Figure 5. Shoreline Movement history at Point Franklin
Appendix C: Costing
SYNOPSIS
This document presents the EVALUATE (+/-30%) Estimate.
The estimates have been developed for the Victorian State Government Department of Environment, Land, Water and Planning.
This document provides an understanding of the cost items by option for total installed costs. It cannot be relied on to make any financial decisions without further analysis and understanding of the qualifications, exclusions and scope issues.

PROJECT DESCRIPTION
For further detail please refer to the Portsea Front Beach Options Assessment report.
1.0 Estimate Key Qualifications

1.01 Estimate accuracy is concept screening level (WOR EVALUATE phase) and based on conceptual information.

1.02 Estimate base date is July 2016.

1.03 Direct manual labour rates and unit rates are based on recent ‘typical’ historical data.

1.04 Labour productivities are based on historical data (PF @ 1.4)

1.05 No detailed Contract and Procurement plans have been developed as part of this estimate, therefore the estimate is based on typical.

1.06 No detail mobile piling, crane & rigging studies were completed.

1.07 No geotechnical investigations were completed.

1.08 No formal logistics study has been completed.

1.09 No project or construction schedule developed to support estimate basis.

1.10 Estimate allows for EPCM execution. (Engineering, Procurement, Construction and Management)

1.11 Contracting Strategy is by Sub-Contracts.

1.12 Contingency was included as per WOR estimate classifications.

1.13 Estimate allows for Common Distributables Costs. This scope covers:

1.13.1 Temporary Construction facilities

1.13.2 Construction support

1.13.3 Inductions (Cost for manual labour to attend site specific inductions when not included in contractor distributable costs.)

2.00 Estimate Assumptions

2.01 Unit weight used in estimate for rock is 2.6 MT per CM.

2.02 Supply rate of rock armour (shot rock) is between $AUD 30 - 50 per MT - $AUD 35 per MT has been used.

2.03 Pricing will be subject to quantity purchased and location of hard rock quarry.

2.04 Dredging sub contractor distributables, accommodation, maintenance and fuel - Included in dredging rates

2.05 Dredging downtime for seastate i.e. environmental / Fish / Whale migration and inclement weather included.

2.06 Piling / sheet supply and install rates are from historical / contracted rates

2.07 The pricing reflects the cost of driving piles / sheets as per scope i.e. no ancillary work such as support work for precast, concreting of pile toes, etc. has been included.

2.08 The impact of shipping operations or beach use during summer has not been assessed or allowed for in the productivities used. Assume beach will be closed.

2.09 The assumptions made about the availability of works areas have not been validated.

2.10 A pile / sheet driving analysis has not been carried out.

2.11 Detailed methods, the sequence of construction and overall project program duration have not been evaluated as yet. As such the pricing does not reflect plant and labour balancing for the project durations.

2.12 Piles are assumed to be free issue at Portsea, within 1km of the site and can be road transported to site in full lengths.

2.13 Dredging Ship Mob assumed from local port.

2.14 Dredging rates are based on local historical data.

3.00 Estimate Exclusions

3.01 Variations to exchange rates other than those nominated in the estimate.

3.02 Owners costs is excluded.

3.03 No allowance for any variation to scope.

3.04 No allowances for deferred capital costs.

3.05 Finance and interest charges for project duration.

3.06 No allowance for salvage value for any demolished equipment and materials.
3.07 Any special environmental requirements.

3.08 Costs of environmental testing.

3.09 Any environmental requirement not identified in this estimate.

3.10 Taxes / Import duties.

3.11 No allowance for abnormal land and seastate weather conditions.

3.12 No allowance has been made for soil remediation for any in situ contaminants if required.

3.13 No allowance has been included for extended periods of industrial unrest.

3.14 No allowance has been made for delay costs associated with obtaining statutory approvals.

3.15 Sunk costs (eg. Cost of this and previous studies etc.)

3.16 Market forces & escalation.

3.17 Assessment of total direct manhours for dredging.
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<tr>
<th>Item Description</th>
<th>Sub Total Direct Costs</th>
<th>Common Distributables</th>
<th>EPCM Costs</th>
<th>Owner's Costs</th>
<th>Contingency</th>
<th>Escalation</th>
<th>Sub Total Indirect Costs</th>
<th>Total Installed Costs</th>
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<tr>
<td>A. Configuration Dredging Offshore</td>
<td>44,993,018</td>
<td>29,942</td>
<td>128,800</td>
<td>346,840</td>
<td>5,579,800</td>
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<td>B. Detached Rubblemound Breakwater</td>
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<td>315,030</td>
<td>417,680</td>
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<td>1,426,000</td>
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<td>3,202,917</td>
<td>9,608,750</td>
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<td>C. Detached SPW Breakwater</td>
<td>1,663,309</td>
<td>166,331</td>
<td>937,333</td>
<td>2,032,199</td>
<td>1,736,500</td>
<td>33%</td>
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<td>D. Attached Rubblemound Breakwater</td>
<td>6,790,750</td>
<td>679,075</td>
<td>979,800</td>
<td>1,878,640</td>
<td>12,103,750</td>
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<td>11,216,008</td>
<td>33,648,023</td>
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<td>E. Portsea Front Beach Headline Rock Groyne</td>
<td>7,322,625</td>
<td>125,063</td>
<td>195,500</td>
<td>696,900</td>
<td>1,207,500</td>
<td>33%</td>
<td>2,864,276</td>
<td>14,321,381</td>
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<td>F. Port Franklin Headland Rock Groyne</td>
<td>11,077,375</td>
<td>132,538</td>
<td>227,700</td>
<td>754,860</td>
<td>2,645,000</td>
<td>33%</td>
<td>4,451,242</td>
<td>22,256,209</td>
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<td>G. Sand Nourishment</td>
<td>21,240,500</td>
<td>14,950</td>
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<td>H. Rock Revetment</td>
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### Portsea Front Beach Options Assessment

**WORLEYPARSONS JOB NUMBER: 301311-11231**

**ESTIMATE DETAILS BY COMMODITY EVALUATE Estimate +/-30% Location: Portsea, Victoria**

#### DREDGING/SAND ON BEACH

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#### SITE ESTABLISHMENT

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<td>Site Establishment/dis-establishment</td>
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#### ROCK ARMOURING (2.6 MT per CM)

<table>
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#### TOTAL COSTS

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## Portsea Front Beach Options Assessment

### WORLEYPARSONS JOB NUMBER: 301311-11231

**ESTIMATE DETAILS BY COMMODITY EVALUATE Estimate +/-30% Location: Portsea, Victoria**

### 1. Materials

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<td>Gravel, 80/140mm</td>
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<td>SM</td>
<td>Gravel, 140/225mm</td>
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<td>5,100</td>
<td>SM</td>
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### 2. Labor

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<td>200</td>
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<td>300</td>
<td>Labor, 135,000</td>
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### 3. Equipment

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<td>150</td>
<td>Equipment, 75,000</td>
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### 4. Total Costs

- **Direct Costs**: $25,310,055
- **Indirect Costs**: $14,837,473
- **Total Costs**: $40,147,528

### 5. Design and Pricing

- **Design and Pricing Allowance - 15%**: $6,022,135
  - **Design and Pricing Allowance - 10%**: $4,014,754
  - **Design and Pricing Allowance - 5%**: $2,006,870

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Appendix D: Marine Ecology
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Project No: 301311-11231- – Portsea Front Beach Remediation: Appendix D: Marine Ecology

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Figure 11. Mixed mussels, seagrass and algae (12A) toward end of transect 9 (12B).................................9

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1 Introduction

Severe erosion at Portsea Front Beach in recent times has resulted from changes to the distribution of wave energy along the Weeroona Bay foreshore.

The options considered in the main investigative report to ameliorate the erosion process at Portsea Front Beach can be summarised as follows:

Table 1. Options Assessed in the Long Term Options Assessment Report

<table>
<thead>
<tr>
<th>No.</th>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Configuration Dredging</td>
<td>Modify the distribution of wave energy along the Portsea Front Beach shoreline to minimise erosion by shaping the seabed with dredging. Dredged material could be used to restore the beach.</td>
</tr>
<tr>
<td>2.</td>
<td>Breakwaters</td>
<td>This is a shore-parallel structure offshore of Portsea Pier that would block the incoming swell wave energy that is causing erosion at Portsea Front Beach. This includes consideration of an attached and detached breakwater option.</td>
</tr>
<tr>
<td>3.</td>
<td>Groynes</td>
<td>A structure extending seaward from the shore that would capture sand drift to the east, thereby building the beach and providing a sand buffer to erosion. This includes consideration of two options, one at Point Franklin and a second option along the beach.</td>
</tr>
<tr>
<td>4.</td>
<td>Replace sandbag revetment with a rock revetment</td>
<td>A rock revetment would halt recession of the shoreline.</td>
</tr>
<tr>
<td>5.</td>
<td>Beach restoration with sand nourishment</td>
<td>The periodic placement of sand mined from the offshore sand banks to feed the erosion process.</td>
</tr>
<tr>
<td>6.</td>
<td>Remove sandbag revetment</td>
<td>This explores what would be the extent of erosion that could occur if no remedial works are undertaken.</td>
</tr>
</tbody>
</table>

This marine ecology report provides a description of the nearshore benthic environment that potentially may be affected by the options assessed in the long term options assessment report.
2 Methods

2.1 Field

The field assessment was undertaken on the 23rd August 2016. Conditions on the day of survey were ideal with very light winds and no swell. Underwater visibility was also exceptional with the seabed visible at most sites to 8m (vertical) depth.

The survey vessel used was operated by the skipper at a speed between 1 and 2 knots while an Advisian marine scientist was operating the underwater camera system to collect the required video data. To ensure good quality of the recorded images, priority was given to vessel speed over heading direction.

Before deploying the camera system, the coordinates of the centre point for the configuration dredging option were entered into the on-board GPS to assist the skipper with orientation during navigation. Video footage was collected along directional transect grids to survey the proposed study area. A high definition underwater tow camera system with live feed was used to document the conditions on the seabed (Figure 1). Underwater visibility was excellent and the camera was towed at between 0.5m and 1.0m off the seabed.

Figure 1. Towed Video System
2.2 Survey Transects

A series of transects was completed for the towed camera survey so that all areas potentially affected by the options assessment were surveyed.

A total of nine transects were undertaken. Four of the transects were over the nearshore trench and across the general area where the detached breakwater was proposed and four transects across the area where the beach groyne options were proposed. A transect was also run along the western length of the Portsea Pier where the attached breakwater option is located (Figure 2).

A series of video points were also collected from within the nearshore trench to compliment the transect imagery.

Figure 2. Towed video transects derived from GPS (indicated by the orange lines)

2.3 Data Analysis

All video footage was assessed and the key habitats classified.
3 Results

3.1 Transect 1

Transect 1 was located close to the centre of the proposed nearshore trench option in 9 to 9.5m depth of water. Much of the seabed was composed of consolidated sand with a rippled seabed (Figure 3a). Lower frequency but larger sand waves were evident in the footage which is more typical of seabed affected by swell waves. Patches of blue mussel colonies (*Mytilus edulis*) were also observed regularly throughout the footage collected Figure 3b.

![Image 4A](image-url) ![Image 4B](image-url)

Figure 3 Sandy seabed (4A) and colonies of blue mussels (4B)

3.2 Transect 2

Transect 2 was located along the seaward edge of the nearshore trench in a similar depth range to Transect 1. The seabed was predominantly consolidated sand with very little epibenthos present (Figure 4a).

![Image 5A](image-url) ![Image 5B](image-url)

Figure 4. Sandy seabed (5A) and colonies of blue mussels with sparse seagrass (5B)
Patches of the blue mussel, *Mytilus edulis*, were common and varied in abundance and cover. A very sparse cover of seagrass was also present in some of the footage (Figure 4b). The species present was most likely *Zostera nigricaulis*, which is the most common seagrass species recorded in Port Phillip Bay.

### 3.3 Transect 3

Transect 3 was located along the landward edge of the nearshore trench and in the general vicinity of the detached breakwater option in 8.5 to 9.2m water depth. The habitat observed along Transect 3 was very similar to that observed in Transect 1 and 2, although no seagrass was detected in the footage.

![Figure 5. Colonies of blue mussels (6A) and sandy seabed with shell (6B)](image)

### 3.4 Transect 4

Transect 4 was located from the easterly end of nearshore trench toward Point Franklin and followed the approximate alignment of the groyne at Point Franklin option. The seaward end of the transect was in 10m water depth and shallowed with increasing proximity to Point Franklin. The initial section of the transect was sand (Figure 6a) which then progressively changed into substrate dominated by macroalgal reef (Figure 6b). The Point Franklin site has been monitored as part of the Victorian Subtidal Reef Monitoring Program for Parks Victoria and has been surveyed by Edmunds et al. (2003).

The most dominant algae at Point Franklin that was observed in the video footage was the kelp *Ecklonia radiata* and to a lesser extent other brown algae such as *Cystophora* and *Sargassum* species. Common invertebrates include the sea urchin *Heliocidaris erythrogramma*, the feather star *Cenolia trichoptera* and very low abundances of abalone *Haliotis* spp. (Edmunds et al. 2003).

Fish were not observed in any of the footage at Point Franklin and Edmunds et. al. (2003) confirmed that the Point Franklin reef had very low abundances of all fish species, including the typically abundant blue throat wrasse, *Notolabrus tetricus*. The only observed species in higher
abundance were the small species such as mado *Atypichthys strigatus* and juvenile toothbrush leatherjackets *Acanthaluteres vittiger*. Edmunds et al. (2003) also indicated that the Point Franklin site is subject to exceptional line and spear fishing pressure, with casual observations indicating the site is likely to have the highest spear-fishing pressure in Victoria. The location is frequented by novice fishers and indiscriminate spearing may have resulted in the observed paucity of all fish species. At least two snorkelers were observed at Point Franklin during the field visit.

3.5 Transect 5

Transect 5 was started at Point Franklin and completed 200 m westward toward Portsea Pier in 4 m water depth. The transect commenced over reef and then intersected a mixed assemblage habitat that was dominated by seagrass and macroalgae. The seagrass observed at the site was predominantly *Amphibolis antarctica* which within Port Phillip Bay is usually restricted to the more exposed locations around the Heads. Seagrass cover was patchy but dense (Figure 7b). These areas of high density are clearly visible in the aerial imagery from the site.
3.6 Transect 6

Transect 6 extends from the western edge of the Point Franklin reef in a south westerly direction toward the middle section of the main beach. The transect covered the area potentially affected by construction of a groyne on the Portsea Front Beach.

The transect was dominated by mixed assemblages of macroalgae and seagrass as shown in Figure 8a and Figure 8b.

![Figure 8. Ecklonia macroalgae and Amphibolis seagrass (9A) mixed macroalgae assemblage (9B)](image)

3.7 Transect 7

Transect 6 extends from the western edge of the Point Franklin reef in a north easterly direction across the reef. The transect covered the area potentially affected by construction of a groyne at Point Franklin.

![Figure 9. Point Franklin Reef, Ecklonia macroalgae (10A) rocky reef with sponges and macroalgae (10B)](image)
A review of the footage showed that the habitat was predominantly reef (Figure 9) with mixed assemblages of seagrass and macroalgae as described previously in Section 3.4. The seabed is colonised by dense Amphibolis, a seagrass that forms meadows on calcareous sands, the interweaving roots and leaves of which consolidate the substrate, protecting it from erosion by currents and waves. Only toward the end of the transect, in approximately 10m water depth does the substrate revert to a more sand dominated seabed.

3.8 Transect 8

Transect 7 was run in a northerly direction from the shallows immediately west of the existing Pier, from a starting depth of 2.3 m to an end depth of 8.0 m. This transect was intended to cover the approximate alignment of the western wing associated with the attached breakwater option.

The initial section of transect was dominated by a mixed assemblage of seagrass and macroalgae. The presence of the Amphibolis seagrass and macroalgae would indicate the presence of a hard substrate for attachment like shell and broken rubble. No high relief reef was observed but is likely to be present closer to shore where a small section of intertidal reef is visible at the base of the seawall immediately west of the Pier. The inshore section of seagrass and macroalgae (Figure 10a) eventually grades into unvegetated, sandy seabed at approximately 3.6 m depth (Figure 10b). Toward the end of the transect, patches of blue mussel become more evident.

3.9 Transect 9

The final transect was run in a west to east direction, approximately 100m from the end of the Portsea Pier at depths of 5.5m to 7.0m. This transect was intended to cover the approximate alignment of the “T” associated with attached breakwater option.

Most of the transect, in particular the initial section, was over sandy seabed that graded into a mixed assemblage of mussels, sparse seagrass and smaller algae (Figure 11a). The proportion of
macroalgae increased toward the end of the transect, which may have been related to the increasing proximity to the extensive reef at Point Franklin.

3.10 Summary

The nearshore coastal and marine habitats that are present adjacent to the Portsea Front Beach foreshore consist of a range of commonly occurring species that are found throughout the southern section of Port Phillip Bay. The area of seabed in the vicinity of the nearshore trench and offshore breakwater options are predominantly sand, whereas the habitat most likely affected by the headland and beach groyne options are reef and seagrass.
4 Initial Assessment of Impacts

4.1 Configuration Dredging

Offshore, in some 8 m depth between the Pier and Portsea Hole, a seabed area of some 700 m × 340 m (24 ha) would be disturbed. One third of this area would be lowered by some 8 m with the remainder raised by some 4 m. This would introduce new habitat over a portion of a somewhat regular flat area, which may enhance local biodiversity.

Near the shoreline, some 1200 m × 100 m (12 ha) of nearshore seabed would be smothered with sand. This would result in a temporary loss of some seagrass in the area although the majority of habitat affected will be soft sediment.

If some of the exposed material is hard (rubble), rather than (soft), the resultant habitat may become dominated by reef and other macroalgal species. The most likely species to recolonise the disturbed habitat will be species already present in surrounding habitat such as those found at Portsea Hole and Point Franklin.

Across Point Franklin the seabed is colonised by dense Amphibolis, a seagrass that forms meadows on calcareous sands, the interweaving roots and leaves of which consolidate the substrate, protecting it from erosion by currents and waves.

4.2 Breakwaters

4.2.1 Detached Breakwater

The footprint of either the sheet pile wall option or the rubble mound option would be relatively small and cause an insignificant amount of disturbance to the seabed. A rubble mound option would enhance biodiversity locally by introducing hard substrate to an area that is currently dominated by soft sediment fauna.

This option also includes provision of a borrow site that will be a source of sand to re-nourish the beach. It is estimated that 8 ha of active seabed could be disturbed to provide the volume of sand required for renourishment. These sand shoals that will be the source of sand are subject to dynamic tidal processes and would be restored naturally over time.

At the beach face where nourishment would be placed some 6 ha of seabed would be smothered, impacting some seagrass and benthic fauna. This nearshore habitat is subjected to dynamic beach processes and would be restored naturally.

There would be little adverse impact on the marine ecology either at the nourishment borrow site or at the beach face where nourishment would be placed. The footprint of the rubble mound option would be relatively small. A rubble mound option would provide hard substrate for the colonization of reef species such as those currently found at Point Franklin for example.
4.2.2 Attached Breakwater Option

The footprint of the attached breakwater option is significantly larger compared with the detached option when the entire footprint of the “T type” structure is taken into account. As a result, a correspondingly larger area of existing habitat will be directly affected by construction and a range of potential indirect impacts will also require further consideration.

4.3 Groynes

4.3.1 Point Franklin Groyne

The rock groyne would cover a relatively small area of existing reef and would have a minimal adverse impact on the local marine ecology. The structure would provide additional new habitat which would offset the loss of natural reef habitat under the footprint of the groyne. The buildup of sand over time on the beach side facing side of the groyne would also prevent the establishment of reef flora and fauna.

At the nourishment borrow site, some 19 ha of active seabed could be disturbed. These sand shoals are subjected to dynamic tidal processes and would be restored naturally. At the beach face where nourishment would be placed some 7 ha of seabed would be smothered, impacting some seagrass and benthic fauna. This nearshore habitat is subjected to dynamic beach processes and would be restored naturally.

4.3.2 Portsea Front Beach Groyne

The rock groyne would cover a relatively small area of existing seabed that is predominantly sand and would have a minimal adverse impact on the local marine ecology. The structure would provide additional new hard substrate for colonization by a range of native species of flora and fauna.

At the nourishment borrow site some 7 ha of active seabed could be disturbed. These sand shoals are subjected to dynamic tidal processes and would be restored naturally. At the beach face where nourishment would be placed some 3 ha of seabed would be smothered, impacting some seagrass and benthic fauna. This nearshore habitat is subjected to dynamic beach processes and would be restored naturally.

4.4 Beach Renourishment

At the nourishment borrow site some 15 ha of active seabed could be disturbed. These sand shoals are subjected to dynamic tidal processes and would be restored naturally. At the beach face where nourishment would be placed some 5 ha of seabed would be smothered, impacting some seagrass and benthic fauna.

This nearshore habitat is subjected to dynamic beach processes and would be restored naturally.
4.5 **Rock Revetment**

The longer term impact of a rock revetment without beach nourishment would be the complete loss of the sandy beach and the progressive lowering and deepening of the seabed in front of it.

4.6 **Summary of Potential Impact**

Table 2 provides a summary of the potential impacts on the marine ecology associated with each of the remediation options. The initial assessment does not take into account socio-economic, visual or aesthetic factors associated with the presence of the structures.

**Table 2 Summary of impact on existing habitat associated with each option**

<table>
<thead>
<tr>
<th>Option</th>
<th>Reef</th>
<th>Seagrass</th>
<th>Sand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration Dredging</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attached Breakwater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detached Breakwater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Point Franklin Groyne</td>
<td></td>
<td><img src="#" alt="Red" /></td>
<td></td>
</tr>
<tr>
<td>Front Beach Groyne</td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Yellow" /></td>
<td></td>
</tr>
<tr>
<td>Beach Renourishment</td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Yellow" /></td>
<td></td>
</tr>
<tr>
<td>Change revetment</td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Yellow" /></td>
<td></td>
</tr>
<tr>
<td>No revetment</td>
<td><img src="#" alt="Green" /></td>
<td><img src="#" alt="Yellow" /></td>
<td></td>
</tr>
</tbody>
</table>

- ![Green](#) - no or minimal impact on the habitat indicated
- ![Yellow](#) - some impact on habitat shown but not significant and recovery likely
- ![Red](#) - high impact on habitat shown with permanent change likely
5 Regulatory Requirements

A range of approvals will be required depending on the option selected.

5.1 Coastal Management Act Consent

All options will require assessment (as a minimum) under the Coastal Management Act.

All use or development of coastal Crown land by any party, including committees of management and municipal councils, requires consent under the Coastal Management Act 1995. Coastal Crown land is generally all Crown land within 200 m of the high tide mark and the seabed of Victorian coastal waters.

The consent process applies to all coastal Crown land, regardless of status in a planning scheme and ensures that the Crown has the opportunity to represent the broader public interest in matters affecting the coast and seabed.

5.1.1 Preliminary Assessment

Dredging, beach renourishment, construction of groynes and breakwaters will require CMA Act consent.

5.1.2 Process and Timeframe

Once a Consent form is accepted as valid, the Minister (or delegate) must make a decision within 28 days. DEPI may request additional information in writing depending on the nature of the works and the information provided.

Under section 40(3) of the Coastal Management Act 1995, if the Minister does not make a decision within 28 days, the application is deemed to be refused.

Where the proposal includes dredging of coastal Crown land, as will be required for a range of options that require a source of sand, the application must include a completed application form that is specific to dredging.

5.1.3 Supporting Technical Studies Required

A range of supporting technical studies is likely to be required to support the CMA Consent. These would include but not be limited to:

- sediment characterisation study to demonstrate the sediments are clean (free of toxicants)
- sediment characterisation study to demonstrate that sand is of suitable grade for placement on the beach.
5.2 Environment Effects Act 1978

The need for an EES referral is triggered by criteria set out in ministerial guidelines. The referral criteria are focused on the potential for a significant effect on the environment.

The Minister, when deciding whether an EES is required, will consider the following:

- The potential for significant adverse effects on individual environmental assets, taking into account the magnitude, geographic extent and duration of change in the values of each asset.
- The likelihood of effective avoidance and mitigation measures.
- The likelihood of adverse effects and associated uncertainty of available predictions.
- The likelihood that available environmental standards provide a sufficient basis for managing key issues.
- The likelihood that the project is not consistent with applicable policy.
- The range and complexity of potential adverse effects.
- The availability of project alternatives that may warrant investigation to assess opportunities to avoid or minimise adverse environmental effects.
- Other available assessment processes that may be suitable to address potential environmental effects.
- The likely level of public interest in a proposed project.

5.2.1 Preliminary Assessment

An assessment of the various options was undertaken, however this is only preliminary in nature and it is likely that ongoing consultation with the public and the Department will determine the level of assessment that will eventually be required:

- Options requiring construction of groynes and beach renourishment are unlikely to require assessment under the EES Act.
- Options requiring construction of a detached breakwater and configuration dredging may require assessment under the EES Act although this could be avoided if enough supporting technical information can be provided with the referral to demonstrate that any impact is manageable. There are existing precedents elsewhere in Port Phillip Bay where similar structures and projects have not required an EES.
- The attached breakwater option which has the largest footprint of all the options considered is likely to require an assessment under the EES Act.

5.2.2 Process and Timeframe

All options will require a referral which would recommend to the Minister whether an EES is required or not. The EES process can be broken down into several discrete steps:
<table>
<thead>
<tr>
<th><strong>Referral</strong></th>
<th>A project is referred by a proponent or decision-maker in accordance with the referral criteria.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Decision</strong></td>
<td>The Minister will make one of three decisions, normally within 20 business days of accepting a referral:</td>
</tr>
</tbody>
</table>
| **Decision** | • Yes, EES is required  
Approval decisions are put on hold until the EES process is completed. |
| **Decision** | • No, EES is not required  
Decision-makers can proceed with their approval process. |
| **Decision** | • No, EES is not required but conditions must be met  
Conditions might relate to the location or dimensions of the project or mitigation measures, or alternately requirements for further studies or consultation. |
| **Scoping** | The matters to be investigated and documented in an EES are set out in the ‘scoping requirements’ issued by the Minister. |
| **Scoping** | Draft scoping requirements are released for public comment for at least 15 business days before the final scoping requirements are published. |
| **Preparing the EES** | The proponent must prepare EES, as well as a study program and consultation plan consistent with the scoping requirements. |
| **Preparing the EES** | A Technical Reference Group, with members from government agencies, local government and statutory authorities, is appointed to provide advice to the proponent and the Department during the preparation of the EES. |
| **Public review** | When the Minister is satisfied that the EES is suitable, it is released for public comment for between 20 and 30 business days. During this time, the public can make written submissions. |
| **Public review** | The Minister may appoint an inquiry to evaluate the effects of the project, having regard to the EES studies and public submissions. |
| **Making an assessment** | As the final stage of the EES process, the Minister prepares an Assessment considering all relevant information. The Minister’s Assessment is normally provided within 25 business days of the inquiry report being finalised. |
| **Making an assessment** | The Assessment includes findings on the environmental effects, and may conclude that the project: |
| **Making an assessment** | • Will have an acceptable level of environmental effects; or |
- Will not have an acceptable level of environmental effects; or
- Would need major modifications and/or further investigations to establish that acceptable outcomes would be achieved.

**Informing decisions**

Decision-makers consider the Assessment

Decision-makers must consider the Minister’s Assessment in deciding whether to approve a project under Victorian law or to authorise public works. While the recommendations in the Assessment are authoritative, they are not usually binding on decision-makers.

### 5.3 Other Considerations

The Sea Dumping Act does not apply where dumping is to occur entirely in Internal Waters such as Port Phillip Bay so no sea dumping permit will be required for dredging and sand renourishment activities. However, the suitability of sediment will need to be characterised in accordance with the NAGD (Commonwealth of Australia, 2009).

An EPBC referral is unlikely to be required however under Part 3 of the EPBC Act, there are nine matters of national environmental significance of which two are potentially relevant to this Project including:

- Nationally threatened species and ecological communities (Section 18, 18A, 19) and
- Migratory species (Section 20, 20A, 20B)

These two matters would require additional assessment to confirm the requirement.
6 Conclusions

Of all the options assessed those which require the construction or placement of solid structures on the seabed will have the greatest potential ecological impact.

Although the configuration dredging option does require the dredging and excavation of a relatively large area of seabed, the resultant area will be available for recolonization by equivalent benthic species, hence the net environmental impact is considered low.

The T groyne attached breakwater option will have a much greater impact than the detached breakwater option by virtue of the size of the construction footprint and that it intersects a range of inshore and offshore habitat types.

Construction of the Point Franklin groyne option over an area of natural reef is also likely to have a greater ecological impact than the Portsea front beach groyne option which mainly intersects sand. The reef at Point Franklin has lower biodiversity than comparable reefs elsewhere in southern Port Phillip Bay. However, it is a popular ecological site due its accessibility. Construction of a rock groyne using rock armour at the site will partially offset the loss of habitat. However, at least half of the effective area available for recolonization will be lost due to the build-up of sand on the beach side of the groyne.

All options will require assessment under the Coastal Management Act and CMA Consent will be required for the project to proceed. An EES is unlikely to be required for most of the options considered in this report. However, the decision will be contingent on likelihood of adverse effects and associated uncertainty of available predictions associated with the option and the level of public interest.
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