

#### 4.3 Beach Cleaning Review Findings and Proposed Future Cleaning and Grooming Program

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Attachment(s)	<ol style="list-style-type: none"><li>1. Beach Cleaning Review, October 2023</li><li>2. Mechanical Beach Rake Test, Josie Jones, November 2023</li><li>3. Beach Values Analysis and Recommended Cleaning Method</li><li>4. Proposed Beach Cleaning Program Map</li></ol>

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#### EXECUTIVE SUMMARY

This report is to formally respond to Council’s adopted Notice of Motion (NoM) “That Council agrees in principle for a hand beach cleaning program on Mornington Peninsula Shire (Shire) beaches and that the Chief Executive Officer brings back to Council a recommendation on whether implementation should go ahead based on cost, efficiency, community benefit and consideration of the role of volunteers.” (NoM 370, Cr Gill, 18 October 2022).

The report presents a summary of the Beach Cleaning Review undertaken in partnership with Monash University along with four Port Phillip Bay Beach Cleaning Program options for Council’s consideration.

The recommended Beach Cleaning Program is a 12-month trial of Option 2 – 4.0 full time equivalent (FTE) Hand Cleaners and 0.4 FTE Mechanical Raking (two days per week). This option is considered to cater for the strong recreational values associated with select beaches whilst also providing a better environmental outcome for majority of the Port Phillip Bay coastline.

Given the complexity and opposing perceptions of the Beach Cleaning activity, it is also recommended that this option is accompanied by volunteer support, educational material and a monitoring program to thoroughly assess effectiveness and impacts.

#### RECOMMENDATION

That Council:

1. **Supports a 12-month trial beach cleaning program of Option 2 – 4.0 full time equivalent (FTE) Hand Cleaners and 0.4 FTE Mechanical Raking (two days per week). This option would result in approximately 20% of beaches being mechanically cleaned and 80% hand cleaned.**
2. **Recognises the complexity of beach cleaning and the variety of community perceptions, and supports the Mornington Peninsula Shire Council dedicating funding towards volunteer support, educational material and an ongoing monitoring program, see ‘Provisional Items’.**

#### COUNCIL & WELLBEING PLAN

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This aligns with the Council and Wellbeing Plan, in particular:

Theme 1: A healthy natural environment and well-planned townships.

- Strategic Objective 1.2: A healthy ecosystem, in which our coastline, bushland, wildlife and green wedge is resilient to the climate emergency and development.

**GOVERNANCE PRINCIPLES**

Section 9 of the *Local Government Act 2020* states that a Council must in the performance of its role give effect to the overarching governance principles. This report aligns with principles C, E and I which are:

- C. The economic, social and environmental sustainability of the municipal district, including mitigation and planning for climate change risks, is to be promoted.
- E. Innovation and continuous improvement is to be pursued.
- I. The transparency of Council decisions, actions and information is to be ensured.

**RELEVANT COUNCIL DECISIONS AND POLICIES**

At the Council Meeting 18 October 2022, Council adopted the following Notice of Motion 370 moved by Cr Gill:

*That Council agrees in principle for a hand beach cleaning program on Mornington Peninsula Shire beaches and that the Chief Executive Officer brings back to Council a recommendation on whether implementation should go ahead based on cost, efficiency, community benefit and consideration of the role of volunteers.* (NoM 370, Cr Gill, 18 October 2022). **DISCUSSION**

**Purpose**

The purpose of this report is to formally respond to Council's adopted Notice of Motion (NoM) *"That Council agrees in principle for a hand beach cleaning program on Mornington Peninsula Shire beaches and that the Chief Executive Officer brings back to Council a recommendation on whether implementation should go ahead based on cost, efficiency, community benefit and consideration of the role of volunteers."* (NoM 370, Cr Gill, 18 October 2022).

This report presents four Port Phillip Bay Beach Cleaning Program options for Council's consideration. A recommended Beach Cleaning Program has been identified by Shire officers which is considered to best respond to the findings of the Beach Cleaning Review and further considers the localised values along our Port Phillip Bay coastline.

**Background**

Since 2021 Shire officers have been broadly investigating the possible impacts of mechanical beach raking (referred to as mechanical raking from here on) in response to community and Coastal Advisory Group feedback. These investigations included building a better understanding of community sentiment and understanding of mechanical raking. The investigations lead to a Beach Cleaning Trial where the following three beaches were hand cleaned rather than mechanically cleaned to assess impacts:

- Moondah, Mount Eliza
- Mount Martha South

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- Rye East.

This trial was accompanied by a community survey which received the following results:

<b>SURVEY QUESTION</b>	<b>Yes</b>	<b>No</b>
Have you noticed a difference in the condition of the beach at the trial sites?	50 (66%)	26 (34%)
Did you know seaweed was important to the marine and coastal environment?	66 (87%)	10 (13%)
Do you support maintaining seaweed in the environment?	70 (92%)	6 (8%)
Excluding cost considerations, would you prefer mechanical, or hand cleaning be completed at the beach?	Hand 53 (79%)	Mechanical 14 (21%)

**Beach Cleaning Review**

On 18 October 2022 Council adopted NoM 370 moved by Cr Gill. In response to this NoM, Shire officers commenced further investigations into our current beach cleaning practices, referred to as the Beach Cleaning Review. To assist with the Beach Cleaning Review Shire officers sought a student placement in partnership with Monash University. The Master of Environment and Sustainability student, with the assistance of Shire officers produced a report detailing their findings titled Mornington Peninsula Shire Beach Cleaning Review (October 2023) (Attachment 1).

The Beach Cleaning Review details the existing beach cleaning regime which is summarised as follows.

- All accessible Port Phillip Bay beaches are formally cleaned on a fortnightly schedule with a lineal distance of 34.8 kilometres (km), 29.0km of which is mechanically cleaned and 5.8km is cleaned by hand. It is noted that the Beach Cleaning Review refers to a total as 28.52km cleaned however upon further review this figure was underrepresented.
- The current contractual cost for Beach Cleaning is approximately \$300,000 per year. However, the activity cost with consideration of all elements including waste disposal and management is in the order of \$600,000 per year. This cost is currently included within the waste service charge however new guidelines issued by the Minister of Local Government, December 2023, have stated that this service, as it benefits the whole municipality should be funded by Council.
- It is noted that reporting on the current program is limited, and all costs are estimates only.
- The review sought to consider the efficiency of the current beach cleaning methods (mechanical and hand) finding that during the summer period (1 October 2022 to 30 April 2023) a total of 88.01 tonnes of weight was disposed of to landfill.
- 84.19 tonnes of the material collected and disposed of was collected by mechanical raking across the reported 23.74km of beaches, averaging 3.55 tonnes per km.
- 3.82 tonnes were collected by hand across the reported 4.78km of beaches averaging 0.8 tonne per km.

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- It is noted, mechanical raking will also collect seaweed, sand and other organic matter.
- Organic matter was estimated to make up for 85% of the weight collected by the mechanical rake. So, the weight of litter per kilometre for the rake was adjusted to 0.53 tonne per km.
- Based on these calculations and assumptions, on average per kilometre, hand cleaning is considered to remove more litter than mechanical raking.
- It was also predicted that 71.5 tonnes of organic material was disposed of to landfill during the summer period (1 October 2022 to 30 April 2023) as a direct result of mechanical raking.

The review provided an overview of the current role of volunteers. It recognised that volunteers play a vital role in the upkeep of our beaches, and we are fortunate to have such dedicated residents. Volunteers contribute to the cleanliness of our beaches via multiple avenues including Beach Patrol groups, Port Phillip Bay EcoCentre, events (e.g. Seaside Scavenge) and individuals who informally volunteer. Across the six Beach Patrol groups in operation on the Mornington Peninsula, the level of reporting and years of operation vary. Based on the details publicly available on [www.beachpatrol.com.au](http://www.beachpatrol.com.au) as of mid-January 2024, these groups have collected approximately 10,000 kilograms (kg) of litter and contributed approximately 3,800 hours.

The review also conducted two tests to better understand:

- Test 1 – Microplastic Influence of Mechanical Raking to indicate what happens to the sand and litter when mechanically cleaned and determine the likelihood that the process would break macro-plastics, creating more micro plastics.
- Test 2 – Collection Effectiveness of Mechanical Raking to test the most common pieces of litter against mechanical raking and to see how they reacted to being raked.

Test 1 Microplastic Influence of Mechanical Raking was conducted at three beaches (Safety Beach, Mount Martha South and Rye Pier). The test concluded there was a pattern of more plastics less than 5 millimetres (mm) in size post mechanical raking and recommended further investigation.

Test 2 Collection Effectiveness of Mechanical Raking found that only two of five (40%) items were confirmed to be collected by the mechanical rake. One item (a water bottle) was raked by the mechanical rake three consecutive times without being collected. The test also concluded there was concern with the effectiveness of mechanical raking which should be further investigated.

Ms Josie Jones OAM, a local volunteer who has committed a significant amount of time to investigating the trends of littering along the coast and the impacts of mechanical beach raking conducted her own independent tests. Josie's report titled 'Mechanical Beach Rake Test, Identifying the origins of macro plastics found on Port Phillip Bay beaches' (Attachment 2) was provided to Shire officers for consideration as part of the Beach Cleaning Review. Similar to Test 2 completed by the Monash student, Josie completed a test to assess the collection effectiveness of the mechanical beach rake. Josie used a grid method where 27 test items were monitored. On the day of the test the mechanical rake collected six of the 27 items (22%). A further eight items were found spread across the test area which moved up to 40 metres from their original location. Thirteen items could not be located immediately after mechanical raking. Josie monitored the area over 11 days during which a further seven items were found and confirmed to not have been collected by the mechanical rake.

A summary of the recommendations provided within the Beach Cleaning Review is as follows:

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- Greater Data Collection
- Implement Group Support (Beach Patrol)
- Manual assistance along-side Mechanical Raking
- Before Cleaning Surveyance
- Education on Litter
- Assessing each beach based on its environmental and community significance.

**Community Feedback**

Although the review has identified some shortfalls in the performance of mechanical raking at removing litter from our beaches, there are other values associated with mechanical raking based on aesthetic and community perception.

A local resident of Mornington provided valuable feedback and took it upon themselves to contact the surf rake manufacturer directly for comment on some of the elements of the Beach Cleaning Review. Details of the response have been provided to Council separately.

When news of the Beach Cleaning Review spread within the local Mornington community, a total of 15 direct emails in support of mechanical raking at Mills Beach were received within a matter of days. These submissions were mostly in reference to how the grooming effects of raking supports recreational users of the Surf Life Saving Club along with a perception of risk, particularly syringes, if raking was to discontinue.

Shire officers expect this sentiment to be common across our community and so it is recommended that any change to the Beach Cleaning Program is presented as a trial and accompanied by volunteer support, educational material and a monitoring program to thoroughly assess effectiveness and impacts.

**Summary**

Upon completion of the Beach Cleaning Review, it is apparent that mechanical raking and hand cleaning each have positive and negative attributes as summarised in the following table.

Pros/ Cons	Mechanical Raking	Hand Cleaning
<p><b>Pros</b></p>	<ul style="list-style-type: none"> <li>• Removes organic material from the natural environment. *</li> <li>• Grooms the beach to provide 'neater' aesthetics and supports some recreational activities.</li> <li>• More efficient use of time.</li> <li>• Lower labour costs.</li> </ul>	<ul style="list-style-type: none"> <li>• Maintains organic material within the environment. *</li> <li>• Provides flexibility to clean within foredune vegetation.</li> <li>• Allows for greater reporting of waste data.</li> <li>• Possibly higher quality of cleaning.</li> <li>• Predicable schedule that can better support volunteer groups.</li> <li>• Lower emission impacts.</li> </ul>

4.3 (Cont.)

Pros/ Cons	Mechanical Raking	Hand Cleaning
		<ul style="list-style-type: none"> <li>Allows foredune vegetation to expand and provide greater erosion resilience.</li> </ul>
<b>Cons</b>	<ul style="list-style-type: none"> <li>Removes organic material from the natural environment. *</li> <li>Initial data suggests it removes less than half of present litter.</li> <li>70mm spaces in rake can miss hazardous materials (e.g. syringes).</li> <li>Rake prongs can break fragile materials (e.g. glass or weathered plastic).</li> <li>Limited reporting on waste being collected.</li> <li>Increased disposal costs. associated with organic matter.</li> <li>Inability to clean within foredune vegetation.</li> <li>Equipment breakdown can make scheduling unpredictable.</li> <li>Initial data suggest more micro-plastics are present after mechanical raking.</li> <li>Possible exacerbation of erosion.</li> <li>Possible impact to cultural heritage.</li> </ul>	<ul style="list-style-type: none"> <li>Maintains organic material within the environment. *</li> <li>Higher labour costs.</li> <li>Possible inconsistencies across individual cleaning approaches.</li> <li>Community perception of lower level of service.</li> </ul>

*\*Note, this is considered a positive for some user groups and a negative for others.*

**Options for consideration**

**Option 1 – 1.0 FTE Mechanical Raking and 0.8 FTE Hand Cleaning**

This option is considered the most representative of the current beach cleaning program. This program would result in approximately 80% of the beaches being mechanically raked and 20% being hand cleaned. The method is determined based on if the beach is accessible by a mechanical rake (same as currently).

Note, the current 0.8 Full Time Equivalent (FTE) for hand cleaning is approximate and is derived from a pool of casual workers who undertake a broad range of tasks.

Pros	Cons	Risk
Confident level of service delivery.	Maintains reliance on mechanical raking.	Reputational risk in not changing practices to align with findings of the Beach Cleaning Review.

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Pros	Cons	Risk
General acceptance by the community.	Continues to deposit a significant amount of organic matter to landfill.	Service delivery is approximate due to limited reporting of hours under current contract.
Opportunity for further monitoring and comparison between the two cleaning methods.		
Opportunity to rake on a reactionary basis.		

<b>Option 1 – 1.0 FTE Mechanical Raking and 0.8 FTE Hand Cleaning</b>	
Beach Cleaning Management	\$129,000
1.0 FTE Mechanical Rake	\$400,000
Beach Cleaning Manual Crew (total 0.8 FTE)	\$90,000
Waste disposal (estimated 30 tonnes per month)	\$125,000
<b>Total estimated cost per year</b>	<b>\$744,000</b>

**Option 2 – 4.0 FTE Hand Cleaners and 0.4 FTE Mechanical Raking (two days per week)**

This option is considered to best meet the outcomes of the Beach Cleaning Review and available community feedback. This option is expected to maintain a similar level of service delivery as the current program and provide the best comparison between the effectiveness of mechanical or hand cleaning. This program would result in approximately 20% of beaches being mechanically cleaned and 80% hand cleaned. Mechanical raking locations are informed by localised values including environmental, recreational, access and visitation.

See Attachment 3 for a breakdown of the existing cleaning method, localised values and the recommended cleaning method. See Attachment 4 for a map detailing the recommended cleaning method along the Port Phillip Bay coastline.

Pros	Cons	Risk
Allows for continued grooming of highly modified beaches where the environmental values are less, and recreational values and visitation rates are higher.	Most expensive service delivery option.	Service delivery of hand cleaning may not be enough.
Best meets the recommendations of the Beach Cleaning Review.		Less groomed beaches may result in community pushback.

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Pros	Cons	Risk
Reduces organic matter being disposed to landfill.		May be difficult for the contractor to have a raking equipment available two days per week.
Opportunity for further monitoring and comparison between the two cleaning methods.		
Similar level of service delivery to current based on area per FTE cleaned each fortnight		
Opportunity to rake on a reactionary basis.		

<b>Option 2 – 4.0 FTE Hand Cleaners and 0.4 FTE Mechanical Raking (two days per week)</b>	
Beach Cleaning Management	\$129,000
Beach Cleaning Manual Crew 4.0 FTE	\$450,000
Mechanical Rake 0.4 FTE (two days per week)	\$174,720
Waste disposal (estimated 18 tonnes per month)	\$75,000
<b>Total estimated cost per year</b>	<b>\$828,720</b>

***Option 3 – 5.0 FTE Hand Cleaners and Reactionary Mechanical Raking (0.2 FTE allowance)***

This option primarily relies on hand cleaning with the ability to mechanically rake on a need basis (e.g. after weather events when the wrack washed up on beaches is heavily contaminated with litter). The implementation costs for this option may vary as five FTE hand cleaners may not be adequate to service the whole coastline. Alternatively, the allowance of one day per week for reactionary mechanical raking is considered conservative.

If a rake is not built into the regular program, there is a risk that equipment availability when required will be difficult due to high demand at other foreshore management areas at the same time.

Pros	Cons	Risk
Minimises organic matter being disposed to landfill.	Inability to compare the two cleaning methods.	Service delivery of hand cleaning may not be enough.



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Pros	Cons	Risk
Opportunity to rake on a reactionary basis.		Community pushback on lower service delivery and lack of grooming.
		Access to a mechanical rake for reactive works may be difficult due to demand at surrounding areas.

<b>Option 3 – 5.0 FTE Hand Cleaners and Reactionary Mechanical Raking (0.2 FTE allowance)</b>	
Beach Cleaning Management	\$129,000
Beach Cleaning Manual Crew 5.0 FTE	\$562,500
Mechanical Rake 0.2 FTE (52 days)	\$87,360
Waste disposal (estimated 12 tonnes per month)	\$50,256
<b>Total estimated cost per year</b>	<b>\$829,116</b>

**Option 4 – 5.0 FTE Hand Cleaners**

This option is the most significant change from the current service delivery model as it relies entirely on hand cleaning. The implementation costs for this option may vary as five FTE hand cleaners may not be adequate to service the whole coastline.

Pros	Cons	Risk
Cheapest option	Inability to compare the two cleaning methods.	Service delivery of hand cleaning may not be enough.
Prevents organic matter being disposed to landfill.		Community pushback on lower service delivery and lack of grooming.
		No existing equipment for reactionary raking.

<b>Option 4 – 5.0 FTE Hand Cleaners</b>	
Beach Cleaning Management	\$129,000
Beach Cleaning Manual Crew 5.0 FTE	\$562,500
Waste disposal (estimated 10 tonnes per month)	\$41,880
<b>Total estimated cost per year</b>	<b>\$733,380</b>

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Note, all costings are best estimates and are subject to confirmation with the contractor and subject to vary after the adopted option is fully scoped to an operational detail.

**Provisional Items**

The following provisional items are recommended to be included within the pricing of all four Beach Cleaning Options.

<b>Provisional Items</b>	
Sand Build-Up Allowance (20 days)	\$26,880
Seaweed Removal (10 days)	\$23,590
Volunteer Support (e.g. advertising, coordination assistance, financial support for safety equipment and promotional material etc.)	\$75,000
Education (e.g. develop material (online and physical) to define benefits hand cleaning and preserving seaweed and other organic material in the coastal environment)	\$25,000
Monitoring (e.g. partnerships with universities, Port Phillip Bay EcoCentre and/or the community to establish a monitoring program)	\$50,000
<b>Total cost per year</b>	<b>\$200,470</b>

**Proposed Beach Cleaning Program**

Based on all current information available, including the Beach Cleaning Review, service contract specifications and community feedback, the recommended Beach Cleaning Program is Option 2 – 4.0 FTE Hand Cleaners and 0.4 FTE Mechanical Raking (two days per week). This option is considered to cater for the strong recreational values associated with select beaches whilst also providing a better environmental outcome for most of the Port Phillip Bay coast.

Given the complexity of the Beach Cleaning activity and the possible community concerns in response to different regime, it is recommended that this option is progressed as a trial allowing the opportunity for community feedback.

The trial is recommended for a period of 12 months with the intent to confirm a program for the remainder of the service contract a minimum of three months before the end of the trial. This lead time is required to allow the contractor to adequately prepare for any possible alteration of service. This option also provides an opportunity to review the merits of potentially bringing this service in house and allows time to scale up internal workflows should it be proven to be more cost effective to do so.

It is also recommended that this option is accompanied by volunteer support, educational material and a monitoring program to thoroughly assess effectiveness and impacts.

**Further Considerations*****Beach Cleaning Subsidy***

The Department of Environment, Energy and Climate Action (DEECA) provide a Beach Cleaning Subsidy for Committees of Management who conduct beach cleaning. This subsidy is only applicable to cleaning completed during the peak season (1 October – 30 April) and

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for areas under Committee of Management (CoM). The subsidy amount is calculated based on costs incurred to perform the beach cleaning activity. In 2022-23 the subsidy rate was 41 cents to the dollar.

Applying the 2022-23 subsidy rate to the costings for cleaning beaches under the Shire's CoM for each of the four beach cleaning options equates to the estimated subsidy return outlined in the following table.

<b>Beach Cleaning Option</b>	<b>Estimated Subsidy Return</b>
Option 1 – 1.0 FTE Mechanical Raking and 0.8 FTE Hand Cleaning	\$133,455
Option 2 – 4.0 FTE Hand Cleaners and 0.4 FTE Mechanical Raking (two days per week)	\$148,652
Option 3 – 5.0 FTE Hand Cleaners and Reactionary Mechanical Raking (0.2 FTE allowance)	\$148,723
Option 4 – 5.0 FTE Hand Cleaners	\$131,550

Note, these figures are estimates only. The subsidy rate and process of application is subject to change at the discretion of DEECA.

**Cultural Sites**

Our coastline is rich with numerous areas of cultural significance located along the Port Phillip Bay coast. In May 2022 Bunurong Land Council Aboriginal Corporation (BLCAC) provided the following advice regarding beach cleaning: “the management of the beach should be done to protect the ecosystem, including leaving seaweed on the beach.” BLCAC also expressed concern that mechanical raking may damage middens and vegetation. In summary BLCAC advised that they would support hand cleaning of the beaches as opposed to mechanical raking.

**Monitoring Requirements**

A key finding of the Beach Cleaning Review was the limitations of available data. As part of the proposed Beach Cleaning Program, it is recommended that funding is directly dedicated towards monitoring the impacts of the new program. A recommended monitoring approach is to partner with the Port Phillip EcoCentre to expand their monitoring across multiple Mornington Peninsula beaches. Additionally, volunteers such as the Beach Patrol groups should be encouraged and supported to continue to collect valuable data.

**Support to Volunteers**

Volunteers provide significant contribution to the cleanliness of our beaches. Regardless of the adopted future beach cleaning program, the Shire should better support our volunteers. Beach Patrol have anecdotally recommended support via the following ways:

- Transparency of the Shire's cleaning regime to avoid clashes with Beach Patrol events.
- Greater promotion of Beach Patrol via the Shire's media avenues.
- Financial support that can be used to expand the functionality of the groups including purchasing safety equipment and promotional material.

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We should further investigate the opportunity to expand our services by including a coordinated program with volunteers and the feasibility of such an approach.

***Education***

The current interest in beach cleaning presents an opportunity to educate the community of the benefits of hand cleaning in comparison to mechanical raking. Any decision at the Council Meeting on 5 March 2024 should be accompanied by an educational campaign to build awareness of the benefits of hand cleaning, value of volunteers and promote better litter behaviour.

***In-kind support to Committees of Management***

Currently the Shire provides in-kind support to three Port Phillip Bay CoMs within the municipality by cleaning their beaches. The three CoM areas (WhiteCliffs to Cameron's Bight CoM – 3.5km, Capel Sound Foreshore CoM – 3km and Dromana Foreshore CoM – 2.8km) equates to approximately 9km or 25% of the beaches serviced under the current beach cleaning program.

The CoMs have been approached for feedback on the proposed Beach Cleaning Program with support expressed by Capel Sound and WhiteCliffs to Cameron's Bight.

All the above costs outlined within this report are inclusive of cleaning the CoM areas.

**ENGAGEMENT**

Community engagement was undertaken during the initial trial undertaken in 2021-22. A public survey was advertised and received 76 responses with the results outlined with the Background section of this report. During the Beach Cleaning Review the broader community have not been formally engaged as the focus has been primarily working alongside stakeholders to better understand the beach cleaning process. Shire officers recognise there are varied perceptions of mechanical beach raking and the proposed trial will provide an opportunity to hear how a new beach cleaning program is received by the community. The current focus on the activity also provides an opportunity for broader education around our coastal environment and litter behaviour.

**COMMUNICATIONS PLAN**

Communications will be published on the Shire's webpage and social media to promote the role of volunteers, improved litter behaviour and educational material around the importance of maintaining organic matter within the coastal environment, the adverse impacts of mechanical beach raking and the purpose of the trial. Feedback will also be sought from the community throughout the trial period.

**LEGAL AND REGULATORY FRAMEWORK**

Not applicable.

**CLIMATE AND SUSTAINABILITY CONSIDERATIONS**

Of the four options presented within this report, Option 4 has the largest improvement towards emission reductions and climate resilience, followed by Option 3 and Option 2.

Each of these options will reduce the amount of organic matter being disposed of to landfill, allowing it to be broken down via natural processes which will reduce carbon emissions. Additionally, these options reduce the use of a mechanical rake which is towed by a tractor again, reducing carbon gas emissions.

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Maintaining seaweed and other organic material (or wrack) within the coastal environment provides habitat for a range of animal species that are essential to a healthy beach ecology. Wrack provides food and shelter for scavengers such as amphipods and other invertebrates that consume the debris. Amphipods are a main source of food for shorebirds, that forage in exposed wrack. When covered by tides, the animal life in the wrack become a food source for fish.

Accumulated wrack can also assist in stabilising eroding beaches by supporting sand and other sediments to accumulate and by providing nutrients that support local coastal plant species to colonise and stabilise dunes.

**FINANCIAL CONSIDERATIONS**

Each of the four Port Phillip Bay Beach Cleaning options presented within this report have varied financial implications. All costings outlined within this report are best available estimates and are subject to confirmation with the contractor and may vary after the adopted option is fully scoped to an operational detail.

Each option, including the provisional items are adequately funded under the recently agreed open space service contract.

The Beach Cleaning Subsidy provided by DEECA is an opportunity for Council to recoup funds spent on beach cleaning. However, the rate of return, process of application, eligibility and availability of this funding stream are subject to change at the discretion of DEECA and should not be relied upon for the beach cleaning service delivery.

**OFFICER DIRECT OR INDIRECT INTEREST**

No person involved in the preparation of this report has a direct or indirect interest requiring disclosure.