

OFFICIAL



St Leonards

Local Port Area Plan

October 2025

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Acknowledgement of Country

Wadawurrung Acknowledgement

We deeply respect our people of the past. Our Elders, children, men and women.

We deeply respect their knowledge of Country, Waters and Sky.

We thank them for their resilience and strength, and for never ceding sovereignty.

We carry and stand with our Ancestors Spirit.

Parks Victoria Acknowledgement

Wadawurrung's Cultural Landscape reflects how Wadawurrung people engage with their world and experience their surroundings and are the product of thousands of generations of economic activity, material culture and settlement patterns. The landscapes we see today are influenced by the skills, knowledge, and activities of Wadawurrung peoples, past and present. Parks Victoria acknowledges the Traditional Owners of these cultural landscapes, recognising their continuing connection to and ongoing role in caring for Country. St Leonards Pier is on Wadawurrung Country, and Parks Victoria consulted with the Wadawurrung Traditional Owners Aboriginal Corporation in the development of the Local Port Area Plan as members of the Project Reference Group.

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Level 10, 535 Bourke St, Melbourne

Cover image: St Leonards Pier

Wadawurrung Connection to Sea and Coastal Area

Wadawurrung people hold a deep and spiritual connection to our Coastal and Sea Country. Our *Karringalabil* (great creator spirit) Bunjil created Warri country and all waterways on Wadawurrung *Dja*.

Wadawurrung ancestors honoured seas, lakes and waterholes, as they did with all of *Dja*. The coasts hold a sacred place in our hearts and murrup (spirit), representing an extension of ourselves—like a *Djilang* (tongue) connecting us to *Dja*, the seas, and our ancestors. In the past, these coastal areas served as vital links for trade and travel routes across Warri *Dja*. The memories embedded in places like St Leonards remain a reminder of the intangible cultural heritage which is very much alive for Wadawurrung people.

However, the ongoing destruction of Warri *Dja* casts a shadow over our present, impacting our people and animals profoundly. Despite these challenges, our commitment to care for country and coastal restoration is ongoing. Wadawurrung people are actively engaged in efforts to restore the health and vitality of our coast and seas.

We extend an invitation, "Koling wada ngal," inviting others to walk with us on this journey towards a healthier Country, coast, and seas.





Executive Summary

St Leonards Pier (the pier) on Wadawurrung Sea Country, is one of Port Phillip's iconic piers on the Bellarine Peninsula and supports recreational pursuits of the community and visitors.

This Local Port Area Plan (plan) sets the direction for the St Leonards Pier and Breakwater Reserve, which includes the pier and surrounding water. Local port area plans are delivered under the *Sustainable Local Ports Framework 2021* to help the Victorian Government prioritise investment and deliver critical local port infrastructure where it is needed most. The St Leonards Local Port Area Plan seeks to improve the safety and function of St Leonards Pier and ensure it continues to meet local community needs for many more years to come.

The plan provides direction for visitor berthing, recreational pier-based fishing, scuba-diving, snorkelling and sightseeing through the renewal of the Pier. Important maritime heritage and marine environmental values, in particular seagrass, within the reserve have informed the proposed alignment of the pier, cessation of dredging and the future phase out of swing moorings as depths become too shallow.

The plan is based on technical investigations and studies, along with stakeholder and community engagement. The plan responds to the local community's desire for a pier that extends to the breakwater and supports current activities.

The plan will inform the delivery of the renewal of St Leonards Pier.

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1 Introduction

Parks Victoria is appointed as the port manager for the local port of Port Phillip and as the Committee of Management for the St Leonards Pier and Breakwater Reserve. Parks Victoria has engaged AW Maritime Pty Ltd (AWM) to provide consulting services for the development of this plan which addresses the future of the pier and surrounding on-water uses.

1.1 Planning process

The local port area plan (plan) focuses on actions which enhance the safety of on-water activities, in consideration of current commercial and recreational demands while anticipating future needs. The preparation of the plan involved a review of existing plans and condition reports, analysis of current and future demand and review of navigational safety. Further technical assessments were also undertaken to understand the marine landscape including maritime archaeological and marine environmental investigations.

Refer to Appendix – St Leonards Local Port Area Plan Background Technical Report 2024 for a summary of these reports.

1.2 Site location and study area

St Leonards Pier and Breakwater Reserve is within Wadawurrung Sea Country. It is located on the Bellarine Peninsula, 110km southwest of Melbourne by road and 45km by sea.

The pier is located at the end of Murradoc Road, which is the commercial node of the town and the main road from Geelong. The pier is popular for various activities, including fishing, snorkelling, scuba diving, walking, and boating.

There are significant nature reserves around the study area, the Salt Lagoon Wildlife Reserve to the north, Edwards Point State Faunal Reserve to the south and St Leonards Lake Reserve.

There are several notable features in and around the study area including:

- Sirens Boathouse and Kiosk
- St Leonards Pier
- Port Phillip Bay coastal reserve (north)
- First Avenue Beach and timber groyne
- St Leonards Hotel
- Harvey Park (south)
- Dan Dan Nook Children's Playground which connects to Harvey Park
- Car parking which connects to Port Phillip Bay Coastal Reserve.

Furthermore, aside from the maritime aspects, the plan recognises the significance of activities on land such as dog walking, enjoying recreational activities at the beach, utilising the playground near the pier entrance, and protecting local plant and animal life along with other environmental assets.



Figure 1- Location of St Leonards Pier (Source: Melway Map 460)



Figure 2- St Leonards Pier Study Area and Context Map of Port Phillip (Aerial Image: Nearmap 14/09/23)

1.3 Strategic Context

The Victorian Government is committed to developing a long-term strategy for the future management and maintenance of local port infrastructure. This is being implemented through the *Sustainable Local Ports Framework 2021* (framework) that will help manage, maintain, and prioritise funding for these assets where it is needed the most.

The framework provides a consistent planning and decision-making pathway to support wider precinct planning through local port area plans. Four principles are applied to prioritise future upgrades and improvements. These include Local Economy and Job Growth, Tourism and Recreation, Emergency Response Capabilities, and Community and Cultural Value.

1.4 Vision

An inclusive destination where the natural beauty of the waterfront meets the recreational needs and aspirations of the local community.

1.5 Purpose and objectives

The St Leonards Local Port Area Plan sets the vision, direction and opportunities for St Leonards Pier and surrounding waters. It aims to improve the function and sustainability of the pier and surrounding on-water uses, in the context of the plans prepared by the adjoining public land managers, Bellarine Bayside Foreshore Committee of Management and the City of Greater Geelong.

The objectives are to:

- Ensure the pier remains accessible for existing and future recreational uses
- Improve safe operation of the on and in water users
- Improve understanding of marine environmental and heritage values and the implications on dredging, moorings and pier design
- Meet relevant Australian Standards
- Respond to climate change impacts and sea level rise scenarios.

1.6 Policy Context

The objective and principle of the *Marine Coastal Act 2018* centres around the preservation and maintenance of the marine and coastal environment, with a focus on ensuring its longevity for future generations. In line with this, the *Marine and Coastal Policy 2020* (policy) has been established as a roadmap with a 15-year outlook that envisions a 'healthy, dynamic and biodiverse marine and coastal environment that is valued in its own right and that benefits the Victorian community, now and in the future'. It serves as a strategic guide for planning processes, management approaches, as well as decision-making protocols.

Furthermore, the Policy is supported by the *Marine and Coastal Strategy 2022* (strategy). This strategic framework outlines a series of prioritised actions to be undertaken over the course of the next five years to effectively achieve the objectives set forth in the Policy. The Strategy recognises that formal and informal collaboration is required for effective and integrated delivery. The Victorian Government, Traditional Owners, marine and coastal managers, communities and individuals all have important roles and responsibilities in the joint implementation of this Strategy.

The St Leonards Local Port Area Plan utilises both the policy and strategy as reference documents to lead the management of Victoria's marine and coastal environment.

2 St Leonards Local Port Area Plan development approach

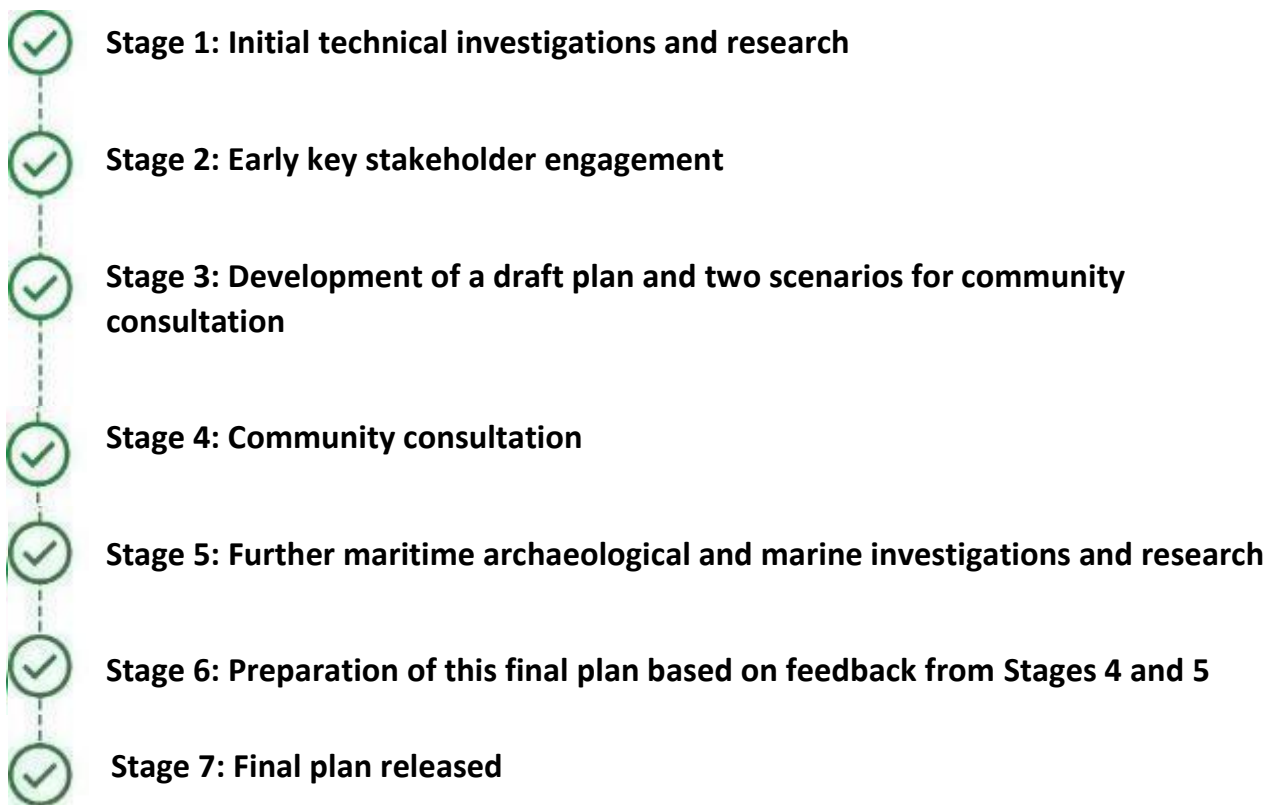


Figure 3 – Project schedule (Parks Victoria, 2025)

2.1 Stakeholder and Community consultation overview

The development of this plan was guided by a Project Reference Group (PRG). The PRG comprised representatives from Parks Victoria, Bellarine Bayside, City of Greater Geelong, the Department of Transport and Planning and the Department of Energy, Environment and Climate Action. The Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) provided valuable input into the development of this plan and joined the PRG as the project progressed.

Stakeholder and community input was sought at key phases in the development of this plan.

- Phase 1 (October 2023). Key stakeholders and user groups were engaged to gather insights around current issues and ideas to help inform a draft plan. The outcomes of this Stage 1 consultation are summarised in *St Leonards - Stakeholder engagement key findings* (October 2023).
- Phase 2 (9 March to 27 April 2024): The purpose of this consultation was to gather community opinions on two pier design scenarios and the draft plan, which would inform the final plan. Feedback was collected through surveys on the Engage Victoria digital engagement platform, as well as through direct discussions with Parks Victoria staff.

2.2 Considerations

Based on a review of existing condition reports, stakeholder engagement and community consultation, the following considerations were identified. These considerations are numbered according to Figure 4 below and are not listed in order of priority:

1. Poor condition of various pier elements beyond repair
2. Potential conflict among different user groups (fishing, scuba-diving, snorkelling, sightseeing, and commercial operations) at high times of high visitation
3. Breakwater provides minimal wave protection
4. Lack of Disability Discrimination Act compliance to access low landings
5. Dredging is necessary to maintain 13 swing moorings, but ongoing dredging affects threatened seagrass beds and marine habitat
6. No defined navigation channel in the harbour
7. Operational challenges because of the varying depths of water
8. Meet Victorian Heritage regulations for archaeological sites and artefacts over 75 years old, e.g. the unidentified shipwreck site.



Figure 4- St Leonard Pier Existing Issues (Aerial Image: Nearmap 14/09/23)

2.3 Further investigations

The Victorian Heritage Act and regulations apply to archaeological sites and artefacts older than 75 years. Within the study area, this is particularly applicable given the proximity of a known shipwreck to the existing pier. Further maritime archaeological and marine investigations have been conducted on two shipwrecks and identify the potential presence of underwater cultural heritage (UCH) that may have been deposited during the pier's operational life.

The process included three main phases of investigation:

- The investigations entailed measuring and mapping underwater features to understand in detail the character of the area, such as water depth, seafloor structure, and anomalies. To do this, we used a multi-media echo sounder, which analyses the sound travel time from the boat to the seafloor, or an obstruction, and back.
- Based on the data obtained from the multi-beam echo sounder, a scuba diving survey was conducted to identify areas of particular interest for further investigation.
- Qualified divers and maritime archaeologists explored the seabed floor for the findings of two shipwrecks, and some features considered remnants of the demolished Coles Jetty, and recorded everything they found.



Figure 5- Results of the probing survey identifying the area of high archaeological potential and low archaeological potential

The area that encloses the locations of the two wrecks (shown in red in Figure 5) is an area of high archaeological potential, located on the northern side of the existing pier. The area containing the footprint of the old Pier in orange in Figure 5 is assessed to be of low archaeological potential. No other UCH artefacts were identified.

2.4 The design criteria

The design criteria outlined below were developed to ensure the plan addresses the current site challenges and considers the future requirements of the primary users in the area.

St Leonards Pier:

- Ensure recreational users and Licenced Tour Operators (LTOs) are provided for in the new pier (i.e. no loss of amenity from current pier)
- Accommodate different activities (fishing, scuba-diving, swimming, and snorkelling) to encourage sustainable activation
- Avoid or minimise impacts on the Sirens Boathouse and Kiosk building
- Ensure the heritage and environmental values of the reserve (including the shipwrecks) are maintained or enhanced
- Ensure the pier levels are suitable for climate change and sea level rise scenarios
- Ensure compliance with the Disability Discrimination Act (DDA) with ramped access at slope 1:14 to low landing
- Provide short-term berthing (low landing) for pick up and drop off of passengers.

Swing mooring ground:

- Consider the future of the mooring ground in light of environmental, heritage and other factors, including safe operating depths.

Channels:

- Ensure all channels meet the requirements of Australian Standards AS3962 (2002) *Marina Design* based on the design vessels for each area.

3 The proposed future use and function for St Leonards Pier and Breakwater Reserve

3.1 Features of the plan

The design features include:

- **A new St Leonards Pier** will be built parallel to the existing pier footprint to protect significant maritime archaeological heritage, including the remains of two shipwrecks located beneath the current pier and protected by the Heritage Act 2017.
- **New low landing** offers recreational opportunities with berthing for vessels up to 12 metres, stair access to the water for scuba diving and snorkelling, and an all-abilities access ramp to the low landing.
- **Vessel approach** to the low landing via deeper water
- **Widened pier head** with seating to enhance the visitor experience.
- **New finger jetty** lengthened to 140 metres to provide for recreational fishing and sightseeing.
- **Widened pier entry** will improve access, sightseeing, and kiosk facility.
- No change to the **breakwater**, to preserve the marine environmental values.
- **Mooring ground** will be monitored for safe depth.
- **Enhanced safety** by providing handrails along the sides of the pier, installing emergency access ladders, ensuring vehicle access for emergencies and maintenance of navigation aids.
- **Environmental protection** is a key priority during the pier rebuild, with care taken to avoid sensitive seagrass areas and to minimise impacts on marine life.
- **Celebrate heritage** the Sirens Boathouse and Kiosk will remain a central focus of the new pier approach.



(NTS)



KEY FEATURES

- 1 New pier alignment runs parallel to existing pier footprint
- 2 New low landing providing recreational opportunities with;
 - (a) Stair access to the water for scuba diving and snorkelling
 - (b) All abilities access ramp to the low landing
 - (c) Berthing for up to 12 metre vessels
- 3 Vessel approach to low landing via deeper water
- 4 Widened pier head will improve visitor experience
- 5 New finger jetty (140 metres long) for recreational fishing and sightseeing
- 6 Widened pier entry will increase sense of arrival
- 7 No change to breakwater for marine environmental values
- 8 Mooring ground will be monitored for safe depth
- 9 Sirens Boathouse and Kiosk

LEGEND

- New Pier
- New Finger Jetty
- New Pier Head
- New Low Landing
- New Scuba diving Low Landing Platform
- Infill
- Existing Pier

St Leonards Pier Precinct Plan

4 Next Steps

This plan provides direction for St Leonards Jetty and Breakwater Reserve which will inform future investment and management actions. Implementation of the new pier is subject to design development, further consultation with relevant stakeholders and obtaining relevant statutory approvals. Parks Victoria will continue to engage with the Wadawurrung Traditional Owners Aboriginal Corporation in the planning and design of the new pier offer at St Leonards.

Priority actions:

- Finalise the detailed design and approvals for the St Leonards Pier renewal.
- Reconstruct the St Leonards Pier.

Longer-term actions:

- Amend the swing mooring set aside area in accordance with the Port Management (Local Port) Regulations 2025 to reflect updated pier design and current water depths.
- Seek amendment to the no vessels zone adjacent to the pier under the *Marine Safety Act 2010* to reflect updated pier design.
- Monitor the mooring ground to ensure safe operating depths.
- Amend the reserve boundaries to better reflect management accountabilities between Parks Victoria and Bellarine Bayside.

Appendix – St Leonards Local Port Area Plan

Background Technical Report

August 2024

1 Background

1.1 Cultural Values

Parks Victoria is committed to continue working with the Wadawurrung Traditional Owners Aboriginal Corporation (WTOAC) to understand and interpret their aspirations for St Leonards Pier. WTOAC have been involved in the development of this plan, and further engagement and investigations will be required to understand their cultural values and stories of the site.

1.2 Land Tenure and Planning

The land management is addressed in the *Northern Bellarine Coastal and Marine Management Plan* (December 2019) and *Adopted St Leonards Structure Plan* prepared by the City of Greater Geelong (March 2015).

The land located around the pier comprises Crown land. The area has three different committees of management:

1. Bellarine Bayside manages areas covering the Port Phillip Bay Coastal Reserve (blue). They are responsible for overseeing the management of the foreshore area in St Leonards which includes informal open spaces, designated parking areas, the entrance to pier, as well as the Sirens Boathouse and Kiosk.
2. City of Greater Geelong is the public land manager of areas along the foreshore including Harvey Park (orange).
3. Parks Victoria manages St Leonards Jetty and Breakwater Reserve (green), excluding the section of the pier managed by Bellarine Bayside.

Parks Victoria is appointed as the port and waterway manager for the local port of Port Phillip. In this role, it is responsible for ensuring the safety, efficiency, and effectiveness of port operations. In this capacity it is accountable for safe navigation, boating zones, moorings and berths, dredging and port infrastructure e.g. the pier.



Figure 1- Various Committees of Management (Aerial Image: Nearmap 14/09/23)

The location falls within the Public Park and Recreation Zone (PPRZ), specifically classified as an 'area of cultural importance'. These areas, as described in the *Aboriginal Heritage Regulations 2018*, encompass registered sites of Aboriginal cultural heritage and land formations that are typically associated with such heritage. The area holds significance due to its inclusion in the Heritage Inventory list and protection of shipwrecks.

Based on this information, any demolition and rebuild of the pier will require:

- Marine and Coastal Act Consent
- Heritage Consent (or permit)

According to the Greater Geelong Planning Scheme under Clause 36.02, a planning permit in terms of constructing a building or construct or carry out works does not apply to a building or works carried out by or on behalf of a public land manager, such as Parks Victoria.

Other statutory approvals may be triggered depending on the circumstances, e.g. removal of plant species listed under the *Flora and Fauna Guarantee Act 1988*.

1.3 Pier History

The township of St Leonards has a rich history that dates to 1850 when it was known as St Leonards-on-the-Bay. Originally established as a village reserve, the township was based on the efforts of Captain George Ward Cole who set up a thriving fire-wood trade in 1855 and established the settlements of St Leonards in 1857 for timber workers.

The pier was first constructed as a jetty in either 1857 or 1858. Literature states that by 1858, the St Leonards Hotel had been constructed and from that point onwards, the township was focused on “the jetty and the pub”. In 1859, the jetty was primarily used for shipping timber and extended a substantial distance into the sea and featured a



Figure 2- St Leonards, Robert Bruce ca. 1870 (Source: SLVIC)

tramway. Its endpoint was marked by a two-decked hulk, partially embedded in the sand and encircled by a breakwater, creating an excellent landing spot (Bryce Raworth, 2023).

In 1867, the jetty had reached a state requiring repairs. Captain Cole declined to further invest in it and expressed his willingness to transfer the control of the jetty to the Shire Council or the Government. This transition of responsibility for the maintenance and restoration of the jetty were confirmed as the government awarded the repairs in 1869. By 1886, the original straight alignment of the jetty now also featured an arm extension and a small shed (refer to Figure 3). In 1908, the L-shaped timber structure had a breakwater constructed which was reconstructed again in 1976.

In 1957, the concrete approach was constructed as part of ongoing improvements. Then again in 1986 came another valuable addition - an outer arm designed to increase practicality and efficiency. The present fabric of the pier bears little resemblance to its original (refer to Figure 3) due to changes in materiality. There was a shed in the middle of the pier (refer to Figure 4), however the shed together with the timber approach extension was demolished in 1986 and reconstructed in 1987 (refer to Figure 5).

The pier remains an integral part of St Leonards township, reflecting the locality's reliance on maritime activities. The current structure, in use today, has undergone complete reconstruction in both 1957 and 1986, as reported by Bryce Raworth in 2023. The predominant character of the pier's fabric is modern, with the associated shed also being a post-war addition. However, the acknowledgment the fabric of both the pier and shed is not historically significant suggests that any pier reconstruction should focus on functional aspects rather than current architectural or heritage value.

1.4 Maritime Archaeology

St Leonards has significant maritime archaeological deposits or features that are also associated with the pier. The Victorian Heritage Register (VHR) lists two places with historic shipwreck *St George* (S649) at coordinates - 38.170297 and 144.719836 as well as the Coles Jetty, St Leonards (H7821-005).

Harvey Maritime conducted a Heritage Impact Assessment for St Leonards Pier which determined significant findings regarding the shipwreck site of the *St George*. Contrary to previous assumptions, the wreck is not that of the *St George* but a smaller, potentially more archaeologically significant vessel, likely constructed in India. Additionally, remnants of the original Coles Jetty were identified within the footprint of the present pier.

The assessment recommended mitigation measures for the reconstruction and the demolition of the existing pier. The main risk identified is the removal of existing pier piles, which could potentially disturb the archaeological remains of the original pier and the associated historic shipwreck. The proposed mitigation measures included cutting-off the existing concrete piles at seabed level, lifting piles clear of the seabed upon removal, providing maritime archaeological training for contractors, establishing no anchoring zones around sensitive areas, and planning demolition activities to minimise impacts on the seabed from plant and equipment.

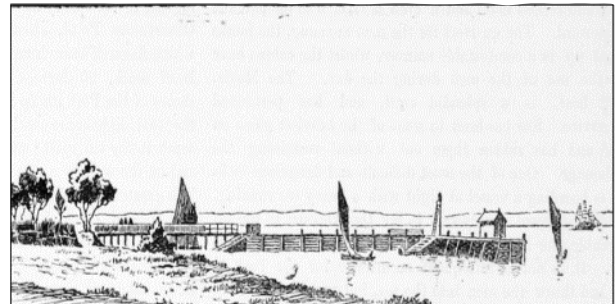


Figure 3- Detail of wood engraving of St Leonards, 1886
(Source: SLVIC)



Figure 4- A view from the Pier St. Leonards ca. 1920-1954
(Source: SLVIC Rose Stereograph Co.)

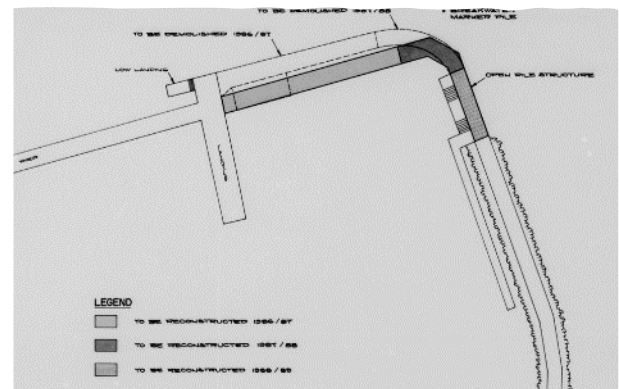


Figure 5- St. Leonards previous layout 1986-1988 (Source: Parks Victoria)

2 Existing Conditions

2.1 Local Port Features

The pier is the focal point of the township and currently supports activities such as fishing, scuba-diving, snorkelling, swimming, promenading, alongside berthing and moorings for the local community and visitors. The pier is approximately 200m long and comprises a mixture of materials and decking surfaces as the structure has been replaced and extended over time. The key components of the pier are outlined in Table 1.

Table 1 – St Leonards Pier Key Components

	Year Constructed	Decking	Substructure	Piles
Main pier approach	1957	Concrete	Concrete	Concrete
Main pier extension	1986	Timber	Timber	Timber and Concrete
Northern arm	1986	Timber	Timber	Timber
Northern low landing	1986	Fibre Reinforced Plastic (FRP)	Timber	Timber
Southern arm	1957	Concrete	Concrete	Concrete
Eastern finger jetty	1986 and 2011	FRP	Timber	Timber
Eastern low landing	1986 and 2011	FRP	Timber	Timber
Breakwater	1976	Rock		



Figure 6- Existing Conditions of St Leonards Pier

2.2 Condition Assessment

The most recent condition assessment of the pier was the Structural Visual Investigation Inspection Report (Cardno, 2021). The condition inspection comprised above water and below water (diving) inspections. Cardno concluded overall the pier was in poor condition and the most critical component was found to be the concrete crossheads. Cardno determined that in 2021 the pier had in the order of 2-5 years of serviceable life.

2.3 Pier Use

The pier is a public multi-use facility, popular for fishing, scuba-diving, snorkelling, swimming, promenading and berthing/mooring. Each group utilises the pier in a different way which, on occasions of high visitation, may put users in conflict with one another. Parks Victoria completed a targeted stakeholder consultation in November 2023 which is discussed further in section 4.3. Anecdotal information from Parks Victoria suggested areas of the pier are used by each group as shown in Table 2.

Fishing is a popular recreational pursuit on the pier. The full extent of the pier is utilised as different species are being targeted including snapper, flathead, whiting and squid. Locals reported that St Leonards is one of the best shore-accessible scuba-diving sites in Victoria with divers and snorkellers entering the water from the beach north of the pier. The greatest scuba-diving sites were reported to be concentrated around the timber piles, rock breakwater and underwater rock pile. Swimmers are encouraged to swim off the beach and north of the pier with a dedicated swimming only zone delineated by special marks.

Table 2 – St Leonards Pier Usage

	Main pier approach	Main pier extension	Northern Arm	Northern low landing	Southern Arm	Eastern finger jetty	Eastern low landing	Rock break-water	Harbour
Fishing	X	X	X	X	X	X			
Scuba-diving		X	X	X				X	
Snorkelling		X	X	X				X	
Swimming			X	X	X				
Promenading	X	X	X		X	X			
Berthing				X	X		X		
Mooring									X

The St Leonards Pier Berthing Map provided by Parks Victoria (refer to Figure 7) shows that short-term berthing is allowed for 30-minute loading and unloading at both low landings. Local rangers from Parks Victoria advised the short-term berths are typically used by recreational power vessels who visit St Leonards on day trips from nearby Queenscliff or Portarlington Harbour. There is permit-only berthing on the eastern side of the concrete arm.

2.4 Pier Abutment

The pier abutment is at the entrance of the pier and supports the start of the main pier approach as well as the Sirens Boathouse and Kiosk. The abutment is a bluestone sloped wall and managed by Bellarine Bayside.

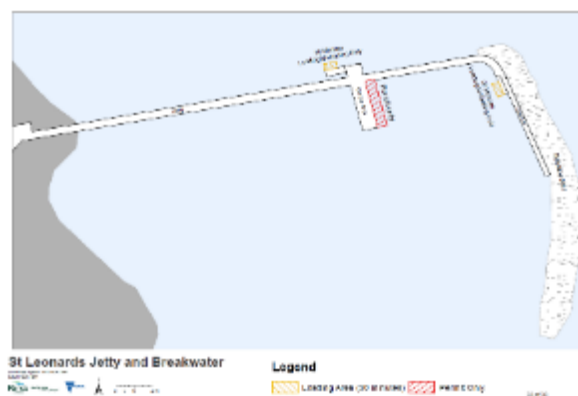


Figure 7- St Leonards Pier Berthing Map (Parks Victoria, August 2020)

2.5 Sirens Boathouse and Kiosk

The boathouse and kiosk has been part of the pier entrance for over 60 years as it was constructed after 1957 (Bryce Raworth, 2023). The building has a footprint of 20m² and has connections to power, water and sullage and is currently leased by a small commercial business to operate as a kiosk. It is a timber framed building on a concrete foundation, sited on the stone foot of the pier, and is managed by Bellarine Bayside.

2.6 Main Pier Approach

The main pier concrete approach has a span of approximately 128m with a 3.8m width and was constructed in 1957 with 92 concrete piles. The approach has a balustrade on the southern side and a concrete kerb on the northern side.

The main pier piles and headstocks are in poor condition with the concrete decking in moderate condition (Cardno, 2021). This section of the pier has been subject to a patchwork of repairs and given chlorides have penetrated the existing concrete to reach the steel reinforcement, the patch repairs may deteriorate at a higher rate than the original concrete.

The balustrades and their fixings are showing surface corrosion, particularly above the pier abutment where there is splash from the abutment. Due to the poor condition of the piles, crossheads and deck, the pier is restricted to pedestrian access only (AWM, 2017). The shipwreck is located underneath the main pier approach, approximately 7m north of the main pier approach and roughly 40m from the shoreline.

2.7 Main Pier Extension

The alignment of the main pier extension has undergone significant changes over time. Initially, it was connected to the northern timber arm before being demolished and realigned to the main pier approach in 1987-1988. Divers reported the marine life is prolific around the timber piles in this section of the pier. The main pier extension spans approximately 61m from the concrete approach. There are 34 square concrete piles and 18 circular timber piles.

The condition of the square concrete piles is variable and the starter bars connecting the pile to the crosshead are severely corroded (Cardno, 2021). The condition inspection for circular concrete piles showed that half of the piles are in condition rating 5 which implies advanced deterioration is present (AWM, 2016).

The timber crossheads are typically in fair condition with end splitting common from the expansion of corroded steel fixings. The timber deck planks are generally in poor condition, exhibiting decay on the deck planks resulting in section loss. The timber ladders are not in serviceable condition while the vertical fender beams are in very poor condition within the tidal zone (Cardno, 2021).

2.8 Northern Arm and Low Landing

The northern arm is made of timber piles and timber decking connected from the main pier concrete approach. The northern arm is another popular spot for recreational fishing when divers are not in the water. Connected to the northern arm is the northern low landing which is 8.6m long and 3.1m wide. It is connected through timber stairs with treads, handrail and edge beams in good condition (Cardno, 2021).

The low landing has Fibre Reinforced Plastic (FRP) mesh decking with a timber substructure and timber piles below.

The northern low landing has a ladder which is used by divers and scuba-diving classes to get into and out of the water, particularly as it is close to the best marine life on the piles. The landing is also a short-term loading and unloading berth. The area can be congested in peak times, and this has led to safety concerns from a conflict in uses.

2.9 Southern Arm

The southern concrete arm was constructed in 1957 at the same time as the concrete approach. It is a high landing located adjacent to the end of the main pier and comprises 30 concrete piles and a concrete slab. The arm spans up to 25.5m long and 6.75m wide. This arm provides alongside permit berthing on one side for the vessels. It is reported that below deck there is good scuba-diving and fishing. The concrete arm deck is in variable condition, with hooked

bars along the perimeter of the slab typically show severe corrosion (Cardno, 2021). There are large cracks with an open concrete spalls and severe delamination of up to 50 per cent of the surface area of the bent.

2.10 Eastern Finger Jetty

The finger jetty is located at the end of the pier and span along the crest of the breakwater. The jetty is 50m long and 2.05m wide with a FRP deck. The bollards show signs of rust staining and coating degradation, and there is moderate rotting and decay observed in the timber capping beams, with visible damage to the paint coating (Cardno, 2021). The general condition of the timber piles is fair with rotting observed in the tidal zone.

2.11 Eastern Low Landing

The eastern low landing is accessed via stairs from the eastern finger jetty. The landing is 6.5m long and 1.7m wide. The low landing has FRP mesh decking with a timber substructure and timber piles below. The eastern low landing allows for short-term berthing of loading and unloading for 30 minutes. The eastern low landing is also accessible through timber stairs with handrail. The timber stairs are in good condition, however, the ladders on the low landing are in variable condition, with some requiring maintenance/rehabilitation to remain operational while the others are unserviceable due to the severe corrosion of the rungs.

2.12 Breakwater

The rock breakwater is constructed on the offshore side of the timber finger jetty. This breakwater was built to provide sheltered waters and create a harbour suitable for berthing and mooring. The breakwater is currently in poor condition with varying crest height and has shown signs of slumping over time.

Despite these issues, the breakwater still offers some protection against waves approaching perpendicular to the shore (Cardno, 2021). There are also timber piles remaining in the southern end of the breakwater which are remnants of when the eastern finger jetty was longer and extended to the end of the breakwater.

The rock breakwater has developed into an important artificial reef which adds to the attractiveness of the area for scuba-diving and snorkelling.

2.13 Services

The Sirens Boathouse and Kiosk has connections to power, water and sullage. The pier has mains power supply which is used for lighting along the main pier approach and main pier extension. To enhance the long-term sustainability of the pier and reduce reliance on the main power source, implementing solar powered lighting would be advantageous. There are no other services currently provided on the pier other than power.

2.14 Swing Moorings

The swing mooring ground is situated in the lee of the breakwater and on the southern side of the pier. Presently, there are 13 swing moorings in the study area.

Consultation feedback highlighted a few considerations:

Dredging Requirement: There is a necessity for dredging approximately every 10 years to ensure the depth of water is suitable for accommodating swing moorings vessels. The current depth may be insufficient, warranting dredging activities to provide adequate clearance for vessels. Dredging may not be possible due to the presence of a threatened seagrass species.



Figure 8- Existing Swing Mooring Ground (Parks Victoria, January 2019)

Wave Protection: The breakwater provides some level of protection to moored vessels, however, its effectiveness will further reduce over time creating unsuitable conditions for swing moorings.

2.15 Bathymetric Survey

The most recent bathymetric survey was completed in December 2023 by Farren Group. The survey provided coverage within the inner pier area extending southward, outer area extending north and along the breakwater. It revealed the existence of a deeper channel (depth exceeding -2.9m Chart Datum (CD)) on the northern side of the pier. Additionally, the depth of the swing mooring area fluctuates between -1m and -2m CD, which is considered relatively shallow for a mooring ground.

The depth outside the pier near the northern arm and low landing area ranges from -2.6 to -2.9m CD. Along the outside of the rock breakwater, there is a consistent depth of -2.5m to -2.7m CD, which gradually increases to a depth of -4m CD further offshore.

2.16 Navigation

Vessel access to the pier is encouraged on both the north and south sides of the pier. On the north side, there is a designated no boating zone (swimming only) delineated by special marks which dictate how vessels can approach the northern low landing. This effectively creates a channel into the low landing with an approximate width of 40m narrowing to 20m width. There is also an underwater rock pile on the northern side of the pier, however the depths in the recent survey are around -2.8m CD so it may not present a navigational hazard. This rock pile is not marked.

On the southern side of the pier where there are swing moorings, there is the pier arm and eastern low landing. The southern end of the breakwater is marked by a starboard lateral mark, there is no marked channel at St Leonards. The bathymetric survey conducted in December 2023 by Farren Group shows that the depth in the harbour ranges from approximately -1m to -2m CD. The design dredge level for St Leonards is -2.5m CD. Dredging was last undertaken in 2014.

The bathymetric survey also shows the continuing presence of a sand spit off the beach which has developed in the lee of the breakwater and narrows the width and prevents vessels from navigating too close to shore.

Australian Standards AS3692 (2020) Marina design defines the minimum and preferred widths for marina entrance channels. Based on the nominated dredging design level of -2.5m CD, the swing mooring area should be able to accommodate powerboats up to 20m length and yachts up to 8m length (refer to Table 3). These could be the design vessels for the swing moorings and berthing areas on the southern side of the pier.

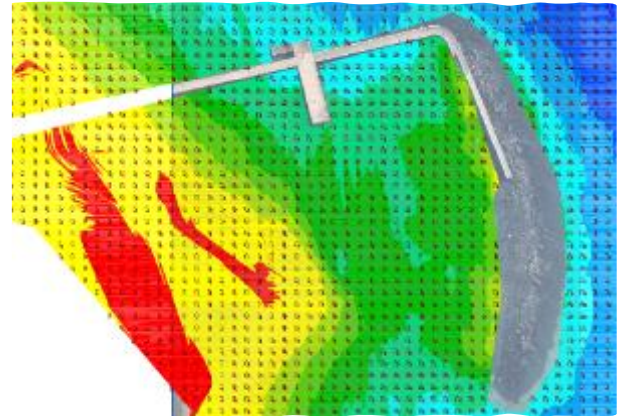


Figure 9- Hydrographic Survey around Pier (Source: Farren Group, December 2023)



Figure 10- St Leonard Pier Boating and Swimming Zones (Source: Parks Victoria, 2015)

Table 3 – Entrance Channel Widths based on AS3692(2020)

Boat Type	Boat Length (L)	Average Boat Beam (B)	Vessel Draft (m)	Preferred D+UKC (1.0m)	Minimum Width (5B or 20m)	Preferred (6B or 30m)
Yacht	8m	3.4m	1.3m	2.3m	17.0m	20.4m
Power	6m	2.5m	0.5m	1.5m	12.5m	15.0m
Power	8m	3.4m	0.7m	1.7m	17.0m	20.4m
Power	10m	3.9m	0.9m	1.9m	19.5m	23.4m
Power	12m	4.3m	1.0m	2.0m	21.5m	35.8m
Power	15m	4.9m	1.2m	2.2m	24.5m	29.4m
Power	20m	5.9m	1.4m	2.4m	29.5m	30.0m

Depending on the final design for the pier rebuild, additional navigational markers may be required to mark the underwater rock pile (isolated danger) and the northern end of the breakwater (north cardinal).

2.17 Coastal Process and Sedimentation

The St Leonards coastline has shown that it is highly dynamic compared to other areas in Port Phillip Bay. The beach's north-south orientation leads to seasonal longshore transport, which is influenced by waves generated by southerly winds in summer and northerly winds in winter. Previous studies have found that there is net sediment movement from north to south at St Leonards, primarily due to dominant waves generated by winter winds moving from north to northeast (AME, 2013).

The sand at St Leonards is relatively fine based on the previous experience and a previous study (AWM, 2018). This suggests the cross-shore transport of sand may result in substantial quantities being carried offshore during storm events leading to erosion of the beach. The shape of the beach is regularly altered by waves as they approach the shore. This happens because the characteristics of each individual wave change frequently and are never constant over a long period of time.

2.18 Sea Level Rise (SLR)

The *Victoria Coastal Strategy* (Victorian Coastal Council 2014) recommends consideration of sea level rise in accordance with the following:

- 0.2 metres by 2040
- 0.4 metres by 2070
- 0.8 metres by 2100

The *Marine and Coastal Policy 2020* (policy) requires designers to design for sea level rise of not less than 0.8m by 2100, and to allow for the combined effects of tides, storm surges, flooding, and coastal processes when assessing coastal hazard risks. Consistent with this policy, the following sea level rise scenarios should be considered for the pier. The term storm tide refers to coastal water levels produced by the combination of astronomical and meteorological ocean water level forcing. The meteorological component of the storm tide is commonly referred to as storm surge and collectively describes the variation in coastal water levels in response to atmospheric pressure fluctuations and wind setup.

Estimates of extreme coastal water levels have been developed for Port Phillip Bay by the CSIRO (2009) for various planning and sea level scenarios at Queenscliff which is the closest reference point 22km from St Leonards. The levels were based on a 1 per cent AEP (1-in-100 year) modelling. The storm tide levels for Queenscliff have been adopted for this study and are based on the climate change scenario which combines sea level rise (IPCC 2007 A1F1) with an increase in wind speeds. Table 4 shows that the current level of the pier is above the predicted mean sea level for a 1 per cent AEP scenario in 2100.

Table 4 - Key Levels of St Leonards Pier with Sea Level Rise Scenarios

	AHD	CD
St Leonards main deck	3.00m	3.52m
St Leonards northern low landing	1.26m	1.78m
St Leonards eastern low landing	1.38m	1.90m
MSL (2100, 1% AEP extreme water level CSIRO, 2009)	2.33m	2.85m
MSL (2070, 1% AEP extreme water level CSIRO, 2009)	1.93m	2.45m
MSL (2030, 1% AEP extreme water level CSIRO 2009)	1.46m	1.98m
MSL (2019, 1% AEP extreme water level CSIRO, 2009)	1.23m	1.75m

2.19 Metocean Conditions

The wave conditions in Port Phillip Bay originate from wind-generated waves. During winter, the wind at St Leonards comes predominantly from the north to east directions. During summer, when the wind is stronger, the wind comes predominantly from the south and the southeast. AWM previously completed a coastal study for St Leonards providing design wave parameters based on a STWAVE model at St Leonards (2018). The results are shown in Table 5.

Table 5 – Design Wave at St Leonards (AWM, 2018)

Annual Exceedance Probability (AEP)	Significant Wave Height Hs (m)	Peak Period Tp (s)
2%	2.1	5.4
1%	2.2	5.5
0.5%	2.4	5.6

2.20 Marine Ecology

CEE completed a marine ecology survey at the pier in November 2023. The analysis of the towed camera feed and observations made while snorkelling around the timber piles indicated that these structures offered a habitat for a diverse range of typical marine organisms. The finding shows that the piles facing away from the jetty were characterised by a dense cover of algal species, whereas shaded piles facing inward or below the main deck had much less algal cover but with a greater proportion of invertebrate species.

There was a variability in cover between the piles, some are dominated by *Ecklonia radiata*, *Caulerpa brownie*, *Caulerpa remotifolia* or *Ulva lactuca*, whereas other piles had a mixture of macroalgal species. Common species noted in the top section of piles included a narrow band of the serbulid polychaete, *Galeolaria caespitosa*, blue mussels (*Mytilus planulatus/galloprovincialis*) and a range of macroalgae (e.g. *Undaria pinnatifida* and *Ecklonia radiata*). The presence of marine pests in the area is restricted to only one species, *Undaria pinnatifida*. *Ecklonia radiata* thrives on numerous rocky reefs along the Victorian coastline. These seaweeds play the role of self-sustaining organisms, nurturing a diverse array of life forms, both large and small (Parks Victoria, 2023).

Shaded sections of the piles are currently dominated by a range of species including ascidians, bryozoans, sponges, hydroids and bivalve and gastropod molluscs. Other common species present were the gastropod *Dicathais orbita*, the crab *Plagusia chabrus* and the seastar *Uniophora granifera*.

The basalt rocks forming the breakwater not only contribute to a reef-like structure but also serve as a thriving habitat for common kelp, along with other large brown macroalgae. This environment supports a diverse community of invertebrates and fish. Although these rocks and the breakwater structure contribute to the overall habitat for a variety of marine flora and fauna, it is less likely that they would offer significant support to any threatened or Flora and Fauna Act-listed species found in this specific region of the bay.



CEE reported that the removal of piles poses low overall risks to Protected Aquatic Biota under the *Victorian Fisheries Act 1995*, while the associated risks with disturbance to the rock are reported to be high.

In the context of developing a new harbour, minimising the disturbance to the *Heterozostera nigricaulis* seagrass is necessary as this will need to be considered in *Marine and Coastal Act 2018* consent applications. This species is known to frequently inhabit fine sand and mud seabeds in artificially created areas protected from waves in the vicinity of Port Phillip. The *Flora and Fauna Guarantee Act 1988* designates this species as threatened.

Key considerations involve careful planning of the harbour layout to avoid disruption or shading of the existing seagrass meadow. To address potential light reduction, particularly during the growing season, trigger-based responses are necessary for sediment suspension during demolition, construction, and dredging. Strategic design of vessel moorings, berths, and access channels is necessary to minimise impacts on the seagrass meadow, recognising its ecological significance.

3 Economics and Demand Analysis

3.1 Demographics

The 2021 census shows that the population in St Leonards increased to 3,542 from 2,480 in 2016. St Leonards is characterised by a mature demographic, with a median age of 56 years, indicating a predominant population of older residents. This demographic suggests a higher proportion of individuals living alone, highlighting the potential demand for significant community and social services tailored to the needs of this age group (ABS, 2021).

The employment rate is 1,444 (45.9%) out of 3,147. The occupational landscape of St Leonards is diverse, with professionals leading the workforce at 250 individuals (18%), followed closely by technicians and trades workers with 225 (16.4%), the managerial sector comprises 175 individuals (12.8%), while 167 (12.2%) community and personal service workers contribute to social well-being. The workforce is further complemented by 142 labourers (10.3%), 109 sales workers (7.9%), and 81 machinery operators and drivers (5.9%) (ABS, 2021).

3.2 Commercial Operators

The pier currently supports several businesses or Licensed Tour Operators (LTOs) directly through the structure itself or indirectly by the environmental values of the marine ecology underneath the pier. They include:

- Sirens Boathouse and Kiosk operator
- Bay City Scuba
- Scubabo Dive
- Snorkel and Dive Safari Altona
- Eco-Logic Education and Environment Services
- Each Wild

3.3 Tourism

Visitors to the Bellarine Peninsula (75%) are more likely to visit the beach than similar coastal locations, such as Mornington Peninsula (54%) and Phillip Island (62%). Bellarine North where St Leonards is located has an overnight visitor market of 566,741 visitors and day trip visitation around 274,964 visitors per annum, with most of these visitors staying in holiday homes or camping. Data for the Bellarine Peninsula show that it attracts much higher levels of holiday leisure visitation than Urban Geelong. The top five activities undertaken with overnight trips include: going to the beach (75%), eat out/dine at a restaurant and/or café (66%), visit friends and relatives (49%), sightseeing/looking around (42%) and visit wineries (11%).

3.4 Future Demand and Commercial Opportunities

St Leonards township envisions a future that supports a dynamic mix of retail, commercial, community, and entertainment establishments within its town centre. The integration of the town centre and pier-foreshore area stands as a core goal to foster a cohesive and vibrant community space in the years to come (The City of Greater Geelong, 2022). The pier holds significant maritime historical value and has played a crucial role in the development of the St Leonards township. Today, the pier serves as a prominent waterfront focal point, offering both locals and tourists opportunities for recreational activities. Therefore, AWM believes the potential opportunities for Parks Victoria to consider include:

- Construct a new pier for the community to enjoy.
- Continue to provide fishing and scuba-diving opportunities.
- Acknowledgement of the pier's importance in development of St Leonards (e.g. plaques, walking tours).

- 
- Utilisation of the sheltered waters on southern side of the pier for paid activities:
 - Non-motorised watercraft hire: kayaks, standup paddle boards
 - Art installation like a floating forest of buoys.
 - Future opportunity to create a map or trail for divers and snorkellers involves several key steps to ensure a safe and enjoyable underwater experience.
 - Installation of an artificial reef to further enhance marine life and scuba-diving opportunities.

4 Stakeholder and Community Insights

4.1 Consultation Overview

A project reference group (PRG) comprising representatives from Parks Victoria, Bellarine Bayside, City of Greater Geelong, the Department of Transport and Planning and the Department of Energy, Environment and Climate Action advised on the project.

The Wadawurrung Traditional Owners Aboriginal Corporation worked with Parks Victoria in the development of the plan.

Stakeholder and community input was sought at key stages in the development of the plan.

- Stage 1: October 2023. Key stakeholders and user groups were engaged to gather insights around current issues and ideas to help inform a draft plan.
- Stage 2: Summer 2024. The wider community were invited to view the draft plan and provide feedback to inform the final plan.

4.2 Stakeholder Consultation (Stage 1)

Key stakeholders and user groups consulted during Stage 1 were:

- Swing mooring permit holders
- Recreational fishers
- Licensed tour operators (LTOs)
- Tenant of Sirens Boathouse and Kiosk
- Local Progress Association
- VRFish
- The Boating Industry Association
- Better Boating Victoria
- The Bellarine Catchment Network

The stakeholder views from this consultation provided their opinions and identified several challenges and opportunities related to the on-water components of the pier including:

Fishing

- There should be a platform constructed over the rock breakwater to enable people fishing to safely access this area and to land fish (noting there was once a timber structure over the breakwater which was removed).

Scuba-Diving/Snorkelling

- The rock breakwater should continue to be accessible, and its values protected, to continue to support scuba-diving and snorkeling.
- Any new pylons should have a rough surface to promote attachment by marine plants and animals.
- The pier should have stairs at the deep end to allow people swimming or snorkeling to easily climb out of the water.
- Artificial reefs should be placed in deeper water for advanced scuba-diving.
- Fishing should be limited to allow marine biodiversity to flourish.

- Spider crabs should be protected from predation by fishers and divers during their molting season.
- Monitor the spread of urchin barrens in the area.

Moorings

- Long-term berths should be provided instead of swing moorings as this would enable people to more easily and safely board and disembark from their vessels.
- The breakwater does not sufficiently block rough seas.
- Sand accumulation is restricting the maneuverability of vessels using the moorings.
- Swing moorings should accommodate larger vessels (e.g. 9-10m yachts).

4.3 Community Consultation (Stage 2)

Stage 2 sought wider community feedback and comment on the draft plan to inform decisions around the options proposed for the pier which led to the final St Leonards Local Port Area Plan.

Community feedback showed little support for either scenario. The main concerns identified were:

- A longer pier is required; at a minimum, the same offer should be replaced for the growing community and future-proofing
- More space for recreational fishing and access needs to be provided for over the breakwater
- Scuba/snorkelling and swimming should have separate access from other activities
- Swing moorings and boat access should be retained, people associate St Leonards Harbour with boats
- The community want Sirens Boathouse and Kiosk to be retained
- Protection for the environment, particularly around the marine life found under the pier, breakwater and mooring ground.

For a detailed summary of the insights and perspectives gathered during this consultation process, refer to the *St Leonards Local Port Area Plan Community Engagement Summary* (July 2024).

5 References

5.1 Reports

No.	Title	Author	Date
1	St Leonards Condition Assessment	AW Maritime	May 2017
2	St Leonards Pier- Structural Visual Investigation	Cardno Victoria Pty Ltd	July 2021
3	Saint Leonards Jetty Electrical Condition Assessment	Hyder Consulting Pty Ltd	May 2010
4	St Leonards Pier Structural Concrete and Steel Condition Assessment- Portion B- Draft	Hyder Consulting Pty Ltd	September 2011
5	St Leonards Jetty Structural Timber Condition Assessment Portion A- Draft	Hyder Consulting Pty Ltd	May 2012
6	Southern Divers St Leonards Pier Pile Inspection Report 2021	Southern Divers Pty Ltd	May 2021
7	Heritage Information: Piers and Jetties of Port Phillip	Robin Crocker & Associates	July 2004
8	Background Report- North Bellarine Beach Nourishment	Department Environment, Land Water and Planning	February 2021
9	Sustainable Local Ports Framework	The State of Victoria Department of Transport	
10	Marine and Coastal Policy	Victoria State Government	March 2018
11	Adopted St Leonards Structure Plan	The City of Greater Geelong	March 2015
12	Boating and Swimming Zones are Changing for the Better	Parks Victoria	June 2015
13	Northern Bellarine Coastal and Marine Management Plan	Bellarine Bayside Coastal Management	December 2019
14	The Effect of Climate Change on Extreme Sea Levels in Port Phillip Bay	McInnes K., O'Grady J. & Macadam I. CSIRO Marine and Atmospheric Research	November 2009
15	Inundation Report: Bellarine Peninsula- Corio Bay Local Coastal Hazard Assessment	Cardno Victoria Pty Ltd	December 2015
16	Marine and Coastal Act 2018	Victoria State Government	2020
17	Marine and Coastal Strategy	Victoria State Government	2022
18	Greater Geelong and Bellarine Tourism Development Plan Final Report 2019-2022	Urban Enterprise	February 2019
19	St Leonards (vic.) 2021 Census All Persons QuickStats	Australian Bureau of Statistics	2021
20	Saving Victoria's ecological anchors of the sea	Parks Victoria	June 2023
21	St Leonards Pier Marine Ecology Survey & Pier Renewal Considerations - Draft	CEE Pty Ltd	December 2023
22	Heritage Review St Leonards Pier	Bryce Raworth	January 2024
23	St Leonards Pier Heritage Impact Assessment – demolition and reconstruction of St Leonards Pier	Harvey Maritime	February 2024
24	St Leonards Pier Rebuild – Maritime and Archaeological Investigations	Harvey Maritime	May 2025

