Warrnambool City Council

Port of Warrnambool Asset Management Plan

Review of Port Operations

August 2018

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1. Introduction

1.1 Background

The Port of Warrnambool (the Port) is a Government owned asset managed by Warrnambool City Council (WCC).

The establishment and maintenance of a port at Warrnambool has a long and problematic history due to the energetic wave climate and sediment transport patterns in the region. The construction of the breakwater has had a major impact on the shoreline within Lady Bay, causing the shore line to prograde and the port area to infill with sediment.

Currently the major users of the port are commercial fishing, recreational fishing and the coast guard. The port precinct is a popular area for tourists and local recreation.

Warrnambool City Council has engaged GHD to develop an Asset Management Plan for the Port, and as part of this scope a number of operational issues have been review.

1.2 Purpose of this report

The purpose of this report is to present our review and recommendations on a number of port operational issues associate with the Asset Management Plan (AMP). The AMP itself is presented in a separate report.

1.3 Scope

Operational issues to be reviewed were nominated by WCC:

- Swing Moorings – Provide recommendations and options on ways to best manage the ongoing operations including: application process, permit length and fees, insurance requirements
- Larger Vehicle Operations - Document templates for traffic management plans and safe work method statements
- Vessel Refuelling - Document templates for traffic management plans and safe work method statements. Document a process for near misses and incidents.
- Disposal of Bilge Waste - Document templates for traffic management plans and safe work method statements. Document a process for near misses and incidents
- Benchmark Fees and Charges – Provide a comparison with other Victorian Harbours
- Dredging – Provide recommendations of frequency of survey and triggers for maintenance dredging.

1.4 Limitations

This report: has been prepared by GHD for Warrnambool City Council and *may only be used and relied on by Warrnambool City Council for the purpose agreed between GHD and the Warrnambool City Council as set out in section 1 of this report.*

GHD otherwise disclaims responsibility to any person other than Warrnambool City Council and state government arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD has made reasonable care in determining the assumptions. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by Warrnambool City Council and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

2. Swing Moorings

2.1 Current situation at Port of Warrnambool

Port of Warrnambool has 15 swing moorings, 3 of which are owned by the Council. Due to the wave climate within Lady Bay, vessels can only be accommodated by swing moorings rather than fixed berths. Existing tenants of the port include commercial cray-fishing vessels, charter vessels and the coastguard.

Warrnambool City Council issues annual permits to mooring holders and inspect the moorings every year (beginning in 2017). The mooring holders are charged for the inspection. Mooring holders are not required to have insurance.

2.2 Review of swing mooring management at other ports

A review of swing mooring management at other local ports on the Victorian coast and Port MacDonnell in South Australia has been undertaken to provide context for Warrnambool and a benchmark for mooring fees – refer

Table 1.

Table 1 Summary of Swing Mooring Management and Fees

Port / Location	# Swing Moorings	Managed by	Annual Fees
Port of Warrnambool	15	Warrnambool City Council	Dependant on length, up to $330
Port MacDonnell Boat Haven	50+	State Government (SA)	$108 per m[1]
Apollo Bay	16 (approx.)[2]	Colac Otway Shire	$205 establishment fee $127 annual fee[3]
Barwon Heads	20 (approx.) – Small Vessels only[4]	Barwon Coast Committee of Management	-
Port Phillip and Western Port	1000+	Parks Victoria, Various local sub-agents eg yacht clubs	Between $102.30 and $443.90, dependant on location $154.80 Establishment fee[5] $78.20 Transfer Fee[5]
Andersons Inlet, Corner Inlet and Port Albert, Gippsland Lakes, Snowy River, Mallacoota	100+	Gippsland Ports	Between $101 and $147 dependent on length, and $17 per m additional over 15m $143 Establishment Fee[6]

** Swing Moorings at Portland Harbour have been/are to be decommissioned, with additional marina berths planned under the Portland Marine Masterplan (June 2016)[7].*

[1]https://www.legislation.sa.gov.au/LZ/V/R/2017/HARBORS%20AND%20NAVIGATION%20(FEES)%20VARIATION%20REGULATIONS%202017_36/2017.36.UN.PDF
[2]http://www.colacotway.vic.gov.au/Recreation-tourism/Port-of-Apollo-Bay
[3]https://ablis.business.gov.au/service/vic/permit-to-moor-a-vessel/25533
[4] http://www.barwoncoast.com.au/boating
[5] http://parkweb.vic.gov.au/park-management/bay-and-waterways-management/moorings-and-berths/moorings-and-berths2
[6] https://www.gippslandports.vic.gov.au/wp-content/uploads/2017/06/wharves-jetties-bm-fees-charges-2017-18.pdf
[7]http://www.glenelg.vic.gov.au/Files/Glenelg_Portland_Marine_Master_Plan_Report_Revision_C_June_2016.pdf

Mooring permits, application and management

Permits for swing moorings are issued by the local port managers in Victoria. Application is generally available online, but the number of moorings or space available for moorings is limited and many areas have waiting lists. In some areas of Port Phillip Bay and Western Port Parks Victoria have appointed sub-agents, such as yacht clubs, to manage the allocation of moorings.

At all sites reviewed permits were issued and fees leveed annually.

Transfer of swing moorings between vessels is allowed by some authorities (Parks Victoria will allow applications for transfer with a fee in some areas, while Colac Otway Shire (Apollo Bay) does not allow for any transfer).

Mooring ownership, installation, inspection and maintenance

Generally the mooring holder is responsible for provision of the mooring tackle, except for temporary and visitor mooring which are owned by the port manger. The ports reviewed had different approaches to ensuring that the mooring tackle was fit for purpose and well maintained:

- At Apollo Bay the port manager inspects the moorings annually and recovers the cost from the permit holders.
- Within Port Phillip and Western Port, Parks Victoria (PV) required that all moorings sites are approved and mooring tackle designed and installed by a PV approved mooring contractor (engaged by the permit holder). Mooring must be inspected annually by a PV approved mooring contractor engaged by the permit holder, and a report provided to PV.
- In ports managed by Gippsland Ports (GP), the permit holder must provide mooring specifications and drawings to GP, and GP may require the design to be review by a marine surveyor. Mooring must be inspected annually by the permit holder and any necessary repairs made, and a statutory declaration provided to GP.

Insurance and indemnities

Requirement for insurance and indemnitees vary between ports:

- At Apollo Bay the permit application requires “The Applicant should take out and keep current during the period of use and occupation of the berth or mooring, as described herein [the contract], a Third Party insurance policy for marine and small craft and provide documentary evidence of same”[8]. The level of insurance cover is not specified. The application also requires the applicant to indemnify the port manager for any liability arising out of use of the mooring.
- Within Port Phillip and Western Port, Parks Victoria (PV) do not require mooring holders to take out insurance, although it is generally required in marinas and club facilities.
- Gippsland Ports only requires insurance for commercial vessels. The application however requires the applicant to accept all liability and indemnify the port manager for any liability arising out of use of the mooring.

[8] http://www.colacotway.vic.gov.au/Council-the-shire/Permits-applications-forms/Port-of-Apollo-Bay-permits-applications

2.3 Swing mooring recommendations

Council's management of mooring at the Port of Warrnambool is generally in line with practice across Victoria and South Australia.

The Council should consider requiring mooring holders to take out insurance against damage to third party life or property. At the moment the small number of boats and limited infrastructure at Warrnambool mean the risk is relatively low.

3. Port Fees and Charges

It is understood that there are no fees and charges for users at the Port of Warrnambool other than the mooring permits discussed above. Port fees and charges at local ports can be and are levied on a number of activities, depending on the level of infrastructure provided[9]:

- Use of boat ramps
- Car parking
- Rental of berths
- Wharf use for vessel loading/unloading or servicing
- Use of facilities such as slipways or hard strands
- Navigation/Channel fees (commercial)
- Cargo loading/unloading fee (commercial)
- Fuelling permits (commercial)
- Event permits and event setup fees (commercial)
- Rental of land and wharf space (commercial)

3.1 Port of Warrnambool boat ramp

The boat ramp at the Port of Warrnambool is a well-used facility and presents an opportunity to levee fees to recover some of the costs associated with management on the Port.

The existing boat ramp, is a two lane concrete boat ramp supported by two adjacent jetties (one on each side of the ramp), that act as queuing, fishing and promenading structures. The boat ramp is protected by the Breakwater however the ramp is still subject to waves and surge which can make launch and retrieval difficult and dangerous in particularly adverse conditions. The community has expressed a strong desire to see additional protection provided for the ramp to limit the impacts of water movement[10].

The sealed carpark currently provides marked parking spaces for approximately 52 car-trailer units (CTUs). Car-only parking is also provided, including in excess of 100 spaces available throughout the port precinct across three parking areas. Parking is presently free, however community consultation undertaken as part of Warrnambool Harbour Master Planning reports that just over one third of respondents would support paid CTU parking in the current condition and 47% of respondents “indicated they would support the user pays system if the facility was upgraded to a satisfactory level” meaning improvement in the surge on the ramp [11]. It was also indicated that traffic flows could be improved, with an additional car and trailer turning area supported by the community.

[9] https://www.gippslandports.vic.gov.au/wp-content/uploads/2017/06/general-fees-charges-2017-18.pdf
[10] http://www.standard.net.au/story/5039324/call-for-city-harbour-forum-for-public-to-have-a-say/?cs=72#slide=2
[11] Warrnambool Harbour Master Plan, Final Draft, November 2017 https://www.warrnambool.vic.gov.au/sites/warrnambool.vic.gov.au/files/documents/council/meetings/2017/20171102%20Draft%20Final%20MP%20-%20low%20res.pdf

3.2 Review of other port boat ramp charges

Table 2 summaries a comparison of recreational boat ramps at various locations throughout Victoria and including Port MacDonnell in South Australia.

With the exception of the City of Greater Geelong, Table 2 demonstrates that most managing authorities in the region charge parking fees when sealed and marked parking is provided for cars with boat trailers.

Mornington Peninsula Shire Council charges highest annual fee of the areas compared in Table 2, however it is noted that this area is adjacent to the Melbourne Metropolitan region, as compared to the more rural nature of the Barwon and South West region. It is therefore considered that the Glenelg Shire boat ramps in Portland are the most appropriate comparison.

Table 2 Boat Ramp Comparison - Locations, Description and Fees

Location	Number of ramps	Description	Parking type	Fee charged?	Fee details
Warrnambool	1 boat ramp within harbour	Two lane boat ramp with adjacent jetties as queuing structures	Sealed, marked (approx. 52 spaces)	No	-
Port Fairy	1 boat ramp, managed by Moyne Shire	Small two lane ramp, with adjacent jetties as queuing structures	Limited, sealed, unmarked	No	-
Portland[12]	3 boat ramps, managed by Glenelg Shire	- Single lane ramp and three lane ramp adjacent, mixed queuing structures (jetties and floating walkways) - Four lane ramp with three queuing structures	Sealed, marked (approx. 60 spaces at larger ramp), with grassed overflow	Yes	Annual Fee $110 Annual rates payer or concession $55 Daily $10
Port MacDonnell Boat Haven[13]	1 boat ramp, managed by District Council of Grant	Four lane ramp with two floating walkways	Sealed, marked (approx. 55 spaces), with grassed overflow	Yes	Annual Fee $100 Annual pensioner of Seniors concession $60 Monthly $50 Weekly $25 Daily $5
Apollo Bay	1 boat ramp, managed by Colac Otway Shire	Two lane ramp with mixed queuing structures (jetty and floating walkway)	Unsealed (gravel), unmarked	No	-
Ocean Grove	1 boat ramp, managed by the City of Greater Geelong	Two lane ramp with two pontoon queuing structures	Sealed, marked (approx. 30 spaces)	No	-
City of Greater Geelong[14]	Approx. 17 Council managed boats ramps	-	-	No	-

[12] http://www.glenelg.vic.gov.au/foreshoreparking
[13] https://www.dcgrant.sa.gov.au/webdata/resources/files/WKS008-Application%20for%20Annual%20Boat%20Ramp%20Permit-1.pdf
[14] https://www.geelongaustralia.com.au/boating/article/item/8cdc0f93bf5c460.aspx

Location	Number of ramps	Description	Parking type	Fee charged?	Fee details
Mornington Peninsula Shire Council[15]	6 Council managed boat ramps	-	-	Yes	Annual Fee $130 Daily $12

3.3 Boat ramp recommendations

Council could consider a implementing a fee for the use of the boat ramp, levied as a fee for the parking of car and trailer units. We recommend that the fee be set at a level similar to Portland and Port MacDonnell as these facilities provide a similar level of service.

[15] https://www.mornpen.vic.gov.au/Activities/Sports/Boating/Boat-ramps

4. Vessel Refuelling

Currently refuelling of fishing vessels is undertaken using a 'cart' shared by the fishing fleet. The cart consist of portable fuel tank in a trailer that can be towed by a light commercial vehicle. The vessel moors at the lower landing on the north side of the breakwater and the cart is positioned on the main deck of the breakwater level with the vessel. A fuel hose is run from the cart down over the lower landing to the vessel and the fuel is gravity fed to the vessel. This method of refuelling poses a risk of interaction between the cart and other vehicles and pedestrians. Additionally, the area is frequented by recreational fishermen and swimmers.

The use of non-standard, portable equipment supplied and maintained by vessel owners means there is an unknown, and possibly higher, level of safety and environmental risk, as compared with permanent commercial refuelling facilities. Note that GHD have not inspected the fuelling equipment or its operation, and have not performed a detailed risk assessment.

Generic templates Safe Work Method Statements (SWMS) for vessel refuelling and large vehicle operations relevant the current refuelling practices are provided in Appendix A[16].

In order to assess and manage the risk associated with the vessel refuelling activities at the Port is recommended that Council, in consultation with vessel operators

- Undertake a risk assessment and review of the current refuelling operations. Assess whether risk can be lowered by upgrading equipment, for example a system incorporating pumps and emergency shut-off valves.
- Develop a Traffic Management Plan (TMP) in order to manage the interaction between vehicles conducting refuelling and other port users, which is discussed further in Section 6. This plan could include options for separation of refuelling operations from other activities via exclusion zones while fuel is pumped, or a dedicated refuelling berth which cannot be accessed by the general public.
- Develop a site-specific refuelling procedure with measures to mitigate identified risks, including:
    - Maintaining an exclusion zone around refuelling to keep public at a safe distance.
    - Prevention of smoking and other ignition sources.
    - Active monitoring of both ends of fuel hose to identify leaks or spill
    - Measures to quickly shut-off flow in the event of a leak or spill
    - Provision of spill kits for quick access
    - Inspection and maintenance of equipment
    - Training or operators
    - Incident response procedure, outlining the process to be followed in the event of an incident during refuelling activities so as to limit the potential impact

We recommend a budget allowance of $20 - 30k to conduct the refuelling review and develop the procedures, depending on the level of consultation involved.

In addition, refuelling activities should be considered in the Port Safety and Environment Plan (SEMP) or a desiccated Storm Water Management Plan (SWMP) to ensure no stormwater contamination is caused by refuelling.

[16] Based on: https://transportsafety.vic.gov.au/maritime-safety/recreational-vessel-operators/powerboat/safe-operation/boat-handling2/refuelling

5. Disposal of Vessel Waste

Vessel waste can be bilge water (containing or not containing oil), sewerage, biological waste (eg fish head, guts etc), liquid waste (oil, paint, chemicals etc.) and solid waste (timber, plastic etc).

The Australian Maritime Safety Authority (AMSA) requires oil and all oily mixtures (machinery space bilges) be retained onboard of vessels for shore disposal, while sewerage may be discharged no less than 3 nautical miles (nm) from land if contaminated and disinfected, or 12 nm if not[17].

The port of Warrnambool currently offers limited facilities for disposal of waste - bins for disposal of non-toxic solid waste and recycling only. During peak recreational times a bin for fish waste may be temporarily provided. There are no facilities for the disposal of sewerage or oily bilge water.

At larger ports and marinas sewerage pump-out facilities are sometimes provided on a commercial basis, and these may take oily water depending on the requirements of the local water authority. These facilities are generally not provided in harbours the size of Warrnambool, and we have not located any on the Victorian Coast west of Port Phillip.

The only options for disposal of sewerage and oily bilge water on board vessels is discharge offshore (sewerage only), carrying the waste ashore in a portable container for disposal or discharge to a road tanker operated by a commercial waste contractor.

The Council should work with the commercial fisherman in the port to ensure waste generated is being disposed of appropriately. These requirements are difficult to enforce, particularly in relation to sewerage and should be supported by a monitoring and incident reporting process in the SEMP.

[17] https://www.amsa.gov.au/marine-environment/marine-pollution/discharge-standards

6. Large Vehicle Operations and Traffic Management Plan

A range of large vehicles currently access the Port area:

- 100t mobile cranes on the breakwater are used to lift the larger fishing vessels (approx. 20t) out of the water onto low-loaders use used to transport the vessels to maintenance facilities.
- Refuelling is undertaken by a cart system comprising a vehicle-trailer unit operating off the breakwater.
- Car with boat trailers are used to launch recreational boats and small commercial boats from the boat ramp.
- Other vehicles operating in the precinct include garbage trucks, emergency vehicles, and light commercial vehicles servicing the fishing fleet and the café.

Pedestrians also frequent the area and intermingle with traffic in some areas. The pedestrian path from the beach and café to the breakwater leads the across the head of the boat ramp. The breakwater main deck is a shared pedestrian and vehicle zone.

In order to manage the operation of large vehicles, and the interaction between traffic and pedestrians more generally, a Traffic Management Plan (TMP) should be developed considering all stakeholders. We recommend a budget allowance of $20 - 50k to develop to develop the TMP, depending on the level of consultation involved.

The TMP should consider all users of the precinct and the constraints of the site including the load limit on Stanley St Bridge.

A template SWMS for large vehicle operations is provided in Appendix A and a template TMP is provided in Appendix B.

7. Dredging

7.1 Purpose of dredging and previous dredging campaigns

Since the breakwaters construction in 1890, and extension in 1915, ongoing sediment accretion has been occurring within the harbour, resulting in the seaward movement of the shoreline by more than 300 m and a dramatic reduction in the depth behind the breakwater.

More recently, the harbour was dredged in 1978 and 2001 in an effort to maintain safe navigable access to the mooring area, breakwater lower landing and boat ramp.

In 2007 Coastal Engineering Solutions (CES) designed a dredging program with the duel aims of maintain depth for navigation and attempting to reduce the magnitude of waves effecting boat ramp via 'configuration dredging'. This involved the creation of a sharp change of depth at the seaward edge of the dredge area on an alignment calculated to reflect waves away from the boat ramp and towards the beach further north along Lady Bay. The dredge area is shown in Figure 1.

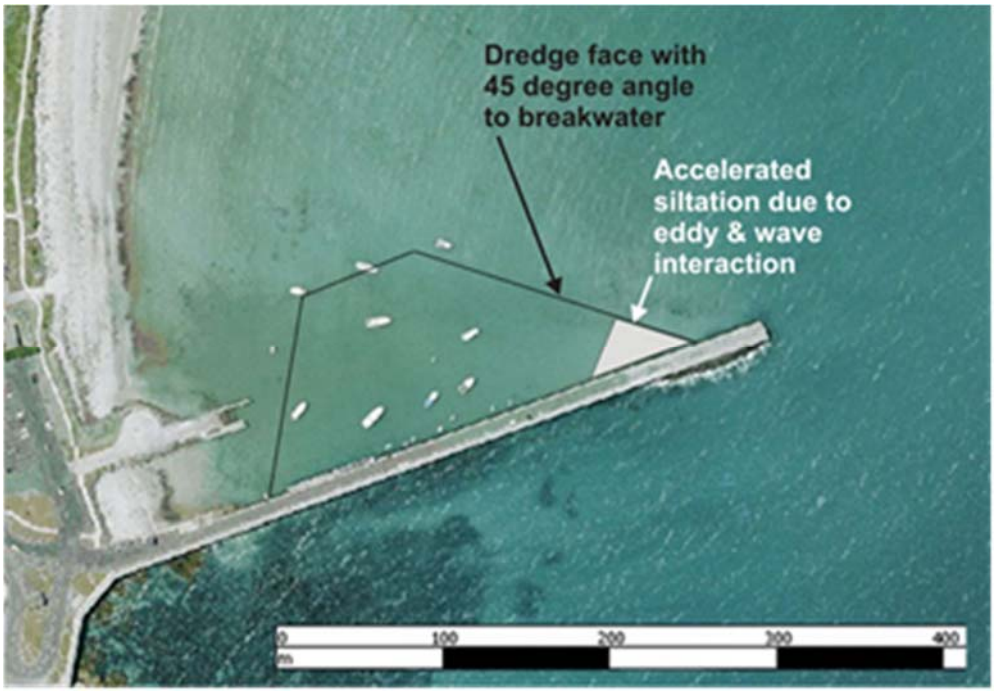

Figure 1 Configuration Dredging Plan from CES (2007)

The configuration dredging, post dredge monitoring program and trigger values for future management action were set out in *Warrnambool Harbour Maintenance Dredging Long Term Management Strategy* (CES, 2007) (only an extract of this document has been reviewed).

According to the *Warrnambool Harbour Dredging 2009 – Post Implementation Review Report*, completed by the Department of Transport, the configuration dredging plan was implemented in 2009, using a cutter suction dredge to remove approximately 36,000 cubic meters of sediment, taking the depth to -4.5 m CD close to the lower landing[18]. This dredging produced grey silty-sand, which was deemed appropriate for deposition on the beach. The post dredge survey is shown in Figure 2.

[18] Warrnambool Harbour Dredging 2009 – Post Implementation Review Report, December 2011, Department of Transport

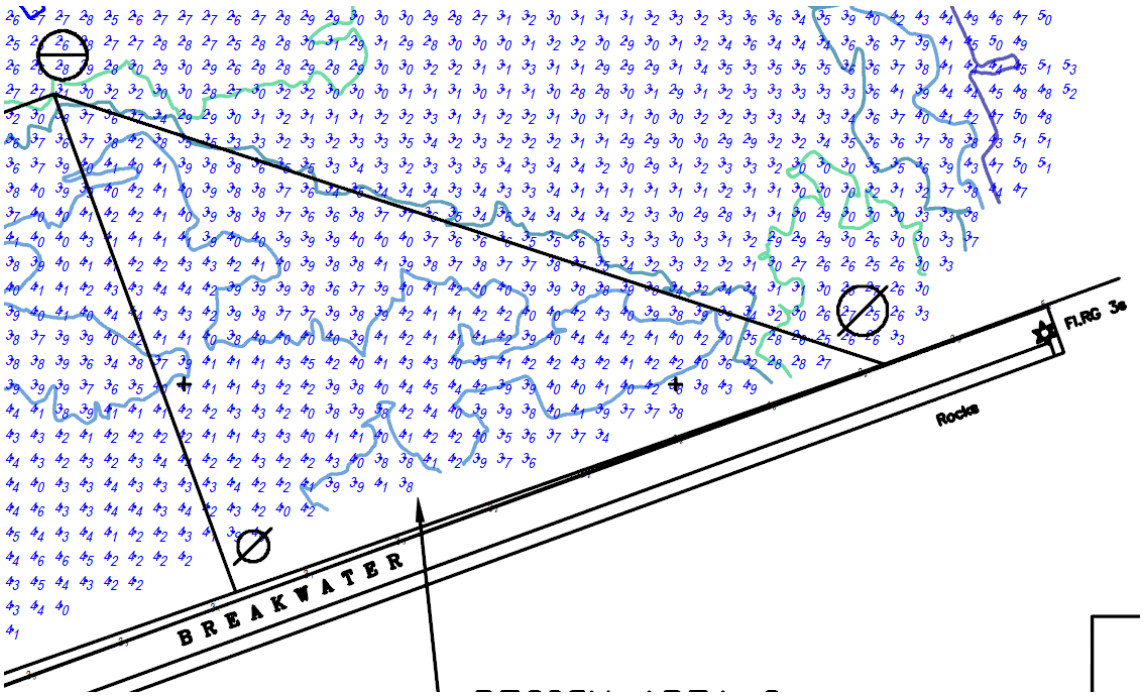

Figure 2 Post dredge bathymetric survey, 2009, showing configuration dredging

Another dredging campaign was conducted in 2013 to remove sand from an area close to the boat ramp, inshore of the 2009 dredging area, as shown in Figure 3. According to a letter from Warrnambool City Council to Moyne Shire titled "*Dredging of Port of Warrnambool - Agreement between Moyne Shire Council and Warrnambool City Council*" (date unknown), the target volume was 8,000 m^3 with spoil placed on the beach approximately 300m to the north.

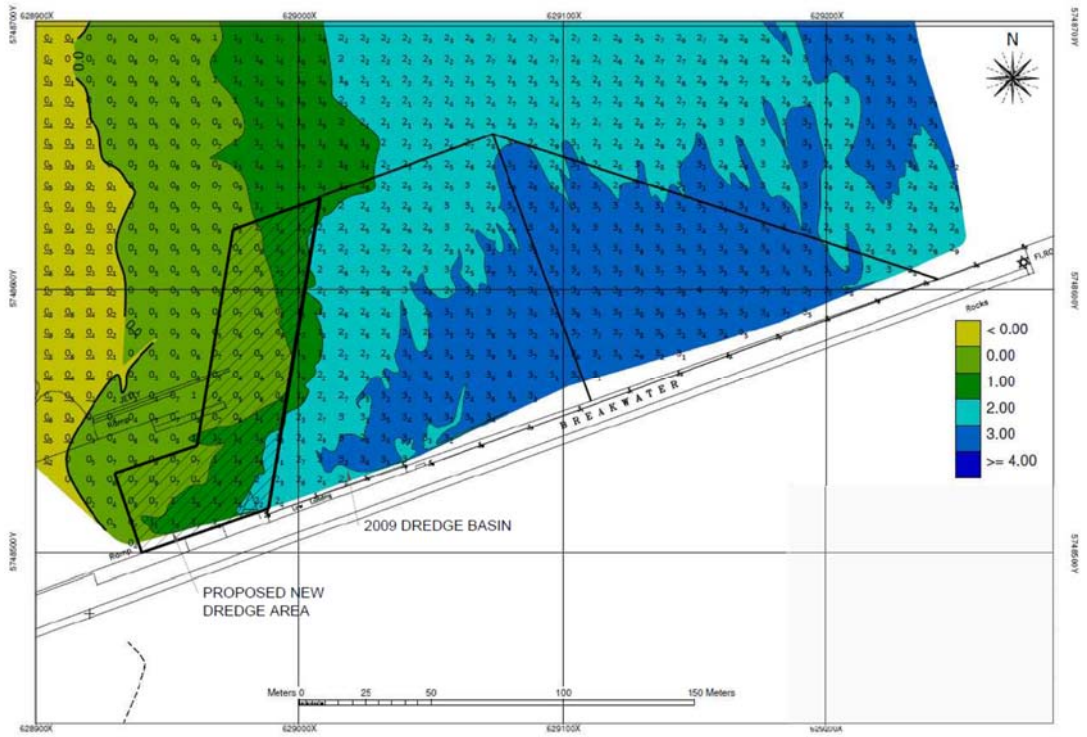

Figure 3 Proposed dredging area 2013

7.2 Survey and monitoring

The *Warrnambool Harbour Maintenance Dredging Long Term Management Strategy* (Coastal Engineering Solutions, 2007) recommended a number of monitoring activities. The available monitoring data has been reviewed against these recommendations:

- **Harbour Configuration Dredging**: annual bathymetric survey of the harbour.
    - It seems that this has been conducted 2 - 4 times per year since 2009.
- **Beaches**: beach profile survey, including seaward edge of dunes, from boat ramp extending 700m north along beach, at 6 month intervals.
    - The beach and seabed of Lady Bay north of the breakwater (for a distance of 1.2km) have been surveyed 1 – 2 times per year. This survey does not include repeated profile survey or survey of the dunes.
- **Boat Ramp:** Logging of reported incidence of difficulty launching at boat ramp due to waves/surge**.**
    - Council have kept a log of incidents, complaints, comments and suggestions regards to condition of the beach, breakwater, boat ramp and other port facilities have been recorded in this log books.

    Records for the duration of 2007-2012 and 2013-2018 have been studied and the results of this investigation is listed below:
    - Number of complaints/records (in total): 193
    - Number of comments about the boat ramp: 41
    - Comments/complaints about the boat ramp were mainly related to maintenance of the boat ramp issues included lighting, slippery surface, safety issues, etc.
    - There was only one complain about wave conditions effecting the boat ramp on October 2011

7.3 Dredging triggers

The *Warrnambool Harbour Maintenance Dredging Long Term Management Strategy* (Coastal Engineering Solutions, 2007) recommended a number of triggers for future dredging, beach shaping or other responses to sand movement. We have conducted a preliminary review of these triggers, based on the limited data available, as shown in Table 3.

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Table 3 Triggers and actions recommended by CES (2007)

Recommended Trigger	Recommended Action	Comment
Harbour Configuration Dredging		
1. Siltation to a depth of -3.5 CD in outer part of dredge area (grey area on Figure 1). This would indicate the geometry of the configuration dredging was deteriorating. Expected to occur in 1 to 3 years.	Dredge area to restore the design geometry and place sand on seabed 100m to north	Siltation to -3.5m did occur within three years of the 2009 dredging, however no subsequent maintenance dredging was undertaken (council were unsuccessful in obtaining funding for dredging and harbour improvements during this time). A remediation dredging campaign was carried out in 2013 to remove the sand bar which was formed at the end of the boat ramp. There is now a sandbar in this area with a depth of only -1.7m CD, and the geometry of the configuration dredging has completely disappeared, as can be seen by comparison of Figure 2 with Figure 3 and Figure 4.
2. Siltation of the broader dredged area, including moorings and lower landing, to a depth of -3.5 CD. Expected to occur in approximately 10 years	Not specified	This trigger has been reached, however no subsequent maintenance dredging was undertaken. (Council were unsuccessful in obtaining funding for dredging and harbour improvements during this time). Currently depths are between -3.4m and -3.8m CD in the vicinity of the lower landing, and up to -2.2m CD elsewhere within the dredge area.
Beaches		
1. Beach and dune erosion north of the boat ramp that threatens the shared pathway. This could be an effect of wave reflection from the configuration dredging,	Reshape beach, relocate pathway or extend rock seawall.	Council have advised that shoaling has occurred with southerly swell, but at no time since 2011 has the shared pathway been threatened by erosion. No known actions taken in response to erosion in this area since 2011. A review of aerial photos from 2011 to 2017 on Google Earth showed no clear sign of erosion of the fore dune.
2. Beach accretion by 3m, possibly leading accelerated siltation of Harbour.	Removal of sand from beach	No known issues with beach accretion or actions taken in this area since 2011. A review of aerial photos from 2011 to 2017 on Google Earth shown no clear trend of seaward movement of the fore dune.
Boat Ramp		
if the number of incidents per year is equal to or greater than 50% of incidents pre dredging, or number of incidents in a month is greater than the corresponding month pre dredging	If there was a drop in incidents immediately post dredging then it would indicate the configuration dredging was successful and should be maintained. Otherwise the dredging program should be re-evaluated	A log of port incidents and complaints was kept but there was only one entry related to the wave action at the boat ramp in 11 years so trigger could not be assessed. Council have advised that during consultation for the recent master plan, there were anecdotal reports from users that the dredging did reduce wave height at the ramp for a time.

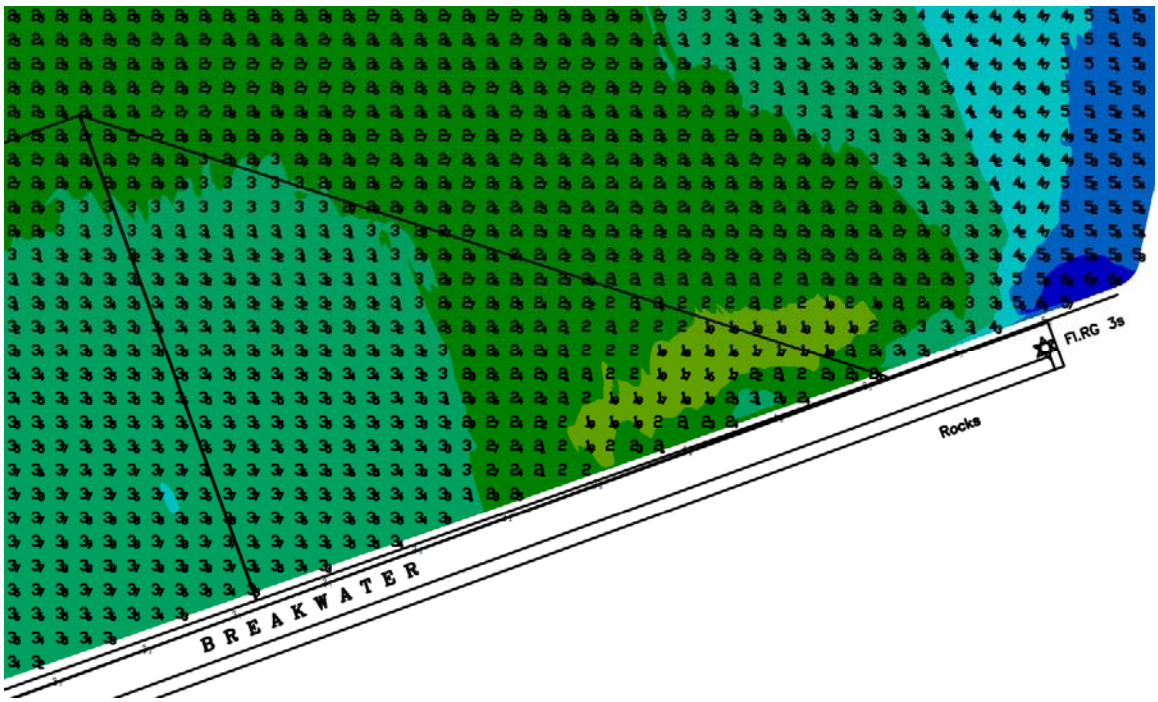

Figure 4 2017 survey, showing area of configuration dredging in 2009

7.4 Dredging approvals

It is understood that the configuration dredging and subsequent maintenance dredging were subject to a 10 yr Coastal Management Act (CMA) consent issued by DSE 28 Feb 2008. This has now expired and a new CMA consent will be required for future dredging. This will require:

- Understanding and description of the dredging impact on coastal processes, the environment and community, including port users.
- Determining if there are any contamination issues with the material to be dredged
- Methodology to carry out dredging in accordance with the Commonwealth National Assessment Guidelines for Dredging (NAGD) or the State EPA Best Practice Guidelines for Dredging.
- Establishment of a monitoring program to monitor the effectiveness of the dredging and impact on the environment and coastal processes.

7.5 Dredging recommendations

It is close to 10 years since the harbour was dredged and it has experience significant siltation, and another dredging campaign will be required soon to maintain safe navigation.

Before the next campaign the *Dredging Long Term Management Strategy* should be revisited and revised. This is likely to be required for Coastal Management Act (CMA) consent. This study should consider:

- Updated understanding of sediment movement based on analysis of bathymetric survey data as well as modelling completed for the *Safer Boating and Harbour Facility Study* (Water Technology, 2011).
- Dredging methodology to cost effectively conduct maintenance dredging and maintain configuration dredging.
- Placement of dredge material to minimise return to the harbour.

- Pre and post dredge monitoring to determine the effectiveness of the configuration dredging. Configuration dredging requires maintenance every 1 – 3 years as opposed to the dredging for navigation which requires maintenance only every 5 to 10 years. Hence configuration dredging should be maintained only if its effectiveness can be clearly demonstrated. This could be done with a combination of incident reporting and/or wave measurements.
- Long term monitoring frequency. Both beach and bathymetric survey frequency could be reduced to once per year.
- The impact of further structures within the harbour. For example a groyne or breakwater on the northern side of the harbour could reduce the rate of siltation.

The estimated budget cost for Council to commission an update of the dredging strategy as well as obtaining CMA consent is in the order of $200,000 ex GST.

Maintenance dredging in 2009 cost approximately $0.5M, and the next maintenance dredging campaign is expected to have costs of a similar order of magnitude. Actual costs will depend on the maintenance dredging regime, dredging methodology and market conditions and cannot be accurately forecast at this time.

8. Summary of Recommendations

The recommendations arising from this review of port operations are summarised below, along with fee estimates for budgeting purposes. Note that these studies have not been fully scoped and the fee estimates are therefore indicative only. For more information on the recommendation refer to the relevant section of the report.

Swing moorings

Current management of moorings is consistent with practice at other local ports in Victoria and South Australia.

Mooring information should be included in Port of Warrnambool website - see below.

Port fees and charges

Council could consider implementing a fee for the use of the boat ramp, levied as a fee for the parking of car and trailer units. We recommend that, if implemented, the fee be set at a level similar to Portland and Port MacDonnell as these provide a similar level of service.

Implementation would involve internal costs to the Council.

Vessel refuelling

In order to assess and manage the risk associated with the vessel refuelling activities at the Port it is recommended that Council, in consultation with vessel operators:

- Undertake a risk assessment and review of the current refuelling operations. Consider whether the risk could be lowered by upgrading equipment.
- Develop a Traffic Management Plan (TMP) in order to manage the interaction between vehicles conducting refuelling and other port users (see ‘large vehicle operations’ below).
- Develop a site-specific refuelling procedure with measures to mitigate identified risks.

Estimated cost of assessment and procedure: $20 - 30k

Disposal of vessel waste

The Council should work with the commercial fisherman in the port to ensure waste generated is being disposed of appropriately.

At the current time the usage of the port probably does not justify provision of sewerage pump out or other liquid or solid waste disposal facilities. If the harbour is enclosed and usage increased significantly in the future these issues should be revisited.

Information on disposal of vessel waste should be included in Port of Warrnambool website - see below.

Large vehicle operations

In order to manage the operation of large vehicles, and the interaction between traffic and pedestrians in general, a Traffic Management Plan (TMP) should be developed, considering all stakeholders.

Estimated cost: $20 - 50k, depending on the level of consultation involved.

Dredging

Another dredging campaign will be required soon to maintain safe navigation.

Before the next campaign the *Dredging Long Term Management Strategy* should be revisited and revised. This is likely to be required for Coastal Management Act (CMA) consent.

Estimated cost: $200k for the dredging strategy and CMA consent, $0.5 - 1.0M for 10 years of maintenance dredging.

Establish website

It would benefit port users if information on all of the above issues were brought together into one place.

We understand Council is already in the process of establishing a website which includes forms, guidelines, procedures and public information for:

- Re-fuelling
- Mooring; annual permit and casual
- Berthing
- Biosecurity
- Information for yachts travelling to Australia
- Launching
- Swimming
- Fishing
- Fish cleaning
- Waste water
- Litter
- Power
- Temporary set-aside for events/ exclusive use
- Commercial operations, e.g. charter, accommodation
- Dredging

- Navigation
- Beach cleansing
- Overtopping
- CCTV
- Scheduled works
- Published business plan, SEMP and masterplan
- Information on the volunteer coastguard
- Offshore fishing
- Warrnambool Yacht Club
- The Pavilion Café
- Middle Island
- Public toilets
- Horses on beaches
- Wildlife

Council have applied for funding of $22k to implement this website.

Appendices

Appendix A – Template Safe Work Method Statements

Appendix 4 - Warrnambool City Council SWMS

Safe Work Method Statement (SWMS)

Job Undertaken: Vessels refuelling at Warrnambool breakwater

High Risk Tasks:
- Vessel Berthing at wharf for fuelling
- Movements of Vehicle delivering fuel
- Vessel refuelling

SWMS No:

Location of Job: Warrnambool breakwater, Lower landing, Access road

Person Responsible: (Ensuring compliance with SWMS) Fuelling contractor/ Vessel captain

Date:

Contractor:

Permit to work required? **Yes** ☐ **No** ☐

Job controls for all tasks:

- No worker to work in isolation
- PPE to be worn i.e. hard hats, vests, boots, ear protection and gloves (when appropriate).
- Spill kit to be easily accessible at all times
- Appropriate fire extinguishers to be easily accessible at all times
- Qualified first aider on site at all times

Task No.	Actual Task	Risks	Risk Control	Person Responsible
1	Vessel berthing	- Collision - Spills	- Approach the berthing structure with safe speed - do not tie up alongside another vessel that is refuelling - Make sure the vessel is securely moored prior to commencement of the operation - Ensure engine bays have adequate ventilation - Ensure vessel fire-fighting equipment is in good order and accessible	Vessel captain
2	Movement of vehicle delivering fuel	- Injuries (vehicle accident with pedestrians)	- Drive the vehicle at a safe speed - Clear/isolate the operation area prior commencing the operation - Deploy suitable hazard signs around the operation area - Check the condition of all hoses, valves, tanks and fitting to be used - Spill kits to be kept with vehicle in easily accessible position	Fuelling contractor

Task No.	Actual Task	Risks	Risk Control	Person Responsible
3	Refuelling the vessel	- Fire (various ignition sources: sparks, flames, hot engine components) - Spills - Injuries	- No passenger on board vessel during fuelling or restarting of engine - Turn off the engine and all electrical equipment - Confirm that all fittings, hoses and tanks are in good condition and free of leak at all times - Do not overfill the tank. Fill level of tank to be actively monitored - Clean up minor spills immediately. Port manager to be notified of any spills - Ventilate tank and engine compartments after fuelling - Do not start the engine if detecting any flames	Fuelling contractor/Vessel captain

Appendix 4 - Warrnambool City Council SWMS

Safe Work Method Statement

Job Undertaken: Larger Vehicles Operations

High Risk Tasks: Manoeuvring large vehicles through port precinct including: Mobile cranes, low loaders transporting fishing vessels, fuel tankers garbage trucks, emergency vehicles, light commercial vehicles

SWMS No:

Location of Job: Port of Warrnambool including access roads, carpark, boat ramp and breakwater

Person Responsible:
(Ensuring compliance with SWMS) Driver

Date:

Contractor:

Permit to work required? **Yes** ☐ **No** ☐

Job controls for all tasks:

- No worker to work in isolation
- PPE to be worn i.e. hard hats, vests, boots, ear protection (when appropriate).
- Qualified first aider on site at all times

Task No.	Actual Task	Risks	Risk Control	Person Responsible
1	General operation of each vehicle including: - driving to arrive to the designated area - mob and de-mob - leaving the area	- Collision - Injuries (vehicle accident with pedestrians)	1- General safe driving rules should be obeyed: - Check safety and operability of the vehicle prior to commencement entry into port area - Drive the vehicle at a safe speed (5km/hr) and obey all road rules. - vehicles to be equipped with reversing alarm -vehicles larger than standard light commercial vehicle or car-trailer unit driving on breakwater or leaving the sealed road/carpark areas shall traffic controllers to keep pedestrians clear and direct the vehicle movement. 2 – Where necessary to keep people and traffic apart: - Use interlocking, chicaned or hinged gates that open towards the pedestrian - Deploy suitable hazard signs (warning triangles) around the operation area (Depending on type of vehicle and operation, different signs and clearing distance should be considered. More details can be found on https://www.vicroads.vic.gov.au/safety-and-road-rules/road-rules/a-to-z-of-road-rules/trucks).	- Vehicle driver

Appendix B – Template Traffic Management Plan

Warrnambool City Council

Port of Warrnambool

Traffic Management Plan Template

June 2018

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1.1 Background

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1.3 Scope and limitations

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2. Existing Conditions Review

2.1 Site Layout

The Port of Warrnambool is located approximately 2.5 km south of Warrnambool town centre on Viaduct Road. Viaduct Road is a two-lane, dual carriageway access road and includes cycle lanes, a mix of parallel and angle on-street car parking, a footpath within the median and a recreational walking trail on the east side of the road.

The southbound lane provides direct access to car parking areas for those vehicles travelling towards the Port. There is a mix of boat trailer and general access parking on the site. A boat trailer turning circle is provided immediately adjacent to the boat ramp.

The site layout is presented in Figure 1.

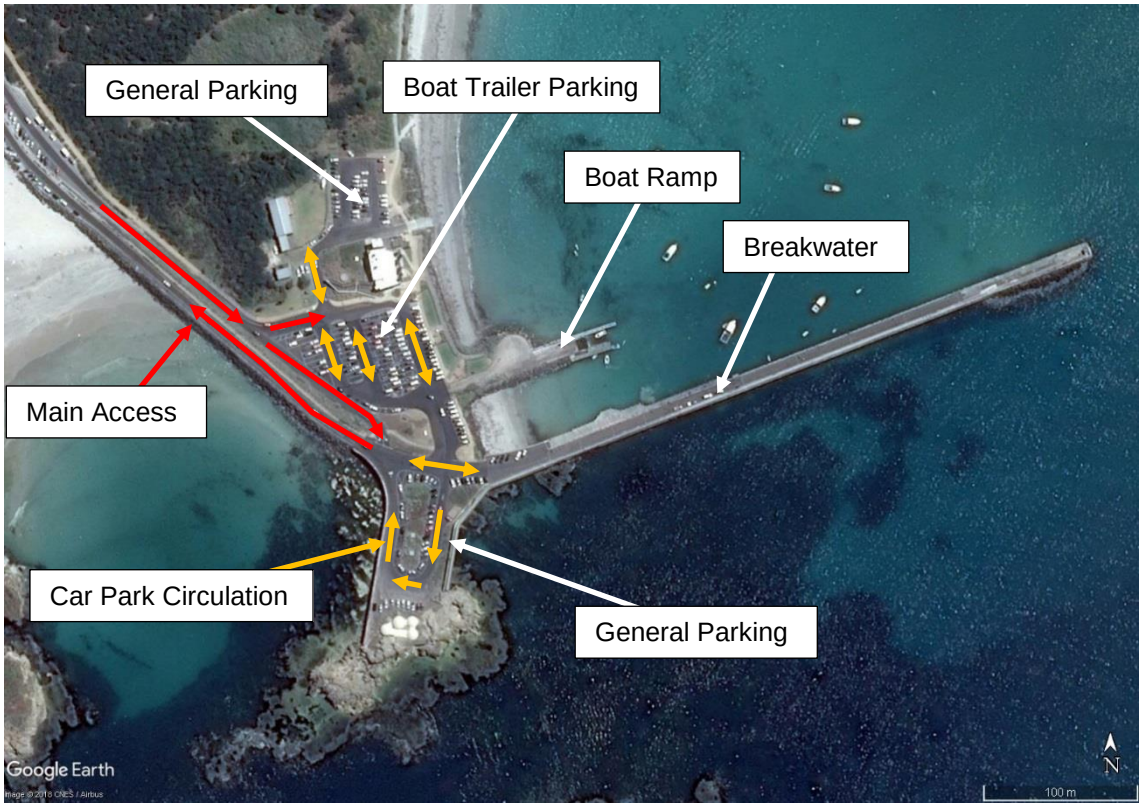

Figure 1 Site Layout

Base imagery obtained from Google Earth Pro © 2018 CNES / Airbus

2.2 Overview of Port Activities

Activities undertaken at the Port and in the immediate surrounds include the following:

- Commercial cray fishing, including vessel unloading and refuelling
- Coast guard
- Launching of recreational fishing boats
- Pedestrian movement
- Swimming and beach based recreation
- Off-the-beach Sailing
- Fishing

- Horse exercise

The following activities do not currently take place at Port of Warrnambool, however they could potentially be included in the future:

- Tourist boating (e.g. whale watching)

2.3 Access Requirements

The Port attracts the following key vehicle and pedestrian movements:

- Boat and trailer circulation between car park and boat ramp
- General access car parking
- Pedestrian movement between Viaduct Road, car parking, beach, breakwater and boat ramp

Occasional access by heavy vehicles is required for a range of activities including servicing the commercial fishing industry, waste disposal and management. For heavy vehicle movements, specific traffic management arrangements may be required. The key considerations for each of these activities are summarised briefly in the following sections.

3. Consultation with users

Prior to activities occurring, consultation should be undertaken with users likely to be affected.

- *Provide advance notice (signage or other method)*
- *Describe duration of activity*
- *Likely impacts*
- *Contact details for questions/issues*

4. Traffic Management Plan

4.1 Large Vehicle Operations

4.1.1 Activities

- *Access and parking for large vehicles.*

4.1.2 Potential Traffic and Safety Impacts

- *Blockage of car parking aisles and/or parking spaces by parked large vehicle.*
- *Pedestrian safety at key crossing points.*

4.1.3 Mitigation Treatments

- *Provide allocated or reserved parking for heavy vehicle prior to arrival using temporary bollards or similar.*
- *Traffic management signage, truck warning signage.*
- *Active traffic management including STOP/SLOW bat if required to manage heavy vehicle access.*

- *Vehicle reversing beeper.*
- *Pedestrian exclusion zones*
- *Pedestrian detours around activity*

4.2 Boat ramp traffic

4.2.1 Activities

4.2.2 Potential Traffic and Safety Impacts

4.2.3 Mitigation Treatments

5. Implementation

- Prepare SWMS
- Allocate responsibilities
  - Planning
  - Consultation
  - Implement traffic management and other mitigation measures
  - Complete activity
- Emergency procedures

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