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USER REQUIREMENTS NEEDS ASSESSMENT

Akaroa Wharf

Christchurch City Council

Contents

1 Introduction

Christchurch City Council (CCC) is looking to replace the Akaroa Wharf, a 155m timber structure which serves commercial and recreational users. A structural condition assessment carried out in 2018 indicated the structure is reaching the end of its useful life and recommended replacing it with a new structure. The current wharf is of cultural, historical, commercial and social value to the Akaroa community.

The new structure needs to take into consideration modern needs for commercial fishing, commercial tourism, cruise ship transfers and recreational use by both locals and visitors. The first stage of stakeholder consultation has already been undertaken and multi-criteria analysis of the various wharf location and construction options (by others) is complete.

1.1 Purpose and Objectives

CCC has engaged Enviser Limited to prepare a User Requirements Needs Assessment. The purpose of the assessment is to document the key requirements of the current wharf users, focussing on the marine operations. The user requirements are to support existing uses/operations as well as enable future growth of these uses and operations. The user requirements documented herein will be used to inform the wharf design process.

This User Requirements Needs Assessment aims to meet the following goals and objectives:

- Provide an overview of the existing marine facilities in Akaroa Harbour.
- Document the user groups, their usage patterns and vessels.
- Set out likely future changes in use and vessel types.
- Outline suggested design vessels for each user group.
- Suggest infrastructure requirements (required and desirable).
- Identify challenges and risks associated with the upgrade.

2 Existing Marine Facilities

To understand the existing marine recreational use throughout the harbour, and how those users may utilise the current (or future) Akaroa Wharf, we have undertaken a review of the existing public marine facilities in Akaroa Harbour. This does not include the numerous small private facilities or informal beach launching locations. For each facility, the review sets out:

- The nature of the infrastructure (ramps, jetties, parking etc)
- Users of the facilities and estimated frequency of use

This information is set out in **Appendix A**, commencing at Wainui, moving around the harbour in a clockwise direction and ending in Akaroa. An overview of the facilities in the wider area is shown in **Figure 1** and more specifically in Akaroa in **Figure 2**. The subject of this assessment, the main wharf in Akaroa, is shown in **Figure 3** and described below.

Figure 1. Identified boat ramps and wharves/jetties in Akaroa Harbour (Canterbury Maps).

Figure 2. Marine facilities in Akaroa (Canterbury Maps).

In summary, there are a range of marine facilities in the Akaroa Harbour, including informal boat launching ramps and various timber wharf/jetty structures. Many of the wooden wharf structures were originally built for commercial purposes (e.g. to support sawmilling operations) but now are only used for recreational purposes. The exception to this is the Wainui Wharf, which is regularly used by Akaroa Salmon, and Daly's wharf that has some commercial use by Ecoseaker and the Fox II.

The wharf structures, and ramps are relatively well distributed around the harbour and provide harbour communities with good access to the recreational opportunities in Akaroa Harbour. Users have indicated that if better infrastructure existed in Akaroa for recreational boaters to tie up vessels (on a short-term basis) an increase in boat-based recreational visits to Akaroa township (i.e. for lunch, coffee, supplies etc) would be expected.

3 Akaroa Wharf

Akaroa Wharf, located on Beach Road in Akaroa, is a 155m long wharf, constructed of timber piles (with some concrete and steel jackets) and a timber and reinforced concrete deck. Two floating pontoons are attached to the main wharf, one on the northern and one on the southern sides (**Figure 3**). Gangways provide access to these pontoons.

The wharf is used in a recreational capacity by pedestrians, swimmers, casual fishers, tourists, recreational boats and for dinghy tie up. Commercial fishing, crayfish and mussel vessels generally tie up to the main wharf structure for loading and unloading. Feedback from users indicate that these operators occasionaly tie up on the southern pontoon if the main wharf structure is in use. Due to easier access/egress, the commercial tourism boats and cruise ship tenders use the floating

pontoons almost exclusively. By preference, the tourist vessel operators generally use the pontoon on the northern side, and cruise tenders generally use the southern side although will also use the northern side on days with multiple cruise ships visiting.

The wharf also supports two privately owned buildings on the southern side, a diesel bowser and a privately owned hoist on the northern side. A water supply is available on both the northern and southern sides of the wharf, including on the northern pontoon. Petrol is required by some vessels and this is sourced from the service station located in Akaroa and transported to vessels via portable means.

The wharf can be accessed in all tidal conditions by the currently operating vessels, although water depth may restrict which part of the wharf the deeper draught vessels can use at low tides. Access to the water from the wharf is via gangways, stairs and ladders.

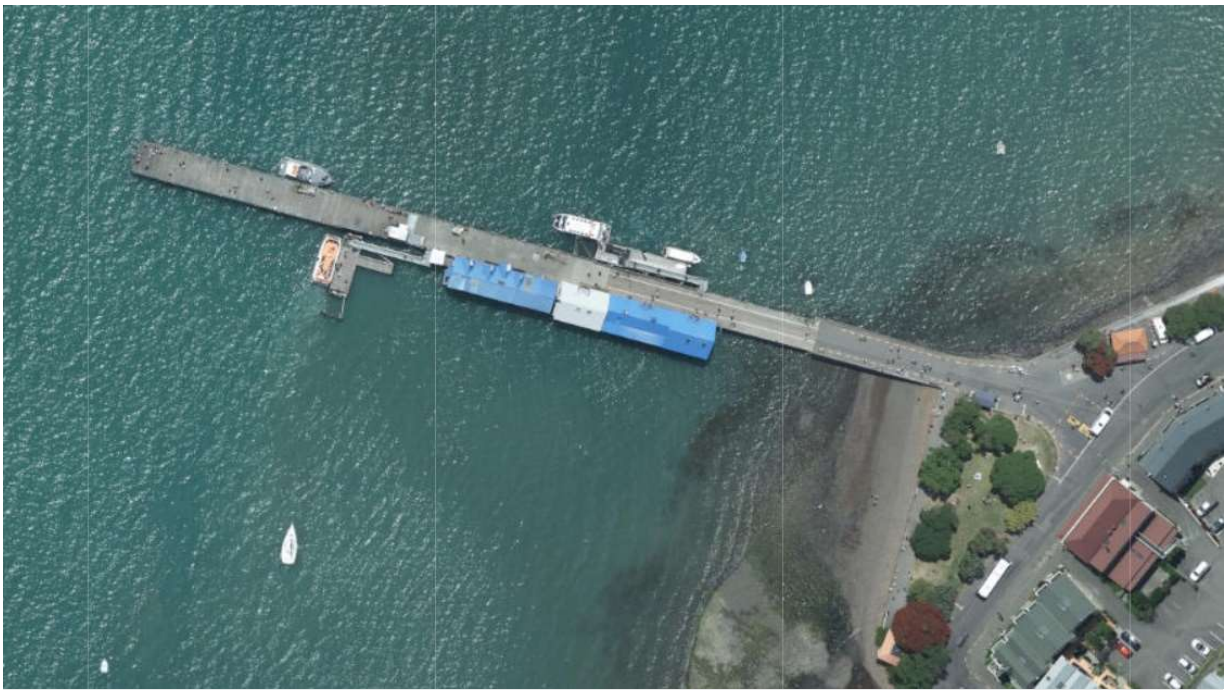

Figure 3. Akaroa Wharf showing vessels at both floating pontoons (Canterbury Maps).

4 User Groups

User groups were identified by information provided by CCC, existing consultation documents and by searching available records. Correspondence with current wharf users was undertaken via phone, email and in person during a visit to Akaroa on the 13th of August 2020. A summary of the information collected is in **Appendix B**. From the information gathered during discussions, four dominant user groups were identified:

- Commercial fishing (including aquaculture)
- Commercial tourism
- Cruise vessels
- Recreational vessels

An overview of the usage patterns and vessel types for each user group is described below.

4.1 Commercial Fishing

Historically, the wharf was frequented by many commercial fishing vessels, with information suggesting up to 40 fishing vessels a day in the 1970's[1]. Changes in the industry have meant the number of vessels has reduced over time. However, the wharf is still heavily used by commercial fishing operations. These operations include the loading and unloading of fish, crayfish and mussels, with four businesses currently in operation, using five vessels. Other commercial fishing operations do exist in the harbour (i.e. Akaroa Salmon) and the general area (other vessels in the inshore fishing fleet) but do not currently use the wharf. If the wharf provided better facilities, primarily for loading and unloading, the number of commercial fishing vessels using the wharf could increase. The commercial fishers did note that Akaroa is well located, being closer to much of the fishing grounds than the ports of Lyttelton and Timaru. With appropriate facilities, fishers may choose to unload at Akaroa to shorten the time to market for fresh fish and allow for more fishing time.

Users indicated that at times, when weather conditions are inclement in fishing grounds beyond the Akaroa Heads, additional fishing boats use the wharf to seek temporary shelter in the calm conditions of the inner harbour.

4.1.1 Usage Patterns

Most current fishing operators frequent the wharf daily, sometimes twice daily and for 365 days of the year. The exception to this are the mussel barges which frequent the wharf for 2-3 day periods, approximately eight times a year.

All commercial fishing operators use the main structure of the wharf to load and unload catch into small refrigerated trucks which drive on the wharf, or onto larger trucks which park off the wharf due to restrictions on deck loading. When loading the larger trucks, a forklift is used to transport the catch down the wharf. On busy days this necessitates coning half of the wharf off to separate other wharf users from the forklift operations.

Power, water and fuel supplies on the wharf are important for the commercial fishers. A privately owned hoist currently exists on the wharf, and this is also critical for unloading catches, loading supplies and for boat maintenance. Vehicle access to the berth-side is also critical to unload catches.

Loading and unloading times vary but generally sit in the range of 30-120 minutes per visit.

4.1.2 Vessel Types

Fishing vessels which currently use the wharf are typically single hulled aluminium or wooden boats with a maximum length overall (LOA) of approximately 13m and beam (width) of 3.5m. The mussel barges are larger vessels, with a maximum LOA of 18.8m and beam of 5.6m. The maximum displacement of the larger of the vessels is up to 45 tonnes as shown in **Table 1**.

Table 1. Summary of commercial fishing vessels

Vessel Name	Type of vessel	LOA (m)	Beam (m)	Draught (m)	Maximum displacement (T)	No. daily visits to wharf	Total mooring time at wharf/day (hrs)
Cherilyn J	Fishing	11	2.7	0.7	4	2	1.5
Truant	Fishing	13	3.5	1.2	15	4	3
Invader	Fishing	12	3.0	1.5	15	2	1.5

[1] Wilson, J. & Beaumont, L. 2009 *Akaroa Historical Overview* prepared for Christchurch City Council

Vessel Name	Type of vessel	LOA (m)	Beam (m)	Draught (m)	Maximum displacement (T)	No. daily visits to wharf	Total mooring time at wharf/day (hrs)
Gladiator	Mussel	18.8	5.6	1.5	45	4	4
Juliet	Mussel	16.6	4.5	1.2	20	4	4
Total						**16**	**14**

4.2 Commercial Tourism

Commercial tourism operations in the Akaroa Harbour include dolphin swimming, powered and unpowered (sail) harbour cruises and nature and wildlife cruises.

4.2.1 Usage Patterns

Currently six commercial tourism operations use the wharf in some manner. Many of the commercial tourism operations run on a seasonal schedule, typically operating between October and April. Dolphin Encounters and Black Cat Cruises are an exception to this, operating 365 days of the year, albeit at a reduced frequency over winter. Both of these operators also run multiple vessels. Most operators typically run 2-3 trips per day, with some operators running up to 4. This results in each operator requiring up to 8 visits to the wharf daily with a loading and unloading time of 15-30 minutes per visit.

Loading and unloading predominantly occurs via the northern floating pontoon, using the gangway for access to the wharf for passengers. If the northern pontoon is unavailable and weather conditions allow, the southern pontoon is also utilised by the tourism vessels (although this is not a preference).

4.2.2 Vessel Types

The types of commercial tourism vessels are varied and range from small powerboats through to large catamarans and historic wooden yachts. Due to the varied nature of the vessels in this user group, boat LOA ranges from 7- 18m with a maximum beam of 7.1m. The vessels also have varying freeboards which impacts on the ease of access to wharfs/pontoons. The maximum displacement of the larger catamarans is up to 70 tonnes, the smaller powerboats are approximately 3 tonnes as shown in **Table 2**.

Table 2. Summary of commercial tourism vessels

Business	Maximum vessel occupancy (no. ppl)	LOA (m)	Beam (m)	Draught (m)	Maximum displacement (T)	No. daily visits to wharf	Total mooring time at wharf/day (hrs)
Akaroa Dolphins 1	50	15.0	5.3	1.2	-	4	2
Akaroa Dolphins 2	50	15.0	5.3	1.2	-	4	2
Black Cat	109	16.9	7.1	1.4	40	8	4
Black Cat 2	34	12.8	4.0	1.0	20	8	4
Black Cat (Black Knight)	14	8.0	1.2	0.5	3	8	4
Black Cat (Canterbury Cat)	102	15.6	6.9	1.6	70	4	2
Southern Wanderer	10	7.6	2.5	1.2	2.8	4	1
Ecoseaker	12	12.5	-	0.8	5.5	2	1

Business	Maximum vessel occupancy (no. ppl)	LOA (m)	Beam (m)	Draught (m)	Maximum displacement (T)	No. daily visits to wharf	Total mooring time at wharf/day (hrs)
Fox II Sailing	32	18.2	-	1.5	22	2	0.5
Coast up Close	30	12.5	4.5	1.4	-	6	1.5
Total						**50**	**22**

4.3 Cruise Ship Users

Cruise ship generally visit Akaroa Harbour in the October – April season. A range of cruise ships visit during this time with passenger loads ranging from 120 to 3,560. Cruise ship passengers are transported from the ship to Akaroa Wharf to offload and continue with sightseeing excursions.

4.3.1 Usage Patterns

Peak use of the Akaroa Wharf occurs when cruise ships are in the harbour. At times, up to four cruise ships have been in harbour although multi-ship days are normally no more than 2 ships at a time, often doubling the passenger transfer number. Typically, transfers are made by tenders, loading and unloading passengers mostly from the southern floating pontoon at the wharf. Load times for the cruise ship tenders is typically a maximum of 15 minutes, with a tender arriving every 10-15 minutes at peak times and up to 6 tenders operating simultaneously. Depending on the time of cruise ship arrival in the harbour, user feedback indicates tenders generally operate between 8am and 6pm, with a constant stream moving from the ship to the wharf throughout that period

Cruise passengers range in age and mobility and any future wharf will need to consider accessibility issues in the design.

4.3.2 Vessel Types

The largest cruise ship tenders in this user group have a LOA of 16m and beam of 5m. The maximum displacement of the largest of these vessels is 43 tonnes as shown in **Table 3**.

Table 3. Summary of cruise ship tender

Class	Maximum vessel occupancy (no. ppl)	LOA (m)	Beam (m)	Draught (m)	Maximum displacement (T)	No. daily visits to wharf	Total mooring time at wharf/day (hrs)
Cruise Tender	267	16	5.0	-	43	120	30

The summary of passenger numbers and mooring times described in **Table 3** represent the visit of a single cruise ship to the harbour. A cruise ship with a total passenger count of 3,560 has been used for this summary. This represents the larger cruise ships that visited Akaroa, although much larger vessels do exist. Over a 10 hour period (8am-6pm), it is estimated for a vessel this size, 60 tender trips would be undertaken to deliver passengers to the wharf and an additional 60 trips to collect passengers at the end of the day. In total, this would result in 120 visit to the wharf for a single cruise ship of this size, requiring a total of 30 hours of mooring time at the wharf, based on 15 minutes alongside the wharf per trip.

This estimate is provided as a likely maximum for a single cruise ship and does not take into account multi-ship days, with additional cruise ships operating in a similar manner.

4.4 Recreational Users

Recreational users of the Akaroa Wharf include casual powerboat and yacht users and occasional unpowered craft (dinghy and paddle craft launch). Recreational use of the wharf also includes pedestrians, casual fishers, visitors to the Blue Pearl Shop and general sightseers. In summer months, fish sales on the wharf from a temporary portacom also attract locals and tourists.

4.4.1 Usage Patterns

Recreational use of the wharf is year-round, with use heightened in the warmer months from October – April. Recreational users tend to spend longer at the wharf, often mooring while a member of the vessel to goes ashore for refreshments/supplies. The time spent ashore is variable but on average a maximum time of 45 minutes is spent at the wharf.

Pedestrian traffic on the wharf from people entering from shore is a significant contribution to the overall usage of the wharf. A preliminary assessment completed by CCC in early 2020 indicates that up to 1100 pedestrians may visit the wharf in a one hour period, during a cruise visit. This aspect of wharf use will be investigated further in the later stages of the project.

4.4.2 Vessel Types

Recreational users of the wharf are typically small powerboats, with approximately 64% of vessels less than 6m LOA[2]. The largest of vessels in this user group are the large powerboats with an approximate LOA of 10m and beam of 3m as shown in **Table 4**.

Table 4. Summary of recreational vessels

Class	LOA (m)	Beam (m)	Draught (m)	Maximum Displacement (T)	No. daily visits to wharf	Total mooring time at wharf/day (hrs)
Average powerboat	8	2.6	1.2	4.5	5	3
Large powerboat	10	3.0	1.2	5.5	1	1.5
Total					**6**	**4.5**

5 Frequency of Use

From our discussions with the wharf users, it is clear that all parts of the wharf are used for much of the year, however the floating pontoons are the most heavily used. The ease of access/egress for passengers and more suitable mooring for a wide range of vessels is the primary driver of this. In addition to commercial use, the pontoons are also freely available for public use.

The main wooden structure of the wharf (seaward of the pontoons) is only regularly used by commercial fishing vessels. These vessels are larger, better suited to mooring against a fixed wharf and require direct access to the wharf deck for loading and unloading.

The northern floating pontoon is the most in demand, being heavily used by almost all commercial tourism operators as well as recreational vessels and cruise tenders on mulit-ship days. The southern floating pontoon, is less desirable for commercial tourism operators (less visible to passengers) and

[2] Enviser Ltd. 2019. Naval Point Development: Waterside space requirements and design conditions

is primarily used by cruise ship tenders during cruise days. Other user groups do use the southern pontoon when the northern pontoon is unavailable and the weather conditions allow.

Chart 1 below depicts the frequency of daily visits by the various user groups. This chart represents the number of visits to the wharf that each of the key users makes daily. For example, in general, Black Cat runs up to three vessels per day with a total of 12 trips. In total they attend the wharf 24 times, 12 times to load their vessels and 12 times to unload their vessels. Occasionally, four of their vessels will be in operation resulting in attendance at the wharf 28 times (14 times to load and 14 times to unload their vessels). As this scenario is not the most common, it has not been represented in **Chart 1**.

The data shows that in total, up to 192 vessel visits to the wharf are made daily during peak seasonal use (October – April).

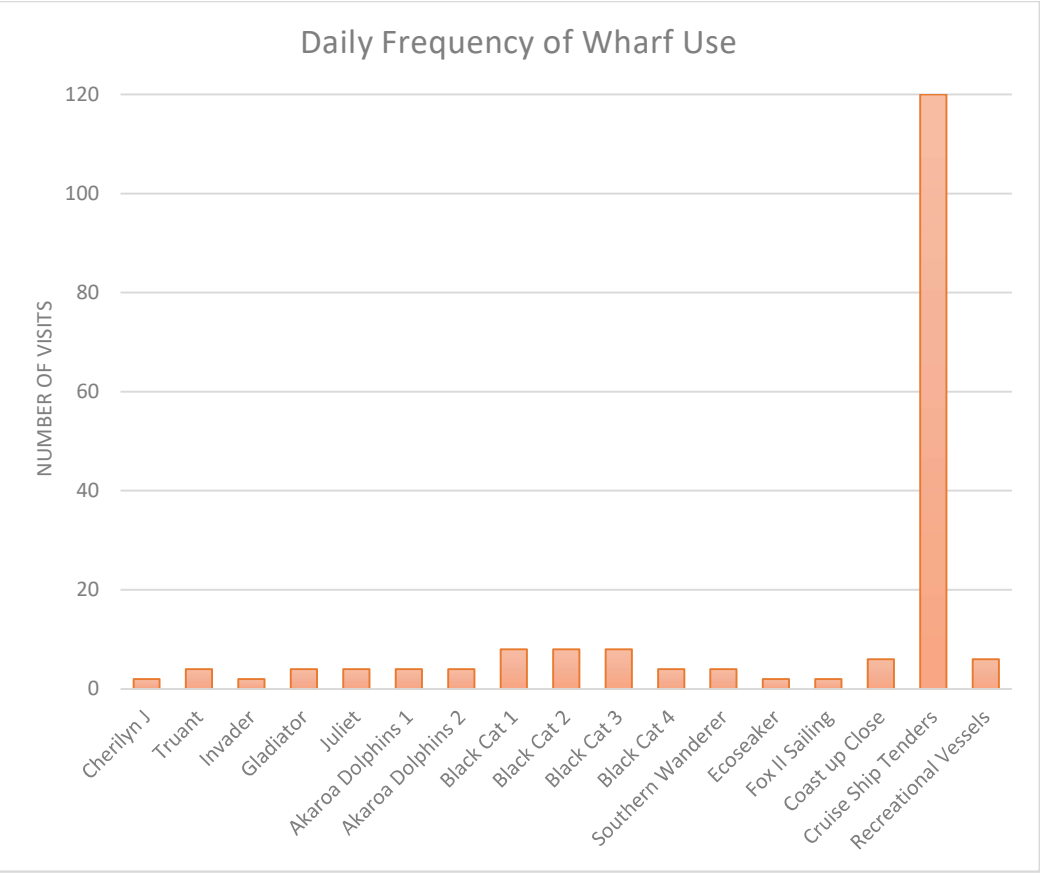

Chart 1. Daily frequency of wharf use from October - April

The data shown in **Chart 1** represents the current situation at the wharf with a single 3,560 capacity cruise ship in harbour and does not take into account multi-ship days (potentially doubling the number of cruise ship tender visits) or any visits by users who may choose to utilise the wharf in the future such as Akaroa Salmon and the few commercial tourism operators who currently use other wharves in the harbour. Neither do these number account for growth of existing business over time, which under normal circumstances could occur.

In general, commercial fishing vessels spend 30-120 minutes at the wharf per visit. Commercial tourism vessels spend 15-30 minutes at the wharf per visit with some of the smaller tourism vessels able to unload and load more quickly, spending only 15 minutes at the wharf.

Loading and unloading of vessels at the wharf can occur concurrently, e.g. a fishing vessels can unload while a cruise ship tender is using the southern pontoon. Vehicle movements on the wharf at this time may however be restricted as traffic management plans are implemented during cruise ship stays. The traffic management plan controls vehicle movements on the wharf during these periods and may restrict vehicle access to fishing vessels.

The wharf becomes congested and vessel manoeuvrability difficult when the northern pontoon is in use, which is very frequently as this is the preferred access point.

5.1 Current mooring requirement

Chart 2 below depicts the average amount of time spent by individual vessels during the loading and unloading of cargo and passengers during each visit to the wharf.

In total, on an average day in peak season (October – April), approximately 70.5 hours of moored wharf time is required by vessels (**Table 5**). For most of the user groups, mooring time occurs between the hours of 8am and 5pm. Some fishing vessels leave from the wharf in the early morning outside of these times.

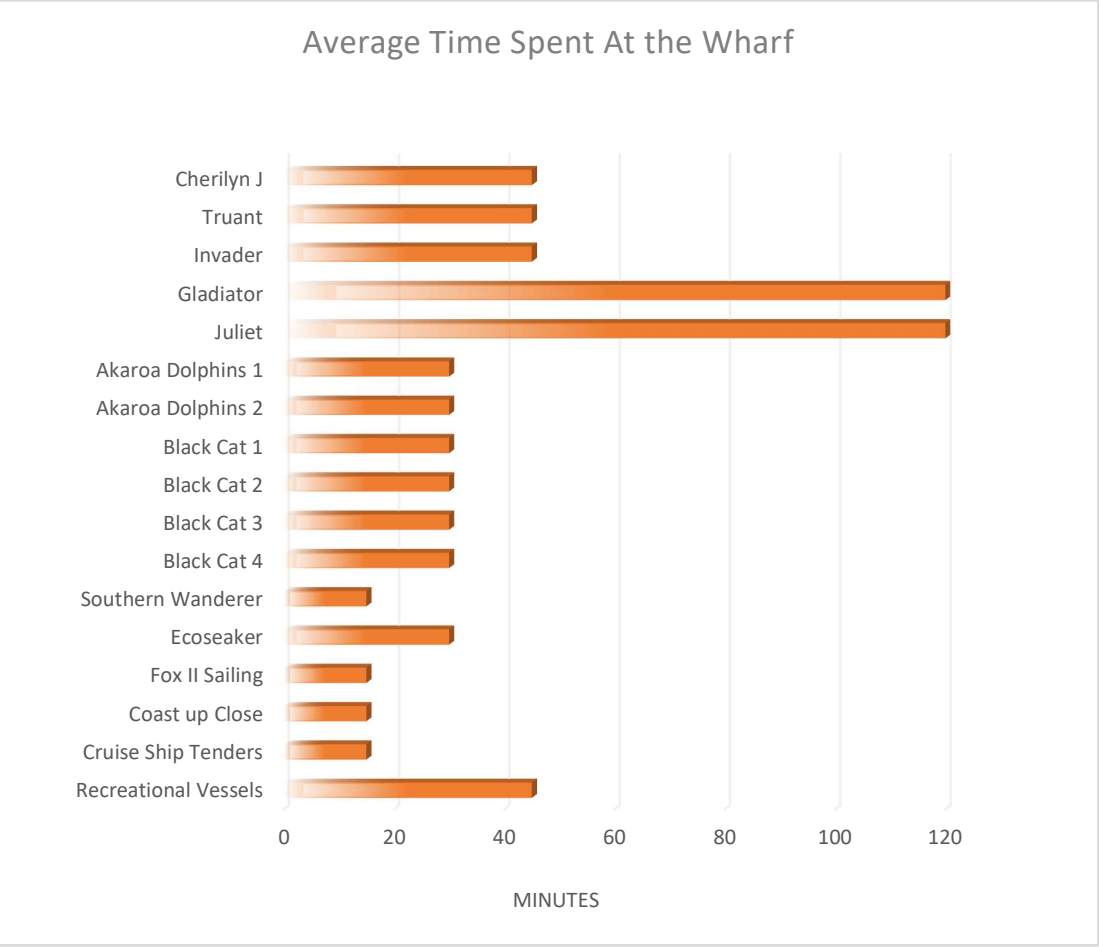

Chart 2. Daily mooring time required at wharf from October – April

The 70.5 hours of required mooring time is condensed to within the 8am to 5pm window, often causing congestion and pressure on the floating pontoons, particularly when cruise ships are in the harbour. As described above, the data below represents the current situation and does not take into account days when more than one cruise ship is in harbour or time required by users who may choose to utilise the wharf in the future.

5.2 Current availability of mooring time

In total there is approximately 18 hours of available mooring time at the northern and southern pontoons and 27 hours available at the main wharf. A total of 63 hours of mooring time is available across the entire wharf on a daily basis (8am – 5pm). This assumes the berths are available 100% of the time and does not allow for time lost to access/egress. **Table 5** shows the northern pontoon is in high demand, with available mooring time less than demand.

The ability of all the users to operate from the wharf, principally the northern pontoon, relies very heavily on a high degree of co-ordination between the users. This is the case especially at times of peak demand, in the morning, midday and afternoon, when vessels are leaving and returning to the wharf to load and unload passengers. At times when cruise ships are in operation, the southern pontoon is also in high demand, with available berth space less than demand.

The current wharf arrangement and berth availability for the period 8am-5pm is shown in **Table 5**.

Table 5. Berth hours available per day

Location	Number of berths available	Availability of mooring time (hrs)	Current mooring demand (hrs)
Northern pontoon	2	18	26.5
Southern pontoon	2	18	30
Main wharf	3	27	14
Total	**7**	**63**	**70.5**

For the current situation, the required 70.5 hours of mooring time (**Chart 2**) outweighs the available mooring time of 63 hours (**Table 5**).

6 Future Trends and Needs

Broader commercial and recreational trends have been considered as part of this assessment. The purpose of this work is to ascertain what future requirements/changes the design for the new wharf should take into account. This includes usage patterns, vessel types and functional requirements for the wharf. The findings and recommendations are set out in the following sections.

6.1 Vessels

Discussions with current operators indicated that current vessel sizes are adequate and are unlikely to substantially increase in size, displacement or draught in the foreseeable future for most operators. Those operators that indicated that vessel sizes may increase have had their future needs incorporated in the Design Vessels described in Section 8.

It is possible that a new wharf, with better functionality may attract larger commercial vessels, i.e. bigger fishing vessels. However, it is expected this would be on an ad-hoc basis rather than regular day-to-day use.

6.2 Demand for berth use

From discussions with the various recreational and commercial wharf users, it appears unlikely that demand for the wharf will decline in the future. Many users indicated they would run additional trips and use the wharf infrastructure more frequently if the wharf had more space and provided better functionality for the various uses.

There are other operators in Akaroa Harbour, including Akaroa Salmon who currently use Wainui Wharf, who would consider switching to use the Akaroa Wharf if infrastructure and space allowed.

Cruise tourism numbers are uncertain at present due to COVID-19 but are expected to pick up in the future once the pandemic settles globally. At this time, cruise ships should again visit New Zealand ports including Akaroa Harbour. However, the completion of the new Lyttelton cruise berth is anticipated to reduce pressure on the Akaroa Wharf once cruise ships resume.

As a result, the new wharf should allow for growth in demand for berth space. This should include a design that allows the addition of berths as demand increases (i.e. by adding more pontoons). Reorientation of existing pontoons, and appropriate placement of additional pontoons in the future to maximise berth availability. Whilst pontoons will be needed on both sides of the wharf, the northern side is currently preferred by user's, likely because of the predominant wind direction.

Whilst difficult to anticipate the quantum of future requirements due to the many influencing factors, **Table 6** describes what should be considered in the future wharf design.

Table 6. Berth design criteria

Location	Number of berths assumed for design	Number of design trips assumed	Daily design demand (hrs)
Northern pontoon(s)	4	58	27.5
Southern pontoon(s)	4	120	30
Main wharf	3	20	17
Total	**11**	**198**	**74.5**

The following assumptions formed the basis for the berth design criteria outlined in **Table 6**.

- One new tourism operator with a vessel size no larger than those described in **Table 2**.[3]
- Two additional daily visits from commercial fishing operators.
- One additional floating pontoon on the northern side to accommodate the existing needs of commercial tourism operators and recreational users.
- One additional floating pontoon on the southern side to accommodate the needs of cruise ship tenders. This pontoon could additionally be used by commercial tourism operators as may be required by operational reasons.
- Configuration of berths and location of pontoons to be confirmed in design phase.

[3] Correspondence with the Department of Conservation indicates there is currently a moratorium in place in Akaroa Harbour which means there cannot be any new dolphin encounter permits issued until 2026.

7 Wharf Functionality

From discussions with the users of the Akaroa Wharf, their infrastructure requirements and desires have been collated and are shown below in **Table 7**. It should be noted that the data contained in **Table 7** represents the desires expressed by the users during interviews. Discussion have been held with CCC on the various items, and preliminary responses from CCC have been included in the table. The final infrastructure to be included in the wharf will be evaluated and selected by the CCC, inconsultation with the community and users, as the project progresses.

The colour coding in the table represents the frequency of request from the users.

Red – represents a high frequency request
Orange – represents a moderate frequency request
Green – represents a low frequency request

Table 7. Record of infrastructure requirements from wharf users

Infrastructure	Frequency	Comment	User importance	CCC response
Easy access to pontoons i.e. ramps	High	A range of ages and abilities frequent the commercial tourism vessels and cruise ship tenders. The ramps need sufficient width to accommodate two people passing and mobility scooters.	Required	Agree, the gangways will be designed according to the appropriate standard to provide safe access. Mobility constraints will be taken into account in the design.
Fenders	High	Non-marking white fenders.	Required	Non-marking fenders will be included where appropriate for the type of vessels using the berth.
Floating pontoons	High	Several required at different orientations, heavily used by commercial tourism and recreational vessels.	Required	The existing floating pontoons are in high demand, additional pontoons will be an integral part of any new wharf.
Fuelling point	High	Both diesel and petrol. Currently only diesel is available at the wharf.	Required	The need for this facility is recognised and CCC will work with fuel suppliers to ensure fuel supply is available at the wharf.
General power supply/shore power	High	Multiple points to allow for use concurrently by different vessels.	Required	Power will be available on the wharf, how and at how many locations is still being investigated. Power supply will likely be on a users pays arrangement.
Hoist/crane	High	For commercial fishing vessels and commercial tourism vessels during maintenance. Existing crane specifications are sufficient.	Required	The existing crane is privately owned, Council provides the location for the crane. A similar arrangement is envisioned for the new wharf.
Office and Shop	High	Both Black Cat Cruises and Blue Pearl Gallery currently have shop facilities on the wharf which they wish to retain. A portable fish and chip shop are also operates during the summer season.	Desirable	At this stage, the wharf design does not include buildings, but does not preclude them being added in the future. If buildings were to be at the new wharf, they would need to be on separate structures so the full width of the wharf is maintained
Solid forklift access	High	Safe forklift and vehicle access, separate from pedestrians for unloading/loading commercial vessels.	Required	The wharf will be designed with sufficient width and features for a forklift to safely access the appropriate berths.
Smooth wharf surface	High	No tripping hazards for pedestrians and mobility scooters/pushchairs using the wharf. All weather, non-slip surface.	Required	Any new wharf will have a modern wharf deck with a smooth surface.
Water supply	High	Multiple points to allow washdown/refilling for vessels concurrently at sufficient water pressure.	Required	Water will be available at the wharf, where and at how many locations is still to be decided. A user pays system may need to be instituted to manage the use of water.
Charging points for electric vessels	Moderate	Future proofed to allow for opportunity for multiple permanent charging points. Ideally incorporate sufficient power supply and space for vessels to be moored to allow recharging overnight.	Desirable	Options for future proofing the wharf for electric vessels are being investigated. This is likely to include allowance in the design for infrastructure, but not instalalling the infrastructure until it is needed.
Dedicated berths	Moderate	This would allow more certain scheduling, allow for vessel specific mooring arrangements and make it simpler for customers to navigate to the tour they have booked.	Desirable	With additional pontoons, there may be opportunities for dedicated berths to improve the tourism experience. Council is considering this in the design process.
Dinghy storage	Moderate	Storage facility (landside or wharfside) for dinghy's.	Desirable	Council is open to discussion around if dinghys can be stored on the wharf, and how this is best achieved.
Heavy vehicle access	Moderate	To reduce the forklifts movements along the wharf and increase safety for other wharf users, the wharf should allow for Class 1 vehicles to access the commercial fishing berths.	Required	Truck access to the wharf is being considered in the design process. The size of truck that can be provided for will depend on the additional costs required to increase the structural capacity of the wharf.
Separate access for recreational vessels	Moderate	A separate mooring point/pontoon or wharf to separate temporary recreational users from commercial fishing and tourism operations.	Desirable	This will be investigated as part of the design process.
Shade cover/marquee	Moderate	Temporary, collapsible shade covers to protect queuing passengers while waiting to board tenders. Also allows cruise ship passengers to provide security checkpoint, sanitising, and water station.	Desirable	Multiuser shade and weather protection will be investigated as part of the design process.
Changing room area	Low	Landside to support commercial swimming operations.	Desirable	At this stage, there are no plans for any buildings on the wharf. However, this could be considered in the future.
Safety rails	Low	On the floating pontoons and along the main wharf at certain points to protect queuing passengers from falling into the water. Some rails on the main wharf already exist for this purpose.	Desirable	Where appropriate, safety rails could be installed. Safety rails are not appropriate in many places on a working wharf as they can impede vessels using the wharf. Options will be investigated during the design process.
Seating	Low	On-wharf seating for cruise passengers and recreational wharf users.	Desirable	Seating for the general public will be provided.
Separate access for cruise tenders	Low	Separate access for cruise tenders is required for security. Current access is southern pontoon.	Required	The design will provide more capacity for cruise ship tenders, whether that will be a dedicated berth is still being considered.
Ticket/booking offices	Low	Landside or wharfside for commercial tourism businesses.	Desirable	At this stage, there are no plans for any buildings on the wharf. However, this could be considered in the future.
Tie offs	Low	Additional tie offs for recreational vessels.	Desirable	The appropriate facilities to secure vessels will be provided at the berths.
Toilets – landside	Low	Landside - to support wharf operations, especially in peak tourist season and during cruise ship arrival.	Desirable	There are toilet facilities on land near the wharf.
Toilets - wharfside	Low	Wharfside - to support wharf operations, especially in peak tourist season and during cruise ship arrival.	Desirable	There are no plans to provide toilets on the wharf.
Wharf storage	Low	Landside or wharfside (on pontoons) for small recreational boats eg kayaks/paddleboats.	Desirable	On wharf storage for small craft (i.e. kayaks, SUP etc) is not planned at this stage.

8 User Requirements for Design

8.1 Design vessels

As the required size and strength of the wharf is conditional upon the size of vessels which will use it, a design vessel for each class of boat has been identified to serve as a basis for design. The design vessels are not the maximum possible vessel, rather of a size that represents the largest vessel of that kind commonly using the wharf or may use the wharf in the future. Information to establish the size range of existing vessels using the ramp was undertaken as part of the user requirements needs assessment.

Aside from the LOA and beam, the draught has also been set for the design vessels. A maximum displacement for each class has also been selected, which will influence the strength requirements of the wharf.

The dimensions of the recommended design vessels are set out in **Table 8** with **Photographs 1, 2 and 3** depicting typical imagery of commercial fishing, commercial tourism and cruise tender vessels. The user requirements needs assessment found that the fourth class, recreational vessels, cover a wide range, from power boats (**Photograph 4)** and small yachts to unpowered stand up paddleboards and kayaks. Typical design vessel dimensions for the recreational vessel class has been taken from work previously completed at Naval Point, Lyttelton[1] and data provided by the New Zealand Cruise Association.

Table 8. Recommended design vessel dimensions

Vessel Class	Estimated maximum vessel occupancy	LOA (m)	Beam (m)	Draught (m)	Maximum displacement (T)
Commercial fishing	5	22	4.5	1.5	45
Commercial tourism	50-100	24	7.1	1.6	70
Cruise tenders	100-260	16	5.0	-	43
Recreational vessels	5-10	10	3.0	1.2	5.5

Photograph 1 – An example of a commercial fishing vessel (12m LOA, 4m beam)

Photograph 2 – An example of a commercial tourism vessel (15m LOA, 5.25m beam)

Photograph 3 – An example of a cruise ship tender (15.7m LOA, 5.2m beam)

Photograph 4 – An example of a recreational vessel (8.2m LOA, 2.5m beam)

9 Challenges and Risks

The overall commentary from the users interviewed as part of this user requirements needs assessment was that the current wharf is very well used but is very congested. Users do not want to exclude any other user group from utilising the wharf, they all wish to accommodate each other with the future wharf offering improvements for access and safety.

The key challenges involved in the construction of a new wharf or the refurbishment of the existing wharf are:

- Accommodating the needs of operators while the current wharf is refurbished or a new one built.
- Creating enough space for all users on the wharf.
- Accommodating peak passenger numbers when cruise ships are in.
- The inclusion of additional pontoons to the main wharf structure will change the visual fabric and historical continuity of the existing wharf.
- Whilst additional pontoons will provide more berth space on the northern side of the wharf, it will inherently reduce the number of berths available for commercial fishing vessels.
- The addition of floating pontoons to the northern side will push commercial fishing vessels berths toward the far end of the wharf. This will require refrigerated vehicles/forklifts to transport loads greater distances from the end of the wharf to landside.
- Challenges creating a safe environment for commercial fishing operators to load/unload while recreational users are using wharf.

10 Conclusion

The purpose of the User Requirements Needs Assessment was to document the key requirements of current wharf users, focussing on the marine operations. A key focus of the assessment was to identify the required and desired infrastructure requirements to support existing uses/operations as well as enable future growth.

The views and opinions of the users have been captured in this document. Moving forward, work is now required to evaluate these requirements and prioritise them, before incorporating the selected requirements into a brief document for the design of the new wharf.

11 Applicability

Enviser Ltd has prepared this report for Christchurch City Council in accordance with the agreed scope. No other party, aside from Christchurch City Council, may rely on this report, or any conclusions or opinions within it, for any purpose without the express written permission of Enviser Ltd.

The opinions and conclusions within this report are based on the information that was viewed during preparation of the report.

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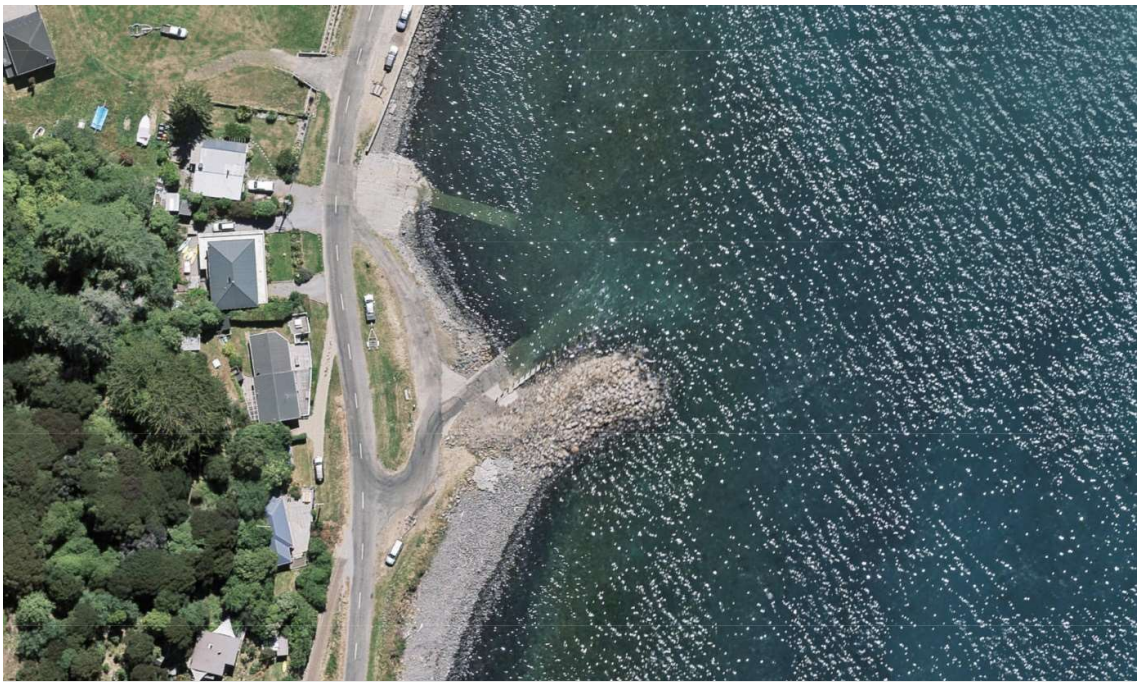
Appendix A – Existing Marine Facilities

Wainui Wharf

Location	Wainui Main Rd, Wainui
Facility	Wharf, limited car parking (5 spaces) and manoeuvring area. Two sets of steps at the end of the wharf.
Construction	Timber piles and timber deck. Lifting crane on deck.
Recreational use	Limited to pedestrian use, swimming and fishing. Occasional tie-up of recreational vessels to load/unload
Commercial use	Used by Akaroa Salmon to load/unload materials and product from their workboats. Currently utilised to its maximum displacement of 3.5T. Product is craned off the boats (using Akaroa Salmon crane) and transported along the wharf via forklift.
Use frequency	Infrequent recreational vessel use, regular use for swimming/fishing in summer months. Regular commercial use by Akaroa Salmon

Wainui Boat Ramp

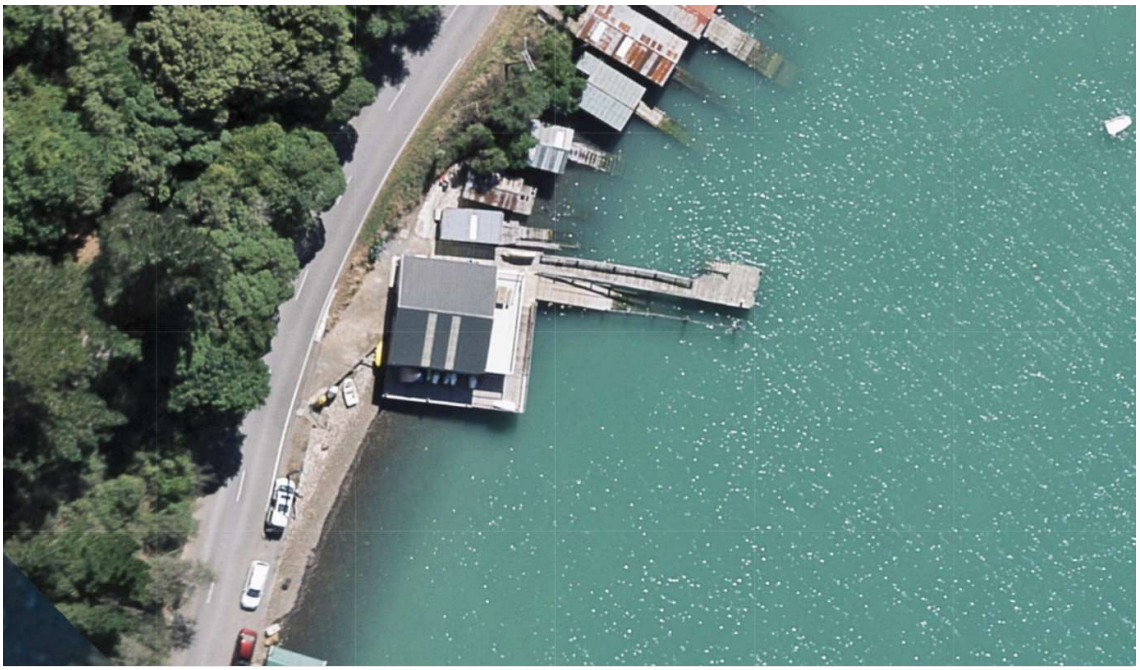


Location	Wainui Main Rd, Wainui
Facility	Two ramps, both concrete with a rock breakwater which protects from dominant wave direction. Main ramp has piled structure alongside the ramp with a walkway on concrete blocks to assist vessel launching/retrieval. Secondary ramp is narrow and suitable for small vessels only. Limited informal car parking (3-5 spaces) and manoeuvring area.
Tidal access	Access possible at all tides, although approaches are shallow and this may limit low tide access to small vessels only.
Construction	Concrete ramps, timber piles adjacent with a walkway on concrete blocks. Rock breakwater stub.
Recreational use	Powerboats, trailer sailers, small sailing dinghies, kayaks, jet skis etc.
Commercial use	Akaroa Salmon to launch/retrieve their smaller work boats.
Use frequency	Medium to high. Particularly summer periods and weekend, serves the entire western side of the harbour. Occasional use by Akaroa Salmon

Tikao Jetty

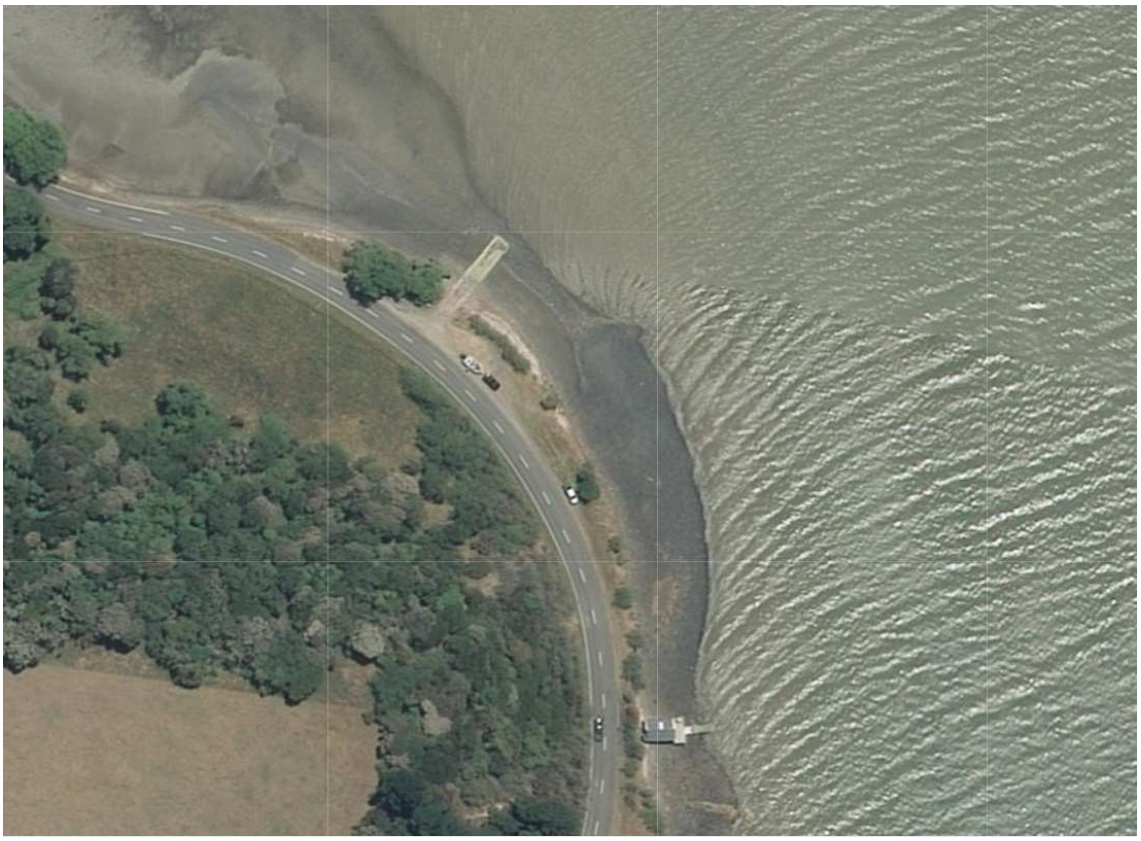
Location	Tikao Bay (end of Tikao Bay Rd)
Facility	Wooden Jetty with two sets of stairs for water access
Tidal access	All tide
Construction	Timber pile and timber decks
Recreational use	Pedestrian access, swimming, fishing. Linked to Tikao Bay Boating Club, must be a member and resident to use for boat access.
Commercial use	Used by commercial tourism boat to load/unload passengers.
Use frequency	Relatively low, largely serves the local Tikao Bay community and occasional visitors.

French Farm Aquatic Club Jetty



Location	Wainui Main Rd, French Farm
Facility	Wooden Jetty, a set of stairs, limited parking on roadside
Tidal access	All tide
Construction	Timber pile and timber decks
Recreational use	Pedestrian access, swimming, fishing. Linked to French Farm Boating Club so public access may be unclear.
Commercial use	None expected
Use frequency	Relatively low, mainly summer and weekends and by locals/club members.

Barry's Bay Ramp



Location	Wainui Main Rd, Barry's Bay
Facility	Small boat ramp, limited informal parking on roadside
Tidal access	High tide only
Construction	Concrete.
Recreational use	Launch/retrieve of smaller recreational vessels with shallow draught (power boats, sailing dinghy's, kayaks etc).
Commercial use	None
Use frequency	Low across all users.

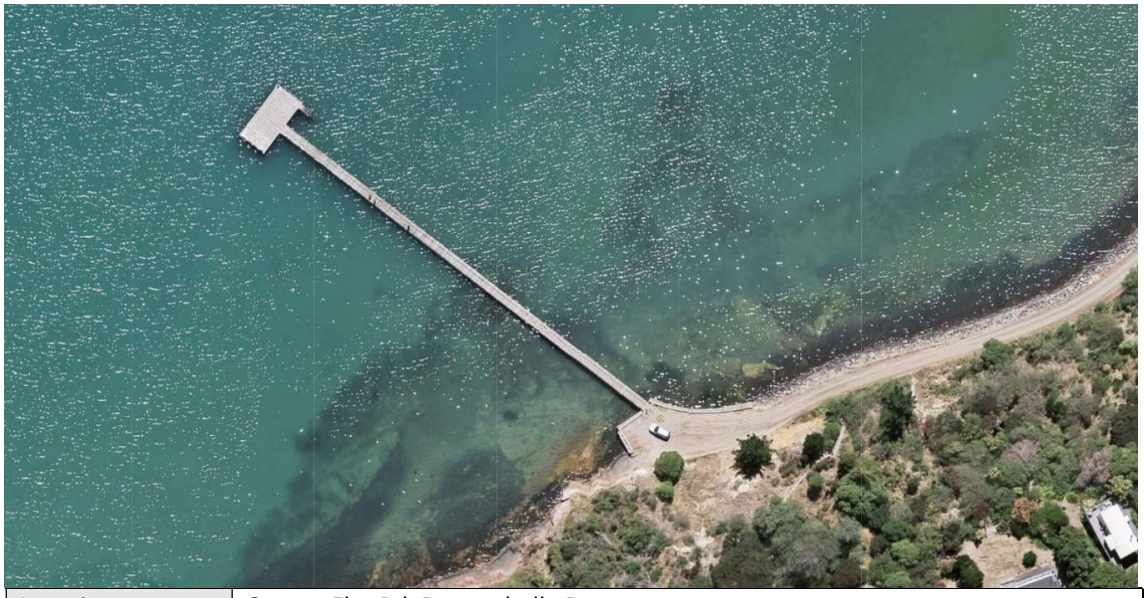
Onawe/Duvauchelle Jetty

Location	Onawe Flat Rd, Duvauchelle Bay
Facility	'T' Wharf with concrete surfaced parking area
Tidal access	All tide for small vessels (at wharf end)
Construction	Timber pile and timber decks, concrete abutment and some rail track present.
Recreational use	Pedestrian access, swimming, fishing limited tie-up of recreational vessels for loading and unloading.
Commercial use	None
Use frequency	Currently closed, currently no timeline on when this will be reopened. Low across all users.

Duvauchelle Ramp and Jetty

Location	Seafield Rd, Duvauchelle Bay
Facility	Ramp (tight two-lane), jetty and parking/manoeuvring area. Limited on-road parking.
Tidal access	All tide for shallow draught vessels
Construction	Concrete ramp, timber pile and timber deck jetty
Recreational use	Primarily launching and retrieval of boats, swimming and fishing off the jetty.
Commercial use	None expected
Use frequency	Medium-high. Good ramp close to a populated area.

Robinsons Bay Jetty



Location	Onawe Flat Rd, Duvauchelle Bay
Facility	'T' Wharf with gravel-surfaced parking area, small informal ramp.
Tidal access	All tide for small vessels (at wharf end)
Construction	Timber pile and timber decks, concrete abutment and some rail track present.
Recreational use	Pedestrian access, swimming, fishing limited tie-up of recreational vessels for loading and unloading.
Commercial use	None
Use frequency	Now repaired and is open. Anticipate low to medium use, mainly swimming fishing. Close to better facilities and low population in the immediate vicinity.

Takamatua Ramp and Jetty

Location	Takamatua Bay Rd/ McRea's Rd, Takamatua.
Facility	Small single-lane ramp. 'T' jetty in adjacent bay, not connected to shore. Parking adjacent to the ramp.
Tidal access	High tide only for ramp, possible to use lower tides by using natural foreshore below the ramp.
Construction	Ramp is concrete, with a short concrete nib. Jetty is timber piles deck.
Recreational use	Launch and retrieve of powerboats, sailing dinghy's, kayaks etc. As jetty does not connect to land, use would likely only be for swimming purposes.
Commercial use	None
Use frequency	Ramp use medium, jetty low.

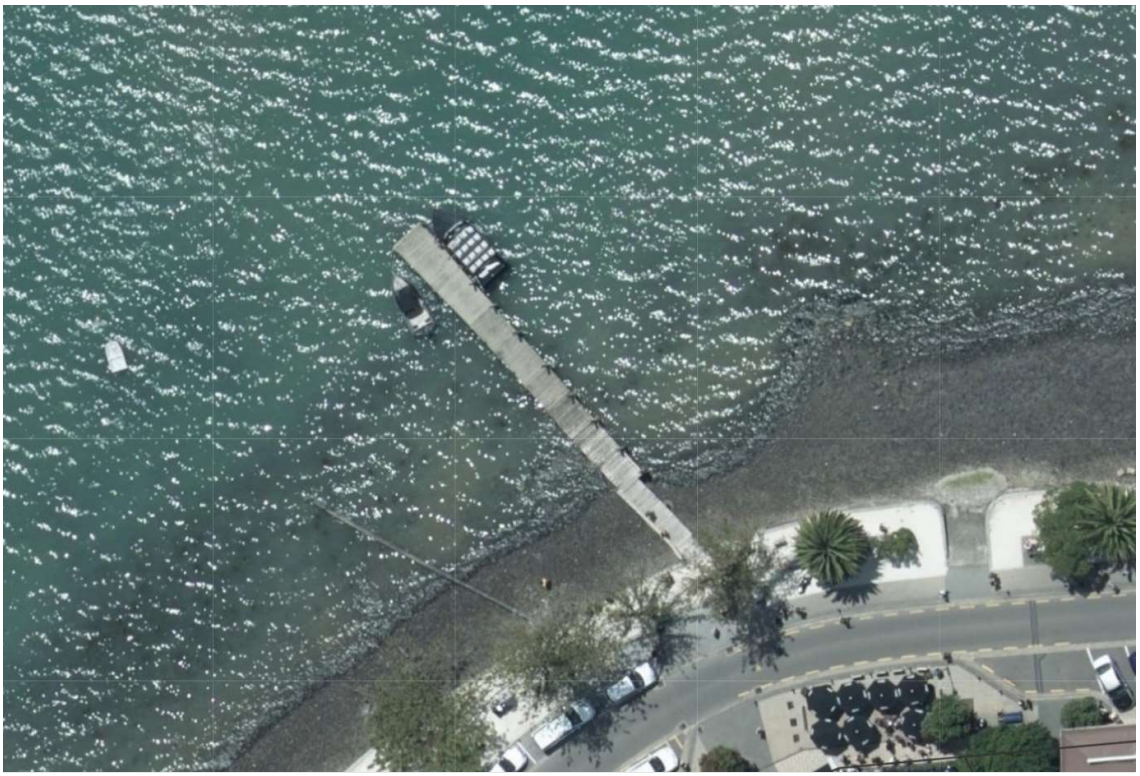
Akaroa Recreation Ground Ramp

Location	Rue Brittan, Children's Bay, Akaroa
Facility	Dual access boat ramp, ample parking and manoeuvring areas
Tidal access	Usable at low tides (as is dredged, but unlikely to suit a very large commercial vessel at low tide (12m DOC boat can launch at lowtide).
Construction	Concrete ramp with timber accessway on each side of the ramp to assist launching/retrieval of boats. Sealed car park and access.
Recreational use	Launch and retrieve of trailerable vessels. Some use by unpowered craft (kayaks, sailing dinghy's etc)
Commercial use	Some occasional launch retrieve of commercial vessels may occur.
Use frequency	High, most used ramp in the harbour.

Daly's Wharf (Akaroa)

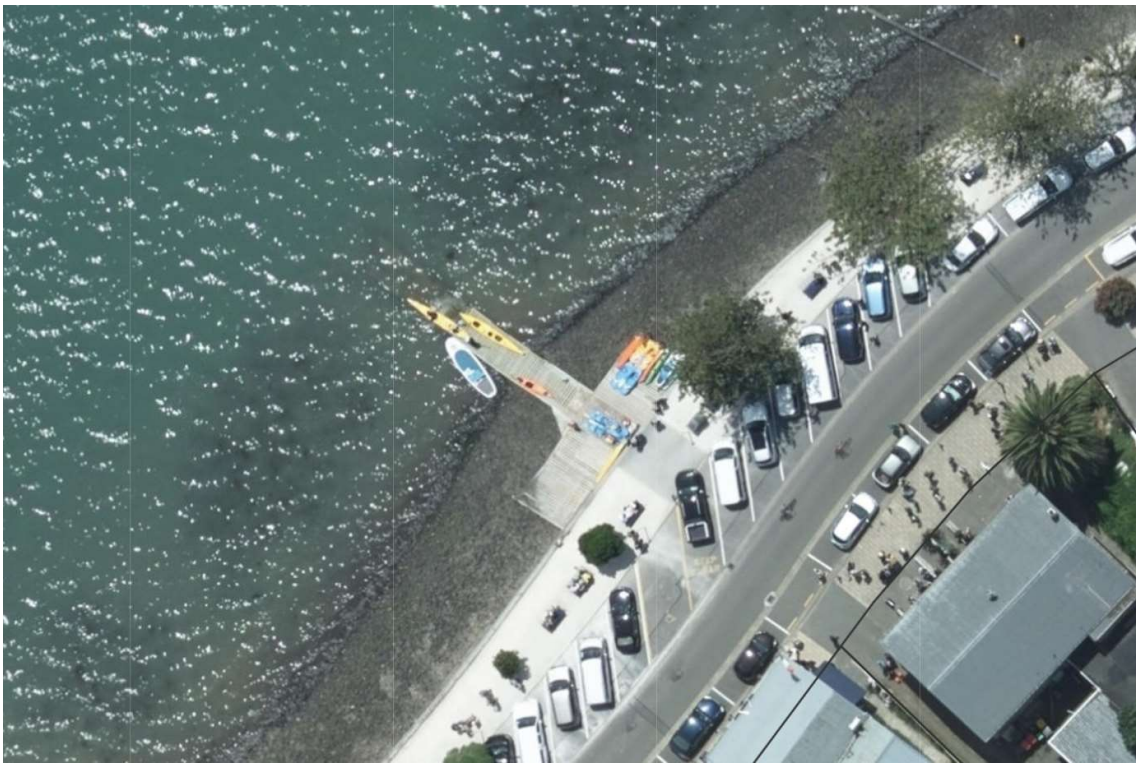
Location	Rue Balguerie, Children's Bay, Akaroa
Facility	Two ramps (one single, one dual), Daly's 'T' Wharf, dinghy storage for boats on swing moorings. Very limited parking.
Tidal access	All tide
Construction	Concrete ramps, timber pile and deck wharf, asphalt parking area.
Recreational use	Launch retrieve of trailer boats, dinghy's to access vessels on swing moorings, non-powered craft. Pedestrian, swimming and fishing on Daly's Wharf.
Commercial use	Used by commercial tourism boats to load/unload passengers.
Use frequency	Medium to high, limited by lack of parking, power and water supply.

Drummonds Jetty (Akaroa)



Location	Beach Rd, Akaroa
Facility	Small wooden ramp
Tidal access	All tide
Construction	Timber pile and timber deck.
Recreational use	Pedestrian access, swimming, launch of powered craft. May be used by small powerboats as a point of access (and temporary tie-up) to Akaroa.
Commercial use	Larger ramp used by kayak/SUP and hire operation and powerboat tours.
Use frequency	High.

Small Craft Wooden Ramp (Akaroa)



Location	Beach Rd, Akaroa
Facility	Small wooden ramp with a storage platform at the shore end.
Tidal access	All tide
Construction	Timber pile and timber deck.
Recreational use	Pedestrian access, swimming, launch of unpowered craft.
Commercial use	Used by kayak/SUP hire operation.
Use frequency	Low to medium.

Appendix B – User Requirements Summary

	Wharf Access and Facilities	Wharf Facilities Used	Frequency of trips	Season window	Loading Time	Fuel Requirements	Boat	Max Length	Future	Beam	Draught	Tonnage		Future Requirements	What Doesn't Work	Landside	Other
												Empty	Full				
Commercial Fishing																	
Cherilyn J - John Wright	Main Wharf	Water Power Crane	1 x day	365 days	30-45 mins	Diesel	Fishing boat	11.0		2.7	0.7	2.0	4.0	Access for refrigerated truck Crane			
Truant - Jason Wright	Main Wharf	Water Power Crane	1-2 x day	365 days	30-45 mins	Diesel	Fishing boat	13.0		3.5	1.2		15.0	Access for refrigerated truck Crane			
Invader - Murray Kiely	Main Wharf	Water Power Crane	1 x day	Oct -Apr	30-45 mins	Diesel	Fishing boat	12.0		3.0	1.5	12.0	15.0	Access for refrigerated truck Crane Food caravan position on the wharf Carparking for wharf users			
Gladiator - Aroma Aquaculture	Main Wharf	Water Power Crane	2-3 x day	8 visits	120 mins	Diesel	Mussel barge	18.8	22.0	5.6	1.5		45.0	Access for refrigerated truck Crane		Parking for truck and trailer	
Juliet - Aroma Aquaculture	Main Wharf	Water Power Crane	2-3 x day	8 visits	120 mins	Diesel	Mussel barge	16.6		4.5	1.2		20.0	Access for refrigerated truck Crane		Parking for truck and trailer	
Akaroa Salmon	Wainui Wharf Main Wharf	Water Power Crane	1 x day	365 days	30-45 mins	Diesel/Petrol	Fishing boat x 1 Alloy boat x 2 Catamaran x 1	 12.6		 4.1	 0.8	 7.0	 13.0	Crane Non-marking fenders Solid runner for forklift Good hiab/knuckle boom crane		 Safe separation from recreational users	
Commercial Tourism																	
Akaroa Dolphins	Main Wharf	Floating pontoons & ramp Hoist Water Power	4 x day	365 days	30-45 mins	Diesel	2 x Catamarans	15.0		5.3	1.2			More floating pontoons Non-marking fenders Separation of pedestrians/vehicles Dinghy storage Separate pontoon with electricity	Old wharf pieces sticking out at low tide Recreational users leaving their boats at wharf	Ticket office Parking	
Black Cat Cruises	Main Wharf	Floating pontoons & ramp Hoist Water Power	4 x day	365 days	30 mins	Diesel	Catamaran Catamaran Aluminium x 2 Catamaran	16.9 12.8 8.0 15.6		7.1 4.0 1.2 6.9	1.4 1.0 0.5 1.6	40.0 20.0 3.0 70.0					
Southern Wanderer	Main Wharf	Floating pontoons & ramp Dinghy tie up	2 x day	Sept - July	15 mins	Petrol	Stabicraft 759	7.6	24.0	2.5	1.0	2.8		More floating pontoons Non-marking fenders Ease of access for passengers Petrol on wharf On wharf superviser on busy days Ramps wide enough for two people to pass	Not enough pontoon space, especially on northern pontoon Boats staying at the wharf too long	More toilets Parking Ticket office	
Ecoseaker	Daly's Wharf Main Wharf	Floating pontoons & ramp Water Power	2 x day	Sept - May	15 - 30 mins	Petrol	Rayglass protector	12.5			0.8	5.5		More floating pontoons Electricity for electric boats Dinghy storage	Water pressure for washdown	Ticket office Changing room trailer space 3.6 x 5m	
Fox II Sailing	Daly's Wharf Main Wharf	Floating pontoons & ramp Stairs Water Power	2 x day	Dec - Apr	15 mins	Diesel	Yacht	18.2	18.2		1.5	22.0		Non-marking fenders		Dinghy storage	
Coast up Close	Main Wharf	Floating pontoons & ramp Stairs Water Power	3 x day	Sep - Apr	15 mins	Diesel	Yacht	12.5		4.5	1.4			Non-marking fenders			
Twin Peaks Sailing	Potentially Main Wharf Currently Tikao Bay Wharf	Floating pontoons & ramp Water Power	2 x day	Oct - Mar	15 mins	Diesel	Yacht	10.2			1.8			Non-marking fenders Dinghy storage			Recreational boats on a different wharf
Akaroa Adventure Centre	Potentially Main Wharf	Floating pontoons & ramp Water	Multiple daily	Oct - April	N/A	N/A	SUP/Kayaks/Paddle	6.0		3.0	0.4			Floating pontoons Power/data Washdown Storage on pontoon Solid wharf (to reduce water mvt)		Ticket office 50m2 storage for boats Ticket office	
Akaroa Sea Kayaking Safaris	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A					Would like advertising on wharf
Blue Pearls	Main Wharf	Water	Daily 10-4pm	365 days	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		Fenders to reduce boat movements in shop			
Cruise Tender Vessels																	
Tender	Main Wharf	Floating pontoons & ramp	60 x day	Oct - April	15 mins	N/A	Tender/lifeboat	15.7		5.2		23.0	43.0	Ramp access, wide enough to accommodate mobility scooters On wharf toilets Handrails on pontoons and along the main wharf Space for small marquee, water stations, sanitisation stations, security podium Rubbish/recycling bins near floating pontoons Toilets near floating pontoons Seating along the wharf for passengers waiting to board Collapsible covered gangways for passengers queuing Dedicated pontoon for loading/unloading while cruise ships are in harbour			