



## MANA CRUISING CLUB

# PROFESSIONAL REVIEW OF DEVELOPMENT OPTIONS



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**MARICO MARINE NEW ZEALAND LTD**

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## 1 INTRODUCTION

The Mana Cruising Club requested Marico Marine to review options for a planned development. This has originally been driven by the need to re-consider safety associated with the launching and retrieval operations that take place at the north-western side of the marina enclosure. These operations affect trailer craft and cruisers alike.

To date, the club has derived new layout options for launching with some detail. With an almost equal balance of members who are trailer-sailors and those who are associated with cruisers, it is inevitable for opinion to be split between the choices available. It is also beneficial for a detached professional marine view to be provided, noting that the outcome of the professional opinion provided will inevitably be contradictory to the views of half the membership.

For this reason, great care has been taken to avoid the influence of individual opinion, with the review proceeding strictly without seeking opinion from those members who have interfaced with Marico Marine. This report also records that no member has sought to influence the review.

The review considers both the options derived for development, but also wider issues of the viability for expansion that is sometimes necessary to fund changes that may be fundamental to how the club operates.

The project briefing was that Mana Cruising Club originally looked to sort out a health and safety issue associated with its launching areas, that surround the club house. The membership has differing views of which option to progress, hence independent opinion is important. There is little doubt as a starting point that these safety concerns are valid.

### 1.1 THE MANA CRUISING CLUB - OVERVIEW

The Mana Cruising Club is located in an excellent setting for the Wellington region and central to both Wellington and the Kapiti Coast. It is equally attractive to members owning trailer launched craft and members owning cruisers, sail or motor. There is a transit of about 18 nautical miles to the entrance of Queen Charlotte Sound, Marlborough, making the location strategically attractive when comparing to the option of basing a larger craft in one of the Wellington or Lower Hutt marinas. Apart from Wellington Harbour itself, it is one of only two locations, including all of the Kapiti Coast where trailer launching can be achieved via its dedicated ramp facility, into the smooth water of the marina. Apart from a small public ramp the other option for trailer launching is at Plimmerton Boating Club, located in Karehana Bay.

The club has its own boat-lift, an excellent asset, which provides added attraction to use the adjacent penned-berth Mana Marina, as cruisers can be easily launched and recovered. The marina itself is owned by a separate entity, with the Mana Club facilities commonly servicing the needs of both types of user.

The marina has a natural vessel size limitation as the bar in the approaches to Mana Harbour inlet has a limiting depth of about 1.8m<sup>1</sup>. If an owner accepts a tidal window limitation, a good-sized cruiser can access the marina. Practically though, the bar limits the size of sloops, but equally powered cruisers that use the marina, to a maximum length of 14-15metres.



**Figure 1 : Google Earth Overview of Mana Cruising Club**

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<sup>1</sup> Chart NZ4632 references a minimum depth of 1.5m at chart datum along a line approximately between Plimmerton Beach and Onehunga Bay.

## 1.2 MEMBERSHIP

Membership of Mana Cruising Club is significant, with the club understood to have a roll of over 700 members in 2019. Interestingly membership is almost evenly split between the trailer-boat user and the moored cruiser owner. Membership fees, at about \$340 for a year, are good value, given the quality of the facilities that can be accessed.

## 1.3 MANA MARINA

Mana Marina is very relevant to the Mana Cruising Club development options, as its berth-holders represent 50% of the club's membership. The marina is accessed via a lane that runs through the entrance to Mana Cruising Club, then up its eastern perimeter before turning to run alongside the rail lines to the berth owners only parking barrier. The marina enjoys extensive parking capacity for its berth-holders, including capacity for parking and storage of cruisers or craft (Figure 2).

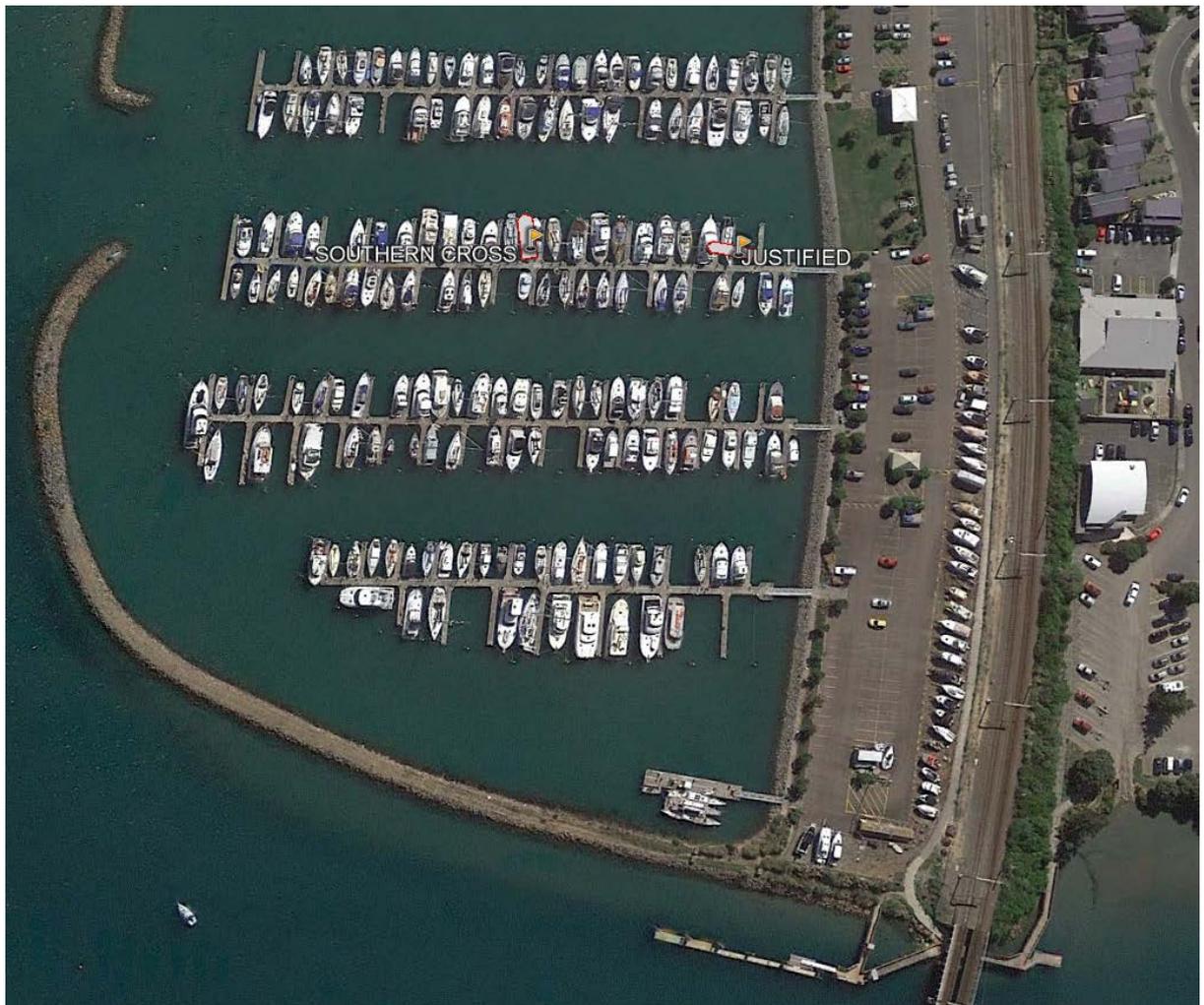


Figure 2 : Mana Marina Enjoys Extensive and Independent Car Parking Capacity

The Mana Marina appears to be operating at either close to or at full capacity. This allows a simple conclusion to be drawn that any scope for expansion at the Mana Cruising Club lies in the trailer-launched craft sector. This sector represents 50% of the Mana Cruising Club Membership.

#### 1.4 LAUNCHING FACILITIES

The club's launching facilities are all located at its Western side and are accessed by driving past the rear of the club, **Figure 3**. The local Coastguard base is also located here and adjacent to the other launching facilities, **Figure 4**.



Figure 3 : The Club's Launching Facilities



Figure 4 : CoastGuard Mana Base Adjacent to Launching Facilities

## 2 MANA CRUISING CLUB'S DEVELOPMENT ANALYSIS

At the overview, the Mana Cruising Club has adequate land space within its limits to support recreational boating activities of many types. They already possess good facilities for winter storage of cruisers and the eastern side of the club's area is good hardstanding for maintenance activities, which includes hull maintenance. There did not though appear to be facilities for the management of paint chippings, although boats being worked on close to the club house had been fully shrouded.

### 2.1 INITIAL DEVELOPMENT OPINION – MARICO MARINE

In the initial opinion of Marico Marine, with some reorganisation of its craft flows on the land side, the Mana Cruising Club has significant potential to attract further new members. The whole club has a surprisingly attractive outlook and its balance of facilities for trailer or cruise launching are excellent. However the marina itself has been full for some time and although berths do occasionally change hands, this is mostly associated with a cruising-craft sale for continued use out of Mana. Growth in the cruising sector could only really occur if the marina enclosure itself was enlarged; this is technically possible, but unlikely given the width of the Porirua Harbour inlet in this location and the channel topography around the perimeter of the rock-armour wall of the marina enclosure. The ability to make more of the clubhouse facilities does lie in membership patronage and that interest lies in the trailer launching sector of its membership.



**Figure 5 : General Topography of Channels Surrounding Mana Cruising Club Enclosure**

## 2.2 WATERFRONT

The Mana Cruising Club already has a useful area of waterfront, alongside which visiting cruisers could stay overnight, but the demand for this market is likely to be limited. This is presently used by both small and large craft to land craft occupants or take stores. Any small craft using the waterfront keeps the single ramp free for launching or retrieval operations. There is a useful crane for mounting of masts/rigging on the waterfront, which may need Safe Working Load (SWL) markings.



Figure 6: Club Waterfront is Extensive with Good Sea Room



Figure 7 : Club Waterfront Taken From Apron

## 2.3 WIDER CLUB FACILITIES

Mention needs to be made of the wider club facilities in relation to development potential. The club building is large enough to provide for all of its membership needs. It has a very nice members restaurant and bar area, with an outlook facing the marina. The club-house frontage opens up into this area, linking the catering area to the waterfront, which is an attractive outlook for any lunchtime meal or event. It also has its own kitchen facilities and presumed, professional catering facilities and expertise. However, it seems to open in the late afternoon and evenings only, unless it is catering for outside bookings. To reviewers, facilities with such a quality outlook and capacity are in short supply and from a detached perspective it would seem that both members and perhaps the public alike would participate in a venue that provided a Saturday and Sunday lunchtime venue. In the summer, it is likely to have attractions for some week days as well. Given the marina-facing outlook, much could be made for weekend lunches for members of the public and membership events. In short, there appears to be an as yet untapped services business potential for the club location.

## 2.4 LOCAL “COMPETING” FACILITIES

There is a council maintained ramp (Public) close to the Mana Cruising Club, which is both congested in summer and launches into the side to the channel. It has good parking but limited capacity.

The Plimmerton Boating Club, provides a second option for trailer launching. It has a choice of launching ramps, two of which are in relative shelter, but not fully enclosed.

On the face of it, the Plimmerton Boating Club has superb launching facilities. There are three ramps, however, one is facing seaward and has a dog-leg (after floating) and the third has a very shallow angle, perfect for the launching of sailing dinghy's on launching trolleys. This club has limited space for parking trailers and for parking in general, but it has a large number of boating lock-up garages, which are excellent for sailing dinghys<sup>2</sup>. This facility appears to be providing more in the way of sailing related services for small boats, including sailing race organisation. Mana Cruising Club has limited activities like this, but does offer mostly winter racing facilities for keelers, using the Plimmerton club facilities.. Although the Plimmerton facility does provide services for motorised trailered craft, capacity is limited for parking. The review suggests the clubs are providing services that are compatible with each other and the interlinking of services offered is part of their joint sustainability.

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<sup>2</sup> Mana Cruising Club also has Garages, but not as many as Plimmerton.

Vessel of the size using Mana Cruising Club Marina are too large for this facility. Thus, although the two clubs lie in relative close proximity, they are complementary and thus compatible with each other. Advice is also that the two clubs work well together.



Figure 8 : Google Earth Capture of the Plimmerton Club Area



### 3 ANALYSIS OF THE MANA CRUSING CLUB NEEDS

The club was visited on four occasions, each visit representative of its level of use. These were:-

- A weekday afternoon and early evening.
- A sunny busy weekend (Saturday Noon).
- A weekday morning.
- Boxing Day (26 December).

#### 3.1 LAUNCHING RAMP – TRAILERED CRAFT

The clubs launching facilities are presently adjacent to each other. The launching ramp is excellent, with an approach angle that allows the vast majority of trailered craft to be launched without vehicles entering the salt water, apart from tyres. **Figure 10**, shows that ramp-room for single launching is excellent. However, on a busy summer’s day the ramp is in almost constant use. On the starboard side of the ramp, there is a floating pontoon with rubber-sheet fendering, with sufficient length to allow launched (or waiting) craft to be placed alongside as they are readied to head-out, or to be recovered. The pontoon has a useful dog-leg at the end, which turns to align with the rock armour wall of the marina enclosure, and thus the channel to the marina enclosure sea entrance. With craft being launched into the marina, there is no chop or wave action, making the launching operation safe for those with limited experience. The ramp itself appeared from a brief inspection to be in good serviceable condition. Its location is excellent, aligning with the marina access channel.



**Figure 10 : Present Launching Lamp is Excellent for Single Launch Usage**

Craft were waiting to use the ramp on the busy weekend and Boxing Day witnessed, especially in the morning. There is little doubt that a double lane ramp would be more efficient for launching and retrieval. A cost-effective way to achieve this would be to recognise the good condition of the present ramp and simply extend it into the adjacent area, and provide a buffered landing pontoon on both its port and starboard side. There are some good on-the-water safety reasons to consider this option further, which are explained later. In order to deliver this marginal change, the finger jetties for the cruiser hoist would need to be moved.

### 3.2 CRUISER HOIST - BOAT LIFT



Figure 11 : Mana Cruising Club Boat Hoist

The boat lift is a real asset to the club. It was reportedly originally a 50 tonnes capacity unit, then owned by Team NZ, which was heightened to accommodate their needs and de-rated to 35 tonnes (16 metre) as its height was increased. Even so, is likely to have capacity to lift out most of the cruisers in the marina. It is understood this was purchased from Team NZ. This purchase was, without doubt, prudent. The lift can move the larger craft to any of the boat park areas, although this process will be slow – these hoists are mobile by design, to move a vessel off the water and onto a trailer or cradle. Transporting a cruiser very far is not recommended

The finger-jetty structure on which the hoist stands for lifting-out is substantial and of encased pile construction. We were advised, but did not test, that the encasement of the piles may be spalding, with re-grouting an option. A slight misalignment of the fingers is also advised, due to settlement, although no present known structural issue. In the experience of Marico Marine, it is often better and more cost effective in the long run to replace this type of construction, than repair. If the misalignment is due to pile settlement, then replacement is a more obvious option. However, we are not structural experts in this area and this opinion is from a brief visit/inspection only and not a survey. Marico have a Dr of Naval Architecture, who specialises loading that a replacement structure would need to be withstand.



**Figure 12 : Lift Jetty Structure Showing Signs of Spalding -Slight Misalignment Reported**

The condition of the cruiser lift finger jetty is of relevance to development decision making. It is reported to have settled and will need attention in the future, irrespective of any development decision.

The hoist did not appear to have any obvious Safe Working Load (SWL) markings displayed and in fact still carries a 50-Tonne marking designation, **Figure 13**. As it is lifting gear, regulations require SWL to be clearly marked and we recommend that either a pillar on each side, or a cross member on each side is marked, with its current lifting capacity. There is an NZ Department of Labour approved Code of Practice for cranes which should be referred to. Maritime NZ marine marking rules may also apply, which Marico can assist with.



**Figure 13 : Mana Cruising Club Hoist – SWL Markings Need Clarifying**



**Figure 14 : The Boat Hoist**

### 3.3 THE RAMP APPROACH AND STORAGE AREAS

The launching areas are approached to the right of the main entrance to the Cruising Club, **Figures 15 and 16.**



**Figure 15 : Launching Facilities are Approached via the Clubhouse Rear**



**Figure 16 : Access is tight with Cruisers Stored Alongside the Site Boundary**

The area surrounding the rear of the club house provides the access to the craft launching areas. Cruisers that have been hauled out are stored along the rear perimeter fence, some being worked on and encased in a dust-tents, **Figures 17 and 18.**

Both the ramp and the boat hoist were noted to be continuously busy on the weekend morning/lunchtime that was observed. **Figure 17,** shows that when cruiser hoist facility is used with a cruiser preparing to be transported by road trailer, there is enough space for this one transit to take place and possibly one trailer to launch. Time is needed for the boat hoist lift operation, which practically should prevent a second craft movement, however small. This further limits trailer launching operations.



**Figure 17 : Vessels Being Moved for Highway Transit Need the Area Cleared**



**Figure 18 : Road Jig Being Prepared for Transit - Leaves Little Room**

However, of more concern is the fact that a cruiser lift is a heavy-lift operation and if something does go wrong, the area around the hoist needs to be clear of any other activity.

### 3.4 LAUNCH VOLUME AND PARKING FOR TRAILERS

The organisation for parking road trailers of launched craft is also somewhat hap-hazard. On the busy weekends attended, including over the Xmas period, trailers and towing vehicles were stacked on the approach road to the club or parked in the hard standing area, **Figures 19 and 20.**



**Figure 19 : Trailers and Vehicles End up Parked Along Entrance Road**



**Figure 20 : Trailers Parked in Hard Standing Area**

Boxing Day is understandably one of the busiest days of the club-year for trailer boats. This together with a fishing competition day, provides a launching volume peak, given present membership level.

There were 25 cars and trailers counted parked inside the club area. A member reported 28 parked elsewhere on the Ngati Toa Domain on Boxing Day morning. The total of 53 is a significant number and any system needs to plan for its capacity events.



**Figure 21 : Trailers Parked Outside the Club Area - Boxing Day**

When trailered craft are launched in a morning, the arrangements appear to be a little chaotic, but managed by good will. With cruisers wishing to use the hoist, even if an owner waits for high tide, the arrangements do not really work. Craft trailers and cars end up being parked in the wash down area. The wash-down area really needs to remain clear and accessible for all craft emerging from the water, **Figure 22**. During visits, it was noted to be only accessible in part.

The presence of cruisers in the transit around the rear of the club, including those that have been enclosed to prevent dust from hull stripping operations is taking up space close to the Club, **Figures 22 and 23**.



**Figure 22 : The Launching Area is Limited by Large Craft Stored Close to the Club House**



**Figure 23 :Cruisers Stored or under Repair to the Rear of the Club House**

There are small craft and other storage garages adjacent to the launching ramp. As the users of small craft will always launch by ramp, the garages need to be sited adjacent to the ramp, **Figure 24**. They are.



**Figure 24 : Small Craft Storage Garages**

The present launching arrangements are compromised by the space available and the close proximity to the cruiser lift, which is specialist equipment and the ramp operations provided some cause for concern about health and safety of those members engaged in either launching or retrieving their craft.

### **3.5 CRUISER WORKING AREA**

The club has a large area for members that own cruisers to be able to either store or work on their craft. The extent of this is significant and it is an attractive asset to boat owners for obvious reasons. It is also used for the parking of trailers and towing vehicles after launching. This area has an open space that is not really organised. Cruisers having work done to hull coatings are parked in varying locations and a new hull for sale is stored on the site. Whilst all vessels will no doubt be paying fees, organisation of the space could be improved. It is noted that there is no obvious washdown facility for the collection and disposal of hull coatings after being removed, although it was noted that a number of vessels being worked on were properly tented over, providing a full environmental enclosure.

The club would benefit from a reorganisation of this space and parking in general. Importantly, with a reorganisation, it could also build a hull wash down facility that implicitly capture hull coating paint chippings for environmentally beneficial disposal.



**Figure 25 : View of Large Vessel "Utility" Area**



Figure 26 : Further View of Utility Area



Figure 27 : Mix of Parking and Cruiser Storage

## 4 DEVELOPMENT OPINION

The previous sections of this report lay out the professional observations of Marico Marine after visiting the Mana Cruising Club. This last section is dedicated to providing a clear opinion of what should be done for the Clubs' future. **Annex A** presents the clubs' layout options so far, as provided to Marico Marine as part of a commencement briefing.

Development layout options essentially provide a choice between moving the trailer launching ramp to the eastern side of the clubs' waterfrontage, allowing its expansion into two lanes; moving instead the boat hoist to the eastern side, or expanding the ramp in its current location by moving the boat hoist

### 4.1 MAINTAINING NAVIGATION SAFETY IN DESIGN – SEASIDE

The trailer launching ramp is in a location with important navigational safety aspects, inherent in its location. By far the greatest frequency of launch and retrievals are associated with trailer launched craft, so they also dominate the number of movements through the marina in any one year. When they are launched, the location of the ramp has craft aligned with the starboard side of the marina access channel. An outbound craft, after occupants have boarded at the jetty, is set to follow the navigational rules of the road, proceeding outbound on the starboard side of the channel. They are presented with a safe and straightforward exit route, **Figure 28**.



**Figure 28 : When Launched Trailered Craft are Aligned With Marina Exit Channel**



**Figure 29 : Perspective of an Inbound Small Craft**

When a small craft is inbound on the correct side of the marina channel, it has limited visibility of any craft present in the waterfront area, right up to the point where it would have to turn to starboard to enter the waterfront area. A craft heading outbound on the wrong side of the channel is very common amongst recreational users, presenting one of the well-known and acknowledged safety hazards of the necessary square layout of a traditional marina design. **Figure 29**, taken from a small craft in the water demonstrates this. It is not possible for occupants to see over the pontoons to become clearly aware of any craft proceeding out of the Club waterfront area. Speed through the water is limited by rule, which mitigates the consequences of any collision. There is also a good sea room for manoeuvre and separation in the Club waterfront area, **Figure 30**. Nevertheless, it is a classic marina collision scenario; almost all marinas possess a 90 degree swing at some part of their design. The larger cruisers have the height to have visibility around the corner of the marina, as they have when proceeding out of one of the berth-pen rows.



**Figure 30 : Club Waterfront Presently has Good Sea Room**

At present the number of movements in the waterfront area is limited to craft or vessels alongside, which, in the case of cruisers, will include preparation to move to or from their marina berths. If the larger launching ramp was moved into this area, the collision hazard would accrue.



**Figure 31 : The Cruisers have a Visibility Height Advantage for the Marina Corner**

The present design layout of the trailer-craft launching arrangements is thus following principles of good marina layout design, which in this case very good. Moving the ramp from its present location would in the view of Marico be a backward step and perhaps inadvertently introduce a collision-safety issue onto the water, that is presently inherently mitigated. This factor becomes more important when the facts of the relative transit numbers, between large and small craft are taken into account. Our opinion is that there must be a greater number of trailer-craft movements, but club members might know otherwise. In any event, the larger craft simply have better visibility. The logic is further grounded when facts of the future growth potential of the club are also considered. With the Marine full and expansion unlikely, trailer craft membership is the obvious area for future growth.

## 4.2 ADDRESSING SAFETY ISSUES - SHORESIDE

The greatest safety need is to re-organise the launching and recovery activities that surround the clubhouse. The area around the club is limited by site boundaries, which include the ancient foundations, which have important cultural significance to the local IWI.

With the challenges present on a busy day, there is a risk that someone is going to suffer injury and Marico doubt the situation could be described as As Low As Reasonably Practicable (ALARP) under the NZ Health and Safety at Work Act. This places a responsibility on the executive of the club, but affecting all club members to a lesser extent. Marico strongly recommend separating out the boat hoist operations from the ramp launching of trailered craft, on the basis that only this solution will isolate risk. Isolating risk is the most appropriate strategy, as opposed to adding in systems that provide mitigation, such as procedures for separation during heavy lift operations, that are unlikely to be adhered to.

We are also advising a separation on the grounds that the heavy lift operation is both technical and specialist<sup>3</sup>. If something went wrong during a lift out, then there is the possibility of a heavy hull slipping out of control onto the hard stand. With hoists of any type such operations occasionally do go wrong – a hoist user assuming the 50 tonnes marked capacity being still available is an easy example of how this could occur. In the area of the lift out, there is an unrestricted mix of members of the public (who may be members of the club) with access to an area where heavy lifting operations are present. We do not think this should continue into the future.

There is plenty of space surrounding the club to organised trailer launching, as well as provide clear space for wash-off, but only if the large cruisers that are present close to the club house are moved. This recommendation may be a difficult scenario for a long term Mana Cruising Club member to accept, but when there is no need to conduct heavy lift operations close to the club house, not only are the craft types separated, but club members in the club house area are also isolated; club members are always going to be in the area of the club house. So, what Marico is recommending is the total isolation of:-

- Risk between people and the heavy lift operations;
- Risk between small craft launching and coincident heavy lift operations
- Risk between a heavy lift operation and unrelated people; and

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<sup>3</sup> Marico have not reviewed the hoist operating system, which should have suitably qualified and experienced operatives and written procedures for its use and testing.

- Risk associated with a random system of launch and retrieval activities surrounding the club house.

A proper organisation of the club estate into a trailer launching area and a cruiser launching and maintenance area should be the goal of the development. Marico cannot recommend separation more strongly and with hindsight, haul out operations probably should have been occurring well away from the club house from the beginning. The difficult message to get across is that there is only one way to achieve this and that is to move the large vessels into space that is already available, and to free up space around the club to organise the small craft launching, as well as facilitate club development.

If the landed cruisers were always located to the east of the estate, there is plenty of space to organise trailer launching and trailer parking on the west, allowing the land outside to club estate to be free of parked vehicles. Equally, there is space to the east to improve the site surfacing for large vessels as well as install solutions to assist the larger boat owners. With heavy hull haul-out to the east, the distance the hoist may need to travel to place a hull on a cradle is minimalised. The route also never goes near the area where club members would always be present.

#### 4.3 PRACTICAL ISSUES - DEVELOPMENT LOGIC

There are practical reasons for keeping the present trailer launching arrangements where they are - cost-effectiveness. The ramp is in good condition and widening, to provide for double and potentially even triple lane launching is straightforward and therefore cost-effective. The hoist fingers for the boat hoist are in need of maintenance attention and the practicality of replacement over refurbishment is the more likely long-term benefit. So moving this facility allows necessary maintenance expenditure to be discounted from the cost of relocation.

The ramp is also close to the garages for the small craft, **Figure 24**, all of which need the ramp to launch. Moving these to a new location has little cost benefit and as they are already aligning a boundary; the garages are already in a very good location (next to the ramp) for launching small craft.

The washdown area for small craft is also in an excellent location, if it was cleared of the everyday obstructions. Keeping the ramp where it is removes the need to recreate this facility over on the eastern side of the club estate.

Finally, the cost of the design and development to move finger jetties and the hoist operation to the east end of the waterfront is going to be cheaper than the earthwork to level the site to provide a suitable angle to create a two lane ramp arrangement. The eastern side of the waterfront already

has the height of banking necessary for installing boat-hoist finger jetties. Moving hoisting operations into this area allows a minimum distance of travel for a cruiser, once it is removed from the water. Limiting travel distance for the hoist should be a safety policy.

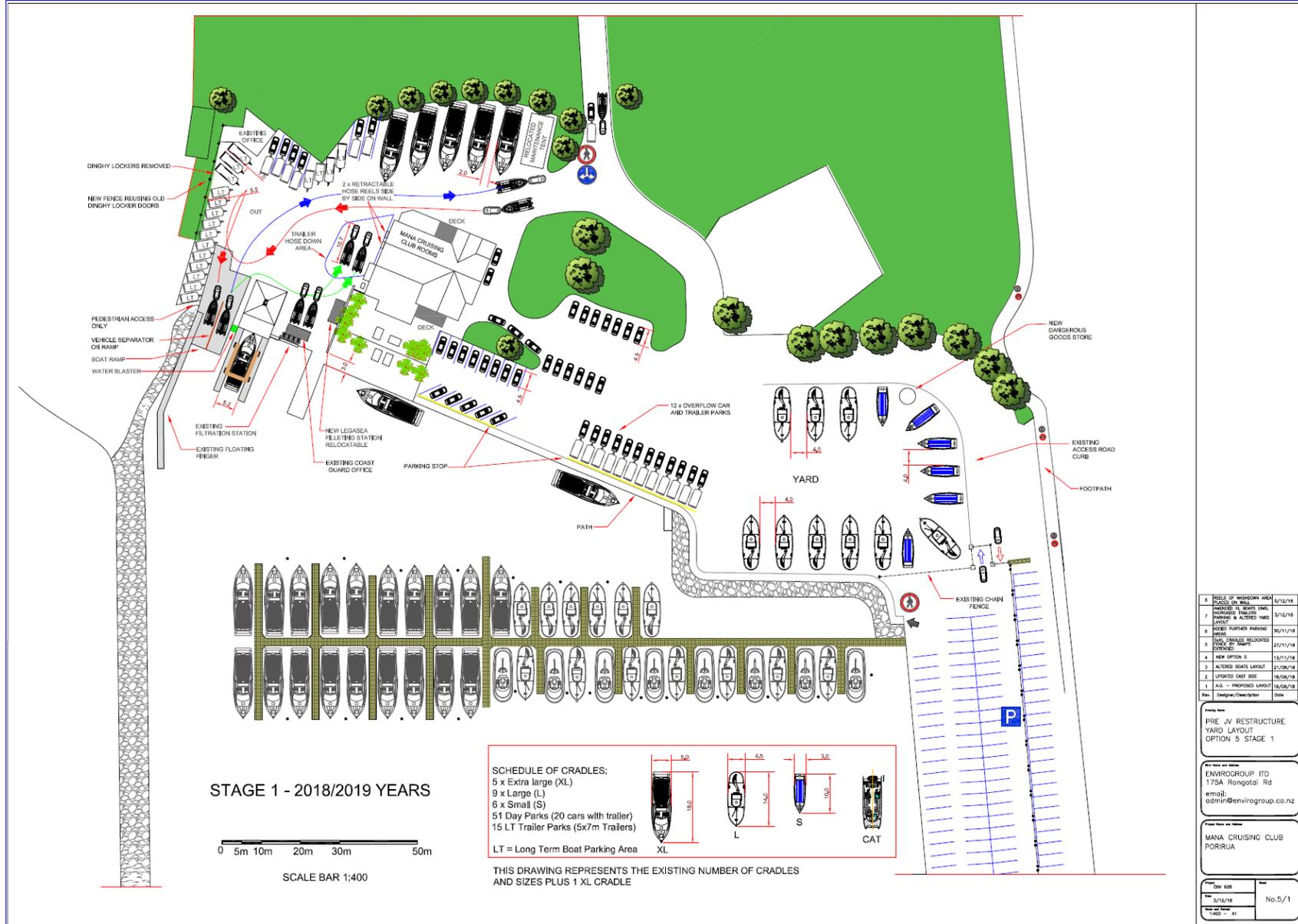
#### **4.4 MANA COASTGUARD OPERATIONS LOCATION**

The Mana Coastguard base is in a useful location and can observe launching operations from its present vantage point. It may be that their focus is not really about the local surroundings, but the visibility afforded by the present location provides Marico with its opinion that this is appropriate.

## 5 CONCLUSIONS

- 1) Marico Marine have reviewed the Clubs layout and present operations and visited on a number of occasions to provide professional opinion about development.
- 2) There is professional concern that separation of the heavy lifting process and ramp operations with trailers and small craft needs to be addressed in the near future. Risk is such that a policy of risk isolation should be taken forward as this can be achieved.
- 3) A clear opinion of Marico Marine is that all of the large hull movement and maintenance operations should be moved to the east of the waterfront, with trailer launching organised in the present area, with an enlarged ramp. This leaves only one development option, in our opinion.
- 4) The boat hoist and the rigging crane should both be marked with their Safe Working Load (SWL) capacity with some urgency.

## **Annex A      Development Options**



8	REELS OF WASHDOWN AREA PLACED ON WALL	5/12/18
7	RELOCATED TRAILER PARKING & ALTERED YARD LAYOUT	3/12/18
6	ROOFED FURTHER PARKING AREAS	30/11/18
5	EXISTING TRAILER RELOCATED CRADLES	27/11/18
4	NEW OPTION 5	13/11/18
3	ALTERED BOATS LAYOUT	11/08/18
2	UPDATED EAST SIDE	18/08/18
1	ASL - PROPOSED LAYOUT	16/06/18
Rev	Designer/Description	Date
PRE JV RESTRUCTURE YARD LAYOUT OPTION 5 STAGE 1		
ENVIROGROUP LTD 175A Rangitoto Rd email: admin@envirogroup.co.nz		
MANA CRUISING CLUB PORIRUA		
Drawn	5/12/18	No. 5/1
Scale	1:400	41



