SOUTH MARITIME SOLUTIONS

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Maritime Safety Review of draft Naval Point Development Plan, Lyttelton

Prepared for Christchurch City Council

Executive summary

The Draft Naval Point Development Plan (the plan) will provide an exceptional marine and recreational facility for Lyttelton and the greater Christchurch city area. From a marine activity perspective, the close proximity to the greater central city area, the ease of access to sheltered boating waters and the quality of infrastructure and services will almost certainly result in more significant numbers of people from a diverse number of marine activities using the facilities. While there is good separation of activities for shoreline access to and from the water, it is the movement of watercraft, entering, exiting and moving around the sheltered confines of, and approaches to, the newly created harbour that will require careful planning and control in order to maintain an appropriate level of marine safety.

On the land, it is predictable that simultaneous use of the marine and sporting facilities could result in congestion at certain peak times – for example, when the weather forecast is suitable for Saturday boating during seasons when sporting fixtures typically take place. This can normally be managed by clear signage, enhanced by the use of marshals during special events.

Background

Christchurch City Council (CCC) is currently drafting a plan for improvements to Naval Point, Magazine Bay Marina and the acquisition of land surrounding this area. Benefits of developing the area will include:

- Naval Point becoming an improved regional recreation facility;
- Safer boating facilities and improved access to Whakaraupō/Lyttelton Harbour;
- A new base for the Coastguard and Naval Point Club;
- Improvements to recreation and sporting facilities located at the Lyttelton Recreation Ground;
- Improvement of public access (pedestrian, cycle and vehicle) to and throughout Naval Point; and
- Recognition of its cultural significance.

Objectives

CCC have asked South Maritime Solutions (SouthMS) to undertake a review of the draft plan and supporting information. This review shall include comments on:

- Whether the draft plan will facilitate improvements to the development of Naval Point as a regional recreation facility;
- Whether the proposed plans support the future development of marine recreational activities at Naval Point
- Whether the planned configuration will be more likely to support safer boating and improved access to Whakaraupō/Lyttelton Harbour than the present state
- Feedback on the proposed improvements to the marine environment including the design of conceptual breakwater location, location of hand launching ramp, positioning of public ramp;
- Whether the planned marine works will improve the efficiency and safety for water craft users at and around Naval Point; and suggest any potential opportunities for improvement.

Marine Infrastructure

Breakwaters

SouthMS has reviewed the two reports produced by MetOcean Solutions for the Christchurch City Council: Wind and Wave Ambient and Extreme Statistics; and Naval Point Wave Study. Noting that floating wave attenuators have failed twice in the past during extreme weather events, it would be wise to invest in the more permanent solution of constructing breakwaters that, not only provide protection from waves to reduce the risk of launching and retrieval incidents and accidents, but also provide a good level of protection for the CCC shoreline assets proposed under the draft plan.

Marina berths

SouthMS notes the damage over the years to the old and existing marina facilities within the Naval point area caused by severe/extreme weather events.

While the draft plan provides for a good level of wave protection in the east, we note that the proposal provides for the residual marina berths to remain in the northwest area of the facility, off Magazine Bay. This small marina will be exposed to winds from the southwest quarter. Given the damage that has occurred to the original marina facility during extreme winds from that sector, it is predictable that the jetties, and any boats moored to them, will sustain significant ongoing damage during future weather events. It is probable that the effort required to maintain these facilities will continue to increase over time.

Given past failures of wave attenuators in this area, it will likely require the addition of another permanent breakwater on the west side of the bay to provide suitable protection for the existing marina facility. Whether the cost of providing an additional breakwater will outweigh the benefits of retaining the facility as a marina will need to be considered.

Beacons, buoys and lights

The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) is an intergovernmental organisation founded in 1957. Its principal work since 1973 has been the implementation of the standardised IALA maritime buoyage system adopted almost exclusively throughout the world. For historical reasons, two different schemes are in use worldwide, called Region A and Region B. New Zealand has adopted Region A, which follows the convention of mariners keeping red buoys, beacons and lights to port and keeping green buoys, beacons and lights to starboard when heading in the direction of buoyage. The direction of buoyage generally follows the main channel when heading into a harbour from seaward.

A system of Cardinal marks is generally used to depict dangers to navigation in areas where mariners might confuse the direction of buoyage, where secondary or multiple channels into a harbour may exist for example.

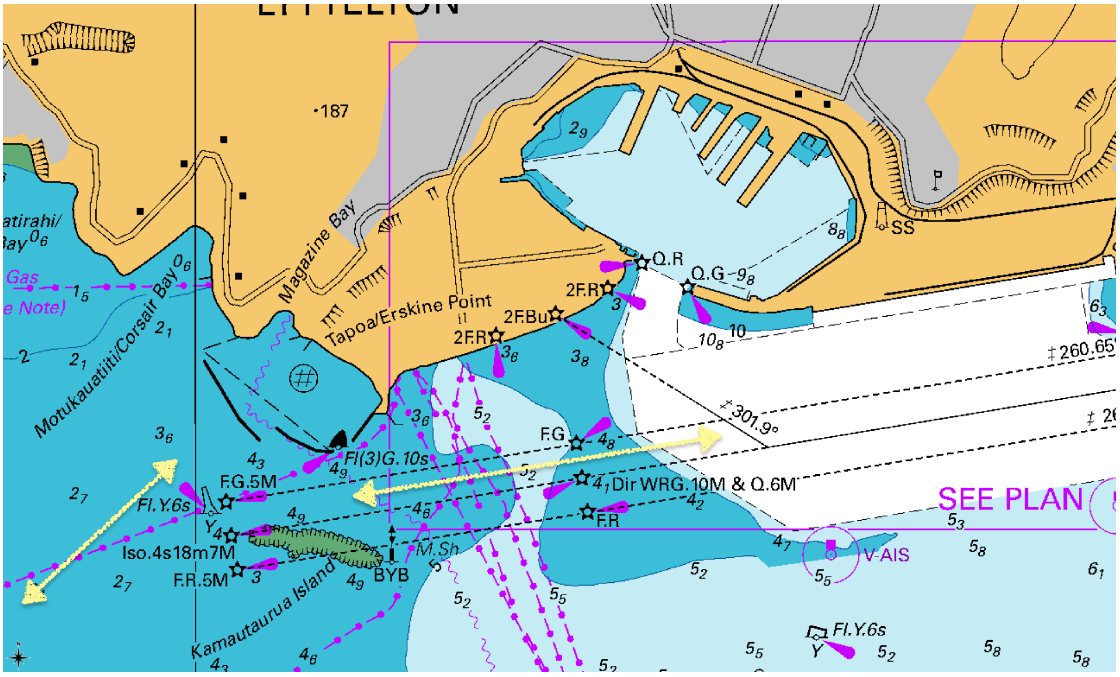
The Naval Point facility could be construed as a secondary port within a main harbour, with the construction of breakwaters essentially creating navigation channels in and out of the area.

Kamautaurua (aka Shag) Reef lies directly off the proposed breakwaters forming the entrance to the Naval Point facility. The reef is a rock formation, largely submerged depending on the state of tide. The island represents a significant danger to navigation. It is marked on its eastern extremity with an unlit East Cardenal black and yellow beacon. Around its western extremity are three light beacons that each form the rear light beacon for three sets of leading lights[1] that assist in keeping large ships within the navigable channel as they transit Lyttelton Harbour to and from Port Lyttelton. They are considered critical to the safe navigation of ships within the harbour.

The six light beacons that make up these three sets of leading lights are a combination of fixed red, fixed green, white and a white/red/green sector light. These existing light beacons are unlikely to strictly conform with the IALA Area A requirements for colour, shape and lighting characteristics for watercraft heading in and out of Naval Point. Consequently, confusion over the location and significance of aids to navigation in this area could result in groundings on /collisions with Kamautaurua Reef.

Before plans for the Naval Point facility are finalised, SouthMS recommend CCC liaise with the Environment Canterbury Harbourmaster to establish agreed preferred routes for marine traffic in and out of Naval Point so that aids to navigation can be made to conform as close as is practicable to IALA standards without compromising the safety of navigation for large ships within Lyttelton Harbour. The picture below shows an extract from marine chart NZ 6321. The yellow arrows are representative of typical entry and exit paths that recreational users would naturally take when their destination is not in the immediate area (note the close proximity to Kamautaurua Reef and the leading light beacons).

[1] A set of lights separated horizontally to form a line of transit. When these are observed to be in line a vessel is said to be on the lead.



Annotated extract from marine chart NZ 6321 showing typical Naval Point entry and exit routes likely to be used by recreational watercraft users

Updating nautical publications

The picture also shows the current local chart still displaying the symbols for the old wave attenuators, which no longer exist. It is important that changes affecting the accuracy of maritime charts be notified promptly to Land Information New Zealand (LINZ) so that any changes can be published in the weekly Notice to Mariners. SouthMS recommends the scope for the Naval Point project include timely notification to LINZ of proposed and completed works.

Environment

The construction of breakwaters will alter the flow of water in the area off Naval Point to some degree. Water flow is generally tidal-driven or naturally occurring currents driven by weather patterns. Water tends to take the path of least resistance and therefore flows are generally greater nearer deep water and naturally formed channels.

The tidal heights at Lyttelton between high and low water are generally in the range of 2 metres depending on the phase of the moon. The tidal waterflow off Naval Point will generally be westward on a rising tide and Eastward on a falling tide, with the possibility of eddies and counter tidal flows closer inshore. Weather driven currents are negligible within upper Lyttelton Harbour.

The water depths between the end of the existing breakwater and the point immediately west of Magazine Bay range from zero to 3.5 meters. Tidal flows are likely to occur within

the waters directly off the proposed Naval Point facility and these will likely be affected to some degree by the construction of the proposed inner breakwater and outer breakwater extension. SouthMS recommends that an environment impact assessment be conducted to establish the likely environmental impact, and that local Iwi be consulted on the outcome.

Marine Activities

Trailer boat launching

Trailer boat launching ramps and their surrounds are often referred to as 'controlled mayhem' at peak times and on occasions, sources of amusement. This reflects the reality that recreational boating is largely an unregulated activity. There is no requirement to demonstrate competence in manoeuvring either a boat on the water or behind a towing vehicle.

The draft plan includes a well thought out arrangement for queuing, launching, parking and retrieving trailer boats. A reasonable amount of 'layby' jetty has been provided immediately adjacent to the launching ramps for the purpose of on-water queuing while awaiting delivery or parking of a trailer. SouthMS is of the opinion there would be merit in expanding the amount of layby jetty. Observation at similar facilities around New Zealand show that congestion is inevitable at peak launching and retrieval times on good-boating-weather days. The more jetty space available for queuing, the fewer boats will need to remain manoeuvring on the water in such a confined space, which can be challenging and result in incidents, particularly when winds are strong.

Some thought will need to go unto how far the concrete pads that form the launching ramps extend into the sea, to ensure there is sufficient water to launch and retrieve boats at the lowest tide. They should extend far enough out so that trailer wheels do not drop off the concrete pad into mud, and also to prevent scouring of the seabed caused by the boat retrieval technique of driving the boat onto the trailer and holding it there until secured.

Hand launching boats

The Plan includes a rigging area and hand launching ramp westward of the public trailer boat launching ramp. Assuming that a good percentage of hand-launched boats will be unpowered yachts, there is potential that competition for sea room and the presence of the breakwater could cause some conflict in certain wind directions.

Ideally, it would be safer if some separation could be achieved between power trailer boats and hand-launched boats when on the water, by encouraging the inward/outward routes for power and hand-launched boats to opposite ends of the inner breakwater.

There are a number of ways this can be achieved, including:

- Publishing in a combined clubs handbook, instructions and maps showing preferred traffic flows for different users

- Reproducing instructions and maps on strategically placed signage at launching and retrieval points
- The use of land-based and on-water marshals during special events that are likely to create extraordinary congestion

Coastguard

SouthMS is aware of several serious incidents involving marine rescue boats where 'task-focus'[2] has been a contributing factor. This is a recognised inherent risk with this type of operation.

The marine rescue centre and launching facility is located close to what will be congested waters close to the shore, where a 5-knot and no-wake zone applies in accordance with the Canterbury Regional Council Navigation Safety Bylaws. Coastguard can manage this risk through robust procedures and monitoring of rescue response activity.

Swimmers

The current Canterbury Regional Council Navigation Safety Bylaws 2016 and Controls prohibits fishing, jumping, diving or swimming:

- from or within 50 metres from a landing place
- an area that would interfere with the berthing or departure of any vessel
- within any marked navigation channel or any other navigational channel leading to a landing place
- Where these activities are prohibited by the Harbourmaster

The proposed plan would arguably prohibit these activities in the entire area directly inside of the proposed inner breakwater, and possibly over a wider area given the presence of the proposed hand launching and coastguard launching ramps.

SouthMS notes the location of the multisport club within the complex and notes that currently swimming events are held in the vicinity of Naval Point. Given the potential increase of boat launching and retrieval activity within the facility, in the interest of safety, and to avoid any doubt, SouthMS would recommend liaising with the Harbourmaster to consider establishing an appropriate no-swimming zone in the waters of the facility.

Recognising the importance of and desire for holding swimming events, it would be equally beneficial to designate an agreed area from where these events can be run.

Swing moorings

SouthMS notes the presence of swing moorings in the bay west of Magazine Bay. These moorings should not impact marine safety within or around the approaches to the proposed Naval Point facility. However, for future reference SouthMS recommends no swing moorings be approved within the natural approaches to the facility. The expected boating

[2] Where a fully competent crew become so dedicated and fixated on achieving a successful rescue, this results in reduced awareness of their surrounds and other safety factors.

activity in and around the Naval Point facility and the presence of the nearby natural hazards to navigation should preclude the inclusion of additional navigation hazards such as swing moorings.

Land-based facilities

Parking

The proposed parking facilities are extensive and make good use of the available space. However, the facility is home for a diverse range of marine activities as well as football and rugby. These are all activities that, in certain seasons, are likely to coincide on a good boating weather Saturday morning, when there will inevitably be competition for parking.

Public amenities

From the information provided, there appears to be only one block of public amenities near the south-eastern shoreline. Undoubtedly amenities will be included in the several proposed clubs and pavilions. However, having only one public amenity block on the south eastern shoreline is likely to necessitate undue foot traffic through and around several high-activity areas. SouthMS recommends investigating additional strategically-placed public amenity blocks to reduce unnecessary foot traffic through these areas.

Summary

The plan as drafted will provide an exceptional marine and recreational facility for Lyttelton and the greater Christchurch city area. The plan will provide a more user-friendly, safer and more efficient space for recreational marine activity than the existing facility provides. The plan maximises the use of available space for a such diversity of shore-based and marine activities that there is a potential for it to become overwhelmed at certain peak user times. SouthMS has identified a number of matters that will need to be addressed and a number of areas for potential improvement to help alleviate some concerns raised. These are encapsulated in the recommendations below.

Recommendations

South MS makes the following recommendations:

1) Under the plan the small marina facility off Magazine Bay is likely to sustain damage during severe/extreme weather events from the southwest quarter. Consideration should be given to the costs of installing additional protection of this facility versus the benefit of retaining the facility as a marina.
2) CCC liaise with the Environment Canterbury Harbour master to establish agreed preferred routes for marine traffic in and out of Naval Point so that aids to navigation can be made to conform as close as is practicable to IALA standards without compromising the safety of navigation for large ships within Lyttelton Harbour.

3) The scope for the Naval Point project include timely notification to LINZ of proposed and completed works to ensure mariners receive appropriate warnings of works and that nautical charts are kept up to date.
4) CCC consider extending the landing jetty's immediately around the public launching ramps to improve on-water queuing of watercraft and reduce the number of watercraft manoeuvring off the facility at peak times.
5) CCC liaise with the Harbourmaster to establish separation of the inward/outward routes for power and sail boats to opposite ends of the inner breakwater to alleviate any conflict.
6) CCC liaise with the Harbourmaster to consider establishing an appropriate no-swimming zone in the waters of the facility.
7) CCC liaise with the appropriate authority to prevent future swing moorings being established within the natural approaches to the facility.
8) CCC investigate additional strategically-placed public amenity blocks to reduce unnecessary foot traffic through high-activity areas.