

Required knowledge for Cook Strait endorsement

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Cook Strait is known locally and internationally as one of the most rugged stretches of water in the world, with strong winds and strong tidal effects that can create, at times, treacherous conditions. Prudent planning must always be completed when thinking about transiting Cook Strait and caution should always be at the forefront of any mariner.

The following information has been obtained from the Admiralty Sailing Directions *New Zealand Pilot NP51*; Charts: NZ 463 – Approaches to Wellington, NZ 6153 – Queen Charlotte Sound, NZ 6154 – Tory Channel Entrance and Picton Harbour; the *Royal Port Nicholson Yacht Club Handbook*, Central Cruising guide.

Currents

The current in Cook Strait is strongly influenced by the prevailing winds. The rate may vary from a northerly- going current of 0.5 knots in moderate southerly winds, to an east–northeasterly-going current at 0.4 knots with fresh northerly winds. In light variable winds the current sets east at 0.4 knots.

Tidal streams

The tidal streams in and around Cook Strait are unreliable and mariners are warned to exercise every precaution when navigating the vicinity. The streams often run in one direction for eight to 10 hours, but cases have been reported of them going 18 hours or more (rare event). When the streams have been running in one direction for an extended period, it has been found that the opposite stream is much weaker, and on some occasions, hardly noticeable.

The maximum rates shown on the chart which are normally attained during spring tide conditions are also liable to be encountered at any other time. In the vicinity of Karori Rock and Cape Terawhiti, rates of up to 7 knots are frequently experienced, but as a rule do not last for more than about an hour. Small vessels are warned to keep well clear of tide rips as they may cause loss of steerage and in extreme cases, capsize.

Weather conditions may considerably affect tidal streams in the strait. The influence of strong gales is felt when the disturbance is 24–48 hours away and the effect of the current may prolong or retard the duration of the normal tidal stream by one to three hours.

High water occurs on the west side of Cook Strait about five hours later than on the east side; so that when it is

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high water on one side it is nearly low water on the other. The tidal streams caused by these differences in level are strong and variable. When meteorological conditions raise the mean sea level (MSL) on one side of the strait, the flow from that side is considerably increased in strength and duration, while flow from the other side is correspondingly reduced, or under extreme conditions, even reversed.

The tidal streams are stronger during spring tides, which occur at two-weekly intervals, when high water at Wellington is approximately 0600 and 1800 hours.

Winds

Cook Strait is particularly affected by the frequency and strength of northerly sector and southerly sector winds, due to the close proximity of high land on both sides which produces a funneling effect. These winds can produce very strong gusty conditions and they give rise to the worst storms experienced in New Zealand waters, averaging about 25 each year.

Strong northerly winds can accelerate off the land between Cape Terawhiti and Sinclair Head (locally known as the “wind factory”) at more than twice the average wind speed.

Sea state

Broken water is experienced in Cook Strait, which may be partly due to the influence of a cold bottom current being forced to the surface. When the flow is strong, heavy overfalls occur in the vicinity of the deep submarine canyons in the strait.

During gales, very rough seas are a feature of Cook Strait. The heaviest seas are caused by southerly gales, which can produce very high and dangerous swells, particularly across the strait south of Wellington Harbour and north and south of The Brothers Islands. Broken water is also caused when the wind flow is against the tide, especially between Sinclair Head and Cape Terawhiti, and off the eastern entrance to Tory Channel.

Karori rip

The combination of broken water and strong wind gusts off the land between Sinclair Head and Cape Terawhiti (the ‘Karori rip’) makes it advisable to transit this section of the passage at slack water. The Karori rip can be particularly dangerous to small craft in strong southerly winds, and a tidal stream setting south- east and in strong north-west winds and a flood tide setting to the north-west.

A caution on chart NZ 463 – Approaches to Wellington states:

The Karori rip extends between Sinclair Head and Cape Terawhiti. Extreme overfalls and tide rips may be experienced up to 2.75 miles offshore. An area of turbulent eddies exists periodically to the north of Cape Terawhiti. Depending on meteorological conditions Karori rip sets northwest from the time of high water at Wellington to 5 hours after, and sets southeast from 7 hours to 1 hour before high water Wellington. Maximum rates may exceed that shown (5.25 knots) at spring tides in certain meteorological conditions.

The following sailing directions should enable a passage to be planned to avoid the worst of sea conditions between Cape Terawhiti and Sinclair Head. The times given assume an average speed of 6 –7 knots.

Westbound

Leave Wellington to arrive at Sinclair Head one hour before high water at Wellington. The tide will then be favourable for the passage across Cook Strait and through Tory Channel’s eastern entrance.

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Alternatively, leave Wellington to arrive at Sinclair Head one hour before low water at Wellington. An adverse tidal stream will be experienced across Cook Strait, but this may be preferable in northerly winds. Tory Channel will be reached at slack water.

Eastbound

Leave Tory Channel two hours after the tidal stream begins setting east. There will be a favorable tidal stream across Cook Strait and between Cape Terawhiti and Sinclair Head.

Alternatively, in southerly winds, leave Tory Channel as the tidal stream begins setting west. There will be an adverse tidal stream across Cook Strait, but this may be preferable in southerly winds. The Cape Terawhiti/Sinclair Head area will be reached at slack water.

Craypot buoys

A caution on chart NZ 463 – Approaches to Wellington states:

Craypot buoys which may present a hazard to small craft will be encountered in the eastern entrance to Tory Channel and close to the shore in the western approaches to Wellington.

A caution on chart NZ 6153 – Queen Charlotte Sound states:

Craypot buoys which may present a hazard to small craft will be encountered in the eastern entrance to Tory Channel.

Ferry routes

Westbound interisland ferries normally keep a minimum distance of 1NM off Sinclair Head and 1.5NM off Karori Rock. Eastbound ferries normally keep 0.75NM further south and make for a position 2NM south of Barrett Reef buoy.

Under the Collision Prevention Rules, ferries and other large vessels transiting Cook Strait or approaching Wellington or Tory Channel have no special privileges over small craft when outside of harbour limits, but it is prudent for small craft to allow them a wide berth.

Within harbour limits, small craft must keep clear of all vessels over 500 GT. Different gross tonnage and length limits apply within the Tory Channel Controlled Navigation Zone (see below).

Geographical features and clearing marks

Thoms Rock

This is situated between Karori Rock and Sinclair Head and lies 0.35 miles (650 metres) outside a line joining these points. Rock hopping in this area is not advisable and a wide berth should be allowed.

Day: Keep Pencarrow Lighthouse visible through Sinclair Head until Karori Rock is open from Cape Koamaru.

Night: Keep Pencarrow Light visible (red or white) until Tongue Point Light changes from red to white.

Sinclair Head

In daylight hours, to pass about 1NM off Sinclair Head, keep Pencarrow lighthouse (lower) in transit with the upper (old) Pencarrow lighthouse.

At night, keep in the white sector of Pencarrow light, to pass about 0.7nm off Sinclair Head.

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Awash Rock

Lying almost midway between Perano Head and The Brothers Islands, approximately 2 nm offshore Awash Rock has very strong tidal streams and should be avoided in heavy weather. At high water it is just visible and is not generally a danger during the day. For any night transit of Cook Strait heading to or from the northern entrance of Queen Charlotte sound, care should be taken by watch keepers to ensure the rock is identified early and a safe distance is allowed for clearing. At night there is a sectored light (red) from The Brothers Island.

Cook Rock

This rock is approximately 3 nm northeast of Cape Koamaru and is generally below the surface but is still a danger to vessels transiting the area near Cape Koamaru. At night there is a sectored light (red) from The Brothers Island.

Stella Rock

Stella rock is found just inside and to the west of Cape Koamaru. While it is not a rock that covers or uncovers at chart datum in heavier weather conditions, the rocks depth can vary due to swell action and any vessels transiting the area with deeper drafts should take all care to avoid the rock and ensure their passage allows safe clearance from the rock.

The Brothers Islands

Strong tidal streams and rips occur north of Cape Koamaru and out to The Brothers. These can be particularly bad with incoming tides against northwest to northerly winds.

The water between and around the area of Cape Koamaru and The Brothers are often surrounded by over falls, whirlpools and currents. Avoid the temptation to pass between the two islands except in calm weather.

Fisherman's Rock

The only offshore hazard in the middle of Cook Strait is Fisherman's Rock. This rock is almost midway between Cape Koamaru and Mana Island. It has a clearance over it of approximately 10m and is unlikely to be hit by cruising boats. However the area surrounding the rock is hazardous in strong tide conditions and/or strong winds. Large overfalls and seas can develop in this region and in bad conditions boats should keep well away.

Checking on tidal set

In daylight hours eastbound, observe Sinclair Head relative to Turakirae Head.

In daylight hours westbound, observe Tory Channel entrance relative to Mt Stokes.

At night, eastbound, observe Baring Head light relative to Tongue Point light.

At night, westbound, observe Tory Channel entrance leading lights.

VHF radio reporting and monitoring requirements

Wellington

The master of any vessel entering Wellington Harbour must call Wellington Harbour Radio on VHF channel 14 and report their intention to enter the harbour.

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All commercial vessels in Wellington Harbour are required to maintain a listening watch on Wellington Harbour Radio VHF channel 14 and, when outward bound, to continue to monitor the channel until seaward of the position of Barrett Reef buoy. They are required to advise when secured at a berth or anchorage, or when seaward of the position of Barrett Reef buoy if outward bound.

Tory Channel

Notes on chart NZ 6153 – Queen Charlotte Sound state:

Ferries

Mariners are warned that ferries may be encountered between Tory Channel and Picton Harbour. Caution should be exercised at all times and in particular when navigating Tory Channel and its eastern entrance, when all inward bound vessels must give way to all outward bound vessels. All vessels are required to keep a minimum distance off designated headlands in Tory Channel. Refer to NZ Pilot for navigational instructions and required distances off headlands.

MDC Navigation Bylaw 2009 section 1.4 states:

Tory Channel Controlled Navigation Zone

This is the area contained between the following geographic positions:

Western Boundary: A line drawn in a direction of 320° (True) from Scraggy Point Light (K4266) to the opposite shore on Arapawa Island.

Eastern Boundary: The seaward arc of a circle radius 0.6 nautical mile, centered on position 41° 12'.71 south 174° 19'.12 east [the point forming the intersection of a line drawn between the East and West Head lights and the line of the Leading Lights].

Tory Channel Reporting Arc

Means the seaward arc of 3.8 nautical miles radius centered on position 41° 12'.71 south 174° 19'.12 east (an intersection of the line drawn between the east and west head lights and the line of the leading lights).

A note from chart NZ 6153 – Queen Charlotte Sound states:

All inward vessels on arrival at the Tory Channel Reporting Arc and all outward bound vessels when passing a line between Motukina Point Light and Te Uira Karapa East Point Light are to transmit a message to 'all ships' on VHF Channel 18 giving the ETA for entering Tory Channel Controlled Navigation Zone.

Note: The broadcast may also be transmitted on VHF Channels 16 and 63.

MDC Navigation Bylaw 2009, section 4.2.2 states:

All vessels, entering or leaving the eastern entrance to Tory Channel, whether in sight of one another or not, are required to establish radio contact with any other vessel which is likely to be approaching the eastern entrance to Tory Channel at approximately the same time.

Tory Channel navigation

MDC Navigation Bylaw 2009, section 4.2.10 and Cautionary Note states:

The master of every vessel of less than 350 gross tonnage or tug and tow less than 40 metres in length, in observing the requirements of this Part of the bylaw is not permitted to impede the passage of vessels of 350

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gross tonnage or more.

Failure to receive radio communication should not be construed as confirmation that the eastern entrance to Tory Channel is clear. The eastern entrance to Tory Channel should be approached with due caution at all times.

Tory channel tidal streams

Mariners should refer to the NZ nautical almanac for daily tidal streams predictions. Complete spring and neap values for Tory Channel can be found in the Almanac. Of note, the west (flood) stream can reach 5 knots and the east (ebb) stream is of similar strength. Weather conditions in Cook Strait can affect the tidal stream and sea state conditions at the entrance to Tory Channel.

Cray pots are set inside and throughout the entrance of Tory Channel making the passage to enter even narrower.

Cook Strait cable protection zone (CPZ)

Electric power and communication cables link the North and South Islands across Cook Strait, operated by Transpower.

Three submarine power cables cross Cook Strait between Oteranga Bay in the North Island and Fighting Bay in the South Island as part of the HVDC Inter-Island, which provides an electricity link between Benmore in the South island and Haywards in the North Island.

Transpower is the owner and operator of the country's electricity transmission system or National Grid. As part of that system, Transpower has vital cable links in Cook Strait which consist of:

- High Voltage Direct Current (HVDC) cables that transmit power between Benmore in the South Island and Haywards in the Hutt Valley in the North Island.
- Fibre optic cables that carry telecommunications across Cook Strait, used by New Zealand's main telecommunication companies for domestic and commercial traffic and by Transpower for control of the HVDC link.

All fishing activities are prohibited except for minor exceptions close in shore at Oteranga Bay and Fighting Bay. There are heavy penalties for a breach of CPZ and vessels transiting the zone should ensure they do not trail any fishing equipment from their vessels.

Visibility

Fog is rarely found in the Cook Strait but can occur late summer – usually the only time of year fog is experienced. However, low cloud and rain can severely restrict visibility.

Note: Applicants for the Cook Strait endorsement will need to show good decision making and robust passage planning skills along with knowledge of Cook Strait conditions. Competency may be demonstrated through scenarios provided by the assessor. Knowledge of the information alone is not enough to meet the required standard for the Cook Strait endorsement.