Navigating **Cook Strait**

Water, water everywhere, but let's avoid the drink. Give yourself the best opportunity of making a successful crossing by gathering all the weather information you need, planning effectively, and making the crossing wisely.

When you're flying somewhere that's unfamiliar, thorough flight planning will help free up some headspace for aviating, navigating, and communicating.

The purpose of this article is to provide some key tips for would-be Strait crossers. It shouldn't be used as a definitive guide for navigating the Strait safely.

Make sure your flight planning includes all the relevant official aeronautical information from *AIP New Zealand*, especially the aerodrome charts (Vol 4) and the Visual Navigation Charts.

Jacob Halliburton, 500-hour CPL holder, recalls his first Cook Strait crossing.

"It was probably the first time I felt nervous in a plane, the first time I experienced that feeling of 'Wow, I'm in a small aluminium tub far off the ground'.

"It was a nice day, and we were tracking from Wellington to Omaka. We flew from Cape Terawhiti to The Brothers – the shortest over-water distance of about 13 nautical miles – and then tracked the coastline down to Woodbourne control zone. At that stage in my flying career, I'd been taught to take the safe option when crossing – the shortest over water route, rather than the most direct point-to-point route.

"What struck me was the navigational difference – you don't have features directly beneath you, they're ahead of you or behind you.

"I also found that the temptation to fly low if you encounter clouds is a lot stronger, over water, than over land.

"You can get the feeling that if it's perfectly flat water, you can go as low as you need to.

"I remember descending through about 900 feet once, trying to track from Wellington to Cape Campbell. Over land there's an instinctive desire to stay as high as possible, especially over unfamiliar ground, both for forced-landing potential and terrain clearance. Over water, I found myself thinking, if I have an engine failure, I don't have obstacles and I'm ditching into wind, so the height didn't seem as critical.

"When I got lower, I started questioning myself. How will I keep navigating without GPS? How confident am I that I'll still have a horizon with all this murk? Why am I pushing my limits so much further than I would in any other situation?

"I ended up turning around, and got better weather with a slightly different route. If I'd pressed on to Cape Campbell, the east coast would have been pretty unpleasant the whole way – assuming it was legally flyable," says Jacob.

Weather to Fly

Most pilots agree that a light northerly wind makes for ideal crossing conditions. A light southerly can be all right too, but they can be few and far between. Typically, light winds will exist during anticyclonic conditions, and after a southerly change.

Obtaining good pre-flight weather information for Cook Strait is very important, but happily straightforward. Both the MetFlight GA web site, and now IFIS, carry the STRAITS area

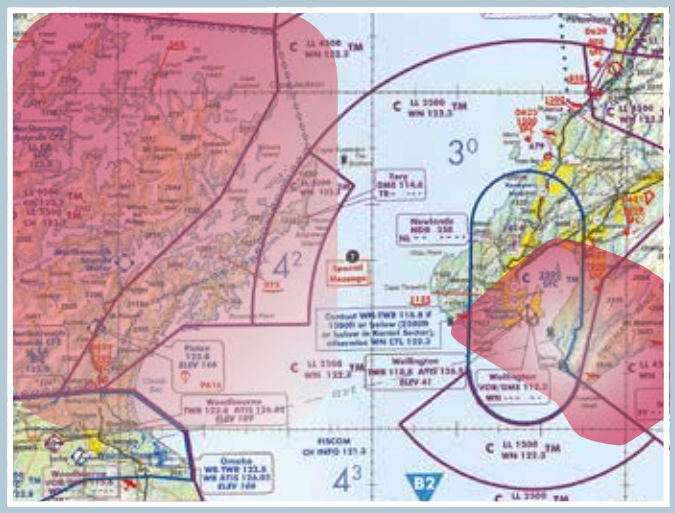

Figure 1
Pre-frontal weather conditions in strengthening northwesterly and westerly winds over 25 knots can provide very turbulent conditions over the area identified in Figure 1.

Area of turbulence, if the aircraft is flown below the ridge heights. Shading indicates severity of turbulence, from severe (dark shade) to light (light shade).

forecast (ARFOR), and the TAFs and METARs for Wellington, Woodbourne, and Paraparaumu. These sites also carry any SIGMET that may cover the area.

Remember too that you can request the latest ATIS report for any aerodrome through Christchurch Information, or ATC, or Flight Service at any of the aerodromes.

Jim Rankin, RNZAF Squadron Leader, has made numerous crossings and has a healthy respect for the potential conditions.

"Weather over the Strait has an almost unrivalled ability to change in a very short period of time and across small lateral distances.

"You can go from having a screaming southerly at Wellington, to light and variable at Woodbourne. The same goes for the sea. There can be huge seas and tidal effects on one side of the Strait, and calm seas on the other.

"Ninety-nine out of 100 times, it will be bumpy in the lee of the Sounds," says Jim.

In windy conditions, it's best to play it safe and stay away from the lee of the hills in the Marlborough Sounds.

Andrew Sims, CFI of Wellington Aero Club, cautions that conditions-wise, the south coast of the North Island catches people out sometimes.

"You can get pretty strong turbulence and northerly wind if you track via Karori Rock coming into Wellington. Typically, the predominant wind in the Strait is a northerly. To get a mental picture, think of the Venturi effect; the wind funnels through the Strait and accelerates.

"You'll likely find any winds with a westerly or easterly component a bit rough. As you know, the upper winds will determine how much turbulence there is, but as a general rule, a westerly or easterly isn't ideal for crossing.

Routing

Your best route will depend on your experience and the conditions on the day. The better the conditions, the more likely you'll be able to take a direct route at altitude with good glide potential.

Jim Rankin tends to fly southbound as low as possible, and northbound as high as he can.

"If I'm flying north from Greymouth. I'd aim to be at 9500 ft with a strong south-westerly pushing me along.

"Normally I'd go south at 2500 ft (the lower limit of controlled airspace where you should be tuned into FISCOM on 121.3 MHz) and pick up the northerly wind.

"Quite often, across the Strait, if there is a northerly at 20 to 30 knots at the surface, the 5000 feet wind will be around 220 degrees true at 20 knots. If Wellington Control are too busy to accept me going through the CTA, I will even look at routing further west, clear of their airspace, to enable a higher climb when heading north. It may be further over water, but actually less time due to sometimes much higher ground speeds," says Jim.

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Marlborough with Big Lagoon centre.

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Radar Monitoring

Cook Strait can seem daunting at times, but air traffic control (ATC) can provide some peace of mind. If you're going a long distance, or even the shortest over-water distance, it's wise to call up Wellington Control on 122.3 MHz and request radar monitoring. If their workload allows, ATC will be happy to help. If radar monitoring is available, the controllers will observe your track and help keep you in the right place at the right height. Remember though, that a clearance from Wellington Control is not a clearance into the control zone, for which you must call the tower on 118.8 MHz.

Also, remember that if you file a flight plan with Airways IFIS, a flight-following service will be provided.

If you are concerned about potential traffic during your crossing, ATC may be able to provide basic traffic information with their surveillance capability, if workload allows.

In Case of an Engine Failure

Crossing the Strait at a higher altitude provides more time to handle an emergency situation. It's recommended that pilots of single-engine aircraft operate above 6000 ft, if possible, to assure better gliding range to the shoreline.

"Always be mindful of the potential for an engine failure, and the consequences," says Jim.

In a successful ditching away from the coast, during the subsequent waiting game, a dinghy could prove the difference between life and death.

"The chances of surviving in the water around Cook Strait are not that great, because the water temperature never gets above 15 degrees Celsius," says Jim.

Also be aware that the vast majority of beaches on the Kaikoura coast and Cook Strait coast are very rough. Even if you can glide to the coastline, there's a good chance that ditching will be safer than trying to land on the rocky shoreline.

Andrew Sims always tells his students, "If you have an engine failure and you have to ditch, your first transmission should be a mayday call on your operating frequency – control or FISCOM.

"The boats in the Strait don't use the same international distress frequency as us, but we certainly take into account where they are, and continually look for them, the same way we continually look for good paddocks on cross country flights."

In an emergency, you need to be planning your imminent rescue, attempting to find the closest point of land, and alerting rescue services, rather than fumbling around for a life jacket.

Jacob Halliburton recalls a particular flight planning oversight.

"I remember one time we got to Cape Campbell and I said to my girlfriend, 'now, we'll put on our life jackets'. So I donned mine, and went to help her; shock horror, it wouldn't fit. This was a three POB flight – she was seven months pregnant.

"I wish I'd thought a little further ahead and we'd been wearing our life jackets the whole way up the east coast," says Jacob.

Any time there's a possibility that you'll need to ditch, you should be wearing your life jacket. That includes following coastlines, and taking off from Wellington. The sooner you try on your life jackets, the sooner you'll realise your pregnant partner can't fit into one!

Airspace Awareness

Be careful not to bust Wellington's controlled airspace. There's a tendency for pilots who are transiting from Turakirae Head to Cape Campbell, to cut the corner of the Wellington control zone. That airspace is particularly important as it's right next to the arrival and departure fan for IFR aircraft (down to 1500 ft), and it is also bordered by the instrument sector of the control zone – where jets are descending unrestricted. ■

Figure 2
In moist northerly overflows, typically associated with the approach of warm or occluded fronts, the northern and eastern sections of the Strait will usually have low-level cloud. In these conditions, there is a high risk of being caught mid-Strait with neither island in sight.

Cloud base height in northerly flow

- Below 500 feet
- 500 feet to 1000 feet
- 1500 feet and above

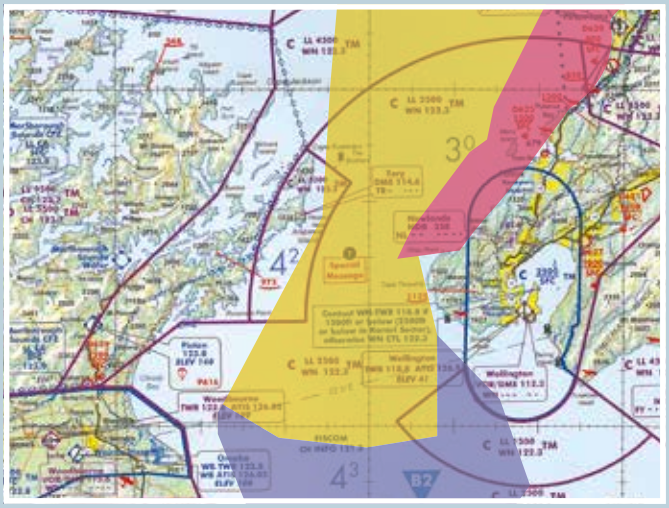

Figure 3
Figure 3 shows the cloud base to be expected in south-easterly wind conditions. Moist easterly, southeasterly, and southerly airflows (except those abating behind a cold front) provide the worst weather conditions in the Cook Strait area.

Cloud base height in southeasterly flow

- Below 500 feet
- 500 feet to 1000 feet
- 1500 feet and above