

# TWEED SAND BYPASSING

## ENVIRONMENTAL MONITORING SUMMARY – APRIL 2023

### 1. SAND PUMPING & DREDGING

- 98,756 m<sup>3</sup> was pumped to Snapper Rocks East.
- 0 m<sup>3</sup> of sand was dredged

#### Sand Delivery April 2023

Pumped: 98,756 m<sup>3</sup>

Dredged: 0 m<sup>3</sup>

Total: 98,756 m<sup>3</sup>

The number of days sand was pumped this month =29

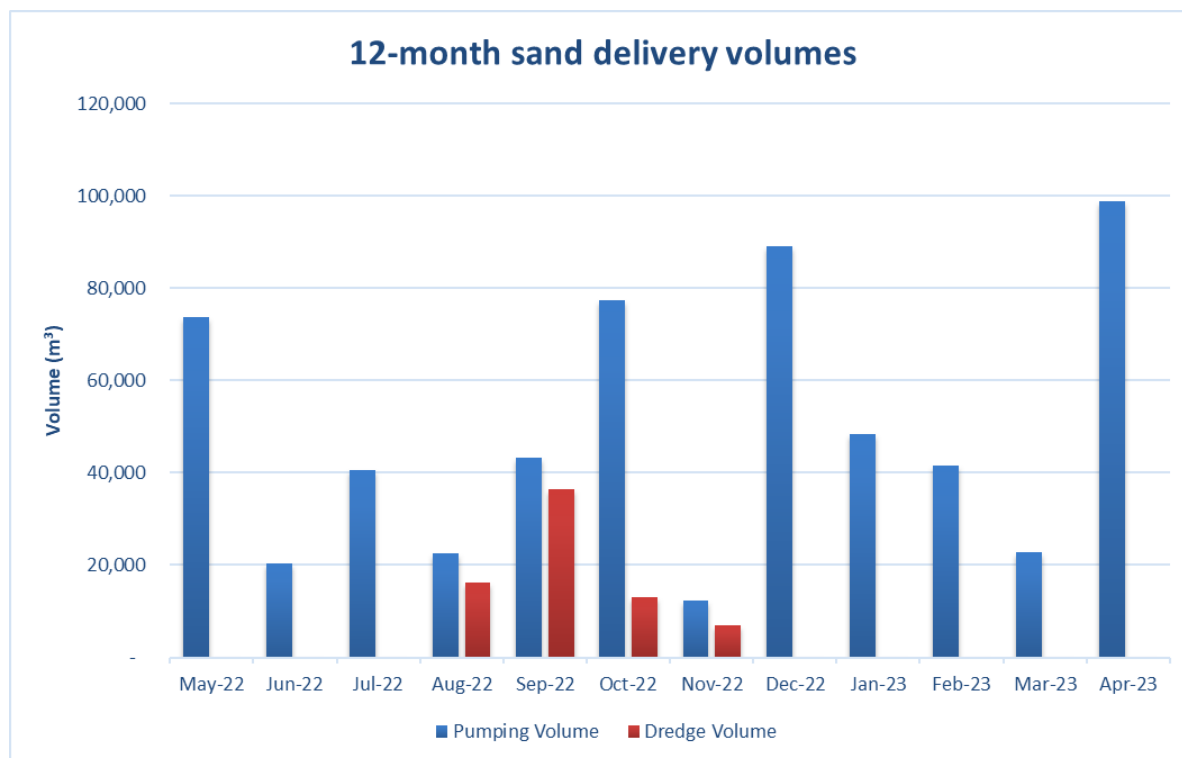
#### Sand Delivery May 2000 to April 2023

Pumped: 11,316,481 m<sup>3</sup>

Dredged\*: 2,787,767 m<sup>3</sup>

Total\*: 14,104,248 m<sup>3</sup>

\* This Includes 22,870 m<sup>3</sup> of sand delivered by dredge to Palm Beach between July 2005 and September 2005



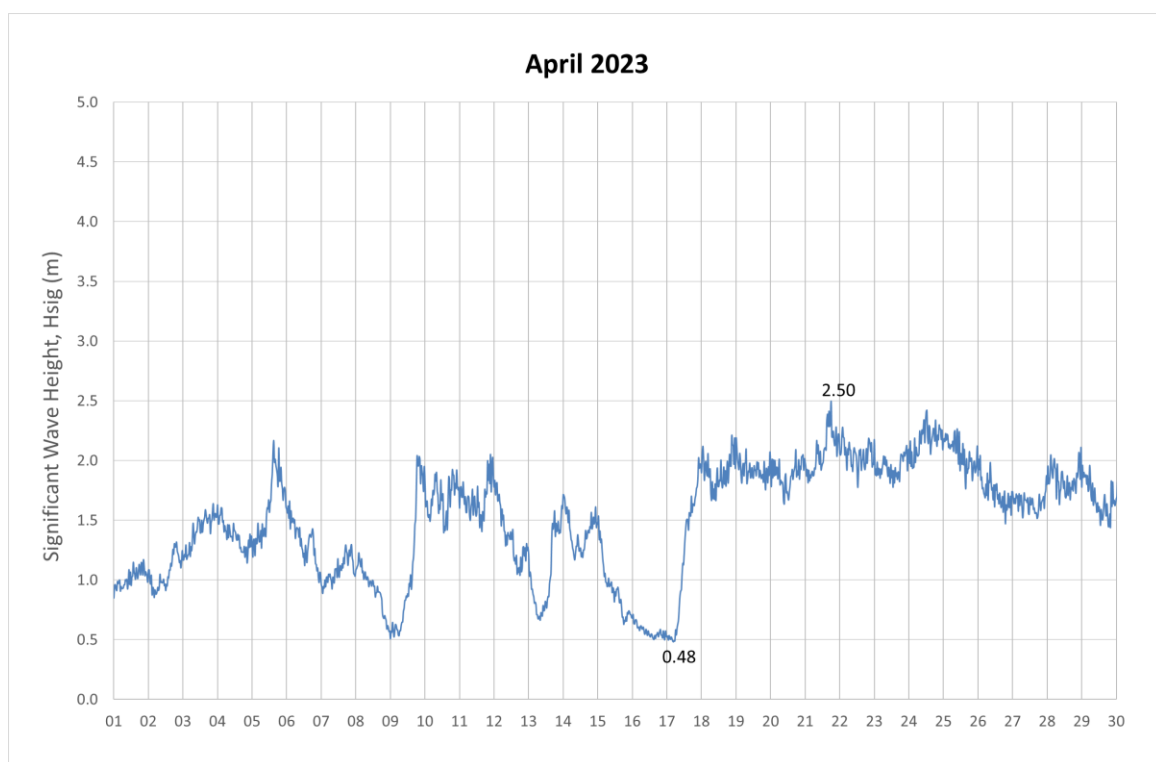
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## 2. WAVE CONDITIONS

In April, moderately sized waves were observed for most of the calendar month. The first pulse occurred on 5 April, followed by a more sustained event between 9 and 12 April. From 18 April until the end of the month there were persistent overlapping sources of wave energy resulting in a sustained energetic wave conditions from the East. The direction of waves observed in April was predominantly from the East and ESE.

- Minimum  $H_{sig}$ : 0.48 m on 17 April 2023
- Maximum  $H_{sig}$ : 2.50 m on 21 April 2023
- Number of days where  $H_{sig} < 1$  m at some point: 10
- Number of days where  $H_{sig} > 2$  m at some point: 15

**Note:**  $H_{sig}$  is defined as the average of the highest one-third of waves recorded over a period of approximately 30 minutes



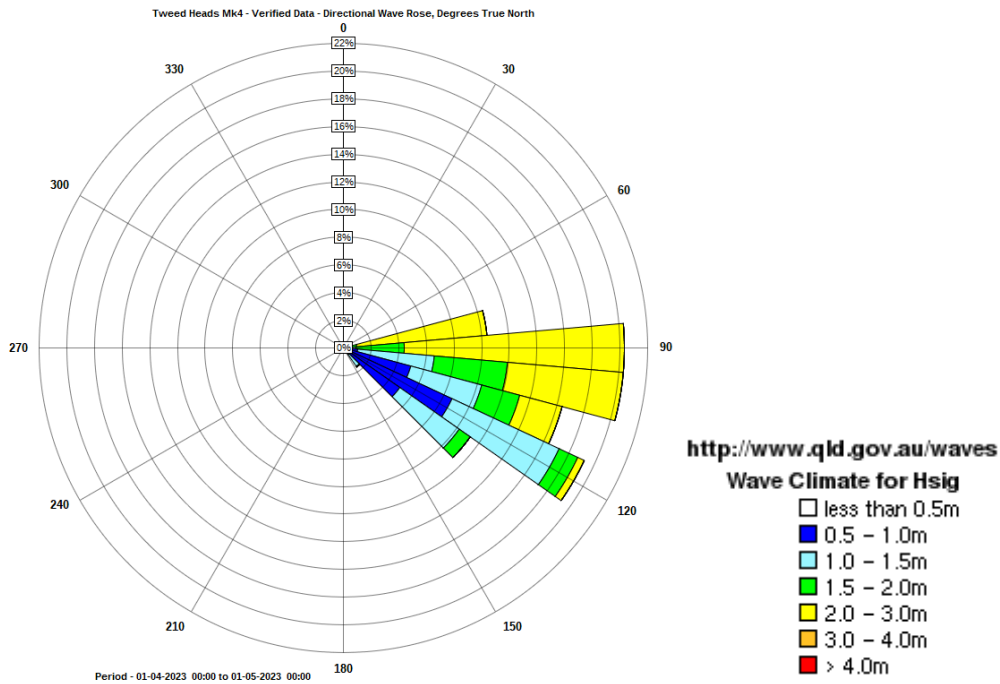
(Source: Tweed Heads Waverider buoy; Queensland Government)

In February 2020 TSB commissioned the deployment of another Waverider buoy in the Tweed region. The Tweed Offshore Waverider buoy was deployed in approximately 60 m water depth to the east and adjacent to Kingscliff and Dreamtime Beaches. The purpose of the Tweed Offshore buoy is to observe and assess changes in wave climate at the Tweed Heads buoy due to the presence of the Danger Reefs and Cook Island.

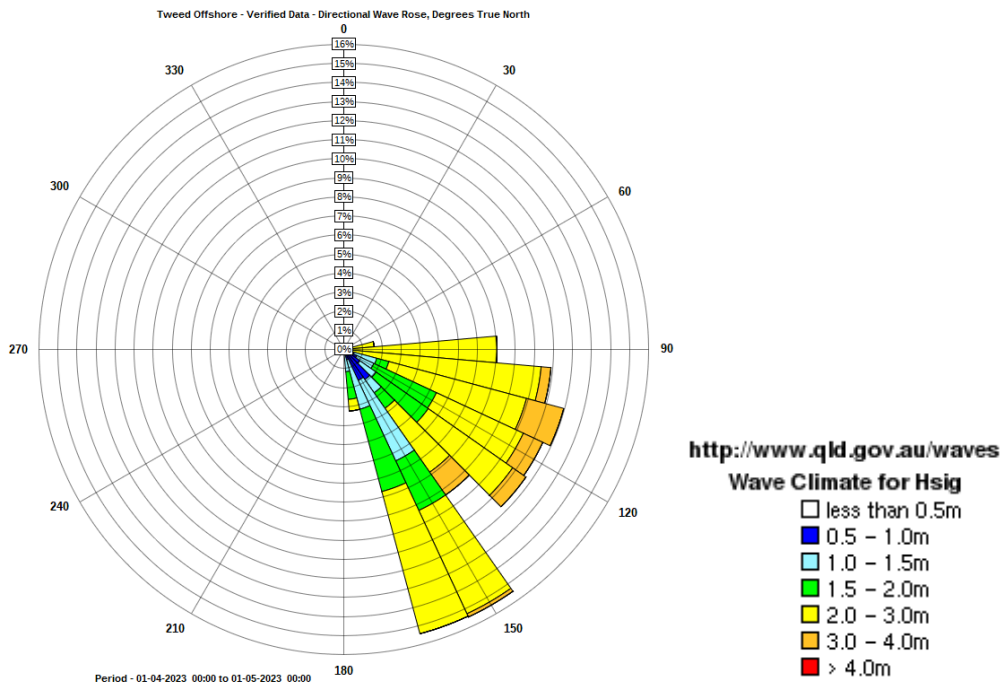
A link to data recorded by the Tweed Heads and Tweed Offshore Waverider buoys is available at: <http://www.qld.gov.au/waves>

# TWEED SAND BYPASSING

## NEARSHORE WAVE DIRECTION



## OFFSHORE WAVE DIRECTION

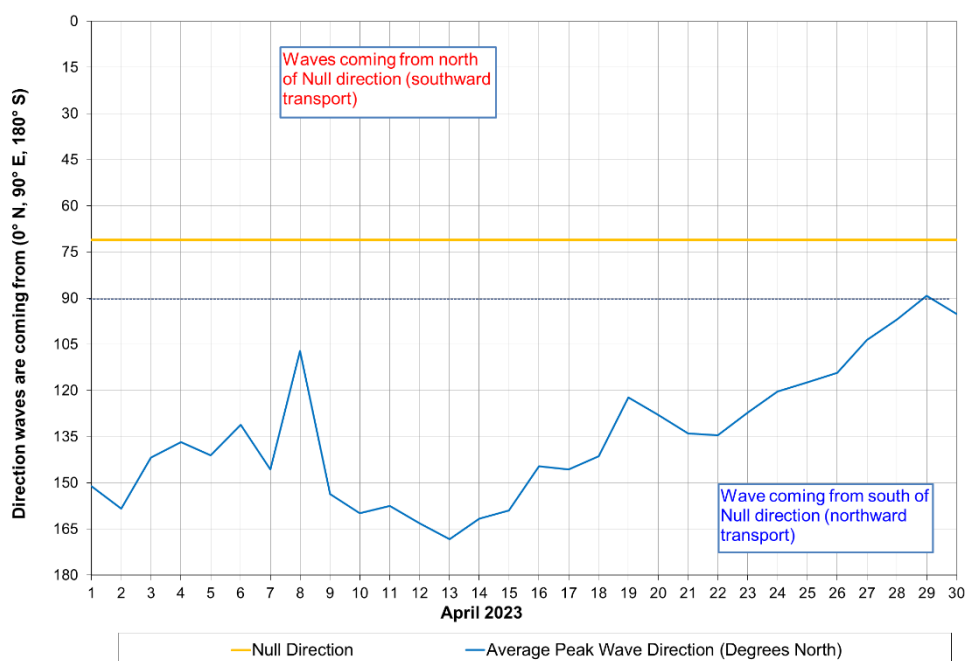
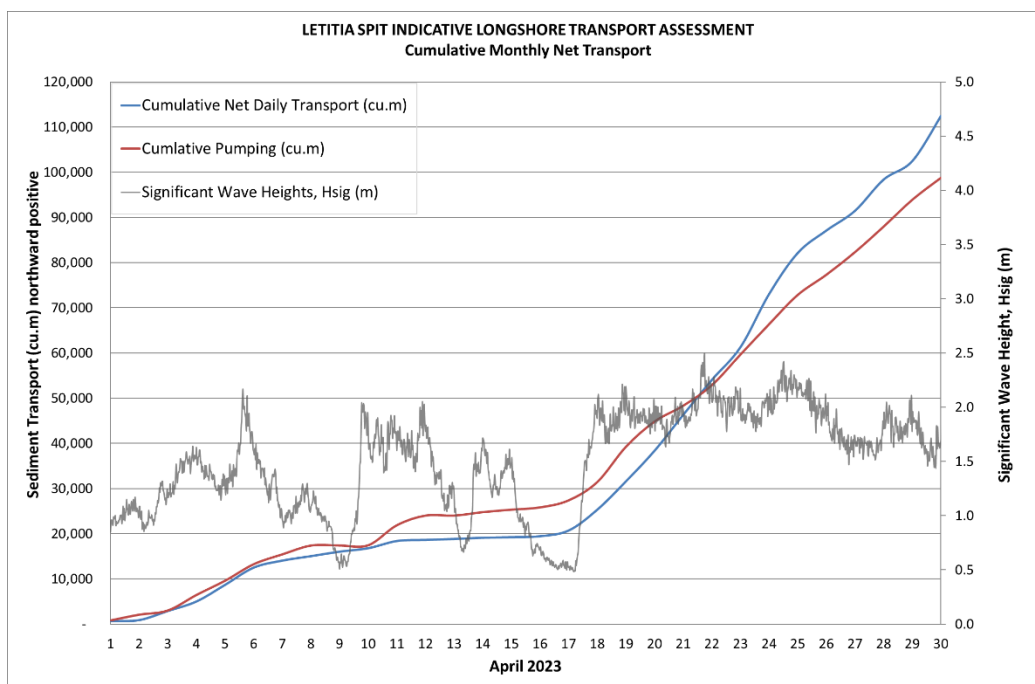


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## 3. INDICATIVE LONGSHORE TRANSPORT

The first graph below is based on simplified sediment transport modelling and is indicative only. The second graph indicates the wave direction in relation to the shoreline null direction (a wave direction coming from south of this line generally results in northward transport of sand).

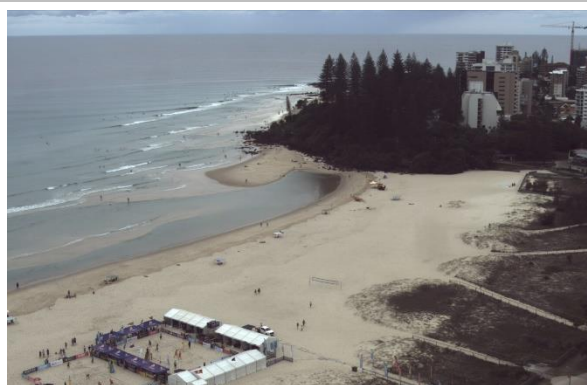
In April 2023 the estimated natural sand transport moving north towards the Tweed River entrance was calculated to be in the order of 112,000 m<sup>3</sup>. This result is 189 per cent of the average estimated sand transport quantity of approx. 59,000 m<sup>3</sup> for April.



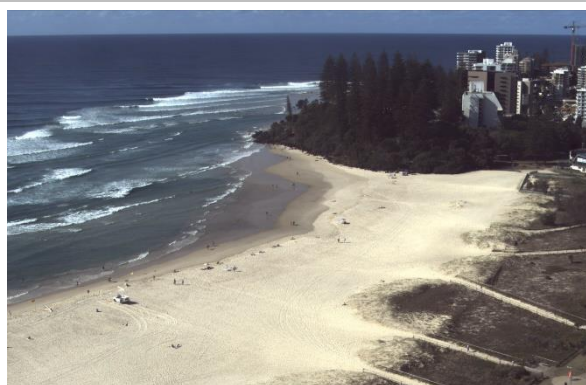
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## 4. BEACH AND SURF AMENITY OBSERVATIONS

Short term changes were observed at Rainbow Bay and Coolangatta Greenmount because of the sustained easterly wave energy in late April. For example (and as indicated by the images below) the gutter-bar formations progressing from Rainbow Bay to Coolangatta extended and repositioned in response to the persistent wave energy. Additionally, the gutter and nearshore bar was re-established at Rainbow Bay after migrating shoreward in March. Erosion of the upper beach at Fingal through late April was also observed, primarily due to sustained easterly wave energy in the last two weeks of the month.



**Coolangatta Greenmount 1<sup>st</sup> April**



**Coolangatta Greenmount 28<sup>th</sup> April**

Surf conditions were excellent during April with sustained, moderate to significant, wave energy for more than half of the calendar month, and quality sand banks at Snapper Rocks, Rainbow Bay, Greenmount, and Kirra. Duranbah also offered good quality beach breaks on days with smaller swell and favourable winds.





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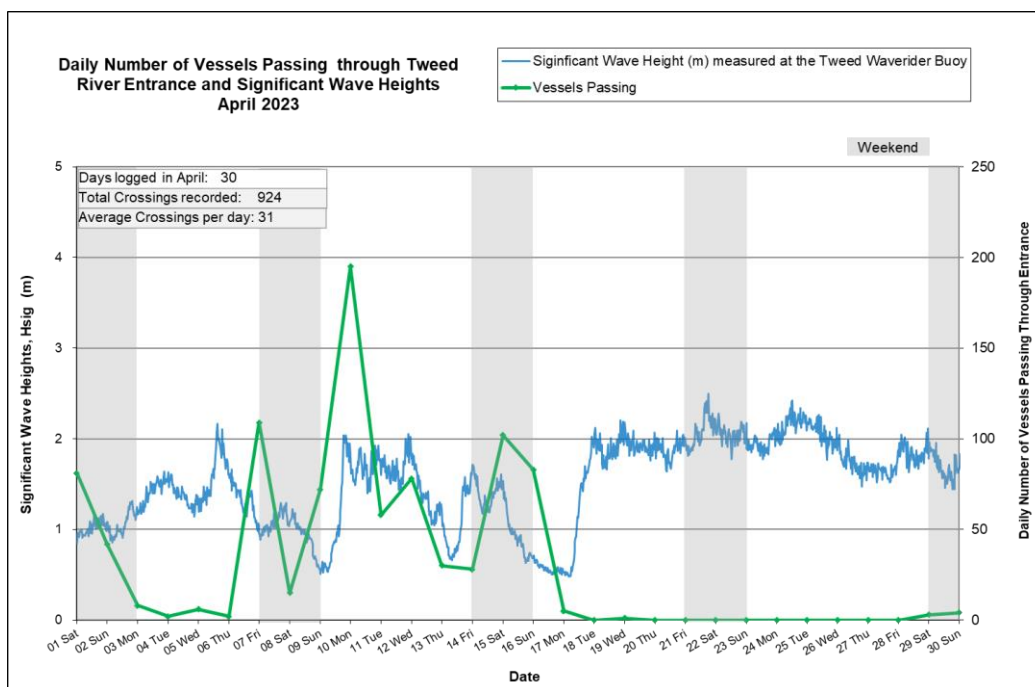
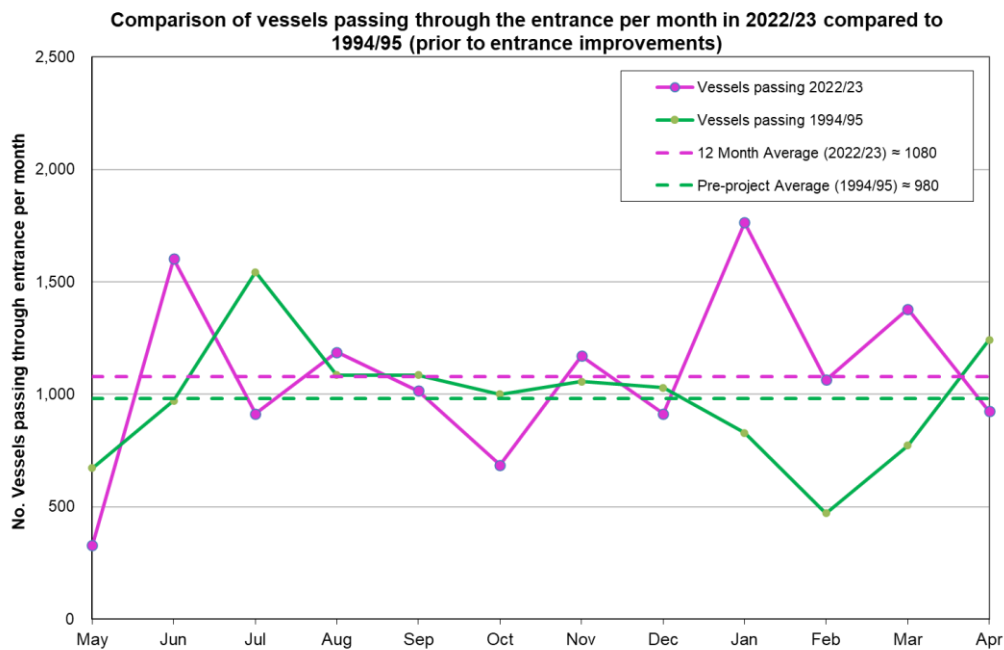
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# TWEED SAND BYPASSING

## 5. TWEED RIVER ENTRANCE USAGE

A total of 924 Tweed River entrance vessel crossings were recorded for the month (54 per cent of the April average (2002–2023)).



# TWEED SAND BYPASSING

Date April 2023	Navigation Rating					Number of Crossings
	Impassable < - - - - > Good					
	Impassable	Difficulty Encountered	Some Difficulty Encountered	Relatively Good Crossing	Good Conditions	
	1	2	3	4	5	
1						81
2						42
3						8
4						2
5						6
6						2
7						109
8						15
9						72
10						195
11						58
12						78
13						30
14						28
15						102
16						83
17						5
18						0
19						1
20						0
21						0
22						0
23						0
24						0
25						0
26						0
27						0
28						0
29						3
30						4
					Total:	924

Marine Rescue NSW - Monitoring Results (Not including trawlers)

 Weekends

**Source:** Marine Rescue NSW, Point Danger