TWEEDSAND BYPASSING

ENVIRONMENTAL MONITORING SUMMARY – JULY 2020

1. SAND PUMPING & DREDGING

- 72,403 m3 was pumped to Snapper Rocks East.
- 0 m3 of sand was dredged.

Sand Delivery July 2020

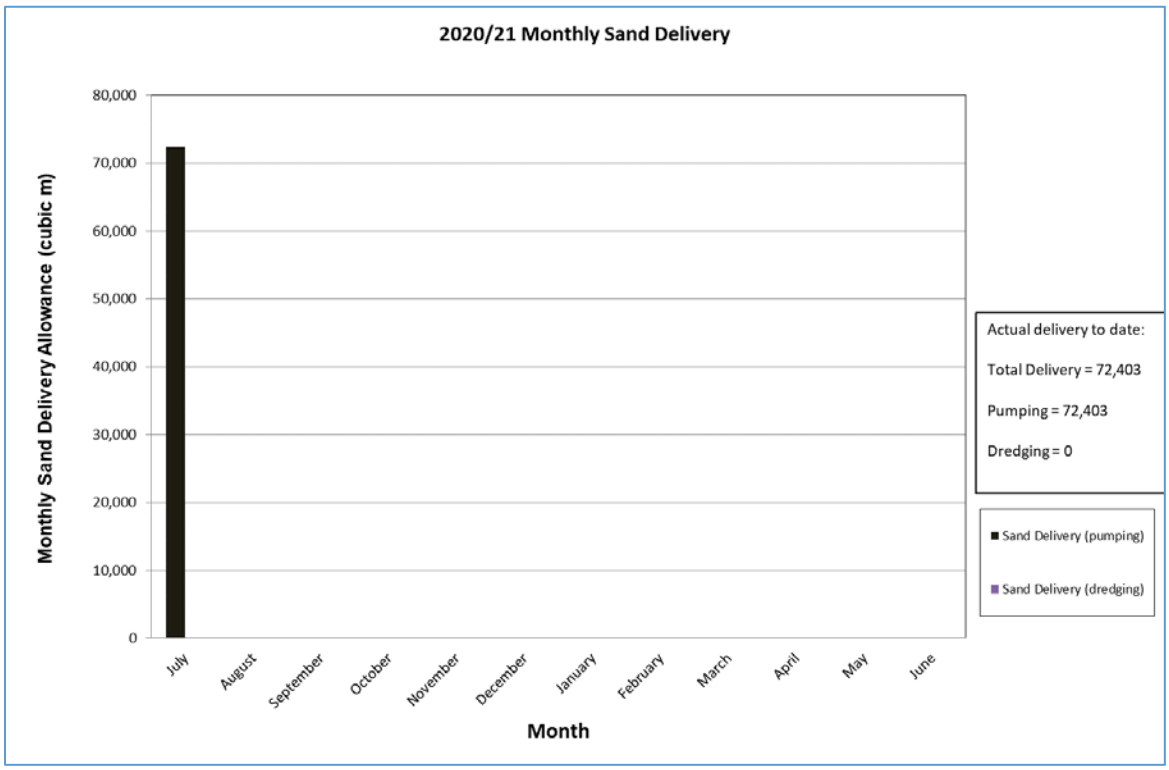
Pumped:	72,403 m^3
Dredged:	0 m^3
Total:	72,403 m^3

The number of days sand was pumped this month = 28

Stage II Sand Delivery May 2000 to date

Pumped:	9,952,664 m^3
Dredged:	2,471,875 m^3 *
Total:	12,424,539 m^3 *

* This Includes 22,870 m^3 of sand delivered by dredge to Palm Beach between November and November 2005

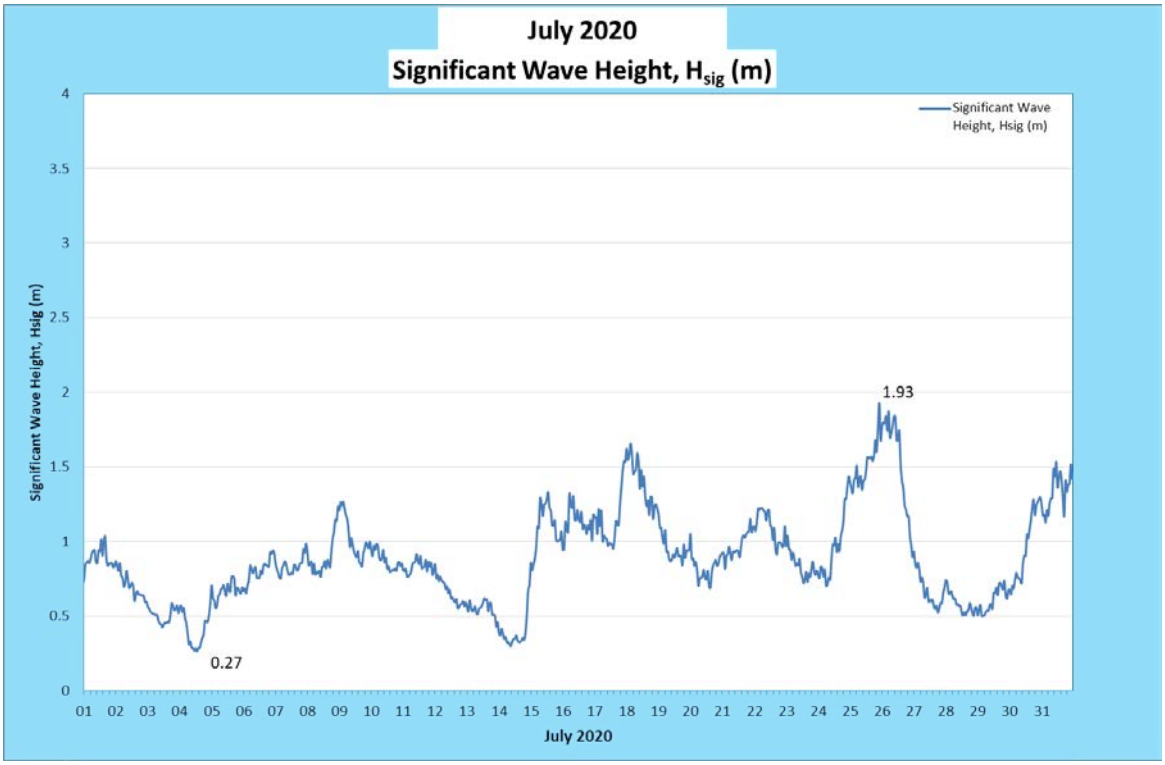


2. WAVE CONDITIONS

Significant wave heights (H_{sig}) ranged mostly from calm to moderate (0.27 m to 1.93 m), with the peak H_{sig} occurring on the 25th of July 2020. Wave directions were predominantly from the SE.

- Minimum H_{sig}: 0.27 m on the 4th of July 2020
- Maximum H_{sig}: 1.93 m on the 25th of July 2020
- Number of days where H_{sig} < 1 m at some point: 28
- Number of days where H_{sig} > 2 m at some point: 0

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

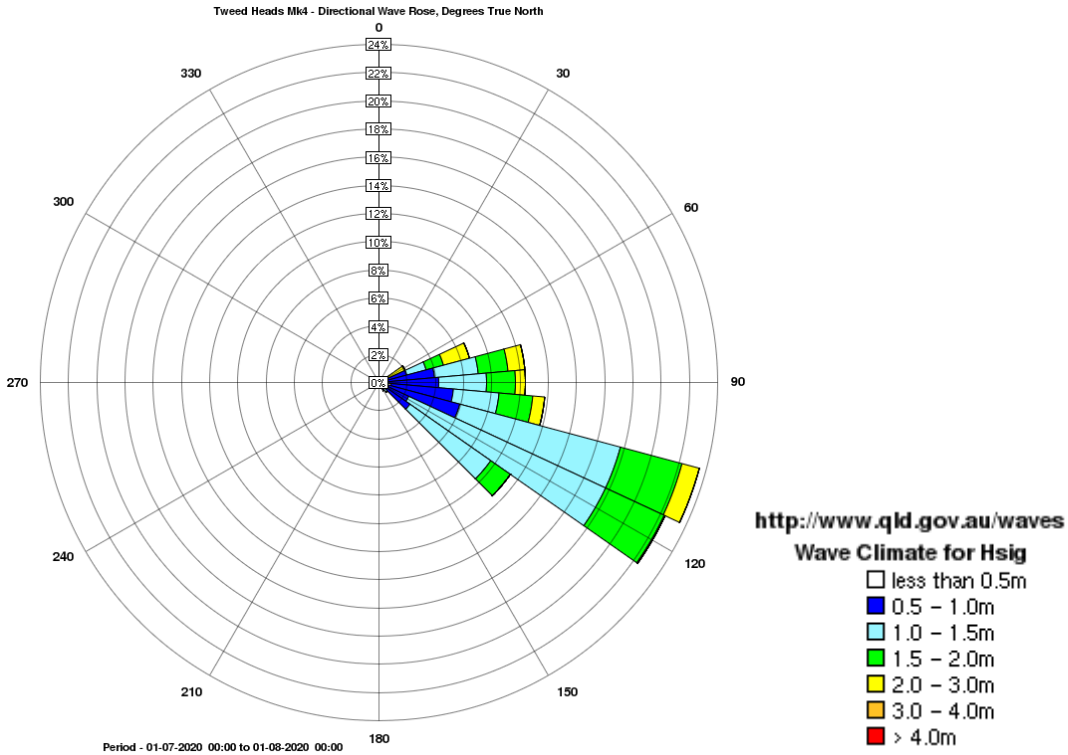


*(**Source:** Tweed Heads Waverider buoy; Queensland Government)*

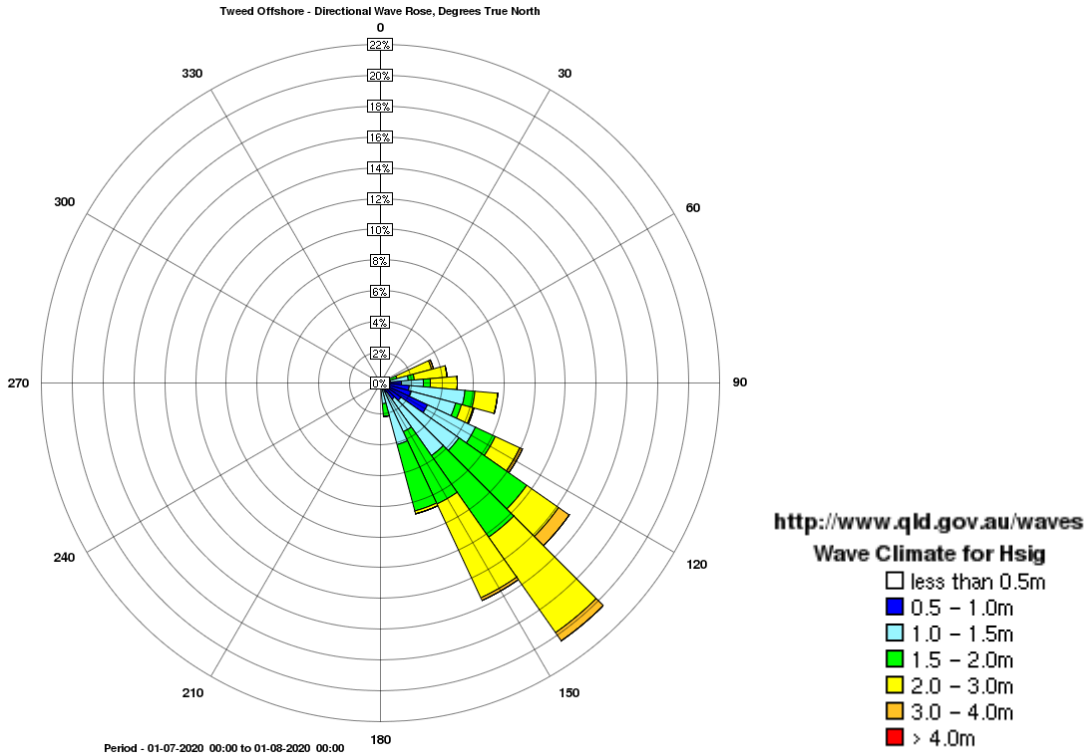
In January 2020 TSB commissioned the deployment of another Waverider buoy in the Tweed region. Tweed Offshore Waverider buoy was deployed in approximately 60 m water depth to the east and adjacent to Kingscliff and Dreamtime Beaches. The purpose of the Tweed Offshore buoy is to observe and assess changes 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

NEARSHORE WAVE DIRECTION



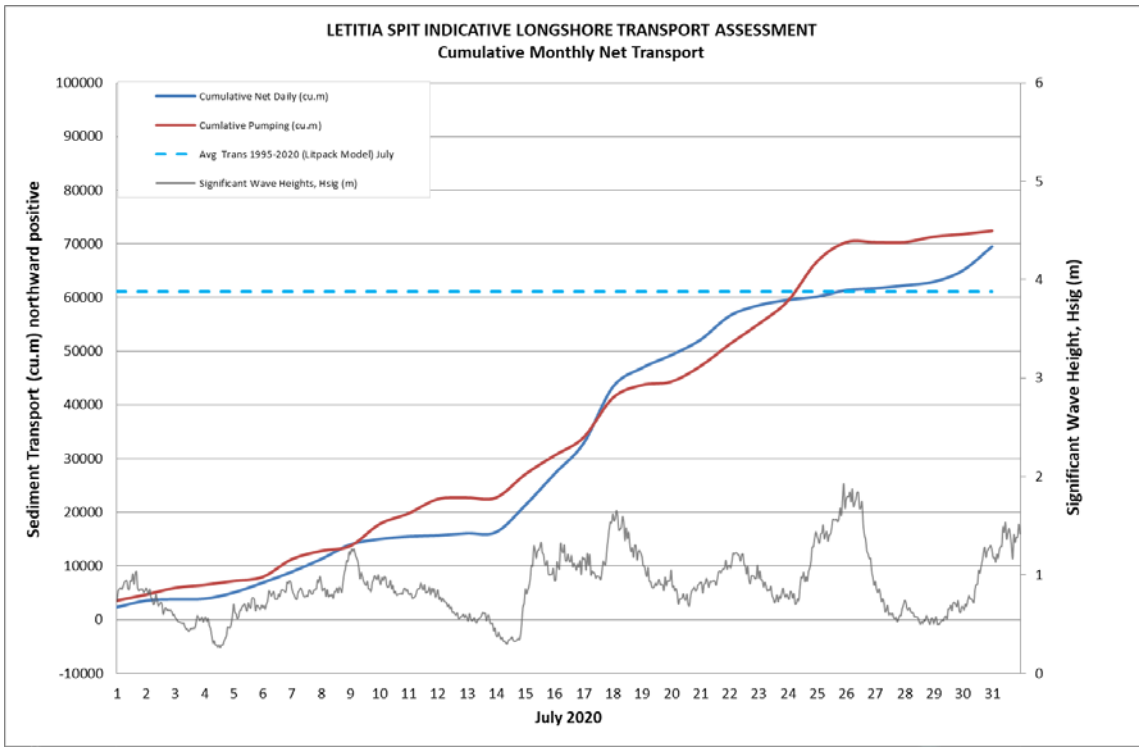
OFFSHORE WAVE DIRECTION

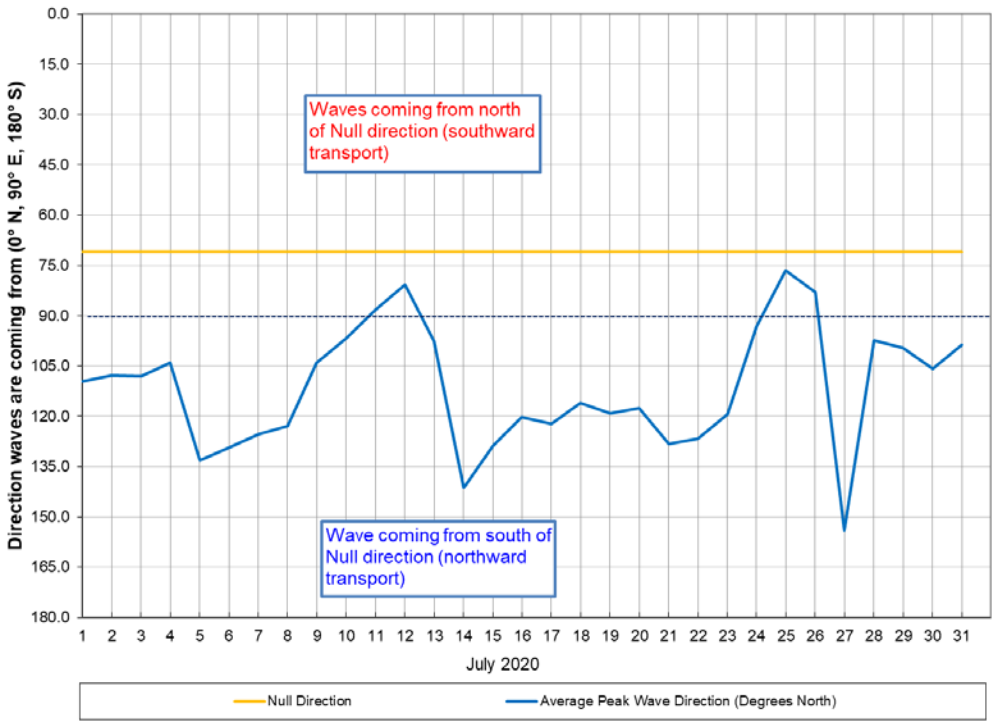


3. INDICATIVE LONGSHORE TRANSPORT

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.

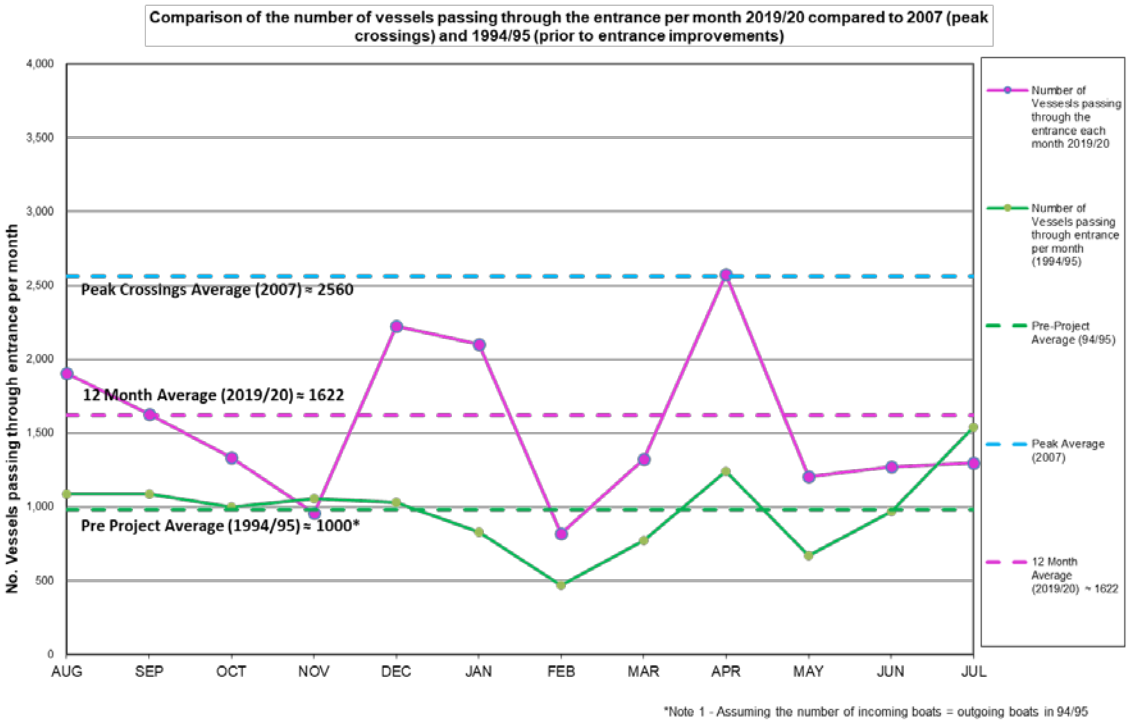
In July 2020 the estimated natural sand transport moving north towards the Tweed River entrance was calculated to be in the order of 70,000 m^3. This result is 114% of the average estimated sand transport quantity of approximately 61,000 m^3 for the month of July.

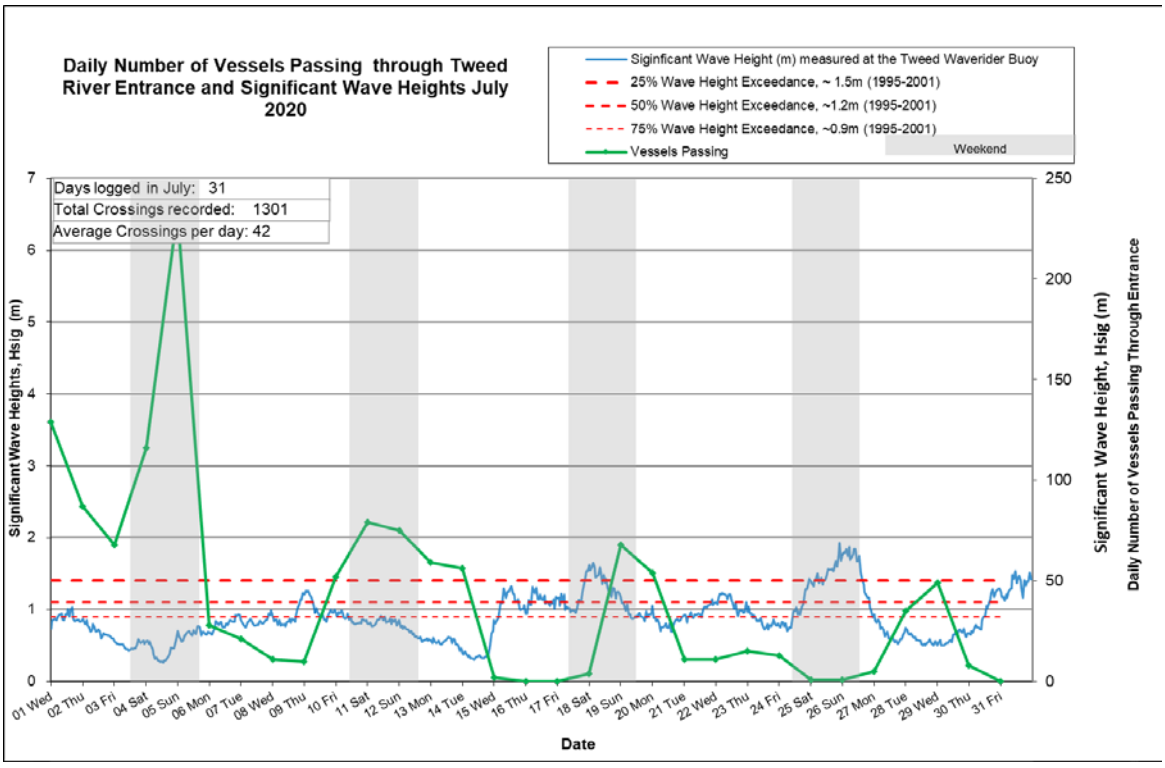




4. TWEED RIVER ENTRANCE USAGE

A total of 1,301 Tweed River entrance vessel crossings were recorded for the month (65% of the July average (2002 – 2020)).





TWEEDSAND BYPASSING

Date July 2020	Navigation Rating Impassable < - - - - - > Good					Number of Crossings
	Impassable	Difficulty Encountered	Some Difficulty Encountered	Relatively Good Crossing	Good Conditions	
	1	2	3	4	5	
1						129
2						87
3						68
4						116
5						233
6						28
7						21
8						11
9						10
10						52
11						79
12						75
13						59
14						56
15						2
16						0
17						0
18						4
19						68
20						54
21						11
22						11
23						15
24						13
25						1
26						1
27						5
28						35
29						49
30						8
31						0
					Total:	1,301

Marine Rescue NSW - Monitoring Results (Not including trawlers)

Weekends

Source: *Marine Rescue NSW, Point Danger*

* Total does not include trawlers