

TWEED SAND BYPASSING

OVERVIEW

In November 2018:

- 19,437 m³ of sand was pumped to Snapper Rocks East.
- 0 m³ of sand was dredged and placed at Snapper Rocks East.
- 0 m³ of sand was pumped to Duranbah Beach.
- 0 m³ of sand was dredged and placed at Duranbah Beach.
- Significant wave heights ranged mostly from calm to moderate (0.39 m to 1.97 m), with a maximum significant wave height of 1.97 m on 29th November. Wave directions ranged from NE, E and SE..
- 1,553 vessel crossings were recorded for the month (This is 96% of the November average (2002 – 2018)).
- The modelled estimated amount of sand moving north towards the Tweed River entrance by natural processes was in the order of 20,000 m³ (this is 64% of the November average of 31,277 m³).

1. SAND PUMPING & DREDGING

Sand Delivery November 2018

Pumped:	19,437 m ³
Dredged:	0 m ³
Total:	19,437 m ³

The number of days sand was pumped this month = 19

Sand Delivery January 2018 to December 2018

Pumped:	329,788 m ³
Dredged:	0 m ³
Total:	329,788 m ³

Stage II Sand Delivery April 2000 to November 2018

Pumped:	9,257,941 m ³
Dredged:	2,320,514 m ³ *
Total:	11,578,455 m ³ *

* This Includes 22,870 m³ of sand delivered by dredge to Palm Beach between June and September 2005

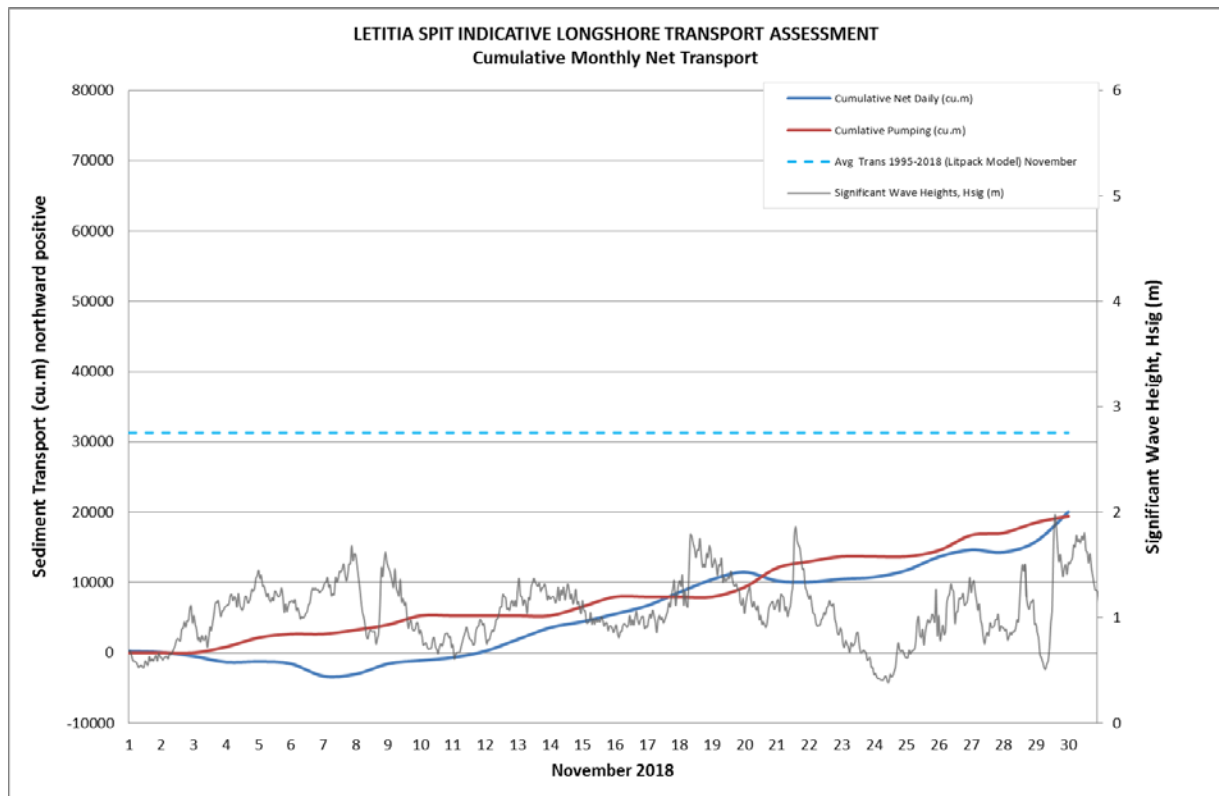
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2. INDICATIVE LONGSHORE TRANSPORT

The graph below is based on simplified sediment transport modelling and is indicative only.

In November 2018 the estimated natural sand transport moving north towards the Tweed River entrance was calculated to be 20,040 m³.

This result is 64% of the average estimated sand transport quantity of approximately 31,277 m³ for the month of November.



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3. TWEED RIVER ENTRANCE USAGE

Marine Rescue NSW - Monitoring Results (Not including trawlers)

 Weekends and public holidays

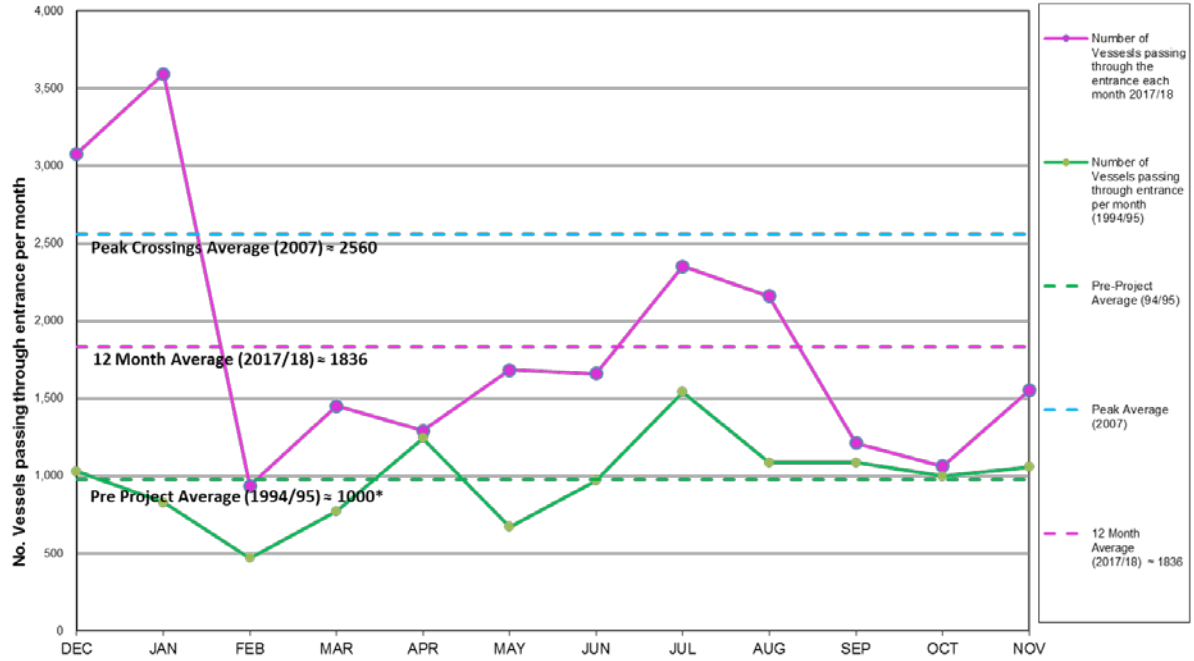
Date November 2018	Navigation Rating					Number of Crossings
	Impassable < - - - - > Good					
	Impassable	Difficulty Encountered	Some Difficulty Encountered	Relatively Good Crossing	Good Conditions	
	1	2	3	4	5	
1						45
2						34
3						14
4						33
5						58
6						3
7						0
8						16
9						10
10						164
11						123
12						10
13						7
14						53
15						84
16						87
17						231
18						6
19						4
20						84
21						0
22						2
23						78
24						110
25						144
26						33
27						70
28						3
29						19
30						28
					Total:	1553

Source: Marine Rescue NSW, Point Danger

* Total does not include trawlers

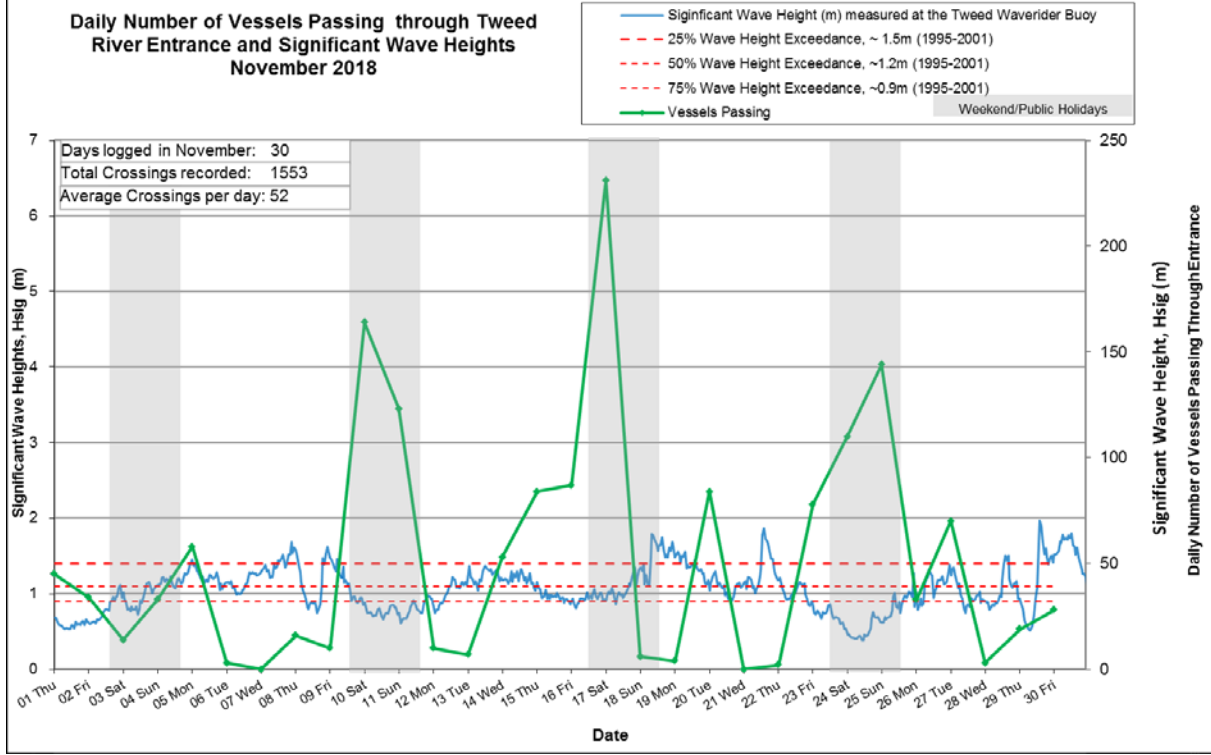
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Comparison of the number of vessels passing through the entrance per month 2017/18 compared to 2007 (peak crossings) and 1994/95 (prior to entrance improvements)



*Note 1 - Assuming the number of incoming boats = outgoing boats in 94/95

Daily Number of Vessels Passing through Tweed River Entrance and Significant Wave Heights November 2018



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4. WAVE CONDITIONS

Wave conditions over the month: Significant wave heights ranged mostly from calm to moderate (0.39 m to 1.97 m), with a peak significant wave height of 1.97 m on 29th November. Wave directions were predominantly from the East.

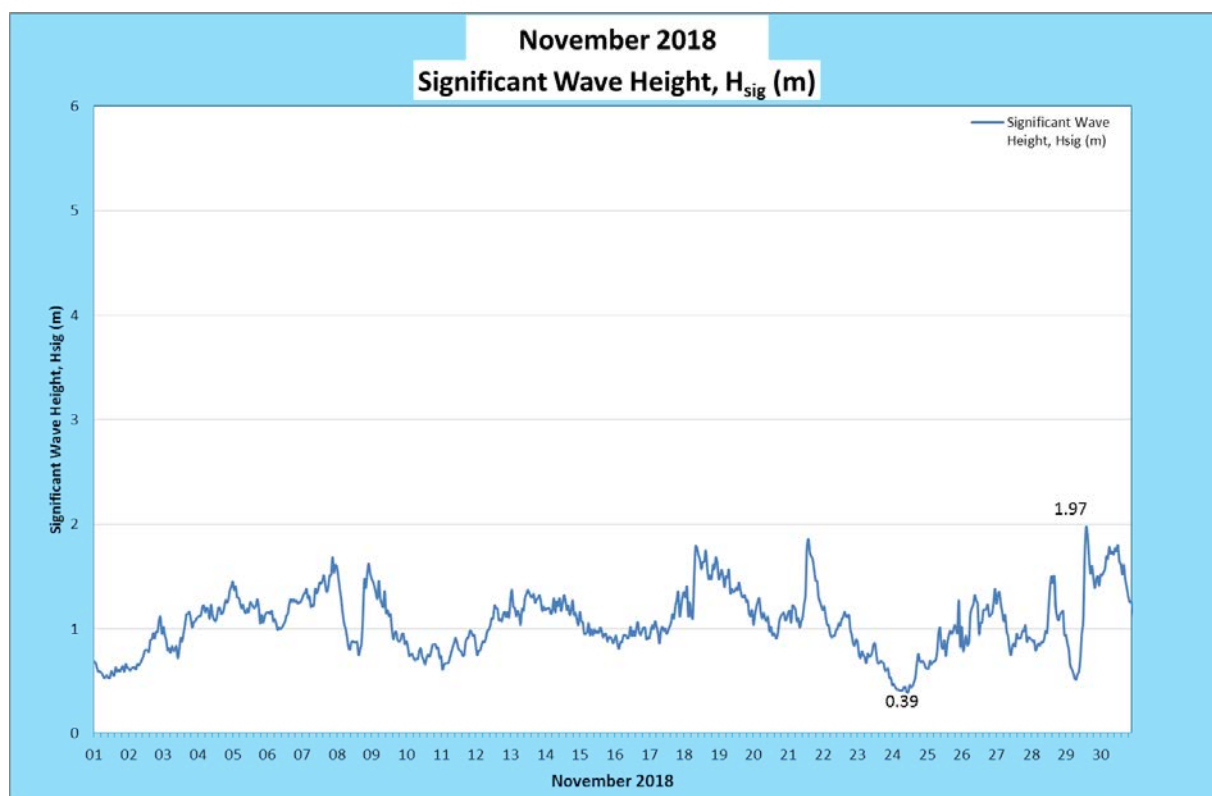
Monthly minimum significant wave height: 0.39 m on 24th November

Monthly maximum significant wave height: 1.97 m on 29th November

Number of days on which waves were below 1.0 m at some point in the day: 21 days

Number of days on which waves were above 2.0 m at some point in the day: 0 days

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

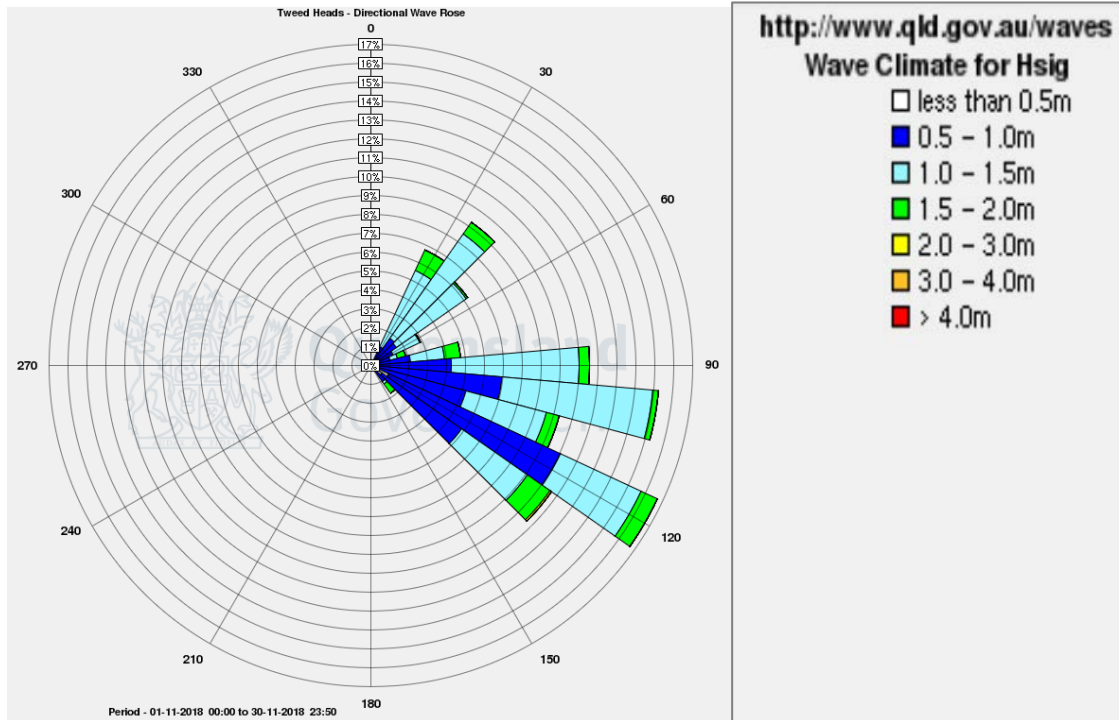


(Source: Tweed Heads Waverider Buoy; Queensland Government)

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

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WAVE DIRECTION



(Source: Tweed Heads Waverider Buoy; Queensland Government)