AC Meeting – 18 August 2021

TWEED SAND BYPASSING

- Project Monitoring / Operational Overview
  - Sand bypassing system operations
  - 2021 Dredging Campaign
  - Environmental Monitoring / beach observations
  - Entrance conditions, usage and survey
  - TSB projects and enhancements
  - Communications

Sand Bypassing System Operations + Delivery Program

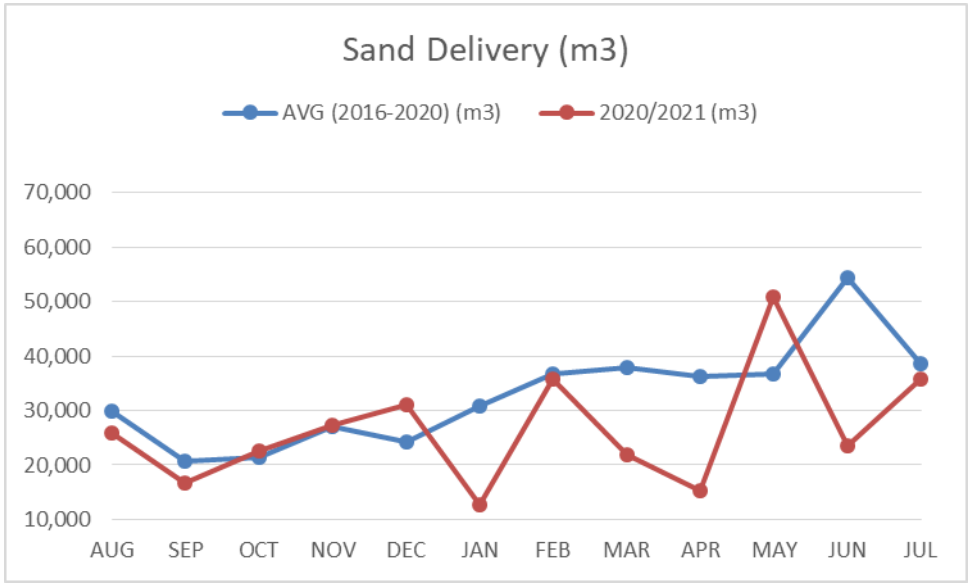
TWEED SAND BYPASSING

Sand Delivery 2021

PUMPING BY JETTY MOUNTED SYSTEM 2021				
MONTH	Vol SRE (m3)	Vol D'Bah (m3)	Total Vol (m3)	AVG (2016-2020) (m3)
JAN	12,694	0	12,694	30,806
FEB	35,663	0	35,663	36,734
MAR	3,067	18,854	21,921	37,910
APR	6,934	8,257	15,191	36,147
MAY	30,832	19,905	50,737	36,781
JUN	17,475	6,070	23,545	54,292
JUL	33,248	2,497	35,745	38,703
AUG			0	29,977
SEP			0	20,653
OCT			0	21,390
NOV			0	26,948
DEC			0	24,342
TOTAL	**139,913**	**55,583**	**195,496**	**394,684**

Avg Vol Jan to July = 271,373m3
Vol since Jan 2021 = 195,496m3

Pumping monthly trends



Avg Vol Aug to July = 394,684m3
Vol since Aug 2020 = 319,315m3

Sand Delivery 2021

PUMPING BY JETTY MOUNTED SYSTEM 2021				
MONTH	Vol SRE (m3)	Vol D'Bah (m3)	Total Vol (m3)	AVG (2016-2020) (m3)
JAN	12,694	0	12,6	
FEB	35,663	0	35,6	
MAR	3,067	18,854	21,9	
APR	6,934	8,257	15,1	
MAY	30,832	19,905	50,7	
JUN	17,475	6,070	23,5	
JUL	33,248	2,497	35,7	
AUG			0	
SEP			0	
OCT			0	
NOV			0	
DEC			0	
TOTAL	**139,913**	**55,583**	**195,496**	**394,684**

Avg Vol Jan to July = 271,373m3
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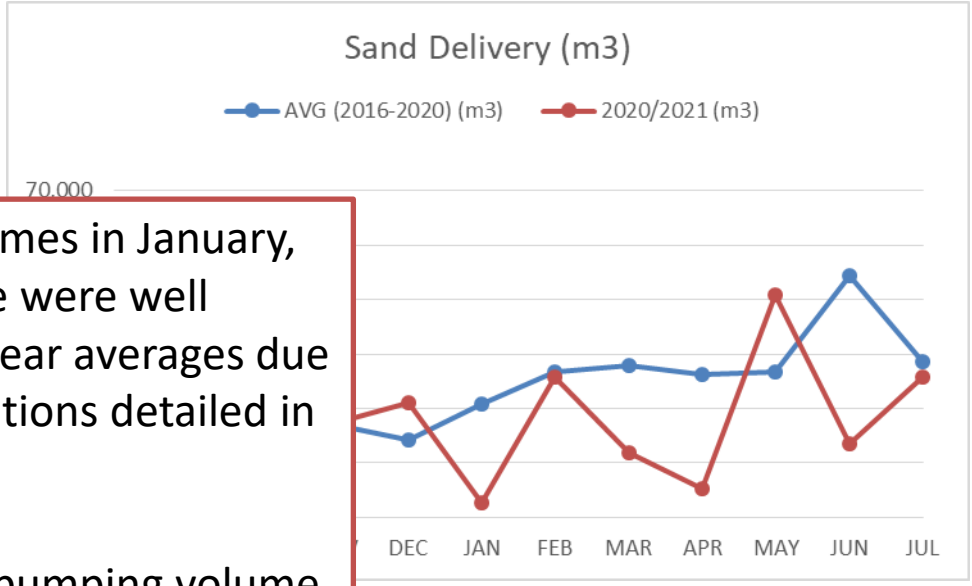
Pumping monthly trends



Pumping volumes in January, April and June were well below the 5-year averages due to wave conditions detailed in later slides.

As such total pumping volume from August 2020 to date is lower than the 5-year average

Aug to July = 394,684m3
Aug 2020 = 319,315m3

Duranbah Pumping March – July 2021

28 December 2020 – After December Erosion

10 March 2021 – Prior to Pumping

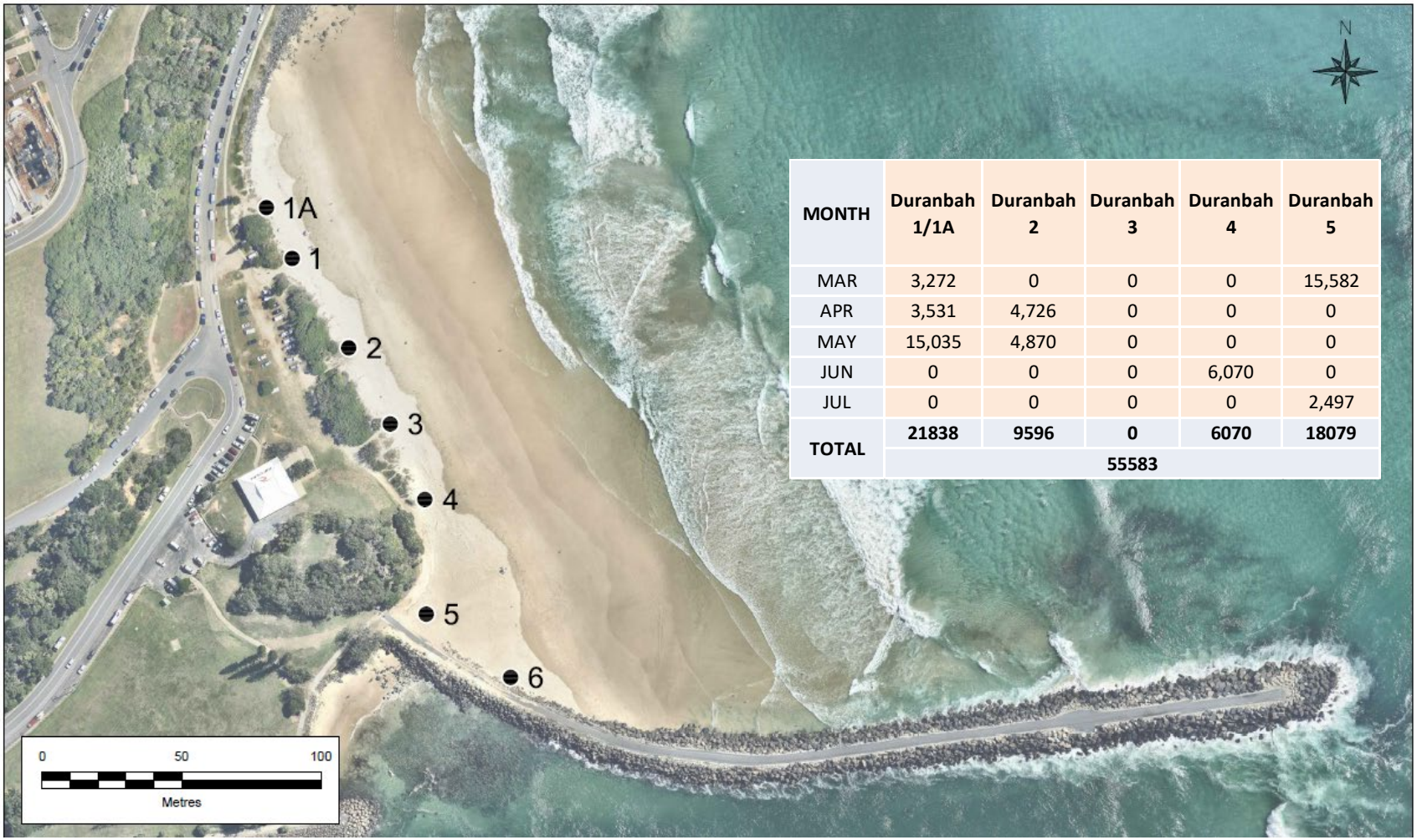
Duranbah Pumping March – July 2021

28 December 2020 – After De Erosion

Following the December 2020 erosion event, Duranbah sand volumes and beach width remained low through to March at the commencement of pumping

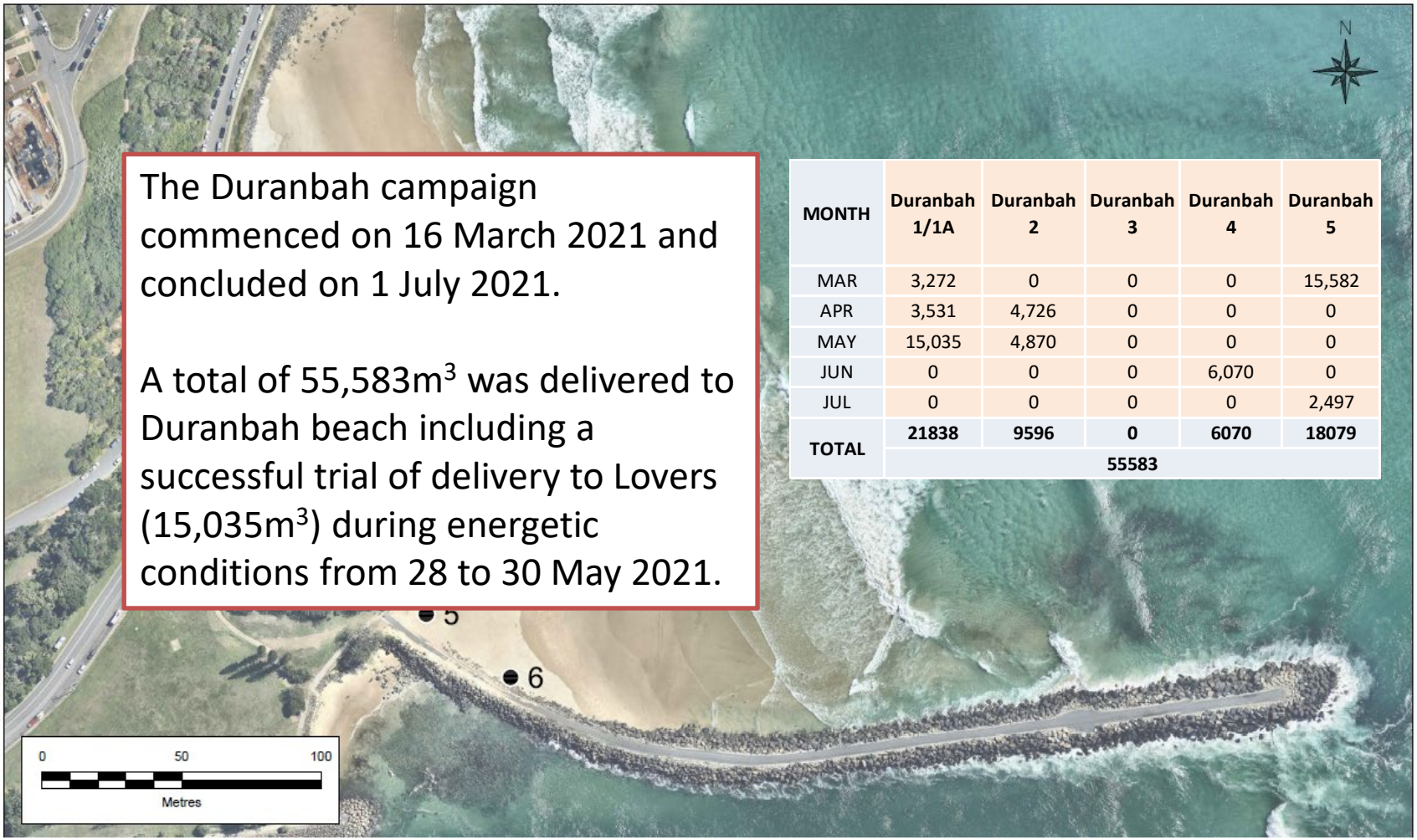
10 March 2021 – Prior to Pumping

Duranbah Pumping March, April May 2021



MONTH	Duranbah 1/1A	Duranbah 2	Duranbah 3	Duranbah 4	Duranbah 5
MAR	3,272	0	0	0	15,582
APR	3,531	4,726	0	0	0
MAY	15,035	4,870	0	0	0
JUN	0	0	0	6,070	0
JUL	0	0	0	0	2,497
TOTAL	**21838**	**9596**	**0**	**6070**	**18079**
	55583				

Duranbah Pumping March, April May 2021



The Duranbah campaign commenced on 16 March 2021 and concluded on 1 July 2021.

A total of 55,583m^3 was delivered to Duranbah beach including a successful trial of delivery to Lovers (15,035m^3) during energetic conditions from 28 to 30 May 2021.

MONTH	Duranbah 1/1A	Duranbah 2	Duranbah 3	Duranbah 4	Duranbah 5
MAR	3,272	0	0	0	15,582
APR	3,531	4,726	0	0	0
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TOTAL	**21838**	**9596**	**0**	**6070**	**18079**
	55583				

Duranbah Pumping March – July 2021

8 May 2021 (central and northern placement)

2 July 2021 (campaign complete)

Duranbah Pumping March – July 2021

8 May 2021 (central and northern placement)

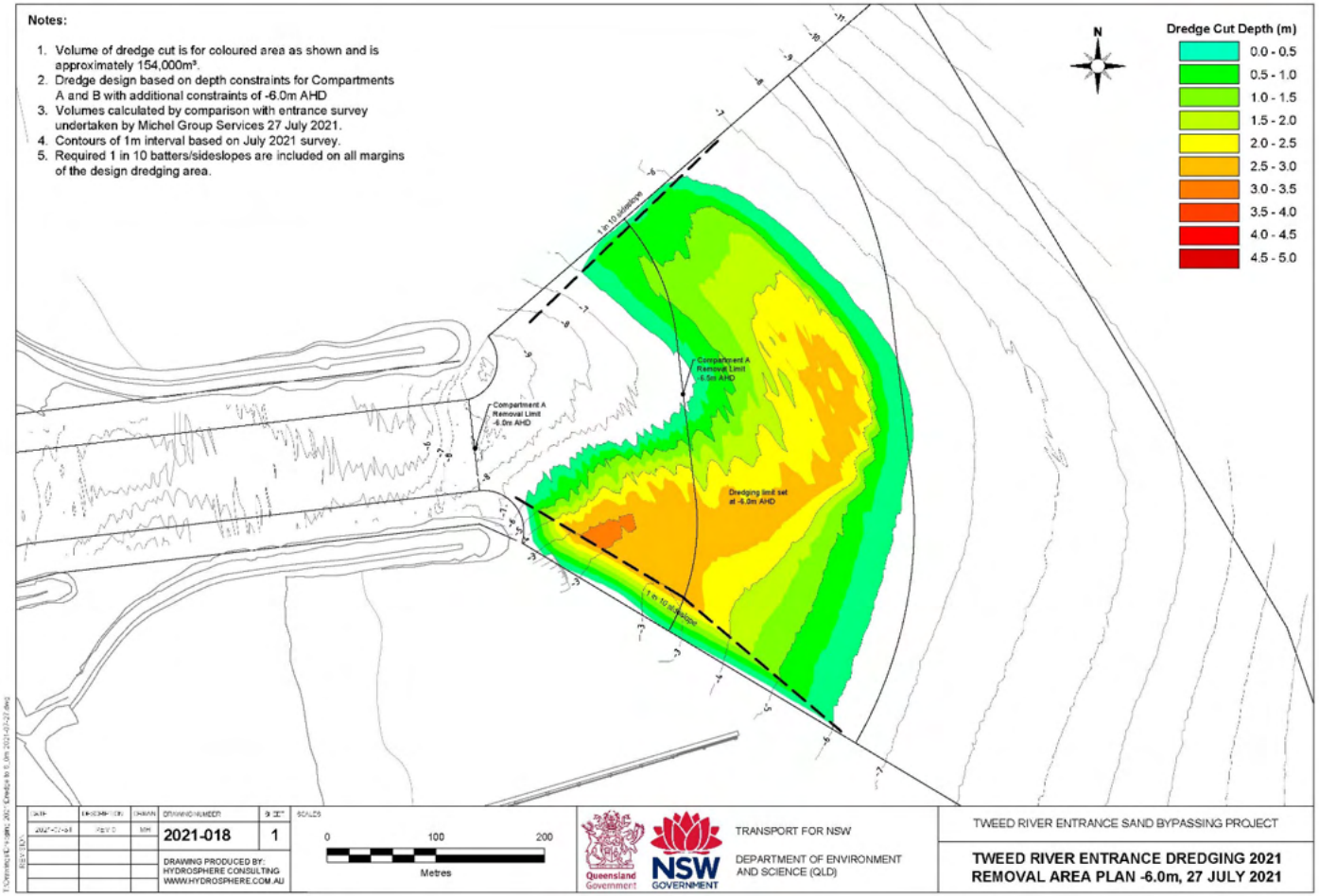
Photo in top left is during nourishment in May showing targeted placement areas. Photo in bottom right hand corner is the day after Duranbah completion illustrating a nourished upper beach.

2 July 2021 (campaign complete)

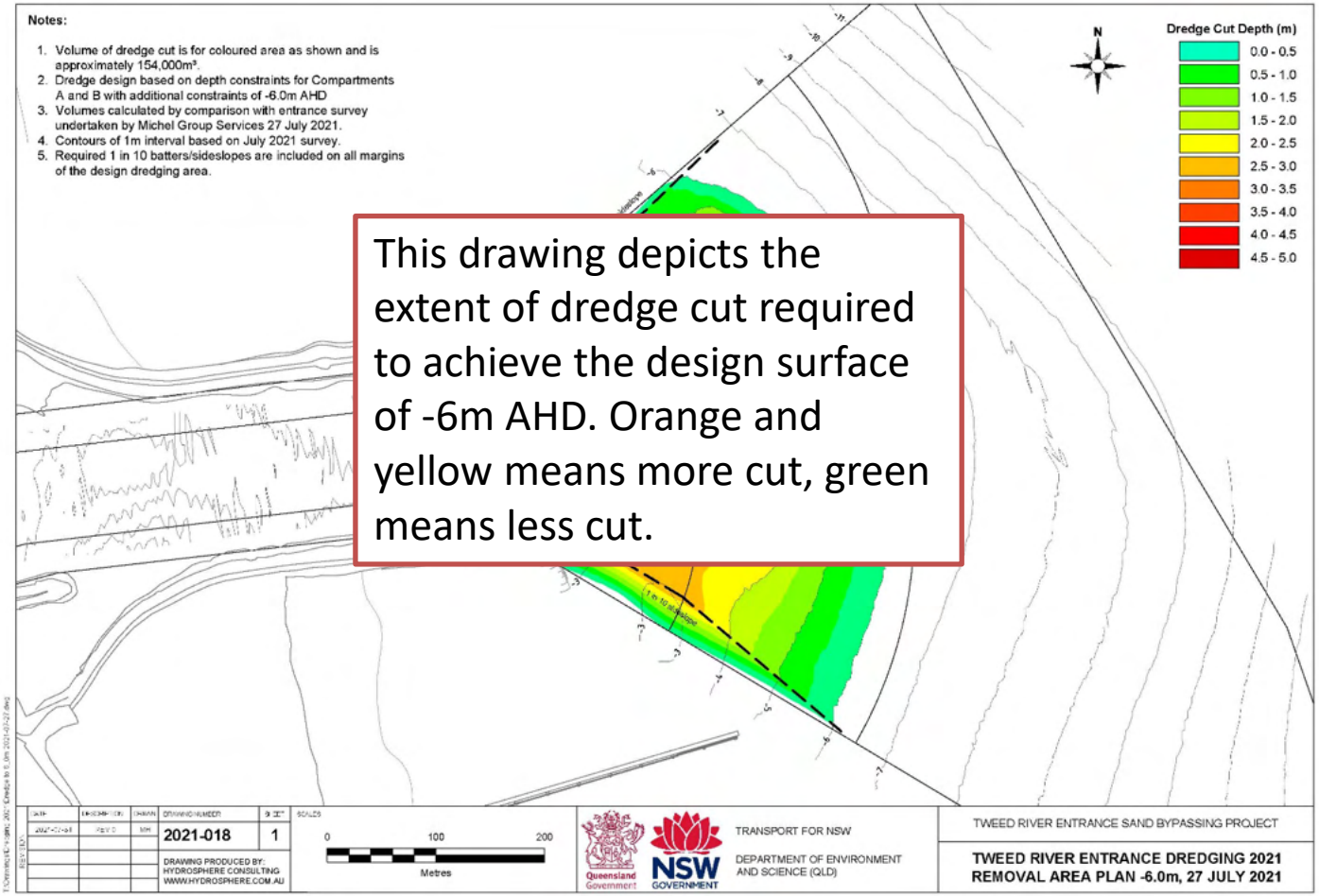
2021 Dredging Campaign

TWEED SAND BYPASSING

August 2021 Dredge Removal Design

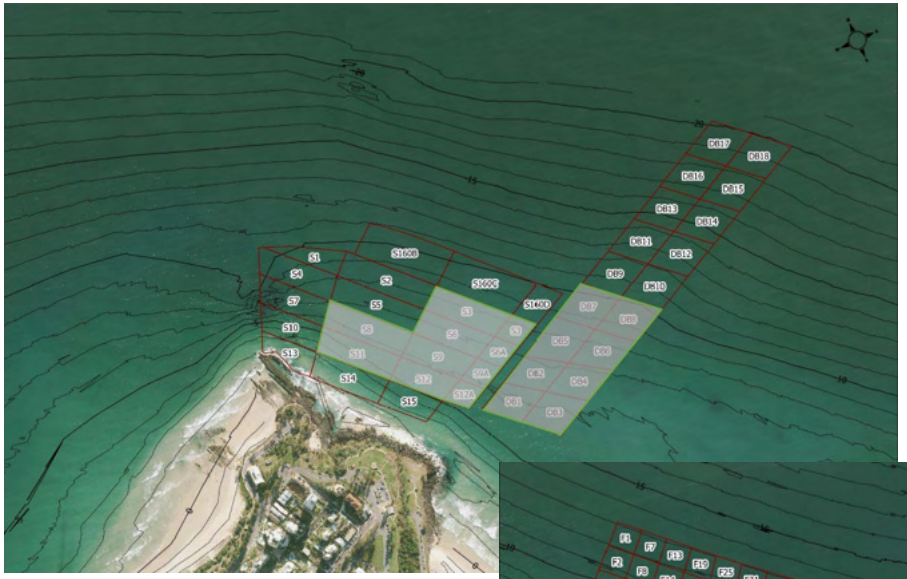


August 2021 Dredge Removal Design



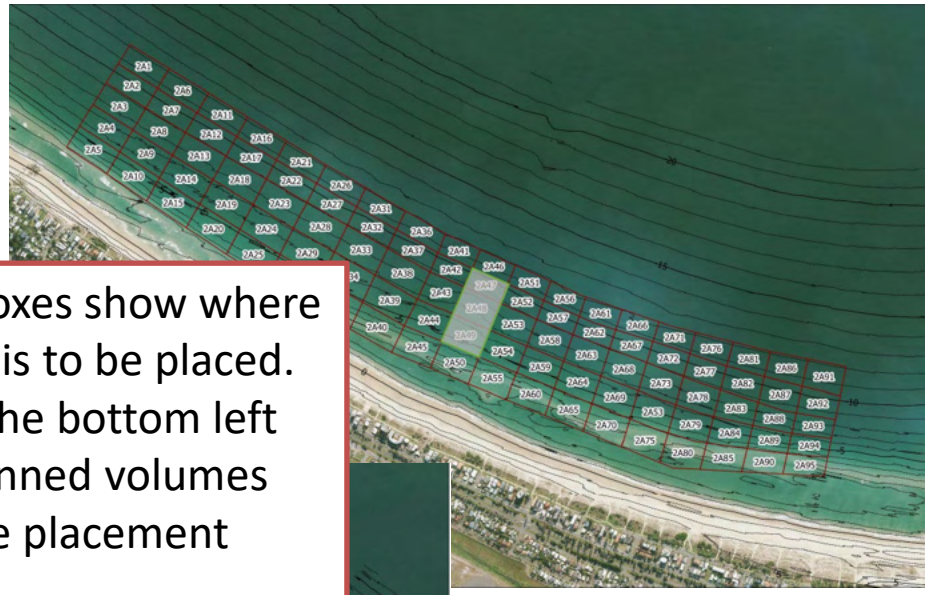
This drawing depicts the extent of dredge cut required to achieve the design surface of -6m AHD. Orange and yellow means more cut, green means less cut.

August 2021 Dredge Placement



Location	Volume (m3)
Bilinga	40,000
Snapper Rocks	44,000
Duranbah	36,000
Fingal	30,000
Total	**150,000**

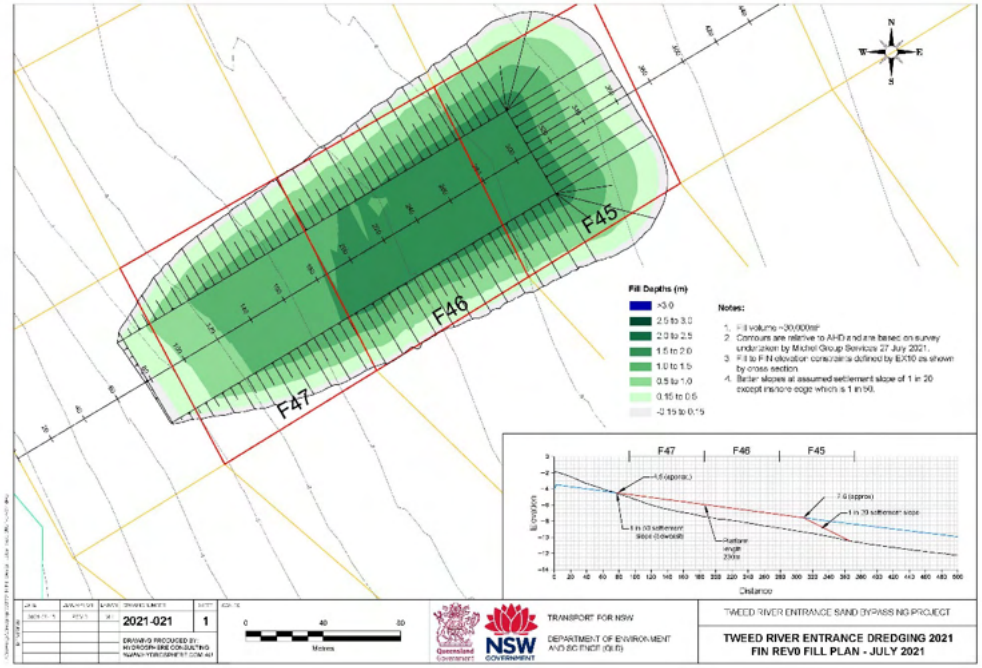
August 2021 Dredge Placement

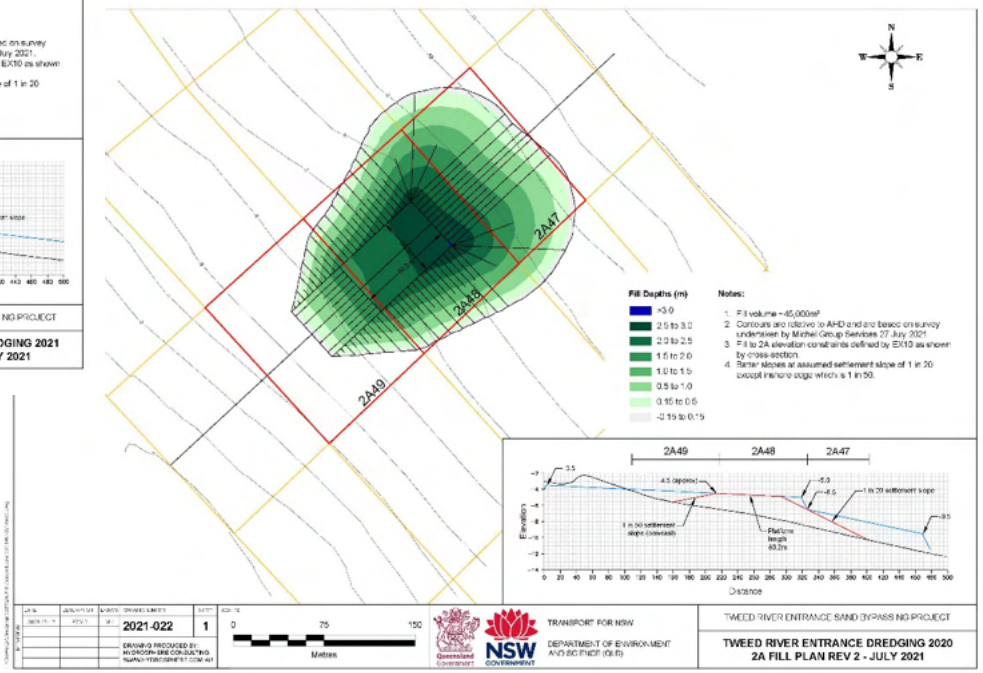


The shaded boxes show where dredged sand is to be placed. The table on the bottom left shows the planned volumes for each of the placement areas.

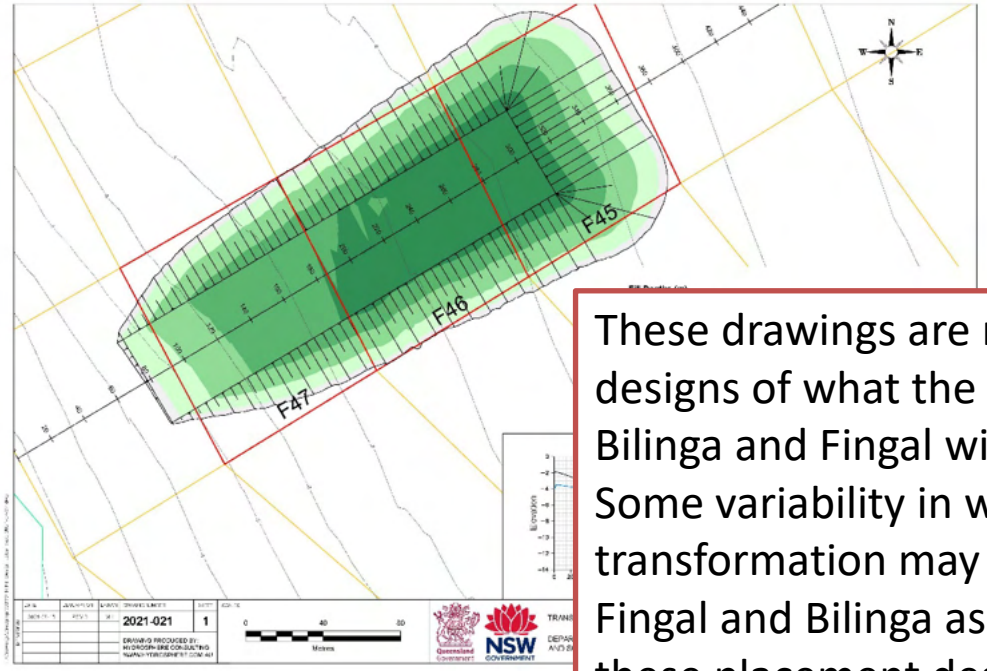
Location	Volume (m3)
Bilinga	40,000
Snapper Rocks	44,000
Duranbah	36,000
Fingal	30,000
Total	**150,000**

August 2021 Dredge Placement

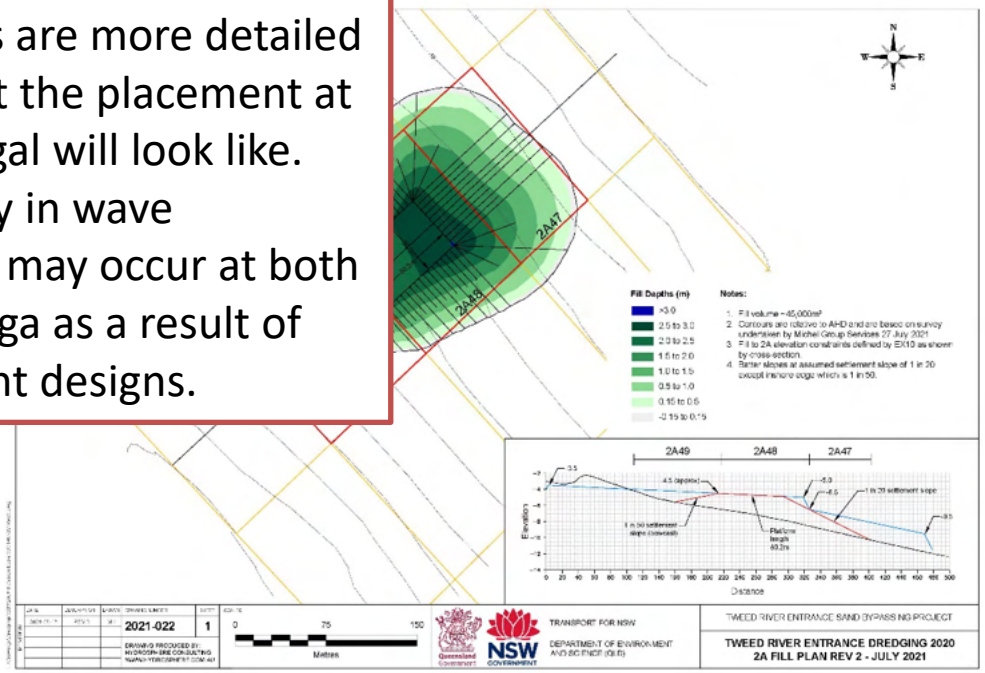




August 2021 Dredge Placement



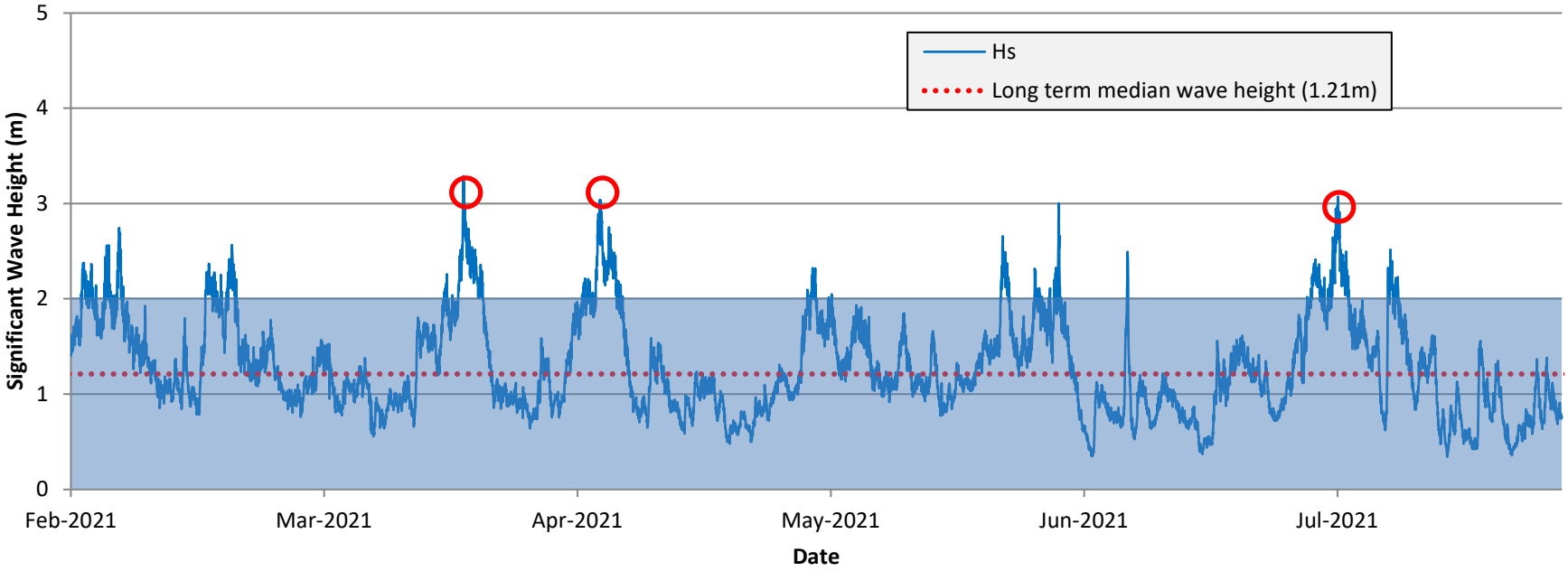
These drawings are more detailed designs of what the placement at Bilinga and Fingal will look like. Some variability in wave transformation may occur at both Fingal and Bilinga as a result of these placement designs.



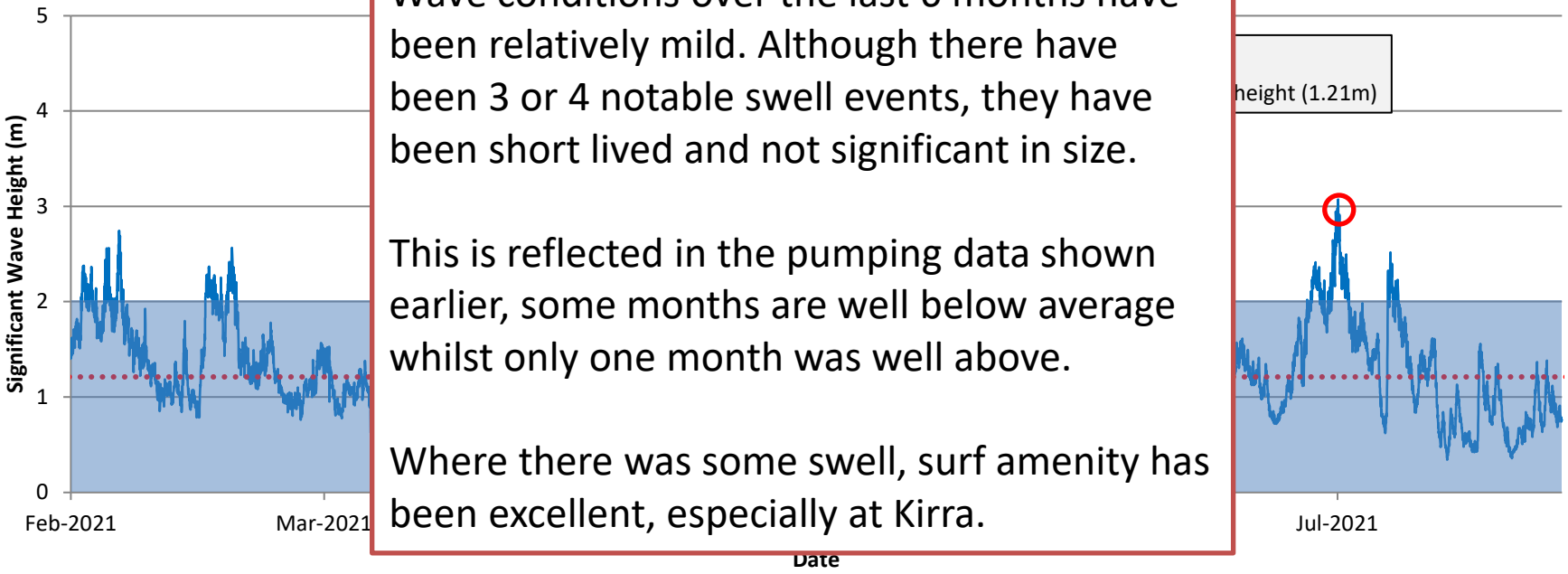
Environmental Monitoring
Beach Observations

TWEED SAND BYPASSING

Wave Data – Feb 2021 to Aug 2021



Wave Data – Feb 2021 to Aug 2021

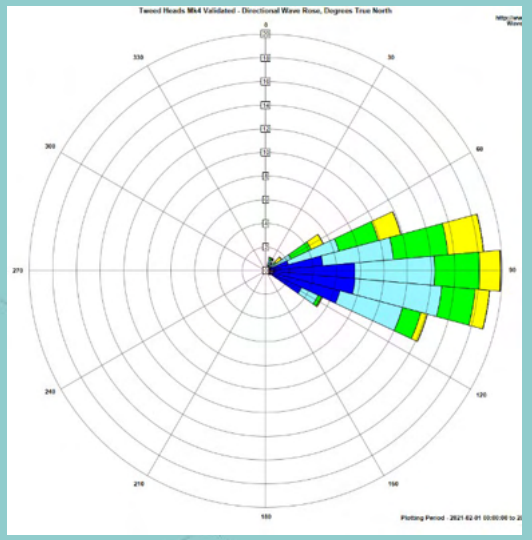


Wave conditions over the last 6 months have been relatively mild. Although there have been 3 or 4 notable swell events, they have been short lived and not significant in size.

This is reflected in the pumping data shown earlier, some months are well below average whilst only one month was well above.

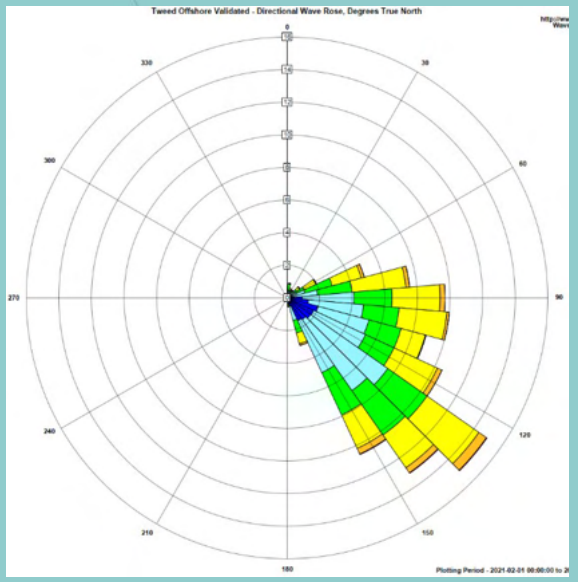
Where there was some swell, surf amenity has been excellent, especially at Kirra.

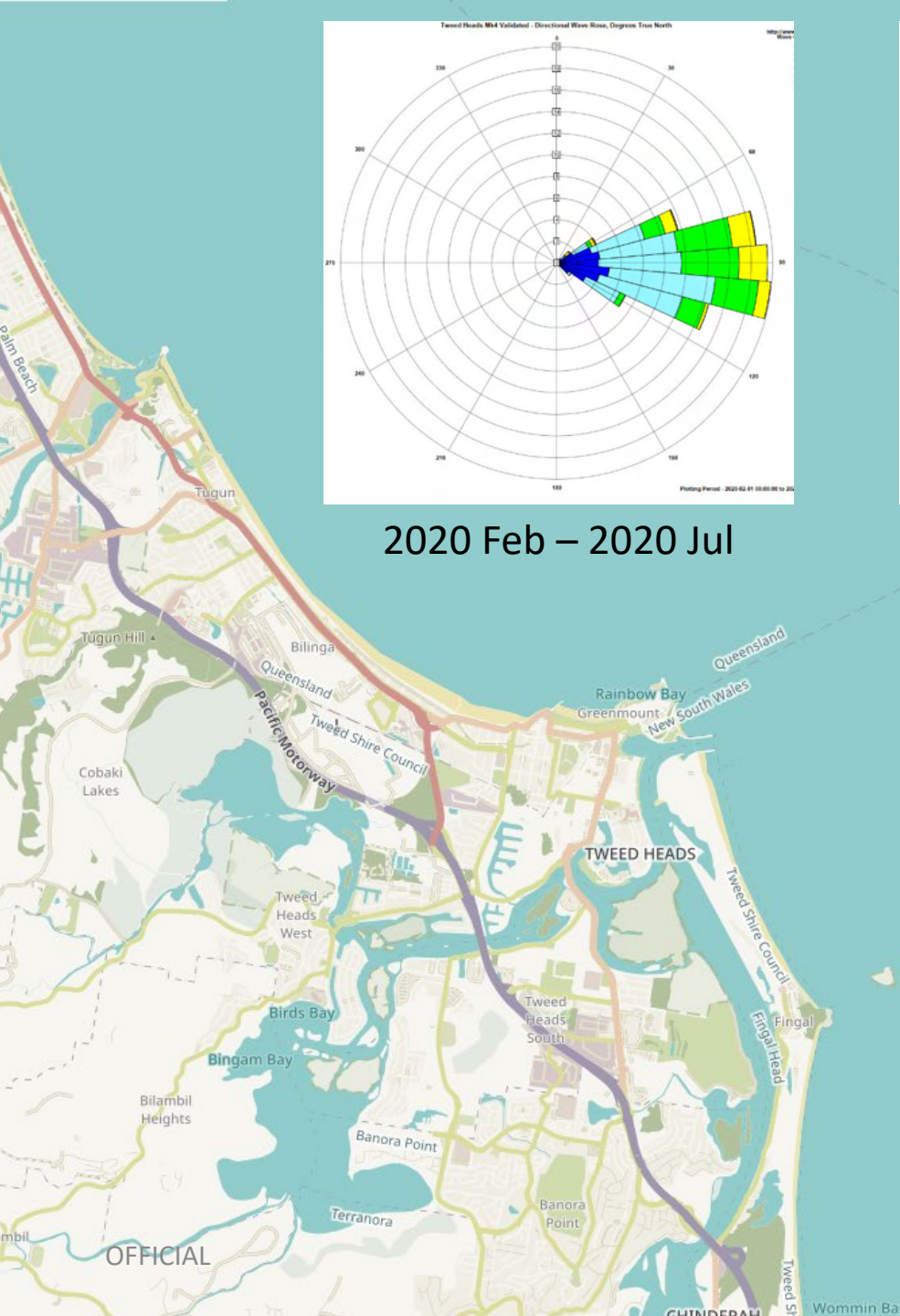
2020 Feb – 2020 Jul

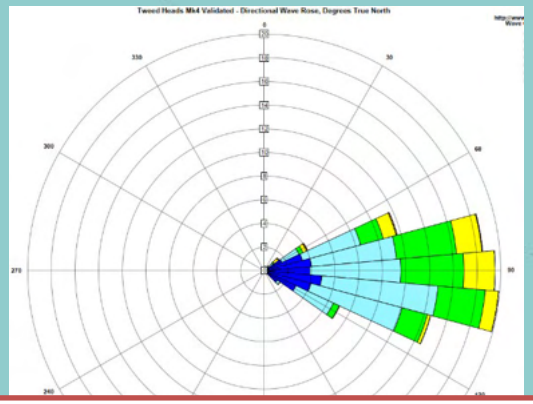


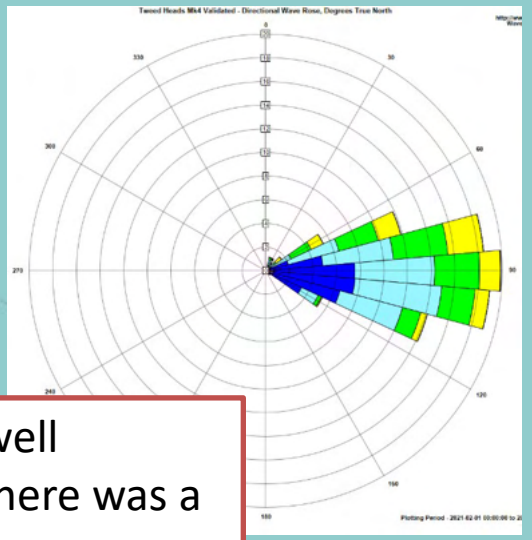
2021 Feb – 2021 Jul

2021 Feb – 2021 Jul
OFFSHORE









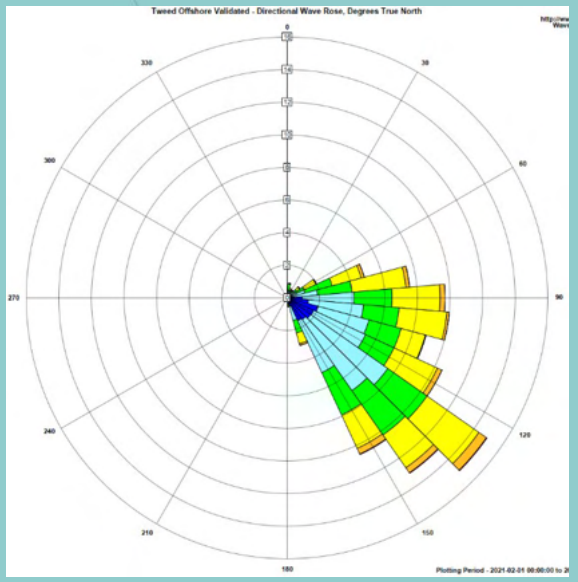
– 2021 Jul

Comparing this year and last, swell direction was similar however there was a greater proportion of the 1-2m wave height in 2021.

There is a slightly higher proportion of larger wave heights from the ENE which has contributed to low pumping months.

Offshore the swell direction is spread from SE to E, Fingal and Cook island shields Letitia from direct SE swell and so the easterly component has been more dominant in relation to sediment transport

2021 Feb – 2021 Jul
OFFSHORE



Fingal

20 August 2020

28 October 2020

14 January 2021

20 April 2021

Fingal

20 August 2020

28 October 2020

Oblique imagery for July was postponed to instead capture during the dredge operations.

The following slides provide historical context for recent survey and imagery data.

20 April 2021

Letitia

20 April 2021

14 January 2021

Vertical Aerial Photography

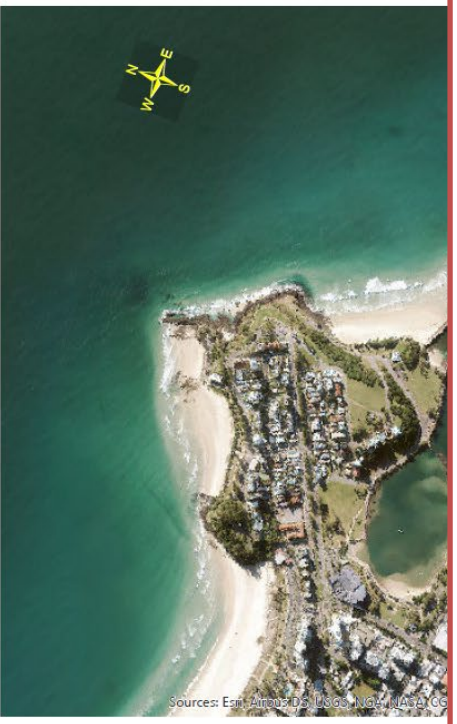
Fingal Head to Point Danger - 29 November 2020

Vertical Aerial Imagery

Fingal Head to Point Danger - 4 June 2021

Vertical Aerial Imagery

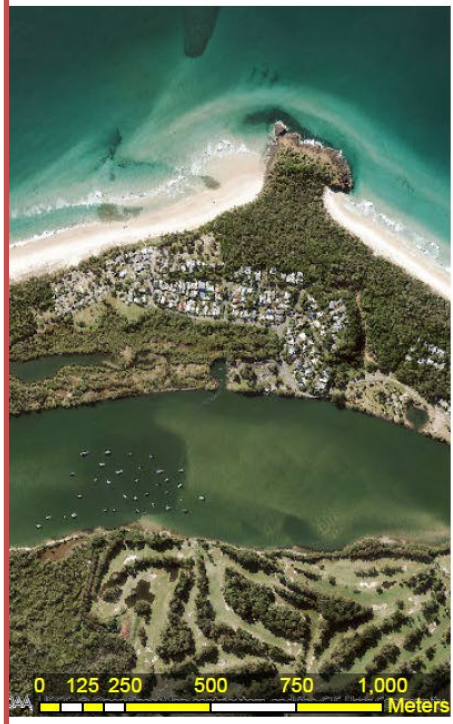
Fingal Head to Point Danger - 4 June 2021



The previous slide shows vertical imagery from Nov 2020 and the current slide is more recent from June 2021.

Notable changes include:

- Fingal bypassing – a sand slug has moved around the headland covering the bedrock at the southern end of Letitia
- There is a well defined bar along the length of Letitia that extends to the end of the southern training wall
- Within the entrance, the southern lobe has pushed further north toward the channel and the entrance bar is visible



Duranbah Beach

22 June 2020

28 October 2020

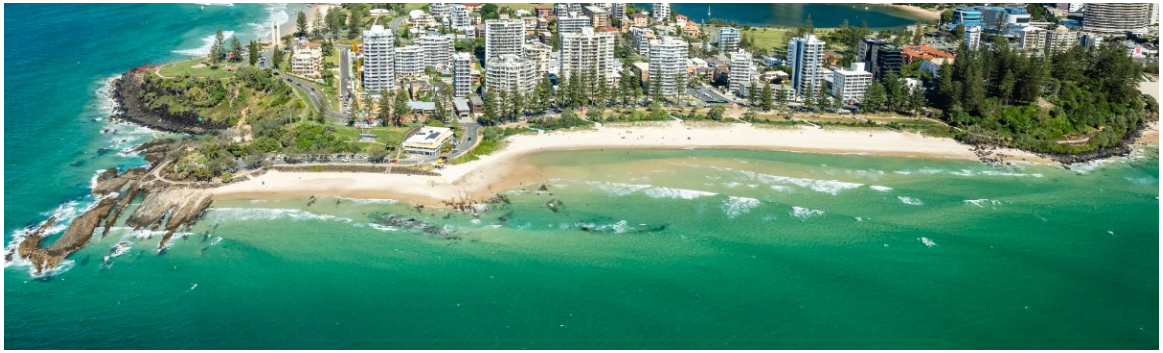
14 January 2021

20 April 2021

28 October 2020

14 January 2021

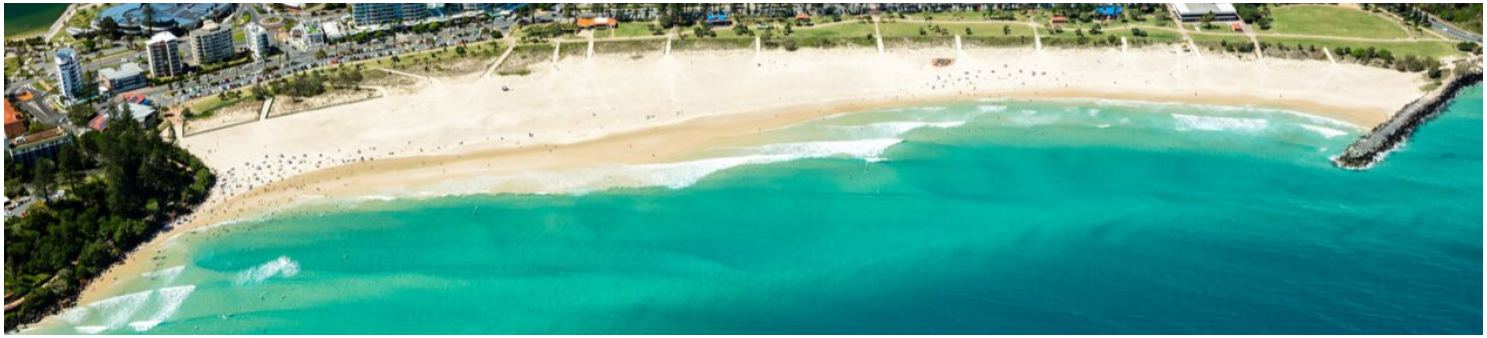
Snapper Rocks / Rainbow Bay



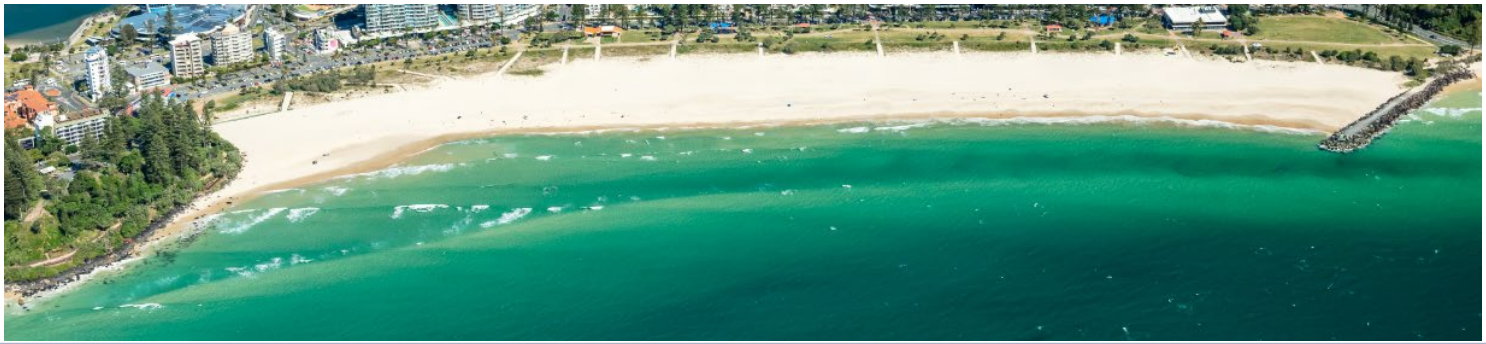
20 April 2021

Coolangatta Bay

28 October 2020



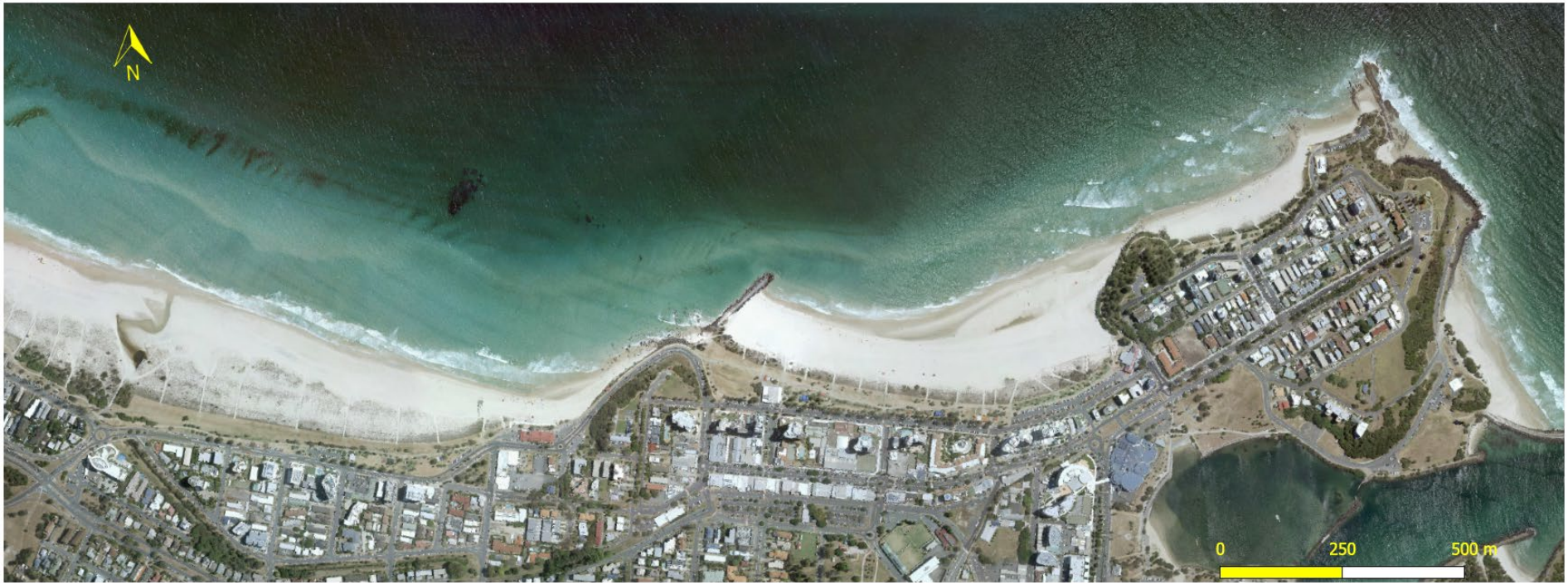
14 January 2021



20 April 2021

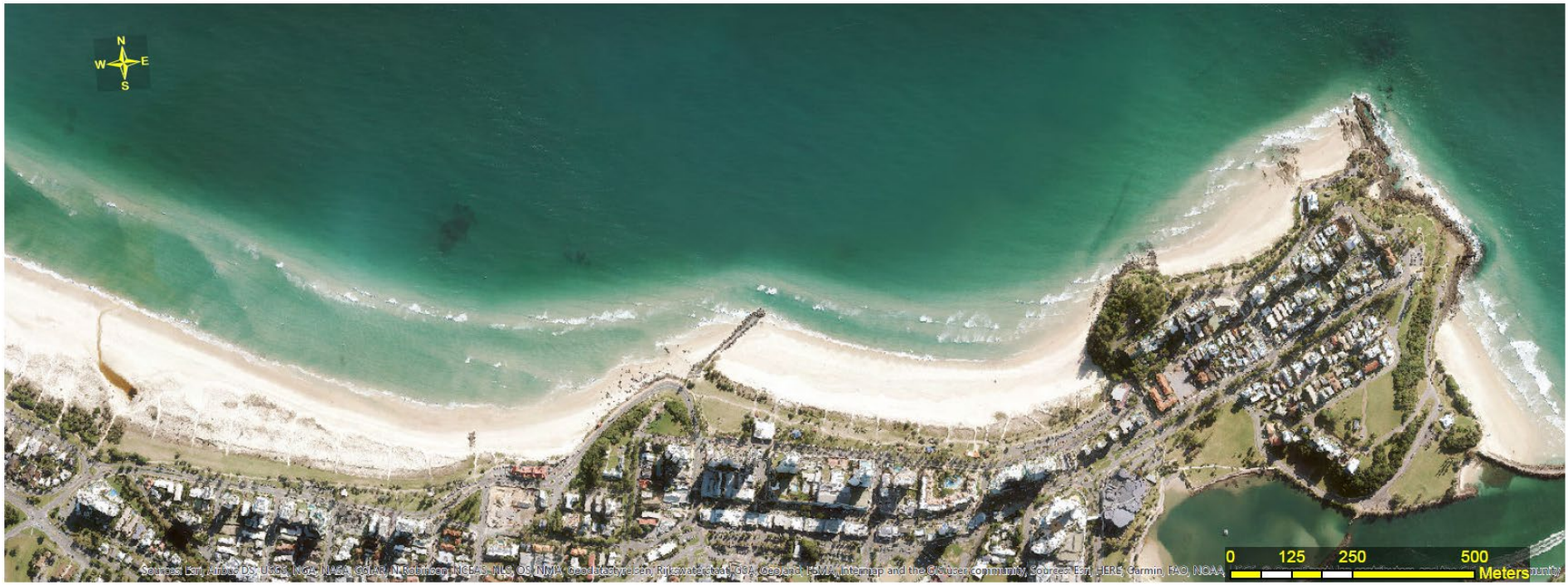
Vertical Aerial Photography

Point Danger to North Kirra - 29 November 2020



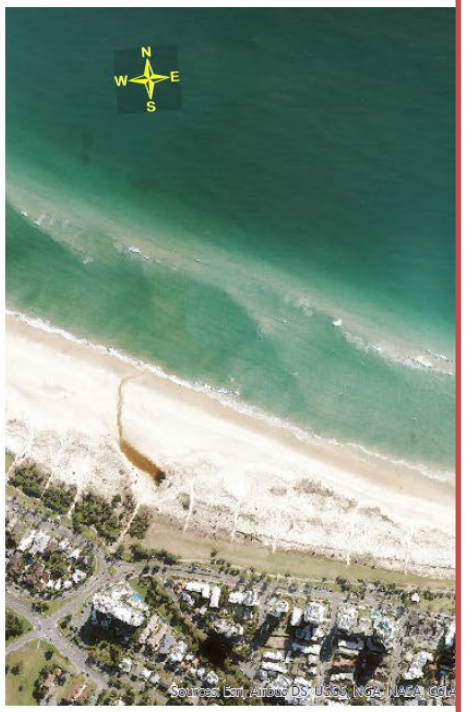
Vertical Aerial Imagery

Point Danger to North Kirra - 4 June 2021



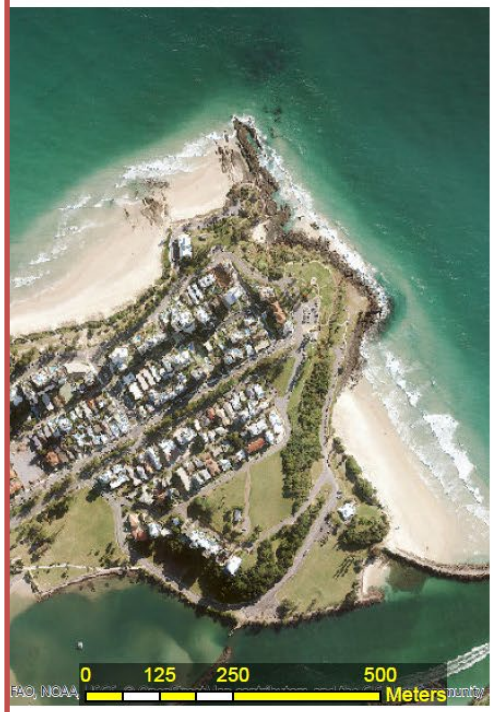
Vertical Aerial Imagery

Point Danger to North Kirra - 4 June 2021

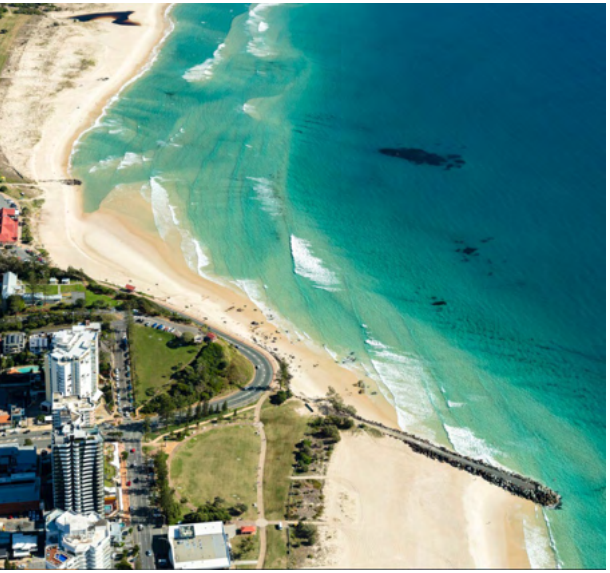


Oblique and vertical imagery for Duranbah through to Coolangatta has shown:

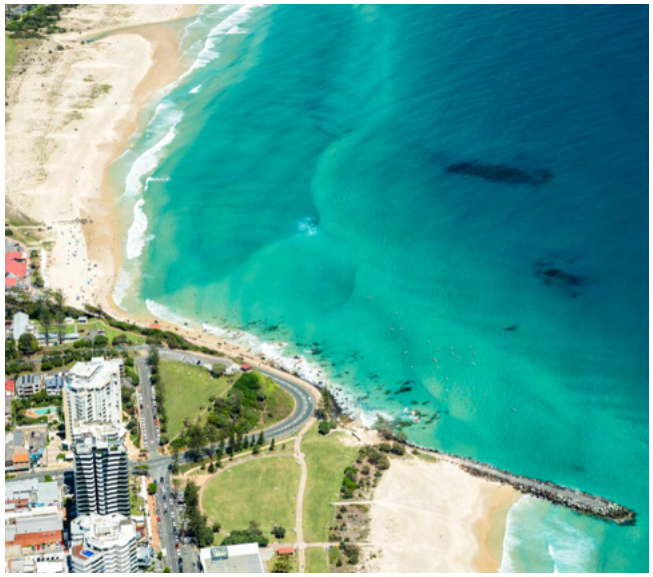
- Duranbah beach width increased through pumping and seasonal change
- Sand volumes being restored at Snapper following December erosion event
- Seasonal sand migration through Coolangatta and the subsequent beach rotation
- Sand volumes at Kirra beach and along the lee side of Kirra Point groyne increased
- A defined sediment pathway consistent with seasonal wave climate



Kirra / Nth Kirra



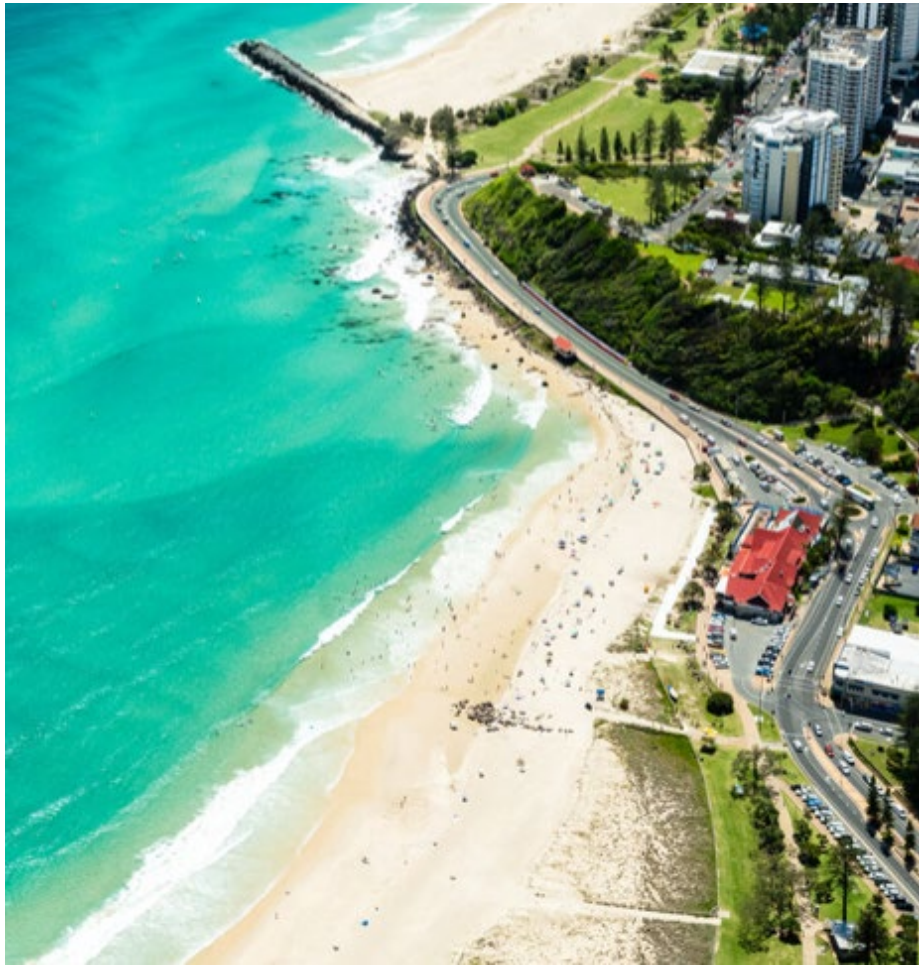
22 June 2020



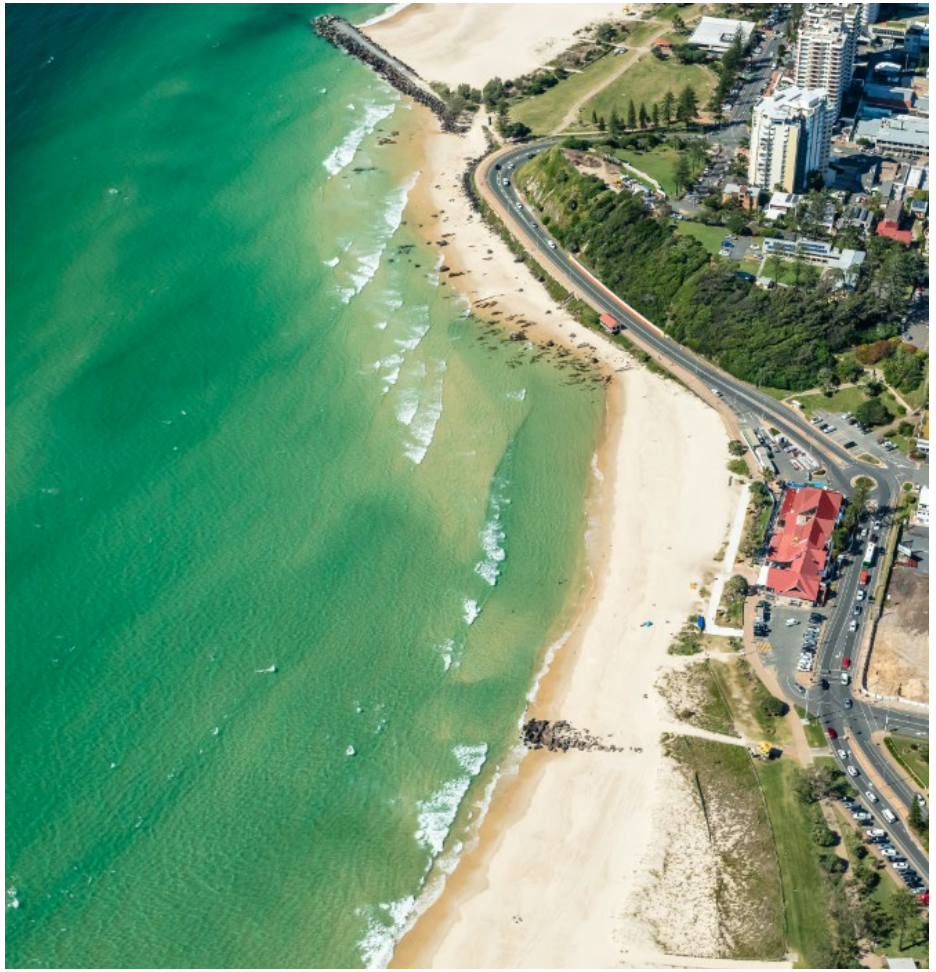
14 January 2021

20 April 2021

Kirra / Nth Kirra



14 January 2021



20 April 2021


14 January 2021


20 April 2021


14 January 2021

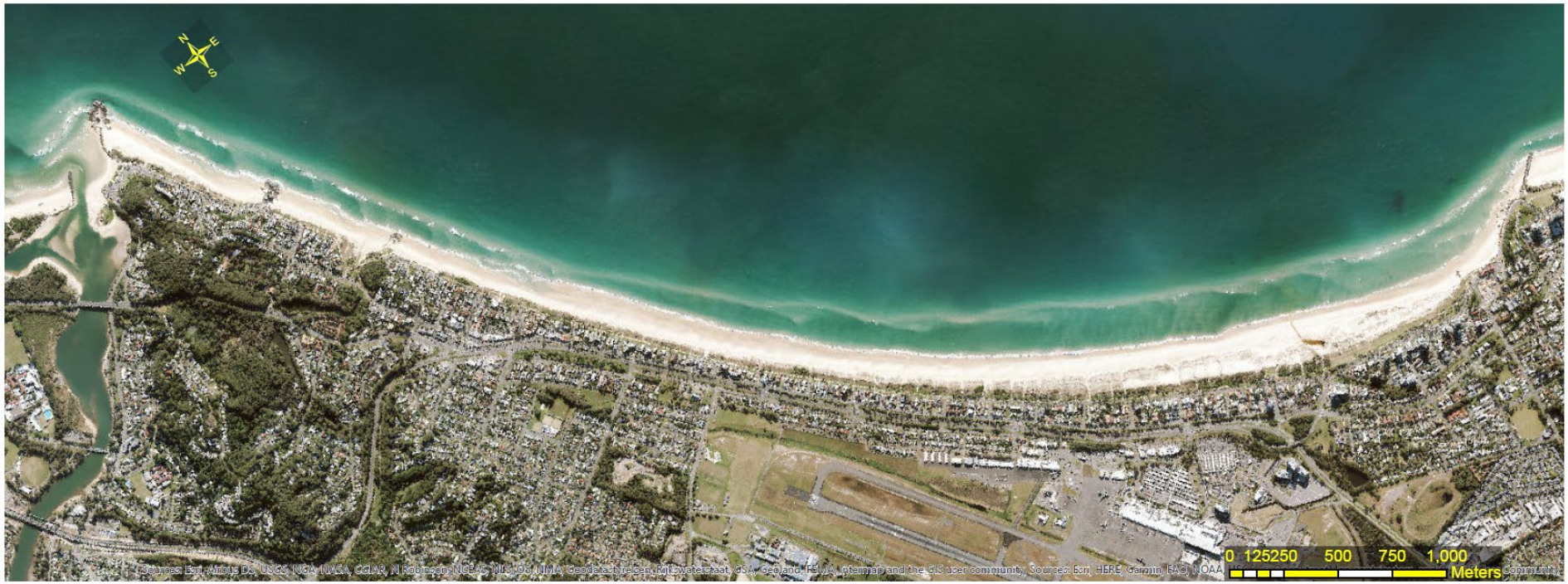

20 April 2021

Vertical Aerial Photography

Kirra to Currumbin - 29 November 2020

Vertical Aerial Imagery

Kirra to Currumbin - 4 June 2021



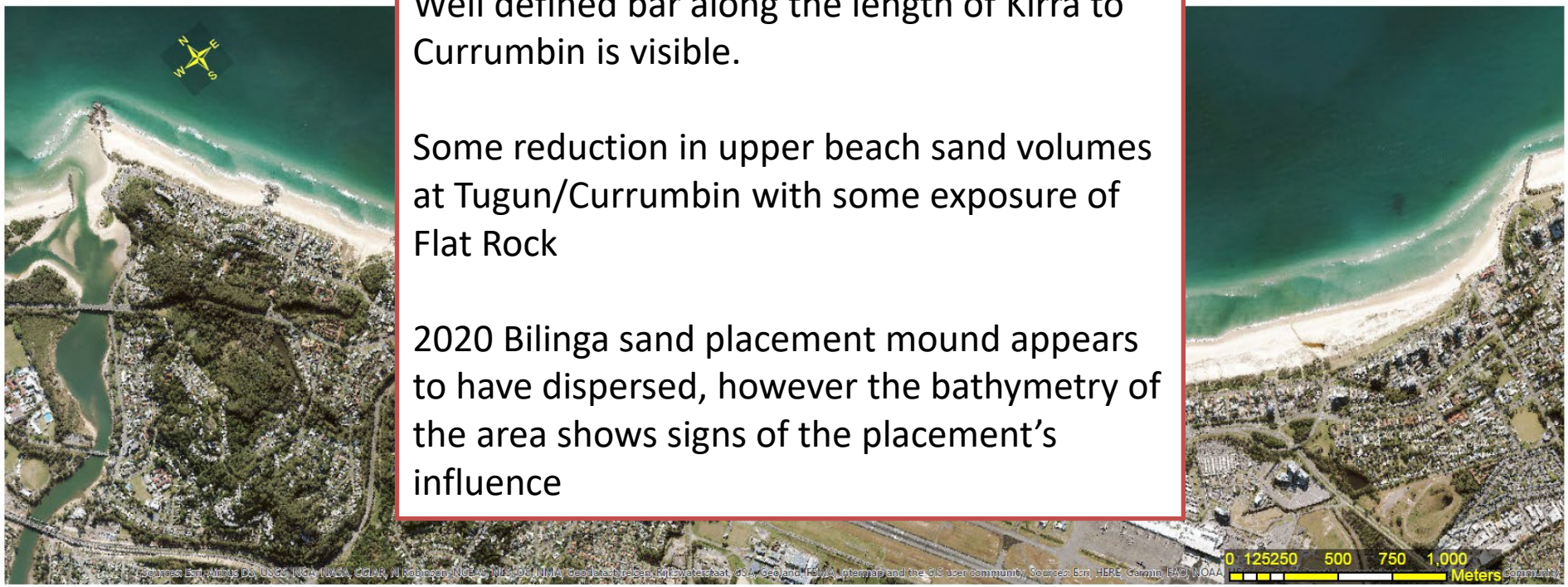
Vertical Aerial Imagery

Kirra to Currumbin - 4 June 2021

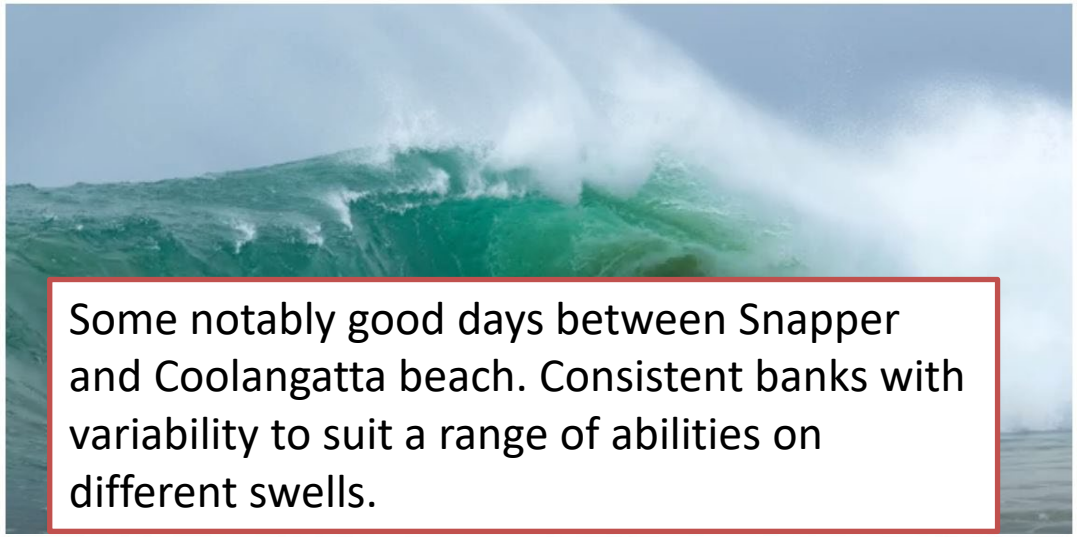
Well defined bar along the length of Kirra to Currumbin is visible.

Some reduction in upper beach sand volumes at Tugun/Currumbin with some exposure of Flat Rock

2020 Bilinga sand placement mound appears to have dispersed, however the bathymetry of the area shows signs of the placement's influence



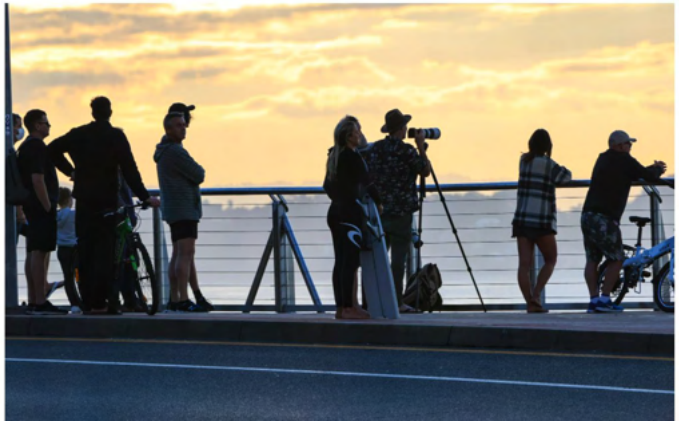
Snapper Rocks



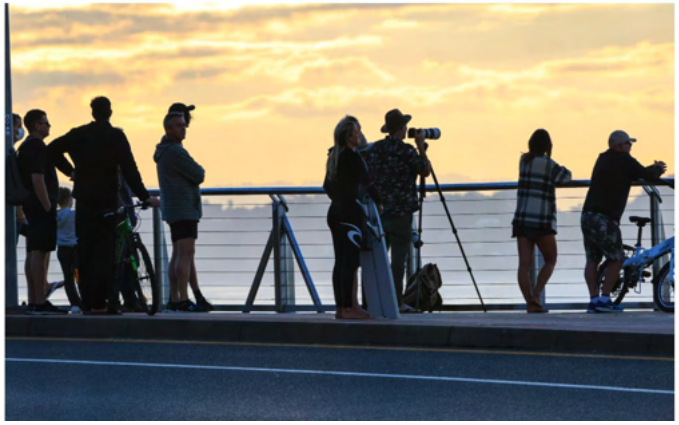
Some notably good days between Snapper and Coolangatta beach. Consistent banks with variability to suit a range of abilities on different swells.

Snapper Rocks

Rainbow/Greenmount/Kirra

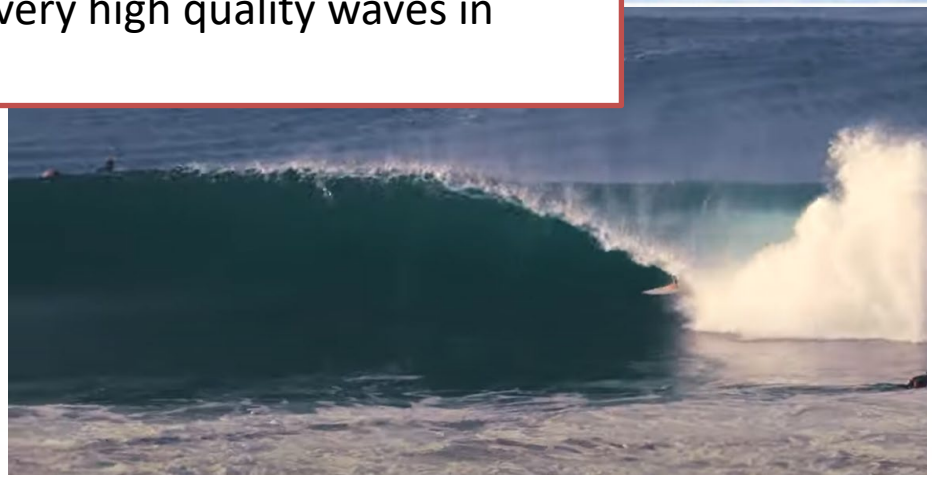


Kirra



Kirra

Kirra produced very high quality waves in early July 2021.



Duranbah

Duranbah has remained consistent with a range of banks across the beach. Sand pumping to Duranbah was not observed to cause any deterioration of bank quality.

Surfonmars

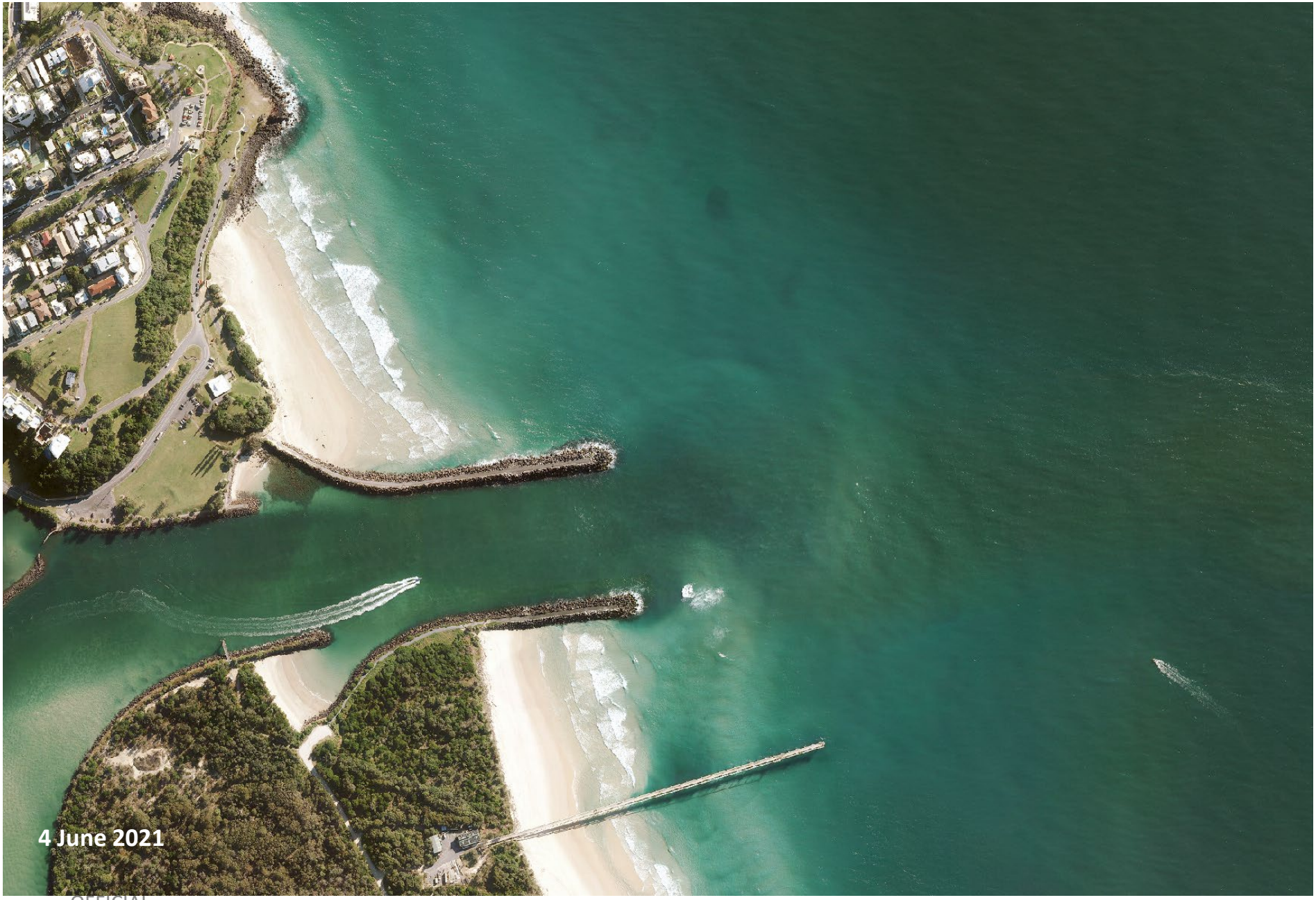
Duranbah

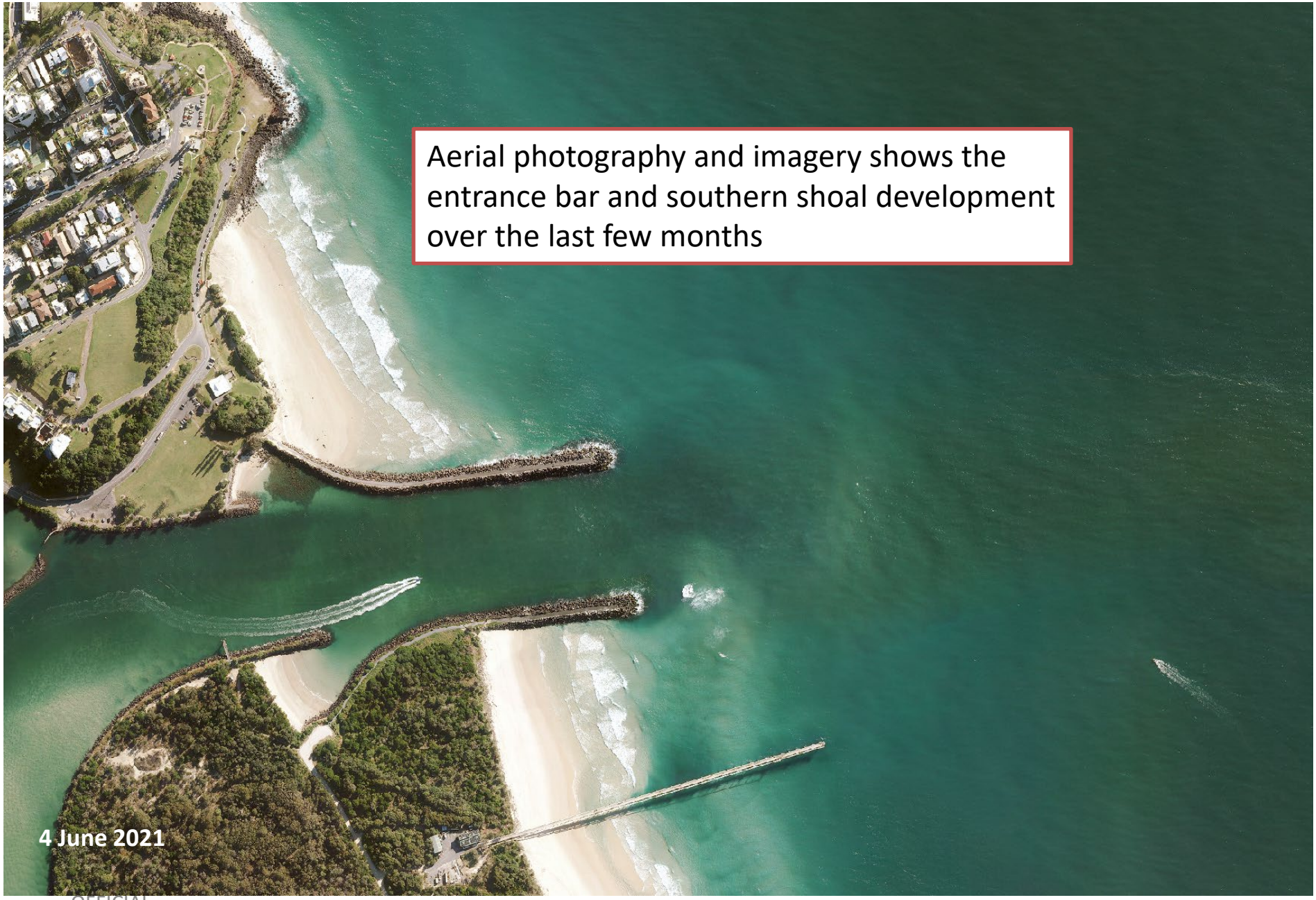
Entrance conditions, usage and survey

TWEED SAND BYPASSING


14 January 2021


20 April 2021




Aerial photography and imagery shows the entrance bar and southern shoal development over the last few months
4 June 2021

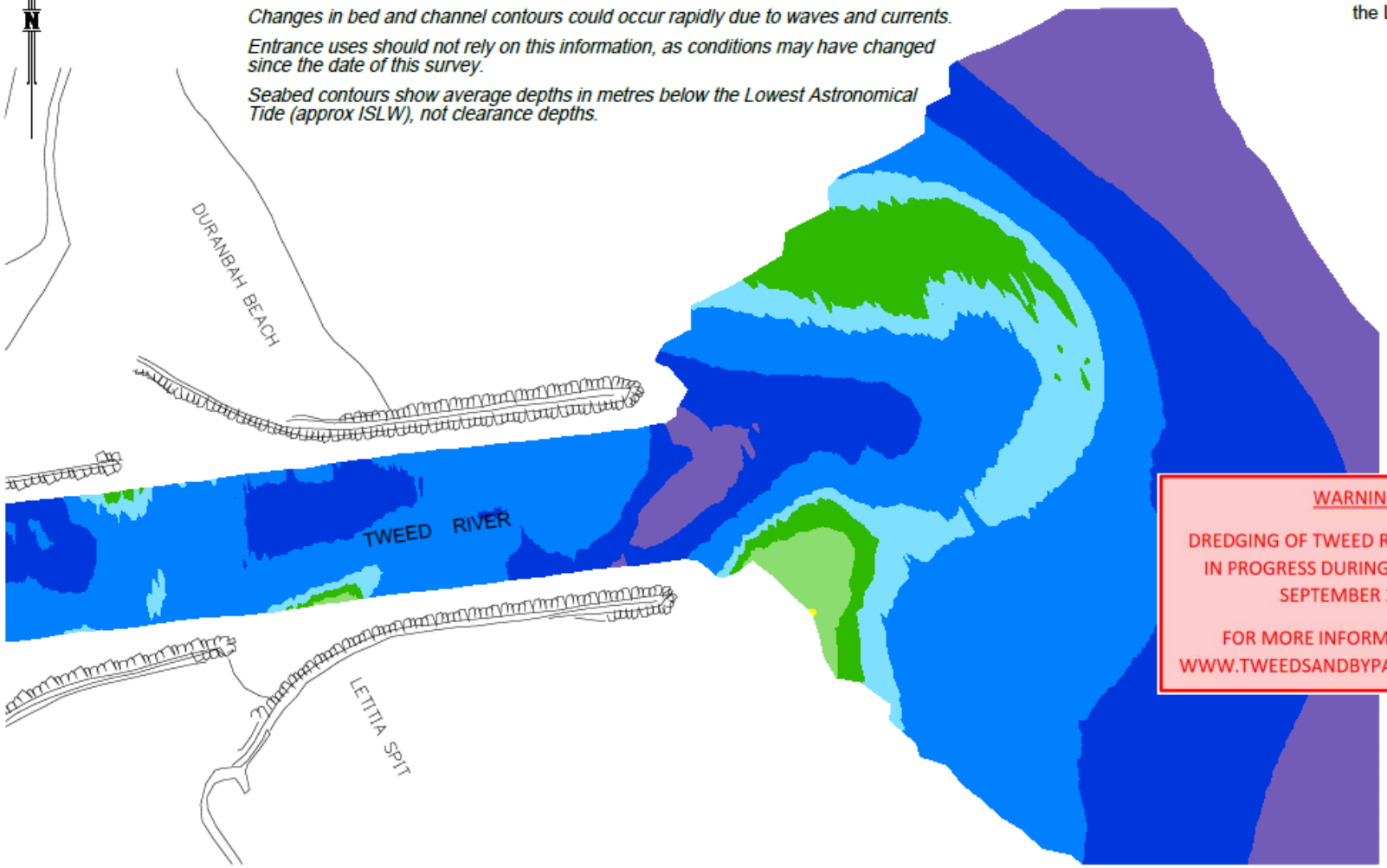
TWEED RIVER ENTRANCE AS AT 29th JULY 2020

WARNINGS: *Extreme caution should be used when navigating this entrance.*

Changes in bed and channel contours could occur rapidly due to waves and currents.

Entrance uses should not rely on this information, as conditions may have changed since the date of this survey.

Seabed contours show average depths in metres below the Lowest Astronomical Tide (approx ISLW), not clearance depths.



NOTES:

1. Survey information collected by Michel Group Services on 29th JULY 2020.
2. This plan prepared by Michel Group Services on 31th JULY 2020.
3. Surveys are undertaken for Tweed Sand Bypassing every three months to monitor entrance seabed levels.

NSW GOVERNMENT | Transport for NSW

TWEED SAND BYPASSING

Tweed Sand bypassing is a joint project of the New South Wales and Queensland Governments, with the support of the Gold Coast City Council, and in conjunction with Tweed Shire Council.

Meters
0 50 100 150 200

Queensland Government

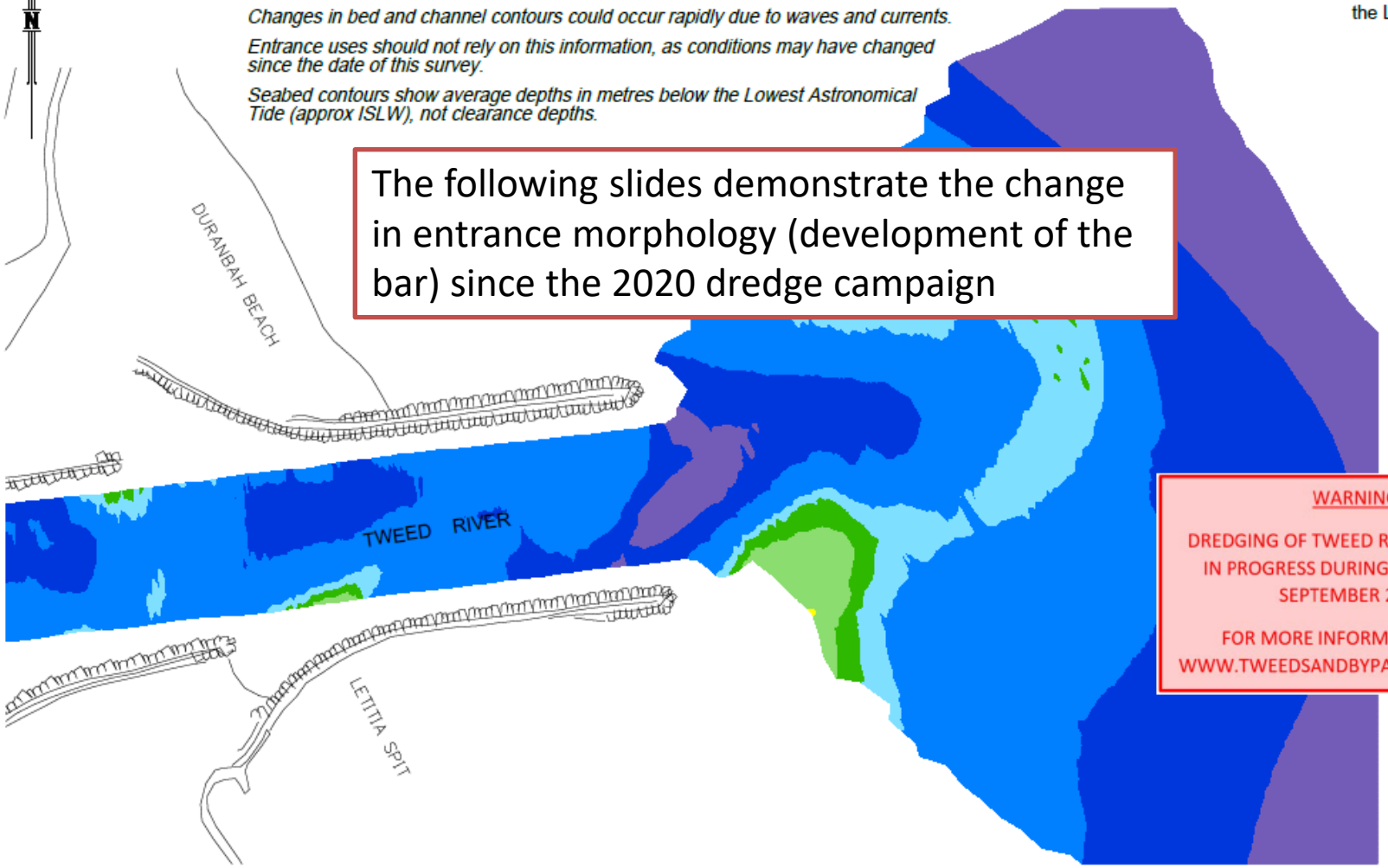
TWEED RIVER ENTRANCE AS AT 29th JULY 2020

WARNINGS: *Extreme caution should be used when navigating this entrance.*

Changes in bed and channel contours could occur rapidly due to waves and currents.

Entrance uses should not rely on this information, as conditions may have changed since the date of this survey.

Seabed contours show average depths in metres below the Lowest Astronomical Tide (approx ISLW), not clearance depths.



The following slides demonstrate the change in entrance morphology (development of the bar) since the 2020 dredge campaign

WARNING

DREDGING OF TWEED RIVER ENTRANCE IN PROGRESS DURING AUGUST AND SEPTEMBER 2020.

FOR MORE INFORMATION VISIT WWW.TWEEDSANDBYPASS.NSW.GOV.AU

NOTES:

1. Survey information collected by Michel Group Services on 29th JULY 2020.
2. This plan prepared by Michel Group Services on 31th JULY 2020.
3. Surveys are undertaken for Tweed Sand Bypassing every three months to monitor entrance seabed levels.

NSW GOVERNMENT | Transport for NSW

TWEED SAND BYPASSING

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Meters
0 50 100 150 200

Queensland Government

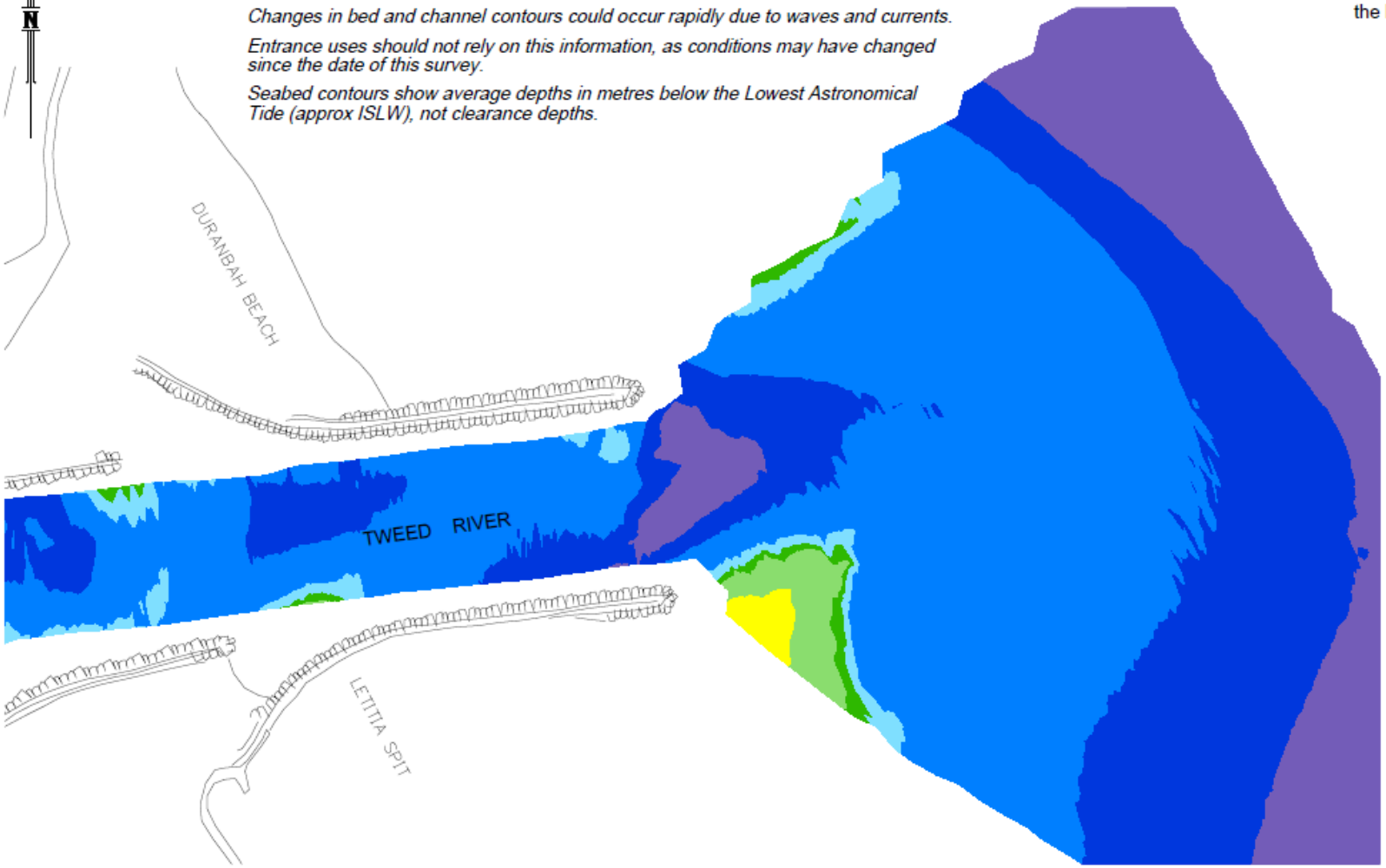
TWEED RIVER ENTRANCE AS AT 28th AUGUST 2020

WARNINGS: *Extreme caution should be used when navigating this entrance.*

Changes in bed and channel contours could occur rapidly due to waves and currents.

Entrance uses should not rely on this information, as conditions may have changed since the date of this survey.

Seabed contours show average depths in metres below the Lowest Astronomical Tide (approx ISLW), not clearance depths.



LEGEND

Average Depths in meters below the Lowest Astronomical Tide

- Less Than 1.0m
- 1.0 to 2.0m
- 2.0 to 3.0m
- 3.0 to 3.5m
- 3.5 to 4.0m
- 4.0 to 6.0m
- 6.0 to 8.0m
- More than 8.0m

NOTES:

1. Survey information collected by Michel Group Services on 28th AUGUST 2020.
2. This plan prepared by Michel Group Services on 2nd SEPTEMBER 2020.
3. Surveys are undertaken for Tweed Sand Bypassing every three months to monitor entrance seabed levels.

NSW GOVERNMENT | Planning, Industry & Environment

TWEED SAND BYPASSING

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Meters

0 50 100 150 200

Queensland Government

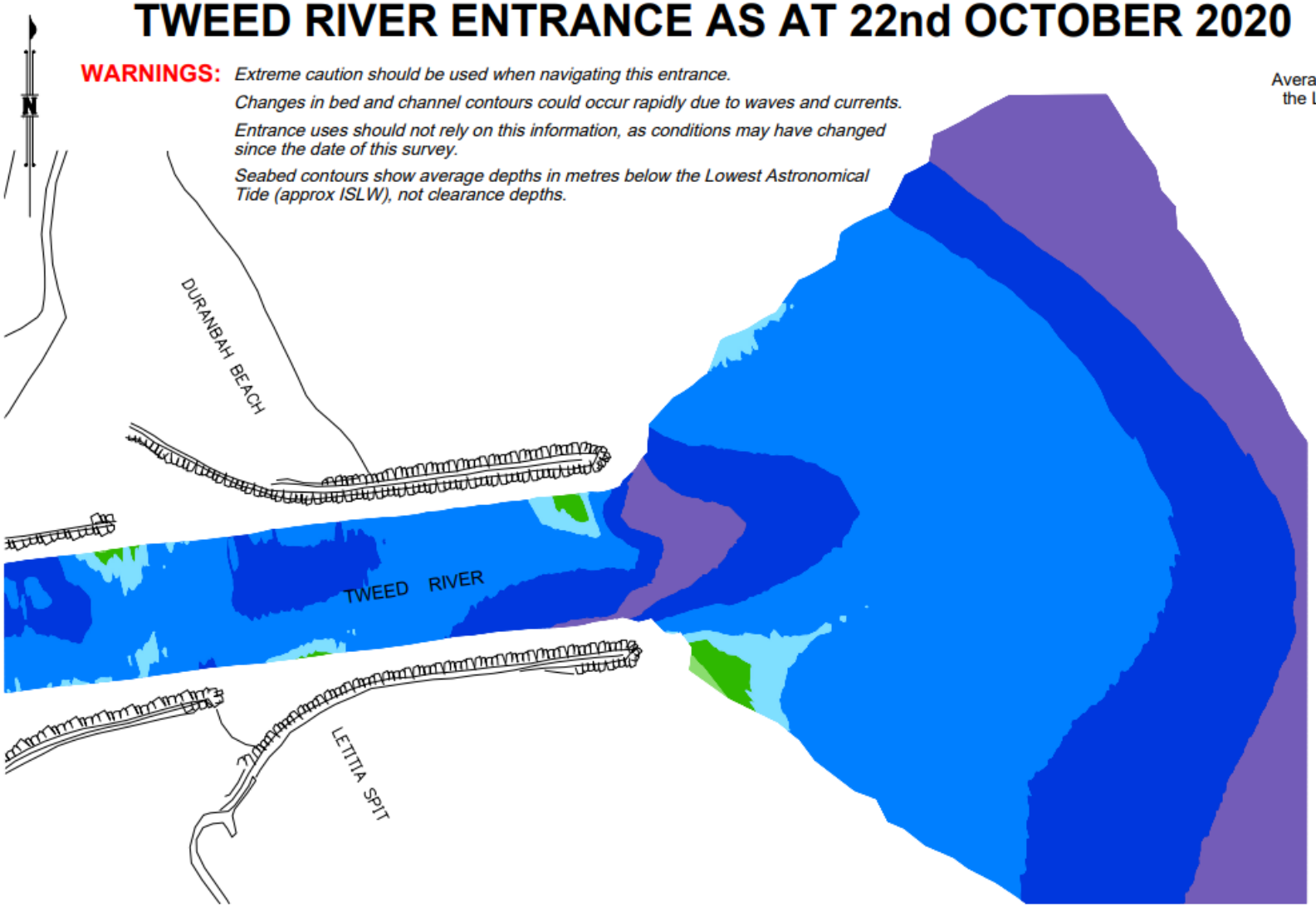
TWEED RIVER ENTRANCE AS AT 22nd OCTOBER 2020

WARNINGS: *Extreme caution should be used when navigating this entrance.*

Changes in bed and channel contours could occur rapidly due to waves and currents.

Entrance uses should not rely on this information, as conditions may have changed since the date of this survey.

Seabed contours show average depths in metres below the Lowest Astronomical Tide (approx ISLW), not clearance depths.



LEGEND

Average Depths in meters below the Lowest Astronomical Tide

- Less Than 1.0m
- 1.0 to 2.0m
- 2.0 to 3.0m
- 3.0 to 3.5m
- 3.5 to 4.0m
- 4.0 to 6.0m
- 6.0 to 8.0m
- More than 8.0m

NOTES:

1. Survey information collected by Michel Group Services on 22nd OCTOBER 2020.
2. This plan prepared by Michel Group Services on 28th OCTOBER 2020.
3. Surveys are undertaken for Tweed Sand Bypassing every three months to monitor entrance seabed levels.

NSW GOVERNMENT | Transport for NSW

TWEED SAND BYPASSING

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Meters

0 50 100 150 200

Queensland Government

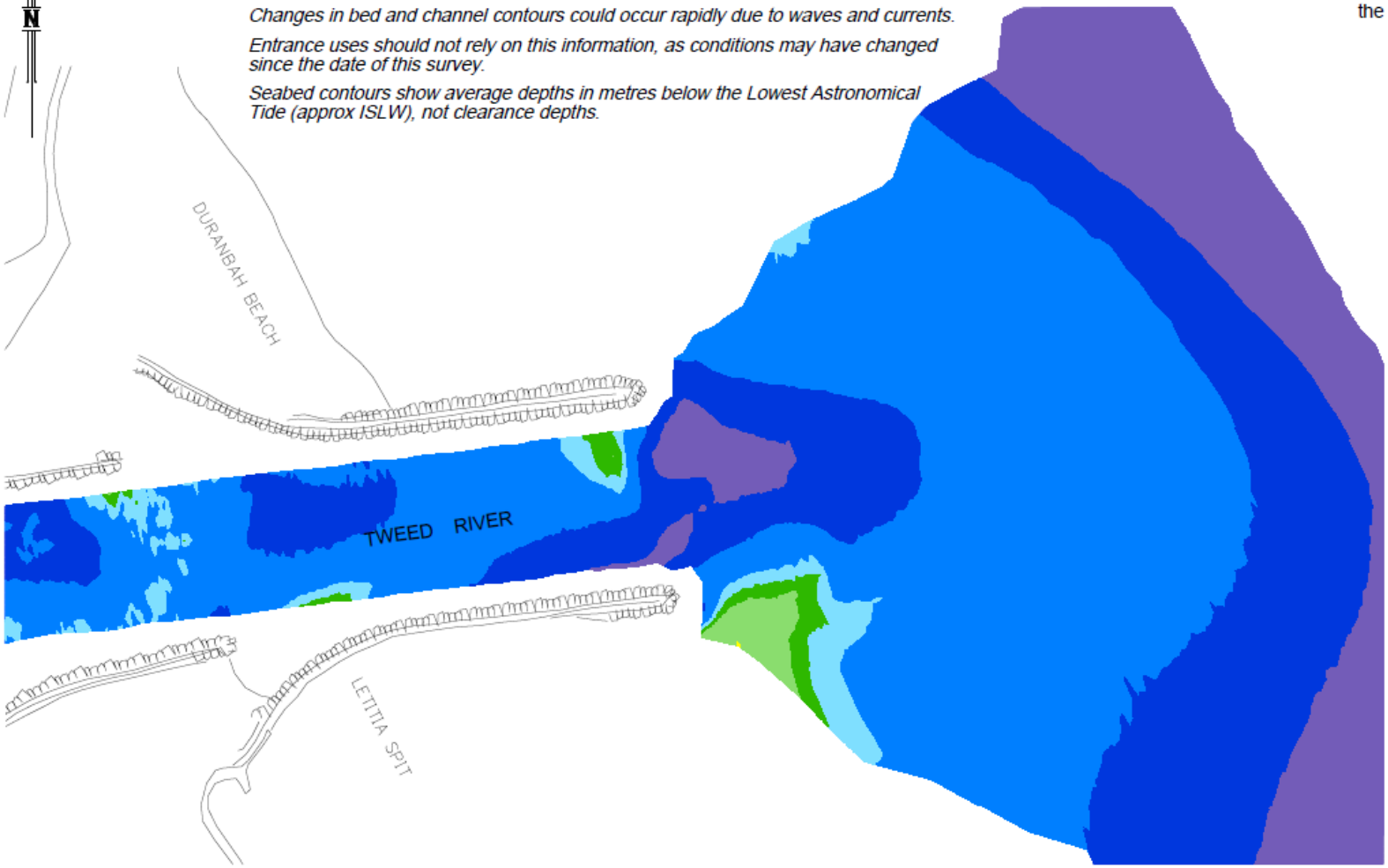
TWEED RIVER ENTRANCE AS AT 27th NOVEMBER 2020

WARNINGS: *Extreme caution should be used when navigating this entrance.*

Changes in bed and channel contours could occur rapidly due to waves and currents.

Entrance uses should not rely on this information, as conditions may have changed since the date of this survey.

Seabed contours show average depths in metres below the Lowest Astronomical Tide (approx ISLW), not clearance depths.



LEGEND

Average Depths in meters below the Lowest Astronomical Tide

- Less Than 1.0m
- 1.0 to 2.0m
- 2.0 to 3.0m
- 3.0 to 3.5m
- 3.5 to 4.0m
- 4.0 to 6.0m
- 6.0 to 8.0m
- More than 8.0m

NOTES:

1. Survey information collected by Michel Group Services on 27th NOVEMBER 2020.
2. This plan prepared by Michel Group Services on 8th DECEMBER 2020.
3. Surveys are undertaken for Tweed Sand Bypassing every three months to monitor entrance seabed levels.

NSW GOVERNMENT | Transport for NSW

TWEED SAND BYPASSING

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Meters

0 50 100 150 200

Queensland Government

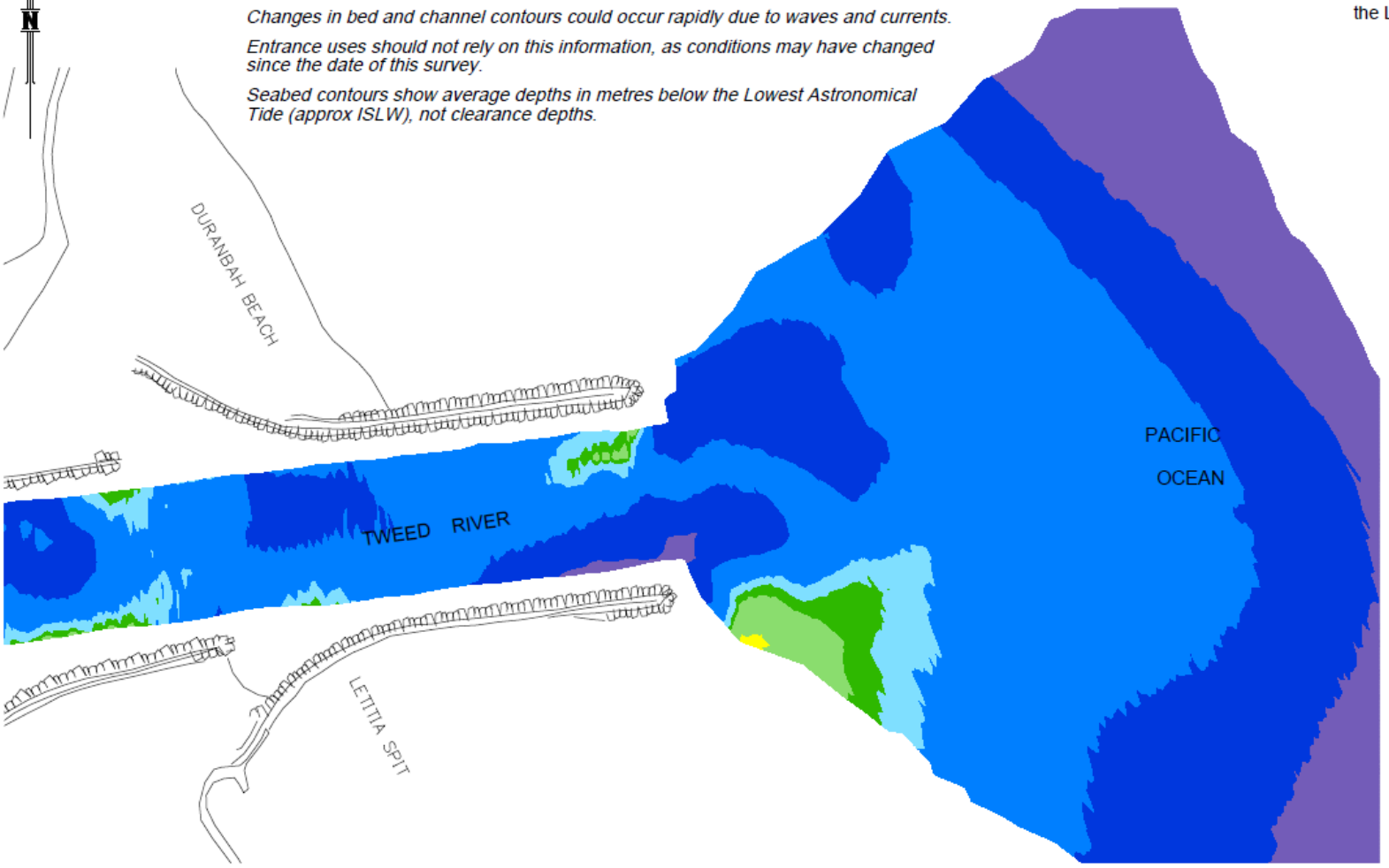
TWEED RIVER ENTRANCE AS AT 15th JANUARY 2021

WARNINGS: *Extreme caution should be used when navigating this entrance.*

Changes in bed and channel contours could occur rapidly due to waves and currents.

Entrance uses should not rely on this information, as conditions may have changed since the date of this survey.

Seabed contours show average depths in metres below the Lowest Astronomical Tide (approx ISLW), not clearance depths.



LEGEND

Average Depths in meters below the Lowest Astronomical Tide

- Less Than 1.0m
- 1.0 to 2.0m
- 2.0 to 3.0m
- 3.0 to 3.5m
- 3.5 to 4.0m
- 4.0 to 6.0m
- 6.0 to 8.0m
- More than 8.0m

NOTES:

1. Survey information collected by Michel Group Services on 15th JANUARY 2021.
2. This plan prepared by Michel Group Services on 27th JANUARY 2021.
3. Surveys are undertaken for Tweed Sand Bypassing every three months to monitor entrance seabed levels.

NSW GOVERNMENT | Transport for NSW

TWEED SAND BYPASSING

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Meters

0 50 100 150 200

Queensland Government

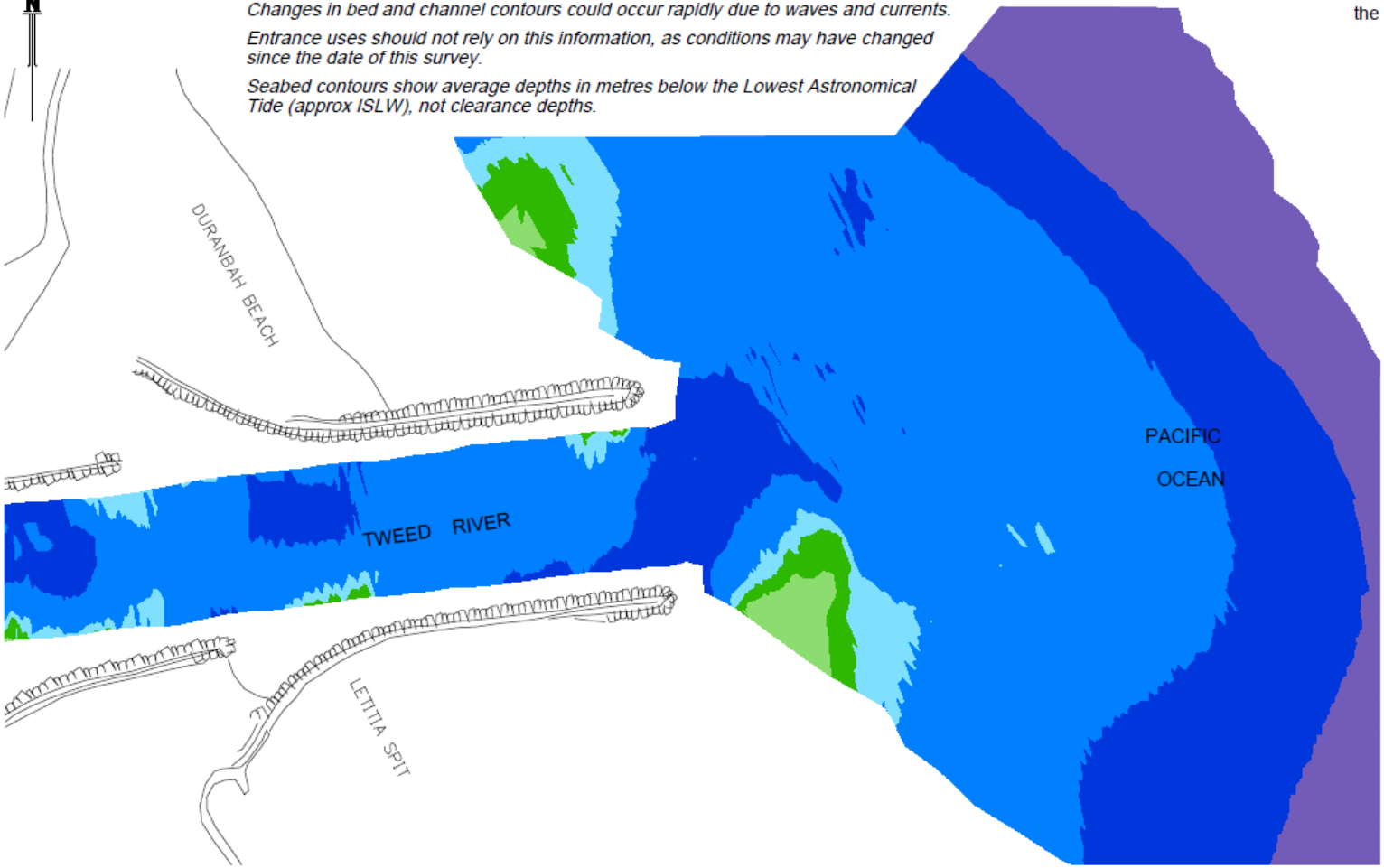
TWEED RIVER ENTRANCE AS AT 1st MARCH 2021

WARNINGS: *Extreme caution should be used when navigating this entrance.*

Changes in bed and channel contours could occur rapidly due to waves and currents.

Entrance uses should not rely on this information, as conditions may have changed since the date of this survey.

Seabed contours show average depths in metres below the Lowest Astronomical Tide (approx ISLW), not clearance depths.



LEGEND

Average Depths in meters below the Lowest Astronomical Tide

- Less Than 1.0m
- 1.0 to 2.0m
- 2.0 to 3.0m
- 3.0 to 3.5m
- 3.5 to 4.0m
- 4.0 to 6.0m
- 6.0 to 8.0m
- More than 8.0m

NOTES:

1. Survey information collected by Michel Group Services on 1st MARCH 2021.
2. This plan prepared by Michel Group Services on 4th MARCH 2021.
3. Surveys are undertaken for Tweed Sand Bypassing every three months to monitor entrance seabed levels.

NSW GOVERNMENT | Transport for NSW

TWEED SAND BYPASSING

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Meters

0 50 100 150 200

Queensland Government

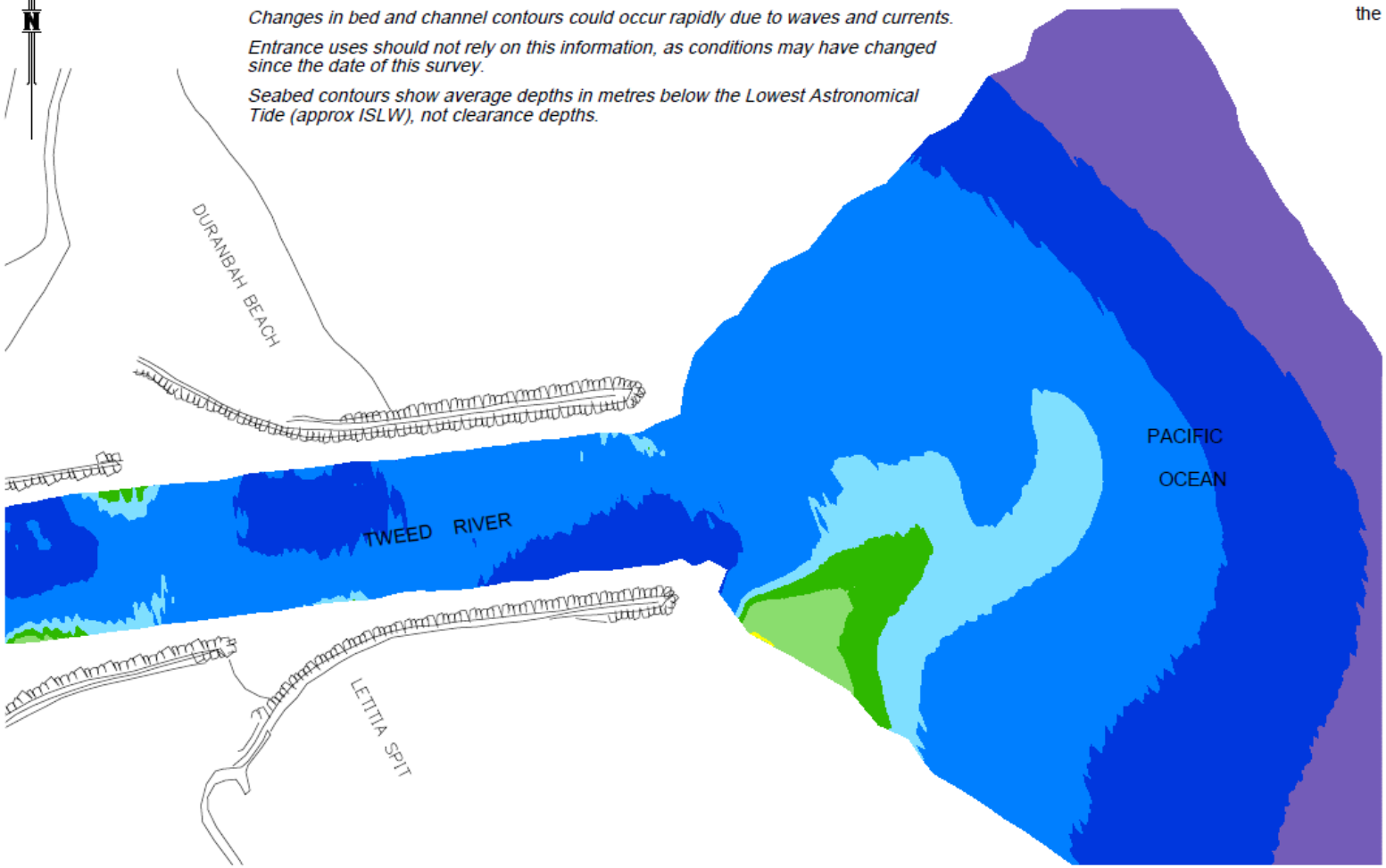
TWEED RIVER ENTRANCE AS AT 14th APRIL 2021

WARNINGS: *Extreme caution should be used when navigating this entrance.*

Changes in bed and channel contours could occur rapidly due to waves and currents.

Entrance uses should not rely on this information, as conditions may have changed since the date of this survey.

Seabed contours show average depths in metres below the Lowest Astronomical Tide (approx ISLW), not clearance depths.



LEGEND

Average Depths in meters below the Lowest Astronomical Tide

- Less Than 1.0m
- 1.0 to 2.0m
- 2.0 to 3.0m
- 3.0 to 3.5m
- 3.5 to 4.0m
- 4.0 to 6.0m
- 6.0 to 8.0m
- More than 8.0m

NOTES:

1. Survey information collected by Michel Group Services on 14th APRIL 2021.
2. This plan prepared by Michel Group Services on 22nd APRIL 2021.
3. Surveys are undertaken for Tweed Sand Bypassing every three months to monitor entrance seabed levels.

NSW GOVERNMENT | Transport for NSW

TWEED SAND BYPASSING

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Meters

0 50 100 150 200

Queensland Government

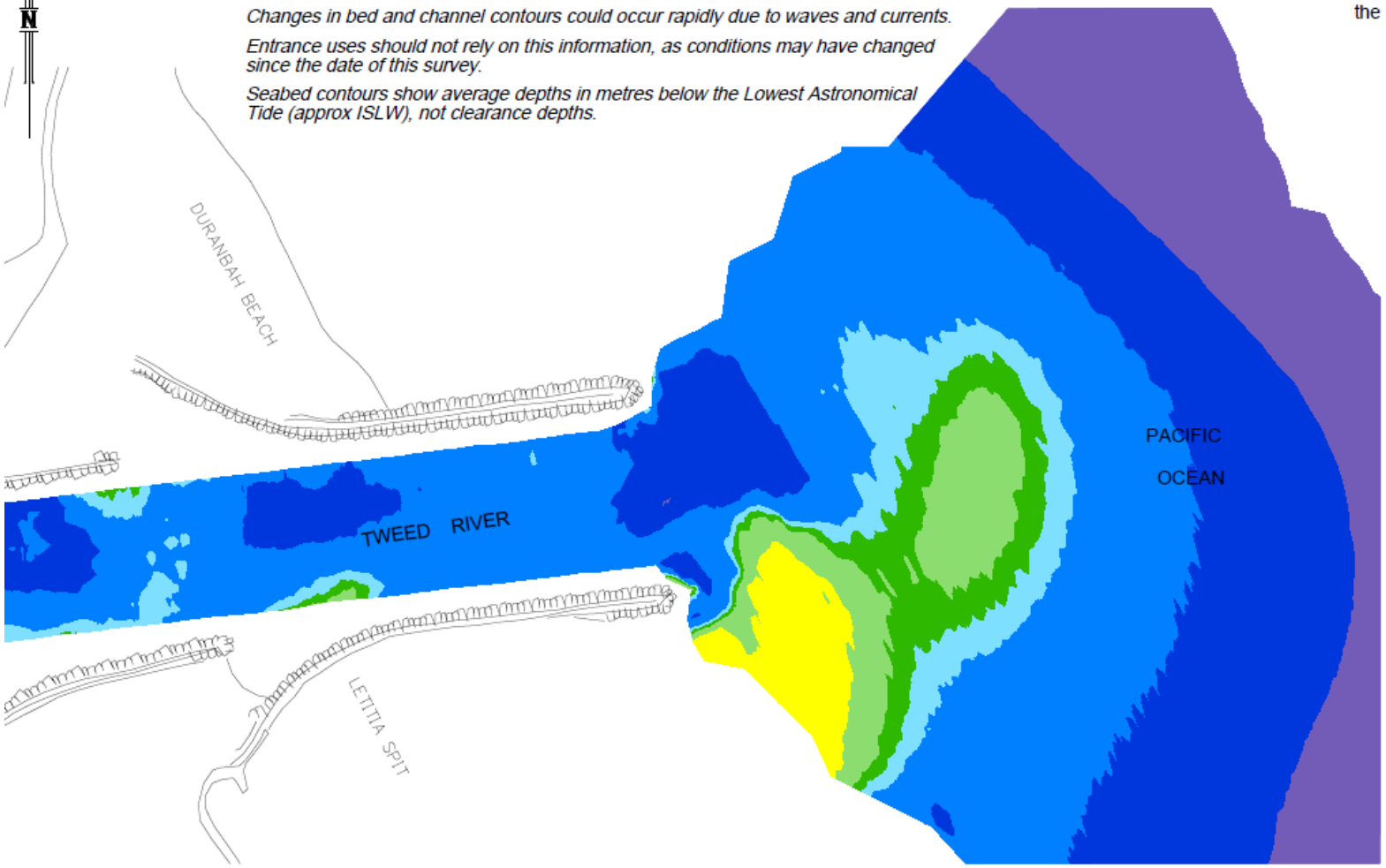
TWEED RIVER ENTRANCE AS AT 10th JUNE 2021

WARNINGS: *Extreme caution should be used when navigating this entrance.*

Changes in bed and channel contours could occur rapidly due to waves and currents.

Entrance uses should not rely on this information, as conditions may have changed since the date of this survey.

Seabed contours show average depths in metres below the Lowest Astronomical Tide (approx ISLW), not clearance depths.



NOTES:

1. Survey information collected by Michel Group Services on 8th & 10th JUNE 2021.
2. This plan prepared by Michel Group Services on 23rd JUNE 2021.
3. Surveys are undertaken for Tweed Sand Bypassing every three months to monitor entrance seabed levels.

NSW GOVERNMENT | Transport for NSW

TWEED SAND BYPASSING

Tweed Sand bypassing is a joint project of the New South Wales and Queensland Governments, with the support of the Gold Coast City Council, and in conjunction with Tweed Shire Council.

Meters

0 50 100 150 200

Queensland Government

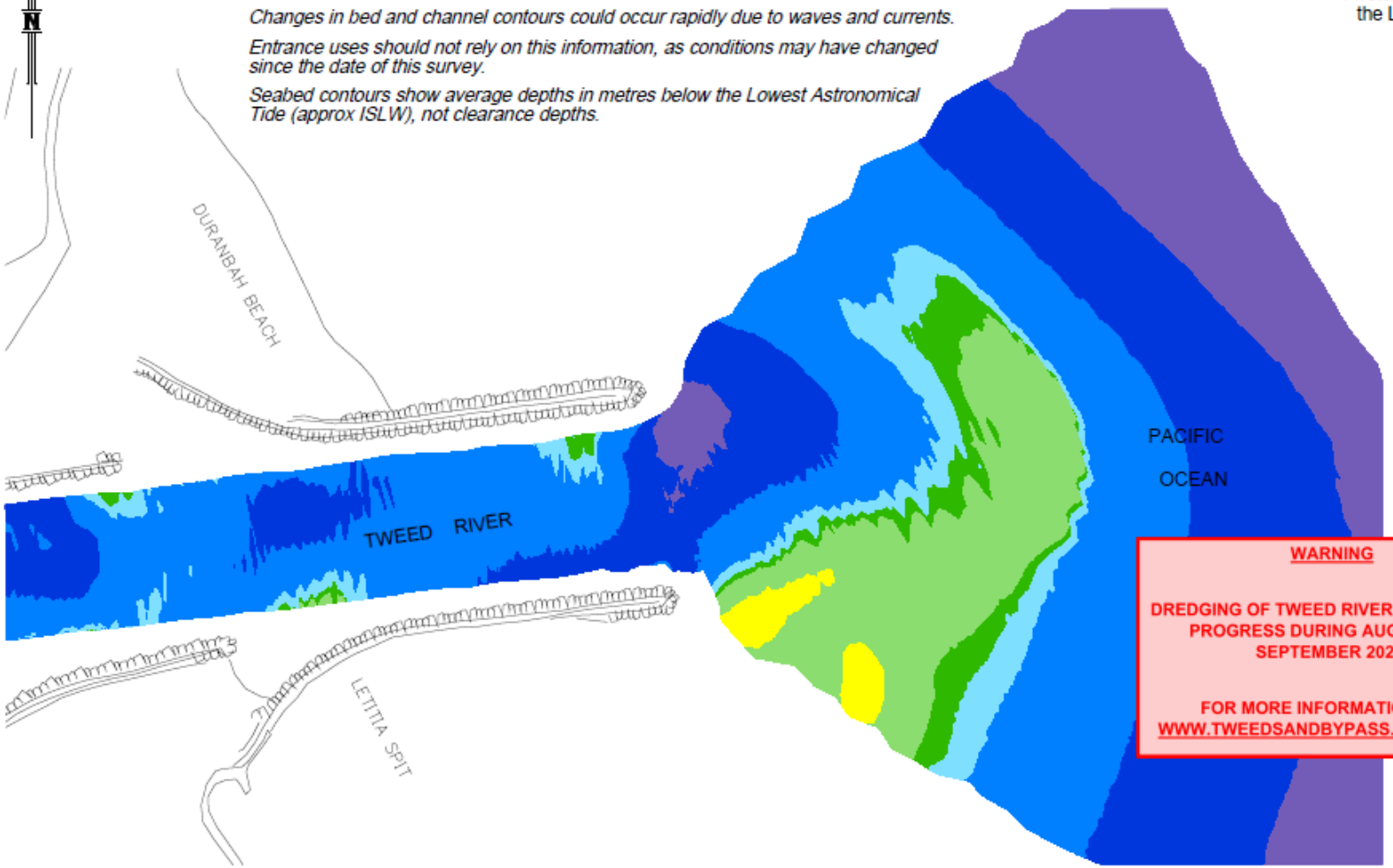
TWEED RIVER ENTRANCE AS AT 26th JULY 2021

WARNINGS: *Extreme caution should be used when navigating this entrance.*

Changes in bed and channel contours could occur rapidly due to waves and currents.

Entrance uses should not rely on this information, as conditions may have changed since the date of this survey.

Seabed contours show average depths in metres below the Lowest Astronomical Tide (approx ISLW), not clearance depths.



NOTES:

1. Survey information collected by Michel Group Services on 26th JULY 2021.
2. This plan prepared by Michel Group Services on 2nd AUGUST 2021.
3. Surveys are undertaken for Tweed Sand Bypassing every three months to monitor entrance seabed levels.

NSW GOVERNMENT | Transport for NSW

TWEED SAND BYPASSING

Tweed Sand bypassing is a joint project of the New South Wales and Queensland Governments, with the support of the Gold Coast City Council, and in conjunction with Tweed Shire Council.

Meters
0 50 100 150 200

Queensland Government

TWEED RIVER ENTRANCE AS AT 26th JULY 2021

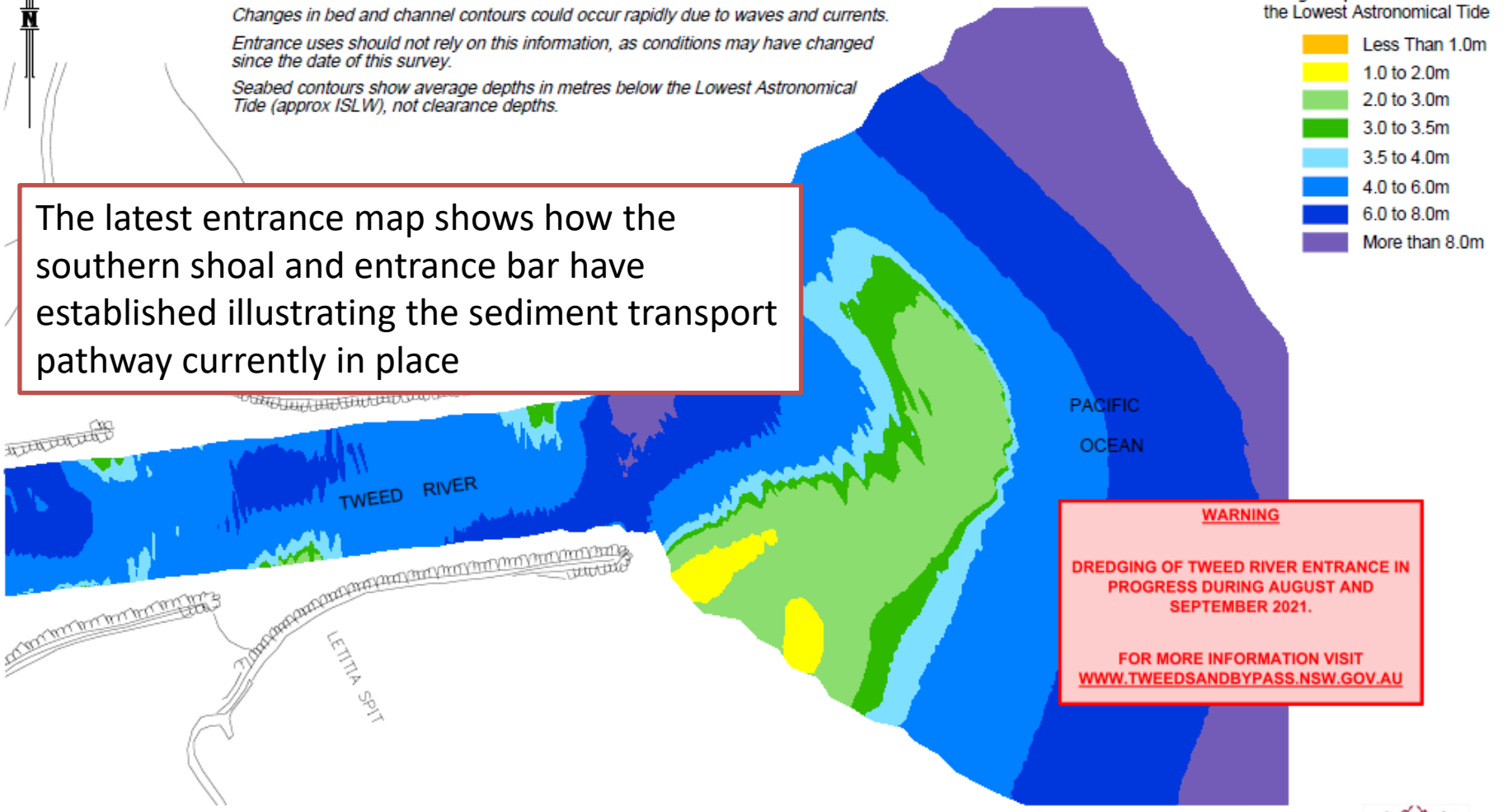
WARNINGS: *Extreme caution should be used when navigating this entrance.*

Changes in bed and channel contours could occur rapidly due to waves and currents.

Entrance uses should not rely on this information, as conditions may have changed since the date of this survey.

Seabed contours show average depths in metres below the Lowest Astronomical Tide (approx ISLW), not clearance depths.

The latest entrance map shows how the southern shoal and entrance bar have established illustrating the sediment transport pathway currently in place



NOTES:

1. Survey information collected by Michel Group Services on 26th JULY 2021.
2. This plan prepared by Michel Group Services on 2nd AUGUST 2021.
3. Surveys are undertaken for Tweed Sand Bypassing every three months to monitor entrance seabed levels.

NSW GOVERNMENT | Transport for NSW

TWEED SAND BYPASSING

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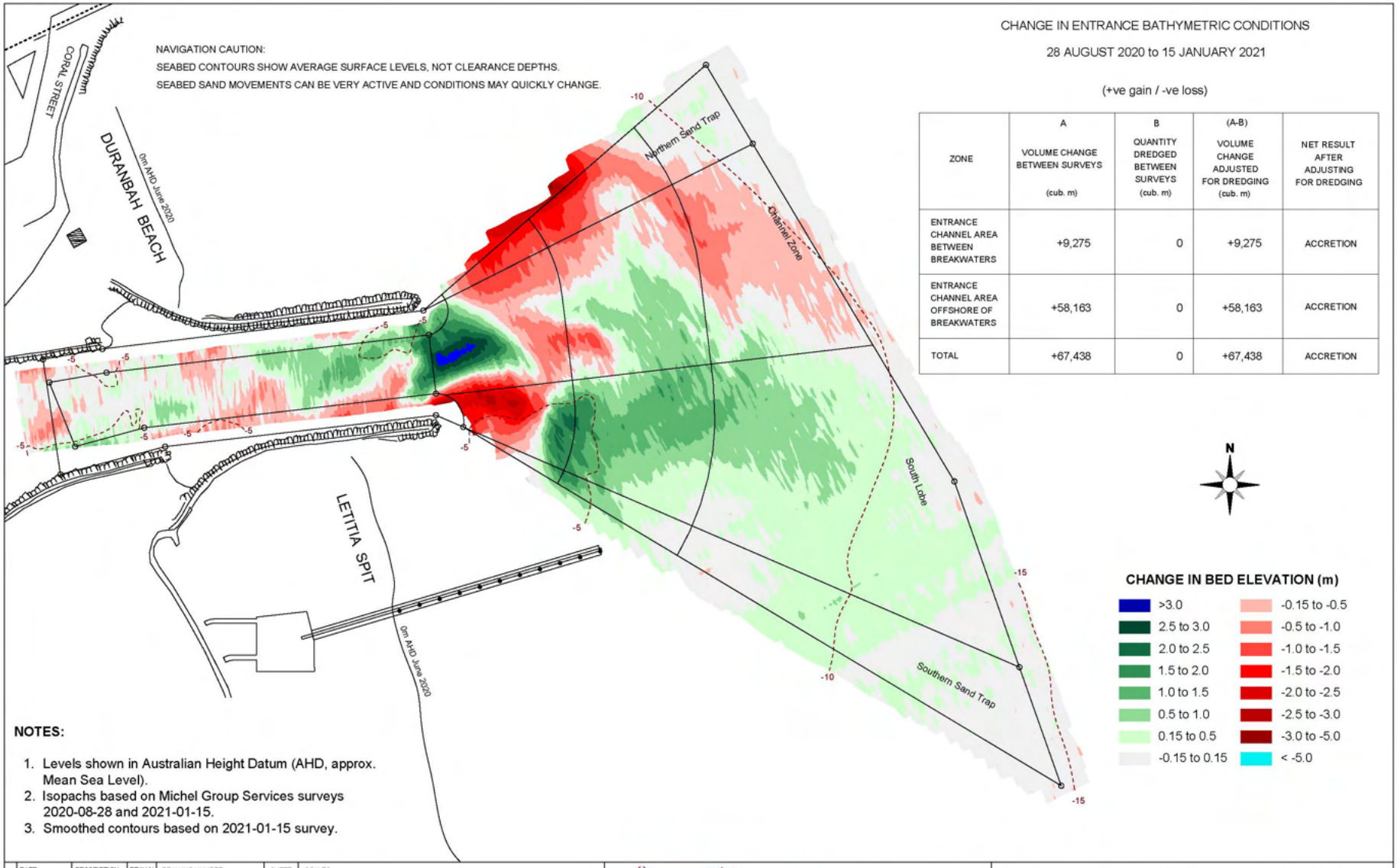
Meters
0 50 100 150 200

Queensland Government



CHANGE IN ENTRANCE BATHYMETRIC CONDITIONS

28 AUGUST 2020 to 15 JANUARY 2021

(+ve gain / -ve loss)

ZONE	A VOLUME CHANGE BETWEEN SURVEYS (cub. m)	B QUANTITY DREDGED BETWEEN SURVEYS (cub. m)	(A-B) VOLUME CHANGE ADJUSTED FOR DREDGING (cub. m)	NET RESULT AFTER ADJUSTING FOR DREDGING
ENTRANCE CHANNEL AREA BETWEEN BREAKWATERS	+9,275	0	+9,275	ACCRETION
ENTRANCE CHANNEL AREA OFFSHORE OF BREAKWATERS	+58,163	0	+58,163	ACCRETION
TOTAL	+67,438	0	+67,438	ACCRETION

NOTES:

1. Levels shown in Australian Height Datum (AHD, approx. Mean Sea Level).
2. Isopachs based on Michel Group Services surveys 2020-08-28 and 2021-01-15.
3. Smoothed contours based on 2021-01-15 survey.

REVISION	DATE	DESCRIPTION	DRAWN
	2021-02-11	REV 0	MH

DRAWING NUMBER: 2021-003 | SHEET: 1

DRAWING PRODUCED BY: HYDROSPHERE CONSULTING WWW.HYDROSPHERE.COM.AU

SCALES: 0 200 400 Metres

Queensland Government | NSW GOVERNMENT

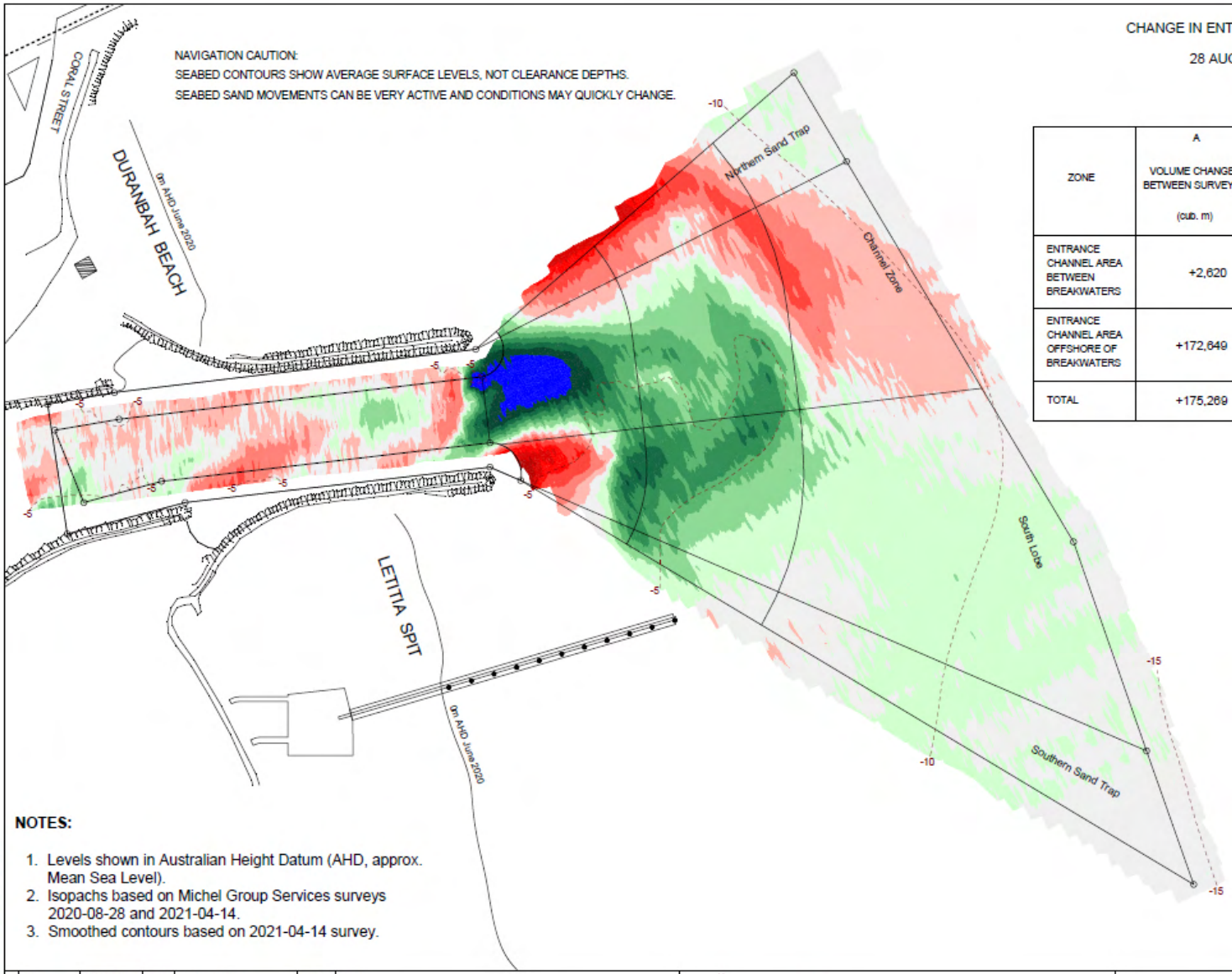
TRANSPORT FOR NSW

DEPARTMENT OF ENVIRONMENT AND SCIENCE (QLD)

TWEED RIVER ENTRANCE SAND BYPASSING PROJECT

TWEED RIVER ENTRANCE BED LEVEL CHANGE AUGUST 2020 TO JANUARY 2021

T:\Drawings\Entrance\Ent ISO 2020-08-28 to 2021-01-15.dwg



CHANGE IN ENTRANCE BATHYMETRIC CONDITIONS

28 AUGUST 2020 to 14 APRIL 2021

(+ve gain / -ve loss)

ZONE	A VOLUME CHANGE BETWEEN SURVEYS (cub. m)	B QUANTITY DREDGED BETWEEN SURVEYS (cub. m)	(A-B) VOLUME CHANGE ADJUSTED FOR DREDGING (cub. m)	NET RESULT AFTER ADJUSTING FOR DREDGING
ENTRANCE CHANNEL AREA BETWEEN BREAKWATERS	+2,620	0	+2,620	ACCRETION
ENTRANCE CHANNEL AREA OFFSHORE OF BREAKWATERS	+172,649	0	+172,649	ACCRETION
TOTAL	+175,269	0	+175,269	ACCRETION

CHANGE IN BED ELEVATION (m)

>3.0	-0.15 to -0.5
2.5 to 3.0	-0.5 to -1.0
2.0 to 2.5	-1.0 to -1.5
1.5 to 2.0	-1.5 to -2.0
1.0 to 1.5	-2.0 to -2.5
0.5 to 1.0	-2.5 to -3.0
0.15 to 0.5	-3.0 to -5.0
-0.15 to 0.15	< -5.0

NOTES:

1. Levels shown in Australian Height Datum (AHD, approx. Mean Sea Level).
2. Isopachs based on Michel Group Services surveys 2020-08-28 and 2021-04-14.
3. Smoothed contours based on 2021-04-14 survey.

REVISION	DATE	DESCRIPTION	DRAWN
	2021-05-10	REV 0	MH

DRAWING NUMBER: **2021-007**

SHEET: **1**

DRAWING PRODUCED BY:
HYDROSPHERE CONSULTING
WWW.HYDROSPHERE.COM.AU

SCALES

0 200 400

Metres

Queensland Government

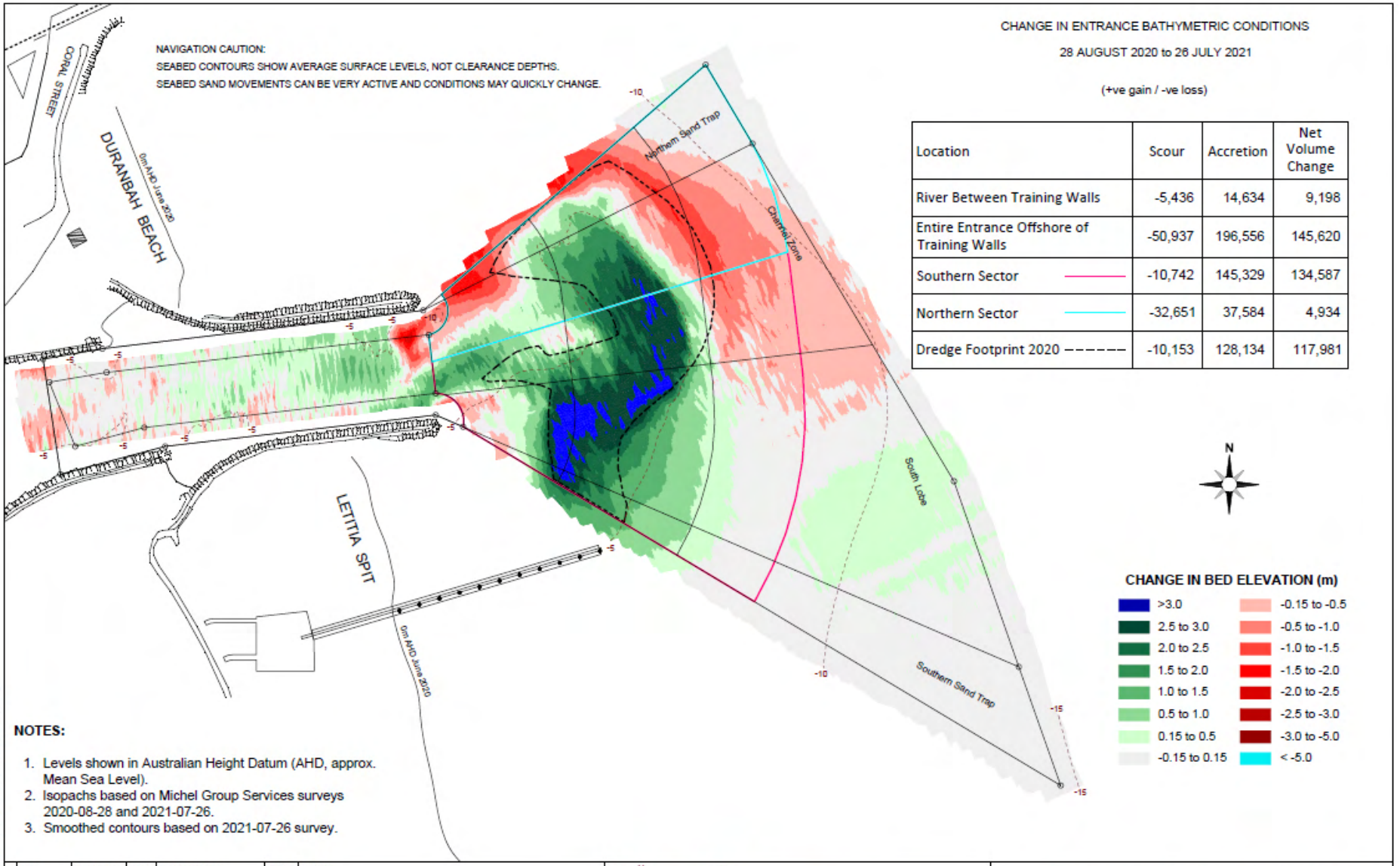
NSW GOVERNMENT

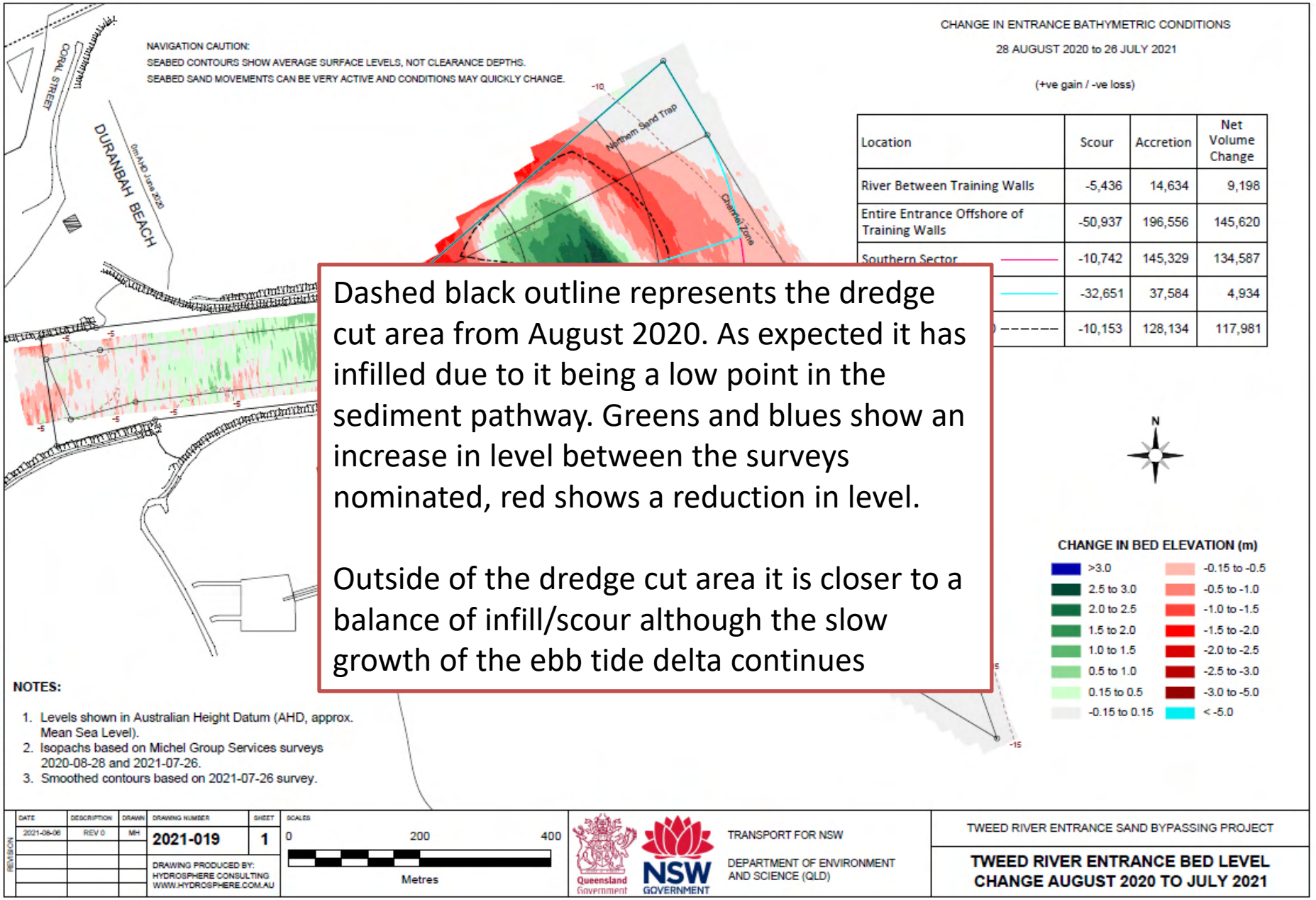
TRANSPORT FOR NSW

DEPARTMENT OF ENVIRONMENT AND SCIENCE (QLD)

TWEED RIVER ENTRANCE SAND BYPASSING PROJECT

TWEED RIVER ENTRANCE BED LEVEL CHANGE AUGUST 2020 TO APRIL 2021


NAVIGATION CAUTION:
SEABED CONTOURS SHOW AVERAGE SURFACE LEVELS, NOT CLEARANCE DEPTHS.
SEABED SAND MOVEMENTS CAN BE VERY ACTIVE AND CONDITIONS MAY QUICKLY CHANGE.
CHANGE IN ENTRANCE BATHYMETRIC CONDITIONS
28 AUGUST 2020 to 26 JULY 2021
(+ve gain / -ve loss)
Location | Scour | Accretion | Net Volume Change
River Between Training Walls | -5,436 | 14,634 | 9,198
Entire Entrance Offshore of Training Walls | -50,937 | 196,556 | 145,620
Southern Sector | -10,742 | 145,329 | 134,587
Northern Sector | -32,651 | 37,584 | 4,934
Dredge Footprint 2020 | -10,153 | 128,134 | 117,981
DURANBAH BEACH
COVAL STREET
0m AHD June 2020
Northern Sand Trap
Channel Zone
South Lobe
Southern Sand Trap
LETITIA SPIT
N
CHANGE IN BED ELEVATION (m)
>3.0
2.5 to 3.0
2.0 to 2.5
1.5 to 2.0
1.0 to 1.5
0.5 to 1.0
0.15 to 0.5
-0.15 to 0.15
-0.15 to -0.5
-0.5 to -1.0
-1.0 to -1.5
-1.5 to -2.0
-2.0 to -2.5
-2.5 to -3.0
-3.0 to -5.0
< -5.0
NOTES:
1. Levels shown in Australian Height Datum (AHD, approx. Mean Sea Level).
2. Isopachs based on Michel Group Services surveys 2020-08-28 and 2021-07-26.
3. Smoothed contours based on 2021-07-26 survey.
REVISION
DATE | DESCRIPTION | DRAWN | DRAWING NUMBER | SHEET
2021-08-06 | REV 0 | MH | 2021-019 | 1
DRAWING PRODUCED BY: HYDROSPHERE CONSULTING WWW.HYDROSPHERE.COM.AU
SCALES
0 200 400
Metres
Queensland Government
NSW GOVERNMENT
TRANSPORT FOR NSW
DEPARTMENT OF ENVIRONMENT AND SCIENCE (QLD)
TWEED RIVER ENTRANCE SAND BYPASSING PROJECT
TWEED RIVER ENTRANCE BED LEVEL CHANGE AUGUST 2020 TO JULY 2021


NAVIGATION CAUTION:
SEABED CONTOURS SHOW AVERAGE SURFACE LEVELS, NOT CLEARANCE DEPTHS.
SEABED SAND MOVEMENTS CAN BE VERY ACTIVE AND CONDITIONS MAY QUICKLY CHANGE.
CHANGE IN ENTRANCE BATHYMETRIC CONDITIONS
28 AUGUST 2020 to 26 JULY 2021
(+ve gain / -ve loss)
Location | Scour | Accretion | Net Volume Change
River Between Training Walls | -5,436 | 14,634 | 9,198
Entire Entrance Offshore of Training Walls | -50,937 | 196,556 | 145,620
Southern Sector | -10,742 | 145,329 | 134,587
-32,651 | 37,584 | 4,934
-10,153 | 128,134 | 117,981
Dashed black outline represents the dredge cut area from August 2020. As expected it has infilled due to it being a low point in the sediment pathway. Greens and blues show an increase in level between the surveys nominated, red shows a reduction in level.
Outside of the dredge cut area it is closer to a balance of infill/scour although the slow growth of the ebb tide delta continues
CHANGE IN BED ELEVATION (m)
>3.0
2.5 to 3.0
2.0 to 2.5
1.5 to 2.0
1.0 to 1.5
0.5 to 1.0
0.15 to 0.5
-0.15 to 0.15
-0.15 to -0.5
-0.5 to -1.0
-1.0 to -1.5
-1.5 to -2.0
-2.0 to -2.5
-2.5 to -3.0
-3.0 to -5.0
< -5.0
NOTES:
1. Levels shown in Australian Height Datum (AHD, approx. Mean Sea Level).
2. Isopachs based on Michel Group Services surveys 2020-08-28 and 2021-07-26.
3. Smoothed contours based on 2021-07-26 survey.
DURANBAH BEACH
COVAL STREET
Northern Sand Trap
Channel Zone
0m AHD June 2020
2021-019
DRAWING PRODUCED BY: HYDROSPHERE CONSULTING WWW.HYDROSPHERE.COM.AU
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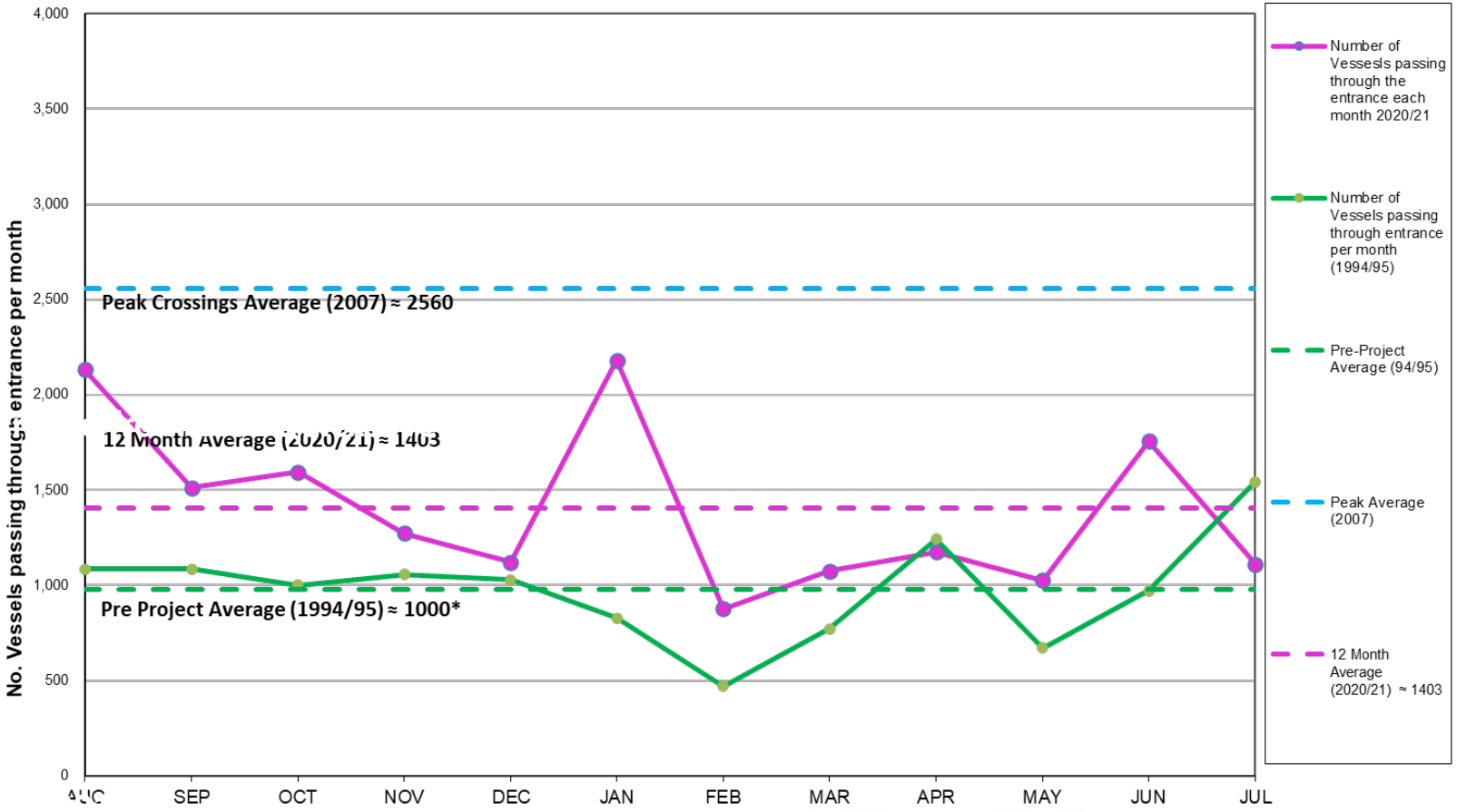
Metres
TRANSPORT FOR NSW
DEPARTMENT OF ENVIRONMENT AND SCIENCE (QLD)
TWEED RIVER ENTRANCE SAND BYPASSING PROJECT
TWEED RIVER ENTRANCE BED LEVEL CHANGE AUGUST 2020 TO JULY 2021

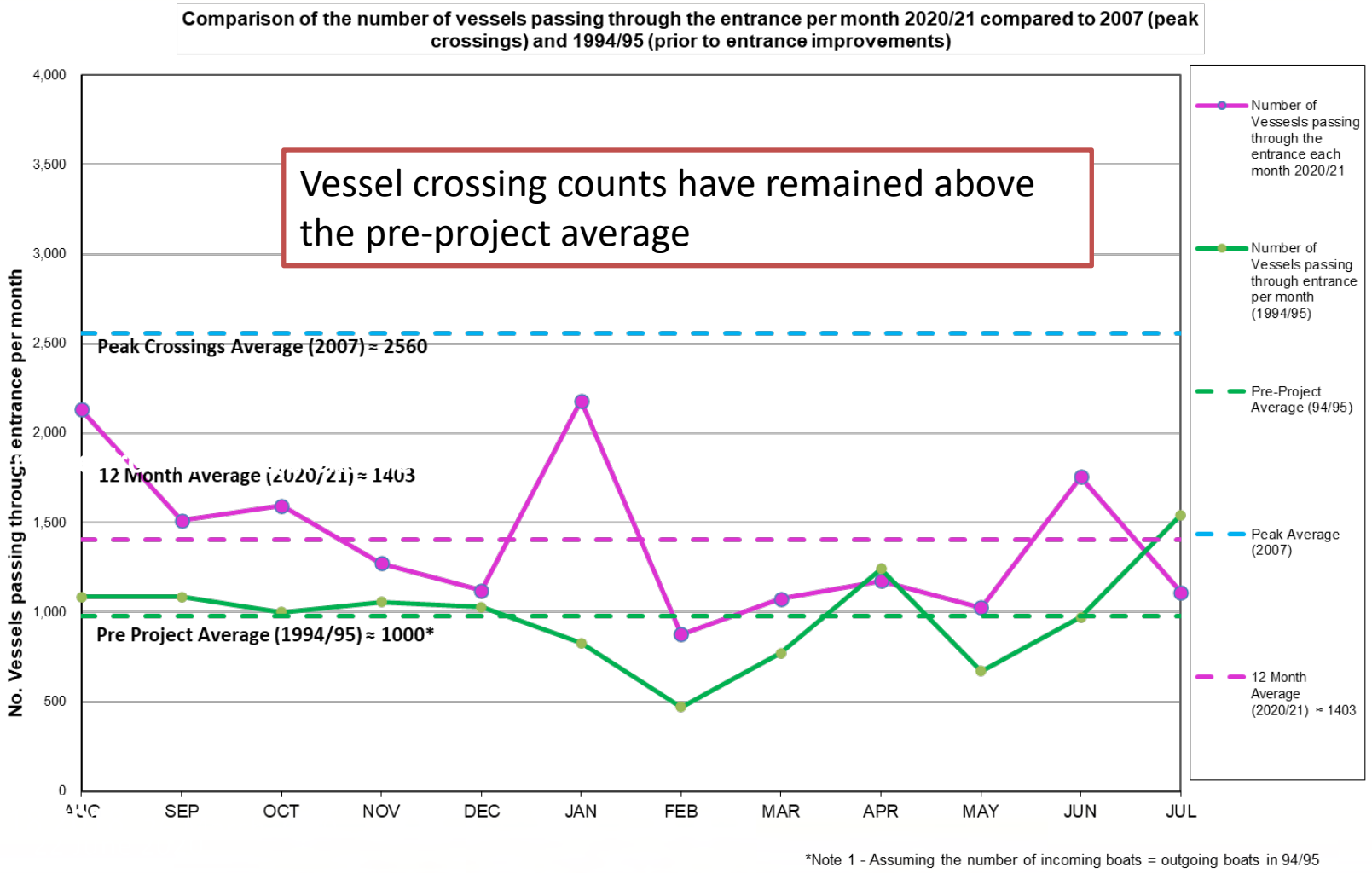
Tweed River Entrance Usage up to August 2021

Comparison of the number of vessels passing through the entrance per month 2020/21 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

Tweed River Entrance Usage up to August 2021



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Projects and Enhancements

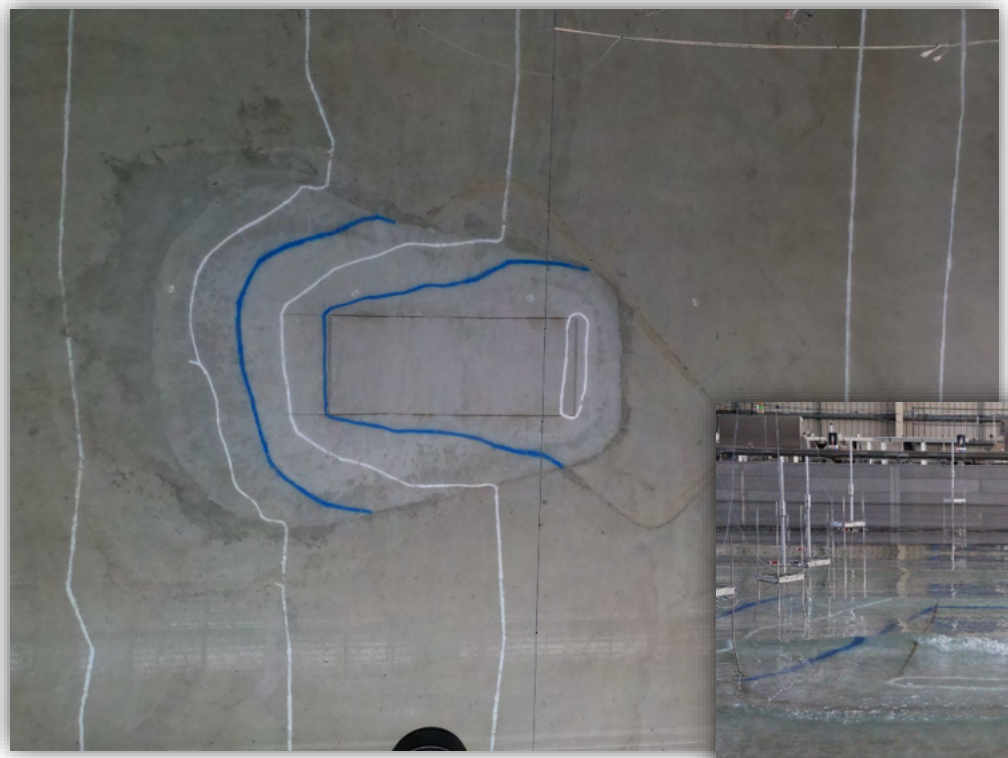
TWEED SAND BYPASSING

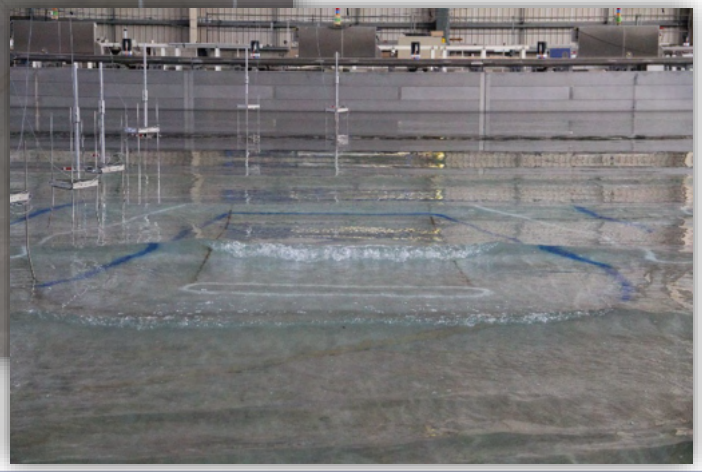
Projects

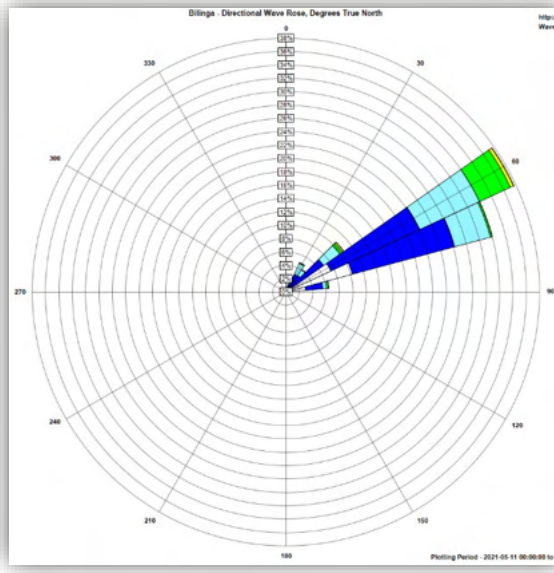
- TSB Transition - Phase 1 investigations complete, Phase 2 options evaluation complete. Preferred option adopted endorsed by the TSB Working Group.
- Reef Monitoring 2021 – field work complete
- Letitia Coastal Processes Study – underway
- Kirra pipeline detailed design – detailed design ongoing
- VP2 safety upgrade – underway
- Asset Management Software Migration - underway

QGHL – Bilinga Physical and Numerical Modelling

- Physical testing – final design in the basin
- Deployment of wave buoy at Bilinga







2021 May – 2021 Jul
Bilinga wave buoy

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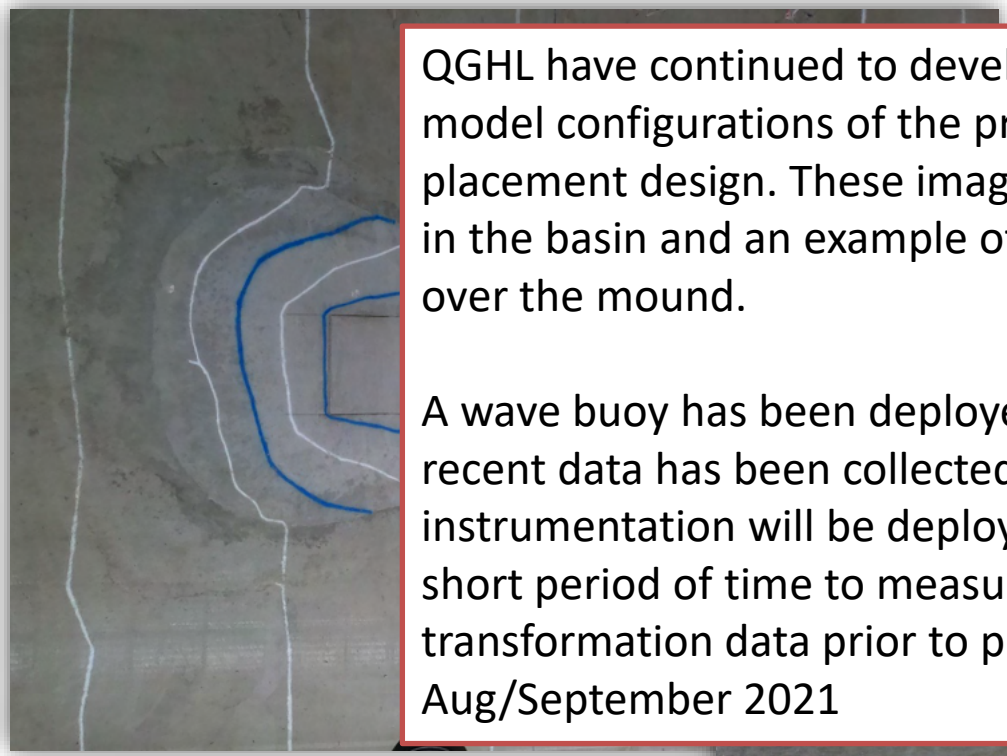

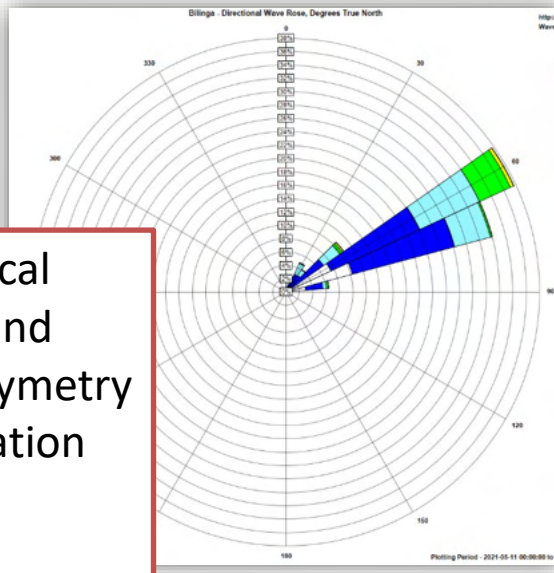

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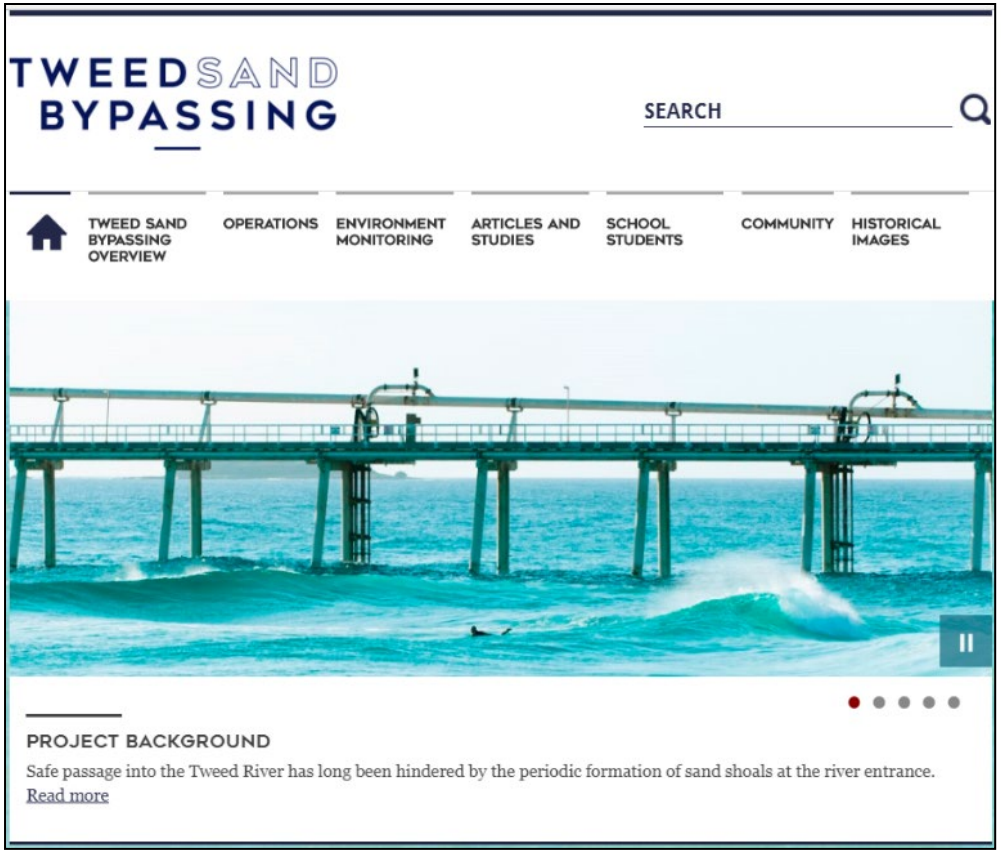
Bilinga wave buoy

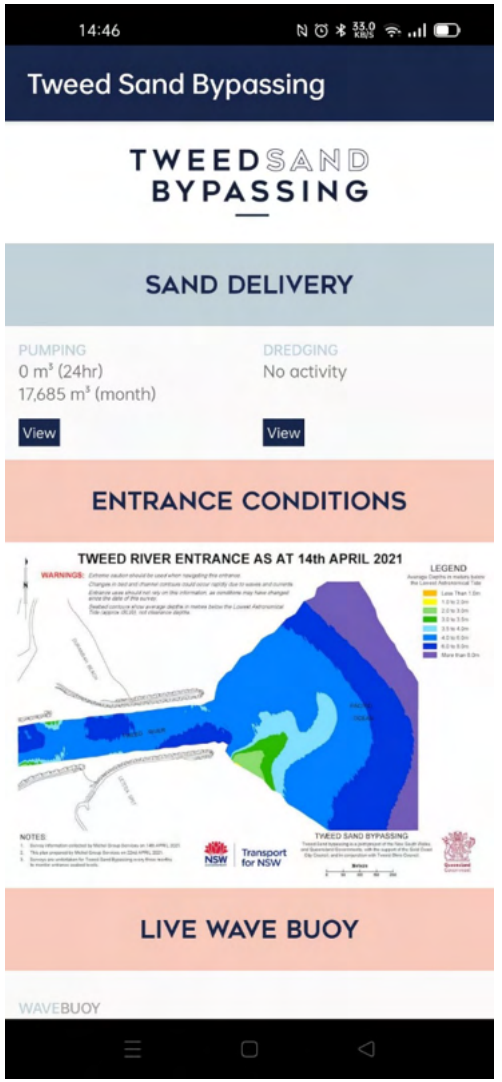
QGHL have continued to develop and test physical model configurations of the proposed Bilinga sand placement design. These images show the bathymetry in the basin and an example of wave transformation over the mound.

A wave buoy has been deployed at Bilinga and some recent data has been collected. This week additional instrumentation will be deployed in the surf zone for a short period of time to measure baseline wave transformation data prior to placement in Aug/September 2021

Communications

TWEED SAND BYPASSING



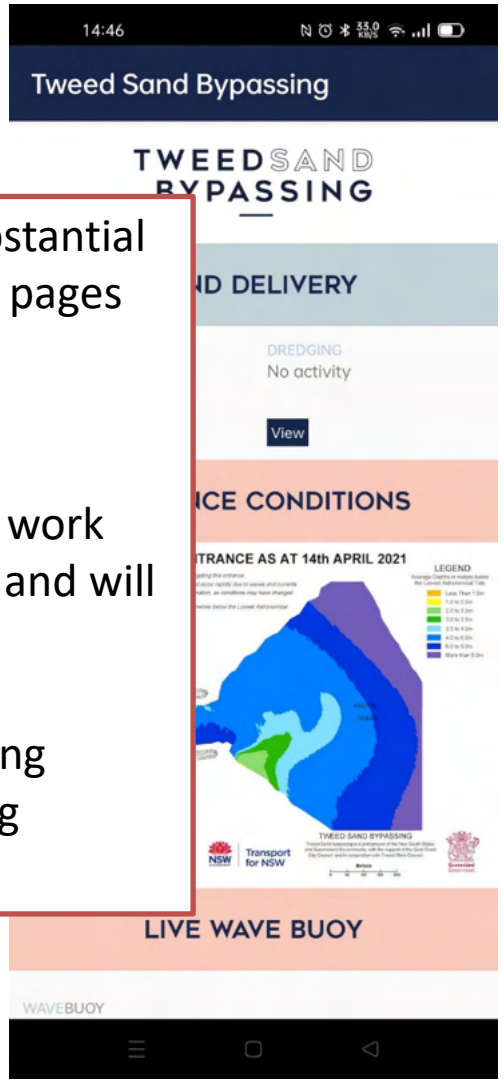


- Communication Activities for dredging
- New Project Video for website

Website continues to be updated, substantial changes to environmental monitoring pages within the next month

Development of a new project video underway. Script complete, voiceover work underway, footage capture underway and will incorporate 2021 dredging

Communications plan for 2021 dredging currently being implemented including Instagram, app and website updates



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