TWEED SAND BYPASSING

ADVISORY COMMITTEE MEETING

17 November 2021

PROJECT MONITORING AND OPERATIONAL OVERVIEW

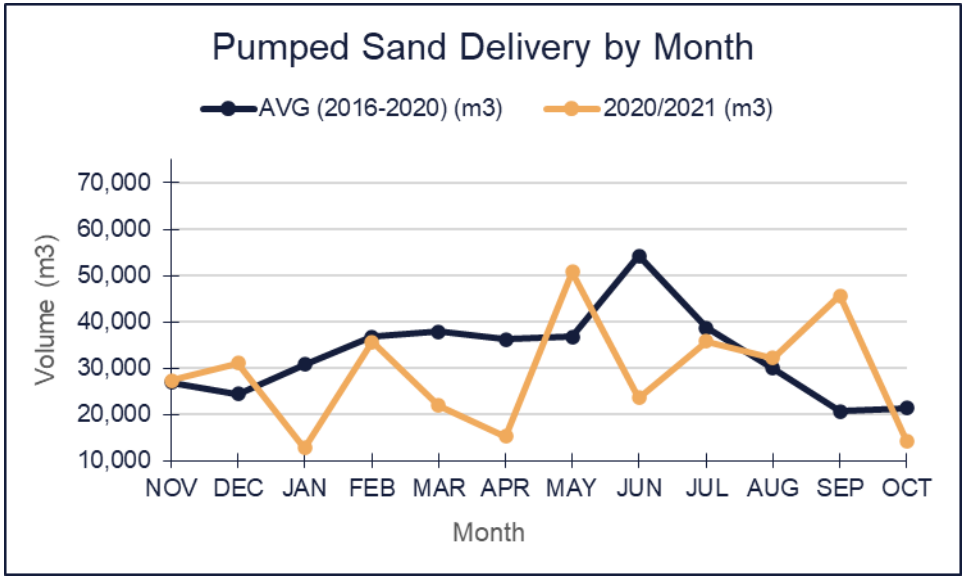
- Pumping operations 2021
- 2021 Dredging Campaign
- Environmental Monitoring / beach observations
- Entrance conditions, usage and survey
- TSB projects and enhancements
- Communications

PUMPING OPERATIONS 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	32,153	0	32,153	29,977
SEP	45,622	0	45,622	20,653
OCT	14,201	0	14,201	21,390
NOV			0	26,948
DEC			0	24,342
TOTAL	231,889	55,583	287,472	394,684

Avg Vol Jan to Oct = 343,394m3
Vol since Jan 2021 = 287,472m3

PUMPING MONTHLY TRENDS



Avg Vol Sept to Oct = 394,684m3
Vol since Sept 2020 = 345,843m3

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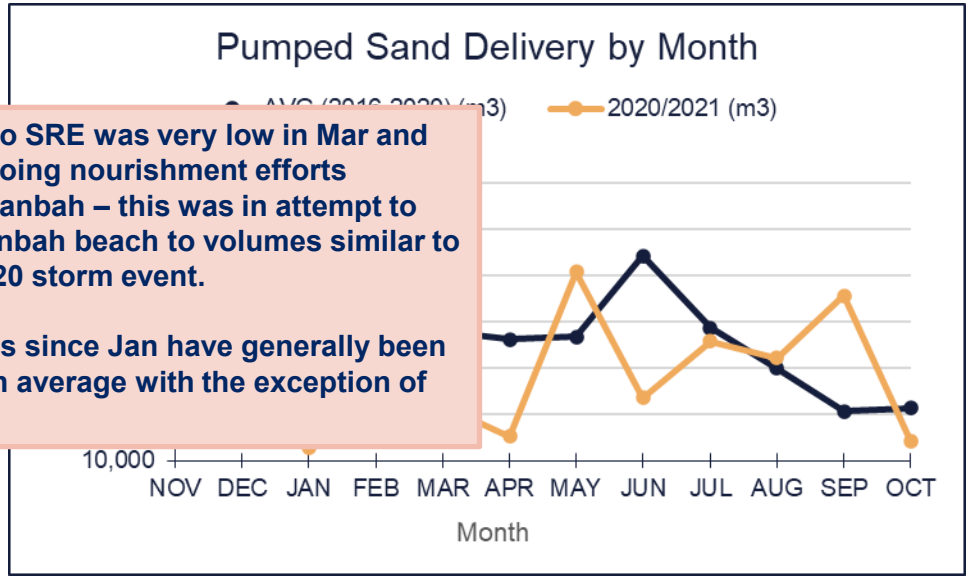
- **Sand delivery to SRE was very low in Mar and Apr due to ongoing nourishment efforts directed to Duranbah – this was in attempt to replenish Duranbah beach to volumes similar to the pre Dec 2020 storm event.**
- **Overall volumes since Jan have generally been at or lower than average with the exception of May and Sep.**

PUMPING MONTHLY TRENDS



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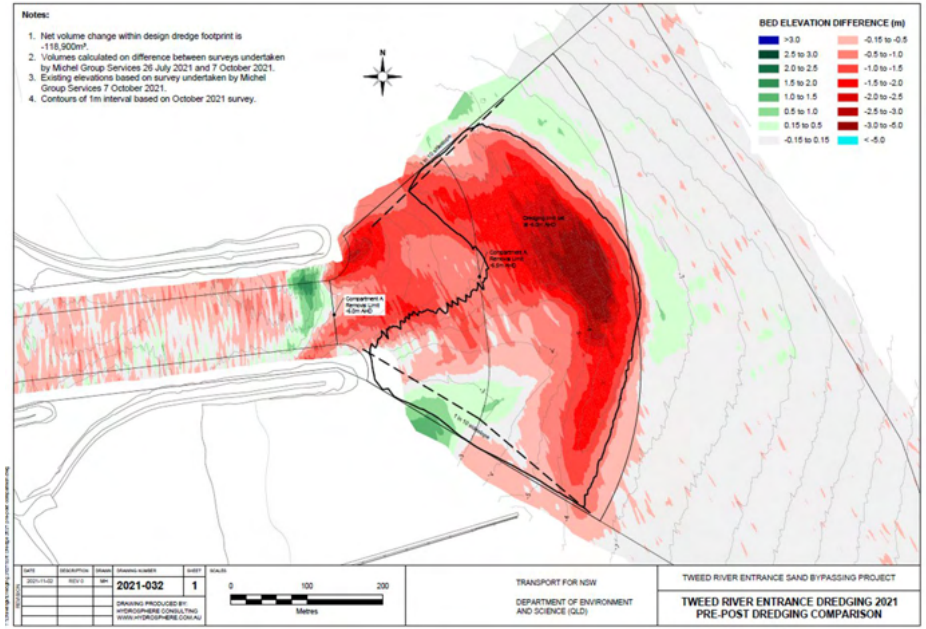
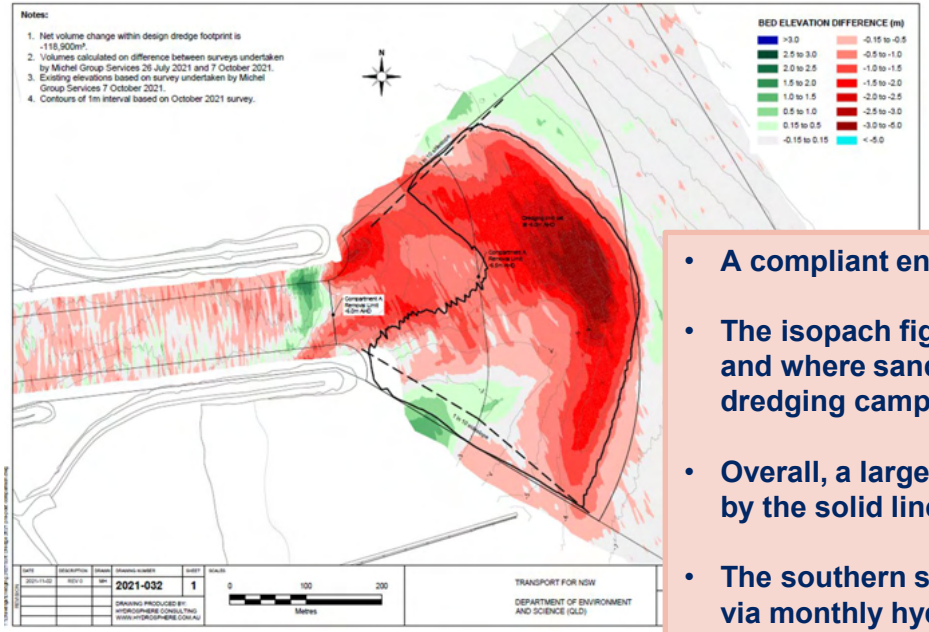
2021 DREDGE CAMPAIGN



Pre and post survey comparison

2021 DREDGE CAMPAIGN



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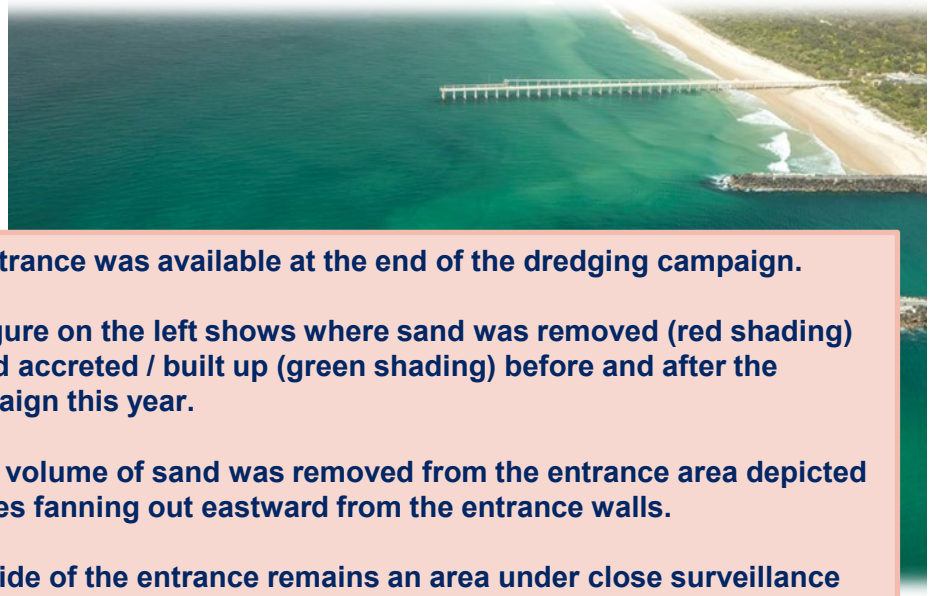
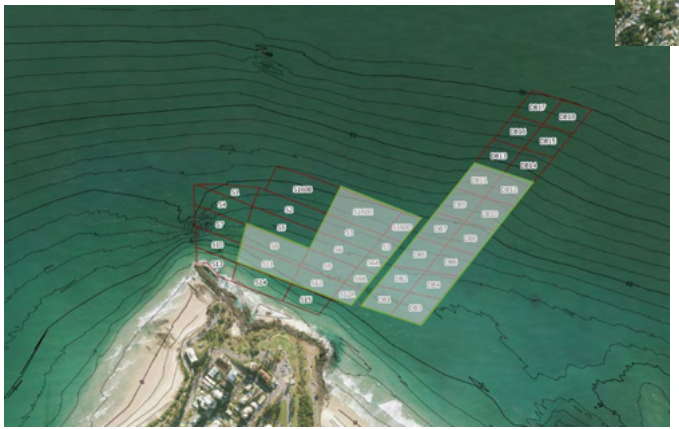


- A compliant entrance was available at the end of the dredging campaign.
- The isopach figure on the left shows where sand was removed (red shading) and where sand accreted / built up (green shading) before and after the dredging campaign this year.
- Overall, a large volume of sand was removed from the entrance area depicted by the solid lines fanning out eastward from the entrance walls.
- The southern side of the entrance remains an area under close surveillance via monthly hydrographic survey – the dredge vessel was constrained by metocean conditions at the time in targeting this area.

2021 DREDGE CAMPAIGN

Bilinga

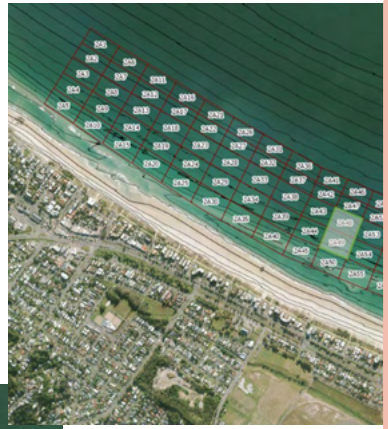
Snapper Rocks and Duranbah



Fingal

Location	Vol (m3)
Bilinga	14,729
Snapper Rocks	59,061
Duranbah	52,181
Fingal Heads	7,345
Total	**133,316**

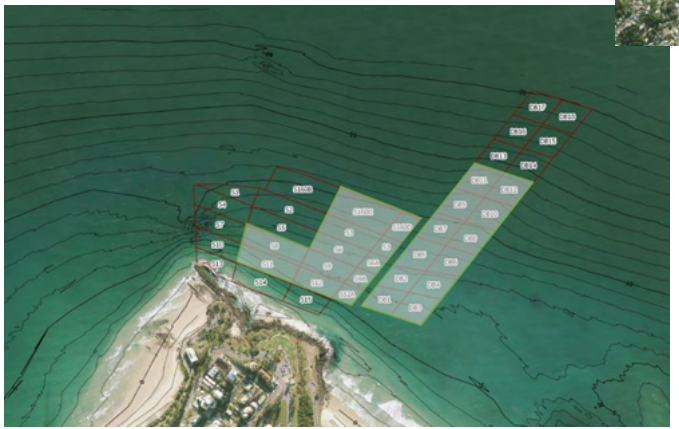
2021 DREDGE CAMPAIGN



Bilinga

- The shaded boxes show where dredged sand was placed. The table on the bottom left shows the volumes placed at each of the placement areas.
- The removal and placement design was based on volumes up to 165,000m^3. Due to reasons beyond the governments control, the placement volumes defined for each area were not fully realised, however a volume of 133,316m^3 was achieved.
- The placement design was adjusted throughout the campaign to ensure sand was distributed appropriately with the available volume.

Snapper Rocks and Duranbah



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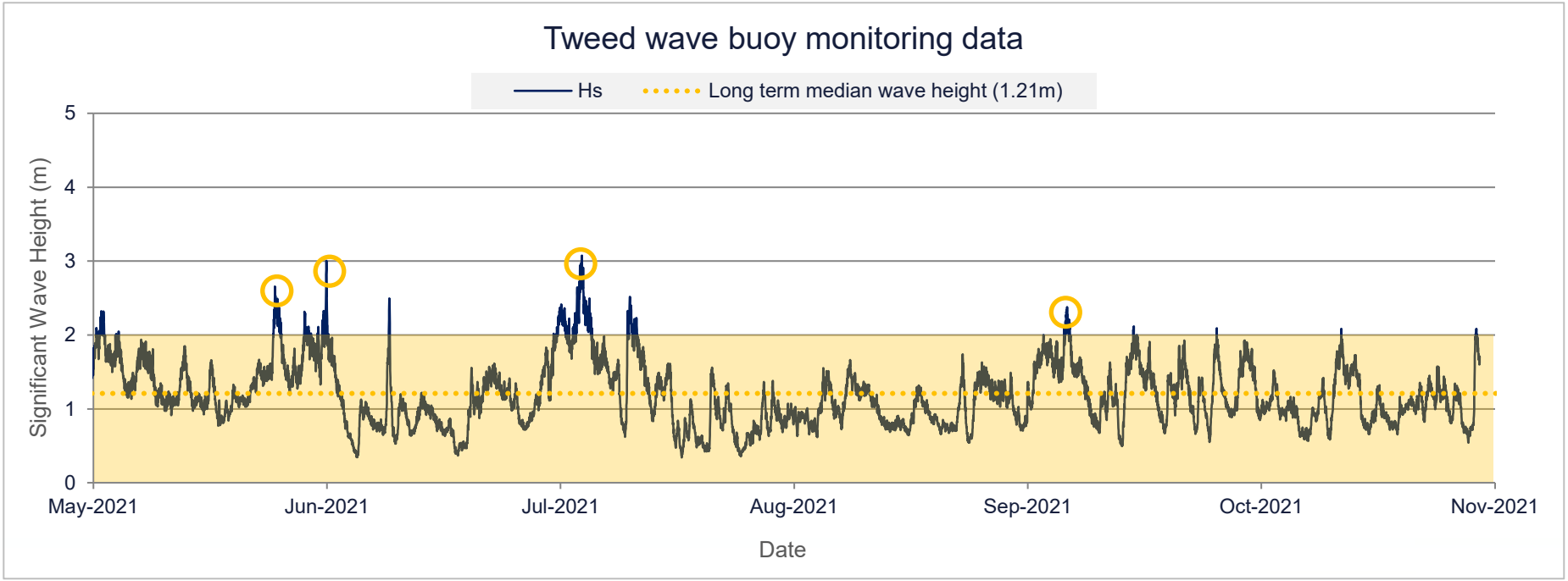
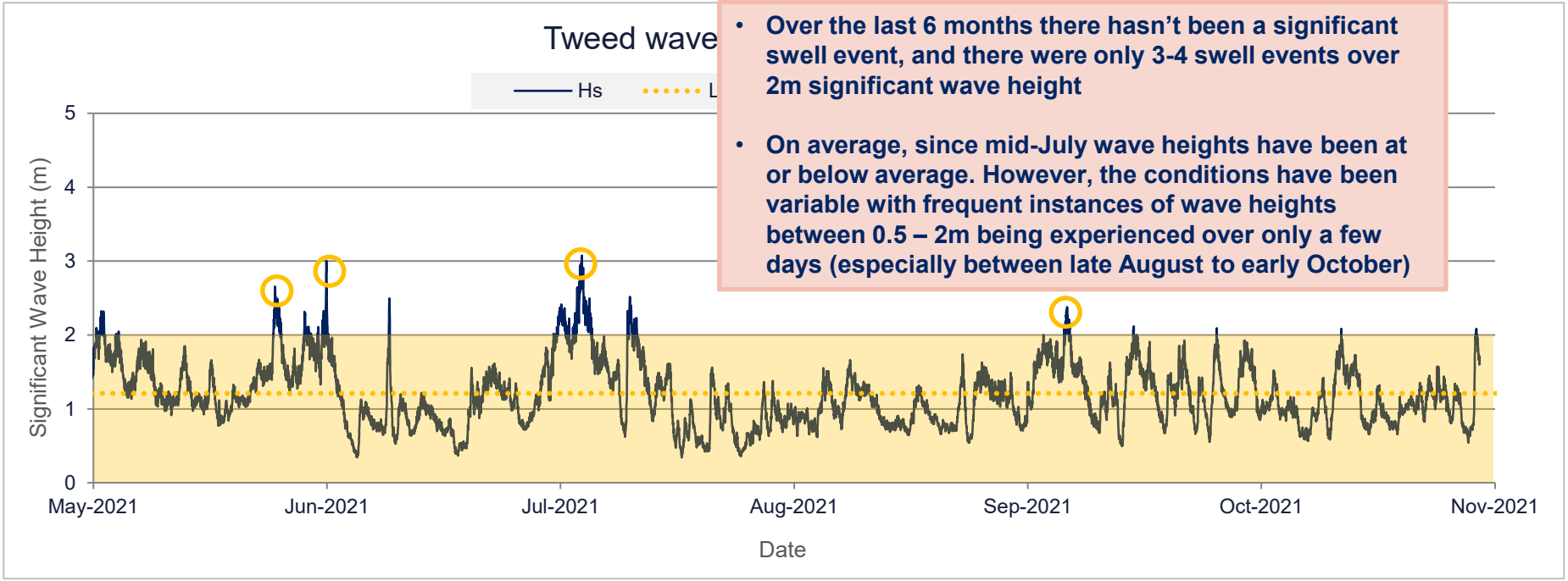
ENVIRONMENTAL MONITORING / BEACH OBSERVATIONS

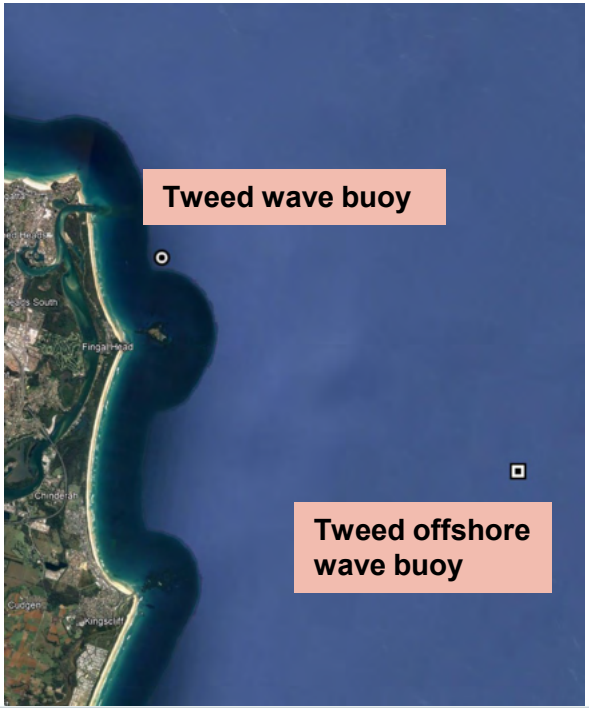


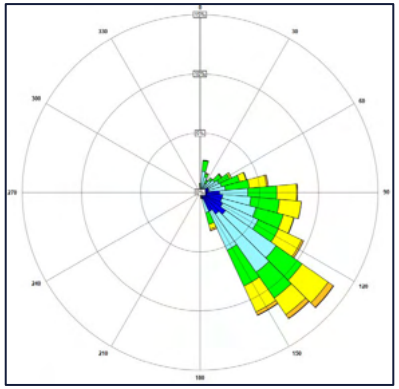
ENVIRONMENTAL MONITORING / BEACH OBSERVATIONS



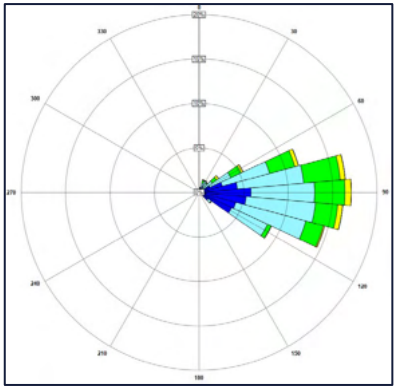
- **Over the last 6 months there hasn't been a significant swell event, and there were only 3-4 swell events over 2m significant wave height**
- **On average, since mid-July wave heights have been at or below average. However, the conditions have been variable with frequent instances of wave heights between 0.5 – 2m being experienced over only a few days (especially between late August to early October)**

ENVIRONMENTAL MONITORING / BEACH OBSERVATIONS

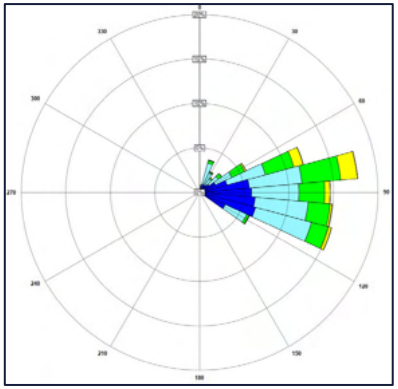




2021 May – 2021 Oct
Offshore



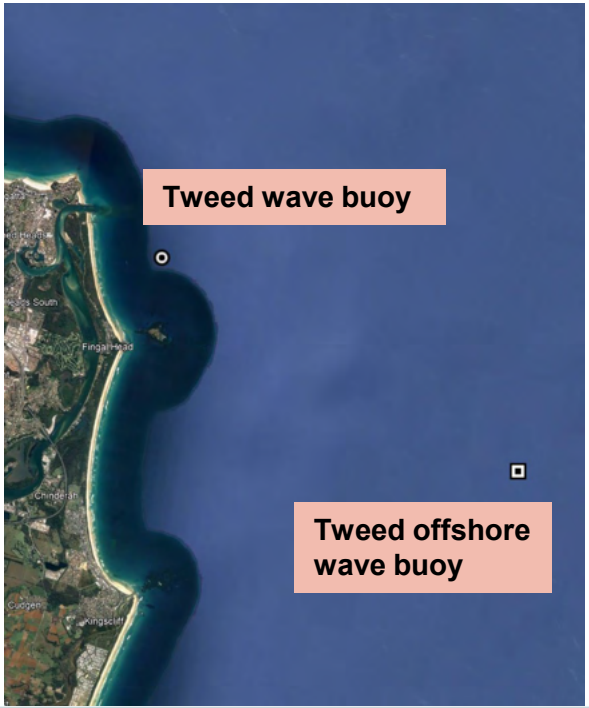
2020 May – 2020 Oct

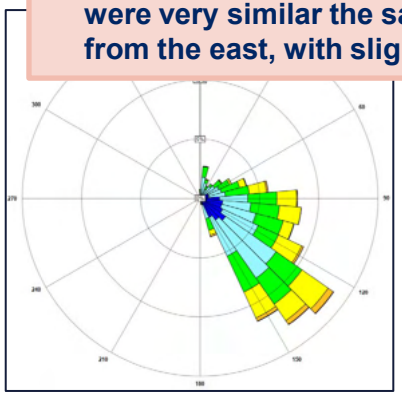


2021 May – 2021 Oct

ENVIRONMENTAL

- The offshore wave direction over the last 6 months has been predominantly from the south east.
- Wave directions experienced approaching the coast over the last 6 months were very similar the same period in 2020. They have been predominately from the east, with slightly more from the ENE in 2021.





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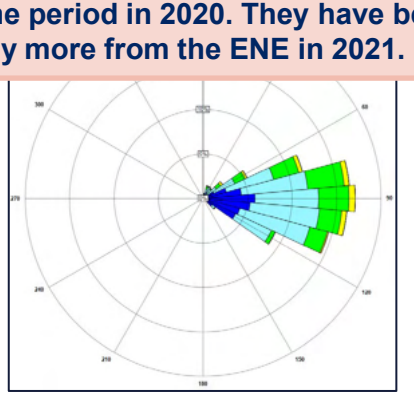
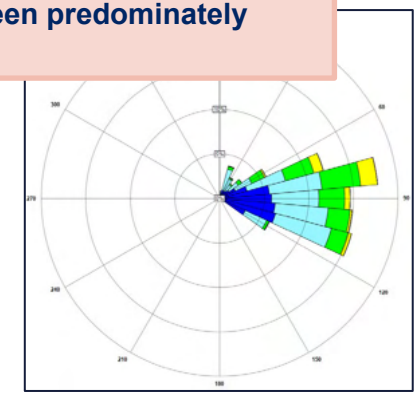


2020 May – 2020 Oct
nearshore



2021 May – 2021 Oct
nearshore

FINGAL

28 October 2020

14 January 2021

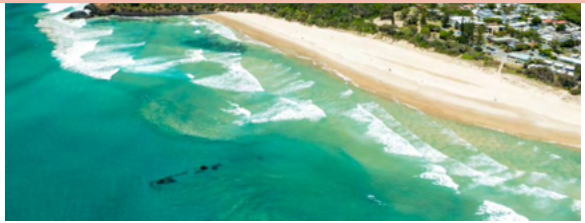
20 April 2021

27 October 2021

FINGAL

28 October 2020

- **Consistent with any east coast headland set up in Australia, episodic movement or bursts of sand move around Fingal head when the northern most area of Dreamtime beach becomes full. Oct 2020 shows a semi depleted down drift (northern) side of Fingal beach, with October 2021 showing a naturally replenished beach.**
- **April 2020 had the largest observed beach width during this period.**

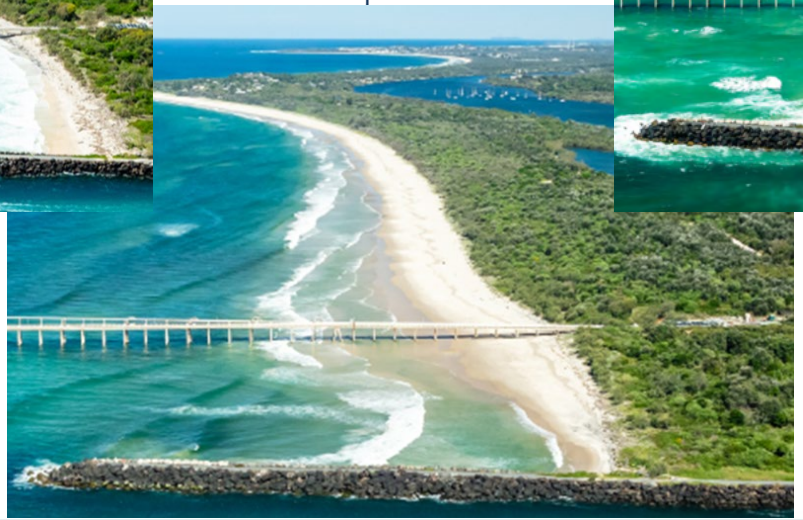


20 April 2021

27 October 2021

14 January 2021

20 April 2021

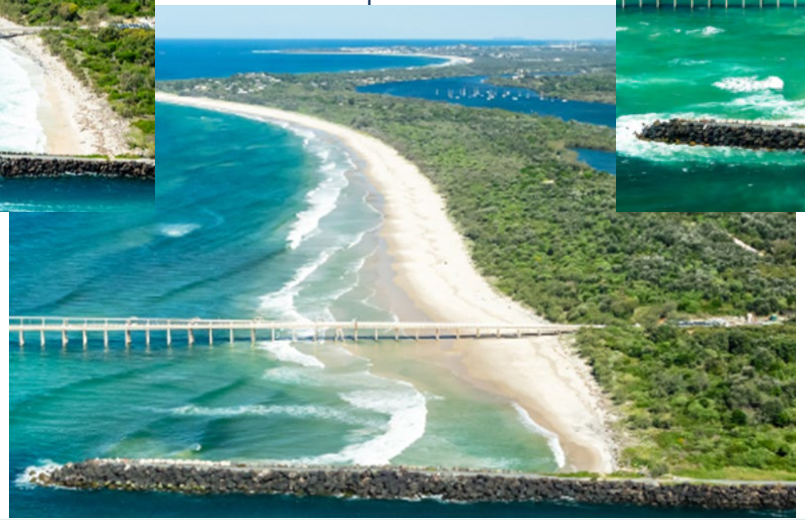


27 October 2021

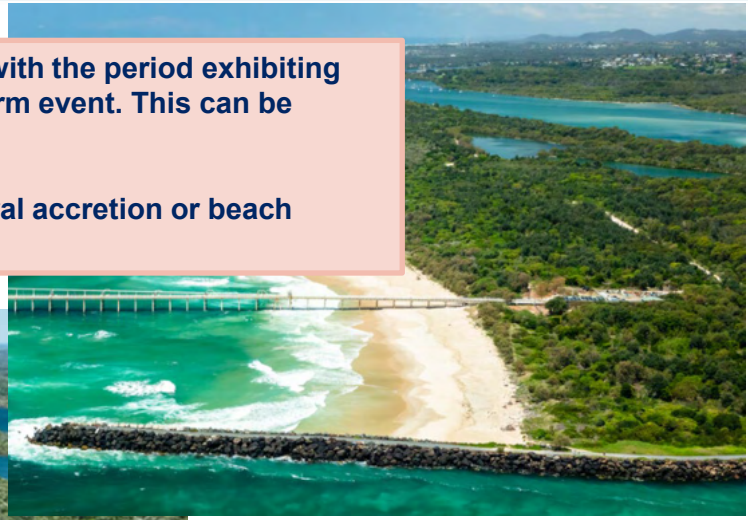
LETITIA

- **Insignificant change along Letitia from Jan – Oct, with the period exhibiting signs of a recovering beach from the Dec 2020 storm event. This can be noticed at the jetty itself between Jan – Oct 2021.**
- **Beach widths in general have grown through natural accretion or beach building processes.**

14 January 2021



20 April 2021



27 October 2021

LETITIA

14 January 2021

20 April 2021

27 October 2021

DURANBAH BEACH

14 January 2021

20 April 2021

27 October 2021

DURANBAH BEACH

- **Duranbah during this period underwent a significant nourishment campaign**
- **Duranbah post Dec 2020 storm event into January was severely depleted (eroded).**
- **Duranbah has responded well to the nourishment, naturally sorting the profile and remains healthy at present.**

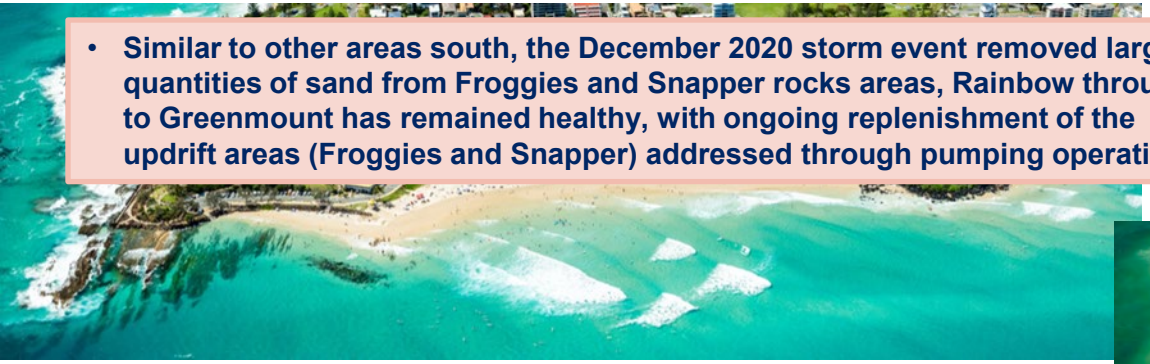
SNAPPER ROCKS RAINBOW BAY

14 January 2021

20 April 2021

27 October 2021

- **Similar to other areas south, the December 2020 storm event removed large quantities of sand from Froggies and Snapper rocks areas, Rainbow through to Greenmount has remained healthy, with ongoing replenishment of the updrift areas (Froggies and Snapper) addressed through pumping operations.**



14 January 2021

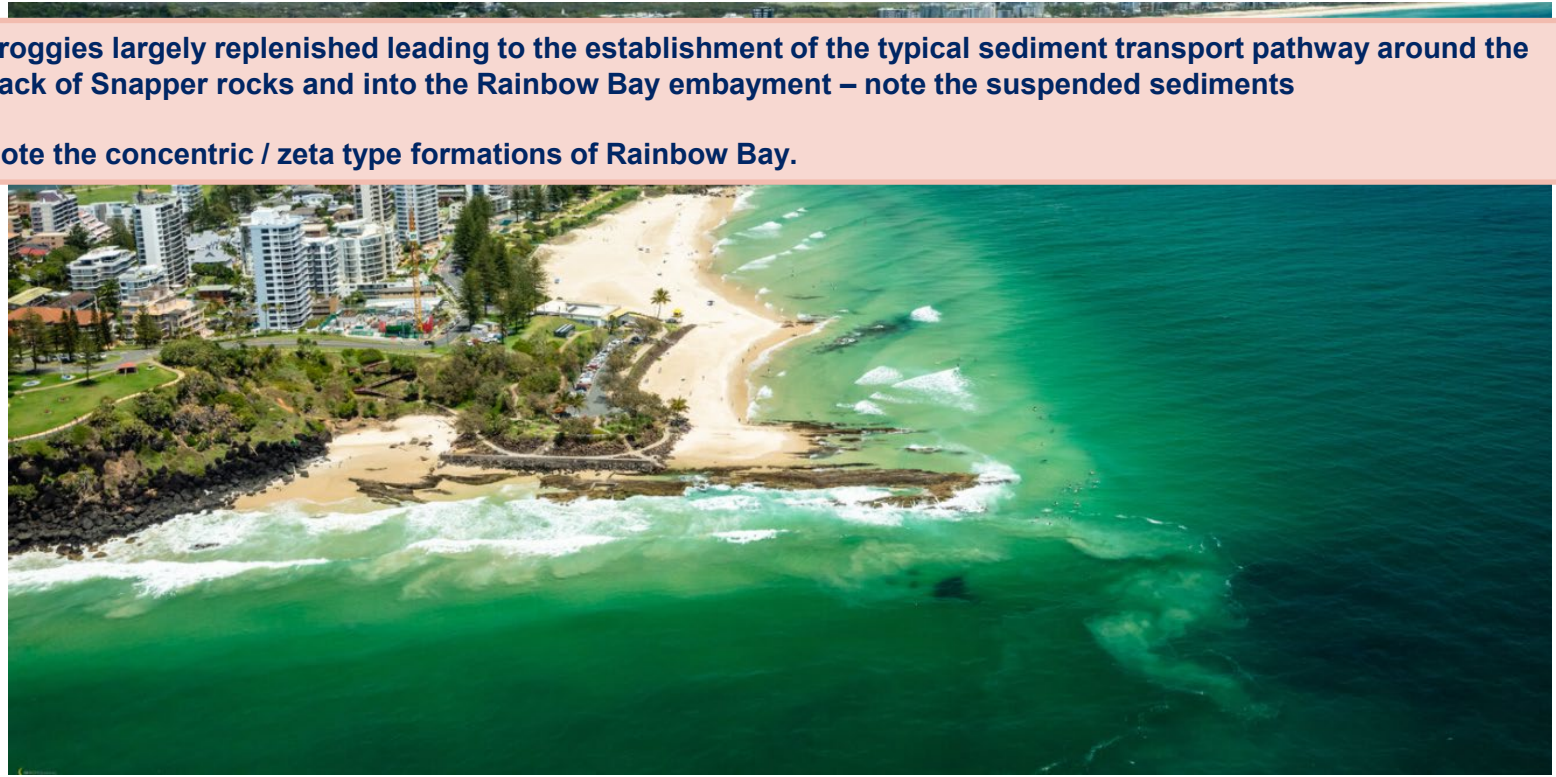
20 April 2021

SNAPPER ROCKS RAINBOW BAY

27 October 2021

27 October 2021

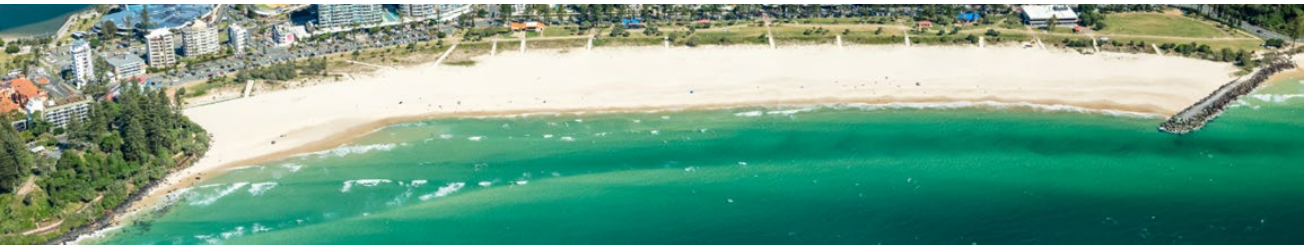
- **Froggies largely replenished leading to the establishment of the typical sediment transport pathway around the back of Snapper rocks and into the Rainbow Bay embayment – note the suspended sediments**
- **Note the concentric / zeta type formations of Rainbow Bay.**



27 October 2021

COOLANGATTA

14 January 2021



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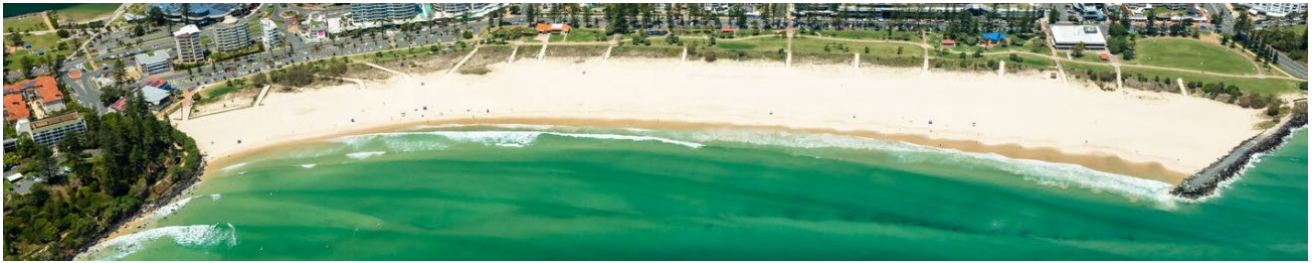

27 October 2021

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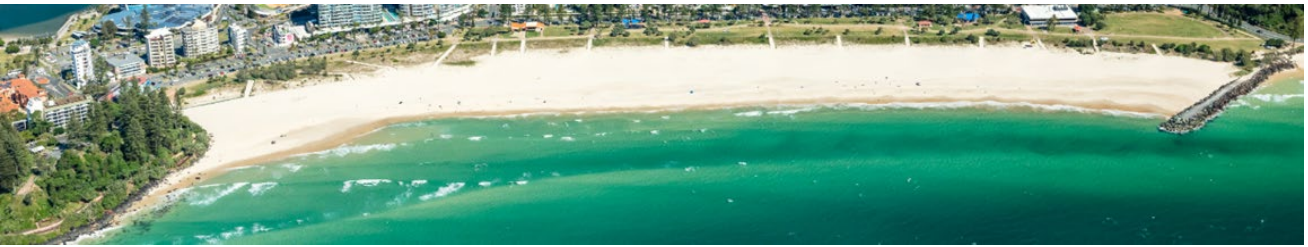

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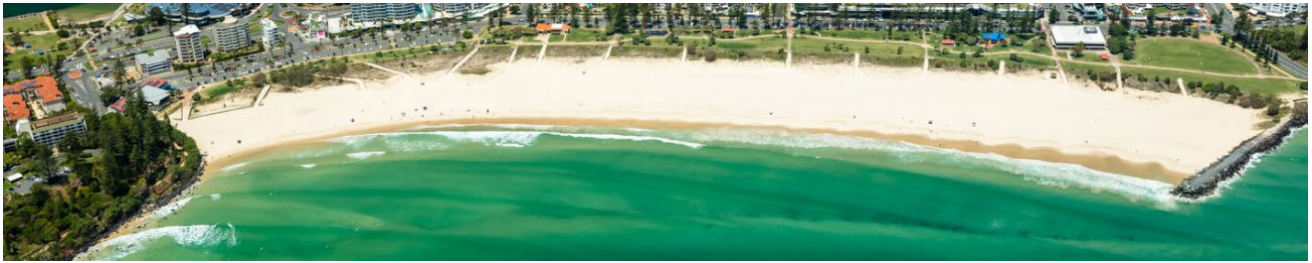
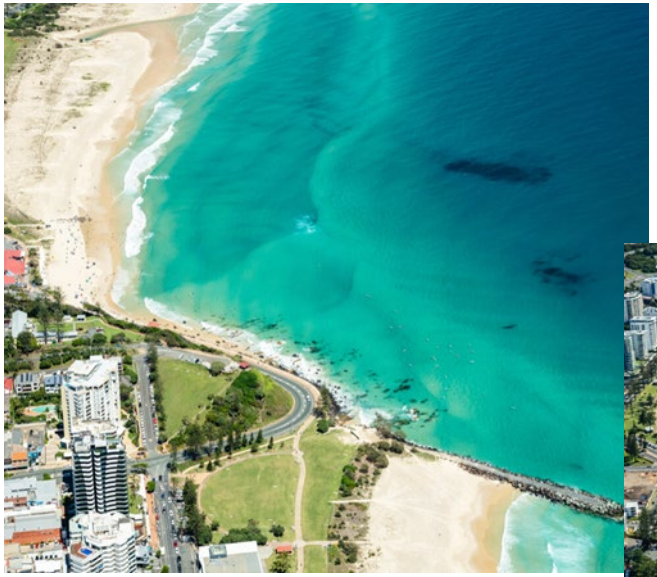


27 October 2021

- **Minimal change through Coolangatta bay, seasonal beach rotation can be observed; very stable, consistent with the low energy conditions through the year and the natural sheltering offered by the broader Rainbow Bay embayment and Greenmount headland.**



14 January 2021

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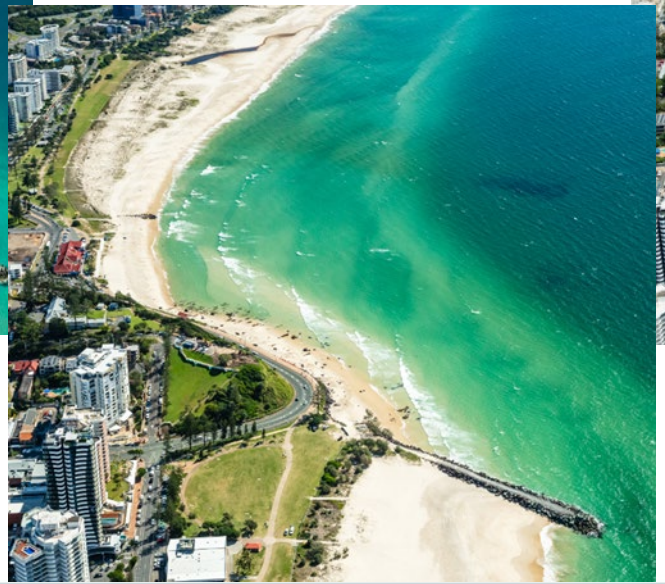
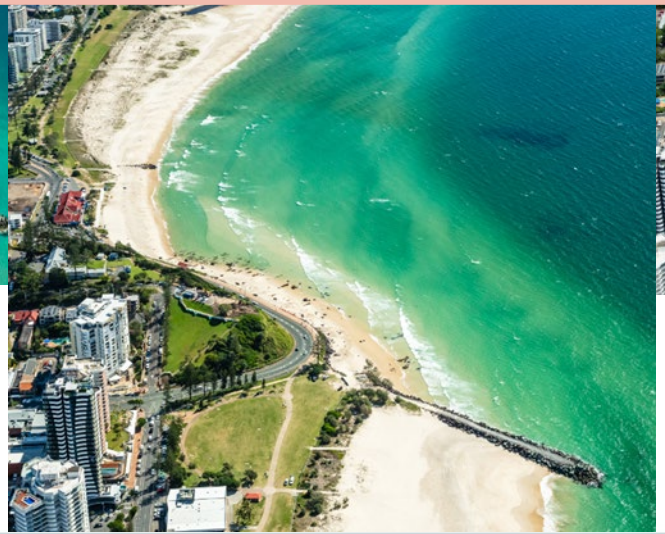


27 October 2021

KIRRA

- The upper beach at Kirra has recovered as a result of sand build up and bypass around Kirra groyne.
- The bank has become slightly more defined since April although position and angle has been relatively stable

14 January 2021



KIRRA

27 October 2021

TWEED SAND BYPASSING

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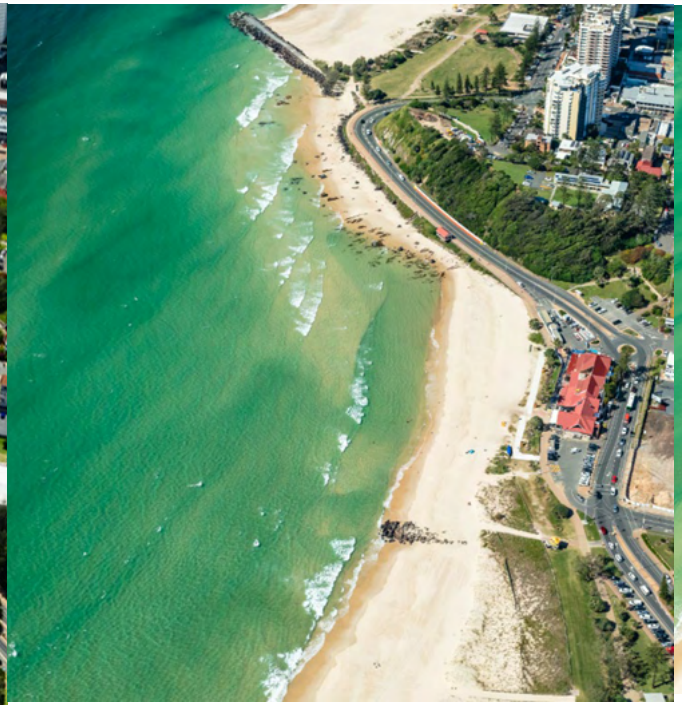

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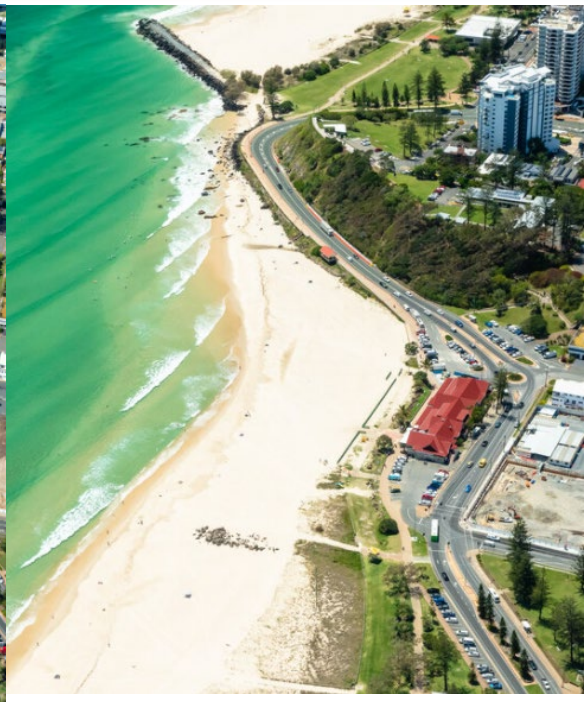
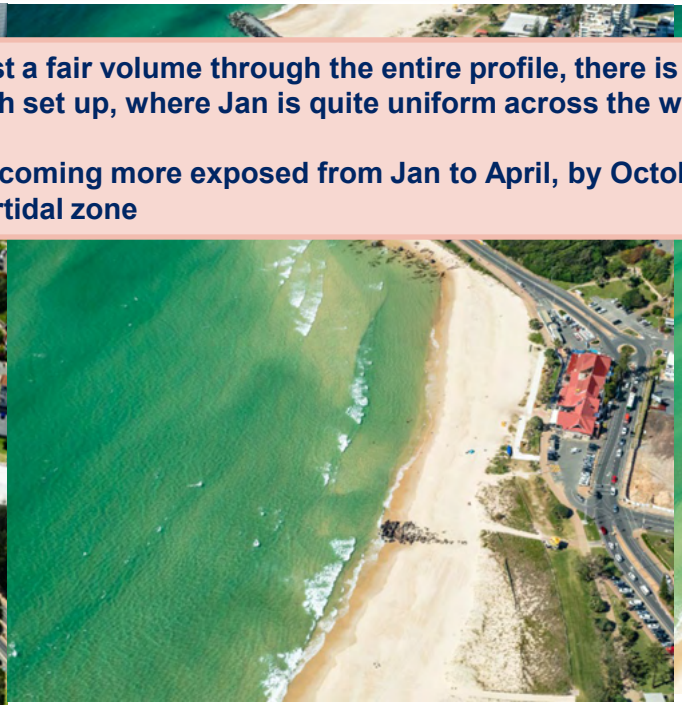


27 October 2021

- April and Oct whilst a fair volume through the entire profile, there is a slight presence of a double bar trough set up, where Jan is quite uniform across the width of the profile.
- Miles St groyne becoming more exposed from Jan to April, by October it's mostly outside of the intertidal zone

14 January 2021



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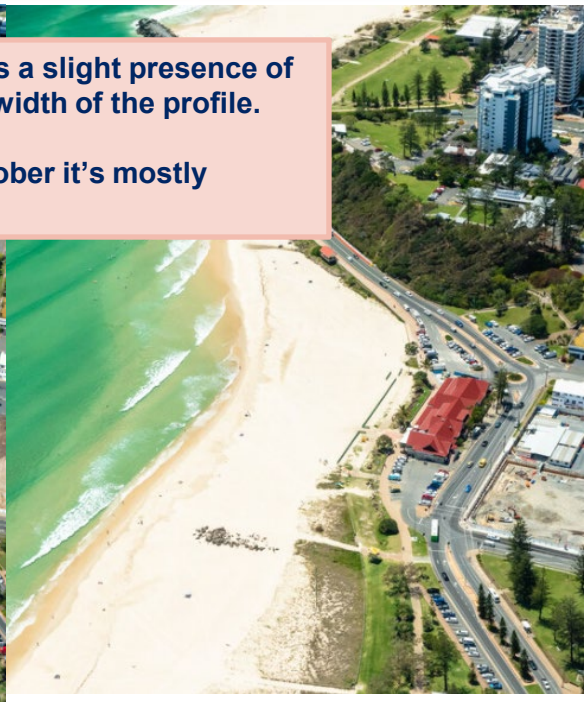

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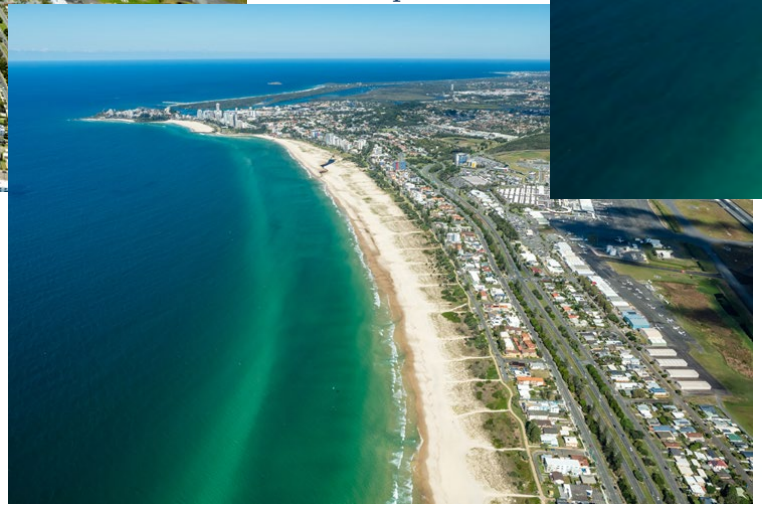


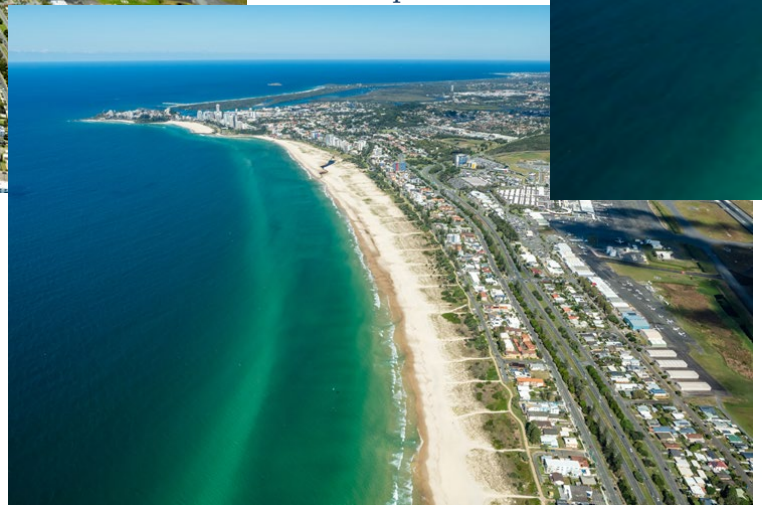
20 April 2021

27 October 2021

BILINGA

- **January a notable bold storm bar offshore as a result of the December 2020 storm event. Large trough evident between beach and the offshore storm bar.**
- **In April this storm bar is less pronounced as it begins to move cross shore toward the land. Large trough still evident.**
- **A result of low energy periods, the October image depicts a more transient bar formation, with variability throughout. The offshore bar system is breaking up.**

14 January 2021



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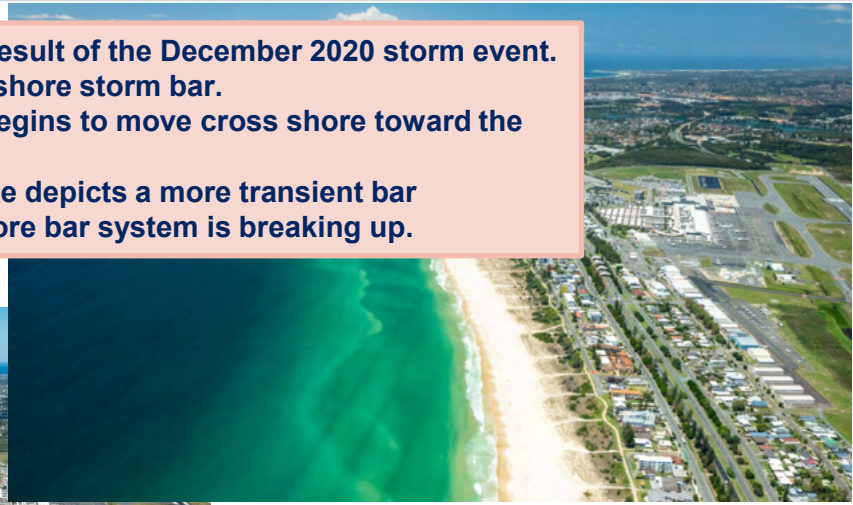


27 October 2021

BILINGA

SURF CONDITIONS

DURANBAH

6 September2021

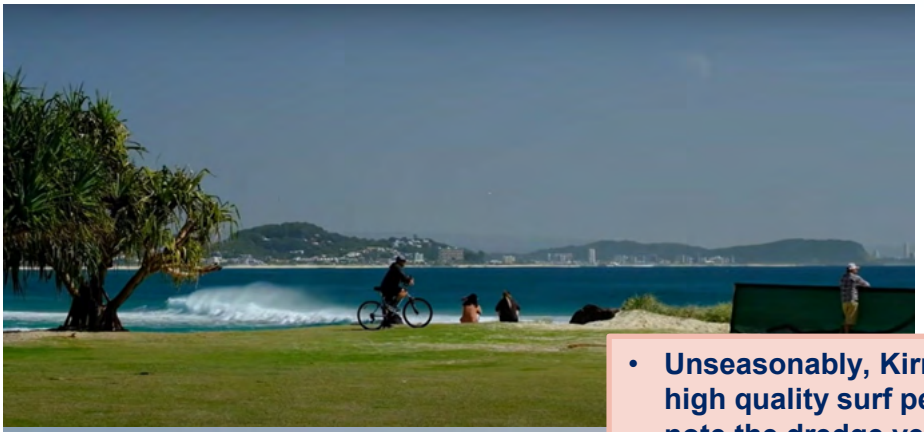
- There have been a number of notable good to very high quality surfing days along the southern Gold Coast point breaks and beach breaks from Duranbah through to Tugun.
- Some days quite unseasonable in Sept

7 September2021

SNAPPER ROCKS RAINBOW BAY

KIRRA

7 September 2021

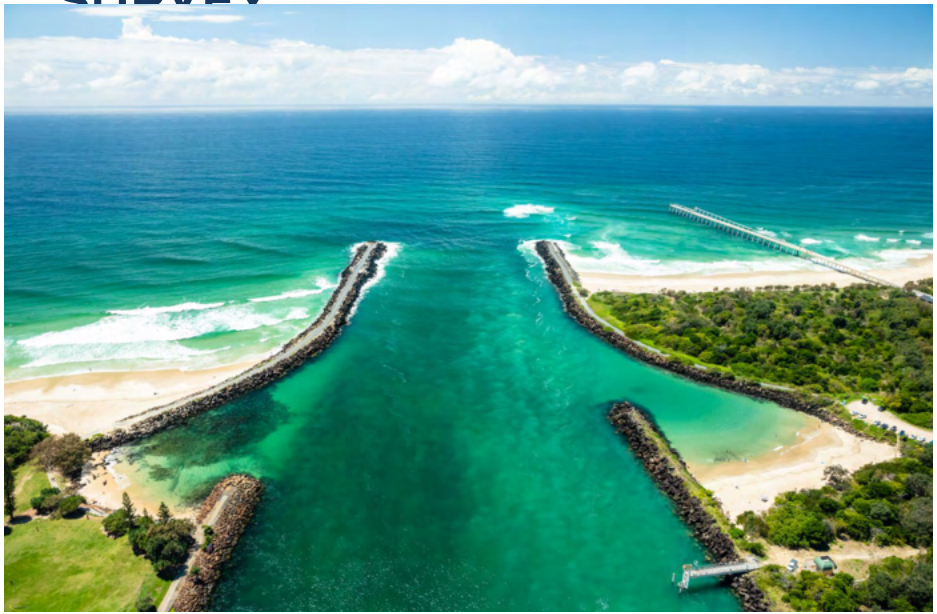


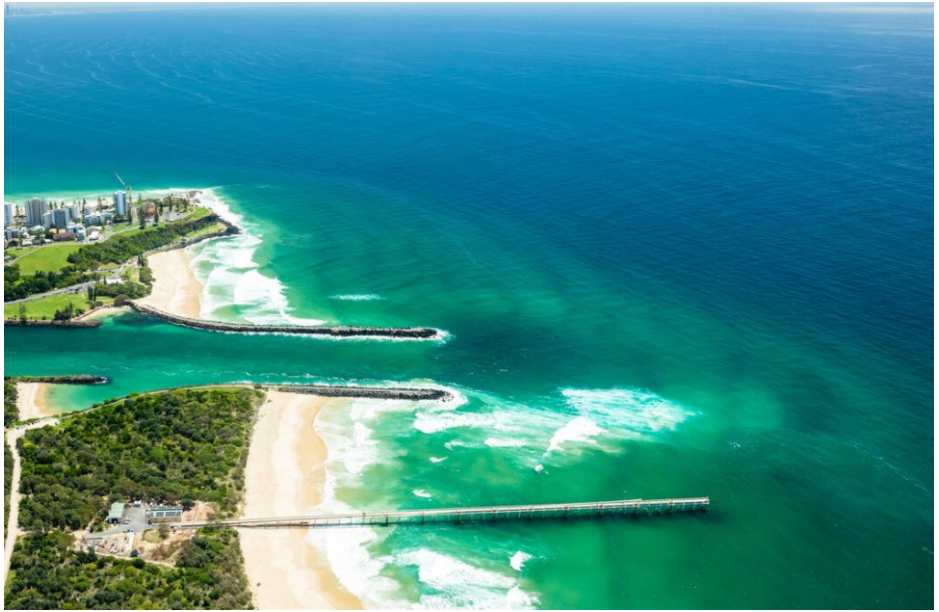
KIRRA

- **Unseasonably, Kirra experienced some very high quality surf periods in September – note the dredge vessel in the background.**

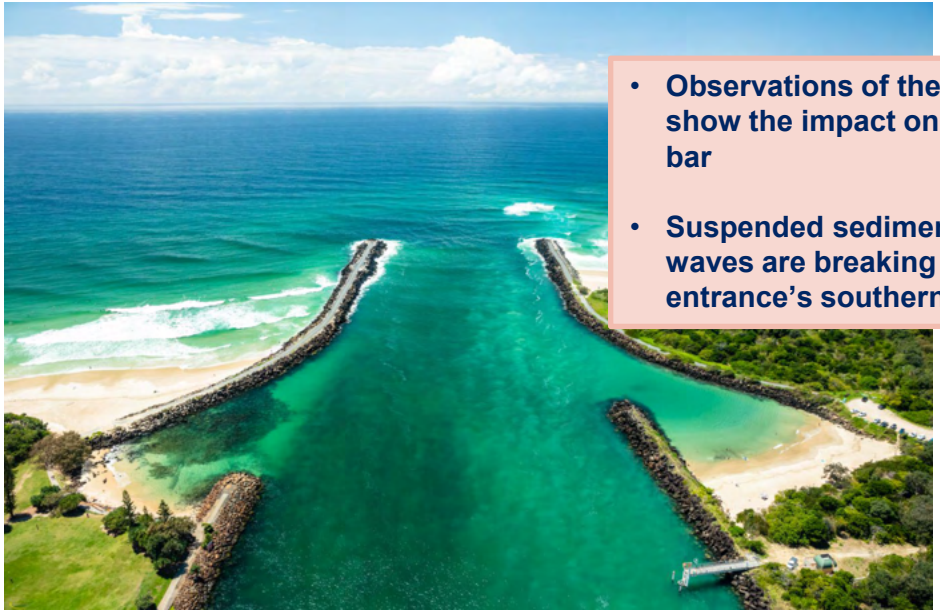
7 September 2021

ENTRANCE CONDITIONS, USAGE AND SURVEY





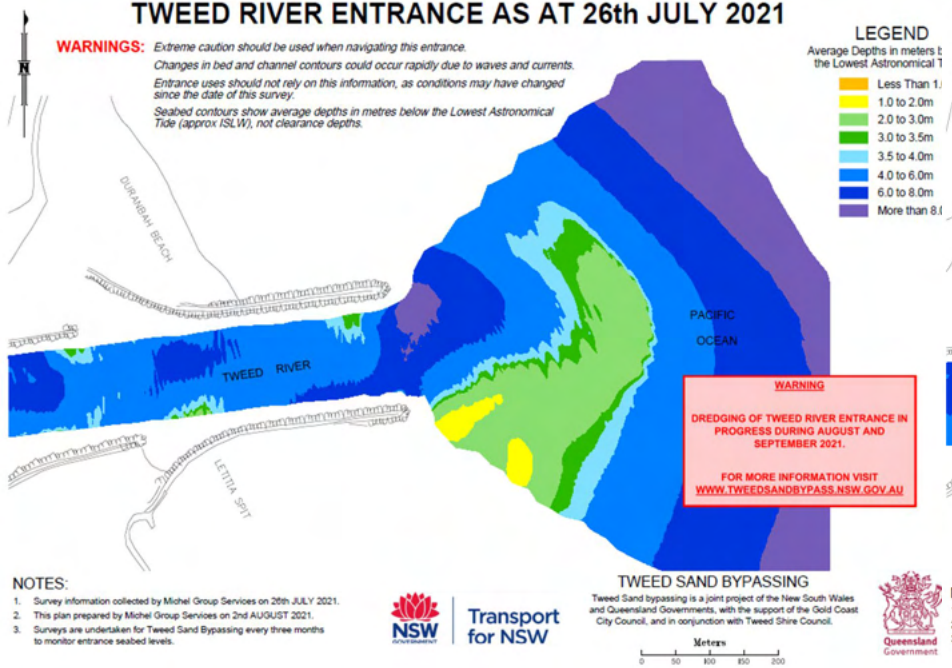
ENTRANCE CONDITIONS, USAGE AND SURVEY



- Observations of the entrance post-dredging show the impact on sand removal across the bar
- Suspended sediment can be observed where waves are breaking on the remainder of the entrance's southern shoal

TWEEDSAND BYPASSING

TWEED RIVER ENTRANCE AS AT 26th JULY 2021



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

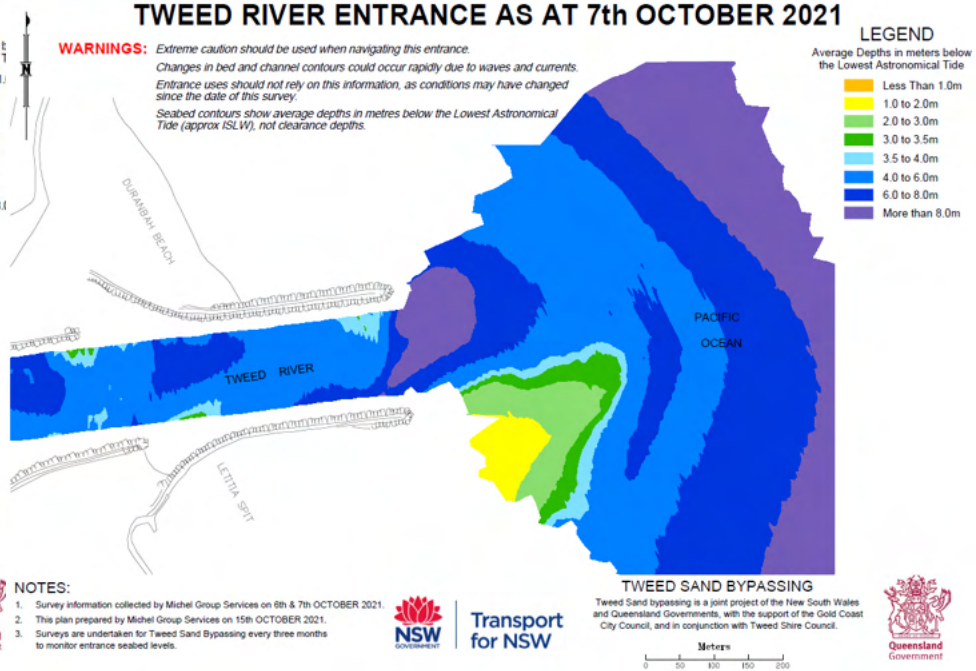
TWEED SAND BYPASSING

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 7th OCTOBER 2021



NOTES:

1. Survey information collected by Michel Group Services on 6th & 7th OCTOBER 2021.
2. This plan prepared by Michel Group Services on 15th OCTOBER 2021.
3. Surveys are undertaken for Tweed Sand Bypassing every three months to monitor entrance seabed levels.

NSW GOVERNMENT | Transport for NSW

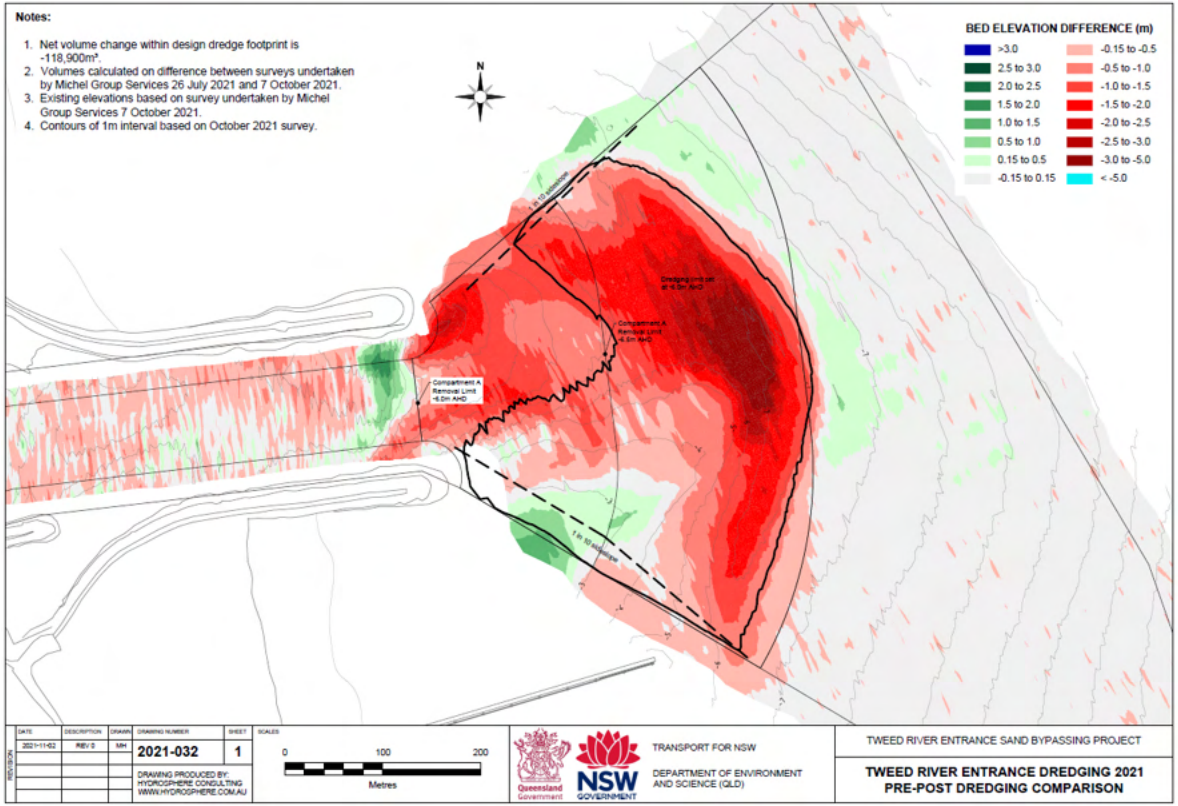
TWEED SAND BYPASSING

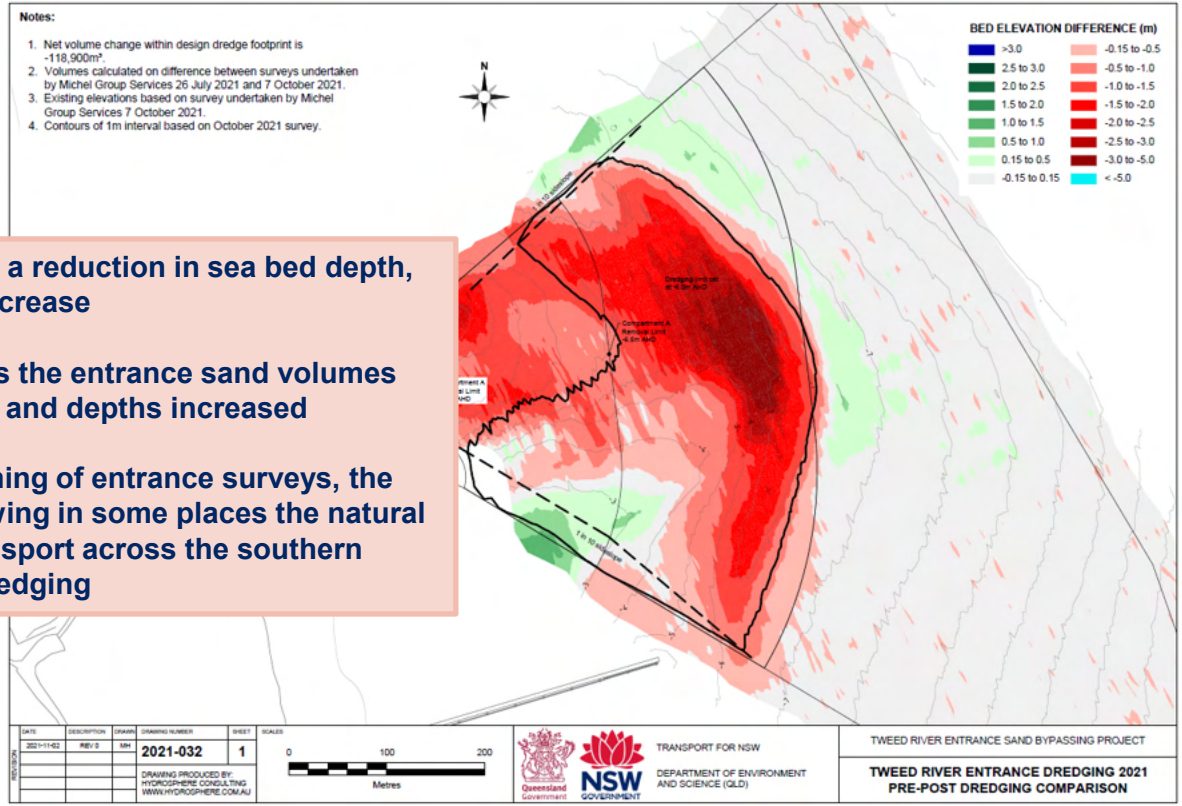
Tweed Sand bypassing is a joint project of the New South Wales and Queensland Governments, with the support of the Gold Coast City Council, and in conjunction with Tweed Shire Council.

Meters 0 50 100 150 200

Queensland Government

- A clear navigation channel has been maintained after dredging of the entrance
- The bar has been broken up with the a general increase in depth across the northern and central sections of the entrance
- It is expected that the shallow southern shoal will disperse across the entrance, dredging has ensured the bar will take some time to re-establish

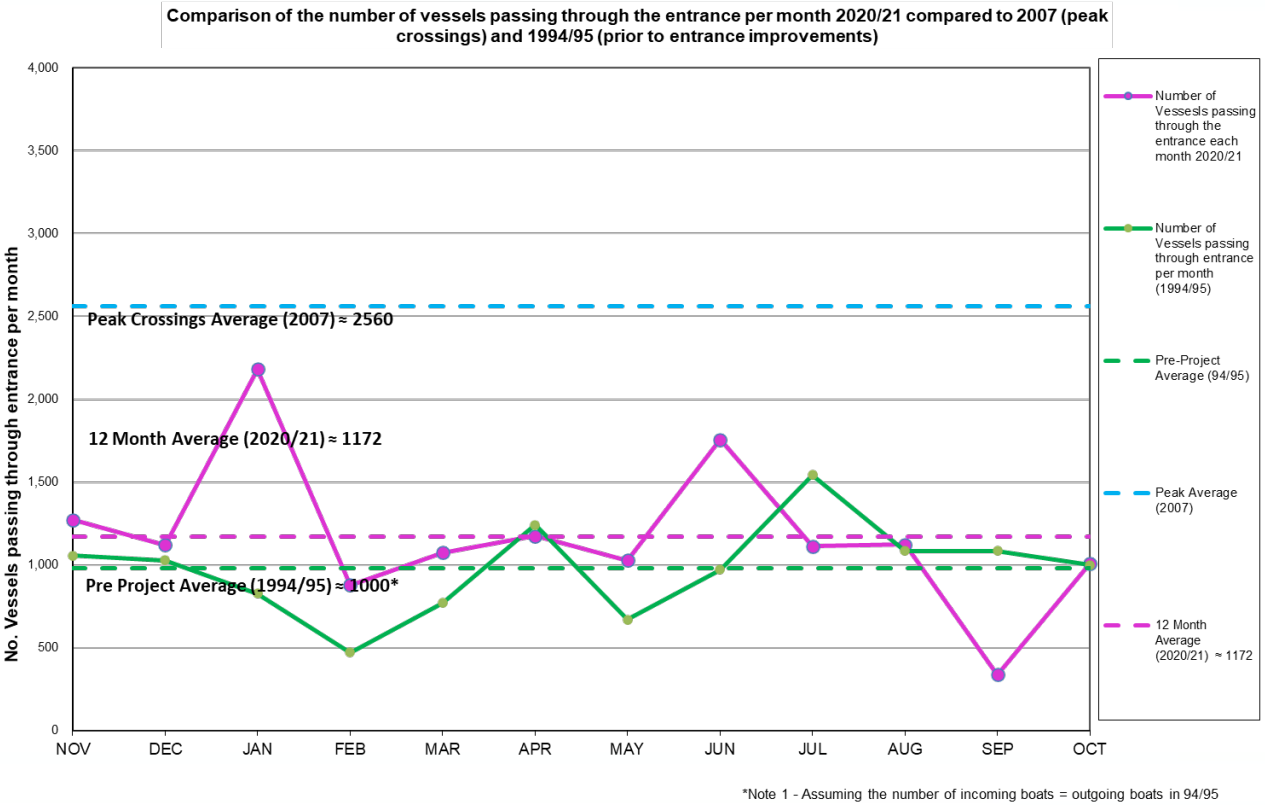

Notes:
1. Net volume change within design dredge footprint is -118,900m³.
2. Volumes calculated on difference between surveys undertaken by Michel Group Services 26 July 2021 and 7 October 2021.
3. Existing elevations based on survey undertaken by Michel Group Services 7 October 2021.
4. Contours of 1m interval based on October 2021 survey.
N
BED ELEVATION DIFFERENCE (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
Compartment A Removal Limit -6.0m AHD
Compartment A Removal Limit -6.0m AHD
DATE
DESCRIPTION
DRAWN
DRAWING NUMBER
SHEET
SCALES
2021-11-02
REV 0
MH
2021-032
1
0
100
200
Metres
DRAWING PRODUCED BY: HYDROSPHERE CONSULTING WWW.HYDROSPHERE.COM.AU
TRANSPORT FOR NSW
DEPARTMENT OF ENVIRONMENT AND SCIENCE (QLD)
TWEED RIVER ENTRANCE SAND BYPASSING PROJECT
TWEED RIVER ENTRANCE DREDGING 2021
PRE-POST DREDGING COMPARISON



- Red indicates a reduction in sea bed depth, green is an increase
- Overall across the entrance sand volumes were reduced and depths increased
- Due to the timing of entrance surveys, the figure is showing in some places the natural sediment transport across the southern shoal post-dredging

ENTRANCE USAGE

- Generally vessel passing numbers have been at or above pre-TSB levels
- September was uncharacteristically low, as evidenced by the many low VMR navigation ratings for days of Sep



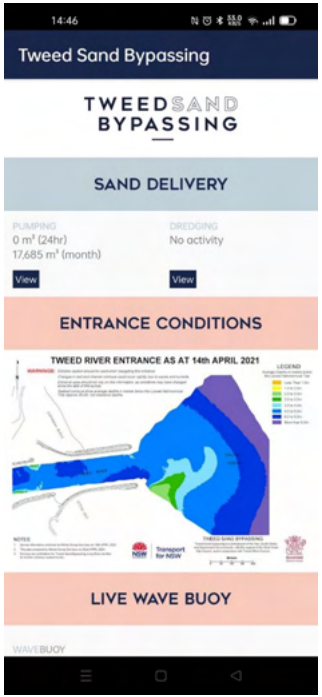
*Note 1 - Assuming the number of incoming boats = outgoing boats in 94/95

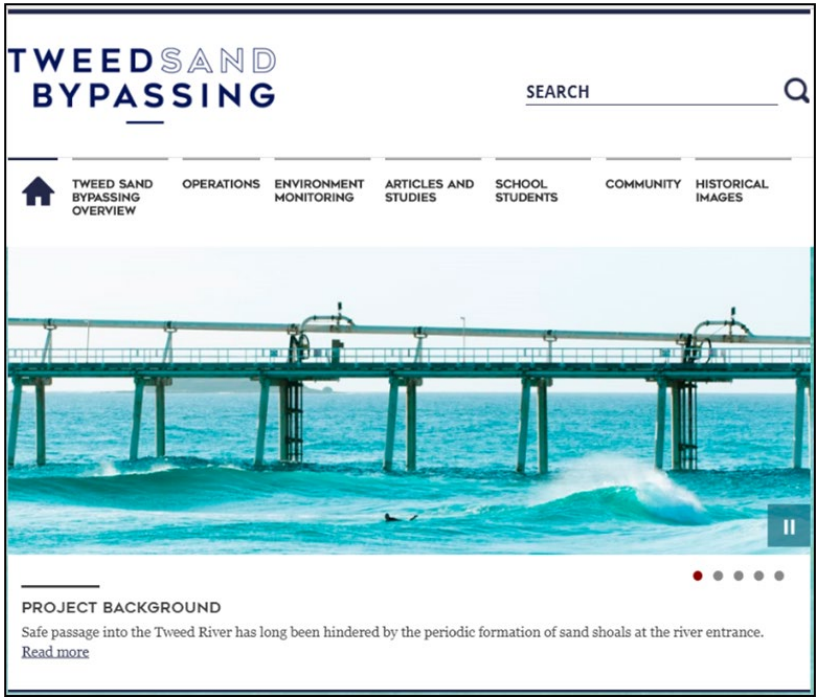
PROJECTS AND ENHANCEMENTS

• TSB Transition	Preferred option adopted / endorsed by TSB Working Group and Ministers. Now working on preparations for implementation
• Letitia Coastal Processes Study	Draft report to be received mid November. Early advice is that Letitia is showing trends of equilibrium
• Kirra pipeline detailed design	Detailed design ongoing
• Valve Pit 2 safety upgrade	Works have commenced on installation of Glass Reinforced Plastic floor to improve safety when working in pit.
• Asset Management Software Migration	Existing system being migrated to new software with better reporting capabilities and user interface.
• Asset condition assessment	Comprehensive condition assessment being undertaken to better understand asset condition and future maintenance cost
• Climate change study	Scope ready for market release. Will inform future strategy and ensure preparedness for impacts associated with climate change.

COMMUNICATIONS AND ENGAGEMENT

- New AC members representing the local NSW community:
  - Mr. John Ede
  - Mr. Gary Fisher
- TSB app continues to be updated with sand delivery volumes and entrance survey maps.
- TSB app announcement section was updated regularly providing up to date information during the 2021 dredging campaign
- TSB Project video is currently being updated. This has involved input from AC members. Final filming pieces underway.

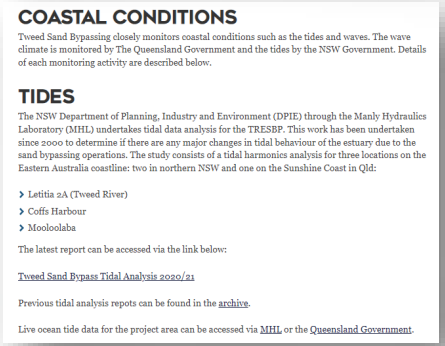


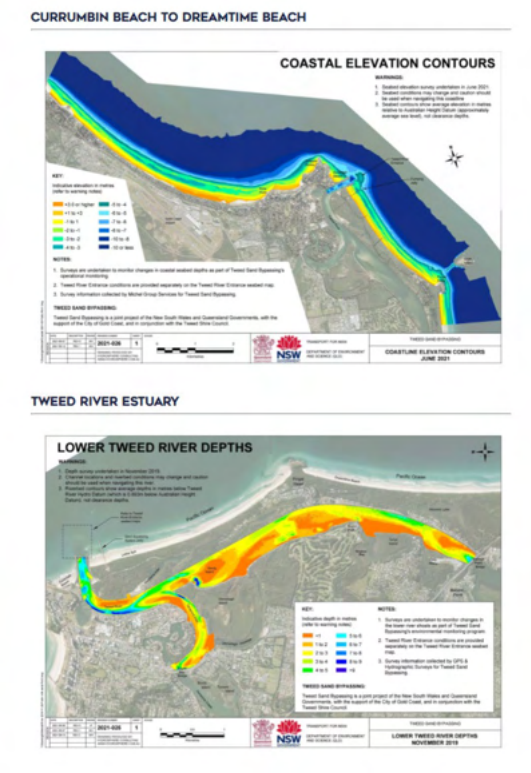


COMMUNICATIONS AND ENGAGEMENT

The environmental section of the website has received a number of updates and improvements:

- Monthly monitoring summaries – more relevant information and data visualisations presented
- Coastal Conditions – links to wave buoy and tidal data updated, reports easily accessible
- Surveys – new bathymetric plans
- Reef monitoring – new report to be uploaded
- Estimated sand transport – all historical reports reproduced and now up to date





ADVISORY COMMUNITY COMMITTEE

- In recognition of the stable state of the environment (TSB project area), routine operational nature and ongoing refinements/improvements of the TSB, The Advisory Community Committee meetings will no longer be held.
- AC meetings will continue as per each quarter. AC members will continue to engage with local community and provide feedback to the AC forum and project team as required.
- A collection of focus group sessions will be held in 2022, tailoring material to the relevant stakeholders i.e. boardrider and surf clubs, boating and fishing groups. AC members are welcome to join the project team members when these are undertaken if they wish (more info to come).
- Presentation material provided to the AC group will be published to the TSB website.

TWEED SAND BYPASSING

THANK YOU

- TSB is a joint coastal management initiative of the New South Wales and Queensland State Governments
- Please provide any feedback to the TSB Project Office email tresbp.projectoffice.group@transport.nsw.gov.au