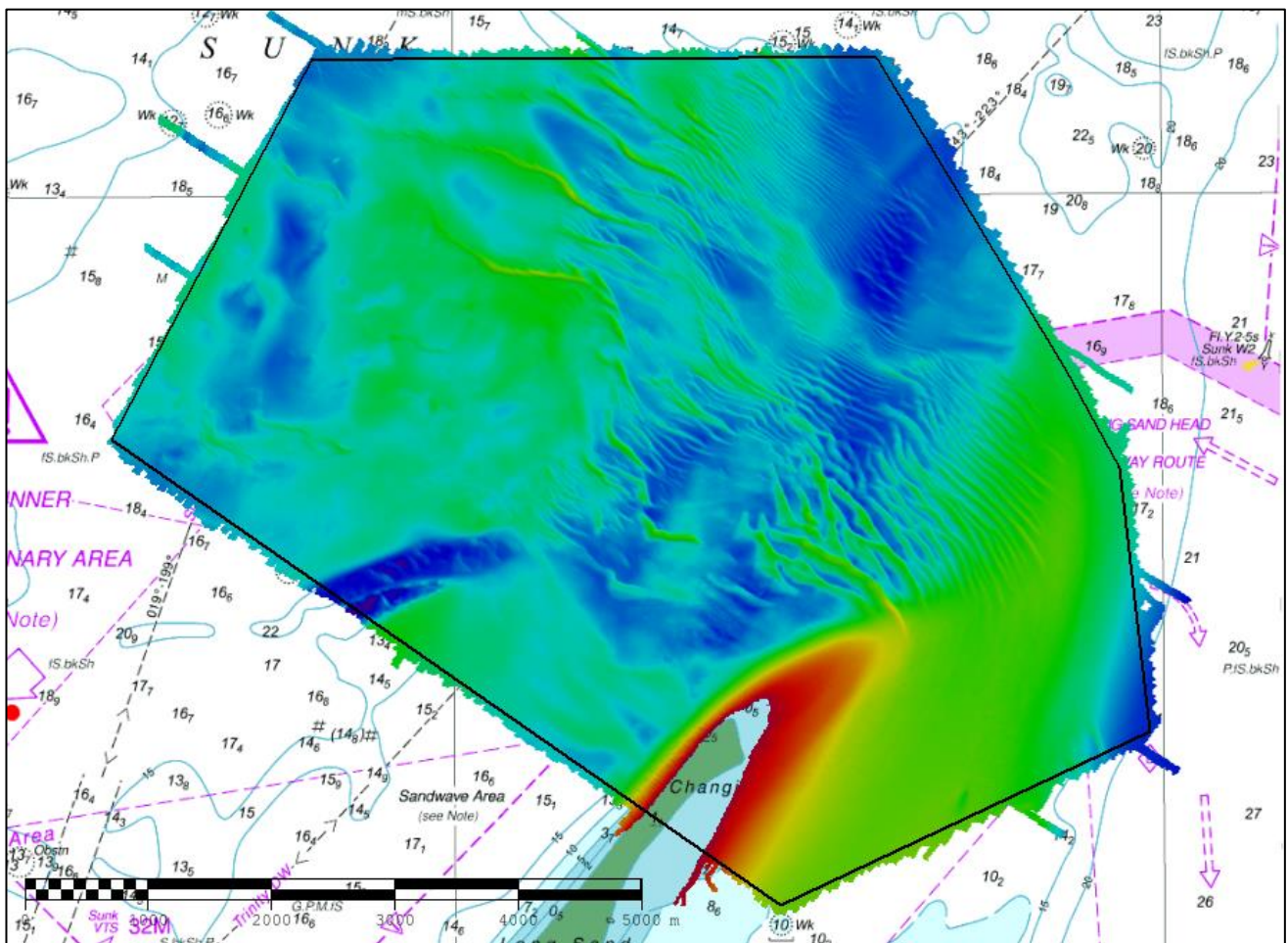




THAMES ESTUARY LONG SAND HEAD FULL (TE5) 2020 ASSESSMENT

An assessment of the 2020 hydrographic survey of the area TE5: to monitor recent seabed movement; to identify any implications for shipping; and to make recommendations for future surveys.



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Notes

This Assessment is produced by the UK Hydrographic Office (UKHO) for the Maritime and Coastguard Agency (MCA). Analysis of the Routine Resurvey Areas forms part of the Civil Hydrography Programme and the reports are made available to through the UKHO website and are presented to the Civil Hydrography Working Group. When approved, the recommendations are incorporated into the Routine Resurvey Programme. The report is governed by a Memorandum of Understanding between the DfT (including the MCA) and the MOD (including the UKHO).

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No analysis of shipping traffic has been included within this report due to no AIS data being supplied by MCA.

All depths are to Chart Datum, defined using the UKHO VORF Model.

TE5 LONG SAND HEAD, 2020

1. SUMMARY

Changes Detected

- 1.1 The Trinity Deep Water Route (DWR) and Long Sand Head Two-Way Route have experienced the most change since the previous full survey in 2018, due to the E/NE migration and shoaling of sandwaves in the region.
- 1.2 The Sunk DWR region appears to be stable, with the controlling depth not changing since 2018. The controlling depth in the Trinity DWR has shoaled by 0.1m since 2018. Shoal soundings adjacent to the Trinity DWR have also been highlighted and analysed for safety of marine traffic.
- 1.3 The controlling depth in the Long Sand Head Two-Way Route has shoaled by 0.6m since 2018. It is monitored annually in a focused survey (TE5a).

Reasons for Continuing to Resurvey the Area

- 1.4 The E/NE migration of sandwaves and Long Sand Head remains a hazard to shipping in the region. The 3-year full survey is therefore required to track sandwaves migrating towards the NE Trinity DWR region and monitor longer-term changes outside of the focused areas (in the more stable regions of Sunk DWR and the NE Trinity DWR).

Recommendations

- 1.5 Given the focused survey covers the more mobile and hazardous areas annually, and the areas outside of these are more stable, the 3-year interval is sufficient for the full TE5 area.
- 1.6 As the full TE5 area has been extended to include the NE region of the Trinity DWR, the limits are currently sufficient.

2. LOCATION

- 2.1 Survey interval at time of resurvey: New survey interval is 3 years from 2020 onward [agreed in 2019].
- 2.2 Area Covered: 40.5 km²

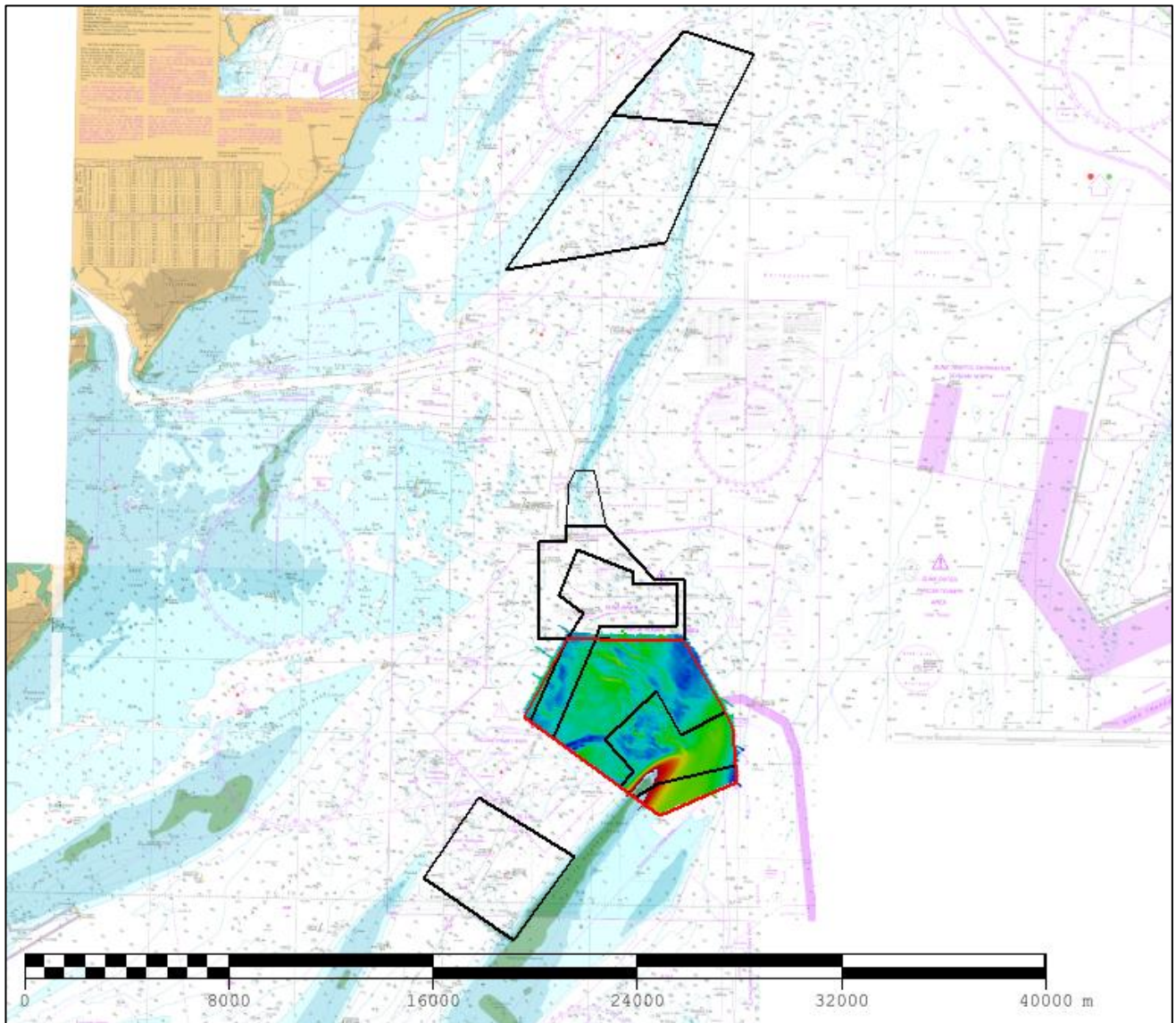


Figure 1: 2020 north section of Thames Estuary Routine Resurvey areas overlaid on BA Charts 1975-0 and 2052-0 with area TE5 in red.

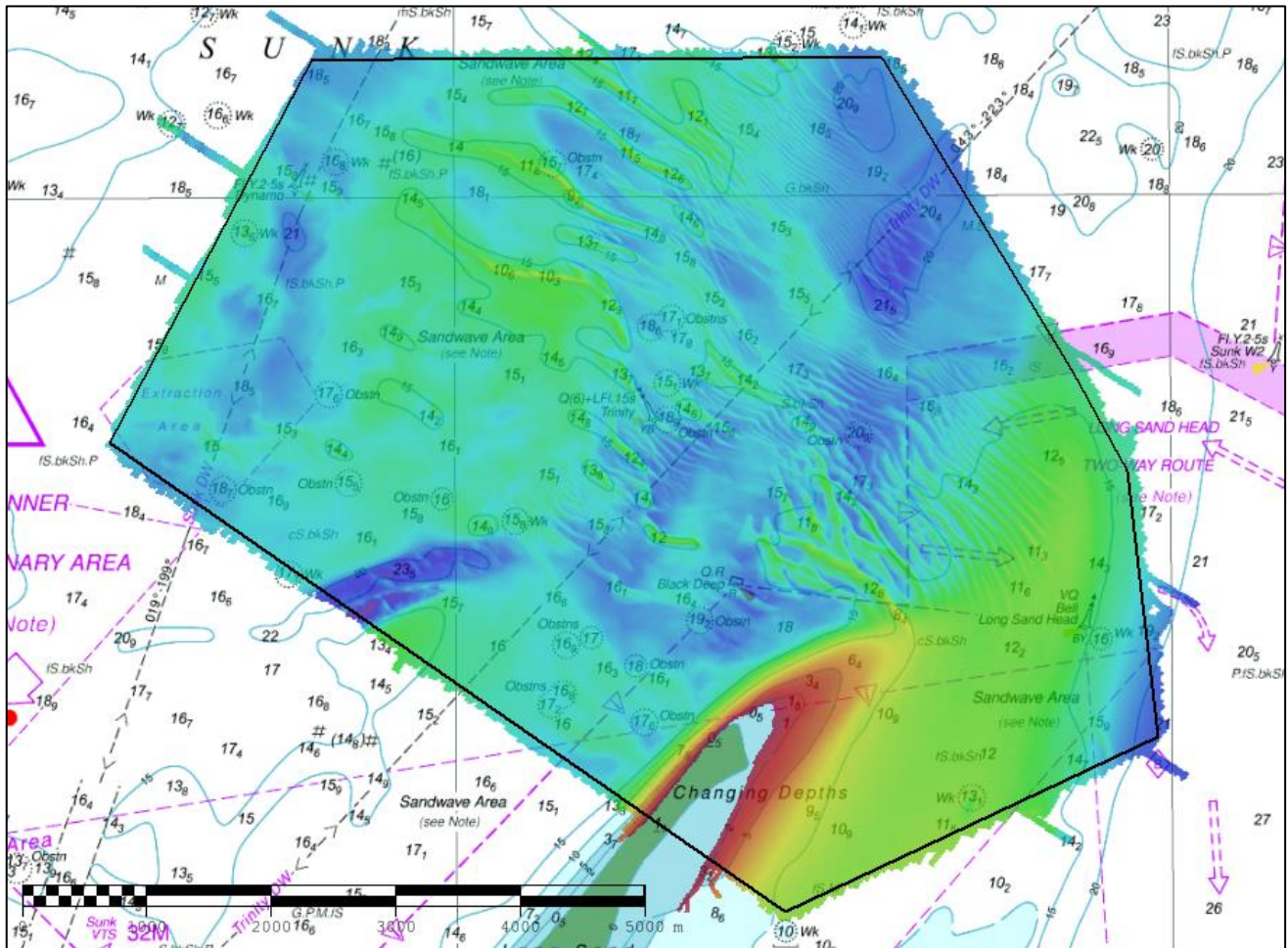


Figure 2: 2020 survey data overlaid on BA Chart 1975-0.

3. REFERENCE SURVEY DETAIL

3.1 The previous full survey was conducted during the 2018 Routine Resurvey Programme between November and December 2018 as part of HI1615. Another full survey was conducted as part of the 2015 Routine Resurvey Programme between August and October 2015 as part of HI1483. Annual focused surveys have taken place in the area, however for longer term analysis, three focused surveys of the Sunk DWR, Trinity DWR, and Long Sand Head two-way route from 2014 have been included, conducted between June and July 2014 as part of HI1459.

3.2 The Report of Survey for these surveys are available upon request from the UKHO and the validated bathymetric surfaces are available to download from the Admiralty Marine Data Portal.

4. NEW SURVEY DETAIL

4.1 The latest full survey from the 2020 Routine Resurvey Programme was conducted between August and September 2020 as part of HI1692.

4.2 The Report of Survey for this survey is available upon request from the UKHO and the validated bathymetric surfaces are available to download from the Admiralty Marine Data Portal.

5. DESCRIPTION OF RECENT BATHYMETRIC CHANGE

- 5.1 The areas of seafloor surrounding Long Sand Head and the Trinity DWR channel have seen the largest changes in the area since previous surveys due to migration of sand waves and the bank E/NE (shown by the black arrows in Figures 4-6).
- 5.2 Controlling depths have been highlighted in Figure 3 below. The controlling depth in the Sunk DWR channel is currently 15m, and appears to be stable, having not changed since the 2018 survey. The controlling depth of 14.3m situated directly on the Trinity DWR has shoaled by 0.1m since 2018. However, the controlling depth in the LSH Two-Way Route has shoaled by 0.6m since 2018 (not including LSH bank). This area however is monitored annually through the focused survey (TE5a).
- 5.3 Shoal soundings adjacent to the Trinity DWR have been highlighted to show changes that may be pertinent to deeper draught vessels that pass or wait for other vessels on the route. The depth of 14.1m is shown near the controlling depth of 14.3m to highlight that there is a nearby shoaler depth next to the DWR. This has shoaled by 0.5m since 2018.
- 5.4 The depth of 13.3m is also shown in Figure 3, as it is another shoal depth near the DWR, and has deepened by 0.2m since 2018. The 12.2m sounding on a nearby sandwave close to Trinity DWR has shoaled by 0.2m since 2018 and may be significant to deeper draught vessels.
- 5.5 The 2014 focused surveys (Trinity DWR, Long Sand Head and Sunk DWR) were used for difference surfaces, as the previous full surveys had not covered the NE area, as it was only extended for the full area from 2020 onwards.
- 5.6 Larger changes seen in the colour-banded depth plot in Figure 7, as well as the darker colours in Figures 4-6, are due to sandwave migration in a NE direction, but show that outside sandwave areas (e.g. the western part of the survey), the seafloor is more stable, with changes fluctuating by +/-0.2m.

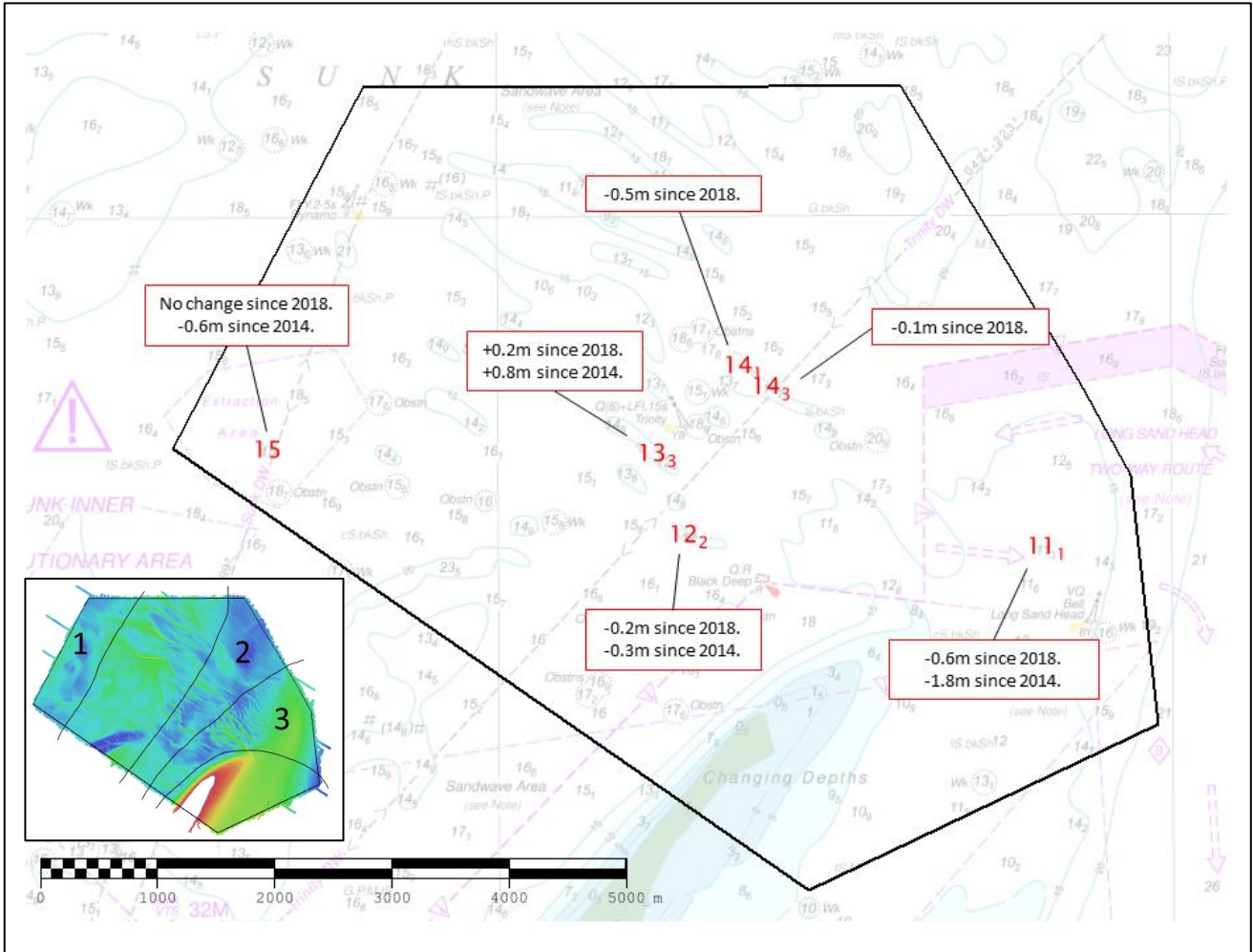


Figure 3: Controlling Depths – split between 3 main areas of the survey to include DW routes as indicated by panel in bottom left. Change is shown since previous surveys (2014 and 2018.)

Positive values (+) represent deepening. Negative values (-) represent shoaling. Shown on BA Chart 1975-0.

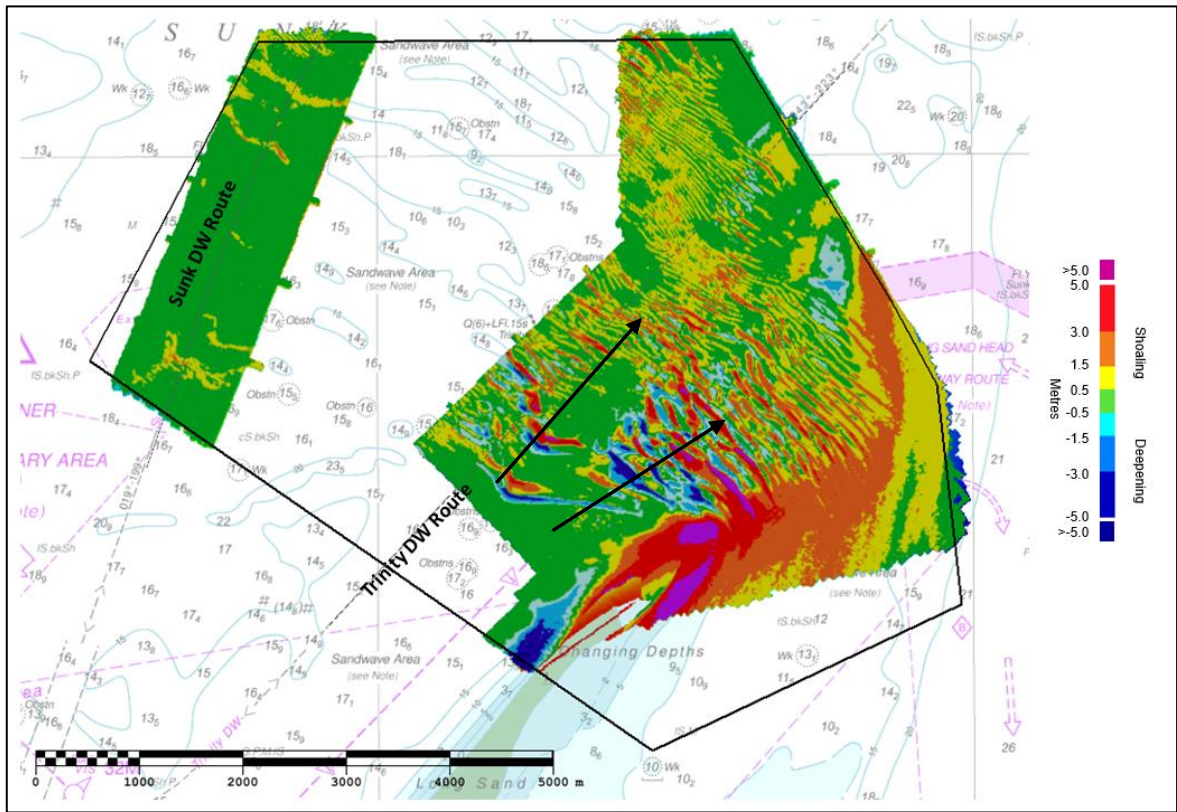


Figure 4: Difference surface showing bathymetric changes between the 2014 focused surveys and 2020 survey overlaid on BA Chart 1975-0 (Black arrows represent sandwave migration since 2014).

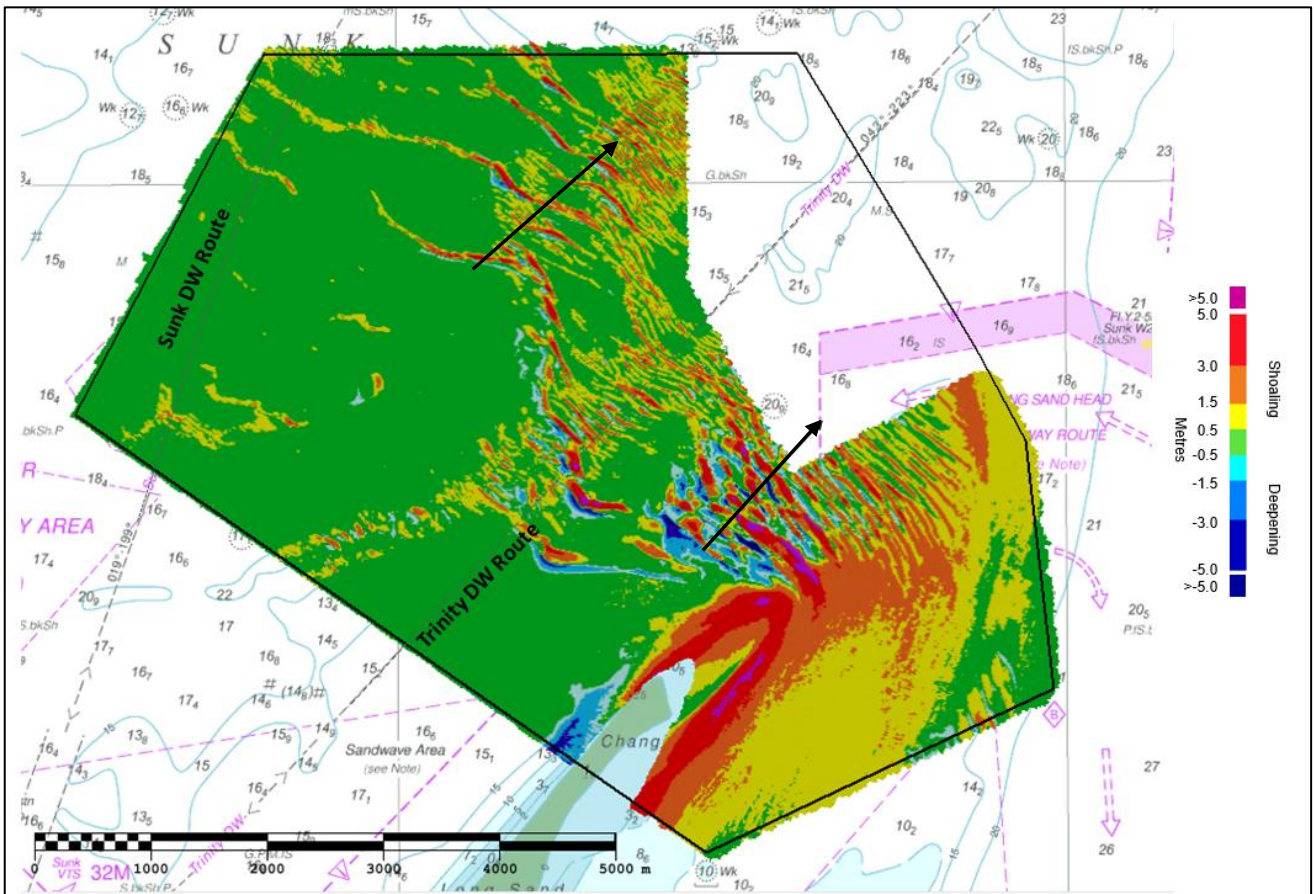


Figure 5: Difference surface showing bathymetric changes between the 2015 and 2020 surveys overlaid on BA Chart 1975-0 (Black arrows represent sandwave migration since 2015 survey).

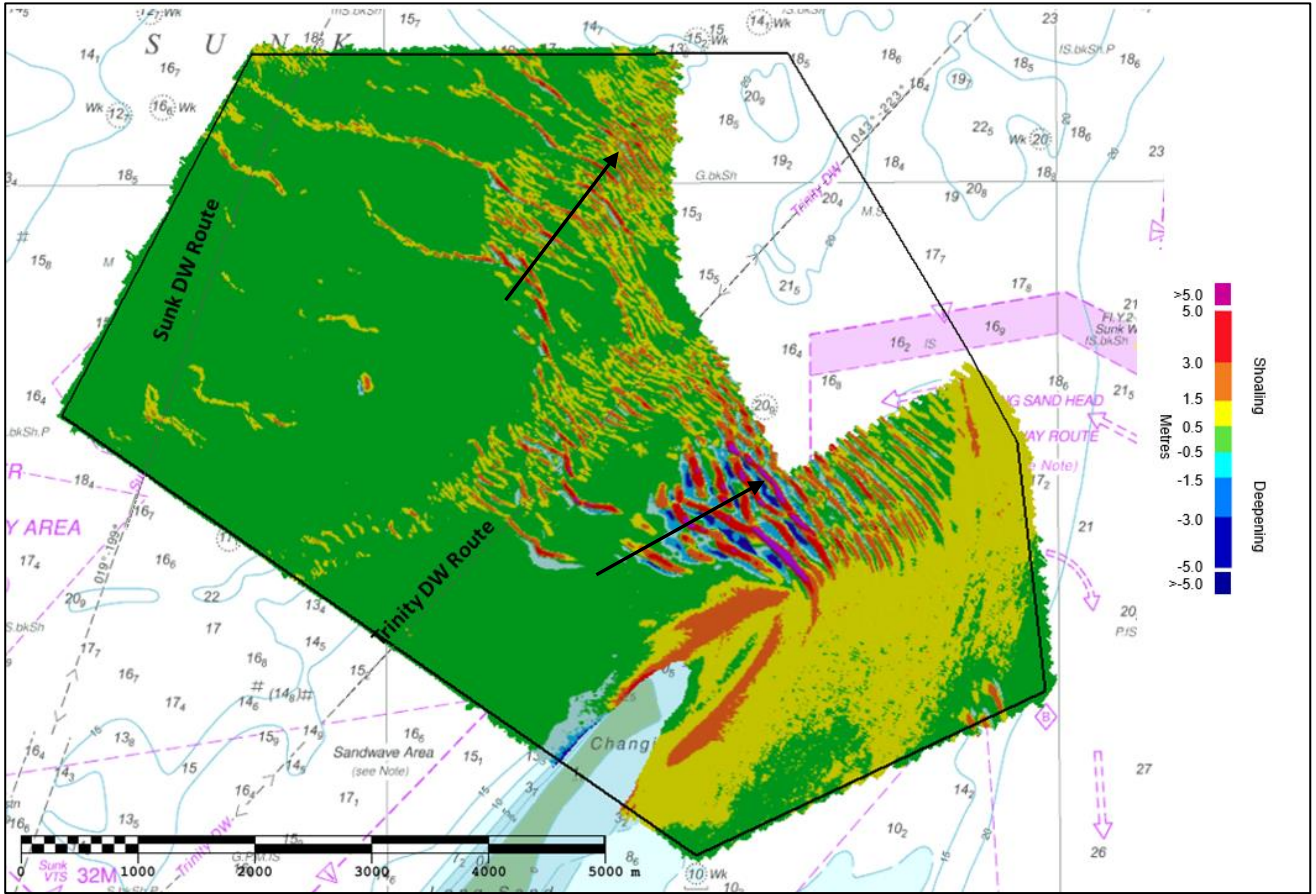


Figure 6: Difference surface showing bathymetric changes between the 2018 and 2020 surveys overlaid on BA Chart 1975-0 (Black arrows represent sandwave migration since 2018 survey).

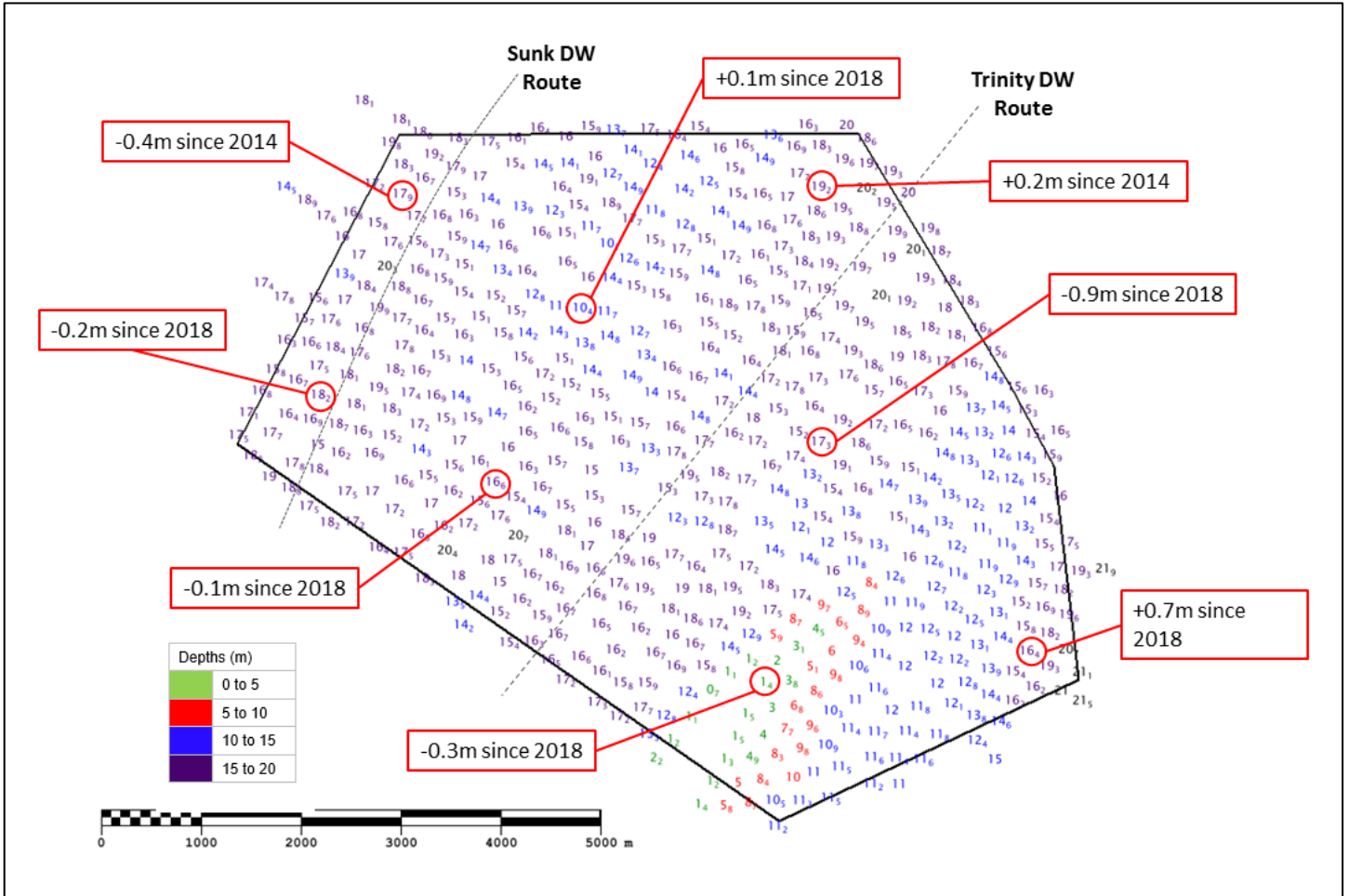


Figure 7: Colour banded depth plot from the 2020 survey with selected depth changes since the 2014 and 2018 surveys. Positive values (+) represent deepening. Negative values (-) represent shoaling.

6. RECOMMENDATIONS FOR FUTURE SURVEYS

Survey Interval

- 6.1 Given that the more mobile and hazardous areas of the Trinity DWR and Long Sand Head Two-Way Route are part of the focused annual survey TE5a, the new 3-year interval for the full area, which also covers the more stable regions, is sufficient.

Survey Area

- 6.2 As the new TE5 limits have now been extended to cover the Trinity DWR in the NE area, the full area limits are sufficient to cover the NE migration of sandwaves.