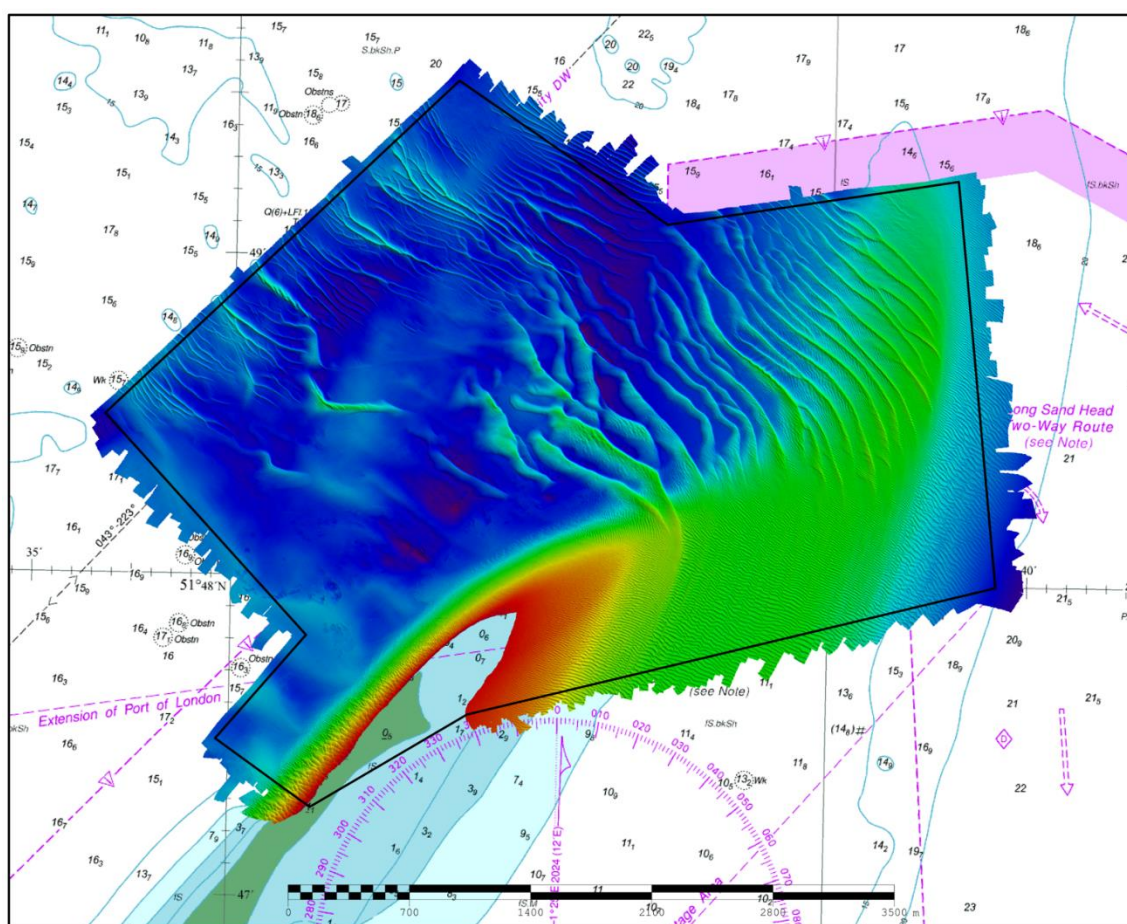


THAMES ESTUARY LONG SAND HEAD (TE5A) 2024 ASSESSMENT

An assessment of the 2024 hydrographic survey of the area TE5A: 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 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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All depths are to Chart Datum, defined using the UKHO Vertical Offshore Reference Frame (VORF) Model.

TE5A LONG SAND HEAD, 2024

1. SUMMARY

Changes Detected

- 1.1 The least depth along Trinity DWR is now 13.9m, 0.1m shoaler than 2023.
- 1.2 The least depth in Long Sand Head Two-Way Route remains 9.9m, but continued shoaling of sandwaves in the surrounding area is likely to lead to further <10m depths in coming years.
- 1.3 The Long Sand Head sandbank continues to migrate north-east.
- 1.4 Large sand waves in the centre of the survey area continue to cause large, localised depth changes, but no overall shoaling or deepening.
- 1.5 The sandbank to the east of the survey area continues to migrate northeast.

Reasons for Continuing to Resurvey the Area

- 1.6 Due to the proximity of the Trinity Deep Water Route (DWR), the dynamic nature of the seabed, and the continued north-east migration of Long Sand Head in the direction of the Long Sand Head Two Way Route, the survey area should continue to be resurveyed. Survey activity will also support proposals being put forward to NCSR (IMO sub-committee) in 2026 to amend the routing as Long Sand Head continues to migrate northeast.

Recommendations

- 1.7 TE5A focused survey should continue on an annual interval due to continued sandwave movement and sandwave migration causing changing depths in the area. The full survey (TE5) interval should also continue at a 3-yearly interval. Trinity House also survey this area every 6 months, and will be adjusting their area to cover the 9.9m in the Long Sand Head Two-way Route.
- 1.8 Both TE5A (focused) and TE5 (full) should be extended east to better capture the migrating sandbank and 15m contour.

2. LOCATION

- 2.1 Survey interval at time of resurvey: 1 year Focused, with the Full area surveyed every 3 years.
- 2.2 Area Covered: 12.92 km²

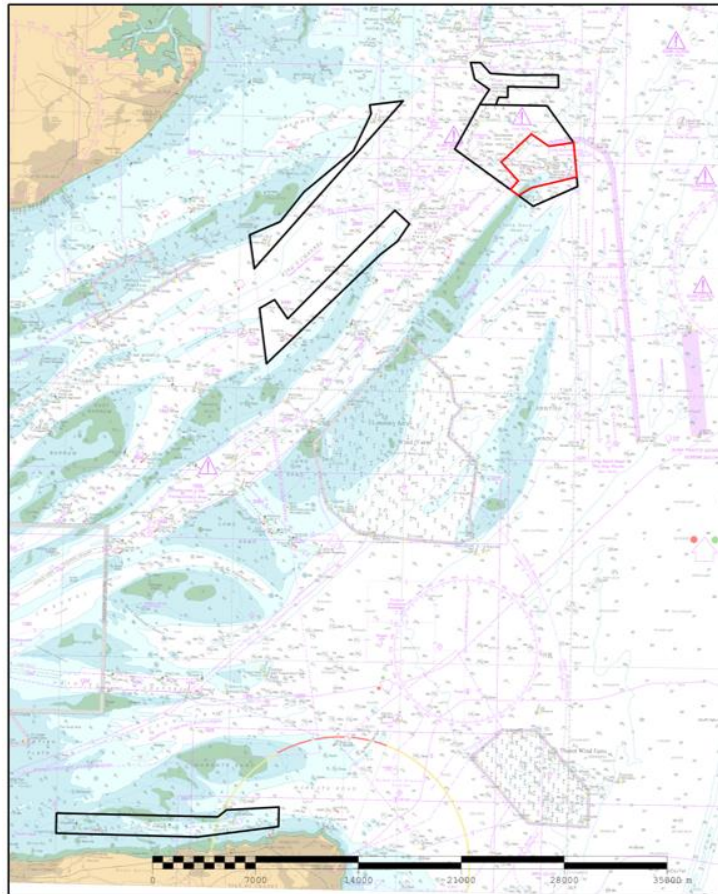


Figure 1: 2024 Thames Estuary Routine Resurvey areas overlaid on BA Chart 1183-0 with area TE5A in red

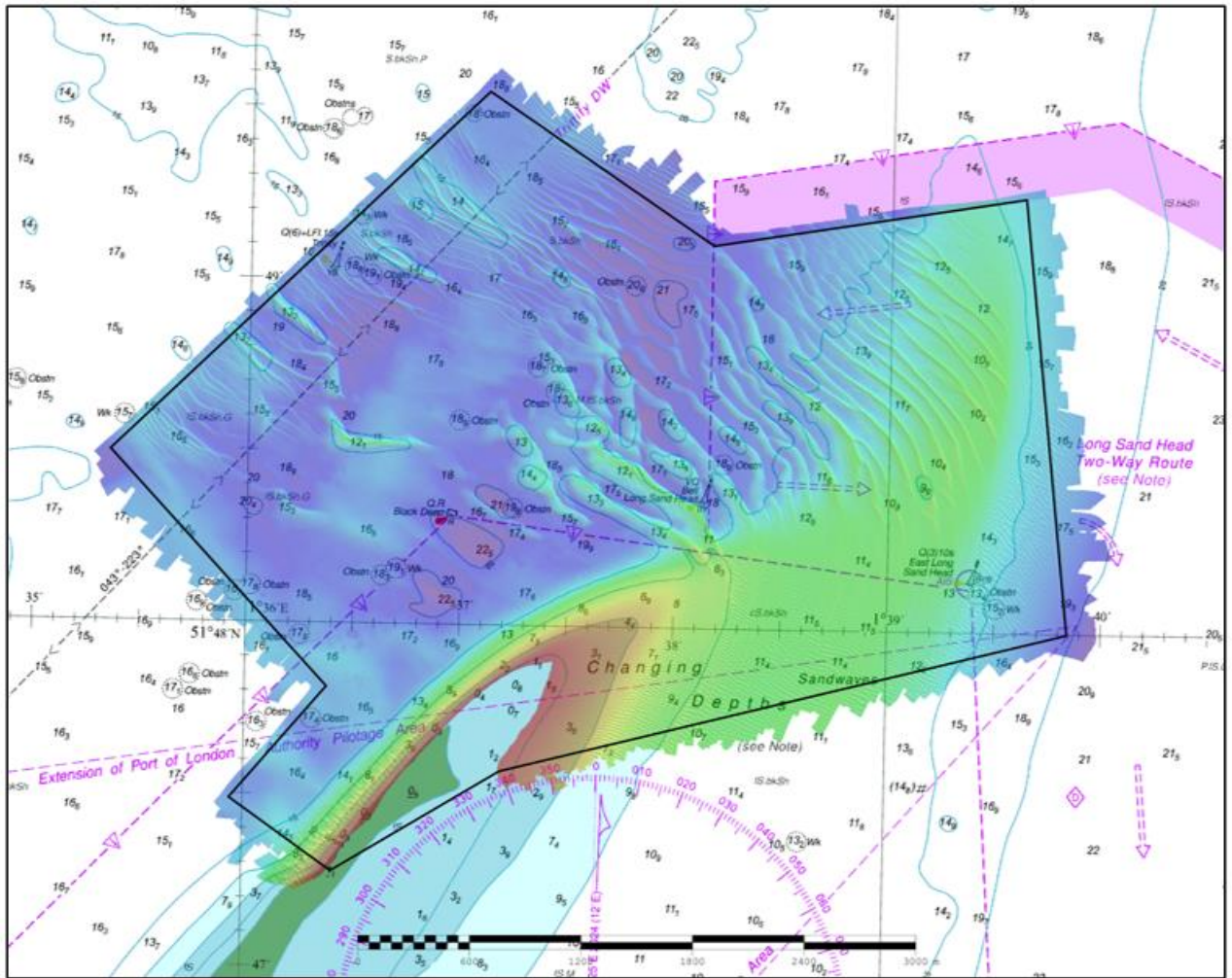


Figure 2: 2024 survey data overlaid on BA Chart 2692-0

3. REFERENCE SURVEY DETAIL

- 3.1 The previous focused survey was conducted as part of the 2022 CHP Routine Resurvey Programme, between September and October 2022, as part of HI1764. A full survey was conducted in August 2023 as part of HI1832.
- 3.2 The Report of Survey for the 2024 survey is available upon request and the validated bathymetric surfaces are available to download from the Admiralty Marine Data Portal.

4. NEW SURVEY DETAIL

- 4.1 The latest focused survey is HI1862, surveyed in August 2024 as part of the 2024 Routine Resurvey Programme.
- 4.2 The Report of Survey for this survey is available upon request and the validated bathymetric surfaces are available to download from the Admiralty Marine Data Portal.

5. DESCRIPTION OF RECENT BATHYMETRIC CHANGE

- 5.1 Figure 3 shows the controlling depth along the Trinity DWR has shoaled by 0.1m since 2023 and is now 13.9m. There is also a significant depth of 14m approximately 450m to the northeast along the Trinity DWR, and a depth of 12.1m approximately 370m to the southeast of the DWR, both of which see significant traffic of regulated vessels, as seen in Figure 10.
- 5.2 The shoalest 2024 depth within the Long Sand Head Two-Way Route is 9.9m, which sits in Area 2, and is 2.4m shoaler than the same location in 2023, this large difference is due to sandwave movement in the area. The previous least depth in Area 2 was also 9.9m in 2023.
- 5.3 To the northeast of the 9.9m depth there are sandwaves which are continuing to shoal year on year and are joining with a sandbank which is migrating to the northeast, as seen in Figures 4, 5 and 7. As shoaling continues the peaks of these sandwaves are getting closer to <10m depths, as seen in Figure 9 where the 2024 depth of 10.1m has shoaled by 2.2m since 2023 and by 2.5m since 2023.
- 5.4 The least depth in Area 1 is 9.5m, which is 3.2m shoaler than 2023. This is due to the northern banks of Long Sand migrating northeast towards the Long Sand Head Two-Way Route. Figures 4 and 5 show the difference between the locations of sand waves between 2023-2024, and Figure 6, shows movement of the 5m and 10m contours since 2022. The west edge of Long Sand Head is deepening as the sediment moves away from the area, this can be seen in Figures 4 and 5, and in Figure 9, where the 15.9m sounding has deepened by 1.1m since 2022.
- 5.5 The difference surfaces in Figures 4 and 5 show large sand waves in the centre of the survey area moving northeast, also seen in Figures 7 and 8, which show migration of the 15m and 20m contours, respectively. This movement has caused some large depth changes, as seen in Figure 9 where the central depth of 11.9m has shoaled by 8.2m since 2023 and by 6.3m since 2022. Despite the localised changeable depths, there is no substantial bathymetric change in the sandwave area.
- 5.6 There is some movement of smaller sand waves in the northwest quadrant of the survey, the southern sand waves are moving northwest along the Trinity DWR and the northern sand waves have a slight trend in the opposite direction, both causing changing depths along the length of the DWR covered in TE5A. These changes can be seen in Figures 4, 5 and 7.

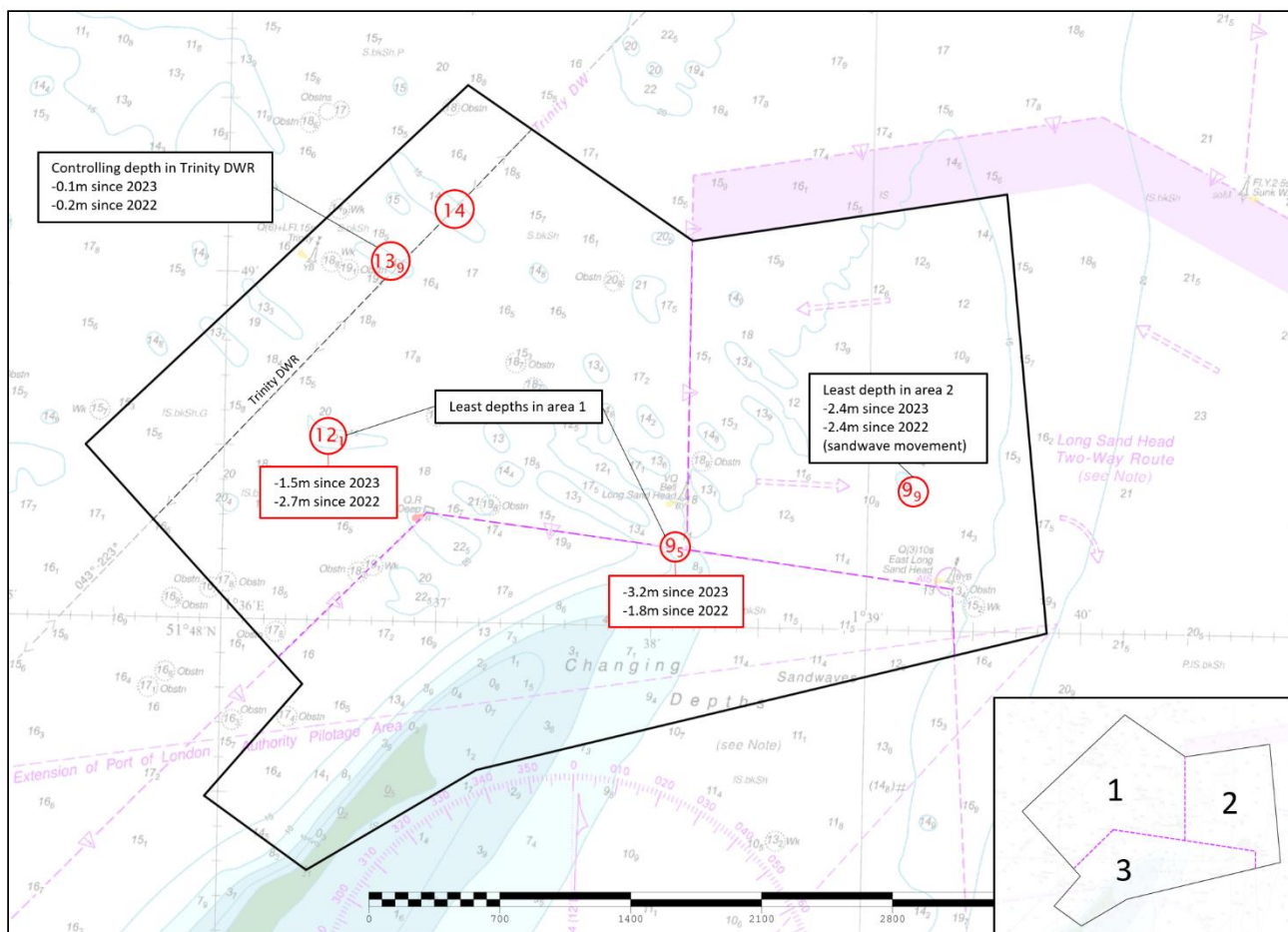


Figure 3: Controlling Depth sounding(s) highlighted, overlaid on BA Chart 2692-0. Controlling depths are not included for Area 3 as this is outside of designated shipping routes.

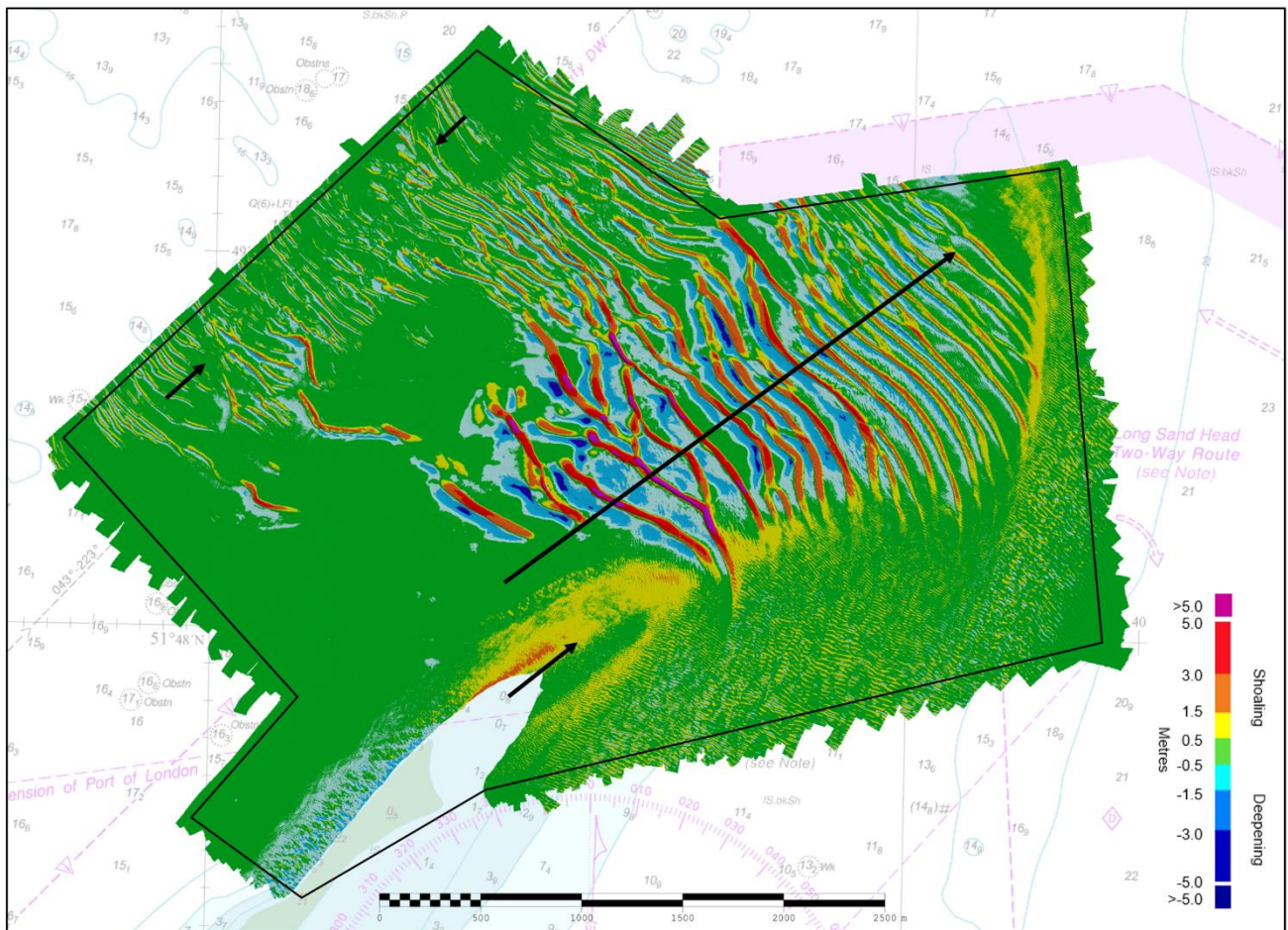


Figure 4: Difference surface showing bathymetric changes between the 2023 and 2024 surveys overlaid on BA Chart 2692-0 (Black arrows represent sandwave migration since 2023 survey)

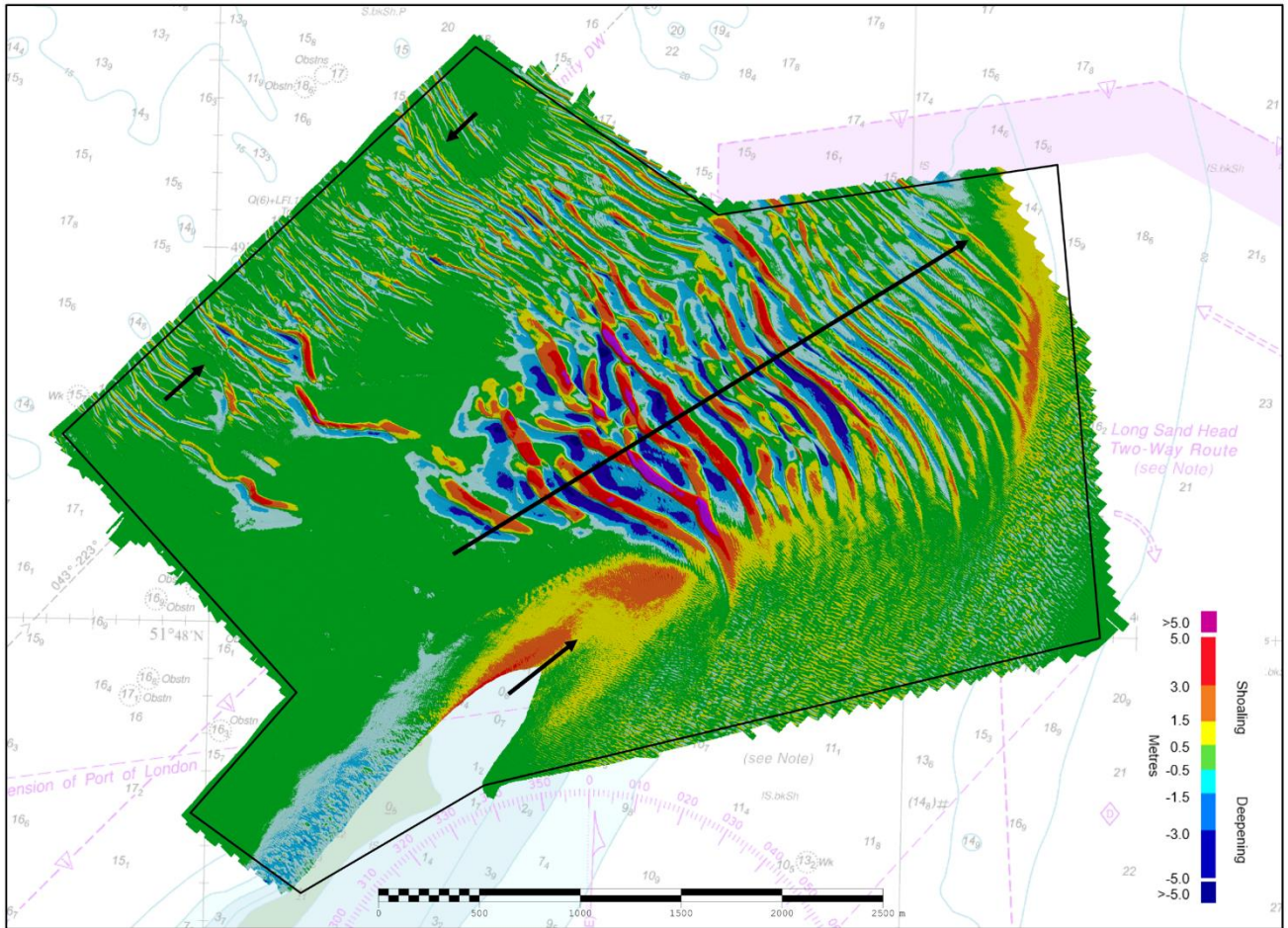


Figure 5: Difference surface showing bathymetric changes between the 2022 and 2024 surveys overlaid on BA Chart 2692-0 (Black arrows represent sandwave migration since 2022 survey)

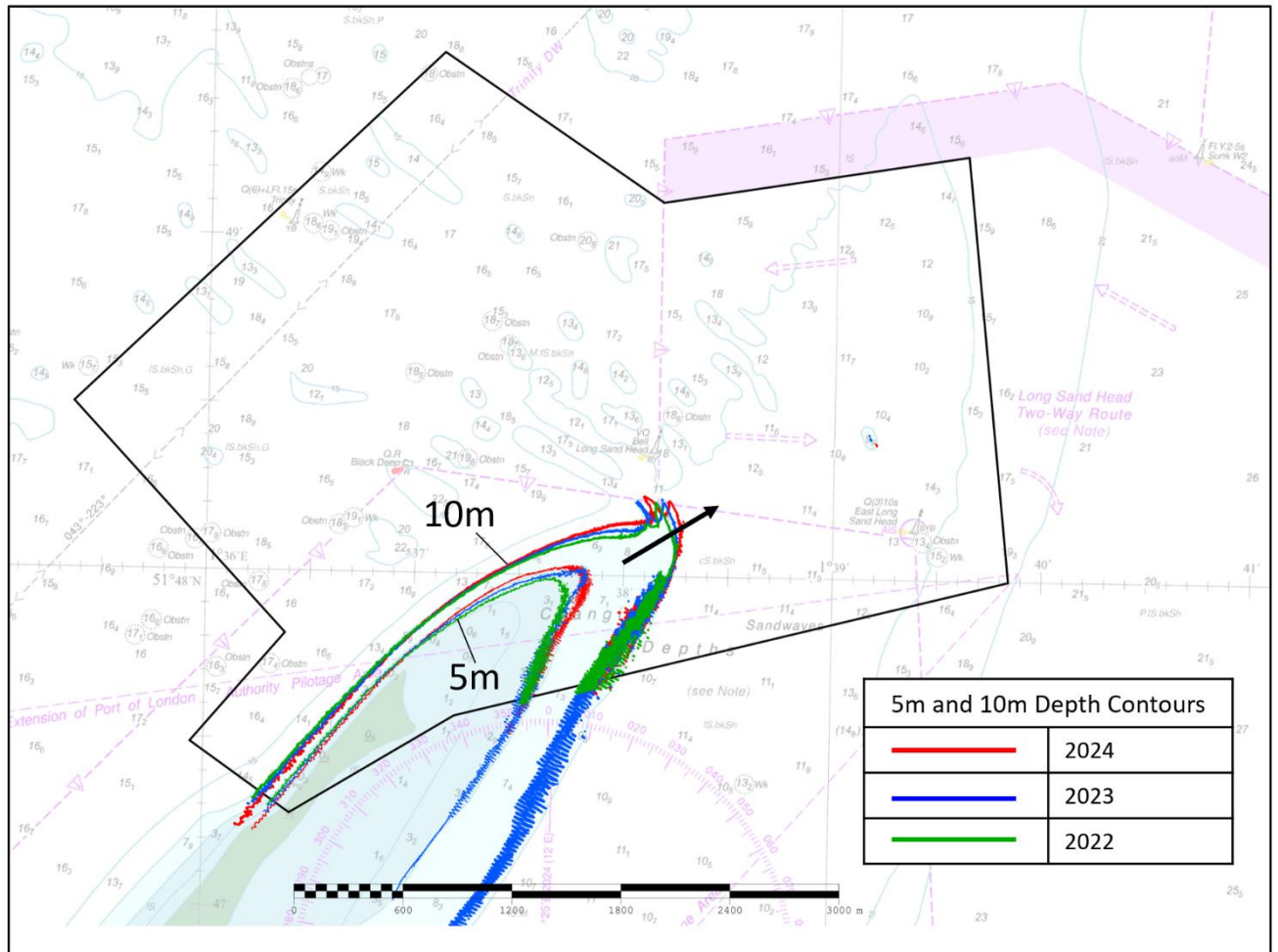


Figure 6: Contour plot showing changes in the 5m and 10m contours between 2022 (green), 2023 (blue) and 2024 (red). Black arrow represents feature migration.

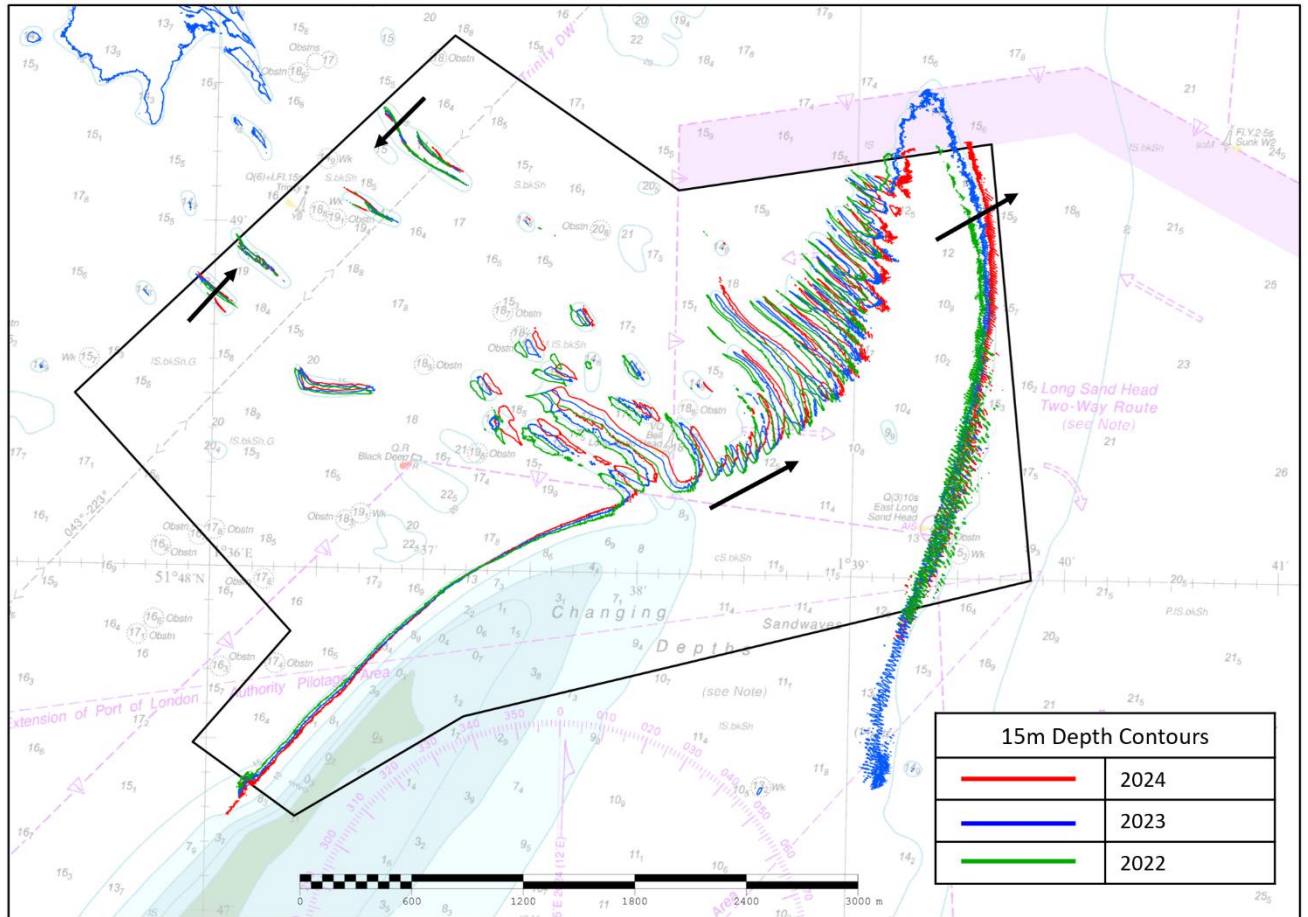


Figure 7: Contour plot showing changes in the 15m contours between 2022 (green), 2023 (blue) and 2024 (red). Black arrow represents feature migration.

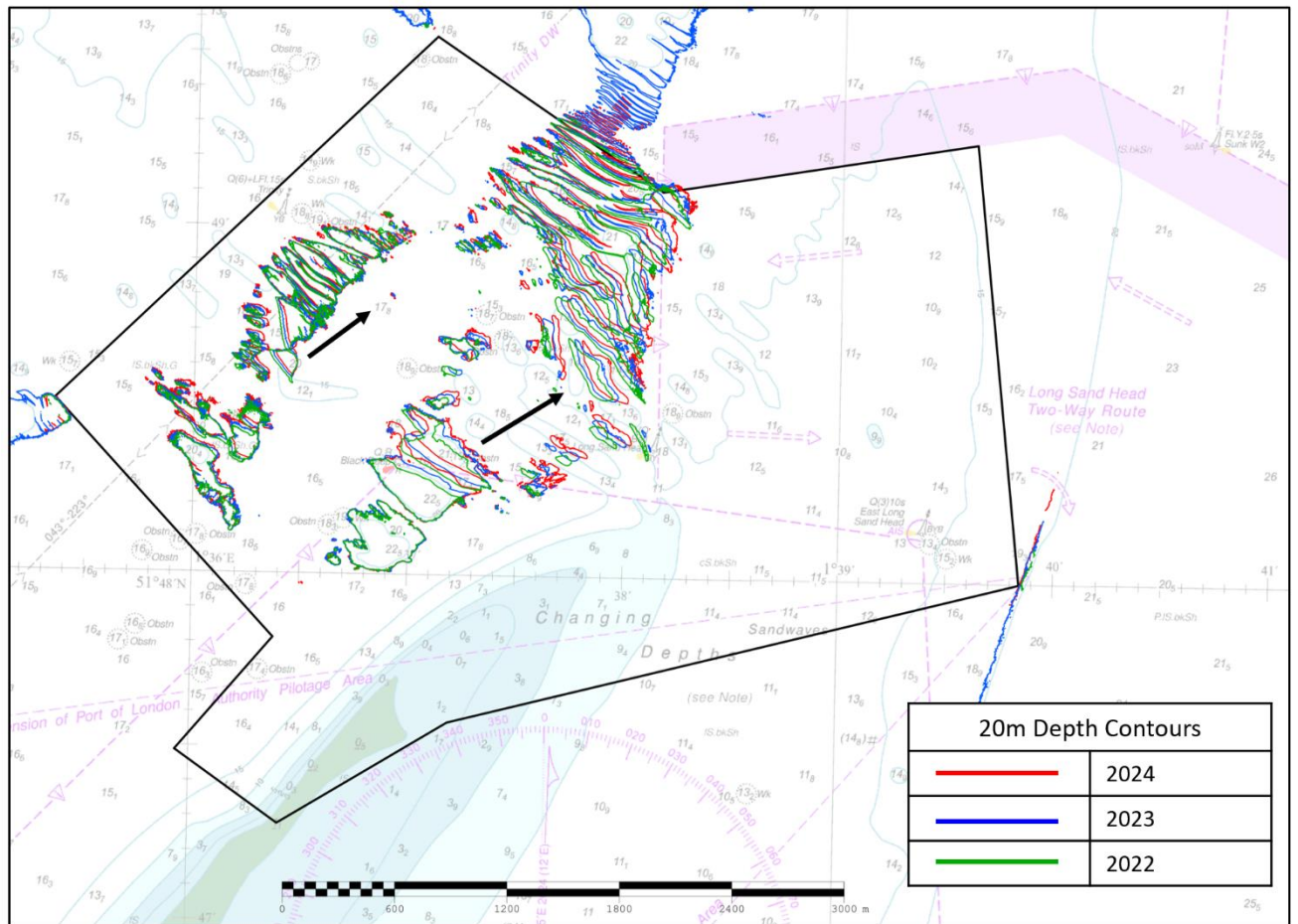


Figure 8: Contour plot showing changes in the 20m contours between 2022 (green), 2023 (blue) and 2024 (red). Black arrow represents feature migration.

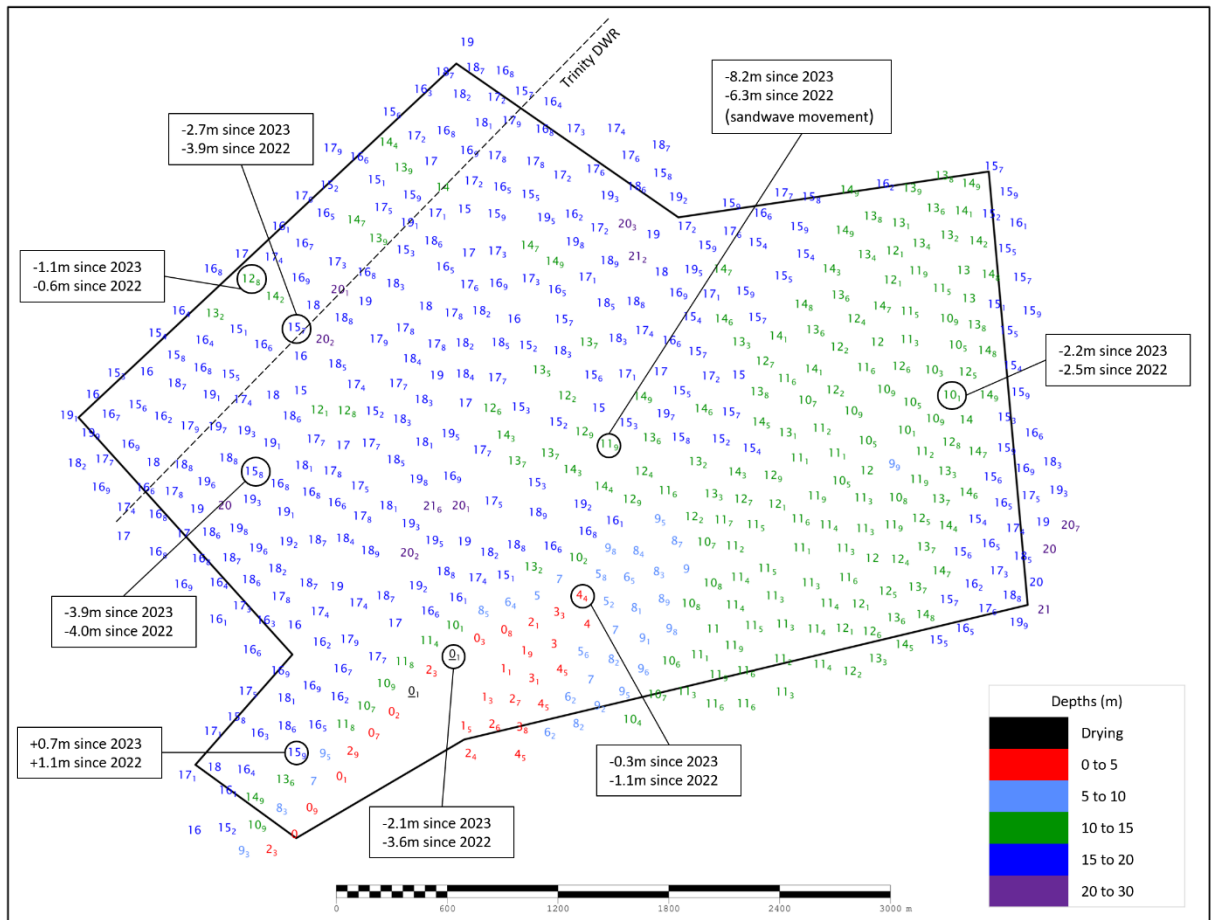


Figure 9: Colour banded depth plot from the 2024 survey with selected depth changes since the 2022 and 2023 surveys. Positive values (+) represent deepening. Negative values (-) represent shoaling.

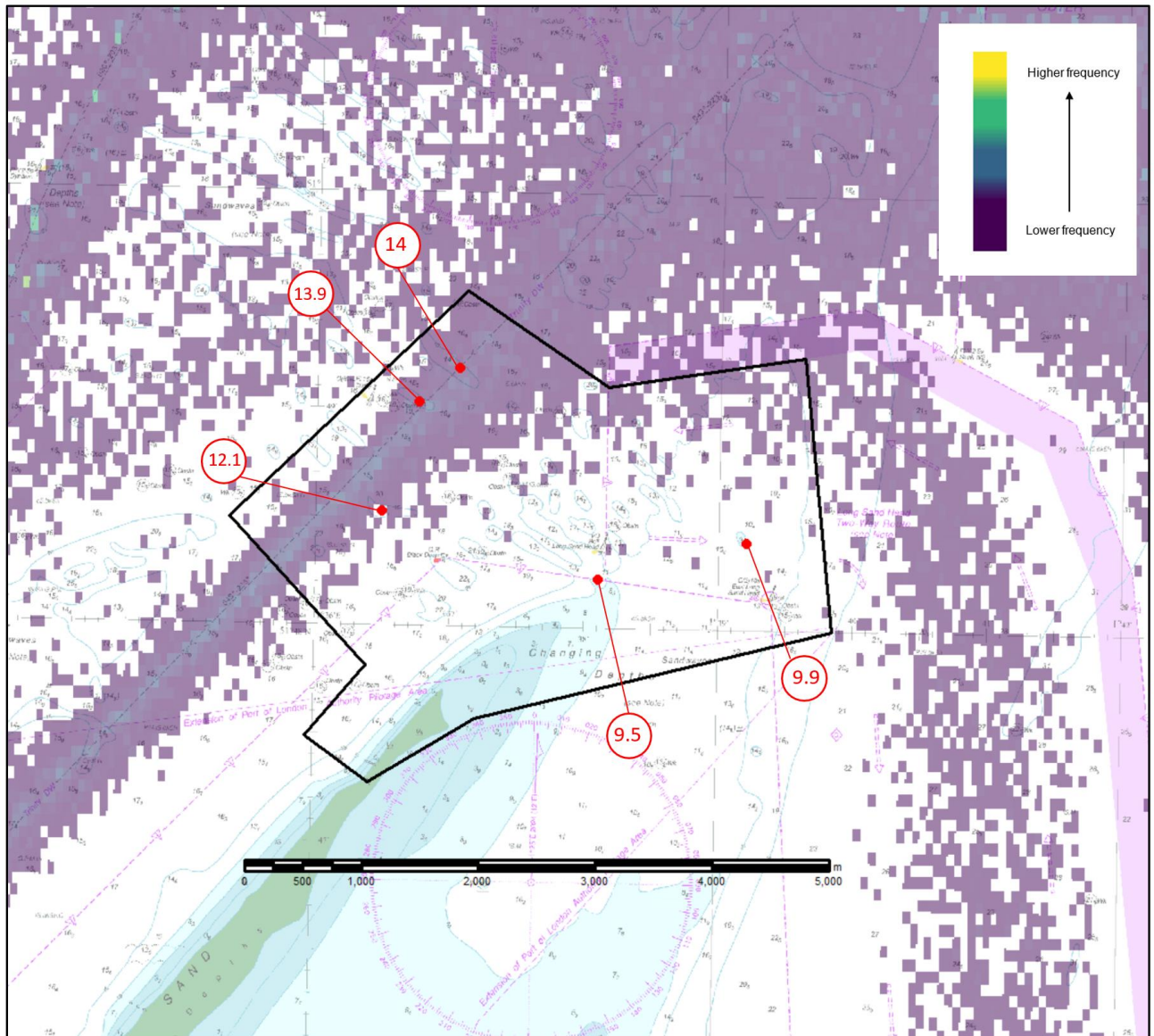


Figure 10: AIS ECDIS regulated annual tanker, passenger, and cargo vessel data from 2023 with Routine Resurvey area TE5A and controlling depth soundings (m) overlaid on BA Chart 2692-0.

6. RECOMMENDATIONS FOR FUTURE SURVEYS

Survey Interval

- 6.1 Given the mobility of the sand waves and changing depths in relation to the Trinity DWR and the Long Sand Head Two-Way Route, TE5A should remain on the annual survey interval.

Survey Area

- 6.2 The shoal bank to the east of the survey area is migrating northeast and is at the very edge of the current survey limits. To fully capture this sandbank as it migrates in the future, we recommend extending the northeastern corner of the TE5A focused area by 460m to the east. This should adequately cover the migrating sandbank for the 2025 survey but may need reassessing if migration continues. See Figure 11 for recommended amendment.
- 6.3 The TE5 full area should also be amended in the same fashion to capture the 15m contour. See Figure 12.

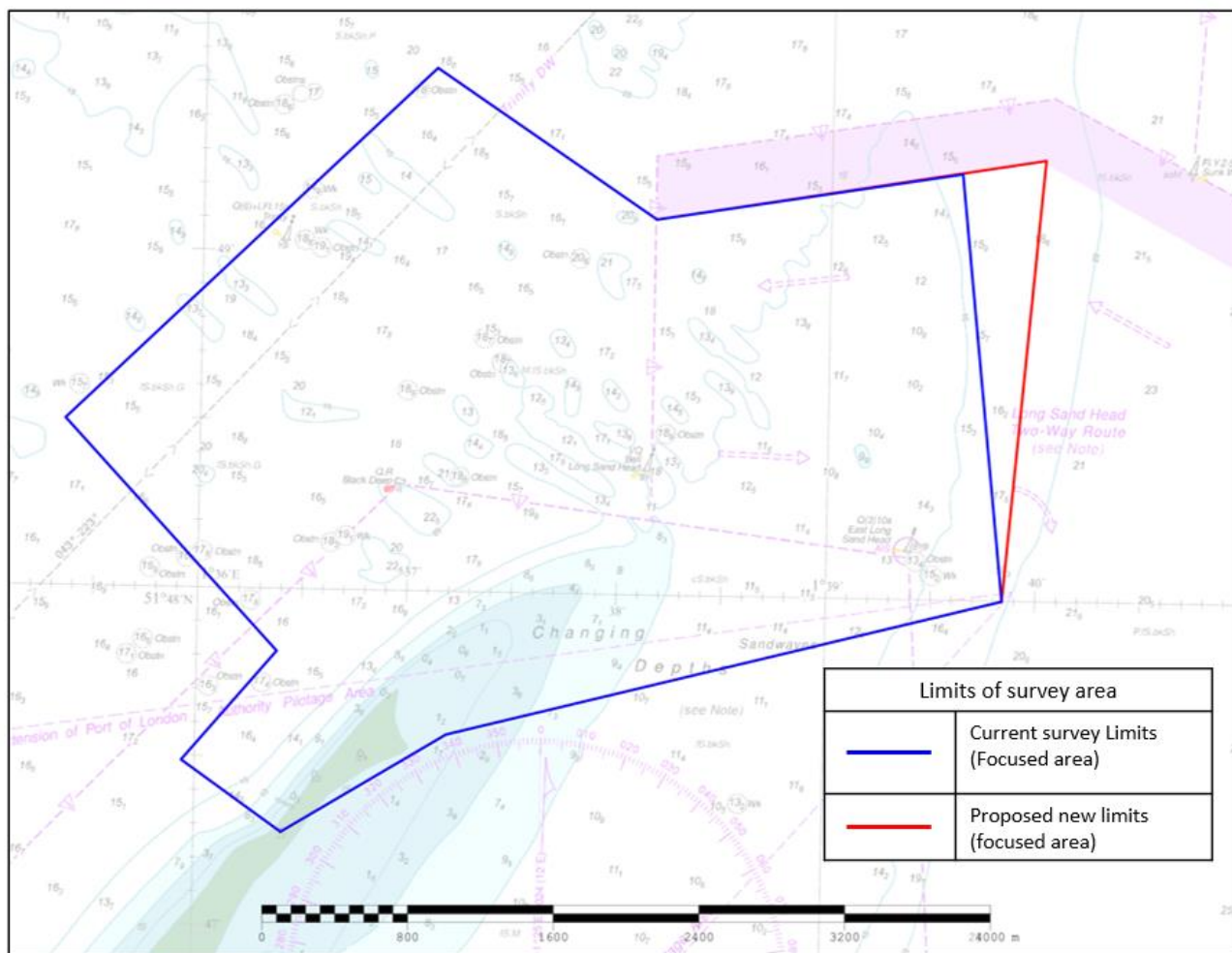


Figure 11: Recommended changes to survey limits of area TE5A focused area

The coordinates of the recommended adjusted survey area limits for the 1-year focused area TE5A are shown below:

Current Limits

TE5A total area: 12.92 km²

Proposed New Limits

TE5A total area: 13.47 km²

	Latitude	Longitude
1	51.791462N	001.598902E
2	51.796918N	001.606351E
3	51.808250N	001.589200E
4	51.825829N	001.618339E
5	51.818549N	001.636006E
6	51.821797N	001.666945E
7	51.800000N	001.664000E
8	51.792939N	001.619962E
9	51.787986N	001.606925E

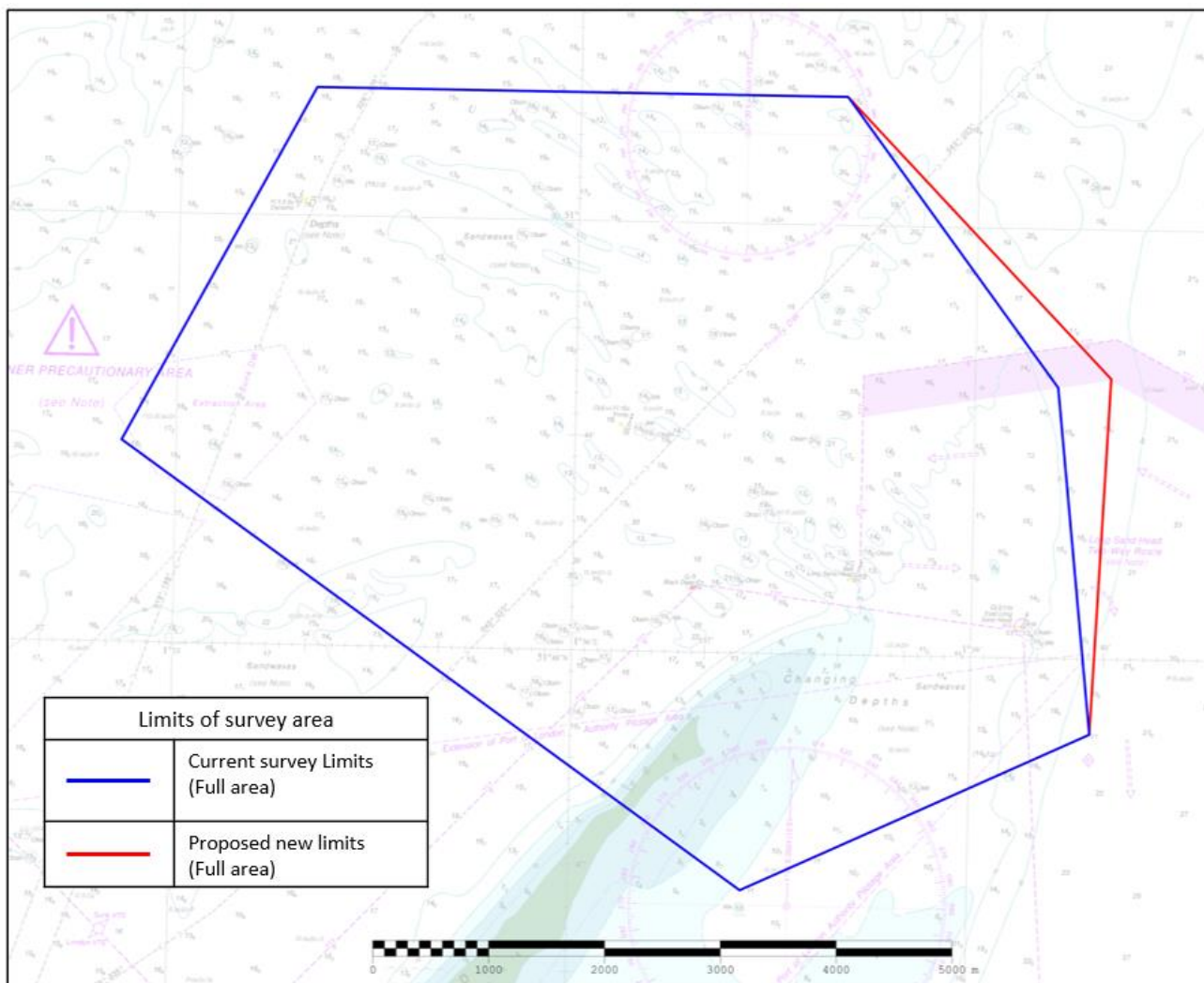


Figure 12: Recommended changes to survey limits of area TE5 full area

The coordinates of the recommended adjusted survey area limits for the 3-year full area TE5 are shown below:

Current Limits
TE5A total area: 39.26 km²

Proposed New Limits
TE5 total area: 40.60 km²

	Latitude	Longitude
1	51.843315N	001.566800E
2	51.843317N	001.576393E
3	51.843320N	001.585946E
4	51.843330N	001.617148E
5	51.843330N	001.633331E
6	51.821797N	001.666945E
7	51.794170N	001.665000E
8	51.781600N	001.621601E
9	51.815673N	001.543137E