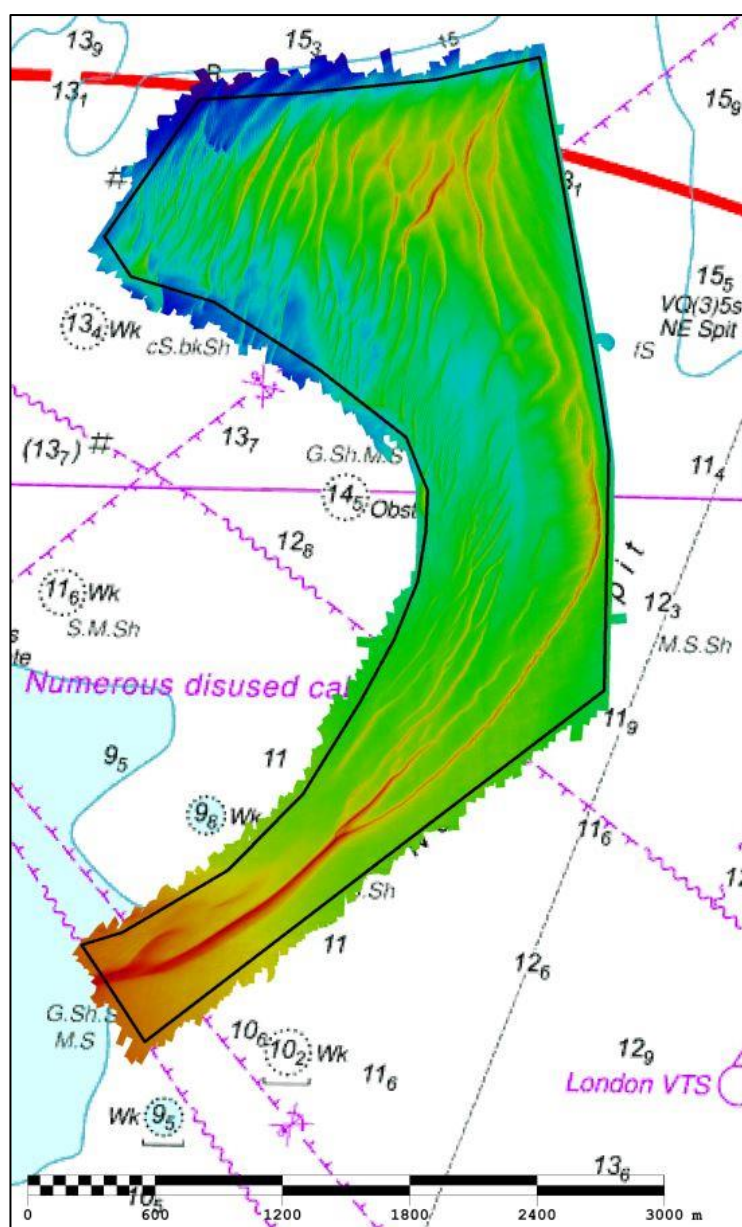


THAMES ESTUARY NORTH EAST SPIT FOCUSED (TE14) 2025 ASSESSMENT

An assessment of the 2025 hydrographic survey of the area TE14: 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.

TE14 NORTH EAST SPIT FOCUSED, 2025

1. SUMMARY

Changes Detected

- 1.1 The area is generally stable with little change in controlling depths. There has been some sandwave movement, the most notable of which is occurring in the east of the survey area

Reasons for Continuing to Resurvey the Area

- 1.2 North East Spit and the eastern end of Margate Sand are crossed by vessels bound to or from Princes Channel (via Queens Channel). Some vessels draughts are close to the charted depth, and the following areas need routinely re-surveying.
- The shoal sand waves delimiting North East Spit, as currently defined by the 10m contour
 - The far eastern end of Margate Sand as marked by East Margate buoy
 - The shoal patch to the northeast of the survey area (northwest of NE Spit East Cardinal buoy) shows migration.

Recommendations

- 1.3 The limited depth variation between 2013, 2019, and 2025 in the area supports an extended survey interval. It is therefore recommended that the current survey intervals of 6 years for TE14 North East Spit Focused, and 12 years for TE14 North East Spit Full are retained.
- 1.4 The area limits should be extended further east to cover possible future sand wave migration.

2. LOCATION

- 2.1 Survey interval at time of resurvey: 6 years for TE14 North East Spit Focused, 12 years for TE14 North East Spit Full.
- 2.2 Area Covered: 5.2 km²

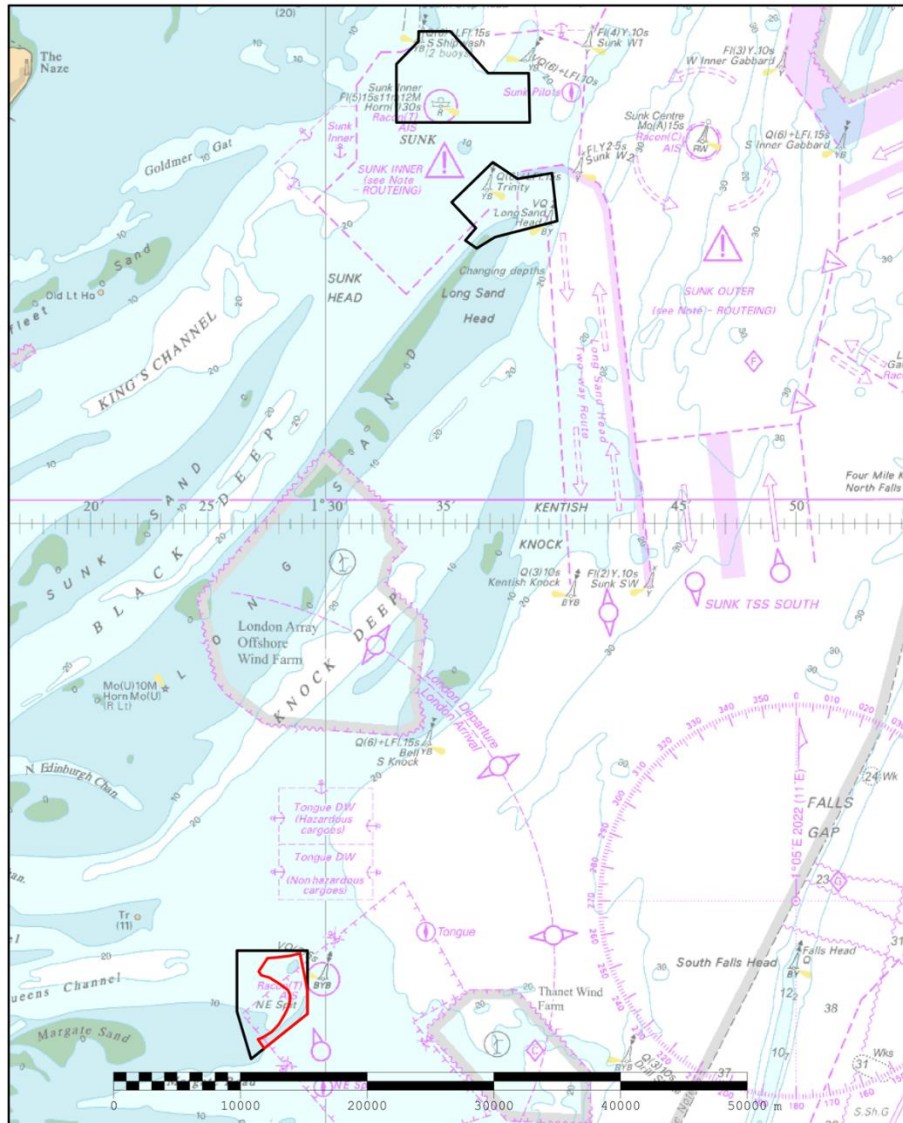


Figure 1: 2025 Thames Estuary Routine Resurvey areas overlaid on BA Chart 1406 with area TE14 focused in red

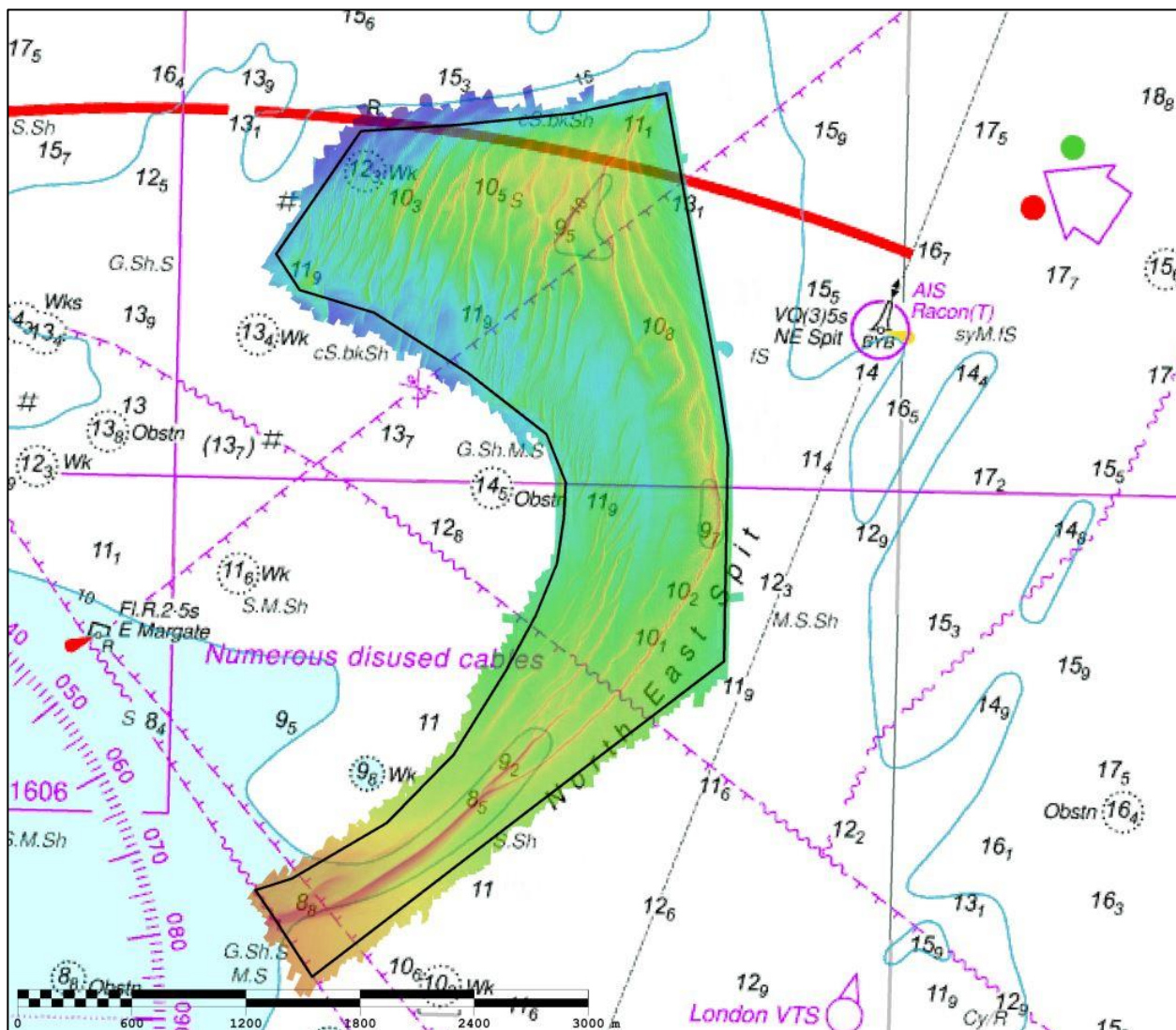


Figure 2: 2025 survey data overlaid on BA Chart 1607

3. REFERENCE SURVEY DETAIL

- 3.1 The previous TE14 full survey, HI1645, was conducted as part of the 2019 Routine Resurvey Programme during August 2019. Another full survey, HI1433, was conducted as part of the 2013 Routine Resurvey Programme between September and December.
- 3.2 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.

4. NEW SURVEY DETAIL

- 4.1 This latest focused survey for TE14 North East Spit, is part of the 2025 Routine Resurvey Programme, and was conducted in April 2025 as part of HI1898.
- 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 that the shoalest controlling depth in the 2025 survey is 8.9m, located on North-East Spit on the approach to Queens Channel. This is 0.4m deeper than 2019, but 0.2m shoaler than 2013. Other controlling depths show little variation since 2019.
- 5.2 The difference surface in Figure 4 shows that general depths in the area have remained similar between 2019 and 2025, although more change can be seen in the difference surface showing change between 2013 and 2025 in Figure 5. Sandwaves are present throughout the survey area and the direction of movement of these changes in different areas. The most noticeable movement between 2019 and 2025 can be seen in the east of the survey area where sandwave movement has been eastwards shown in Figures 4, 6 and 7 and is now approaching the edge of the survey area.
- 5.3 Both the 10m (Figure 6) and 11m (Figure 7) contour has been extracted for the 2013, 2019, and 2025 surveys and show continued migration of the sandwaves northwest of the Cardinal buoy. While the area covered by the 10m contour is shown to be slightly reduced in this area Figure 7 shows sandwaves are still present.
- 5.4 AIS data for 2024, presented in Figure 9, shows vessel traffic over and around North East Spit, with the main navigated route being just slightly northeast of the charted 10m contour.

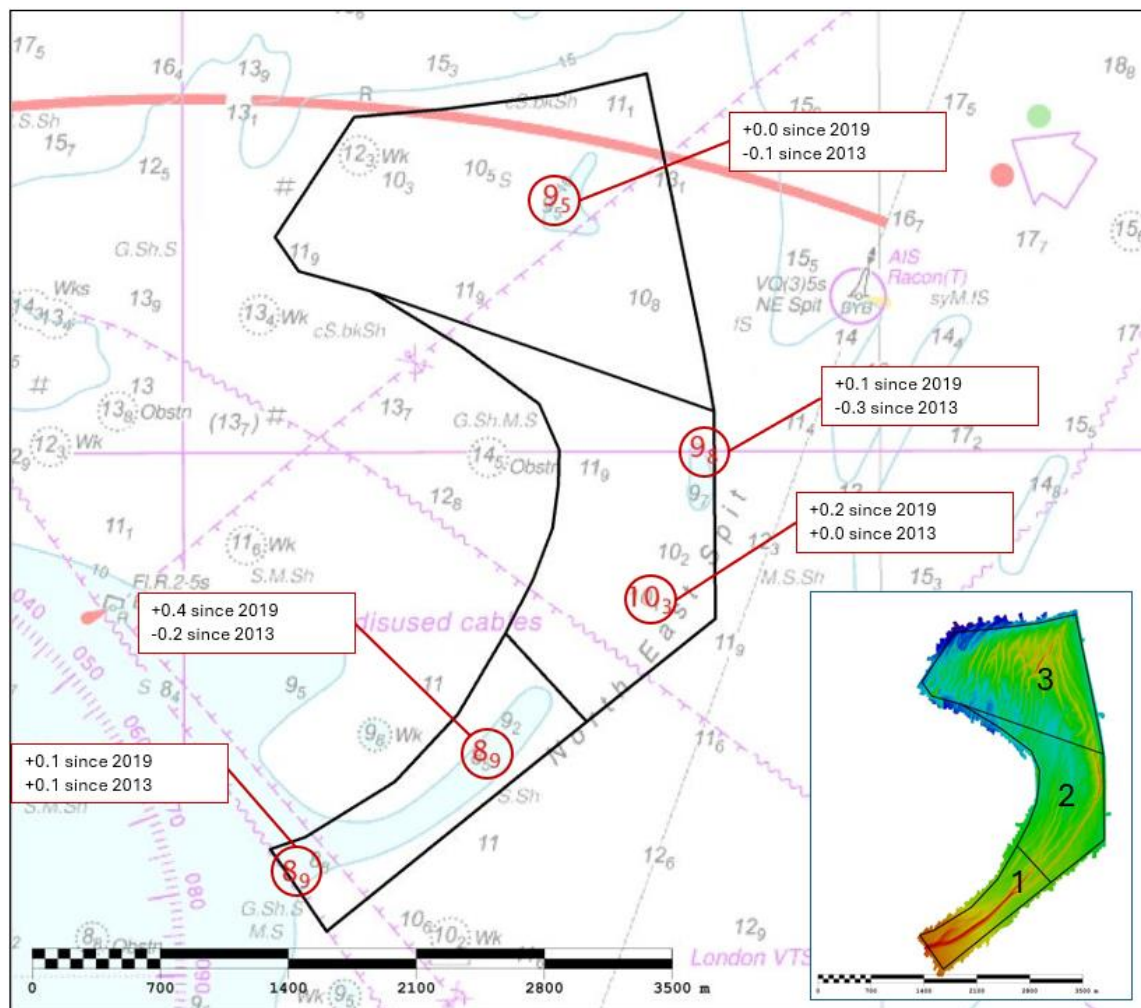


Figure 3: Controlling Depth sounding(s) highlighted, overlaid on BA Chart 1607. Survey divided into areas based on AIS traffic data and Controlling depths in each area highlighted.

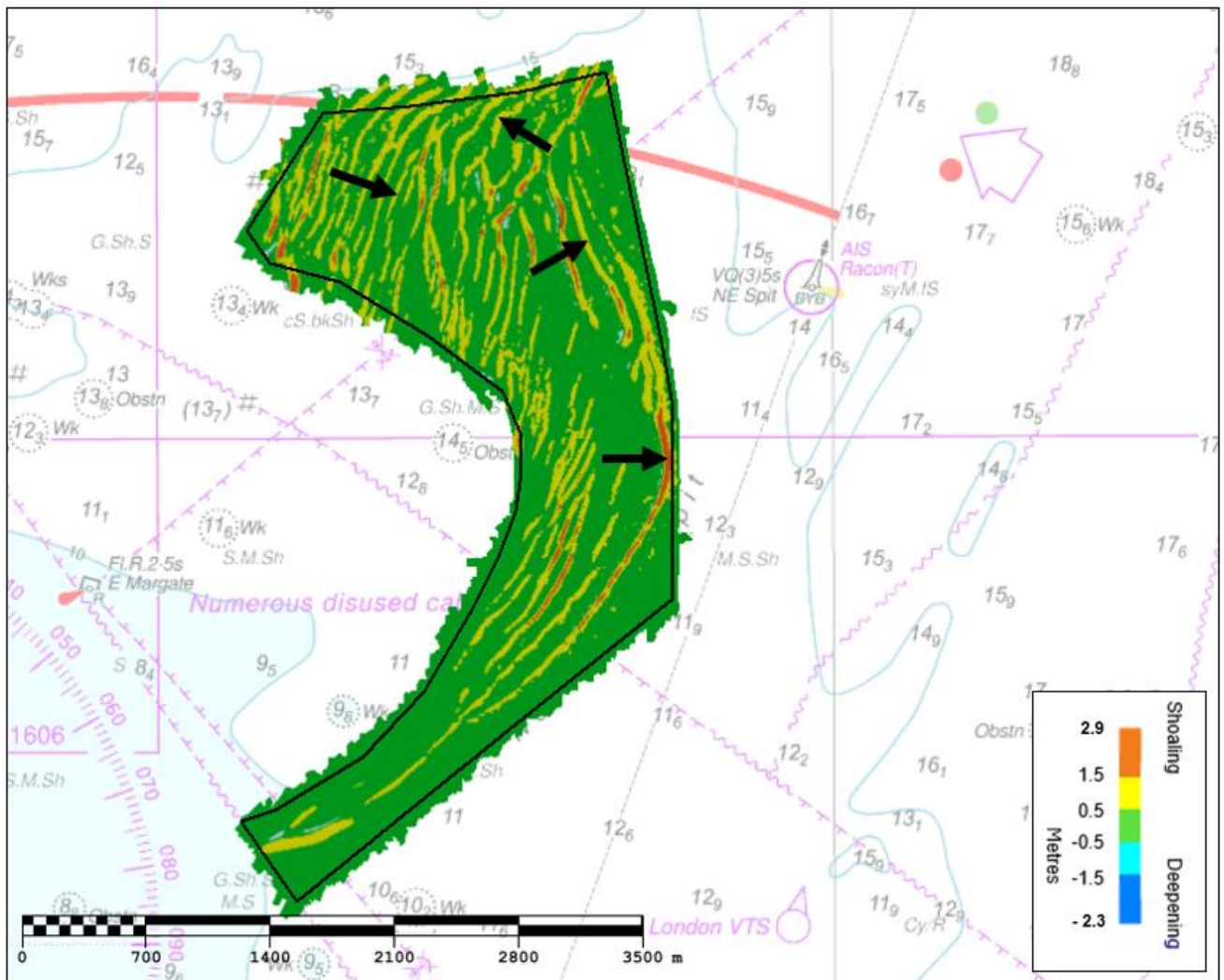


Figure 4: Difference surface showing bathymetric changes between the 2025 and 2019 surveys overlaid on BA Chart 1607 (Black arrows represent sandwave migration since 2019 survey)

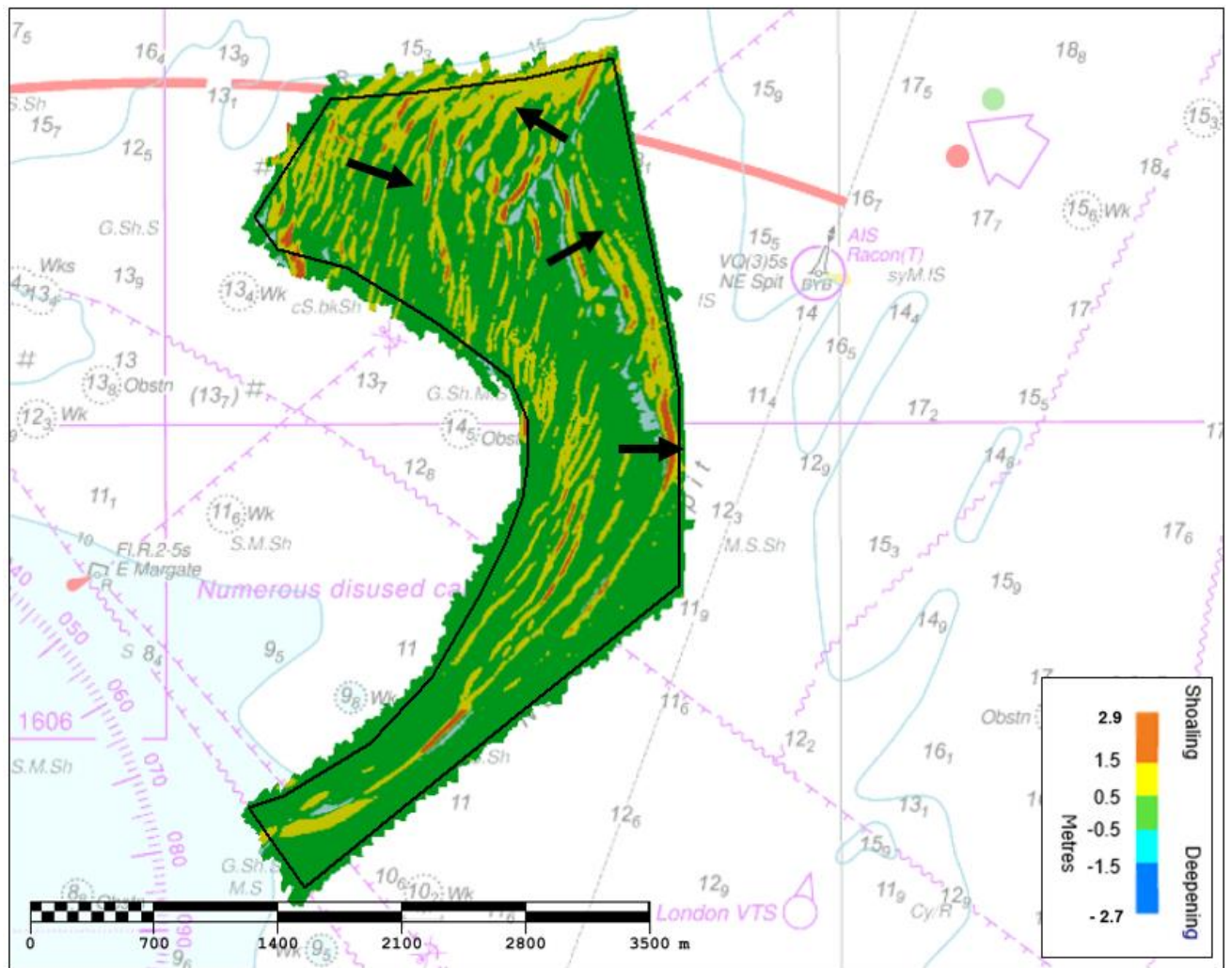


Figure 5: Difference surface showing bathymetric changes between the 2025 and 2013 surveys overlaid on BA Chart 1607 (Black arrows represent sandwave migration since 2013 survey)

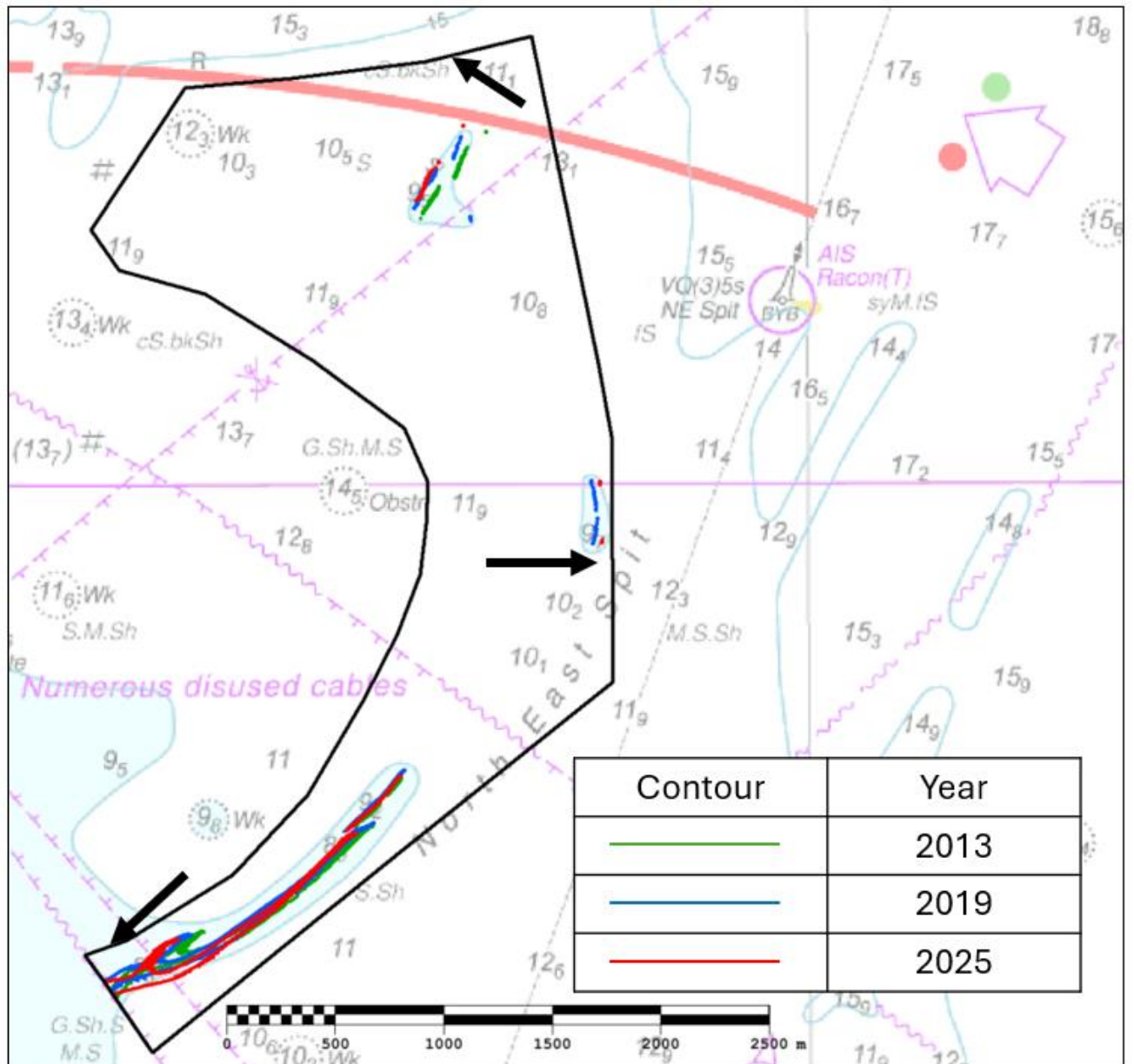


Figure 6: Contour plot showing changes in the 10m contour between 2025 (red), 2019 (blue), and 2013 (green). Black arrow represents feature migration.

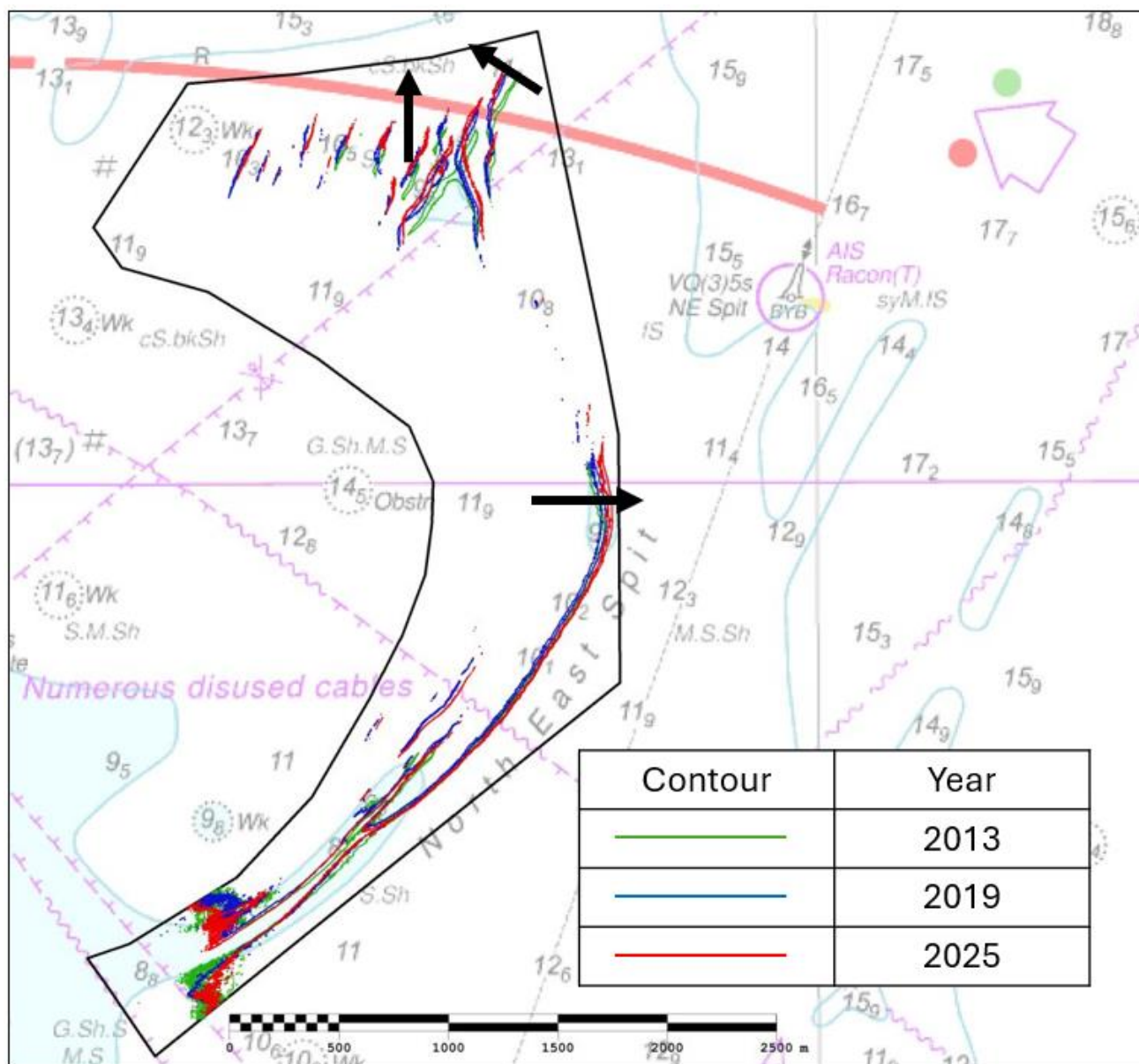


Figure 7: Contour plot showing changes in the 11m contour between 2025 (red), 2019 (blue), and 2013 (green). Black arrow represents feature migration.

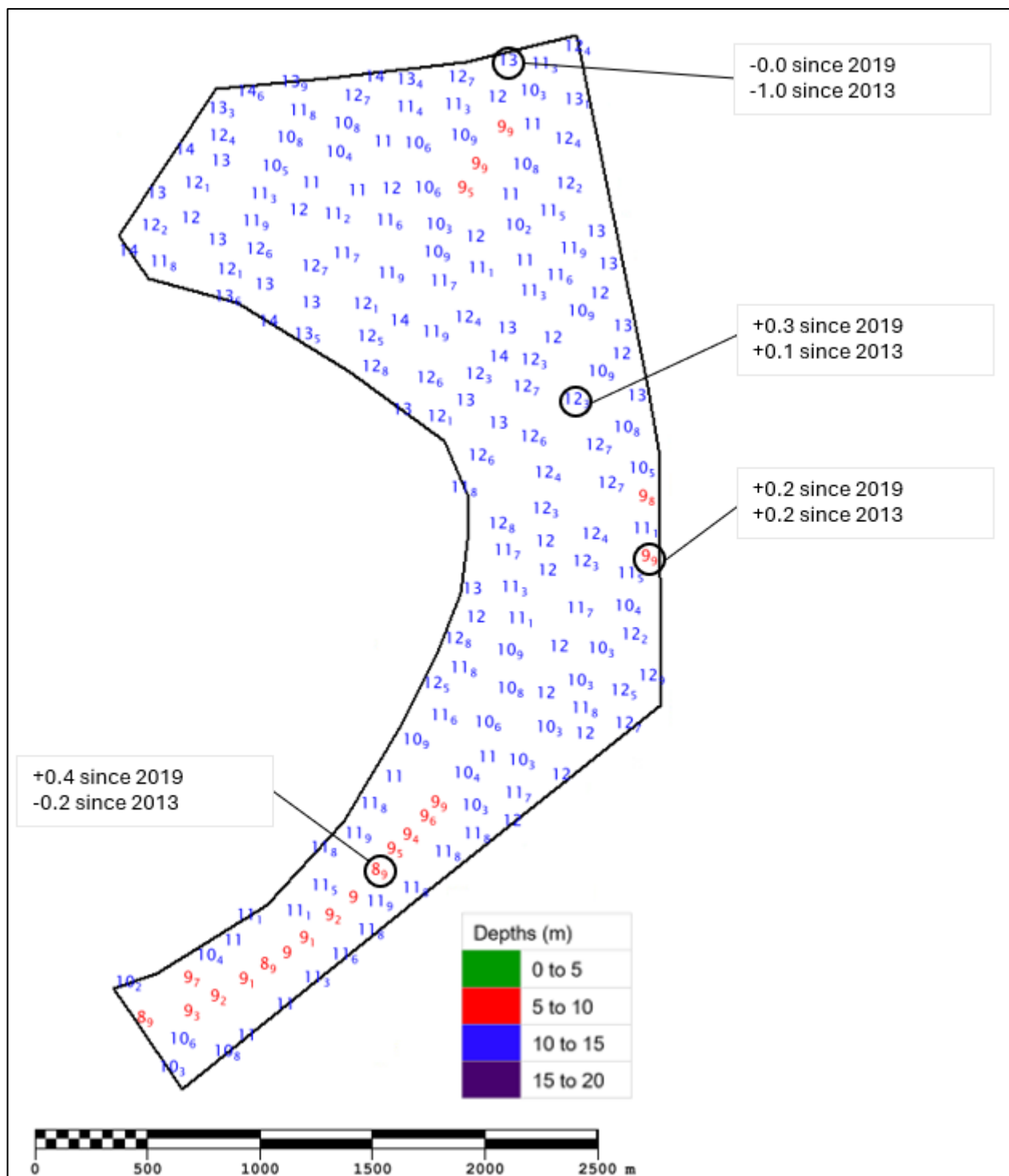


Figure 8: Colour banded depth plot from the 2025 survey with selected depth changes since the 2019 and 2013 surveys. Positive values (+) represent deepening. Negative values (-) represent shoaling.

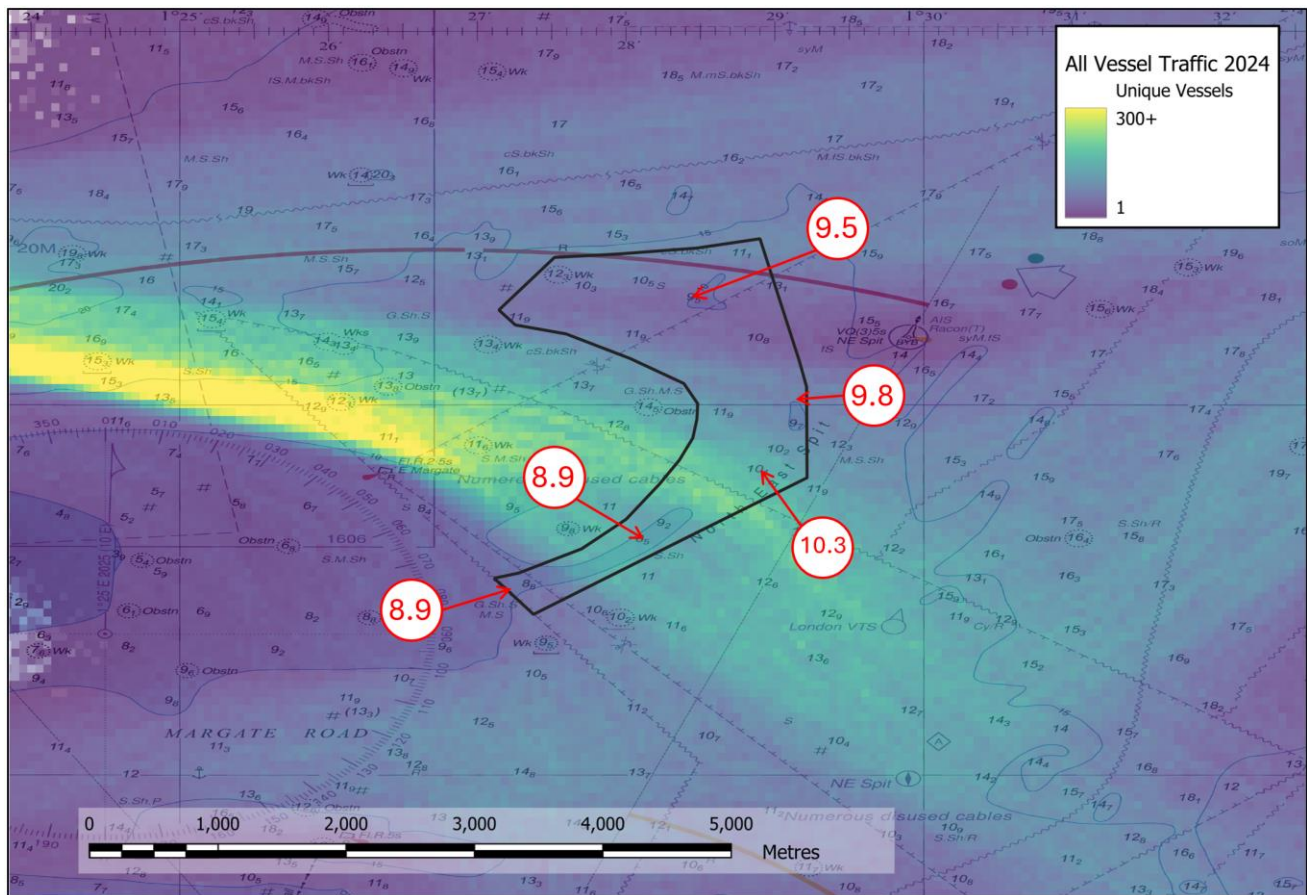


Figure 9: AIS heatmap at 100m resolution grid size. Density unit is unique vessels within the grid square within 2024. TE14 area in black and significant depth soundings (m) overlaid on chart 1607

6. RECOMMENDATIONS FOR FUTURE SURVEYS

Survey Interval

- 6.1 Given the location of the area, the mobility and changes in the seabed within the survey area, TE14 survey interval should be maintained at 6 years focused, and 12 years Full.

Survey Area

- 6.2 Comparison of the 10m and 11m contours show eastward movement between 2013, 2019 and 2025. The limit of the survey area TE14 (Full and Focused) should be extended east to allow for future migration of North East Spit.

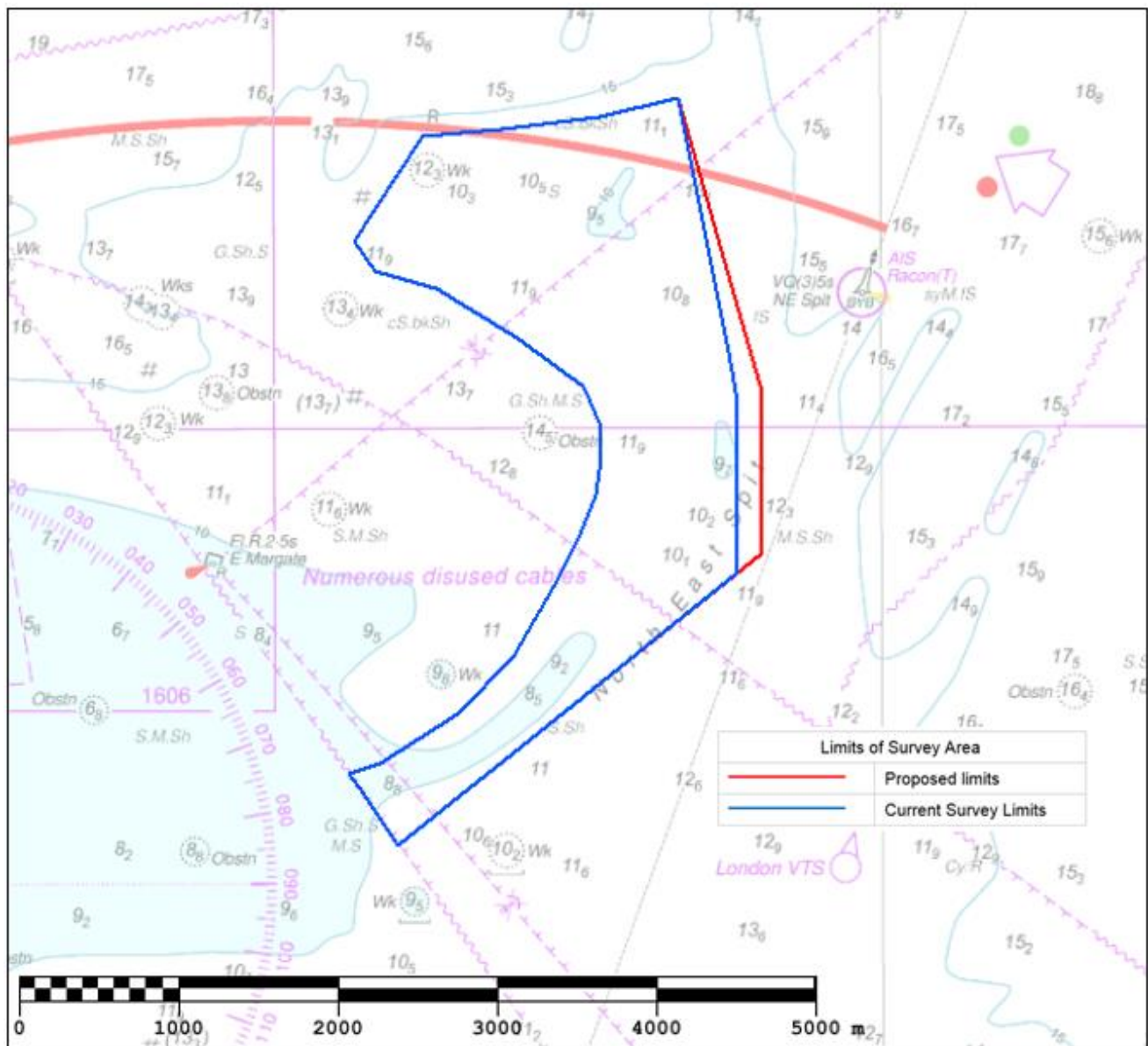


Figure 10: Recommended changes to survey limits of area TE14 North East Spit Focused

The coordinates of the recommended adjusted survey area limits for the 6-year focused area TE14 are shown below:

Current Limits:

TE14 North East Spit Focused total area: 5.14 km²

Proposed New Limits:

TE14 North East Spit Focused total area: 5.45 km²

	Latitude	Longitude
1	51-26.079708N	001-27.377478E
2	51-26.255616N	001-27.186984E
3	51-26.322156N	001-27.111918E
4	51-26.357262N	001-27.277422E
5	51-26.520264N	001-27.701226E
6	51-26.718372N	001-27.999642E
7	51-26.956602N	001-28.225338E
8	51-27.117096N	001-28.358244E
9	51-27.265050N	001-28.448520E
10	51-27.392946N	001-28.476108E
11	51-27.495762N	001-28.481124E
12	51-27.631176N	001-28.388340E
13	51-27.799194N	001-28.027230E
14	51-27.964704N	001-27.595902E
15	51-28.024884N	001-27.254856E
16	51-28.125198N	001-27.144516E
17	51-28.478784N	001-27.518166E
18	51-28.501350N	001-27.944472E
19	51-28.541472N	001-28.476108E
20	51-28.604166N	001-28.899912E
21	51-27.608538N	001-29.349618E
22	51-27.065118N	001-29.350260E
23	51-26.580672N	001-28.377264E

