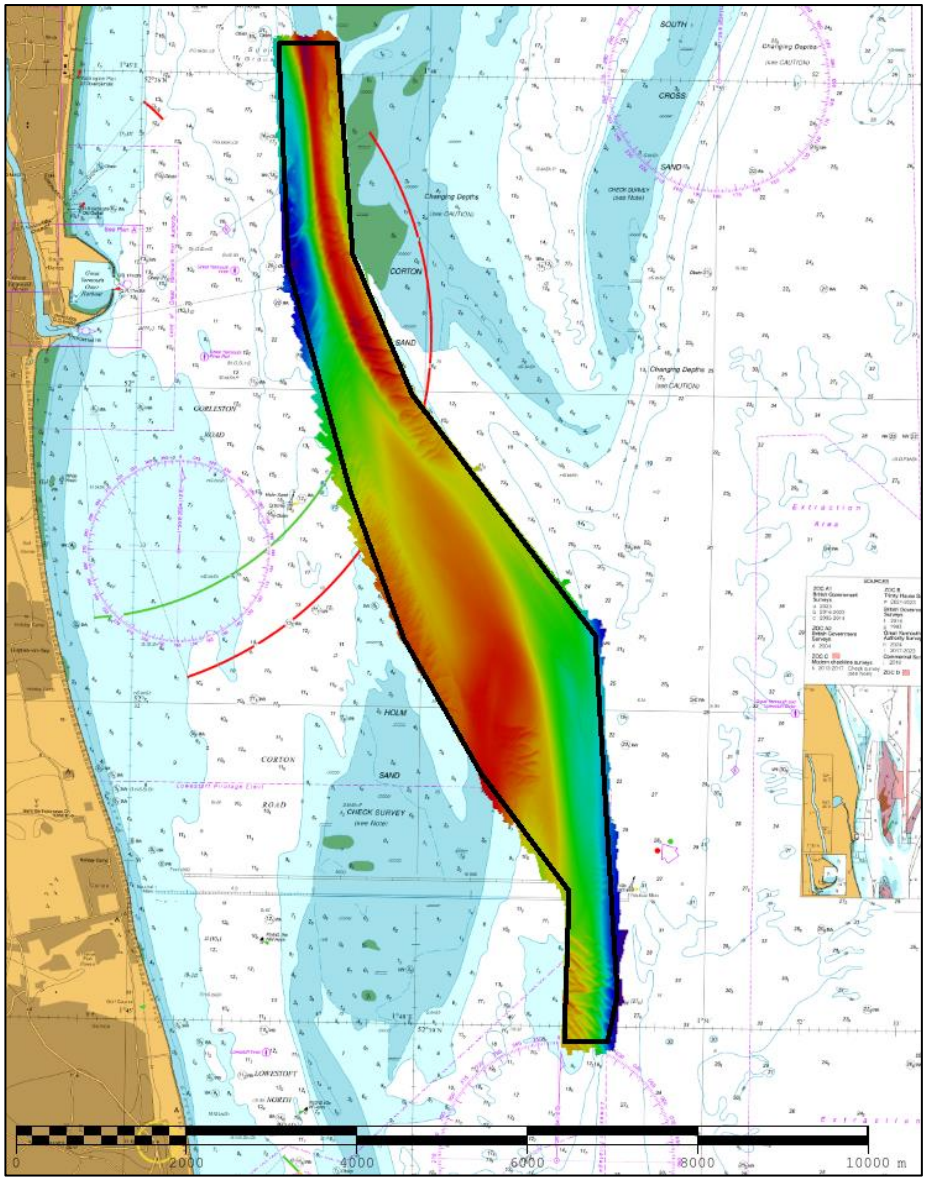
UK Hydrographic Office

EAST ANGLIA
HOLM CHANNEL FOCUSED (EA9A)
2024 ASSESSMENT

An assessment of the 2024 hydrographic survey of the area EA9: 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).

The Admiralty Chart extracts, other graphics and tables in this Report are included for illustrative purposes only and are NOT TO BE USED FOR NAVIGATION.

All depths are to Chart Datum, defined using the UKHO Vertical Offshore Reference Frame (VORF) Model.

EA9A HOLM CHANNEL FOCUSED, 2024

1. SUMMARY

Changes Detected

1.1 As is consistent with previous years, Holm Sand has continued moving northwards, reducing both depth and passage width within Holm Channel, as the south of Corton Sand and north of Holm Sand converge.

1.2 The significant depth for Holm Channel has shoaled across the main channel passing Holm Sand to 9.3m.

1.3 The 10m contour has continued to move northwards, with Holm Sand migrating further into Holm Channel, reducing the channel to 110m horizontal distance between the 10m contours at its narrowest point.

1.4 Corton Sand has continued to migrate westwards, as seen in previous surveys.

Reasons for Continuing to Resurvey the Area

1.5 The passage of Holm Channel between Holm Sand and Corton Sand has been moving annually and continuing to get narrower and shoaler. It is crucial to continue monitoring these areas and their critical depths.

1.6 Corton Sand has continued to move westward so it is important to monitor encroachment into Yarmouth Roads.

Recommendations

1.7 Based on the amount of annual change and seabed mobility, the annual focused area survey interval, and 3-year full area survey interval should remain the same.

1.8 The focused survey area should be reduced to remove the southern extension of the HI limits as it does not provide much insight without covering the sandbank towards Holm Sand to the west.

2. LOCATION

2.1 Survey interval at time of resurvey: A Focused survey annually, and Full survey every 3 years.

2.2 Area Covered: 13.41 $km^{2.}$

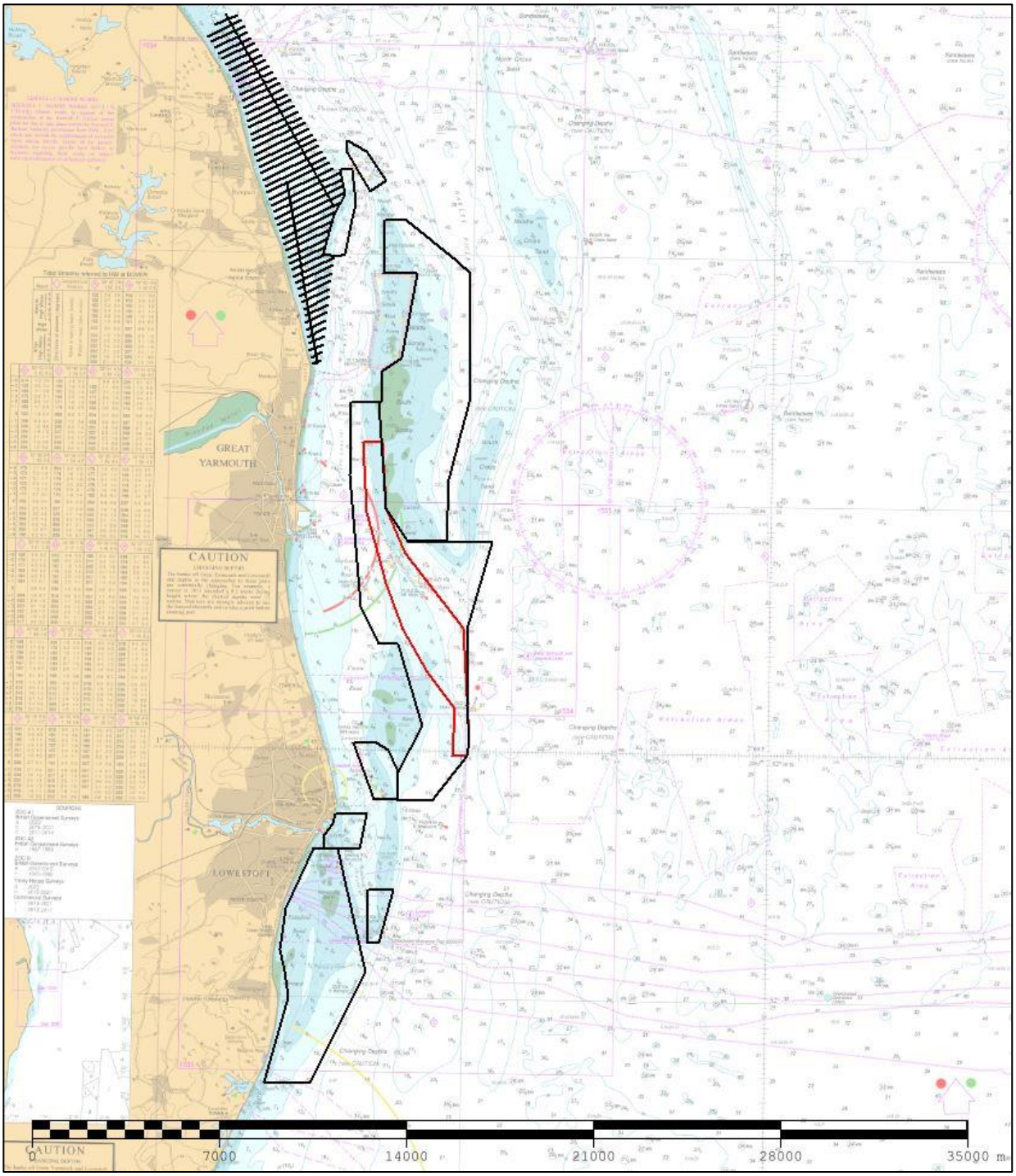

Figure 1: 2024 East Anglia Routine Resurvey areas and EA9 full area overlaid on BA Chart 1543-0 with EA9A focused area in red.

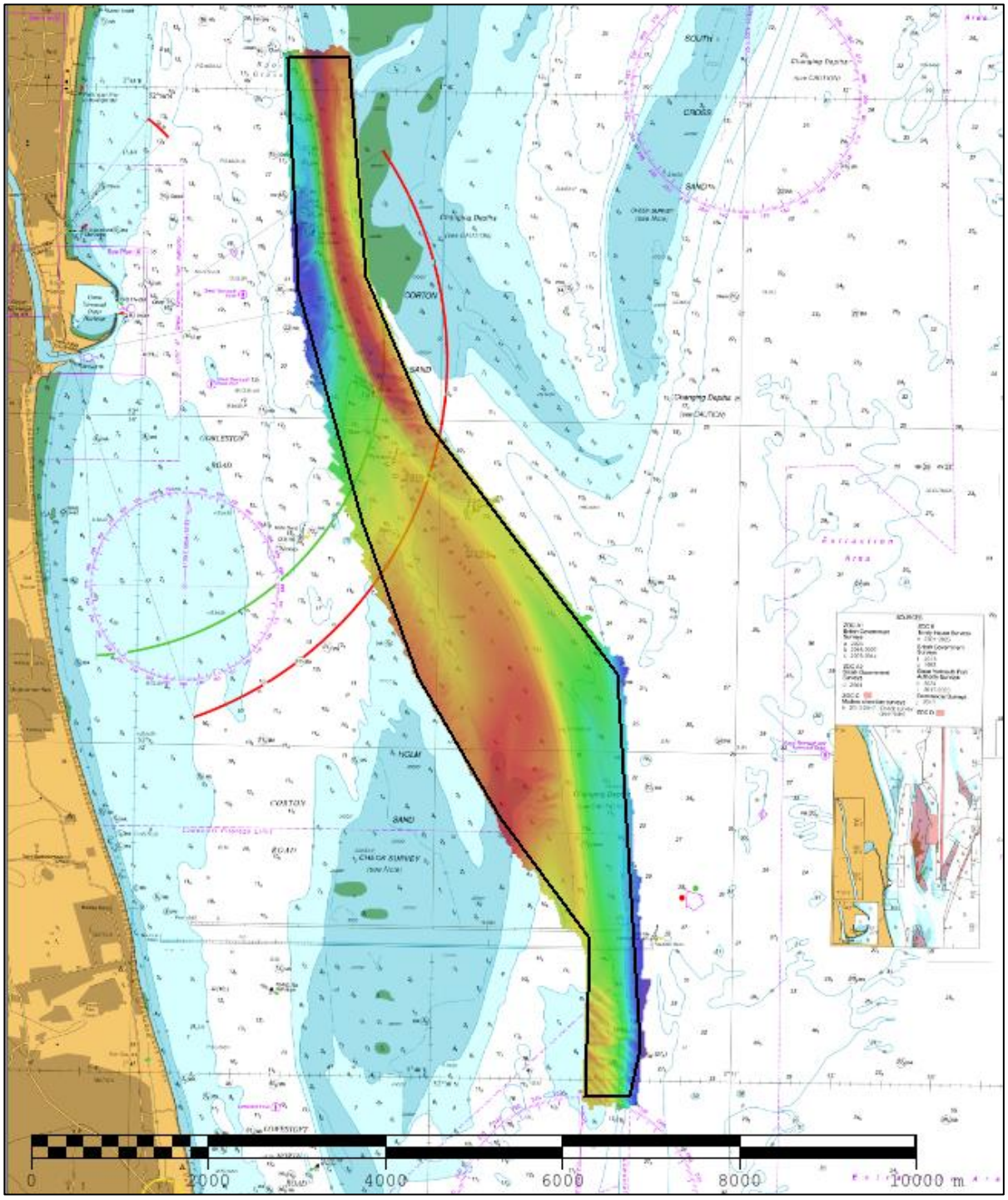

Figure 2: 2024 survey data overlaid on BA Chart 1534-0 and 1535-0.

3. REFERENCE SURVEY DETAIL

3.1 The previous focused surveys HI1761, HI1737, and HI1638 were conducted annually as part of the Routine Resurvey (RRS) Programme in September 2022, 2021, 2019 respectively. The previous Full surveys were conducted every 3 years the latest of which, HI1828, was surveyed in September 2023.

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 The latest focused survey, HI1857, was surveyed during 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 Figures 3 and 4 show the controlling depths of Holm Channel, between Holm Sand and Corton Sand. The northern edge avoiding the bank has shoaled to 9.8m in the north of the channel, from 9.9m in 2023 and 13.8m in 2019, while the main channel has shoaled to 9.3m, from 9.8m in 2023 and 12.3m in 2019.

5.2 The least depth over Holm Sand for the focused survey area is 4.5m, which has shoaled from 5.2m in 2023 and 6.5m in 2019 as shown in Figure 3. The least depth at the southern area of the survey is 6.8m, which has deepened by 2m since 2023 and 2.1m since 2022.

5.3 The heavily mobile seabed is visible from the difference plots in Figures 5,6 and 7. There is a general shoaling over the Holm Sand bank along the centre of the survey area shown in Figure 5, which is consistent with findings from previous surveys as shown in Figures 6 (2024-2022) and 7 (2024-2019).

5.4 Additionally, there is a regular migration of sediment westwards from Corton Sand. Figures 5 and 6 show a 0.5-1.5m deepening of the northeastern edge where the survey area intercepts with Corton Sand between 2024 and 2023 surveys, and a similar 1.5m - >5m deepening between 2024 and 2022.

5.5 The northern edge of the Holm Sand bank is migrating into Holm Channel at the main crossing point between Holm Sand and Corton Sand. This migration is visible using the 10m contour in Figures 8 and 9, with the movement of the 10m contour North-Eastwards towards Holm Channel. At the channels narrowest point, the 10m contour has moved by approximately 42m between 2024 and 2023 and approximately 72m between 2024 and 2022. The current width of channels narrowest point between the 10m contours of Holm Sand and Corton Sand is approximately 110m.

5.6 Consistent with previous years the leading cause of change is the mobility of Holm Sand and Corton Sand; The colour banded depth plot shown in Figure 10 helps to show these changes. The largest change was a shallowing of 4.7m of Holm Sand on the southeast of the survey, likely from westward migration of sediment next to Holm sand as shown in Figures 5,6, and 7.

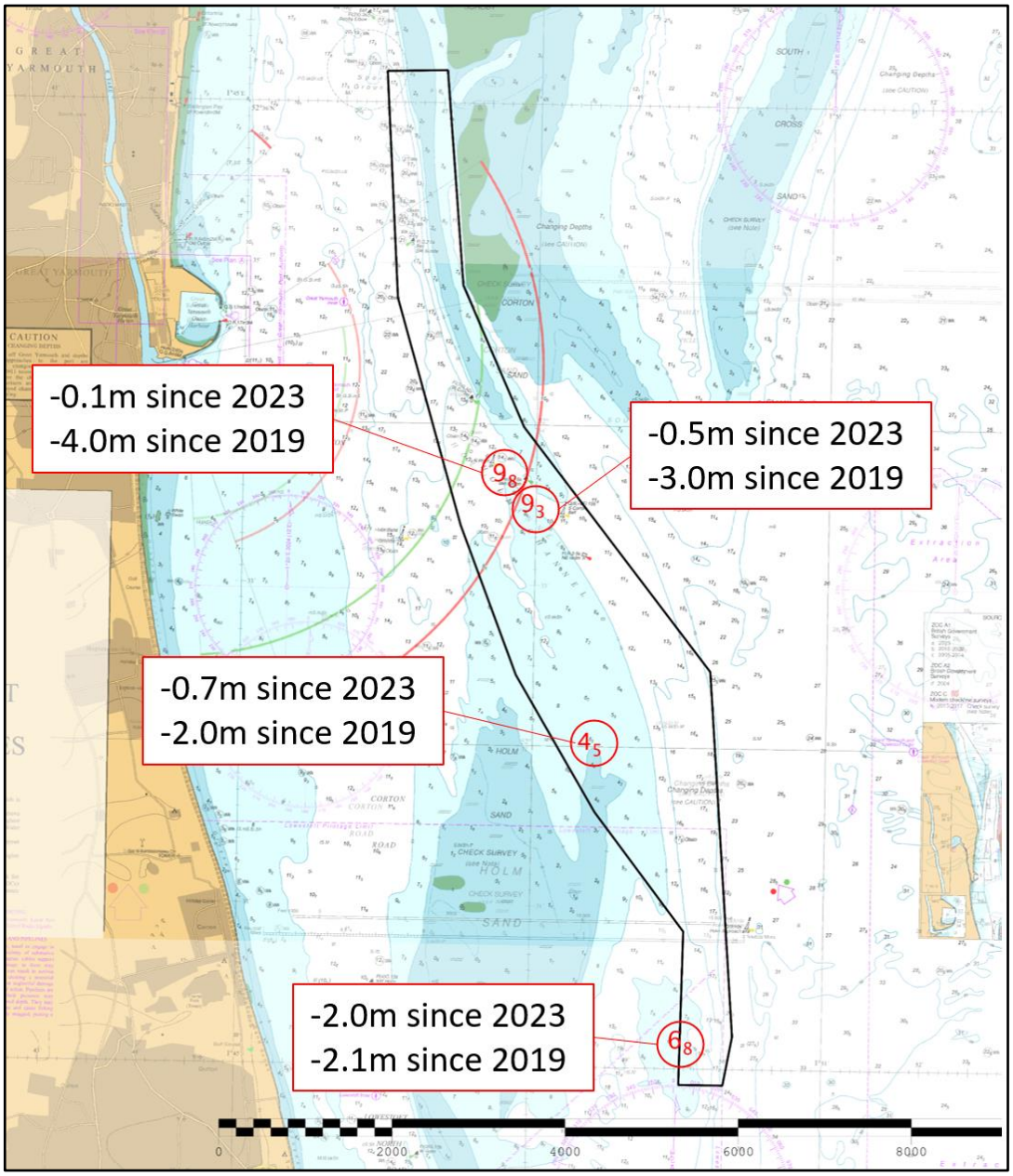

Figure 3: Significant Depth soundings highlighted, overlaid on BA Chart 1534-0 and 1535-0.

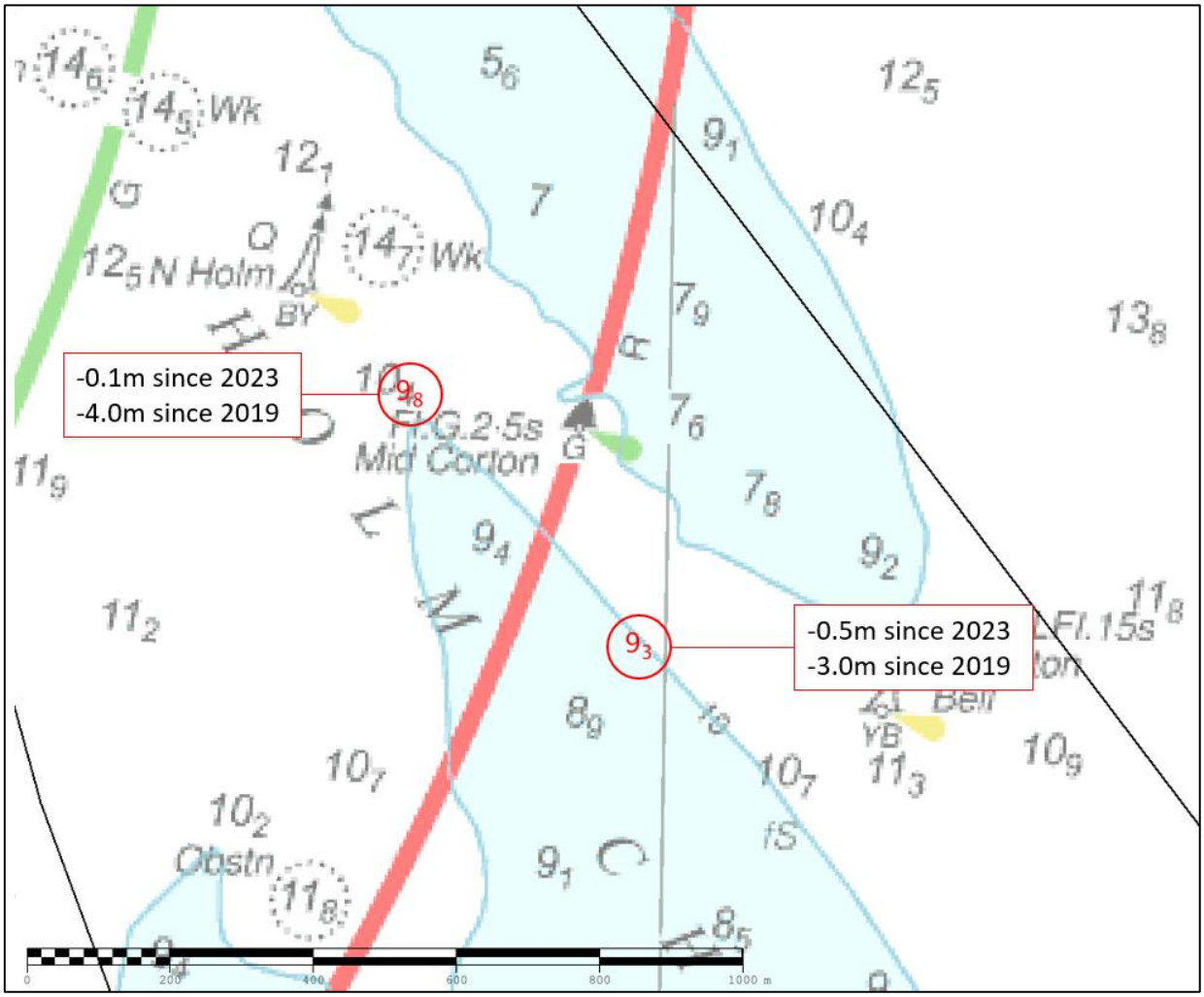

Figure 4: Zoomed view of the highlighted significant Depth soundings, overlaid on BA Chart 1534-0 and 1535-0.

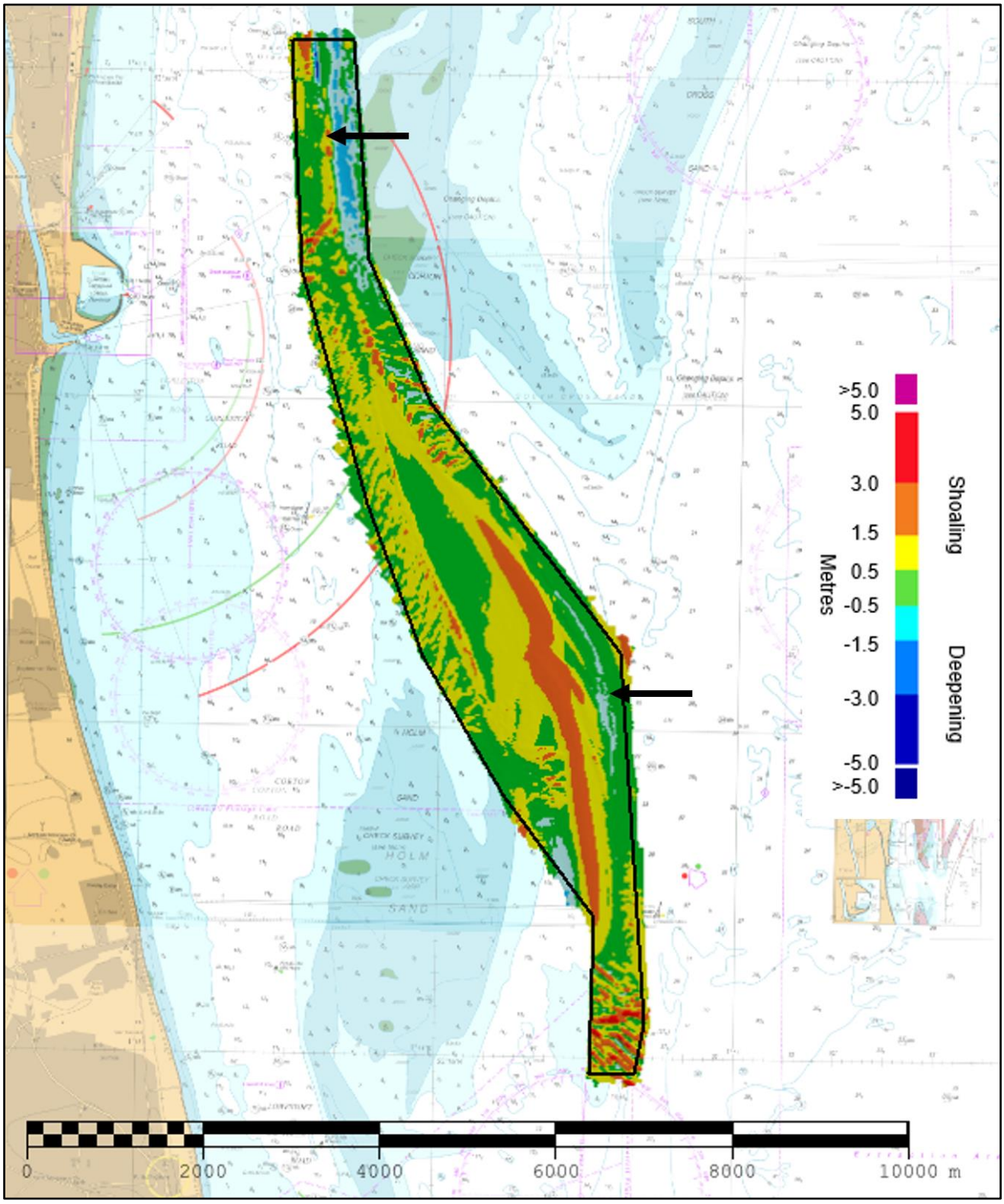

Figure 5: Difference surface showing bathymetric changes between the 2024 and 2023 surveys overlaid on BA Chart 1534-0 and 1535-0 (Black arrows represent sandwave migration since 2023 survey).

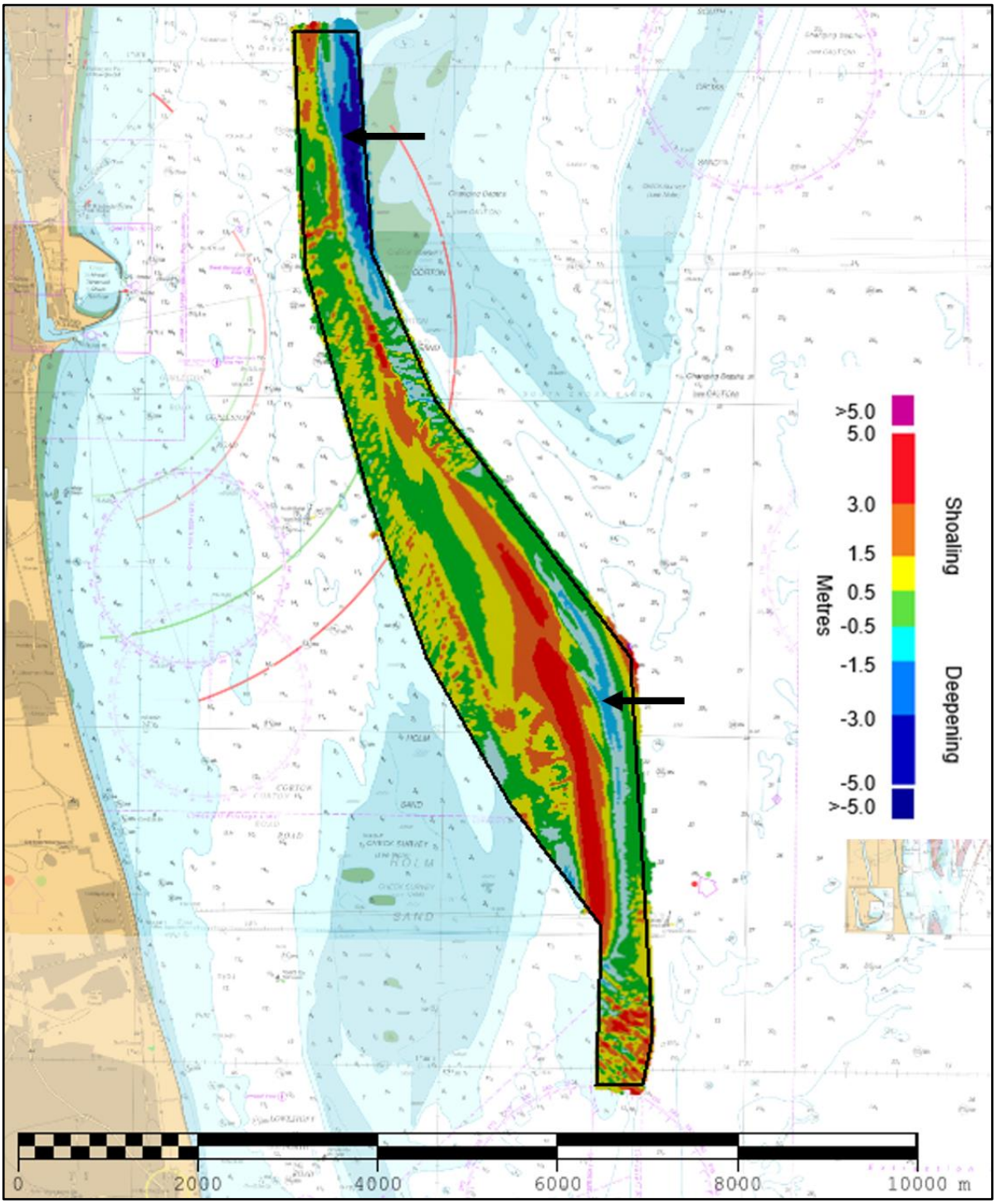

Figure 6: Difference surface showing bathymetric changes between the 2024 and 2022 surveys overlaid on BA Chart 1534-0 and 1535-0 (Black arrows represent sand bank migration since 2022 survey).

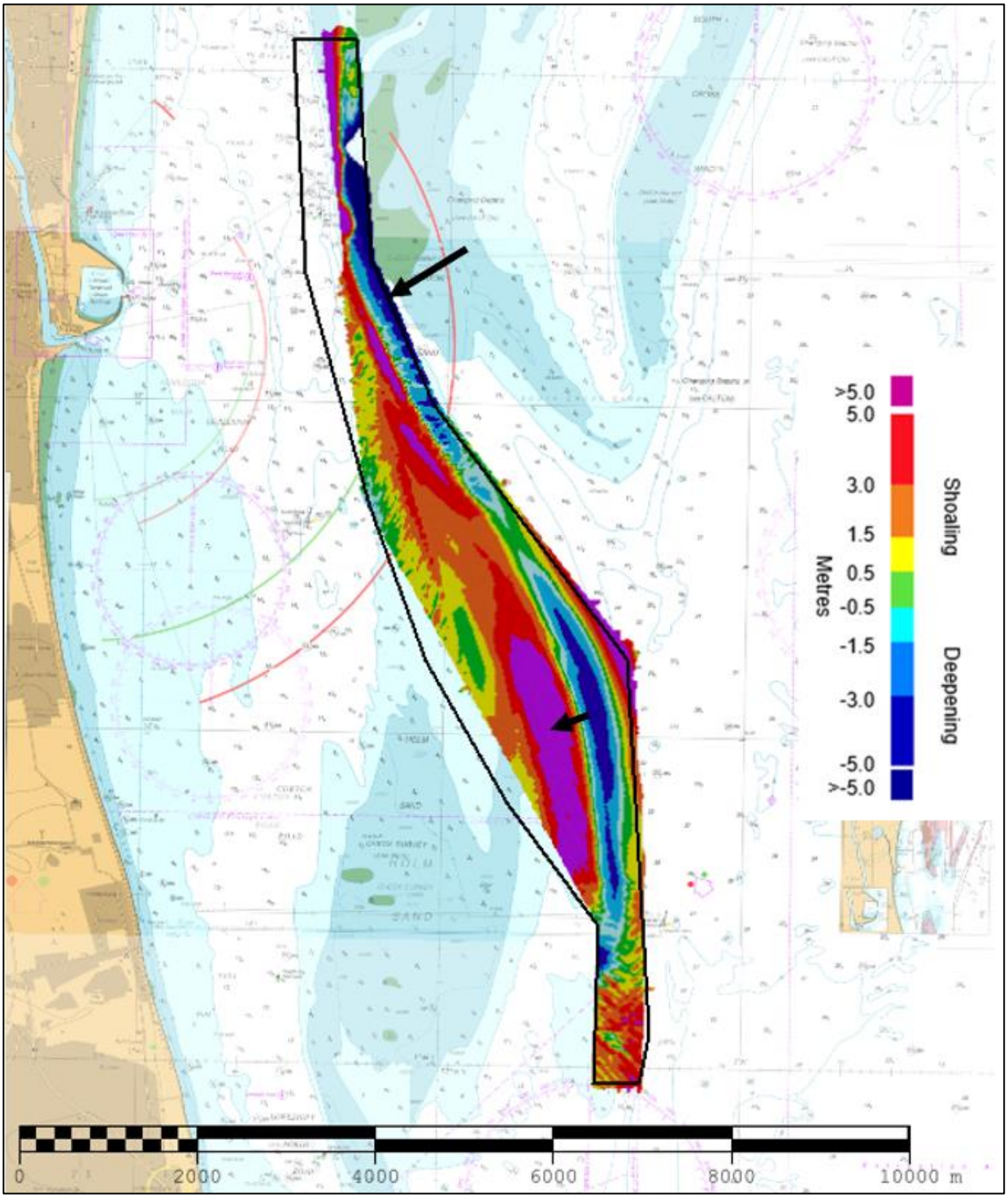

Figure 7: Difference surface showing bathymetric changes between the 2024 and 2019 surveys overlaid on BA Chart 1534-0 and 1535-0 (Black arrows represent sand bank migration since 2019 survey).

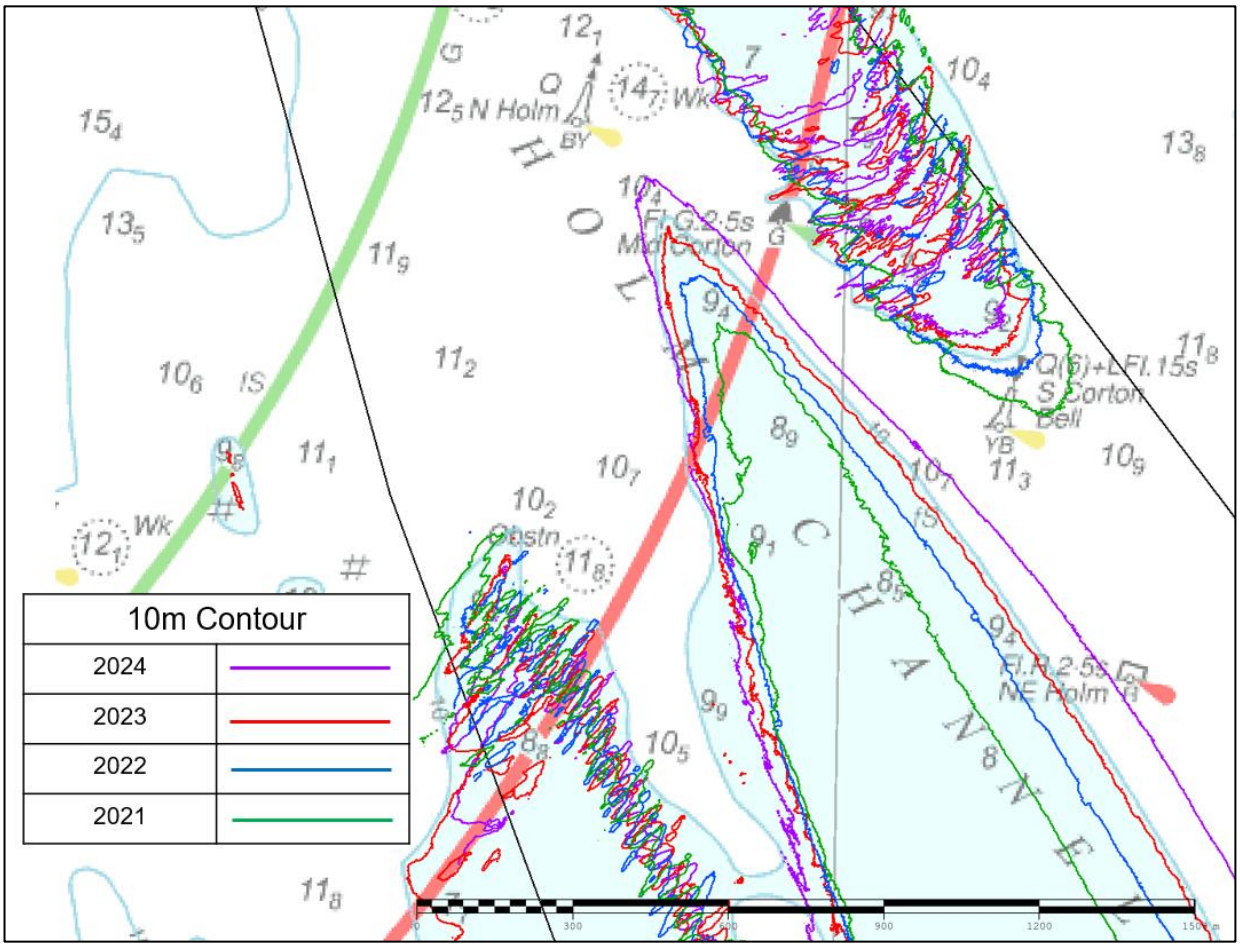

Figure 8: Close-up Contour plot showing changes in the 10m contour between 2024 (purple), 2023 (red), 2022 (blue) and 2021 (green).

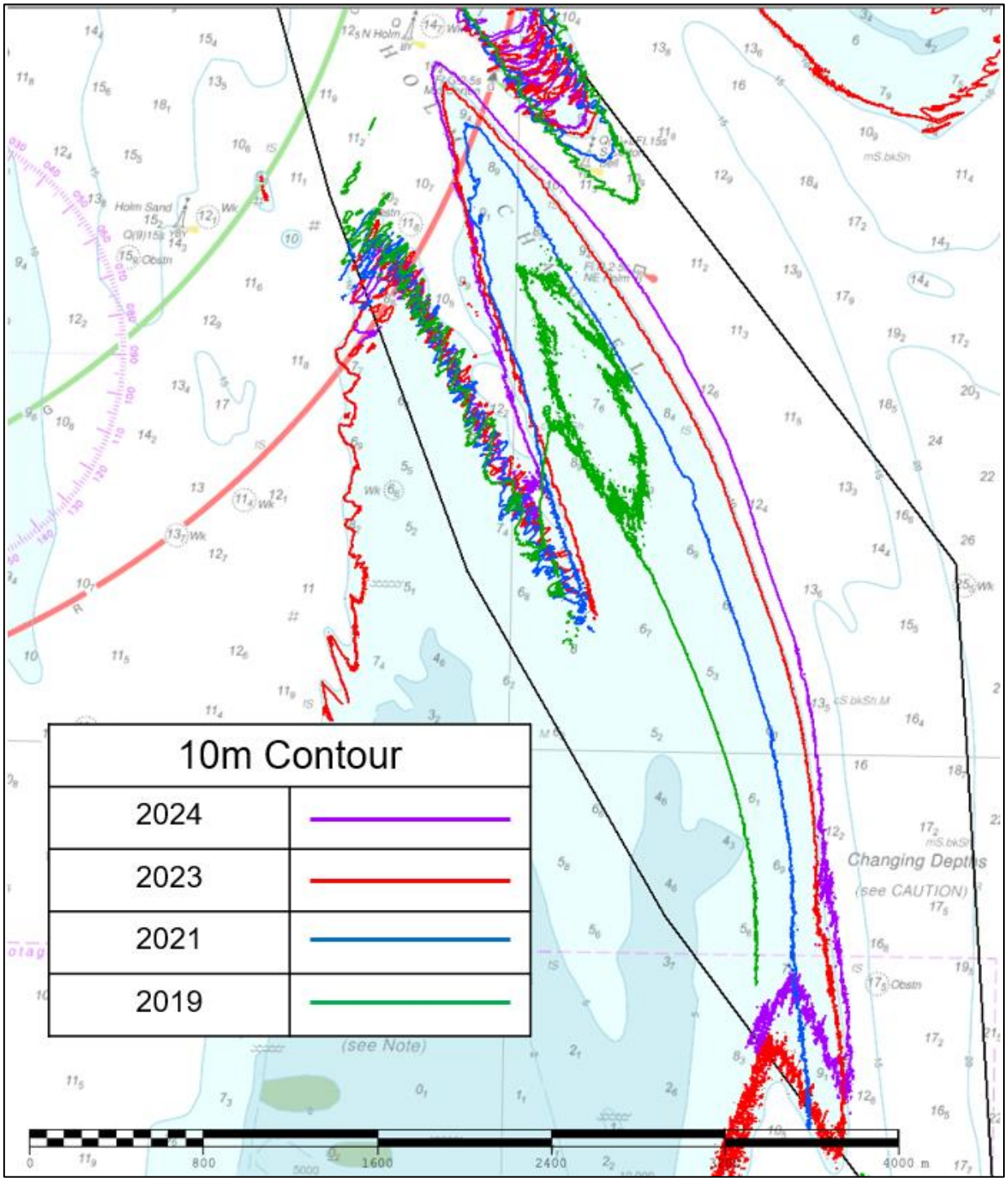

Figure 9: Contour plot showing changes in the 10m contour between 2024 (purple), 2023 (red), 2021 (blue) and 2019 (green).

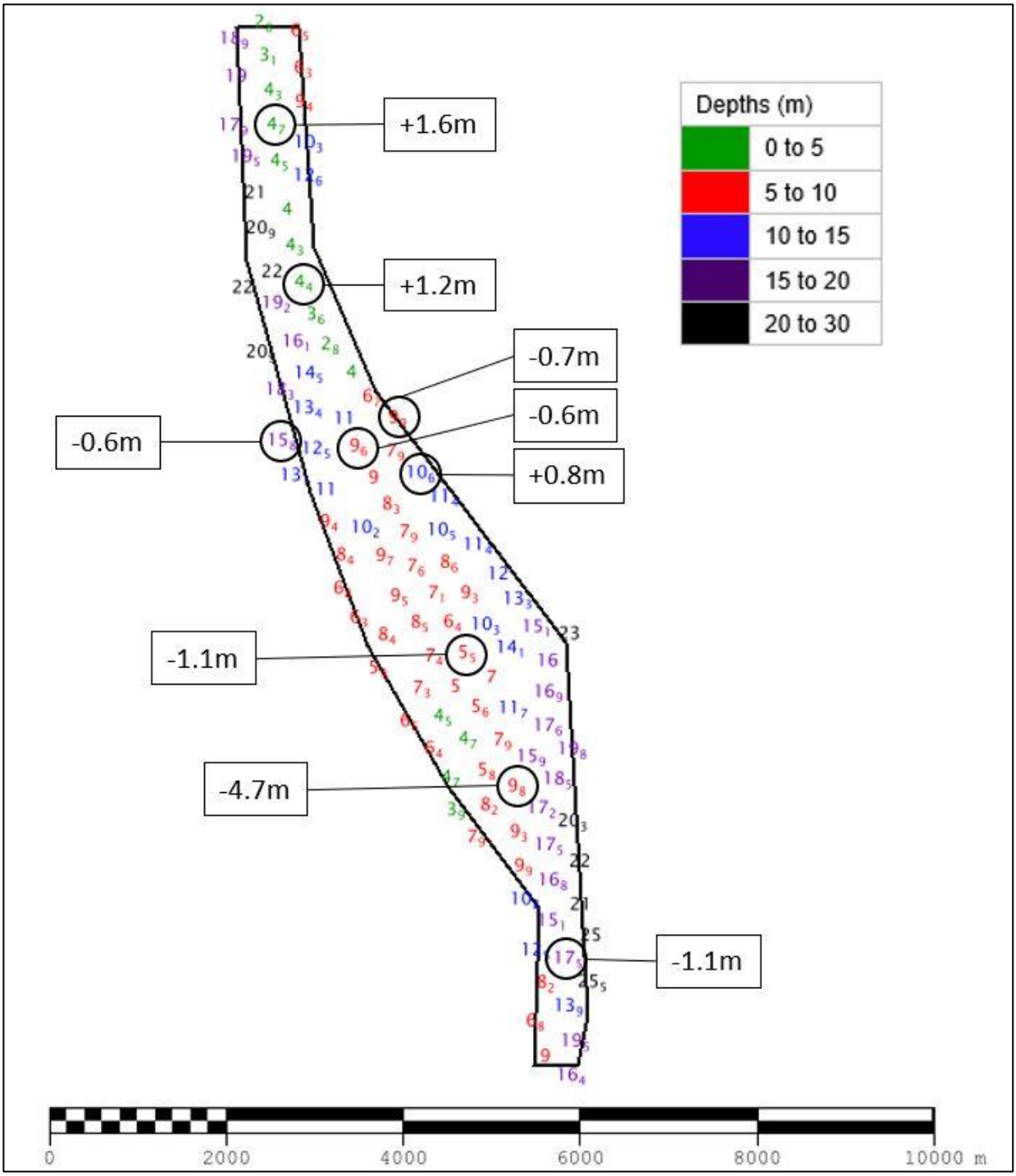

Figure 10: Colour banded depth plot from the 2024 survey with selected depth changes since the 2023 survey. Positive values (+) represent deepening. Negative values (-) represent shoaling.

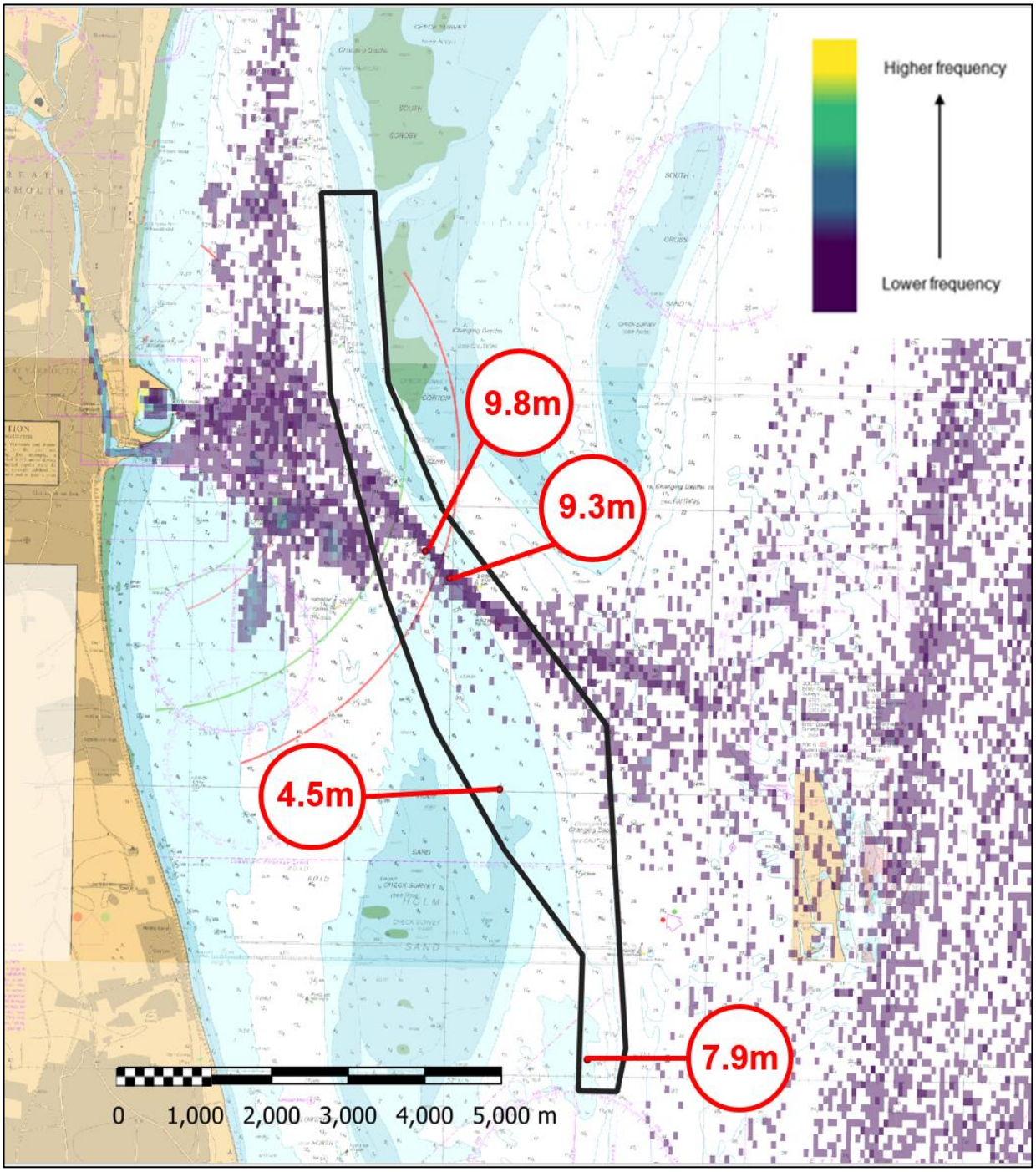

Figure 11: AIS ECDIS regulated tanker, passenger, and cargo vessel data from 2023 with Routine Resurvey EA9A 2024 survey area and overlaid on BA Chart 1543-0.

6. RECOMMENDATIONS FOR FUTURE SURVEYS

Survey Interval

6.1 Due to the progressive northward migration of the Holm Sand bank and the developing restriction this poses to Holm Channel, the annual focused survey interval and three-year full survey interval should be maintained.

Survey Area

6.2 Based on the AIS vessel traffic shown in Figure 11, there is very little regulated traffic, if any, in the southern area of EA9A and the southern extension to the HI does not provide much benefit nor insight without covering the stretch of seabed towards Holm Sand. Figure 12 shows the proposed changes. The southern section of the HI that extends south of the 'Holm Approach' buoyage only covers a small amount of the sandbank without including the historically depicted shoalest point. Obtaining benefit from this section would require extending it approximately a kilometre west, however, this region is aptly covered by the EA9 Full survey limits and historically not known to be as dynamic as the centre of the EA9A Focused survey area. Removing this area would allow for additional survey in other, more changeable and navigationally significant areas, should they be identified in future surveys.

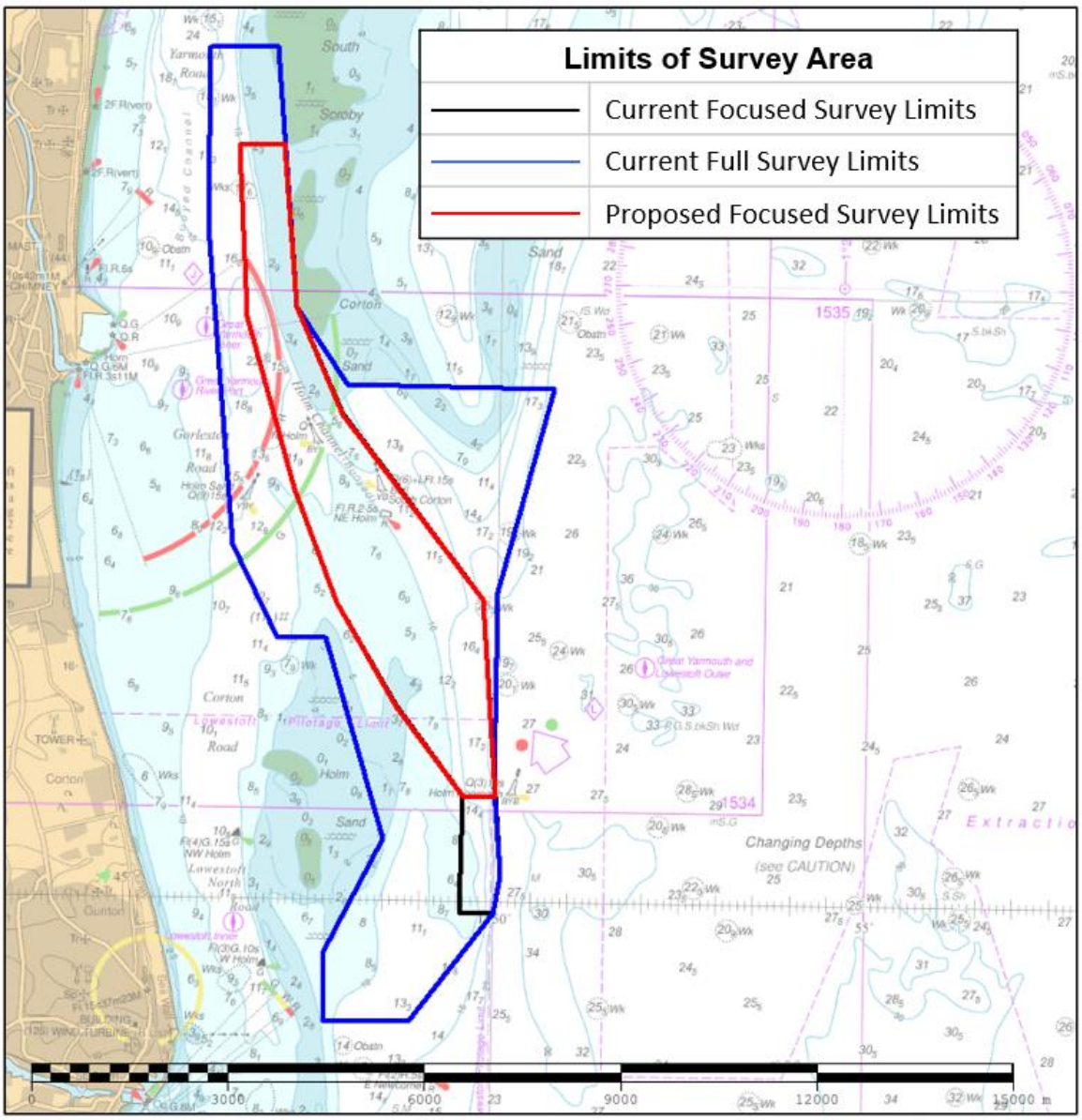

Figure 12: Proposed amendment of the focused area to cover Corton Sand bank. Recommended changes to survey limits of area EA9A.

The coordinates of the recommended adjusted survey area limits for the annual focused survey area EA9A are shown below:

Current Limits:
EA9A total area: 13.41 km^2

Proposed Limits:
EA9A total area: 12.43 km^2

	Latitude	Longitude
1	1.78700	52.58108
2	1.79775	52.5664496
3	1.83015	52.5413049
4	1.83349	52.5142897
5	1.82624	52.5142862
6	1.81083	52.5265414
7	1.79703	52.5406882
8	1.78720	52.5561686
9	1.77587	52.5796733
10	1.77347	52.6032494
11	1.78374	52.6034356
12	1.78700	52.58108