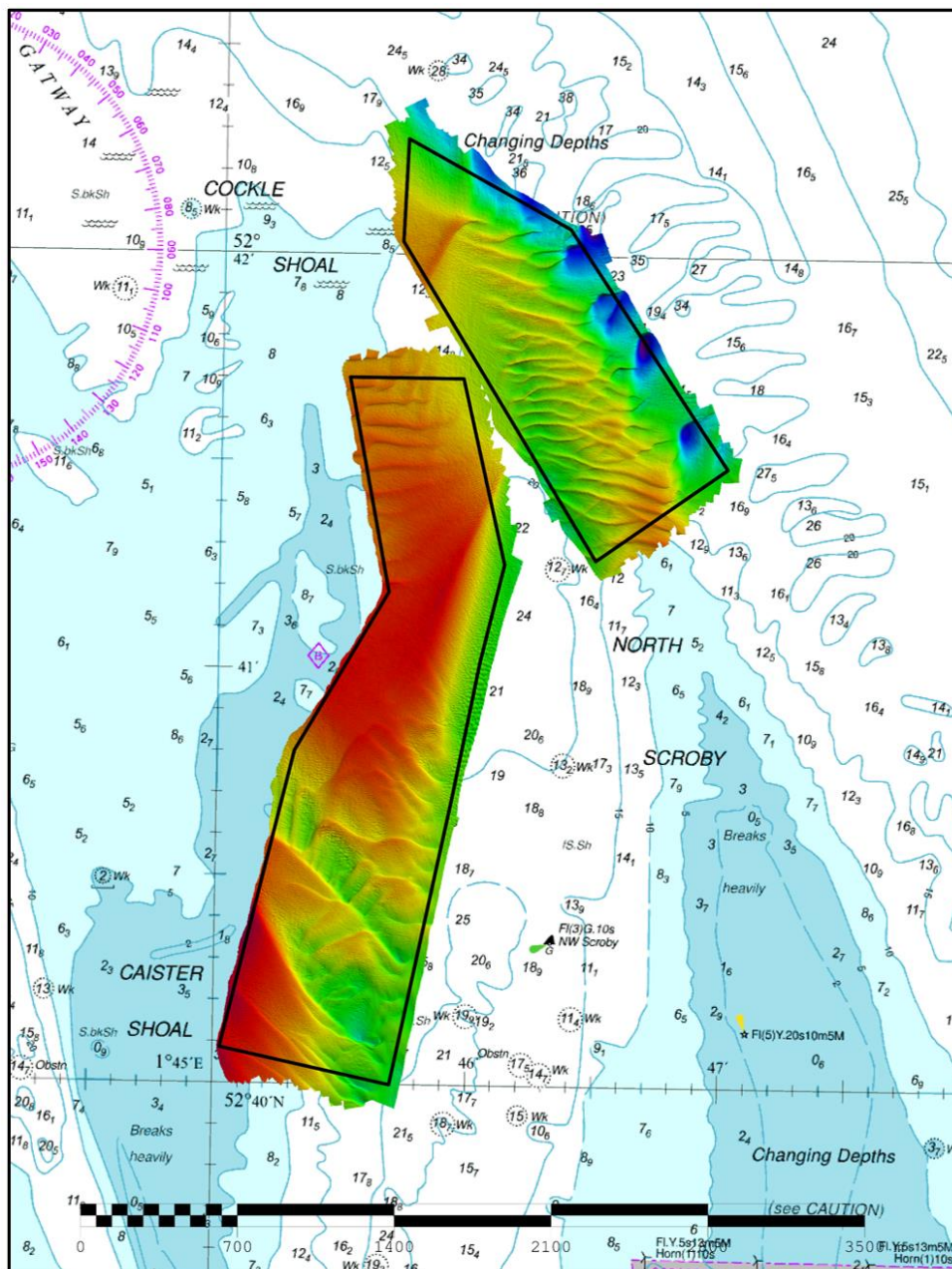




UK Hydrographic  
Office

## EAST ANGLIA COCKLE SHOAL FOCUSED (EA3A & EA3B) 2025 ASSESSMENT

An assessment of the 2025 hydrographic survey of the area EA3A & EA3B: 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.

## **COCKLE SHOAL (EA3A & EA3B) FOCUSED, 2025**

### **1. SUMMARY**

#### **Changes Detected**

- 1.1 In EA3A, Caister Shoal continues to migrate northeast pushing the 10m contour towards North Scroby. A depth of 4.8m has been observed on the northeastern extent of Caister Shoal, shoaling by 2.9m since 2024.
- 1.2 In EA3B, there is evidence that Cockle Shoal is slowly migrating southeast towards North Scroby. A depth of 9.3m has been observed on the eastern extent of the Cockle Shoal sandbank, shoaling by 5.4m since 2024.
- 1.3 The central section of EA3A, north of the N.Caister buoy, is showing a northeasterly migration of sandwaves. To the south of EA3A, sandwaves are migrating north.
- 1.4 Sandwaves in EA3B continue to migrate southeast across the survey area.

#### **Reasons for Continuing to Resurvey the Area**

- 1.5 Depths in the area remain changeable and a potential hazard. There is high number of vessels navigating in and around the area (see Figure 9), therefore, requiring continued monitoring through annual resurveys.

#### **Recommendations**

- 1.6 Given the location of the survey in relation to the approaches to Great Yarmouth, and the continued migration of Caister Shoal, Cockle Shoal and North Scroby bank, EA3A and EA3B should remain on the annual survey interval. The EA3 Full survey should remain on the 3-year interval.
- 1.7 No adjustments to area recommended at this time, however continued monitoring of the north easterly edge of EA3A is required.

### **2. LOCATION**

- 2.1 Survey interval at time of resurvey: 1 year Focused survey areas EA3A and EA3B. Full EA3 area is surveyed every 3 years.
- 2.2 Area Covered: 3.2 km<sup>2</sup>

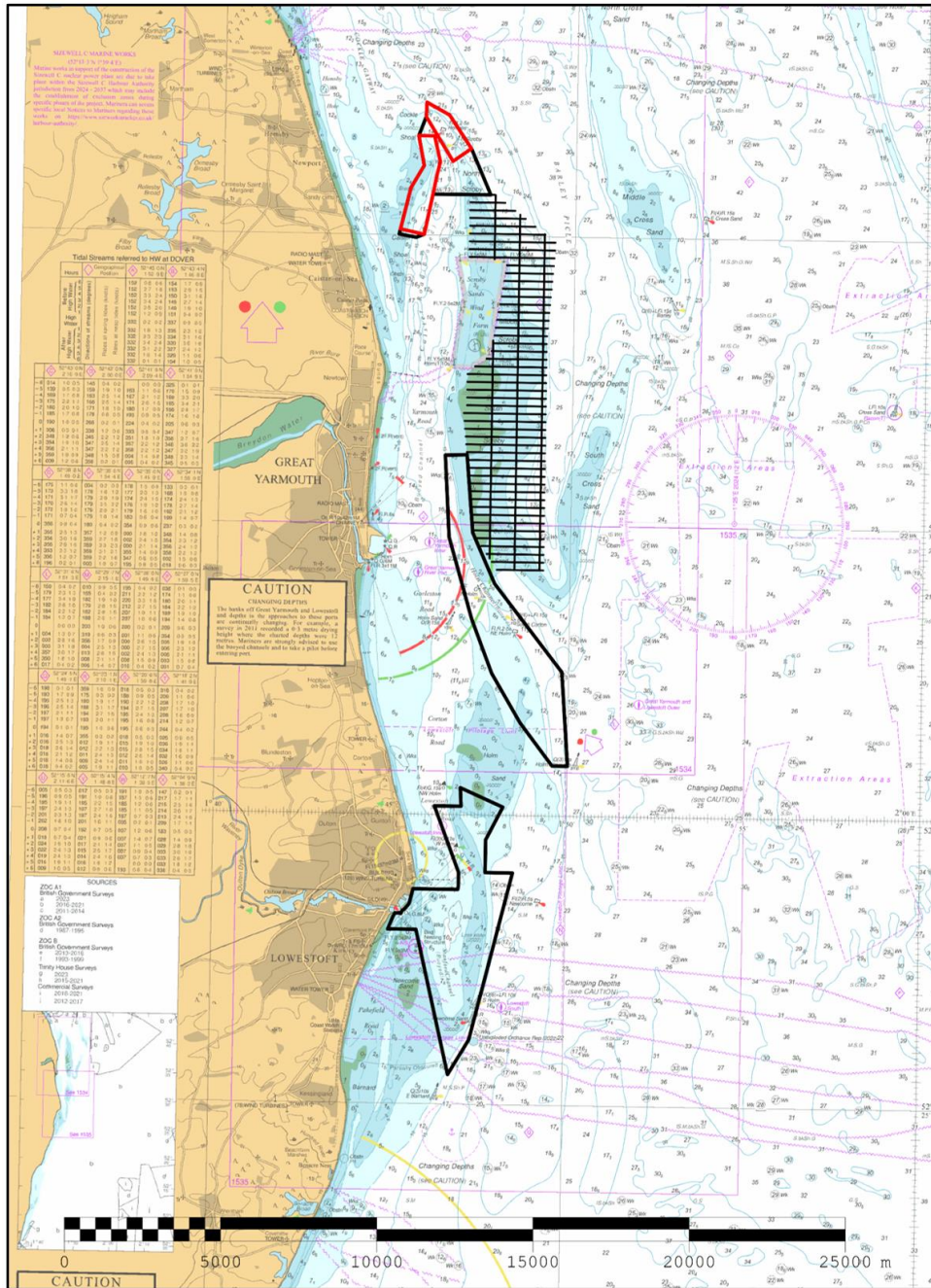


Figure 1: 2025 East Anglia Routine Resurvey areas and EA3 Full in black, overlaid on BA Chart 1543 with areas EA3A and EA3B in red

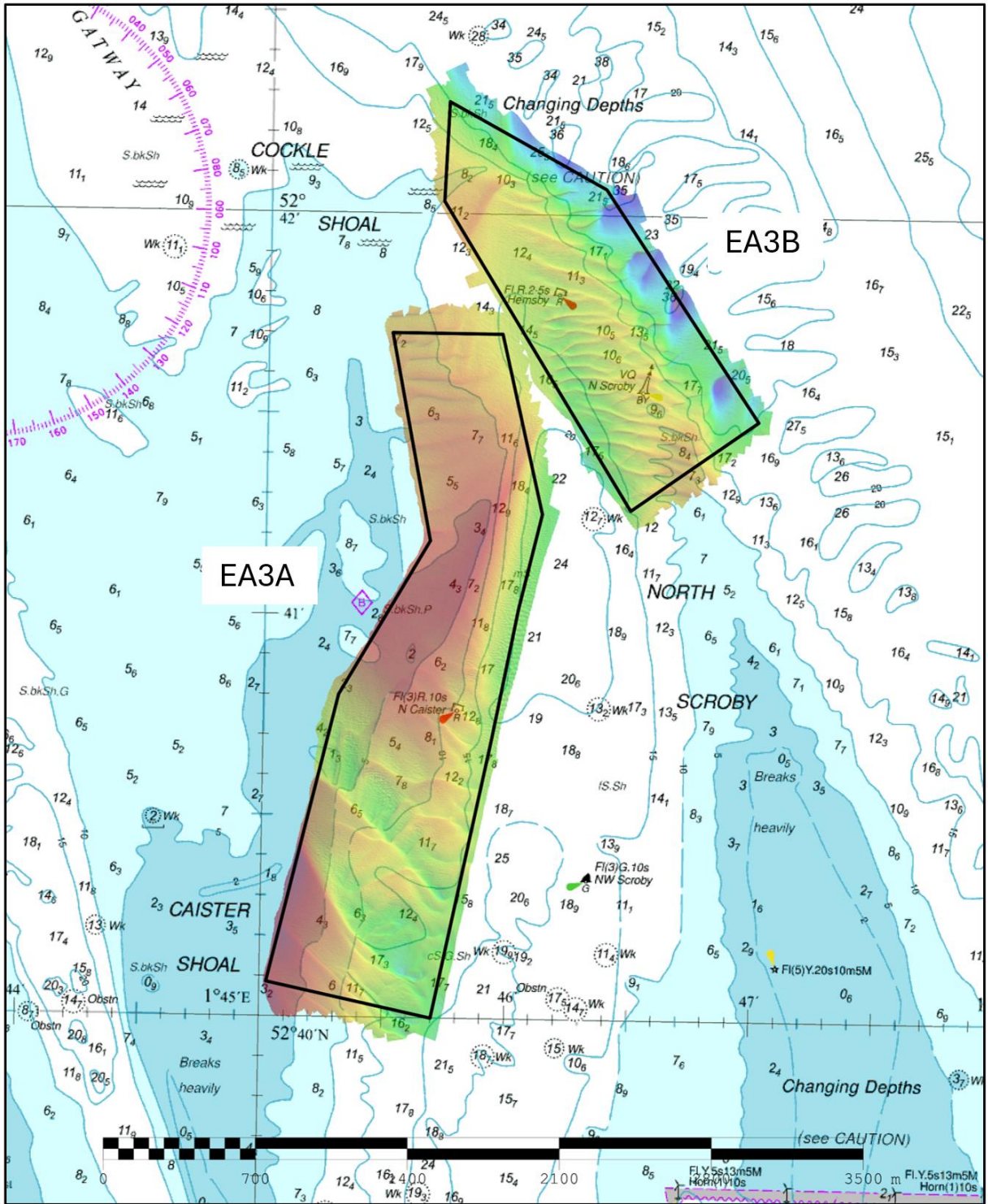


Figure 2: 2025 survey data overlaid on BA Chart 1534

### 3. REFERENCE SURVEY DETAIL

- 3.1 The previous focused survey covering EA3A&B was conducted in September 2024 under HI1855. A full survey of EA3 was conducted in October 2023 under HI1823, as part of the 2023 Routine Resurvey Programme.
- 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 survey is HI1892, surveyed in April 2025 as part of the 2025 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 There are significant depth changes in the northern section of EA3A, caused by continued north easterly migration of the sandbank. Figure 3 shows a depth of 4.8m on the eastern edge of the sand bank; this location has shoaled by 2.9m since 2024 and 6m since 2023. This can also be seen in the 10m contour plot in Figure 6, where the eastern most point of the 10m contour has migrated east by 110m since 2023 (edge of 10m contour was not captured in 2024)
- 5.2 The least depth on the sandbank in the north of EA3A is 4.2m, as seen in Figure 3, where it has shoaled by 0.5m since 2024 and 1.1m since 2023. Least depth over this bank has increased from sounding 3.6m located 130m further north in 2024.
- 5.3 Figure 6 shows the northerly migration of the 10m contour is consistent in the southern half of EA3A, whereas the northern half also displays significant easterly migration, since 2023. This can also be seen in Figures 4 and 5 where depths have changed by over 5m, both shoaler and deeper as large sandwaves migrate.
- 5.4 Figure 8 generally shows the depths are shoaling in EA3A as the sandbank moves east, where the 11.8m depth seen in 2025 is 5.8m shoaler than 2023, and the 8.7m depth to the north-west of that has deepened by 2m. In the south, depths are variable due to sandwave movement, as seen at the 17.2m sounding which has shoaled by 6m since 2023, but deepened by 0.2m since 2024.
- 5.5 In EA3B the tip of Cockle Shoal continues to migrate southeast, as seen in the 10m contours in Figure 6. A significant depth of 9.3m at the tip of a sandwave is highlighted in Figure 3, this location has shoaled by 5.4m since 2024, but only 2.5m since 2023. This inconsistency is likely due to migration of smaller sandwaves, but there is a clear overall trend of the shoal sandbank moving south, also evident in the difference surfaces in Figures 4 and 5.
- 5.6 To the south of EA3B the northern point of North Scroby bank continues to shoal in place, as can be seen in Figure 3 where it is now 1.7m shoaler than 2024. Figure 6 shows the 10m contour continues to move south. This movement is consistent in the 30m contour seen in Figure 7, and the difference surfaces in Figures 4 and 5. The controlling depth in the navigation channel between the Hemsby and North Scroby buoys has increased to 11.9m from 10.9m located 40m northwest in 2024.

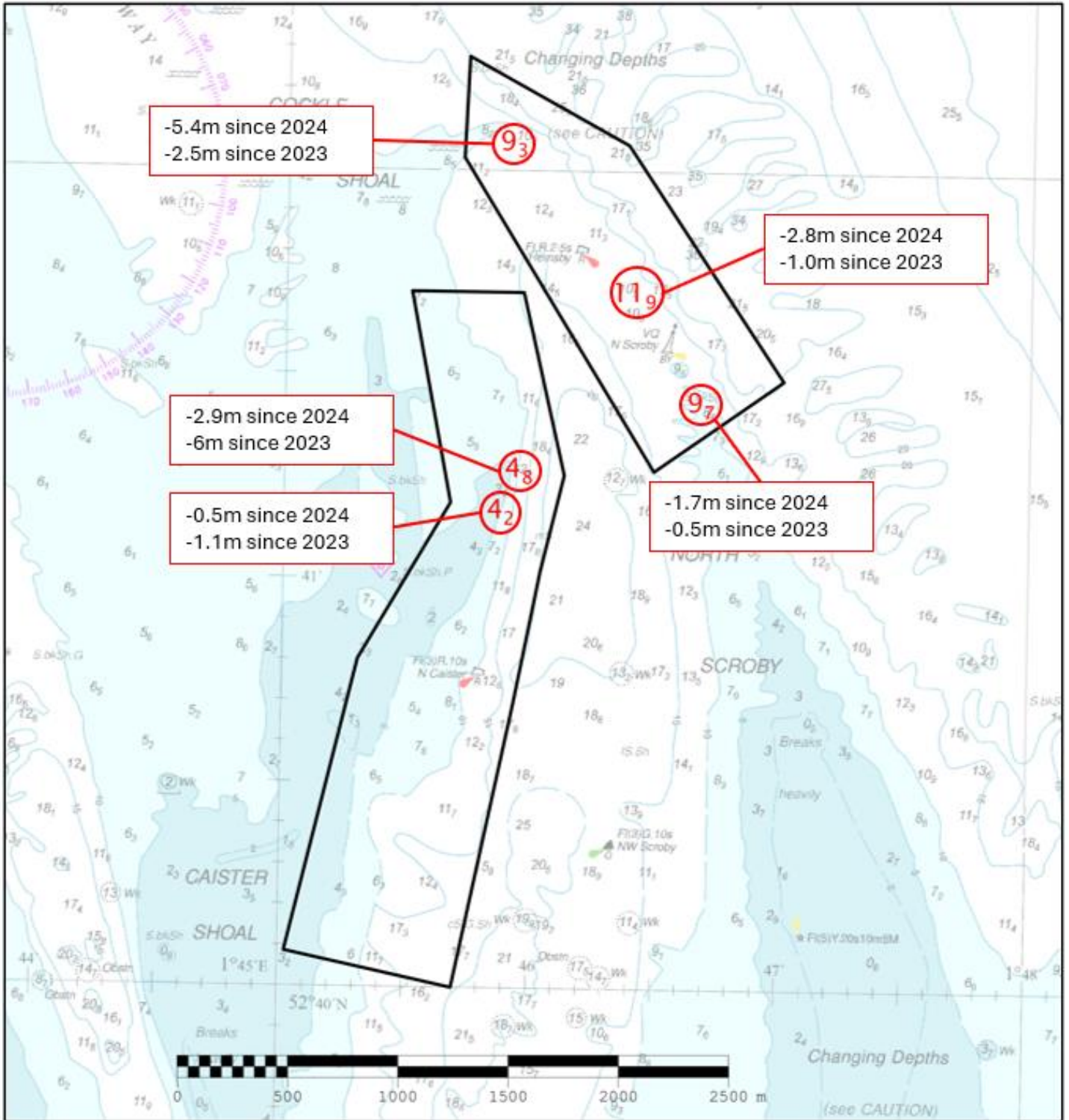


Figure 3: Significant Depth sounding(s) highlighted, overlaid on BA Chart 1534

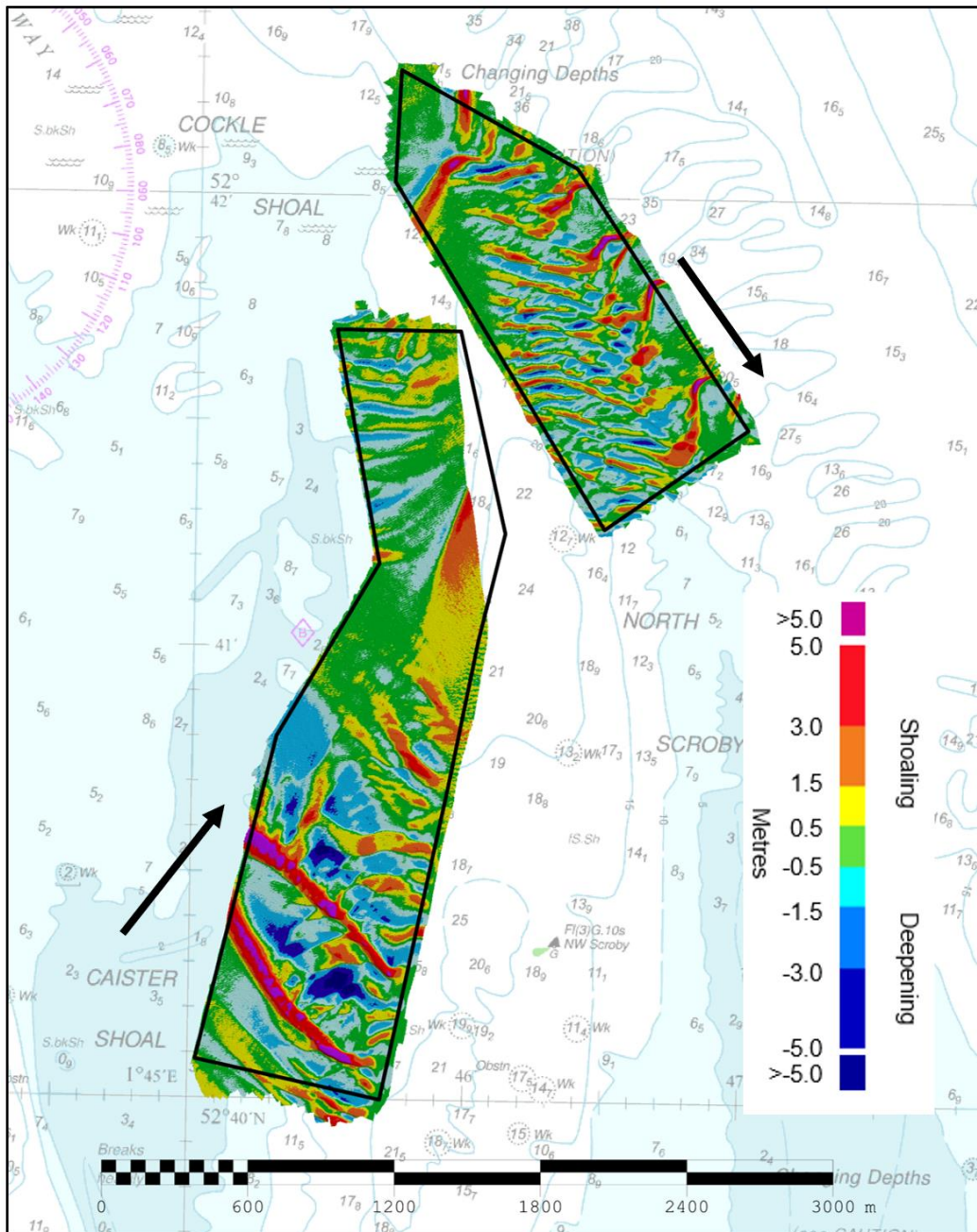


Figure 4: Difference surface showing bathymetric changes between the 2024 and 2025 surveys overlaid on BA Chart 1534 (Black arrows represent sandwave migration since 2024 survey)

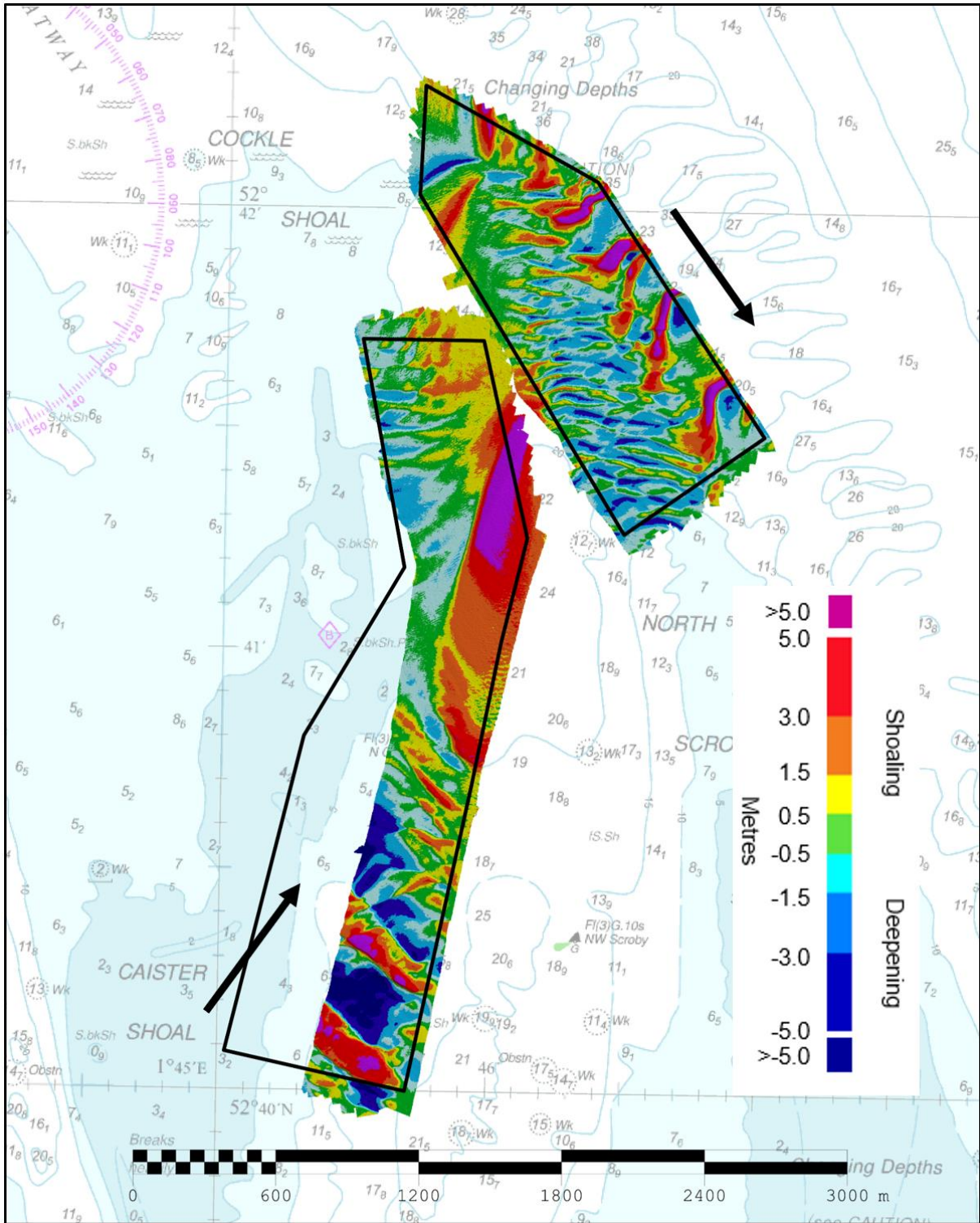


Figure 5: Difference surface showing bathymetric changes between the 2023 and 2025 surveys overlaid on BA Chart 1534 (Black arrows represent sandwave migration since 2023 survey)

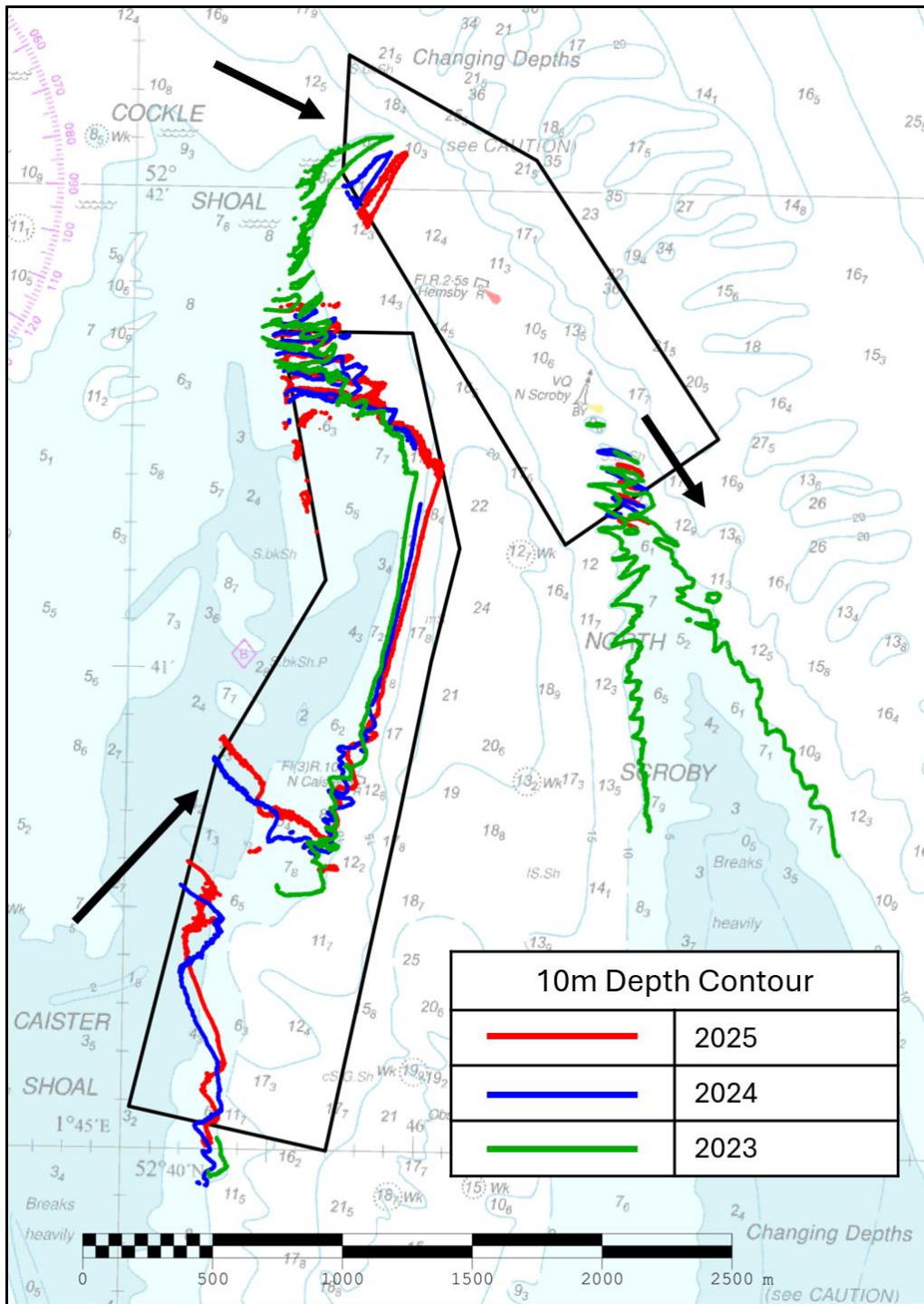


Figure 6: Contour plot showing changes in the 10m contours between 2025 (red), 2024 (blue) and 2023 (green). Black arrow represents feature migration.

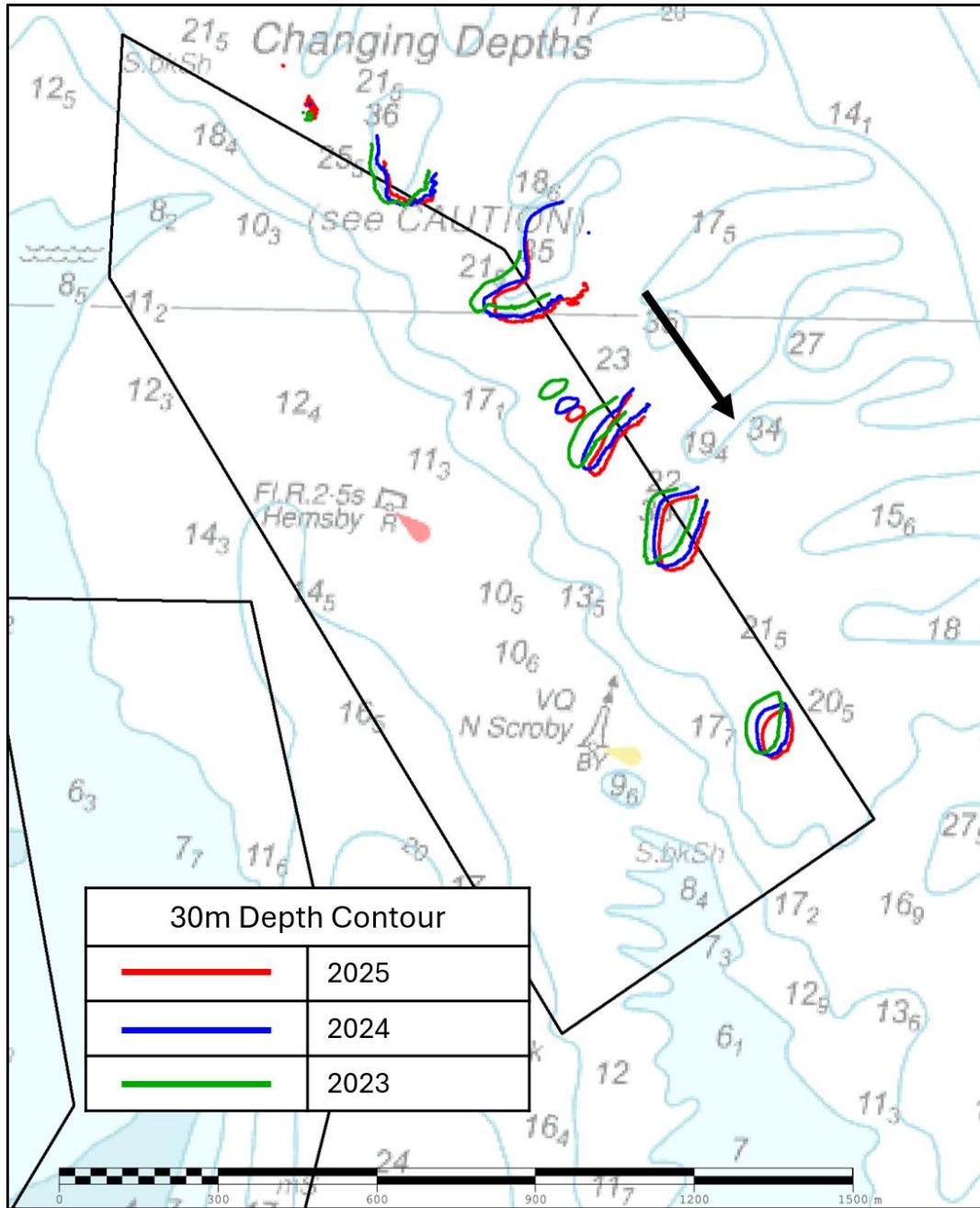


Figure 7: Contour plot showing changes in the 30m contours between 2025 (red), 2024 (blue) and 2023 (green). Black arrow represents feature migration.

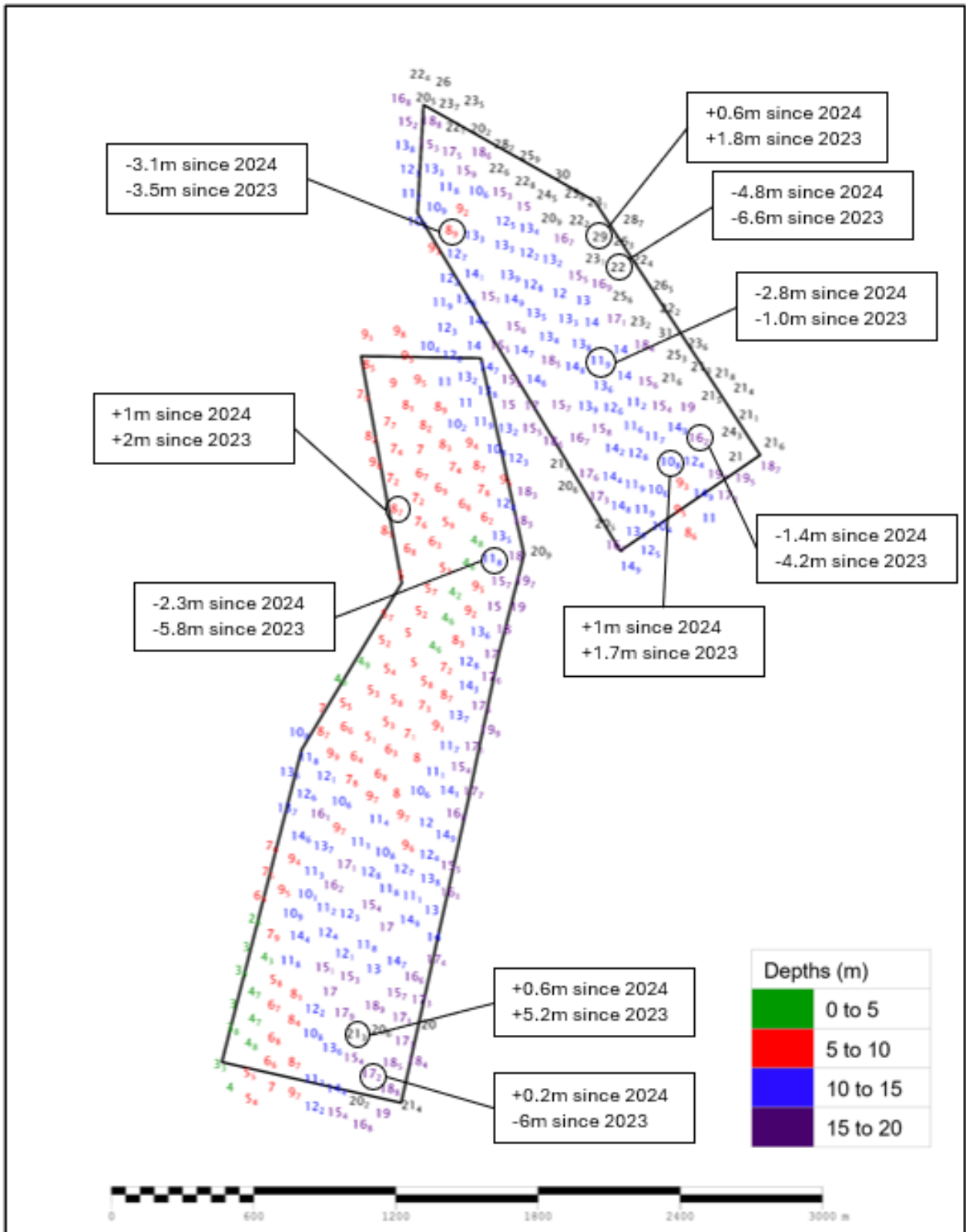


Figure 8: Colour banded depth plot from the 2025 survey with selected depth changes since the 2024 and 2023 surveys. Positive values (+) represent deepening. Negative values (-) represent shoaling.

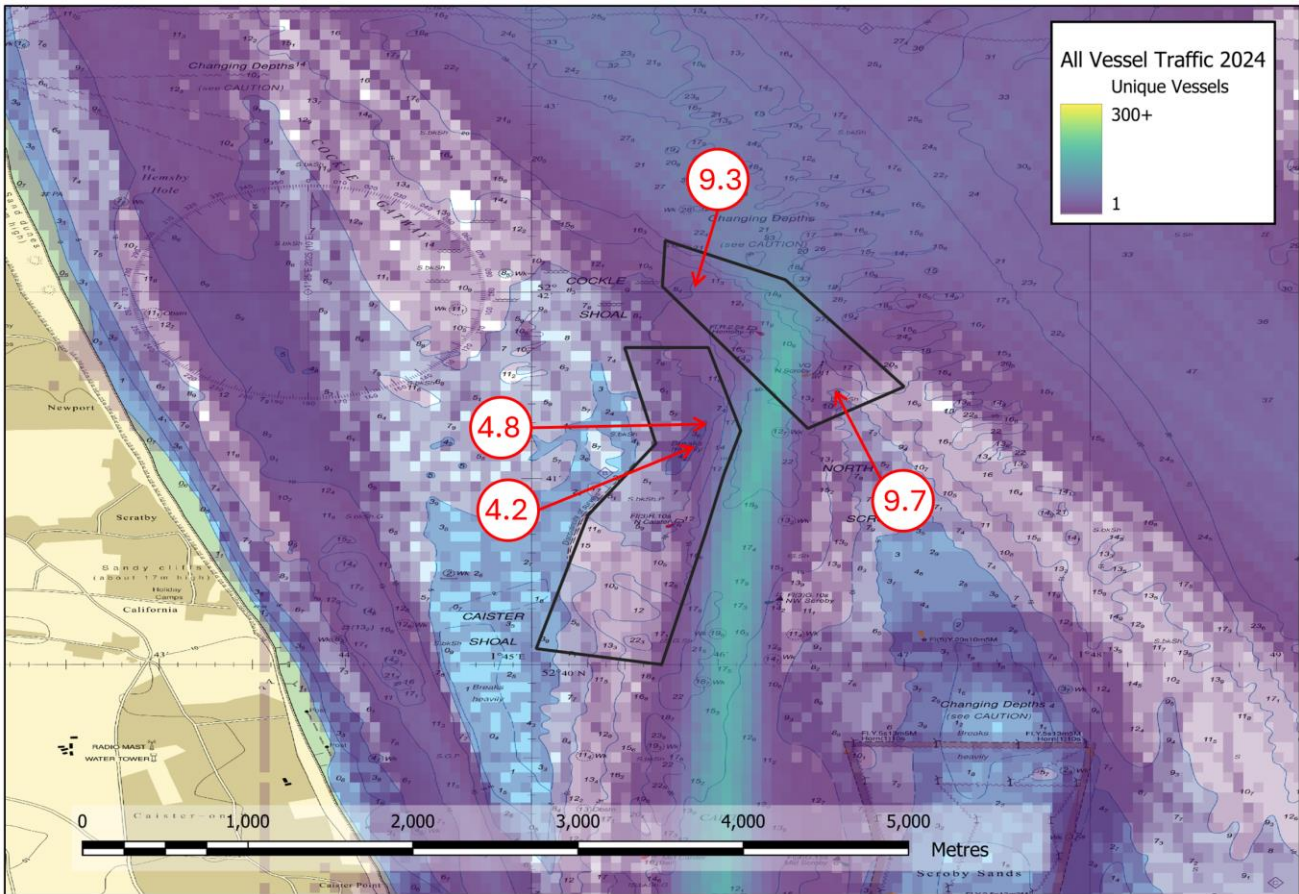


Figure 9: AIS heatmap at 100m resolution grid size. Density unit is unique vessels within the grid square within 2024. EA3A and EA3B areas in black and significant depth soundings (m) overlaid on chart 1534.

## 6. RECOMMENDATIONS FOR FUTURE SURVEYS

### Survey Interval

6.1 Due to the mobility of sandwaves, the 1-year frequency should be maintained on the focused areas EA3A and EA3B covering Caister Shoal, Cockle Shoal and North Scroby, with the 3-year frequency continued for the full area EA3.

### Survey Area

6.2 Given that EA3 Full is due next year (2026), no changes are currently recommended, however after assessing the full area it may be necessary to further extend the northeastern extent of EA3A for 2027 to adequately capture the 10m contour as it migrates northeast.