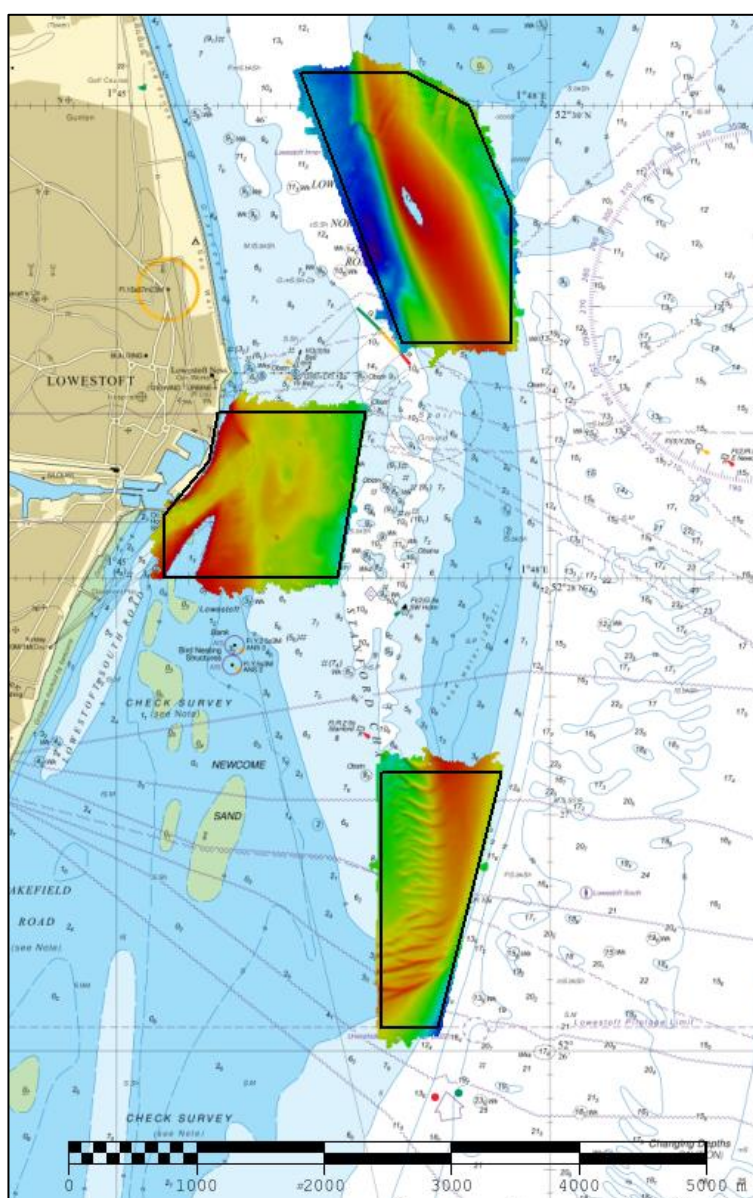


EAST ANGLIA

APPROACHES TO LOWESTOFT (EA10A + EA10B + EA10C)

2024 ASSESSMENT

An assessment of the 2024 hydrographic survey of the areas EA10A, EA10B and EA10C: 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.

APPROACHES TO LOWESTOFT, 2024

1. SUMMARY

Changes Detected

- 1.1 In EA10A South Holm Bank continues its southwards migration into Stanford Channel with the controlling depth at the centre of the entrance to the channel decreasing from 4m in 2023 to 3.8m in 2024.
- 1.2 EA10B shows limited change, however depths along the north of Lowestoft Bank continue to vary, shoaling by 2.7m in one location compared to the 2022 survey.
- 1.3 In EA10C, Holm Sand continues its westerly migration into Lowestoft North Road, particularly in the north where the 5m contour has move approximately 40m since 2023.

Reasons for Continuing to Resurvey the Area

- 1.4 Depths in the area remain mobile and potentially hazardous to vessels navigating the Lowestoft area and therefore require continued monitoring through 3-year full surveys and 1-year focused surveys.

Recommendations

- 1.5 EA10A adequately covers the sandbank movement at the entrance of Stanford Channel. No revisions required.
- 1.6 EA10B sees little change and adequately covers the movement of Lowestoft Bank, as well as the main approaches to Lowestoft, providing wider coverage than the port surveys. No revisions required.
- 1.7 EA10C adequately covers the westward movement of Holm Sand. No revisions required.

2. LOCATION

- 2.1 Survey interval at time of resurvey: 1-year focused areas, 3 years full area.

- 2.2 Area Covered:

Focused area EA10A: 1.68 km²

Focused area EA10B: 1.85 km²

Focused area EA10C: 2.76 km²

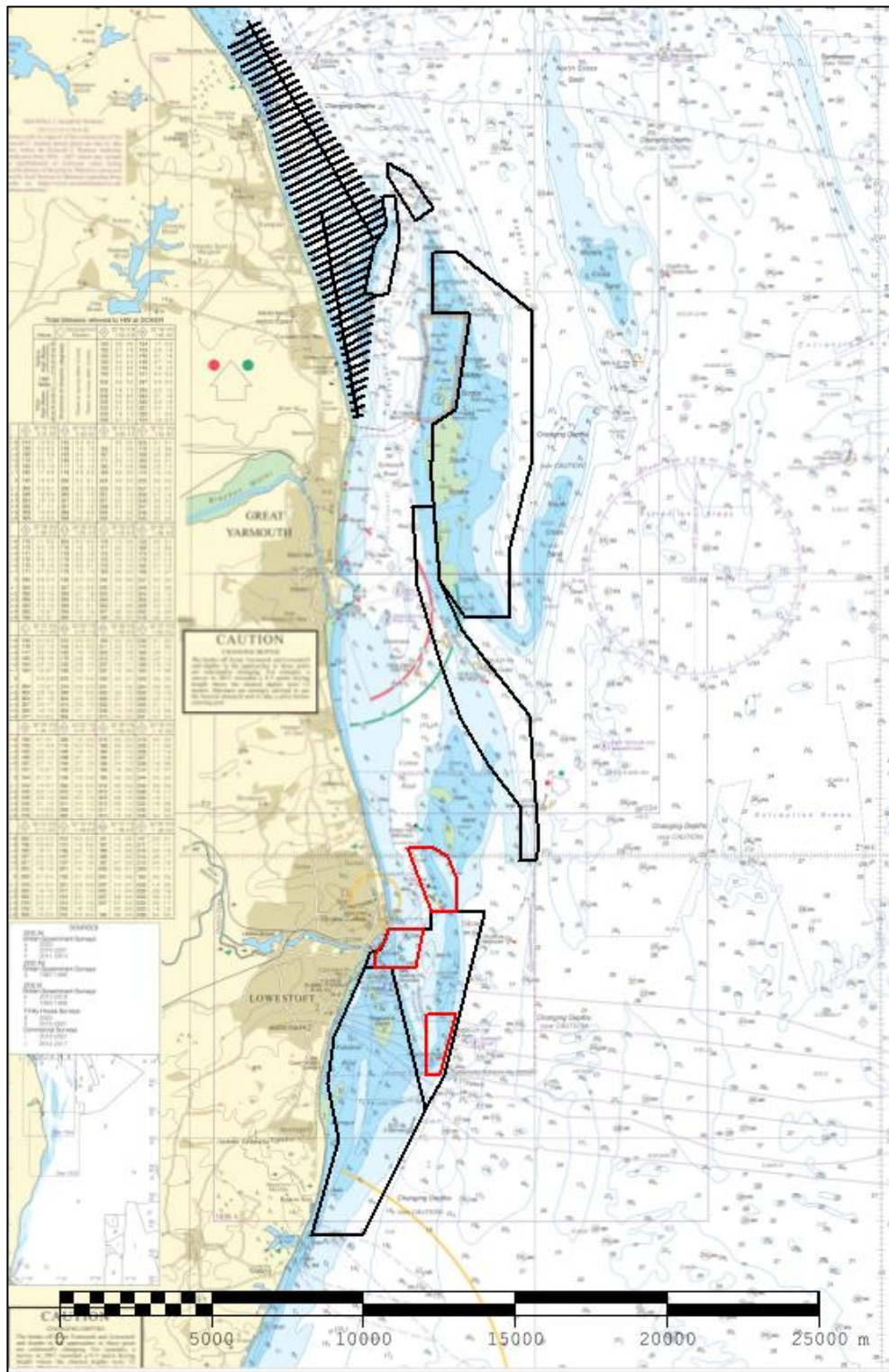


Figure 1: 2024 East Anglia Routine Resurvey areas overlaid on BA Chart 1543-0 with area EA10A, EA10B and EA10C in red.

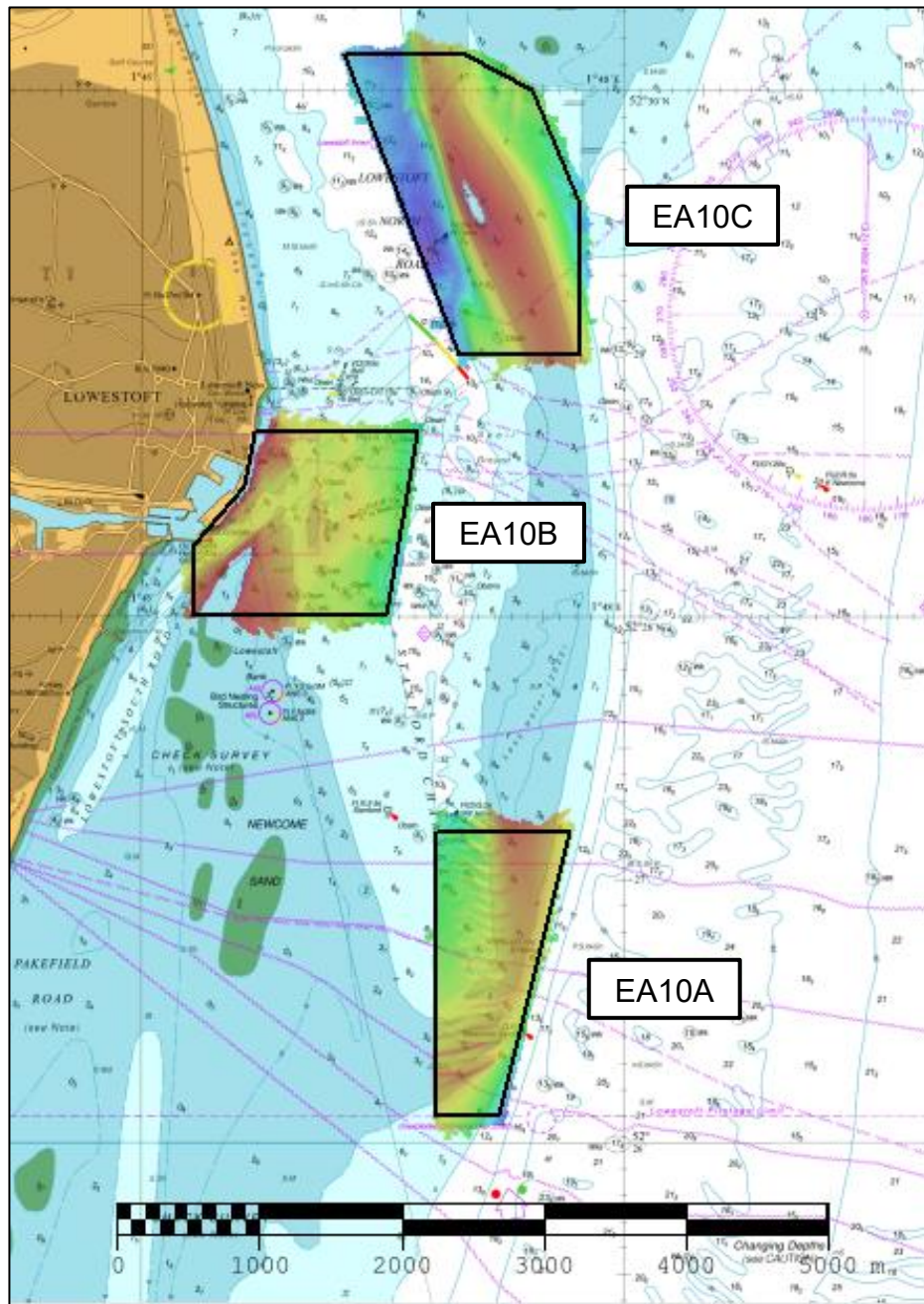


Figure 2: 2024 survey data overlaid on BA Chart 1535-0.

3. REFERENCE SURVEY DETAIL

- 3.1 The previous focused survey of EA10A and EA10C was conducted as part of the 2023 Routine Resurvey Programme, in September 2023 as part of HI1829. The previous full survey was conducted as part of the 2022 Routine Resurvey Programme in October 2022 as part of HI1762. As area EA10B was not included on the last focused survey, comparisons have been made against the focused survey of EA10B as part of the 2021 Routine Resurvey Programme, in October 2021 as part of HI1738.
- 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 Focused survey areas EA10A, EA10B and EA10C were surveyed in August 2024 as part of HI1858 in 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 Significant depths from the 2024 surveys are shown by the depth plots in Figures 3, 4, 5 and 6:

- Figure 3 shows the controlling depths in EA10A. The entrance to Stanford Channel (between the Newcome Sand Buoy and the S Holm Buoy), the most used navigable route into Lowestoft from the south, now has a controlling depth of 3.8m. This point has shoaled by 1.59m since 2023, but the previous controlling depth from the 2023 survey was 4m, slightly to the northwest of the new controlling depth. This represents a continued southward movement of the South Holm bank. Newcome Sand has also seen significant shoaling, with one sand wave showing a depth of 3.5m, shoaling 2.04m since the 2023 survey. Note that the slightly deeper water is now mostly to the north of the charted buoys in Figure 3, following HI1858 Trinity House have moved these buoys to mark a revised 4m channel.
- Figures 4 and 5 show the significant depths in EA10B. Changes in this region have been limited, with one depth of note being the 5.6m in the entrance to Lowestoft, deepening by 0.28m compared to the 2022 survey. The 5m charted depth to the east of The Ridge has moved slightly to the south, and the foul ground in the centre of the approach channel remains unchanged since the 2022 survey.
- Figure 6 shows the significant depths in EA10C. The most significant change observed here is the 9.6m sounding to the north of the survey area, shoaling 2.87m since 2023 as the sandbank begins to move southwest, towards Lowestoft North Road. Other significant soundings in the survey area are also showing a generalised shoaling and south-westward expansion of the sandbank, with 1.7m, 6.9m and 8.1m soundings representing a 0.73m, 0.61m and 0.13m shoaling respectively.

- 5.2 Difference surfaces outline the major patterns of seabed change within the survey areas:

- Figure 7 clearly demonstrates the southwards movement of sand waves in EA10A since the 2023 survey that has led to the significant shoaling of Stanford Channel.
- Figure 8 shows that within EA10B, the approaches to Lowestoft have remained unchanged or been getting deeper. It should be noted however, that Lowestoft Bank continues to be an area of variable depth change, shoaling since the 2022 survey.
- Figure 9 demonstrates the overall south-westerly migration of the Holm Sand in EA10C. This is especially evident in the north where the most significant shoaling and movement of the bank can be observed. Deeping along the northeast edge of EA10C was noted in 2023 and has continued in 2024. This could indicate the possibility of a channel opening to the north of EA10C, in which case it may be beneficial to bring forward the neighbouring survey EA8 (full) from its planned year 2029.

- 5.3 Contour plots in Figures 10, 11, 12 and 13 further illustrate the more localised changes to the sandbanks outlined above:

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Assessment - EA10 Focused/2024

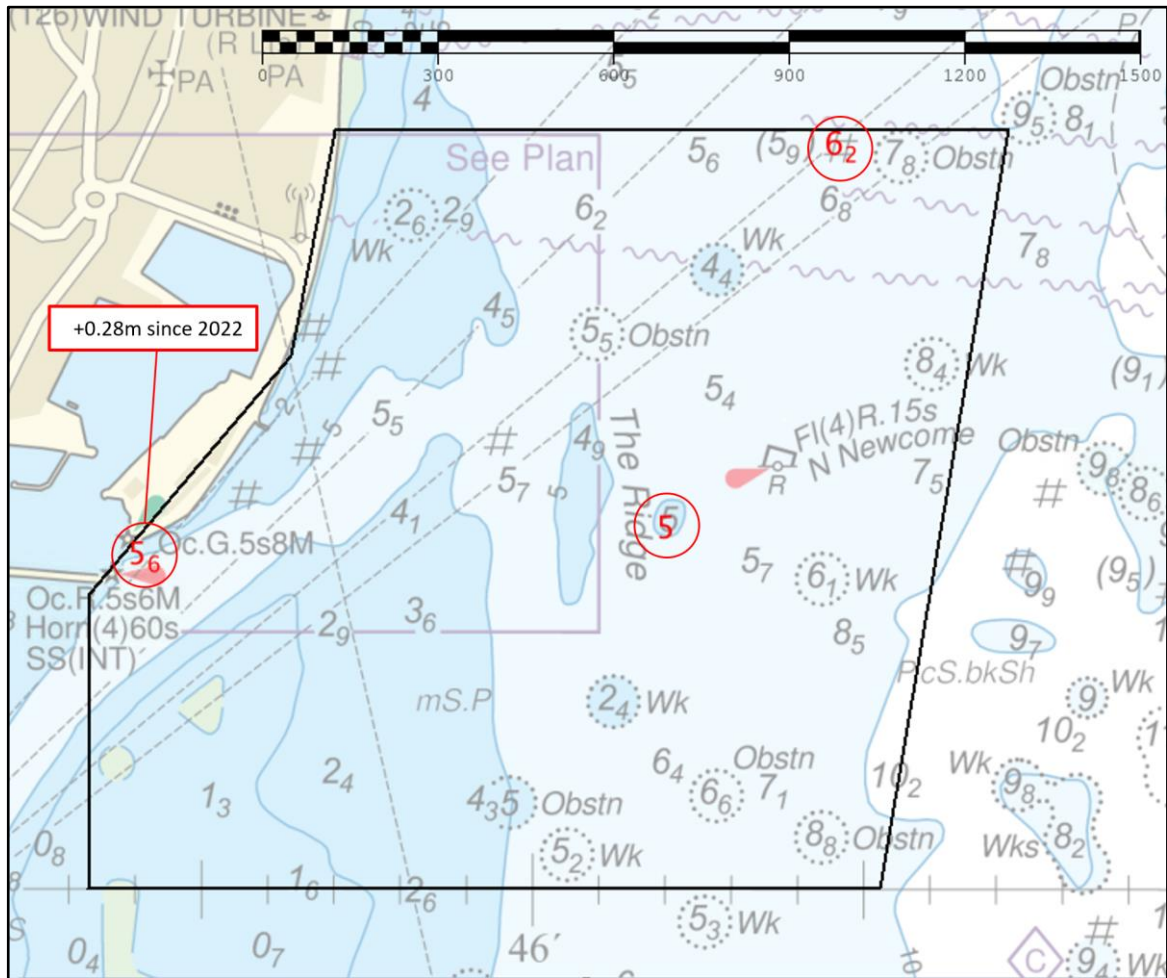


Figure 4: Controlling Depth soundings for EA10B highlighted, overlaid on BA Chart 1535-0.

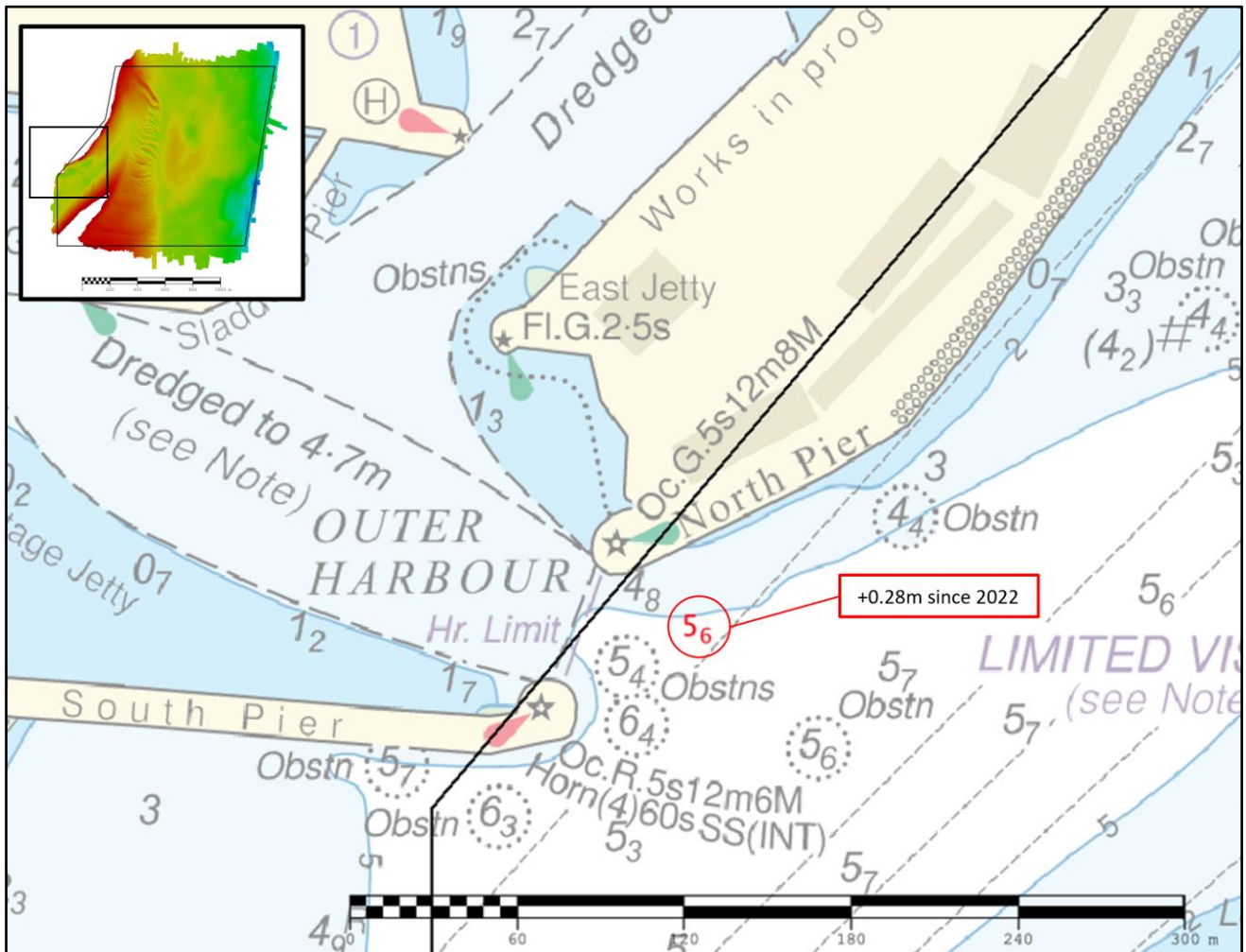


Figure 5: Controlling Depth soundings for EA10B highlighted, overlaid on BA Chart 1535-1.

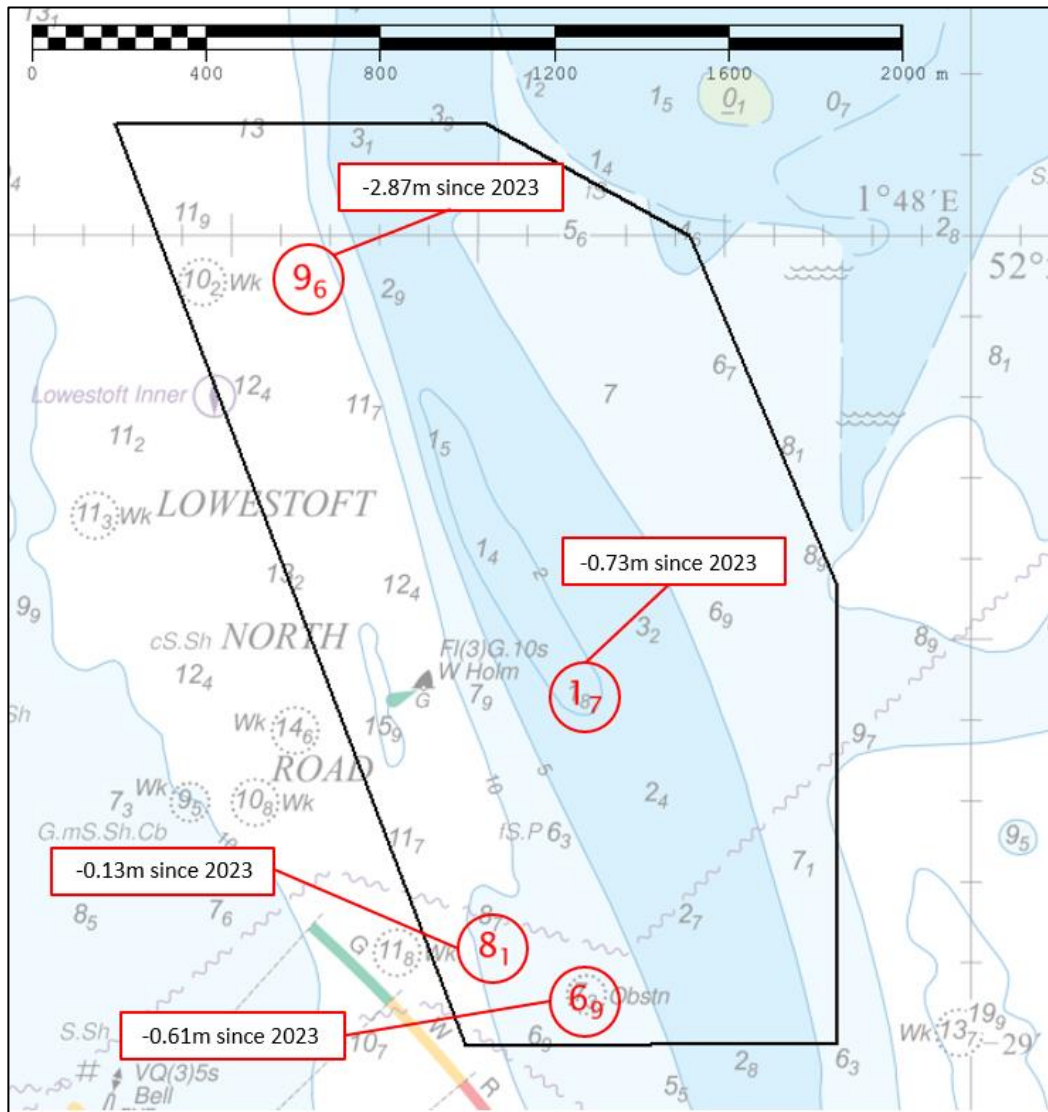


Figure 6: Significant Depth soundings for EA10C highlighted, overlaid on BA Chart 1535-0.

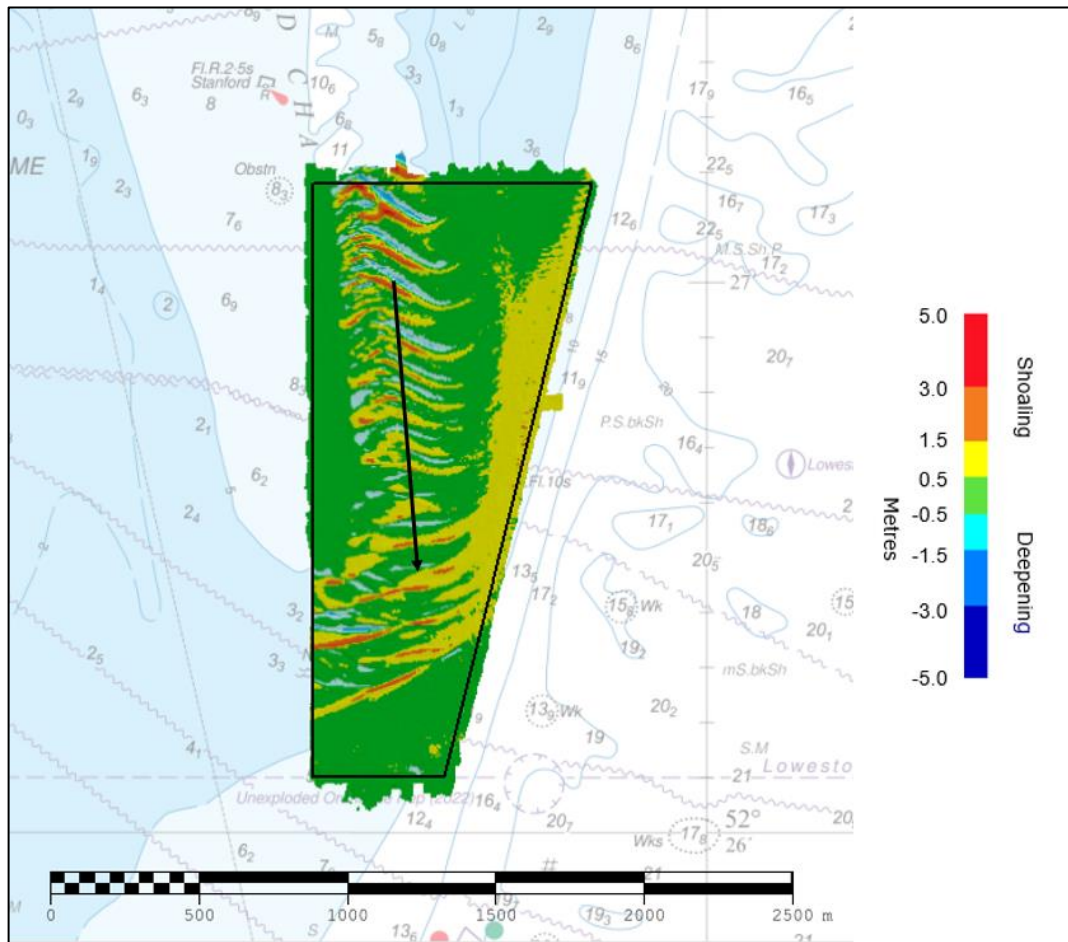


Figure 7: Difference surface showing bathymetric changes between the 2024 and 2023 surveys in EA10A overlaid on BA Chart 1535-0 (Black arrows represent sandwave migration since 2023 survey).

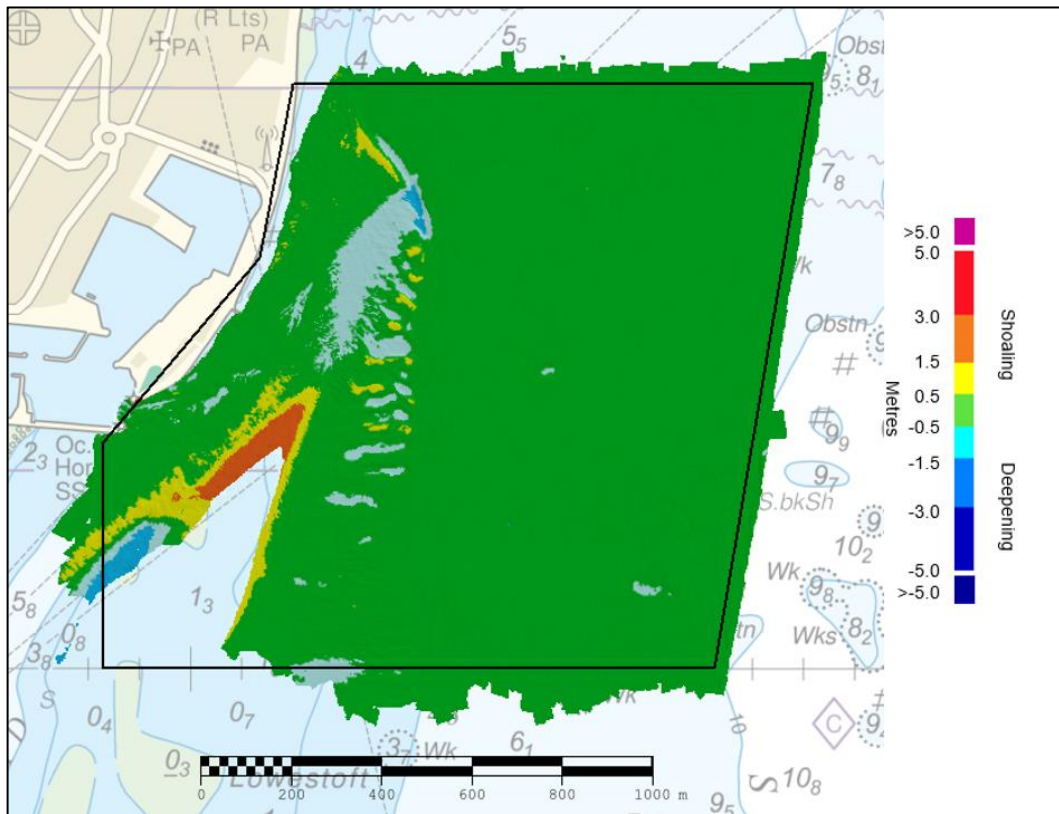


Figure 8: Difference surface showing bathymetric changes between the 2024 and 2022 surveys in EA10B overlaid on BA Chart 1535-0.

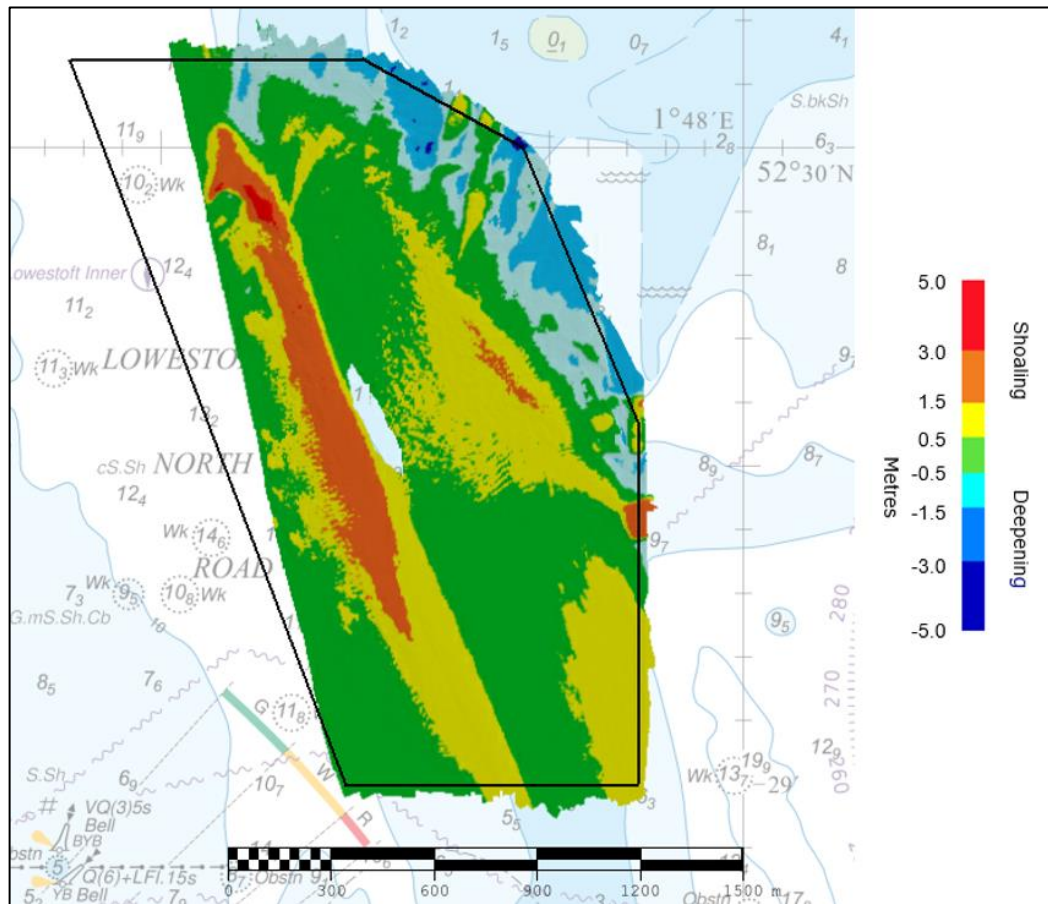


Figure 9: Difference surface showing bathymetric changes between the 2024 and 2023 surveys in EA10C overlaid on BA Chart 1535-0.

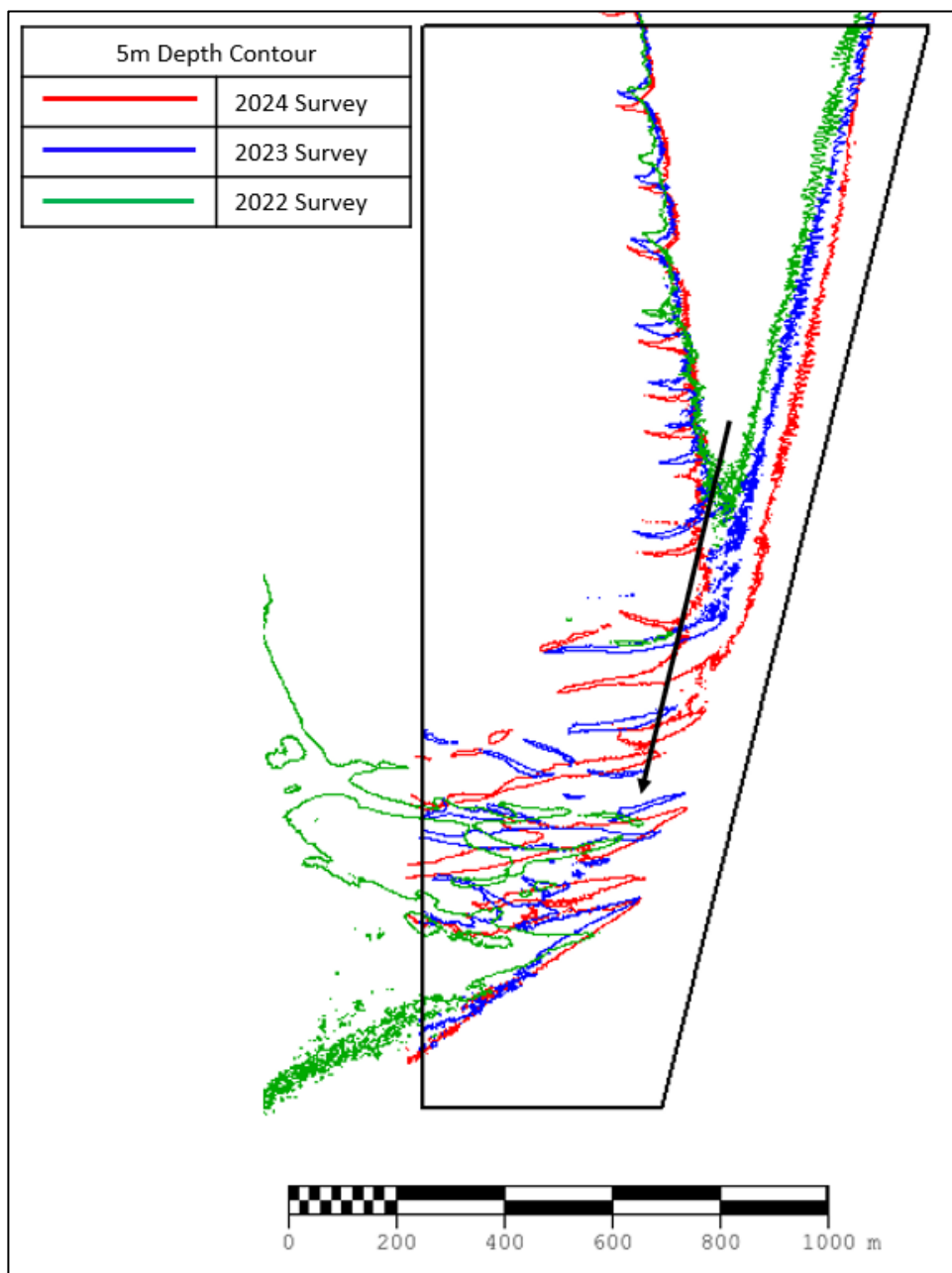


Figure 10: Contour plot showing changes in the 5m contour between 2024 (red), 2023 (blue) and 2022 (green) In EA10A. Black arrow represents feature migration.

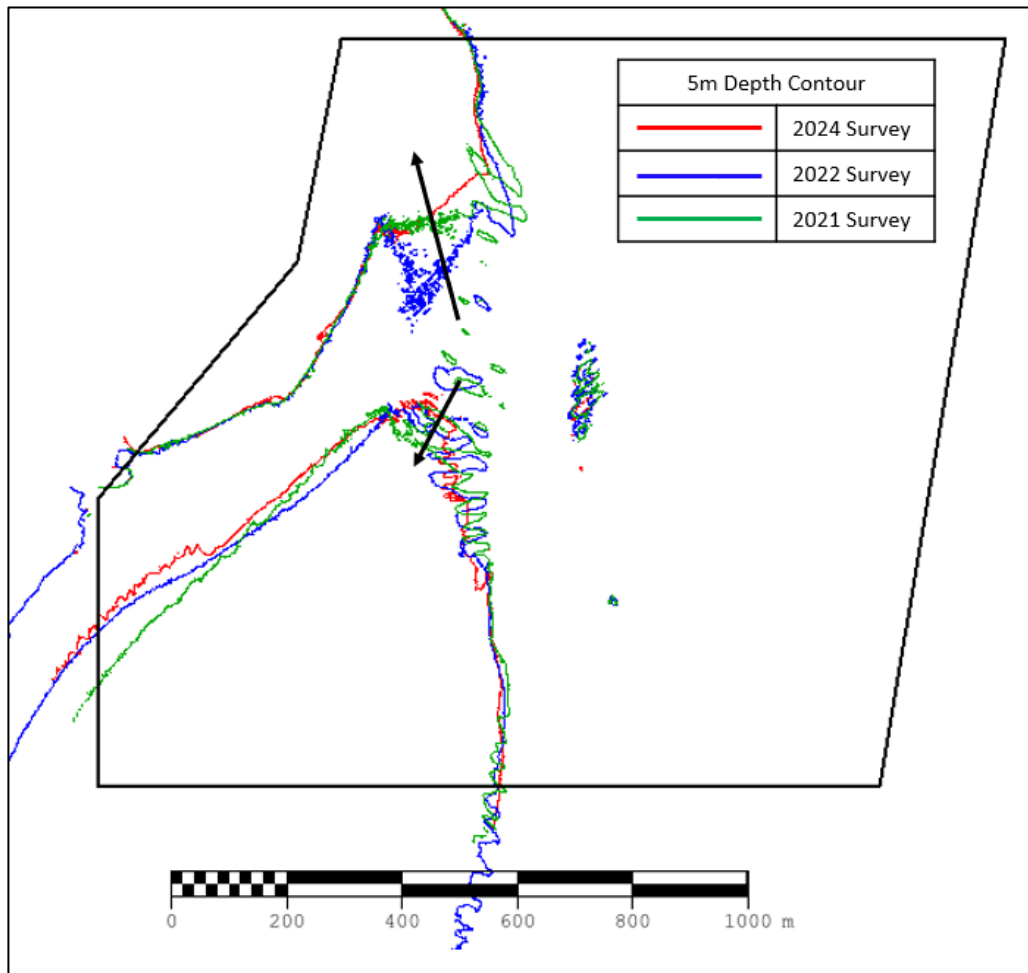


Figure 11: Contour plot showing changes in the 5m contour between 2024 (red), 2022 (blue) and 2021 (green) In EA10B. Black arrow represents feature migration. **Note: movement in this area is primarily due to dredging and not natural processes.**

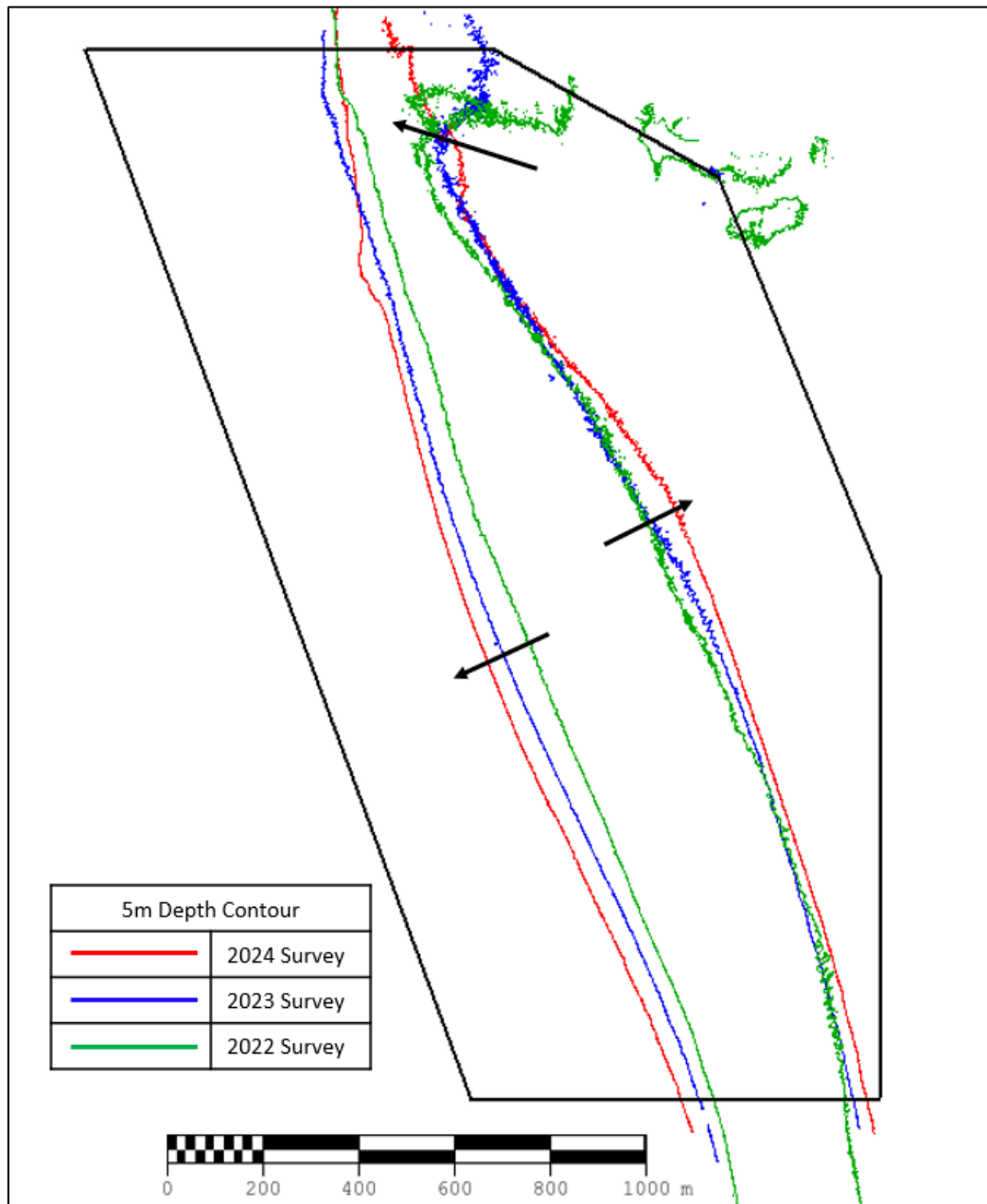


Figure 12: Contour plot showing changes in the 5m contour between 2024 (red), 2023 (blue) and 2022 (green) In EA10C. Black arrow represents feature migration.

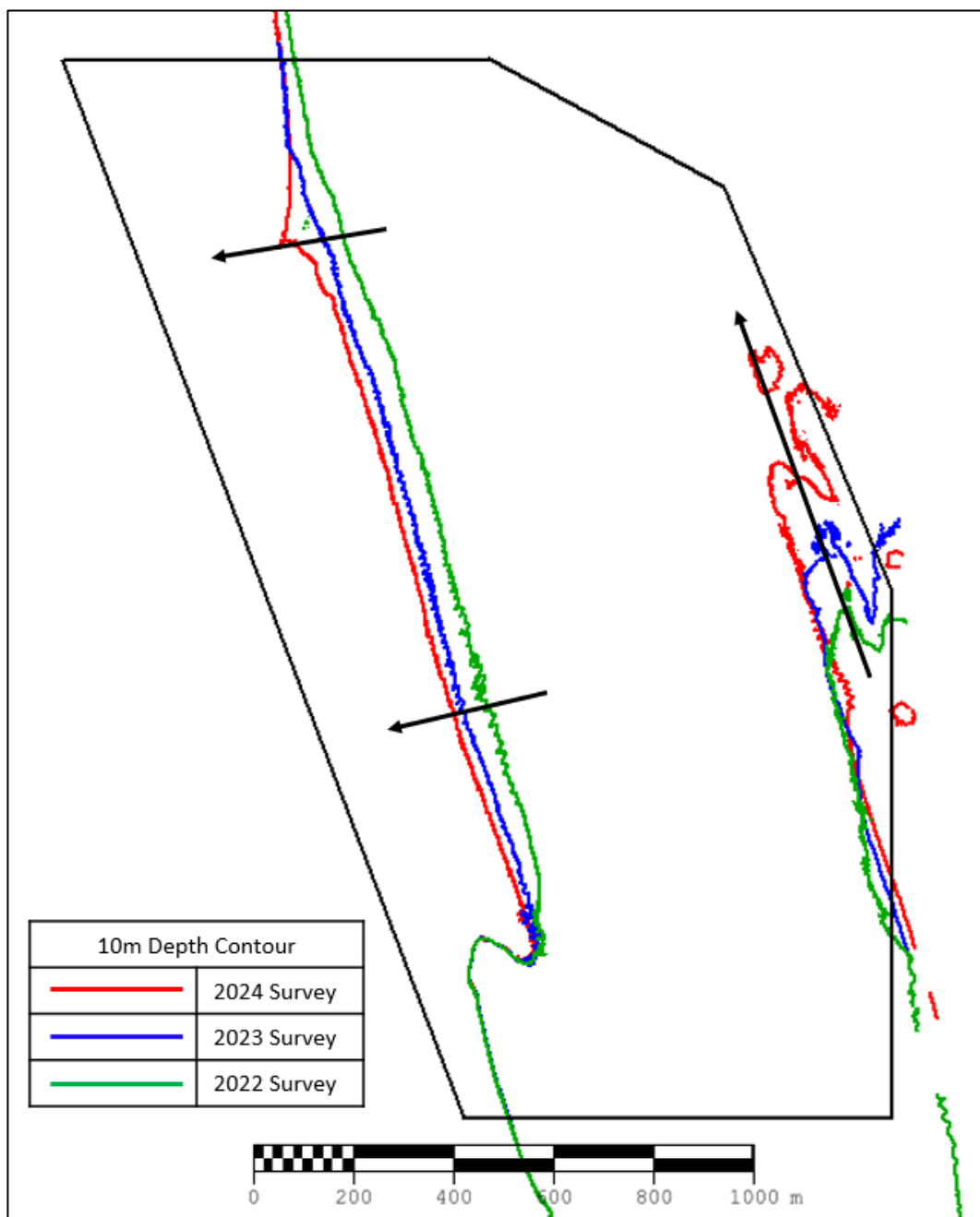


Figure 13: Contour plot showing changes in the 10m contour between 2024 (red), 2023 (blue) and 2022 (green) In EA10C. Black arrow represents feature migration.

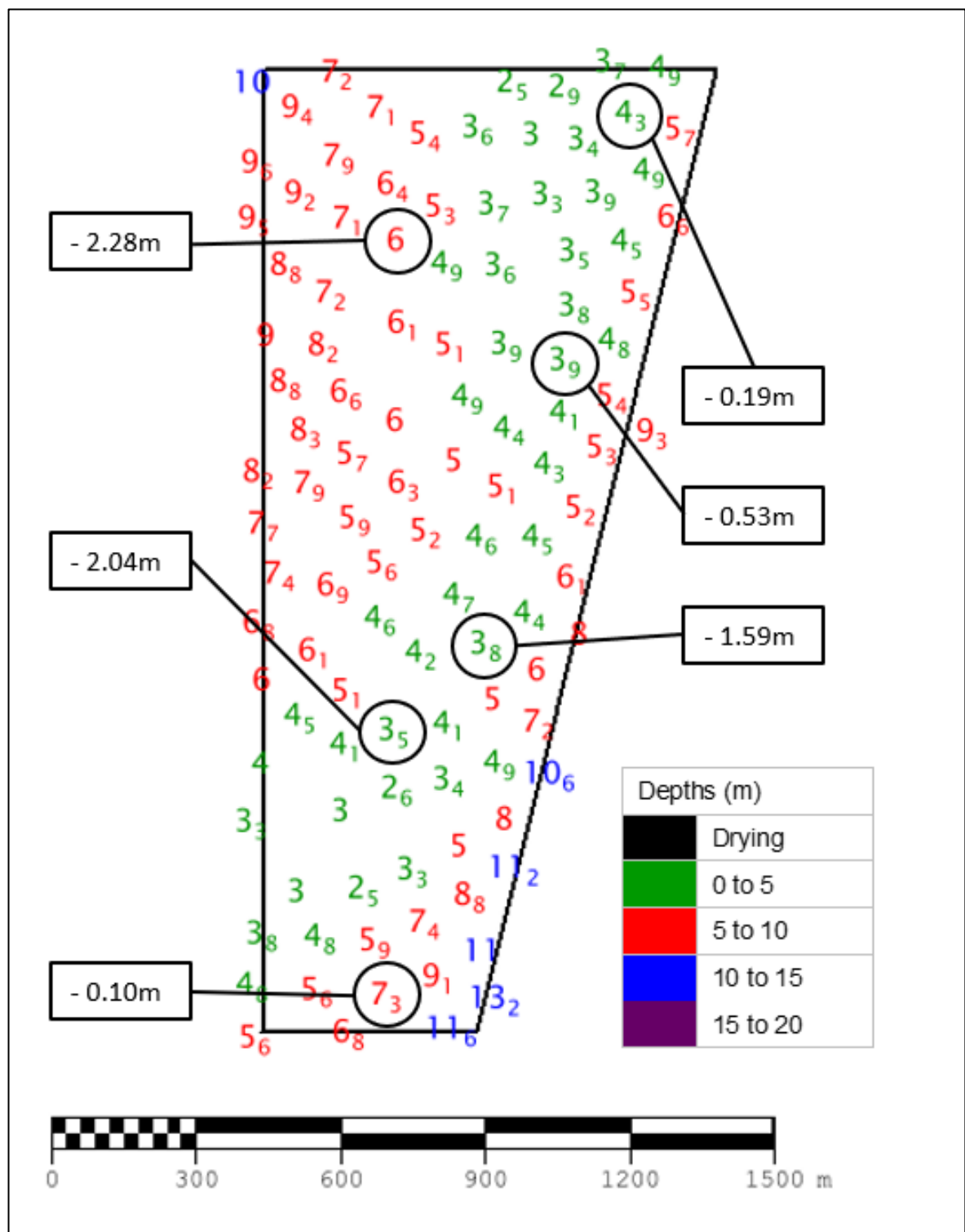


Figure 14: Colour banded depth plot from the 2024 survey with selected depth changes since the 2023 survey in EA10A. Positive values (+) represent deepening. Negative values (-) represent shoaling.

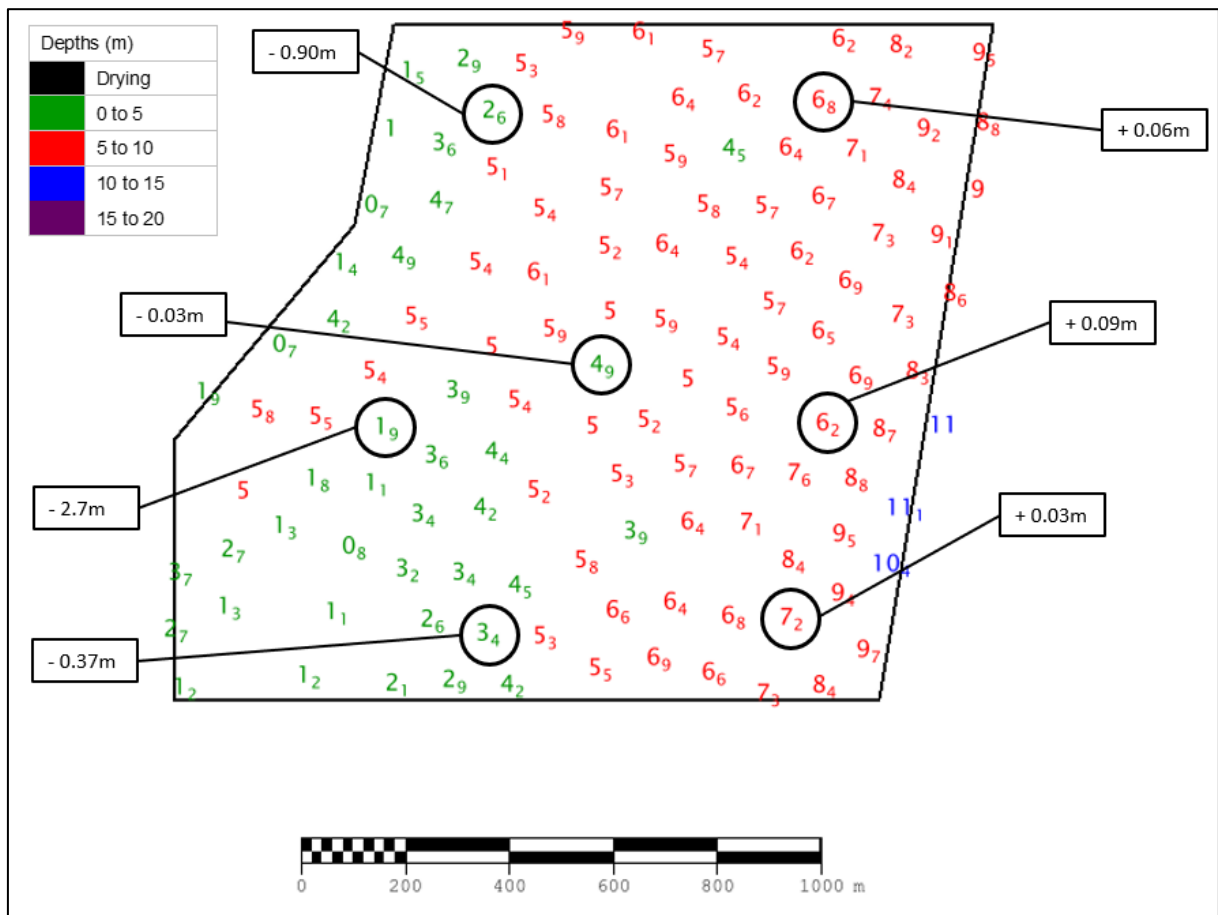


Figure 15: Colour banded depth plot from the 2024 survey in EA10B with selected depth changes since the 2022 survey. Positive values (+) represent deepening. Negative values (-) represent shoaling.

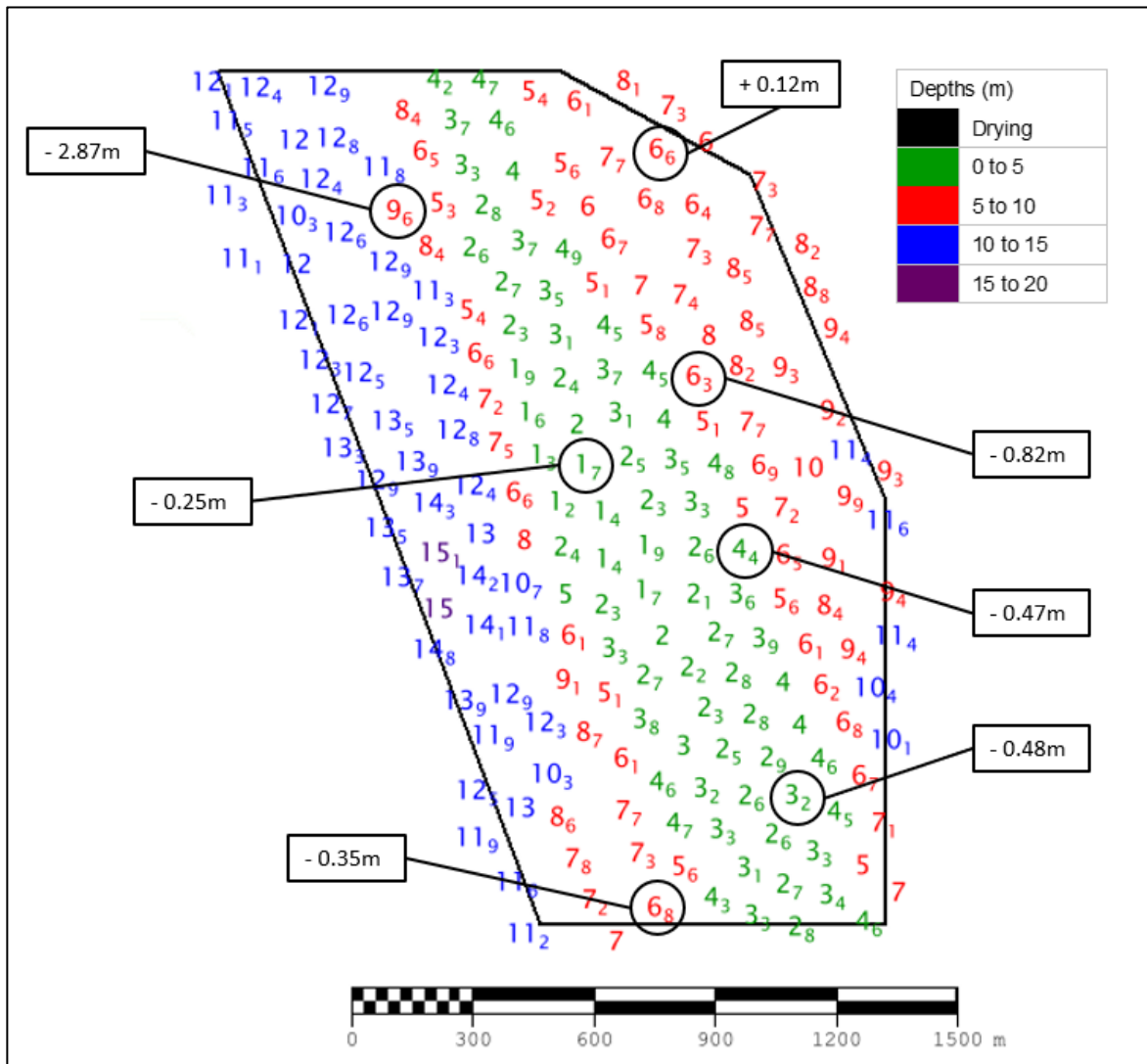


Figure 16: Colour banded depth plot from the 2024 survey in EA10C with selected depth changes since the 2023 survey. Positive values (+) represent deepening. Negative values (-) represent shoaling.

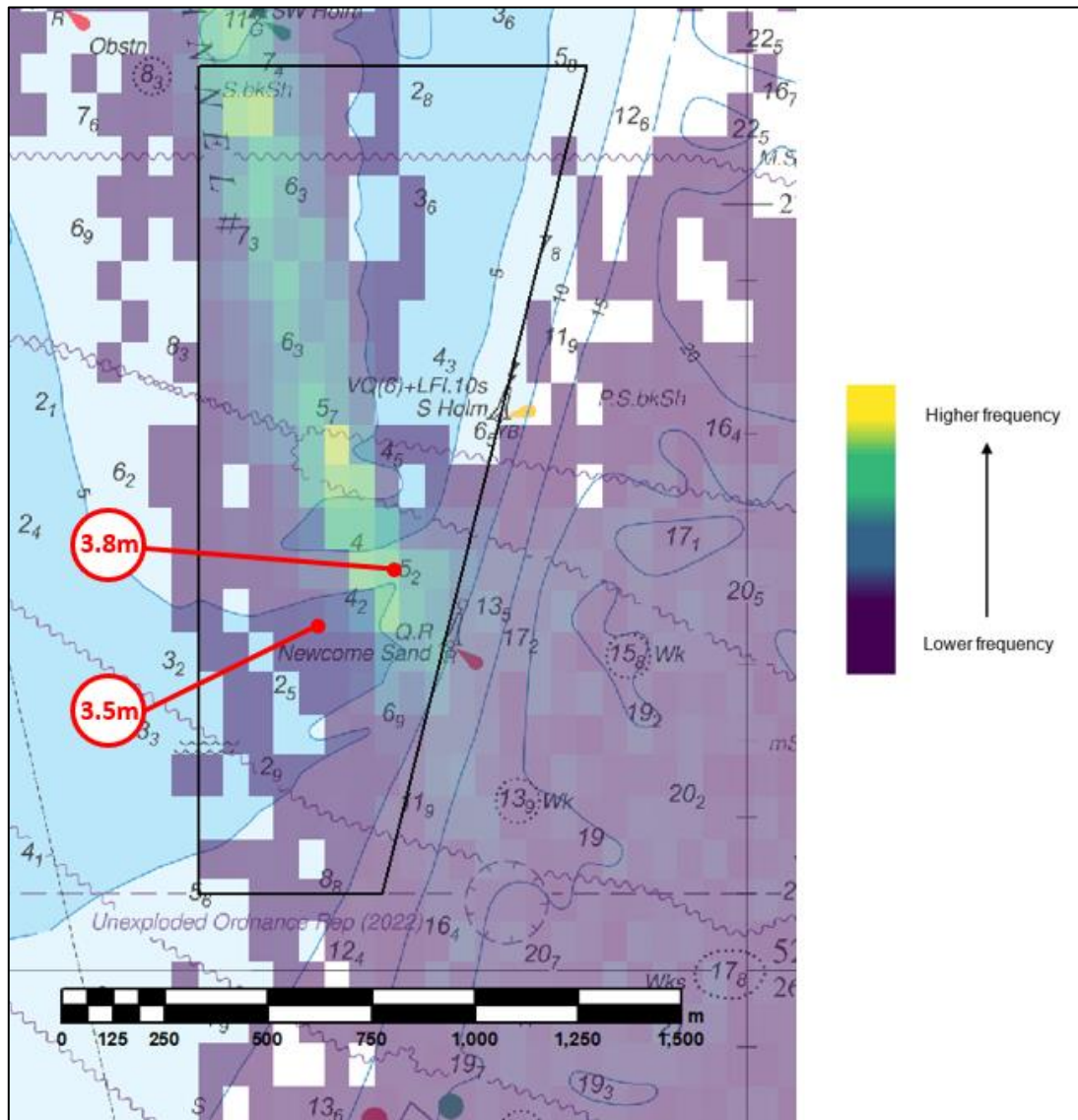


Figure 17: AIS ECDIS regulated annual tanker, passenger, and cargo vessel data from 2023 with Routine Resurvey area EA10A and controlling depth soundings (m) overlaid on BA Chart 1535-0.

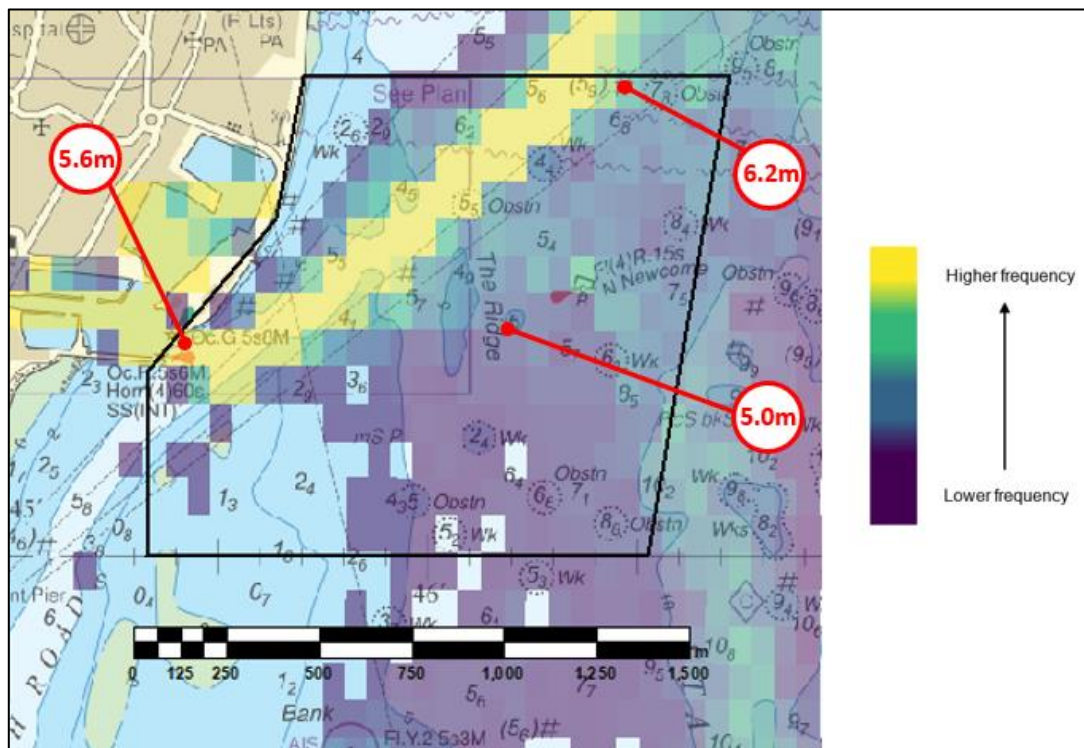


Figure 18: AIS ECDIS regulated annual tanker, passenger, and cargo vessel data from 2023 with Routine Resurvey area EA10B and controlling depth soundings (m) overlaid on BA Chart 1535-0.

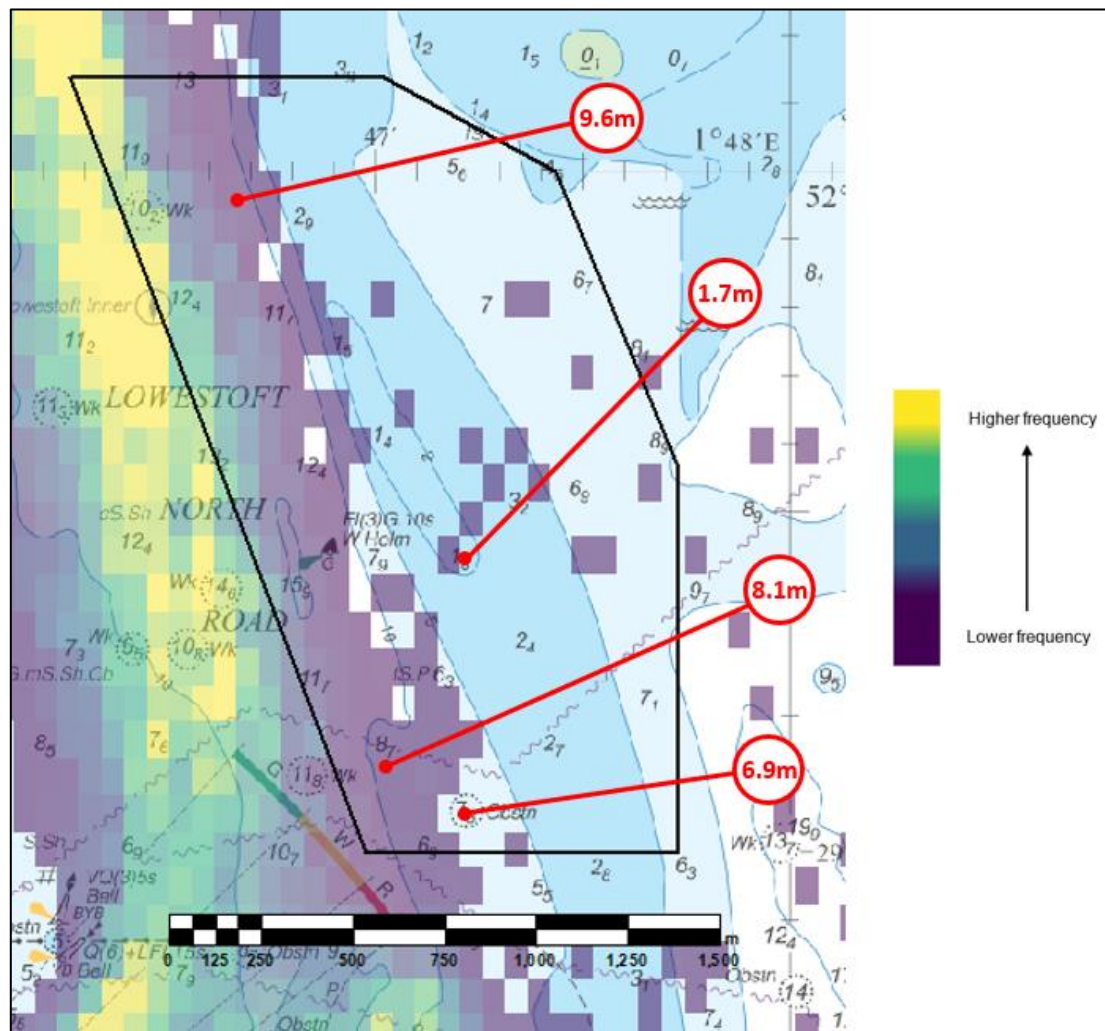


Figure 19: AIS ECDIS regulated annual tanker, passenger, and cargo vessel data from 2023 with Routine Resurvey area EA10C and controlling depth soundings (m) overlaid on BA Chart 1535-0.

6. RECOMMENDATIONS FOR FUTURE SURVEYS

Survey Interval

- 6.1 Given the changing depths due to continued migration of sandwaves in EA10A and the significant shoaling and sandbank movement in EA10C, both these focused areas should remain on the annual survey schedule. Although less movement was observed in EA10B, the variability of Lowestoft Bank, associated with the high frequency of vessel traffic means this too should remain on the annual survey schedule.

Survey Area

- 6.2 The current focused areas of EA10A and EA10C adequately track the major changes at present. Furthermore, surrounding surveys by Trinity House continue to monitor the movement of Holm Sand. As such, no changes are recommended to these two areas.
- 6.3 However it is recommended to extend the EA10B area to the south west. This will bring EA10B into alignment with the full EA10 survey area, providing improved coverage of the South Road Channel near Lowestoft, see Figure 20. This will also adjoin EA10B with EA12, see Figure 21

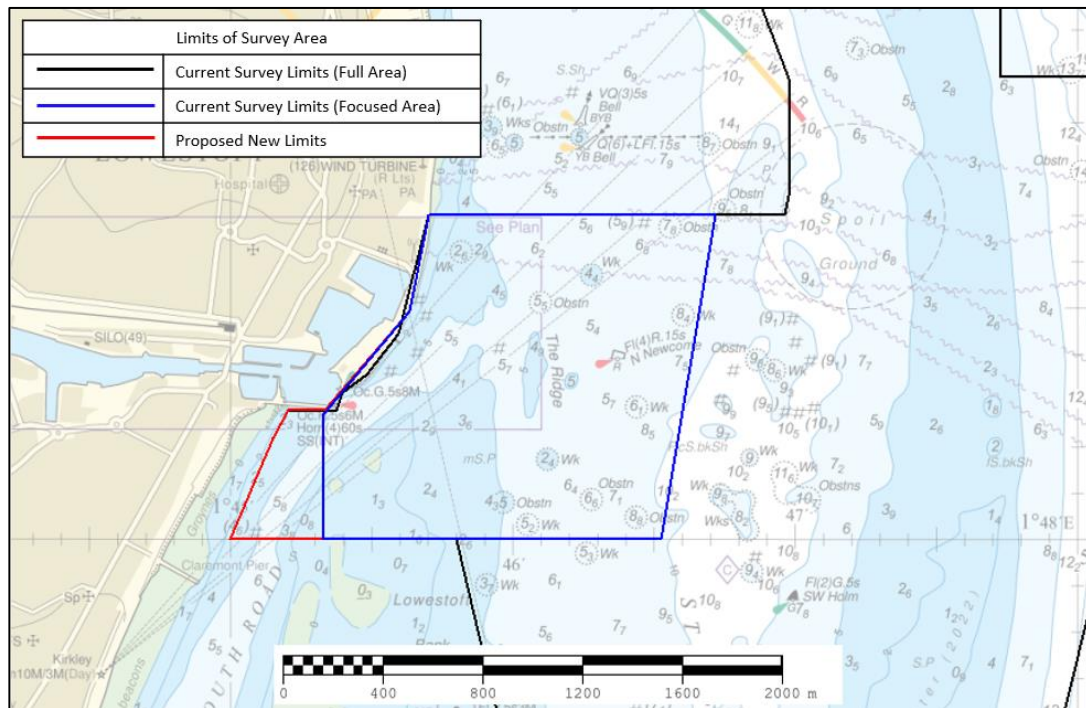


Figure 20: Recommended changes to survey limits of area EA10B.

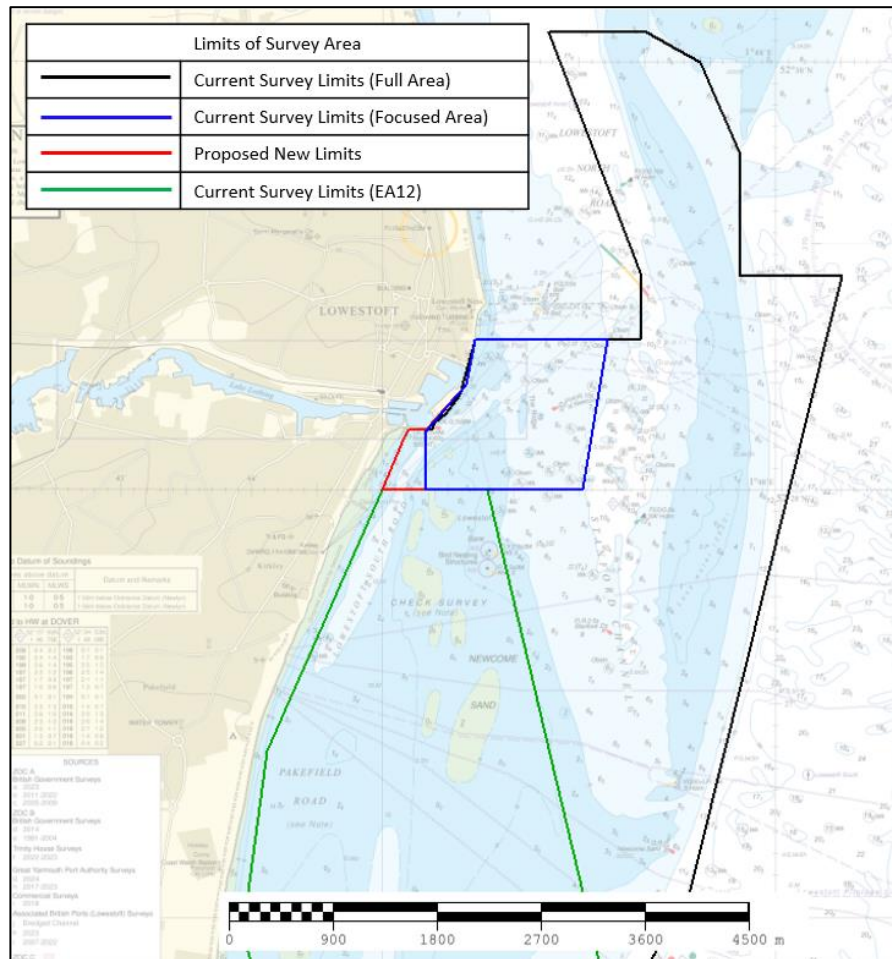


Figure 21: Recommended changes to survey limits of area EA10B with area EA12 included.

The coordinates of the recommended adjusted survey area limits for the annual focused areas EA10B are shown below:

Current Limits:

EA10B total area: 1.68 km²

Potential new limits:

EA10B total area: 1.82 km²

	Latitude	Longitude
1	52-28.699998 N	001-45.700002 E
2	52-28.701132 N	001-46.717656 E
3	52-28.000902 N	001-46.524468 E
4	52-28.000002 N	001-45.330000 E
5	52-28.000002 N	001-45.000000 E
6	52-28.219800 N	001-45.150000 E
7	52-28.279800 N	001-45.202500 E
8	52-28.277922 N	001-45.335064 E
9	52-28.492428 N	001-45.633948 E