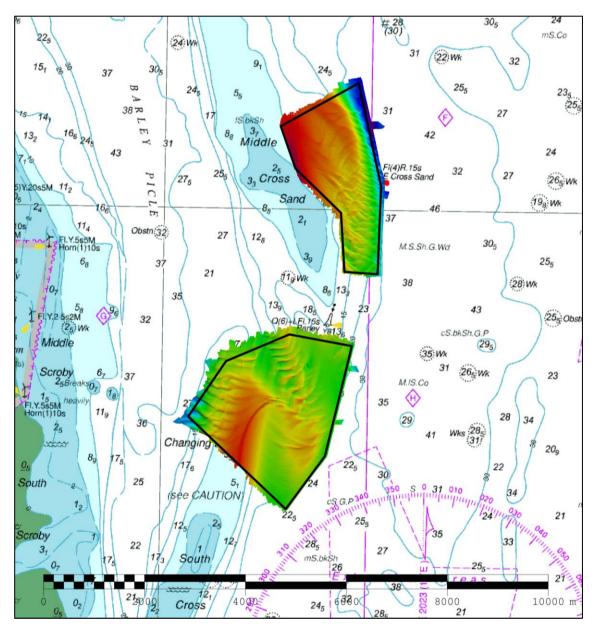


# EAST ANGLIA CROSS SANDS EA7A & EA7B (FOCUSED) 2023 ASSESSMENT

An assessment of the 2023 hydrographic survey of the area EA7A & EA7B: 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.

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No analysis of shipping traffic has been included within this report due to no AIS data being supplied by MCA.

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

# EA7A & EA7B – CROSS SANDS, 2023

### 1. SUMMARY

#### Changes Detected

- 1.1 South Cross Sand continues to move northeast into the deeper channel between South Cross Sand and Middle Cross Sand.
- 1.2 There is also continued movement northeast around Middle Cross Sand since the 2020 survey.

#### Reasons for Continuing to Resurvey the Area

1.3 Depths in the area remain hazardous and changeable to deep draught vessels navigating the area and therefore require continued monitoring through 12-year full surveys and 3-year focused surveys.

#### Recommendations

- 1.4 The survey limits for EA7A currently encapsulate the migration of South Cross Sands sufficiently, therefore it is recommended this area remains the same.
- 1.5 The migration of Middle Cross Sands in EA7B is pushing the survey limits to the northeast and it is likely this area will need revising for future focused surveys.

#### 2. LOCATION

- 2.1 Survey interval at time of resurvey: 12 years full, 3 years focused.
- 2.2 Area Covered: 12.6 km<sup>2</sup>

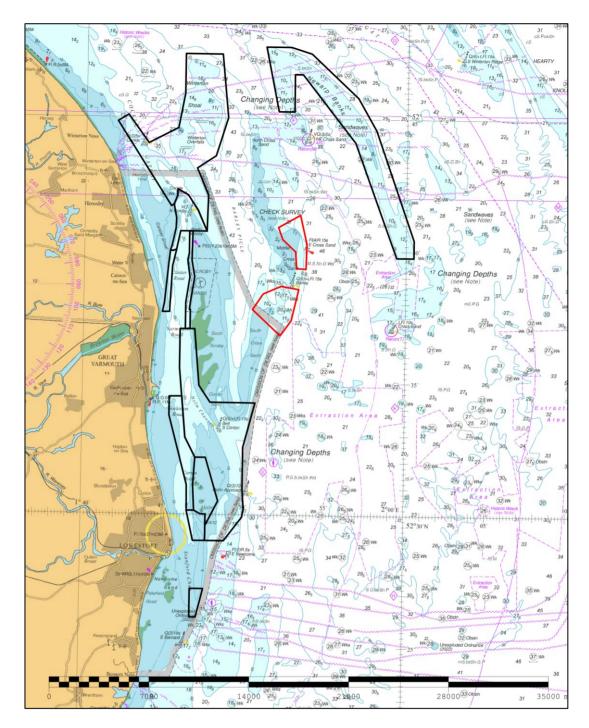


Figure 1: 2023 East Anglia Routine Resurvey areas overlaid on BA Charts 1543-0 and 1408-0 with areas EA7A & EA7B in red.

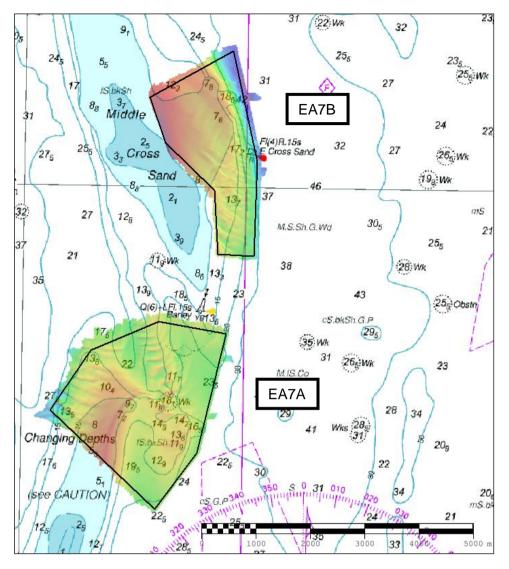


Figure 2: 2023 survey data overlaid on BA Chart 1543-0

# 3. REFERENCE SURVEY DETAIL

- 3.1 The previous focused survey of EA7A and EA7B was undertaken between May and July 2017 under HI1545. The last full EA7 survey was completed in October 2020 under HI1686. Both were part of the CHP Routine Resurvey Program.
- 3.2 The Report of Survey for this survey is available upon request from the UKHO and the validated bathymetric surfaces are available to download from the Admiralty Marine Data Portal.

## 4. NEW SURVEY DETAIL

- 4.1 Focused surveys of EA7A and EA7B were conducted as part of the Routine Resurvey Program, CHP between September and October 2023 under HI1826.
- 4.2 The Report of Survey for this survey is available upon request from the UKHO 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 significant depths in the EA7A and EA7B 2020 surveys. EA7A has a 10.9m sounding E of the upper lobe of South Cross Sand, and a sounding of 11.0m is shown in the channel between South Cross and Middle Cross Sand to indicate shoaling of this area.
- 5.2 EA7B has three significant soundings shown of 4.2m, 13.2m and 14.6m The southern two soundings are both in areas where general depths area 16-20m in the approach to the channel marked by the Barley buoy, however this area has generally deepened slightly since 2020. The 4.2m sounding has shoaled by 6.6m since 2020, and shows how the 5m is migrating NE.
- 5.3 The difference surface in Figure 4 shows that South Cross Sand continues to migrate to the east. The large ribbon feature to the south of EA7A has shoaled by more than 5m in places since the 2020 survey. This feature is also migrating eastwards and least depth is generally about 1m less than in 2020. Middle Cross Sand to the north of EA7B (Figure 5) continues to move to the north, particularly the 10m and the 5m contours. This may have impacts on future recommendations to the focused areas if trends continue. Depths to the south of the area remain uniform and any differences are likely due to sandwave movement.
- 5.4 Figure 6 shows a difference plot of both areas since the 2017 focused survey. South Cross Sand and Middle Cross Sand have moved east and northeast respectively, with South Cross Sand shoaling more than 10m since then. EA7B has shoaled more than 20m during its migration since the 2017 survey.
- 5.5 The Depth plots in figures 7 and 8 show significant differences in depth between the 2020 and 2023 surveys. There has been significant shoaling to the northeast of both South Cross Sand and Middle Cross Sand. The least depth in EA7A (5.5m) has moved 70m northeast since the 2020 survey (within the EA7A limits), and the least depth in EA7B (2.2m) has moved 900m northwest since the 2020 survey (within the EA7B limits). These are however both on the main sand banks and not in the main navigable channels.

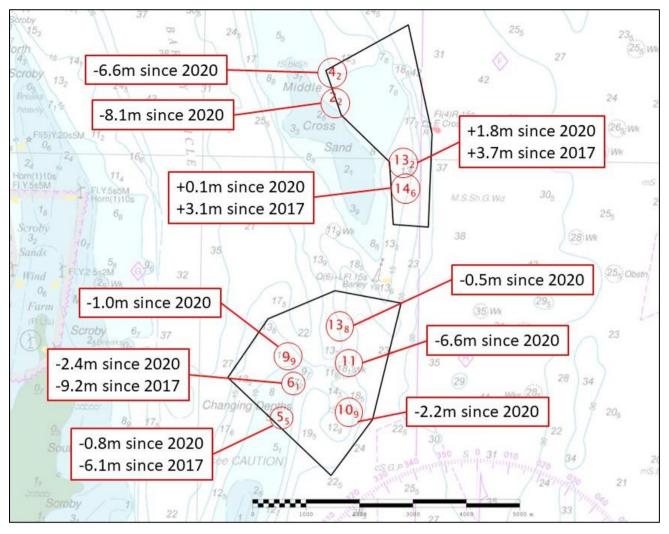


Figure 3: Significant Depth sounding(s) highlighted, overlaid on BA Chart 1543-0

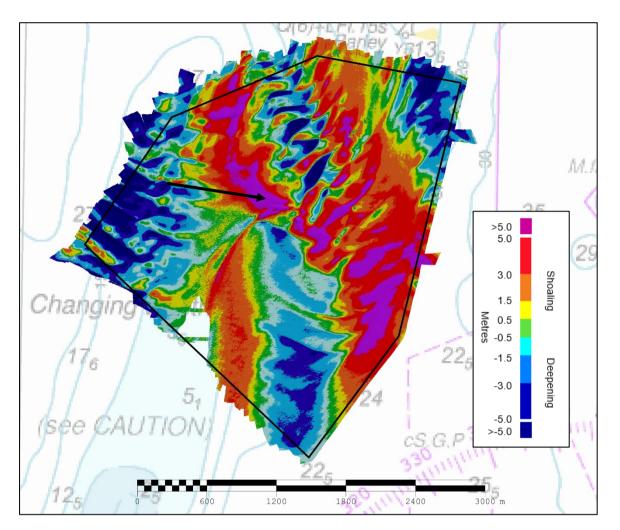


Figure 4: Difference surface of EA7A showing bathymetric changes between the 2020 and 2023 surveys overlaid on BA Chart 1543 (Black arrows represent sediment migration since 2020 survey)

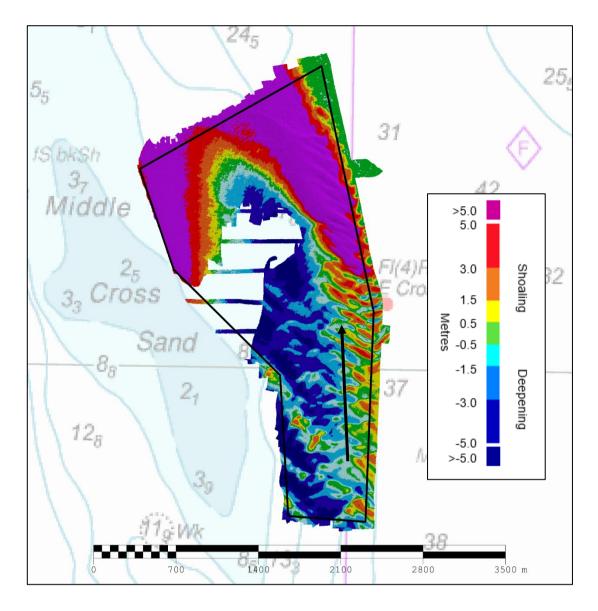


Figure 5: Difference surface of EA7B showing bathymetric changes between the 2020 and 2023 surveys overlaid on BA Chart 1543 (Black arrows represent sediment migration since 2020 survey)

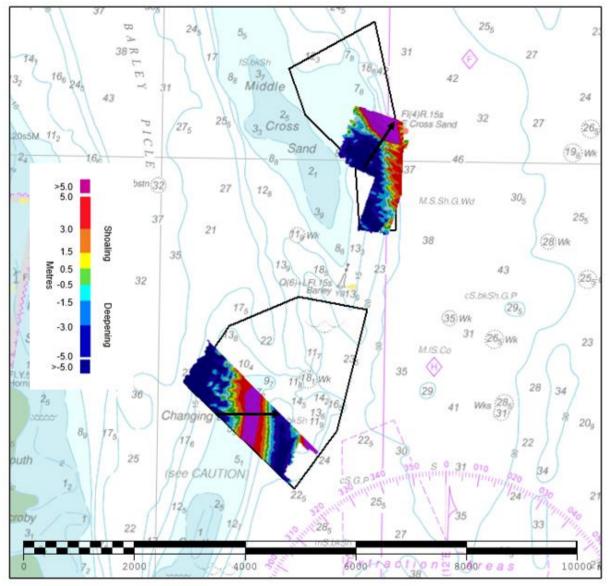


Figure 6: Difference surface of EA7A & EA7B showing bathymetric changes between the 2017 and 2023 surveys overlaid on BA Chart 1543 (Black arrows represent sandwave migration since 2017 survey)

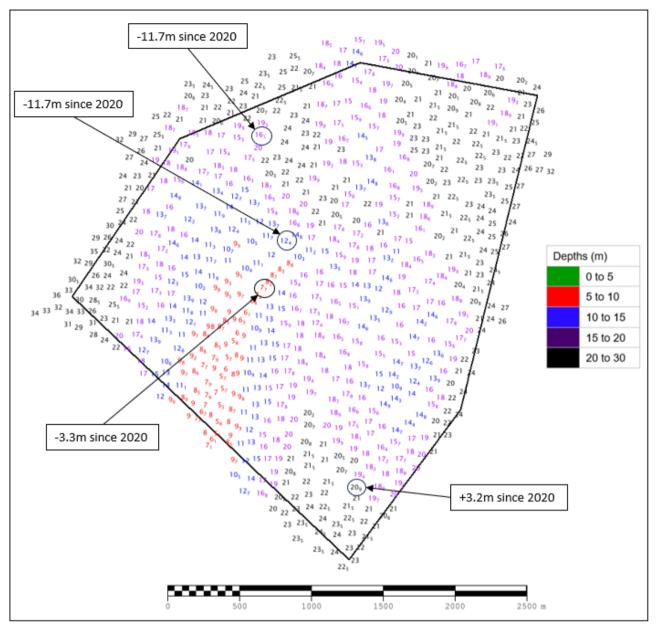


Figure 7: Colour banded depth plot of EA7A from the 2023 survey with selected depth changes since the 2020 survey. Positive values (+) represent deepening. Negative values (-) represent shoaling.

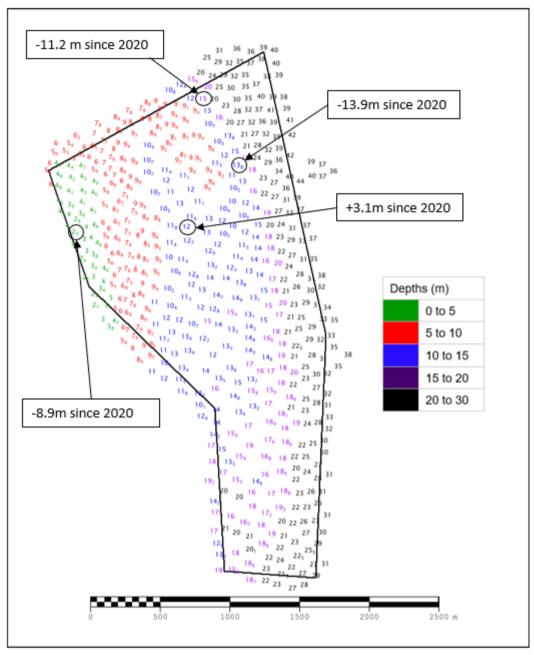


Figure 8: Colour banded depth plot of EA7B from the 2023 survey with selected depth changes since the 2020 survey. Positive values (+) represent deepening. Negative values (-) represent shoaling.

# 6. RECOMMENDATIONS FOR FUTURE SURVEYS

## **Survey Interval**

6.1 It is recommended that the survey intervals remain the same, with the full EA7 survey every 12 years (though next full survey due in 2026 due to changes seen) and the EA7A and EA7B focused surveys every 3 years. Revision of intervals may be required after 2026.

## Survey Area

6.2 The EA7 full and EA7A focused areas should remain the same. EA7B may need revising following the 2026 EA7 full survey due to the migration of Middle Cross Sand to the northeast.