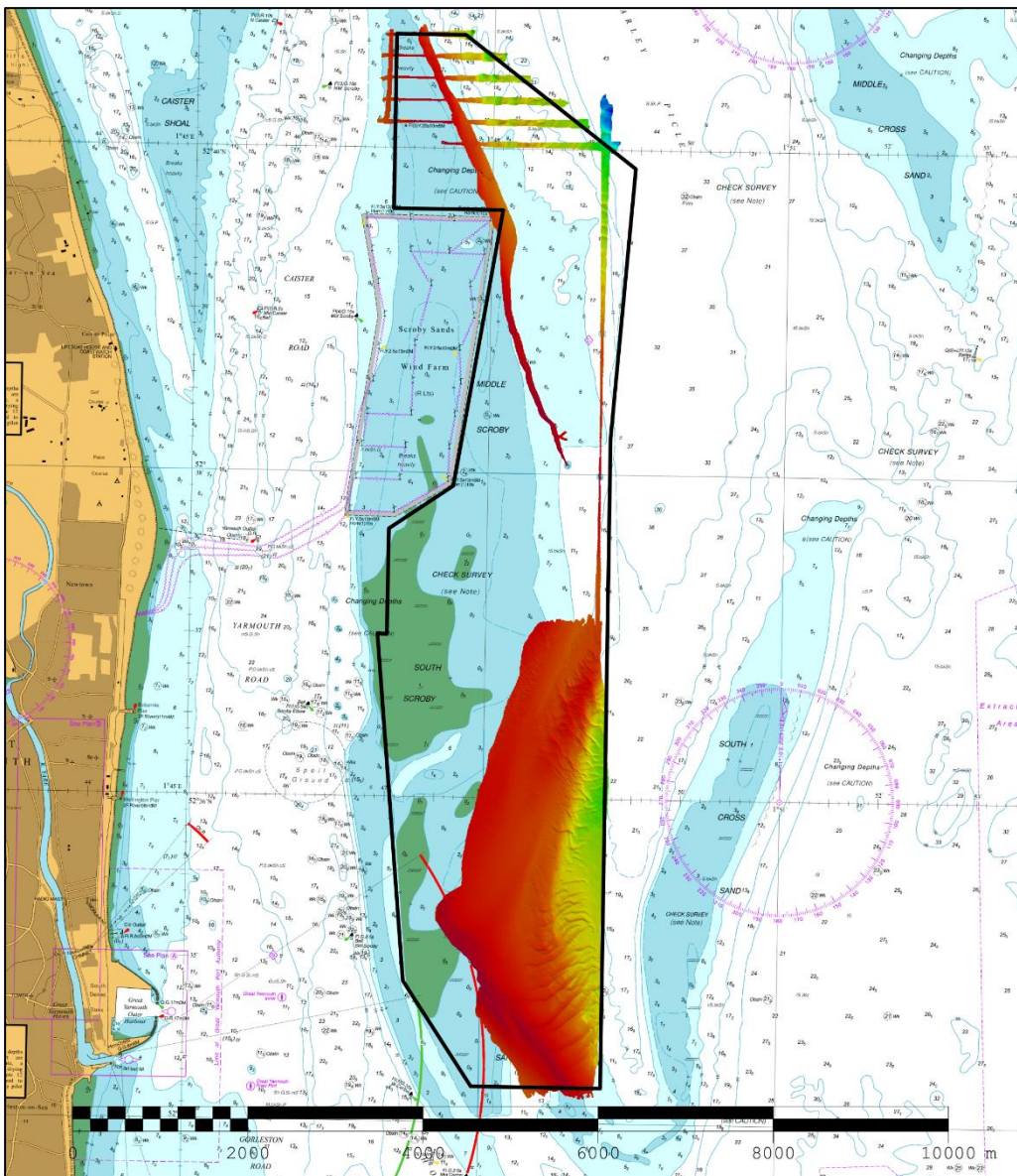




UK Hydrographic
Office

EAST ANGLIA EA5 SCROBY SANDS FULL 2023 ASSESSMENT

An assessment of the 2023 hydrographic survey of the area EA5 Scroby Sands Full: to monitor recent seabed movement; to identify any implications for shipping; and to make recommendations for future surveys.



CONTENTS

Notes	2
1. SUMMARY	1
2. LOCATION	1
3. REFERENCE SURVEY DETAIL	3
4. NEW SURVEY DETAIL	4
5. DESCRIPTION OF RECENT BATHYMETRIC CHANGE	4
6. RECOMMENDATIONS FOR FUTURE SURVEYS	17
7. APPENDIX	19

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.

EA5 SCROBY SANDS FULL, 2023

1. SUMMARY

Changes Detected

- 1.1 Shoalest parts of bank have become slightly deeper.
- 1.2 Crest of bank has moved eastwards by around 1km in some areas.

Reasons for Continuing to Resurvey the Area

- 1.3 Depths in the area remain hazardous and changeable to deep draught vessel navigating the area and therefore require continued monitoring through regular resurveys.

Recommendations

- 1.4 Given the substantial movement of the bank, it may be appropriate to increase the frequency of the survey.
- 1.5 The survey area should be extended further east (up to EA7) to cover the extents of the charted bank and expected future movement, and to ensure no gap between EA5 and EA7.

2. LOCATION

- 2.1 Survey interval at time of resurvey: 12 years
- 2.2 Area Covered: 8.8 km²

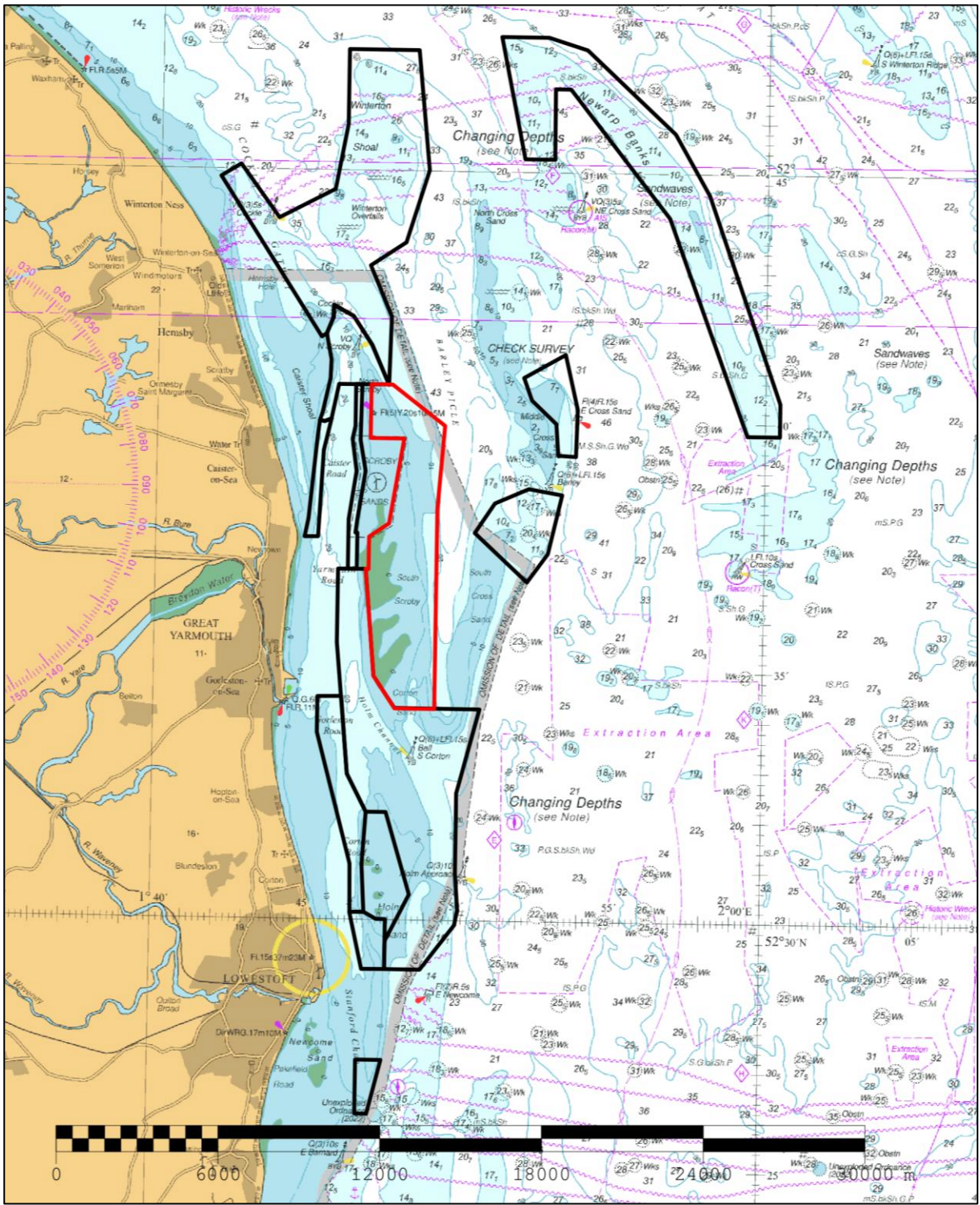


Figure 1: 2023 East Anglia Routine Resurvey areas overlaid on BA Chart 106, 1534 & 1535 with area EA5 in red

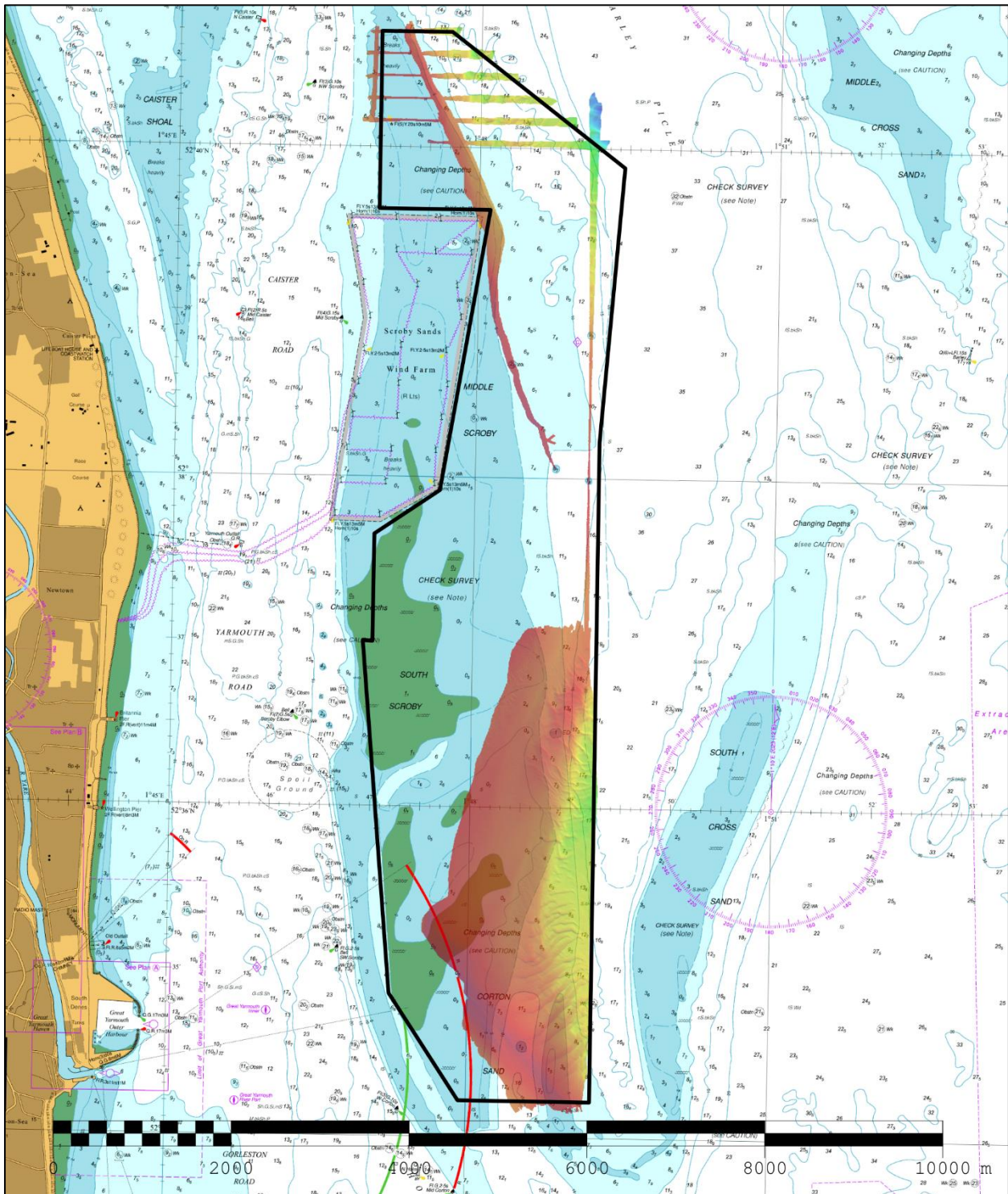


Figure 2: 2023 survey data overlaid on BA Chart 1534.

3. REFERENCE SURVEY DETAIL

3.1 This area was previously surveyed in the following Routine Resurvey programs: The previous full survey was conducted as part of the 2011 RRS as part of HI1367 EA5, between 26/5 and 26/06/2011. This area was surveyed as single-beam checklines in the 2013 RRS as part of HI1432, between 18/11 and 28/11/2023. This area was partially covered by HI1545 EA5A (27/05 – 26/09/2017).

- 3.2 Note that this area has not been completely surveyed with a MBES survey. HI1367 only covered approximately half the current EA5 area. HI1432 covered the whole of the current EA5 area, but with SBES at c. 300m line spacing.
- 3.3 Two full surveys of EA9 Holm Channel area also overlap with a section of EA5 in the south of the area. These surveys were conducted in 2014 between June and September as part of HI1458, and in 2011 between May and July as part of HI1367.
- 3.4 The Report of Survey for these surveys are 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 The latest survey is part of HI1825, surveyed between September and October 2023. HI1828 EA9 Holm Channel data, surveyed between August and September, is also used in this report.
- 4.2 The Report of Survey for these surveys are 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 Between South Scroby and Corton Sands in the south of the survey area, sediment appears to have moved significantly westward, potentially outside of the survey area as surveyed depths are now deeper. The eastern side of South Scroby has moved east into the Barley Picle channel, making the seabed much shoaler than currently depicted on the chart. The movement has resulted in some areas becoming shoaler by 10 to 15m.
- 5.2 In the north of the survey area, the crosslines show that the bank at this end has deepened slightly compared to charted data. At North Scroby, the 2m contour has moved south by approximately 1km, and the least depth has deepened by 0.7m (0.6m to 1.3m), although this is based on very limited coverage. The 5m and 10m contours have not changed significantly. See Figure 3, 10, 11 and 12.
- 5.3 At the NE corner of Scroby Sands Windfarm, the 5m contour appears to have moved westwards by approximately 300m, although this is hard to judge accurately as there is little overlap here with the survey. See Figure .
- 5.4 At Middle Scroby, and South Scroby the bank has moved east. The 5m contour has moved east by about 700m. The 2m contour has moved east by 500 – 900m. There are now <2m shoals in areas that were previously over 10m. See Figure 3, 4, and 10. This sand bar is now moving into the Barley Picle channel depicted on the chart and will require adjustments to the survey area to analyse whether this is continued migratory behaviour (see Section 6).
- 5.5 Between South Scroby and Corton Sand, it appears as if the tail end of South Cross Sand is merging with Corton Sand, see Figure 9. Serious shoaling can be seen compared to what is charted, with depths of 1.4m outside the 10m contour (Figure 4). This area was also covered by the EA9 surveys in 2011, 2014, allowing for some extra analysis of this area. Looking at the current survey data from EA5 and EA9 (Figure 2 and 9) one large sandbank appears to have formed, made from the merging of the tail of South Cross Sand and Corton Sand.

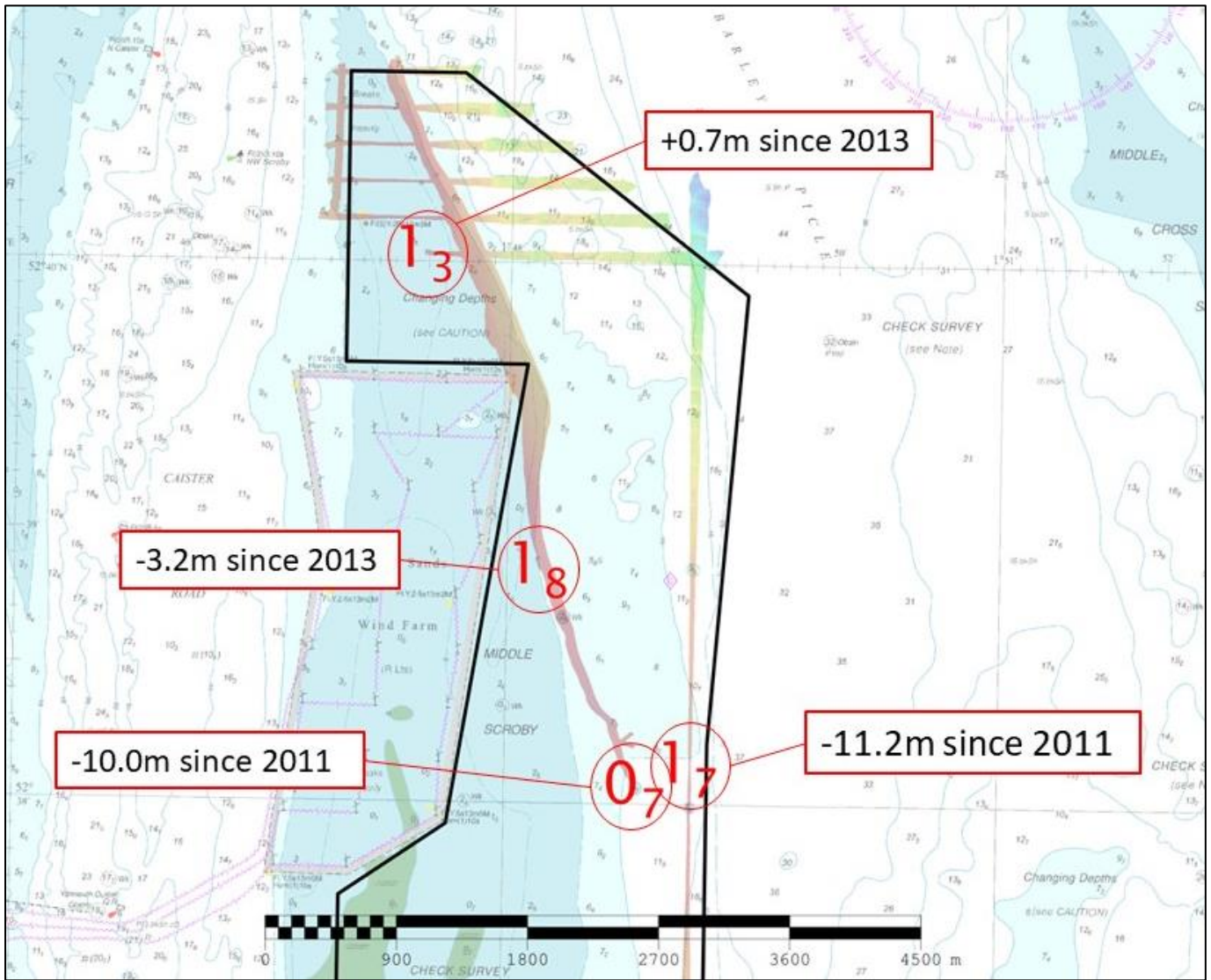


Figure 3: North part of survey: Significant Depth soundings highlighted, overlaid on BA Chart 1534. 2023 Data overlaid to show coverage.

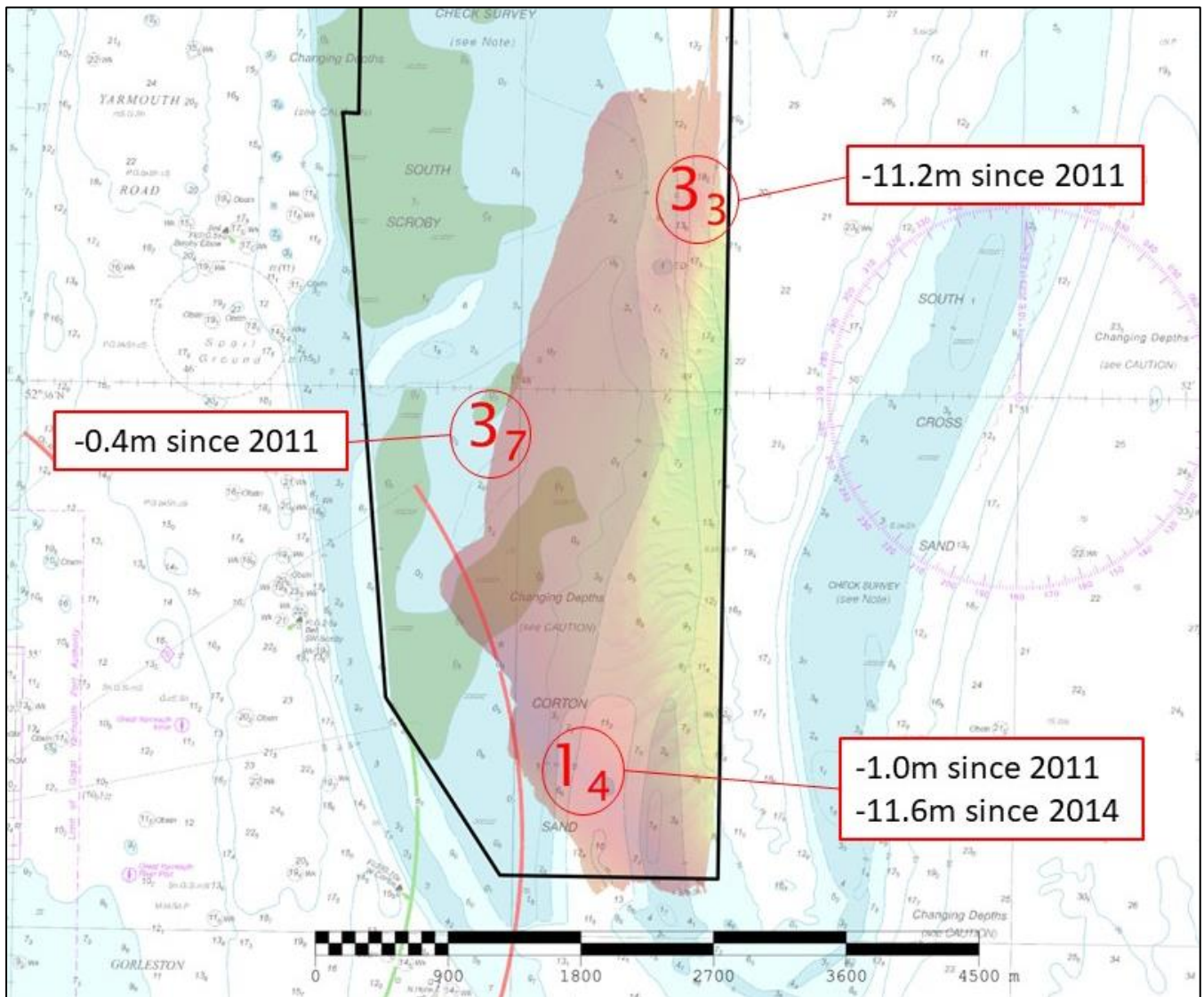


Figure 4: South part of survey: Significant Depth soundings highlighted, overlaid on BA Chart 1534. 2023 Data overlaid to show coverage.

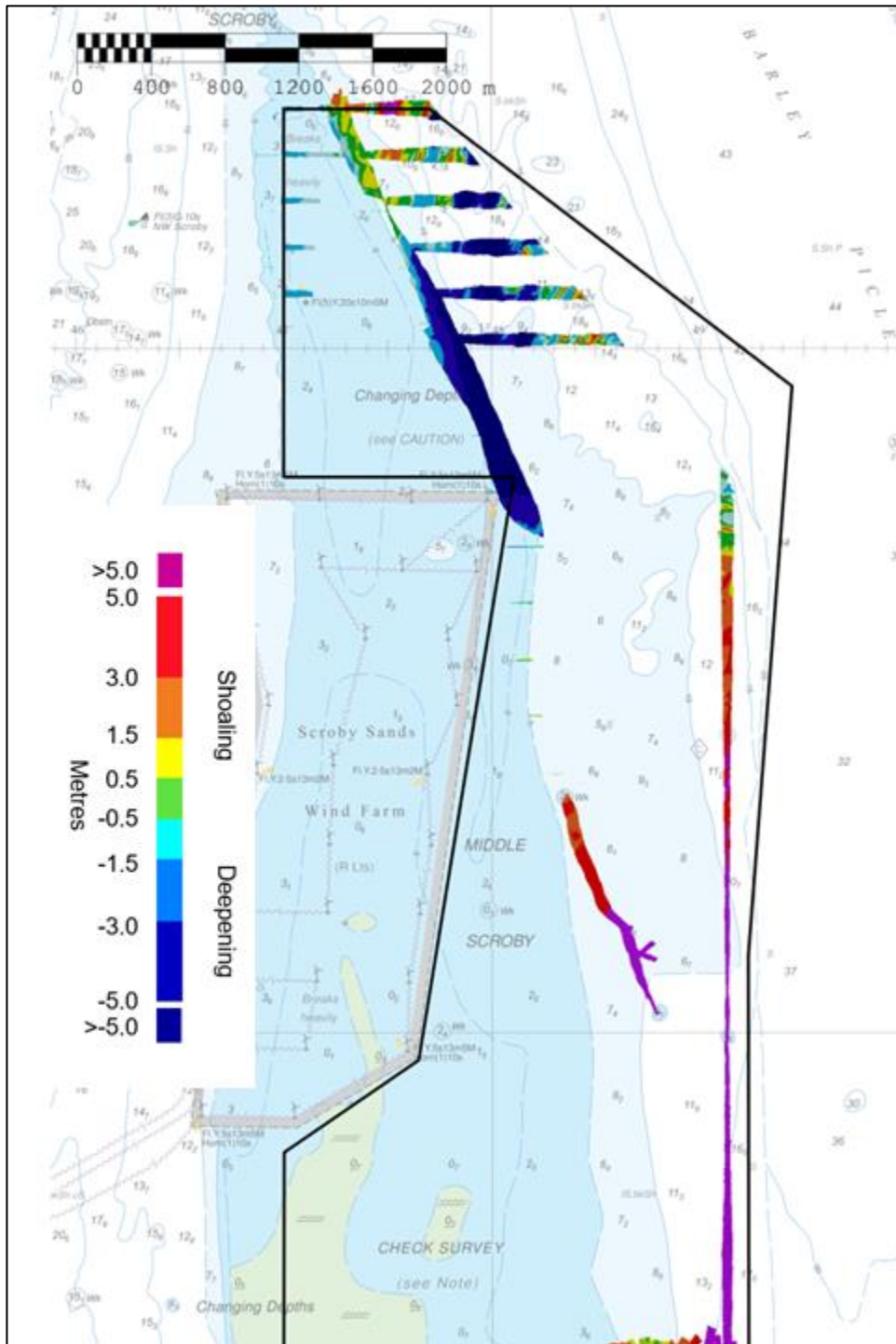


Figure 5: North part of survey: Difference surface showing bathymetric changes between the 2011 and 2023 surveys overlaid on BA Chart 1534.

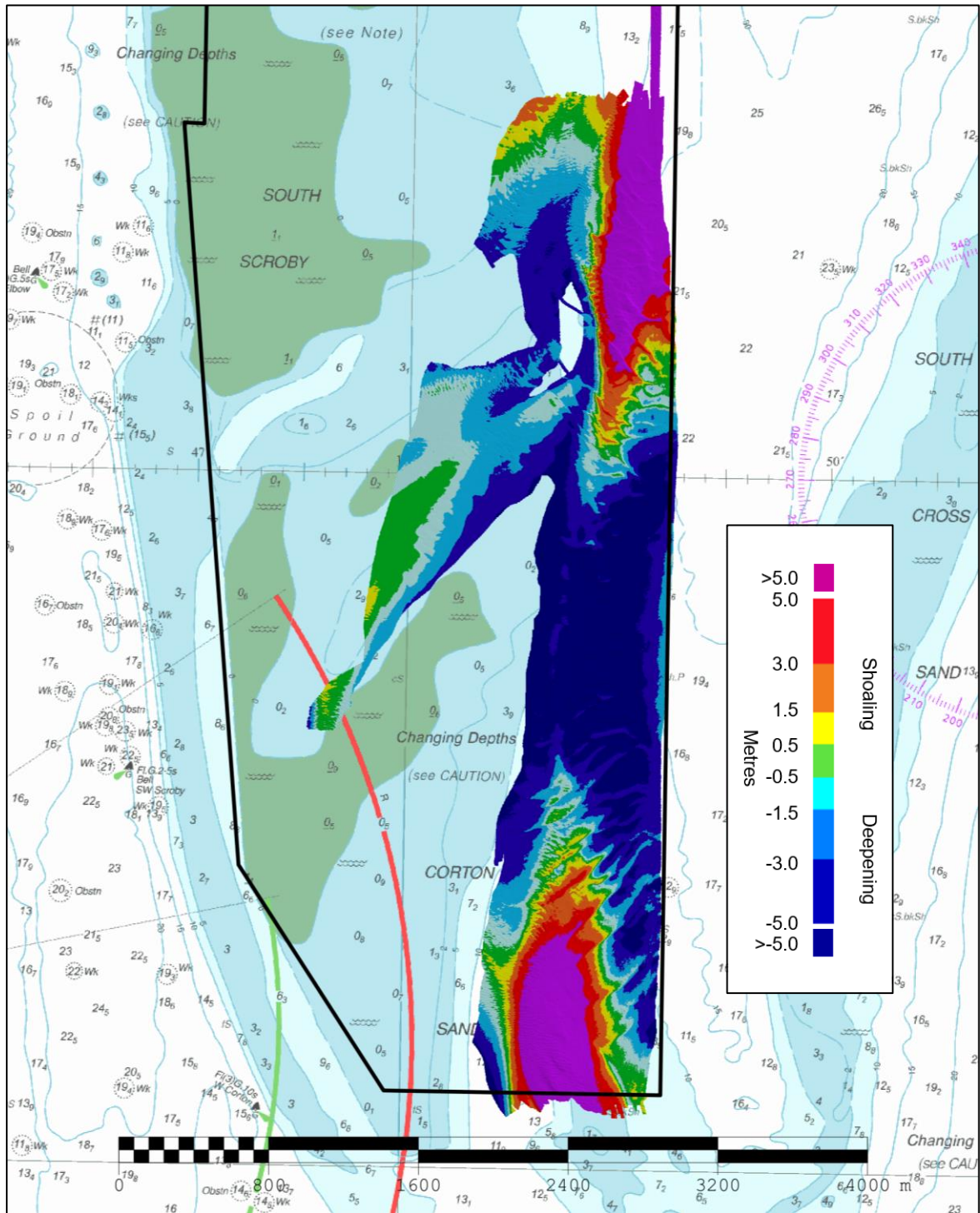


Figure 6: South part of survey: Difference surface showing bathymetric changes between the 2011 and 2023 surveys overlaid on BA Chart 1534.

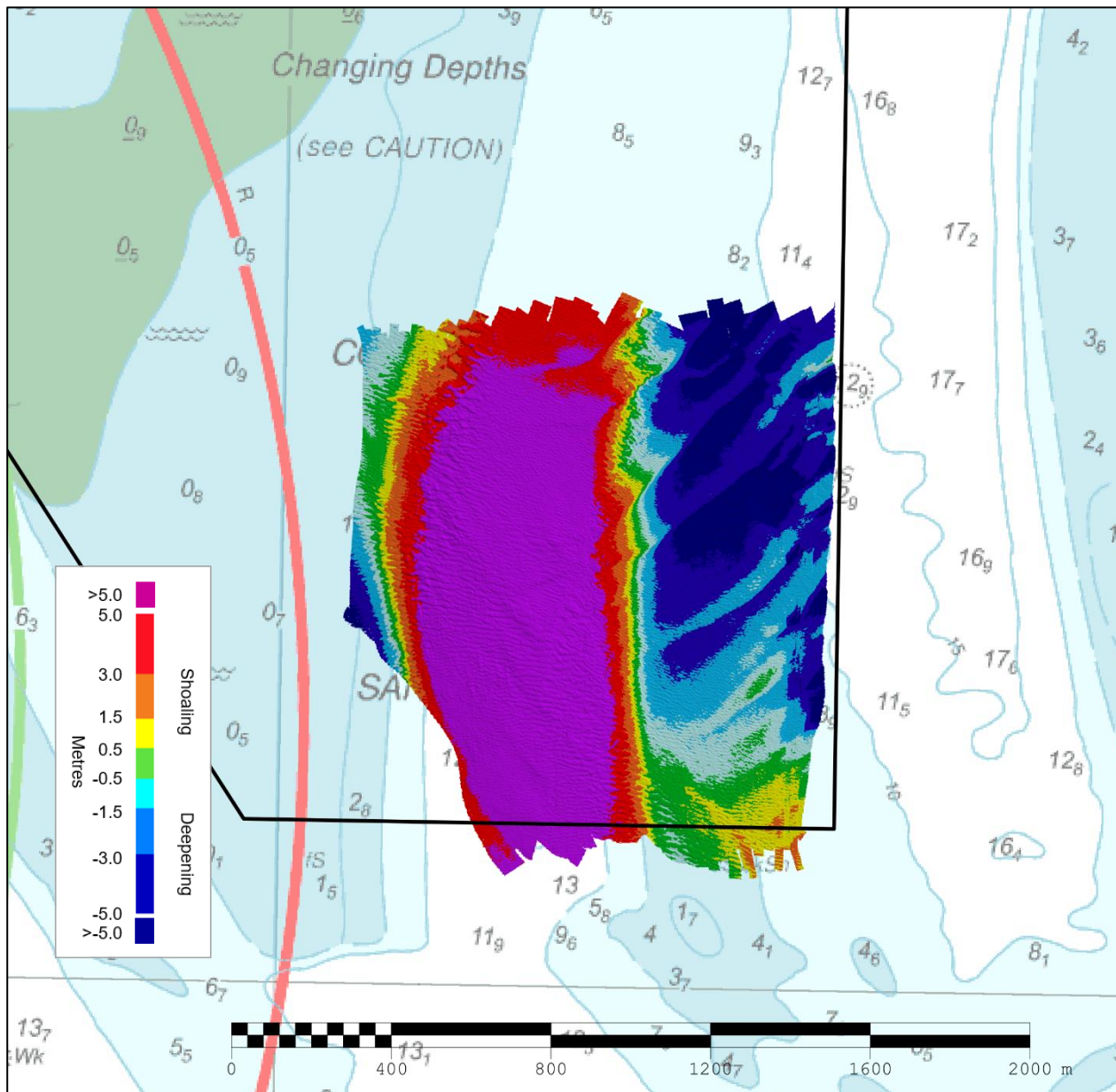


Figure 7: South part of survey: Difference surface showing bathymetric changes between the 2014 EA9 Holm Channel and 2023 EA5 Scroby Sands surveys overlaid on BA Chart 1534.

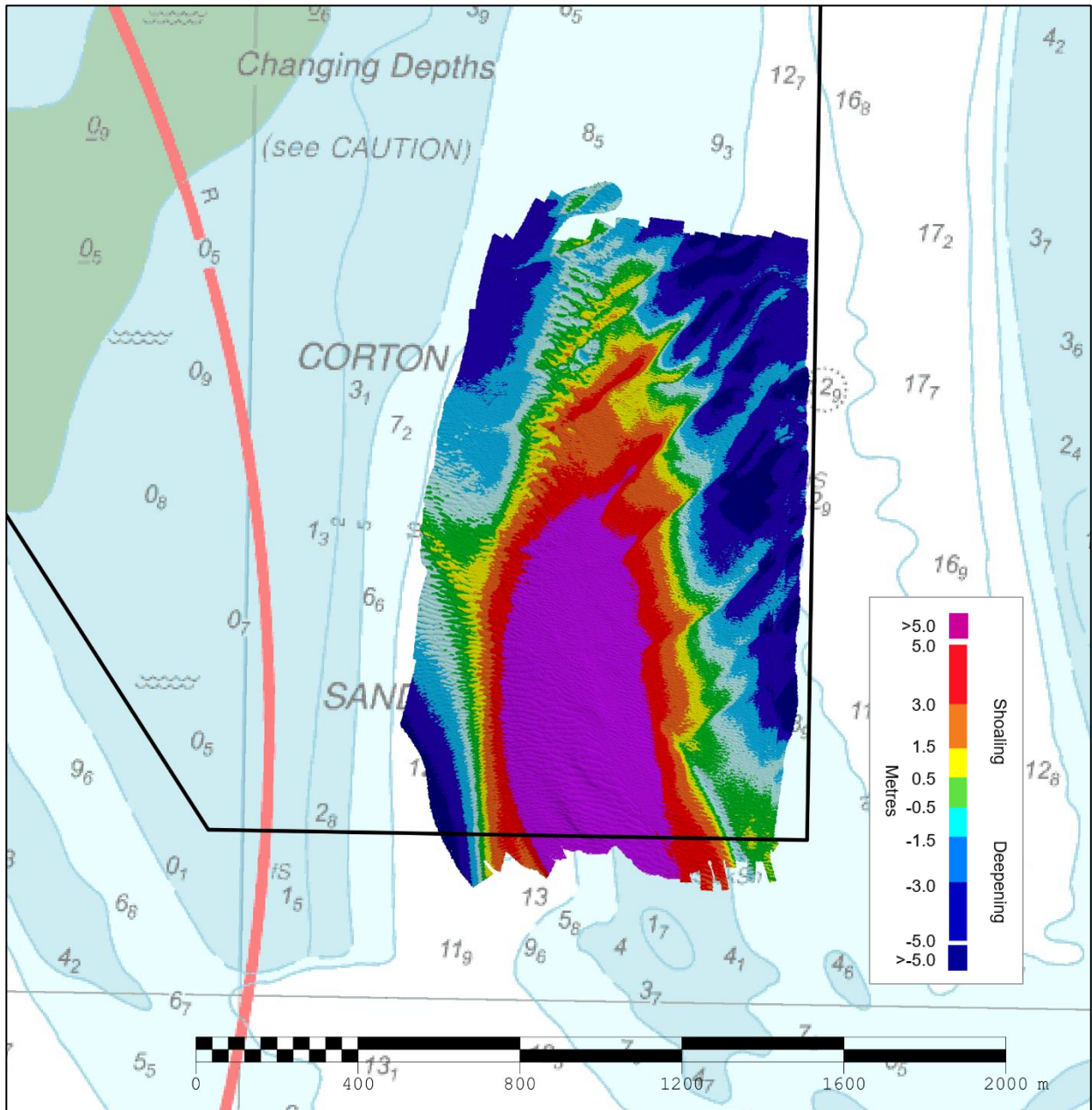


Figure 8: South part of survey: Difference surface showing bathymetric changes between the 2011 EA9 Holm Channel and 2023 EA5 Scroby Sands surveys overlaid on BA Chart 1534.

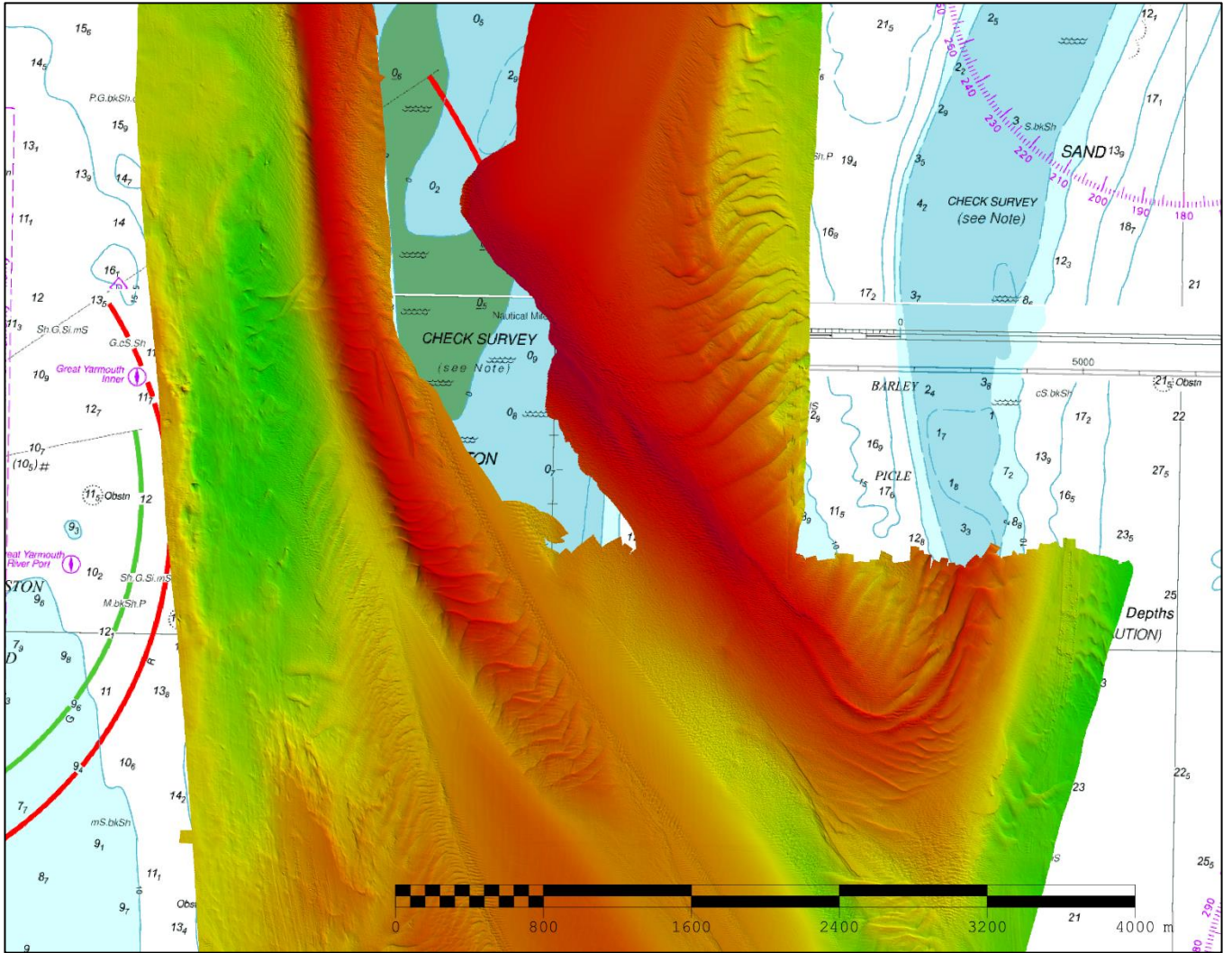


Figure 9: Overview of South Cross Sand and Corton Sand area to show the features in more detail [Vertical Exaggeration = 3].

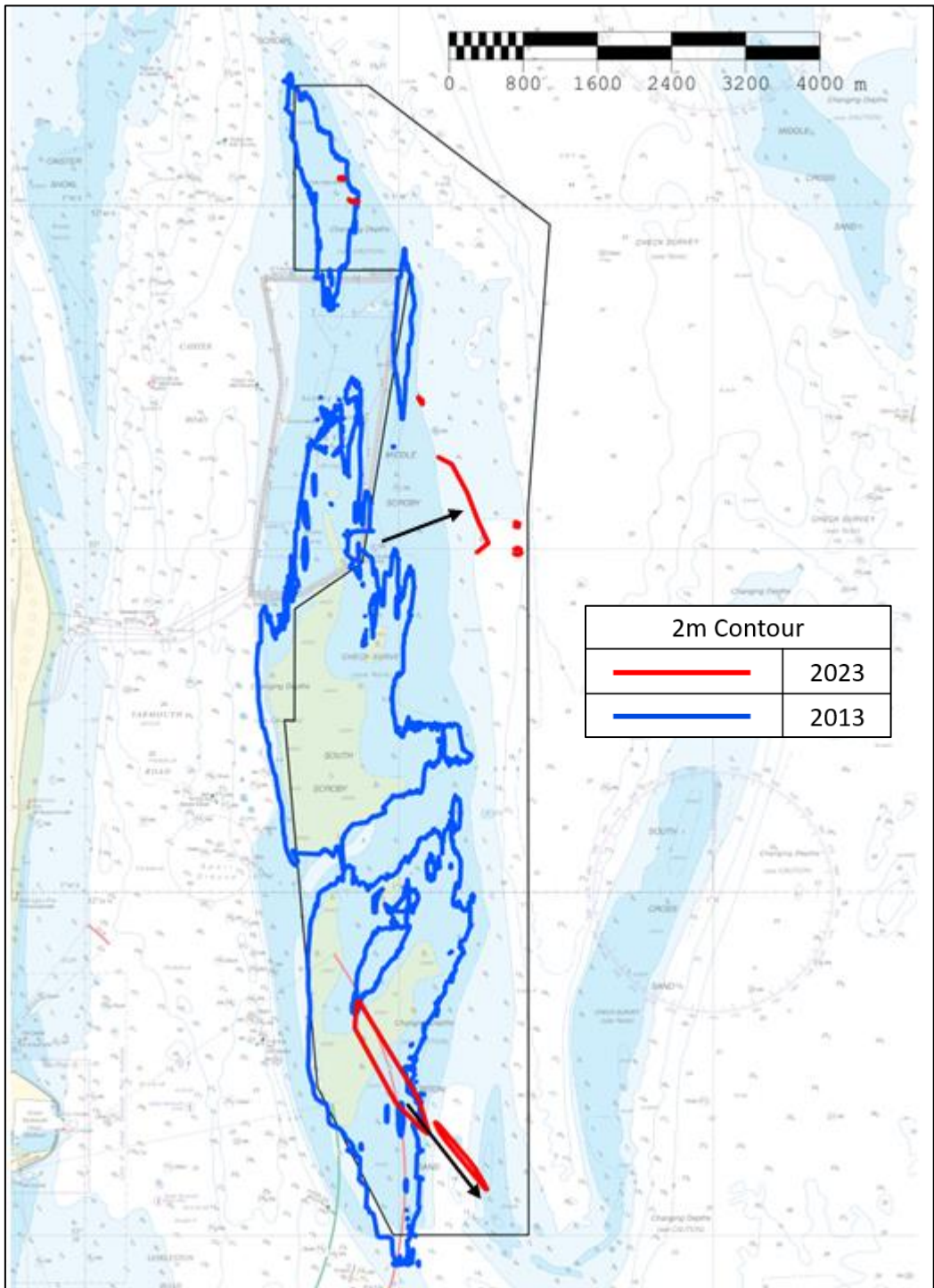


Figure 10: Contour plot showing changes in the 2m contours between 2013 (blue) and 2023 (red). Black arrow represents feature migration.

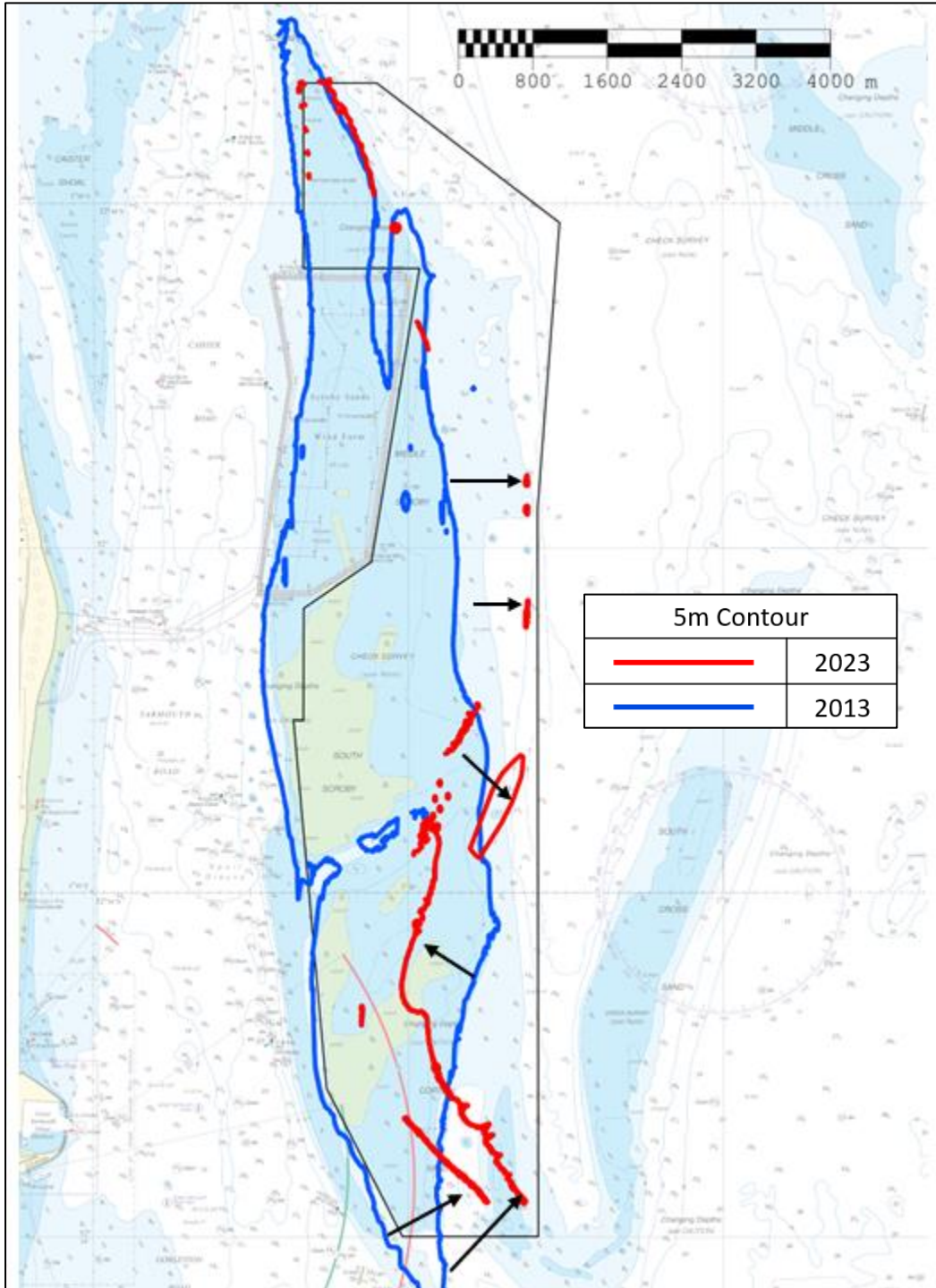


Figure 11: Contour plot showing changes in the 5m contours between 2013 (blue) and 2023 (red). Black arrow represents feature migration.

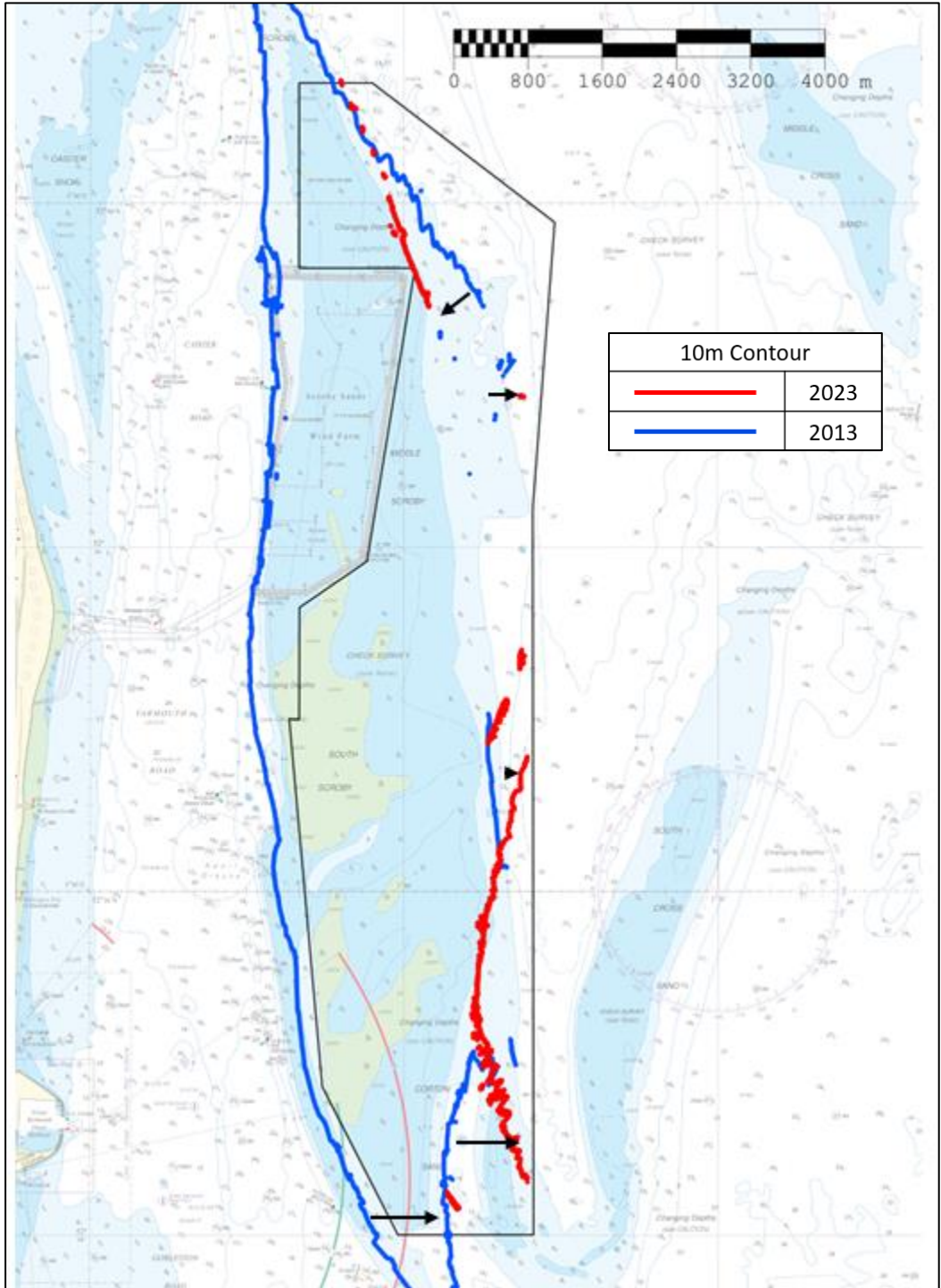


Figure 12: Contour plot showing changes in the 10m contours between 2013 (blue) and 2023 (red). Black arrow represents feature migration.

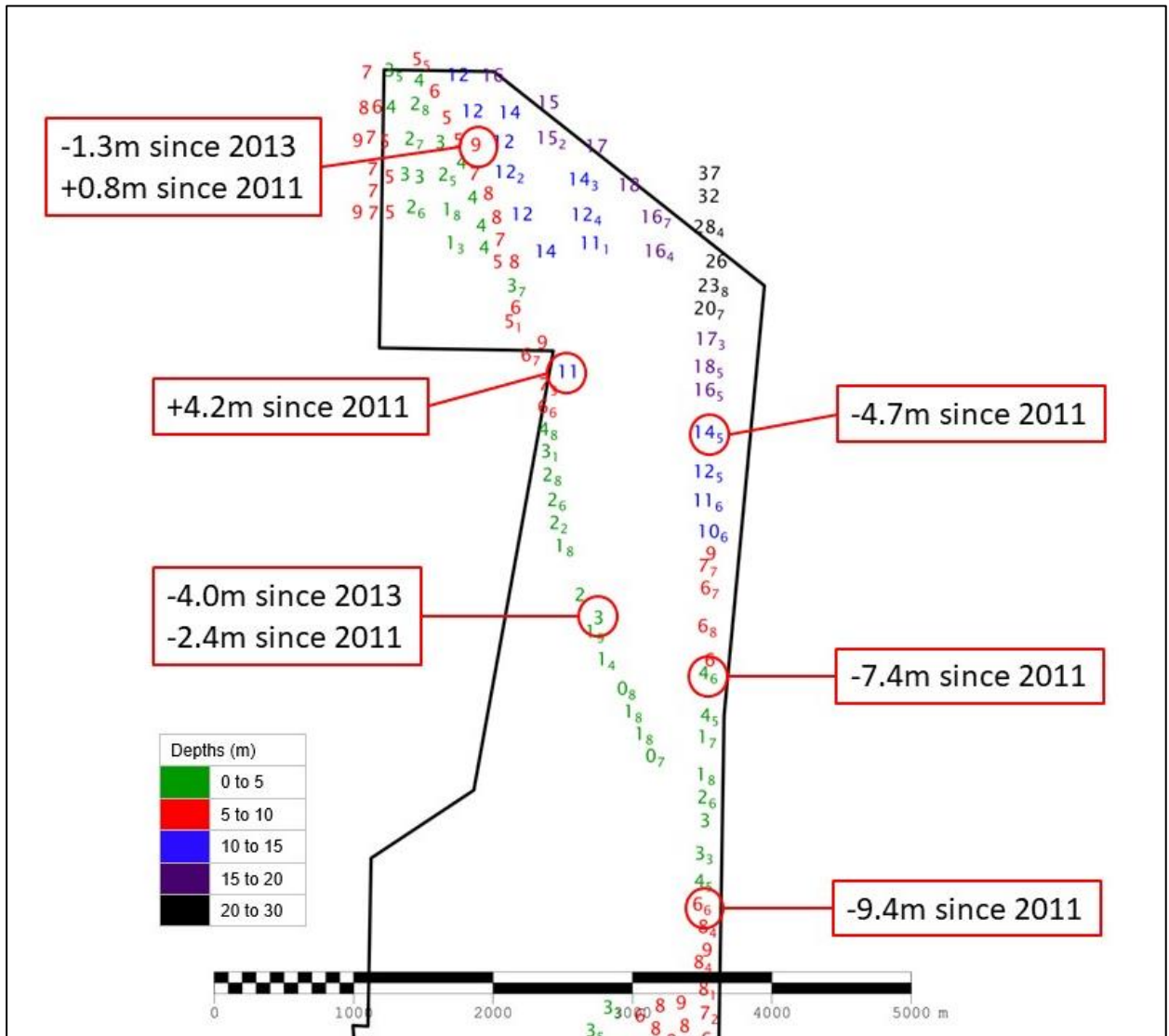


Figure 13: Colour banded depth plot from the North section of the 2023 survey with selected depth changes since the 2013 surveys. Positive values (+) represent deepening. Negative values (-) represent shoaling.

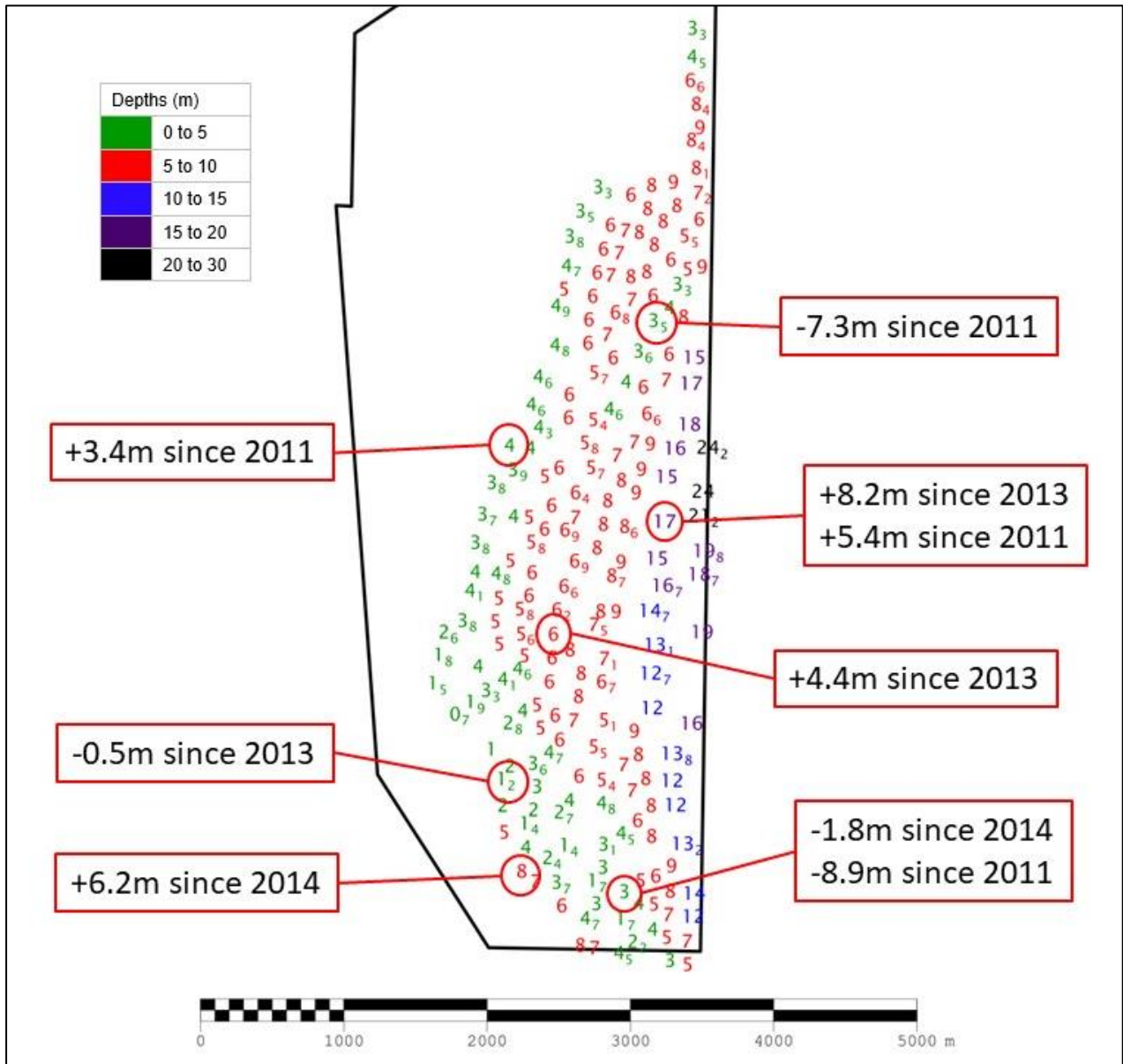


Figure 14: Colour banded depth plot from the South of the 2023 survey with selected depth changes since the 2013 surveys. Positive values (+) represent deepening. Negative values (-) represent shoaling.

6. RECOMMENDATIONS FOR FUTURE SURVEYS

Survey Interval

- 6.1 Due to incomplete coverage in 2023, the north area of EA5 should be surveyed in 2024 (see Appendix for area limits and coordinates), as well as the SW corner of the southern area that was unable to be captured.
- 6.2 After this, it is advised that the survey interval of checklines should be reviewed after the EA5 North area survey and analysis in 2024/5. However, it is currently suggested that the checklines should be surveyed on a 3-year interval (to be surveyed in 2027) to monitor changes, and the full area then completed on a 12-year cycle.

Survey Area

- 6.3 Due to significant changes in Corton Sand and South Scroby, it is recommended to extend the full EA5 area to follow the morphology of the features in Barley Picle and to adjoin EA7 Cross Sands. (EA7 amendments to also follow this will be discussed at CHWG 2023/4).

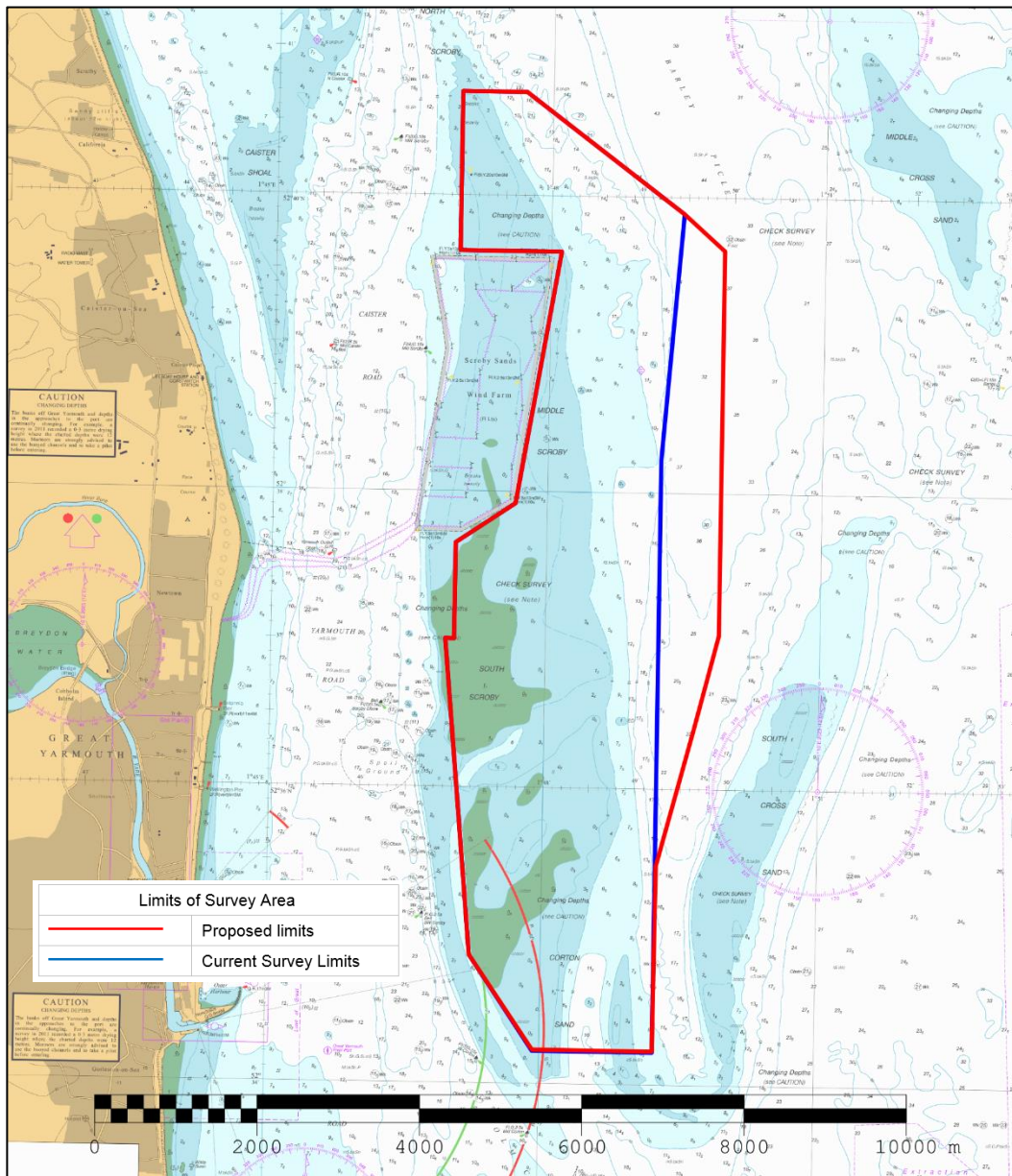


Figure 75: Recommended changes to survey limits of EA5 Full area.

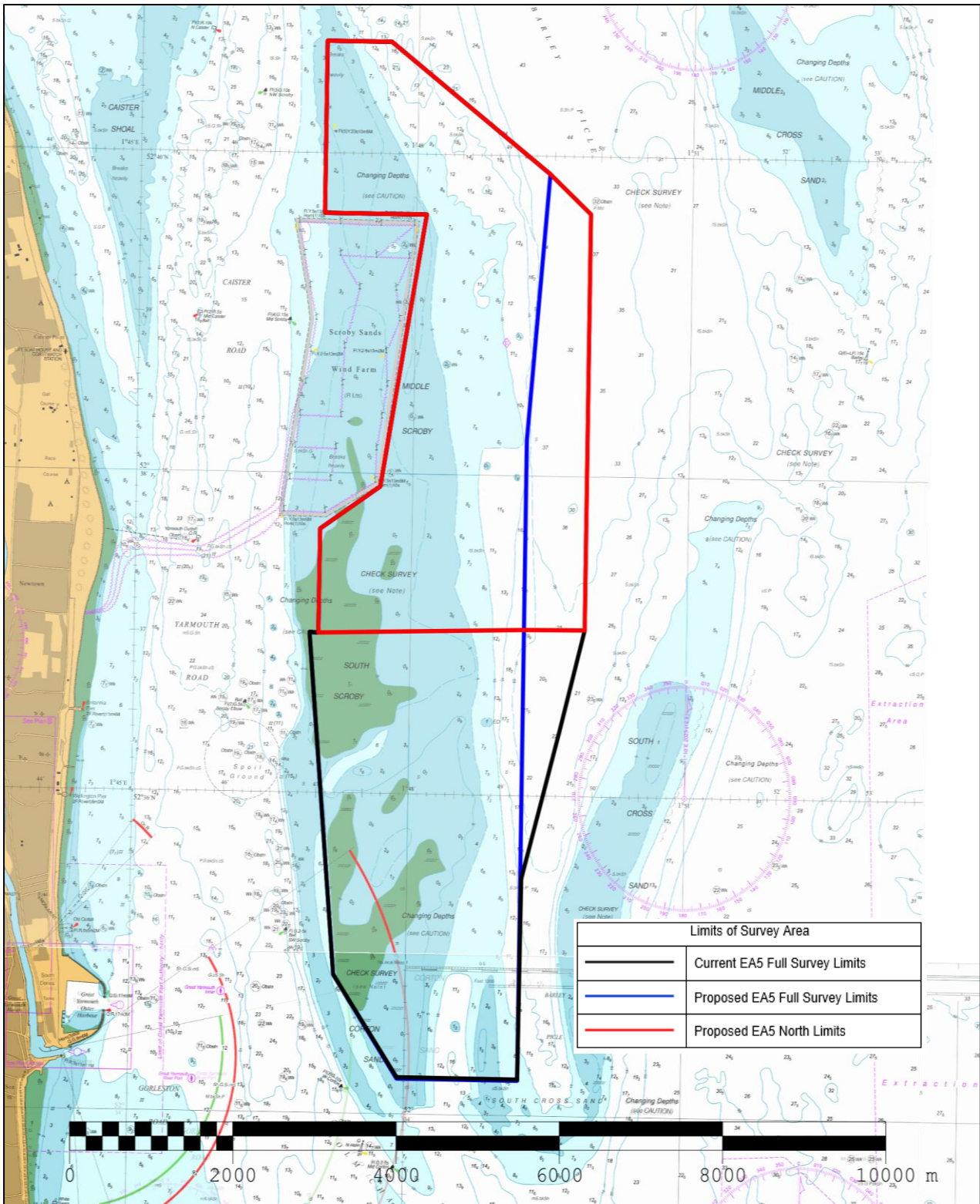
The coordinates of the recommended adjusted survey area limits for the 12-year full area EA5 are shown below:

EA5 total area: 29.69 km²

	Latitude	Longitude
1	52.616670N	001.783330E
2	52.627510N	001.783365E
3	52.632000N	001.794130E
4	52.660400N	001.801780E
5	52.660400N	001.783330E
6	52.678330N	001.783330E
7	52.678330N	001.795000E
8	52.664819N	001.824056E
9	52.660706N	001.831514E
10	52.640329N	001.831517E
11	52.617362N	001.831520E
12	52.606683N	001.827184E
13	52.591371N	001.820730E
14	52.570457N	001.820547E
15	52.570490N	001.798755E
16	52.581080N	001.787000E
17	52.616709N	001.781739E

7. APPENDIX

Due to incomplete coverage in 2023/4, the northern section of EA5 should be surveyed in the 2024/5 RRS programme. A polygon has been made to display the suggested EA5 North area, with coordinates listed below:



The coordinates of the recommended temporary survey area limits for EA5 North are shown below:

EA5 North total area: 16.57 km²

	Latitude	Longitude
1	52.616670N	001.783330E
2	52.627510N	001.783365E
3	52.632000N	001.794130E
4	52.660400N	001.801780E
5	52.660400N	001.783330E
6	52.678330N	001.783330E
7	52.678330N	001.795000E
8	52.664819N	001.824056E
9	52.660706N	001.831514E
10	52.637473N	001.831517E
11	52.617362N	001.831520E
12	52.617303N	001.820543E