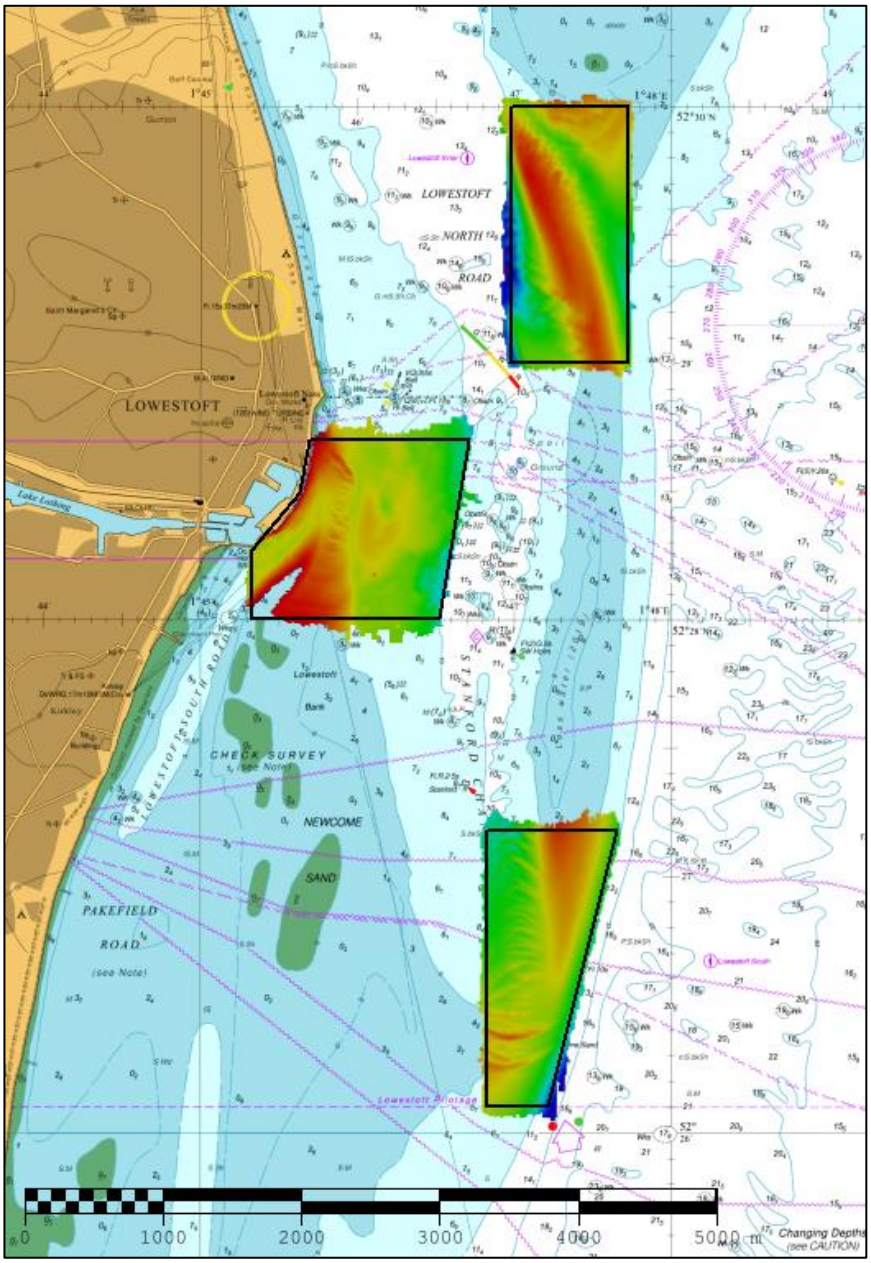
UK Hydrographic Office

# EAST ANGLIA
# APPROACHES TO LOWESTOFT (EA10A, EA10B & EA10C)
# 2021 ASSESSMENT

An assessment of the 2021 hydrographic survey of the focused areas EA10A, B & C: 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 to 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.



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 VORF Model.

**APPROACHES TO LOWESTOFT, 2021**

## 1. SUMMARY

### Changes Detected

1.1 Area A shows some changes with sandwave migration in both north and southward directions at the respective ends of the survey area. A controlling depth of 5.4m at the entrance to the Stanford Channel, between the S Holm and Newcome Sand buoys has been recorded.

1.2 Area B shows little change in the eastern section of the survey area, but some shoaling is evident at the northern tip of the Lowestoft Bank, which has migrated northwest by ~80m. Two significant depths of 4.5m and 4.8m have been shown in the white light sector of the Kirkley direction light.

1.3 Area C has seen the most significant change with the westward migration of the W Holm sand bank, and expansion of the 5m contour northwest by ~500m. Three significant depths of 4.4m, 4.5m, and 5.0m were highlighted in the gap between W Holm Sand and the main Holm Sand area.

### Reasons for Continuing to Resurvey the Area

1.4 Depths in the area remain hazardous and changeable to deep draught vessels navigating the area surrounding Lowestoft and therefore require continued monitoring through annual resurveys.

### Recommendations

1.5 Due to the location of the areas in relation to the approaches to Lowestoft, EA10 focused areas should remain on the annual survey interval.

1.6 Areas A and B adequately cover current areas of seabed change and require no adjustments. However, Area C has experienced a northwest migration trend of the 5m contours on W Holm, moving out of the current survey area and into Lowestoft North Road. Therefore, analysis of the data suggests that the EA10C area be moved and extended northwest to track the movement of the 5m contour. The Full EA10 area will be updated accordingly.

## 2. LOCATION

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

2.2 Area Covered:

Focused area EA10A: 1.38 $km^2$

Focused area EA10B: 1.68 $km^2$

Focused area EA10C: 1.57 $km^2$

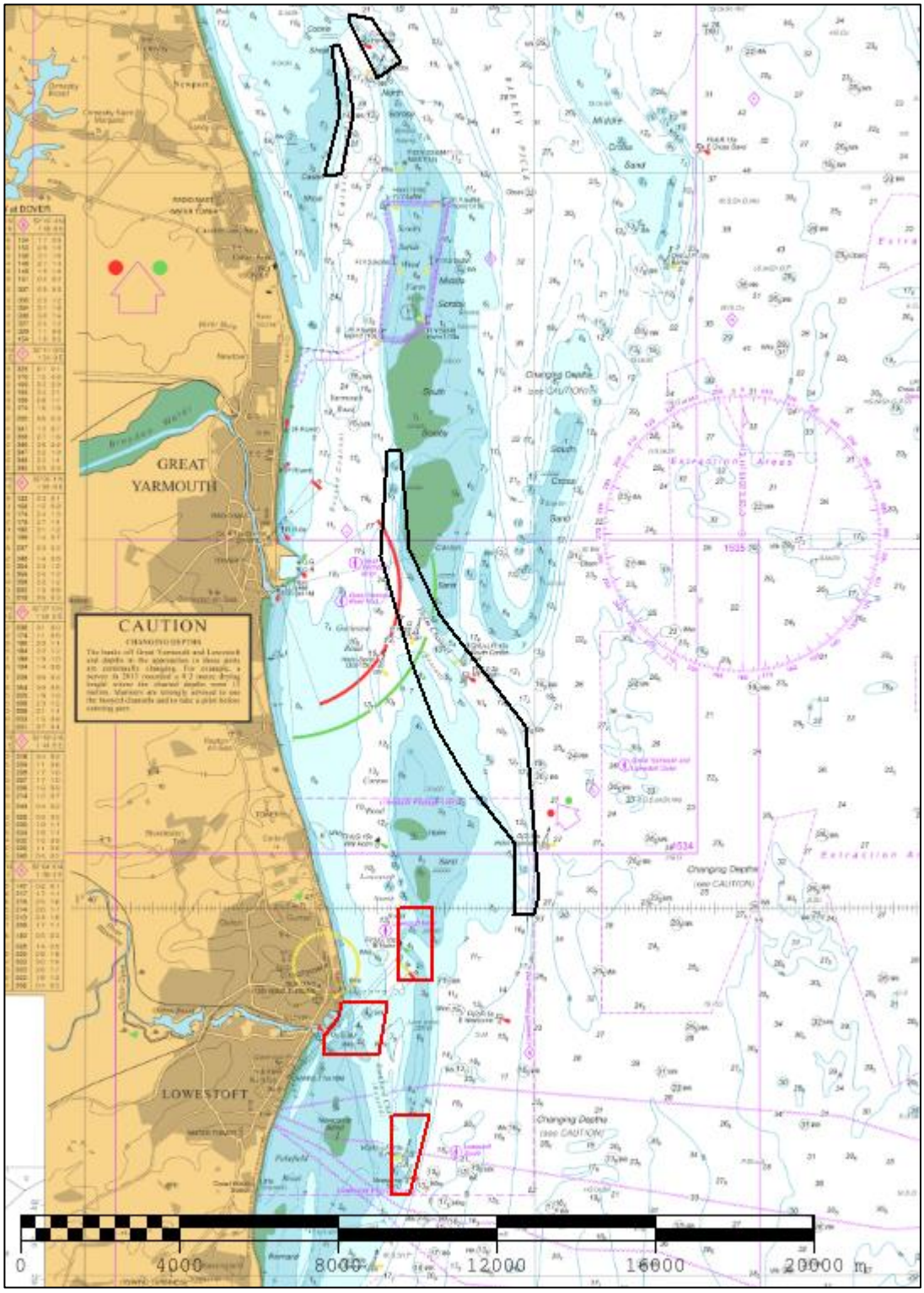


*Figure 1: 2021 East Anglia Routine Resurvey areas overlaid on BA Chart 1543-0 with areas EA10A, EA10B & EA10C in red.*

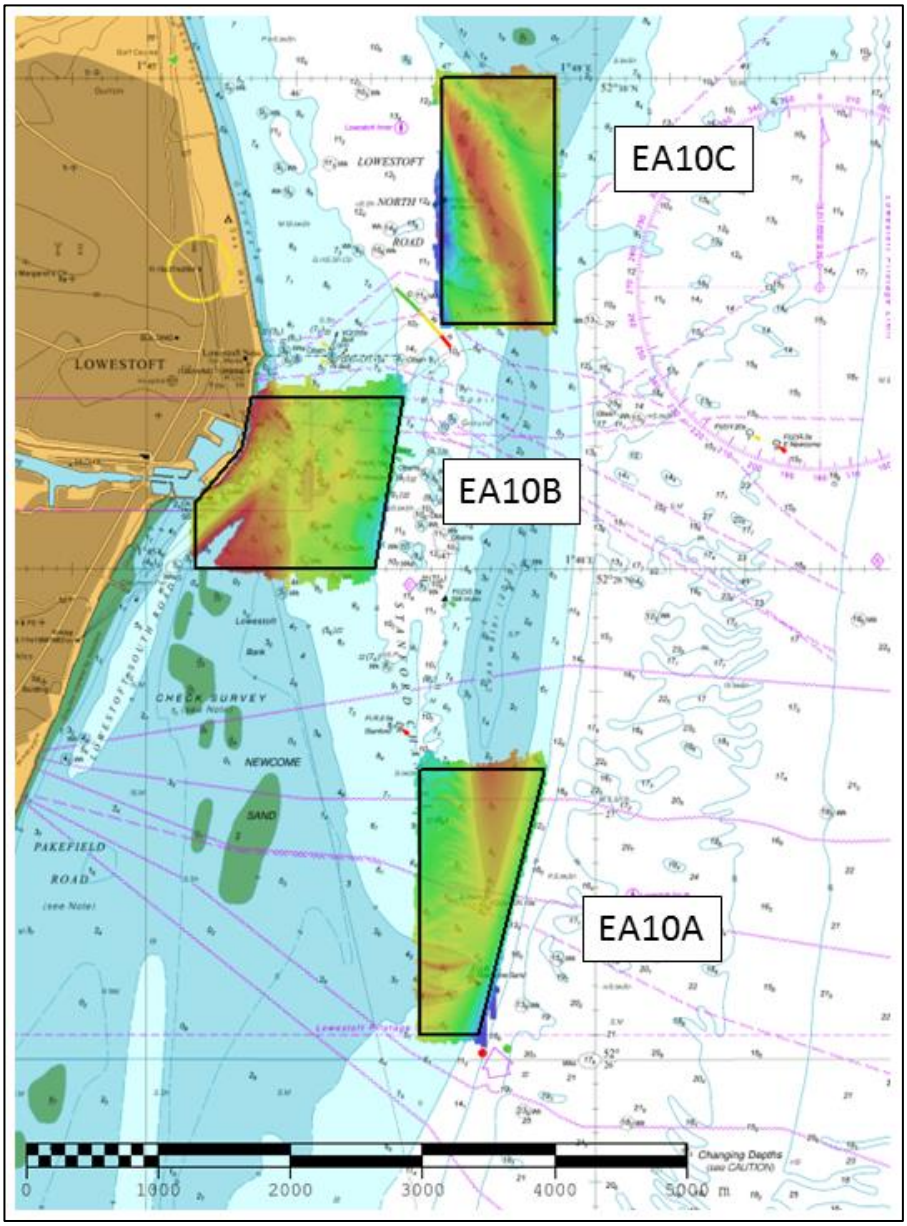


*Figure 2: 2021 survey data overlaid on BA Chart 1535-0*

## 3. REFERENCE SURVEY DETAIL

3.1 The previous focused survey was conducted as part of HI1688 in June 2020, for the 2020 Routine Resurvey Programme, CHP. Another full survey was conducted in September and October 2019 as part of HI1639.

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 The latest focused survey was conducted in September 2021 as part of HI1738 EA10A, EA10B and EA10C Approaches to Lowestoft.

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 Controlling and/or significant depths for each area have been highlighted in Figure 3. For Area A, the route between the Newcome Sand Buoy and the S Holm buoy has a sounding of 5.4m in the middle of the channel (see Figure 4). For Area B, two significant depths of 4.5m and 4.8m were highlighted within the white sector of the Kirkley sector light (see Figure 5). Area C in the north has three depths highlighted, referred to as significant depths, as this area has seen the 5m contours shift significantly. Shoal depths that are relevant to the most likely navigable route have been highlighted as 4.4m, 4.5m and 5m (see Figure 6).

5.2 Area A shows some movement of sandwaves in both the north and southward directions, seen in Figure 8. In Figure 11, the change in the 5m contour shows that the southern section of the sand bank, near the S Holm buoy, has advanced ~150m south.

5.3 Area B shows some shoaling of the northern end of Lowestoft Bank, in the order of 1 to 1.7m in Figure 9. Figure 12 shows little change in the 5m contour, except for a small area of the contour moving ~80m northwest into the area of the white light channel.

5.4 Area C has seen the most significant change over the year. The difference surface in Figure 10 shows the westward movement, indicated by the black arrow, of the sand bank beside the W Holm buoy. Depth changes of up to -8.0m can be seen as the bank shoals and moves NW and deepening of +3.5m in the wake of this migration. Figure 13 shows the significant movement and expansion of the 5m contour in Area C. The 5m contour of the sand bank has extended northwest by around ~500m into Lowestoft North Road., whereas the 5m contour on the northeast side of the survey area has retreated ~200-250m north-eastwards.

5.5 The colour banded depth plots for the focused areas show the previously mentioned changes in depths. Area A overall shows a low range of change, with the most significant shoaling of >1.5m difference seen by the sandwave mobility both southward near the Newcome Sand buoy, and northward entering the Stanford Channel.

5.6 The majority of the depths in Area B have seen little change, with differences in the order of +/- 0.1m in the east side of the survey area. The northern tip of Lowestoft Bank shows the most changes, with the highest depth difference of -1.69m shoaling.

5.7 Figure 16 shows some of the changes noted in previous images for Area C, however large changes due to the migration of the W Holm sand bank have been highlighted in red, to show change due to mobility (-8.9m in some places).

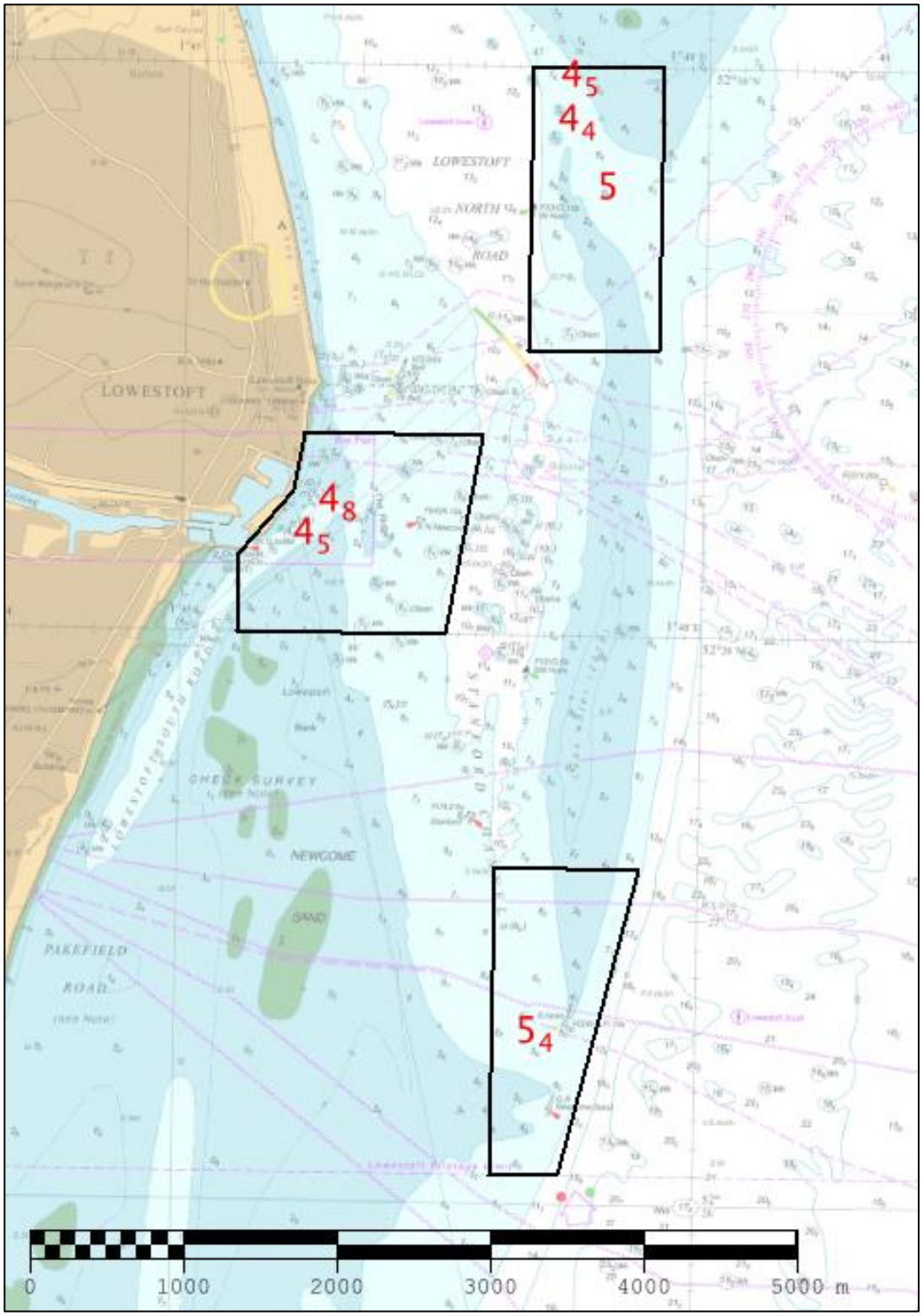


*Figure 3: Controlling/Significant Depth soundings highlighted, overlaid on BA Chart 1535-0.*

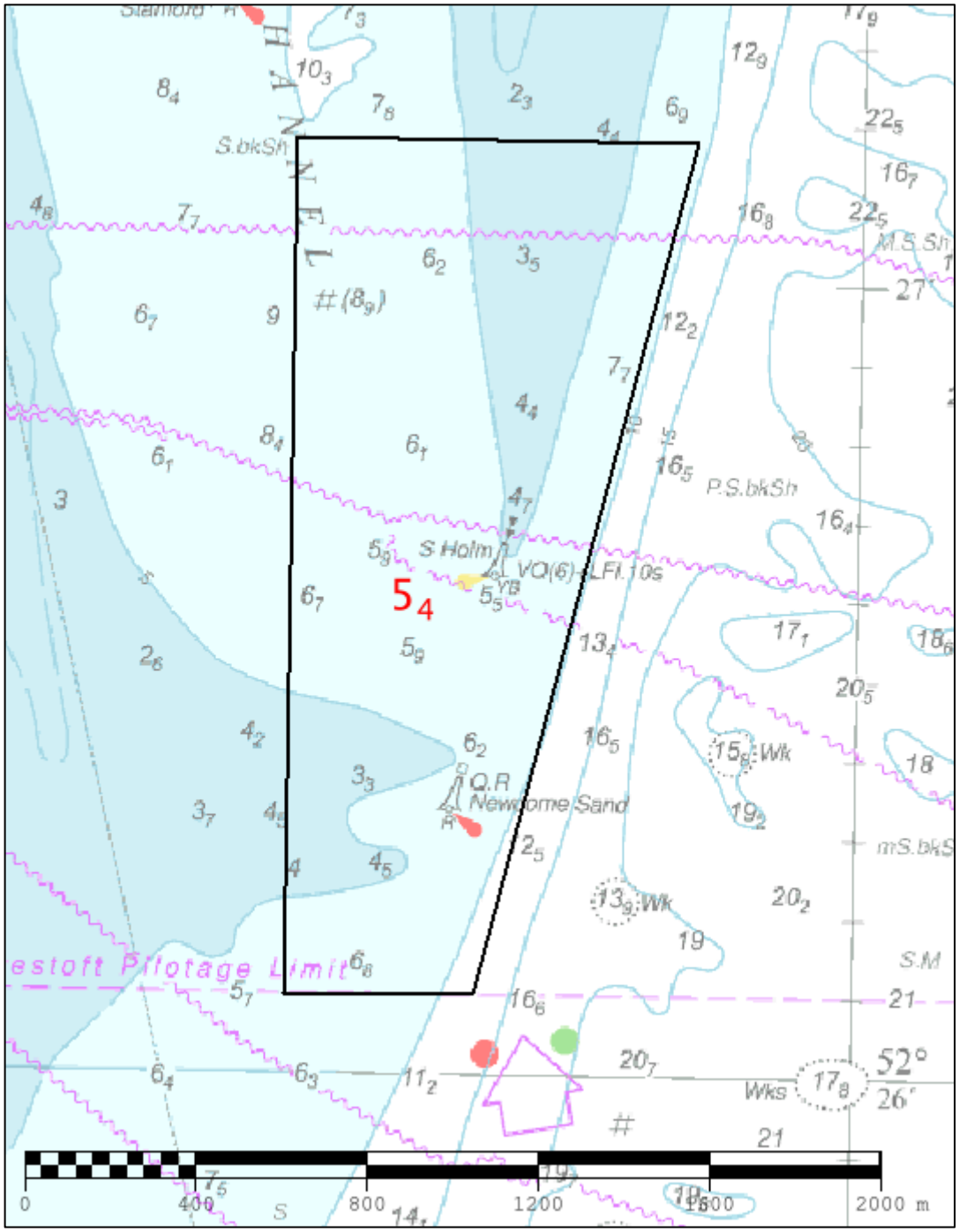


*Figure 4: Controlling Depth highlighted in Area A, overlaid on BA Chart 1535-0.*

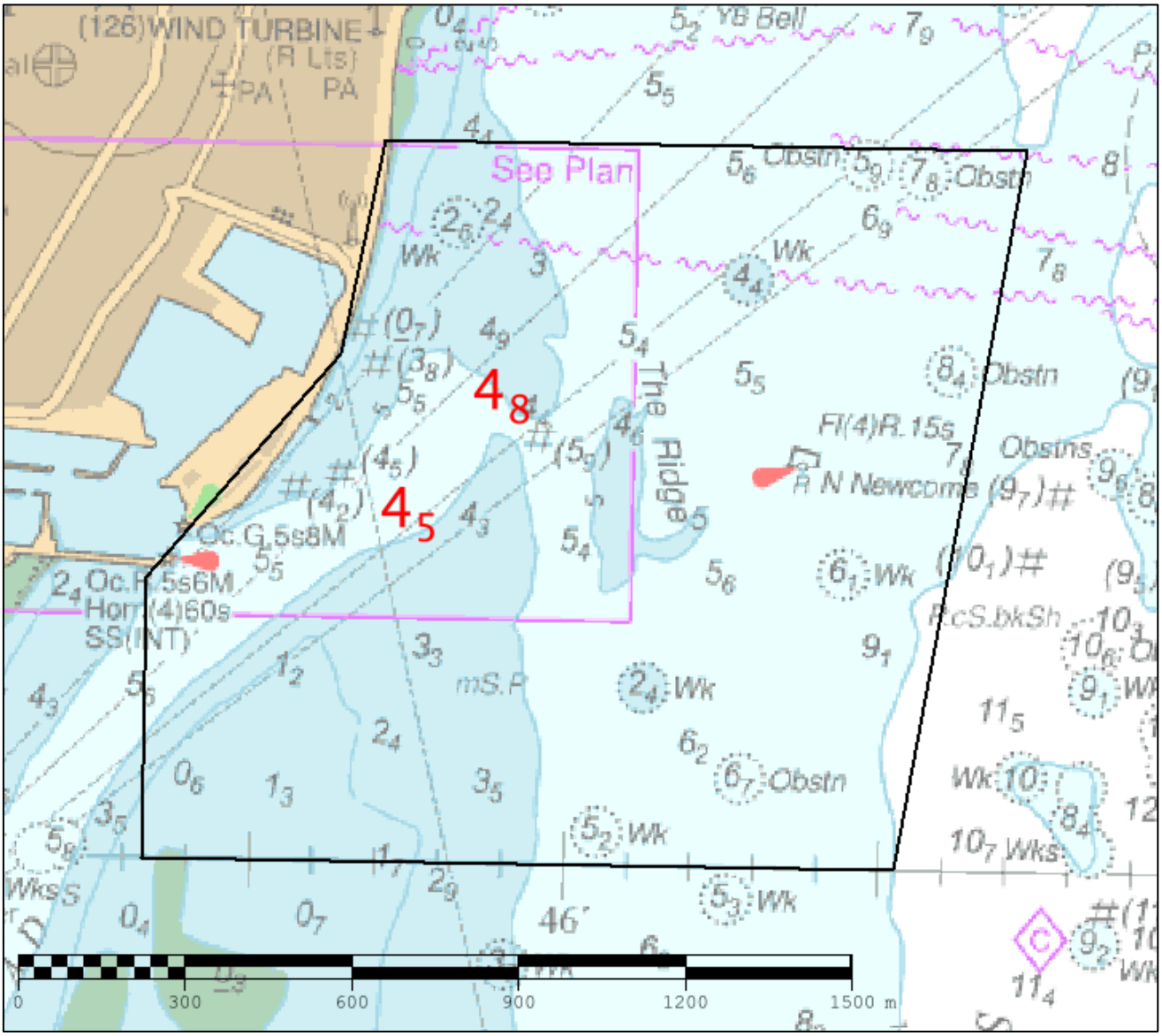


*Figure 5: Controlling/Significant Depth soundings highlighted in Area B, overlaid on BA Chart 1535-0.*

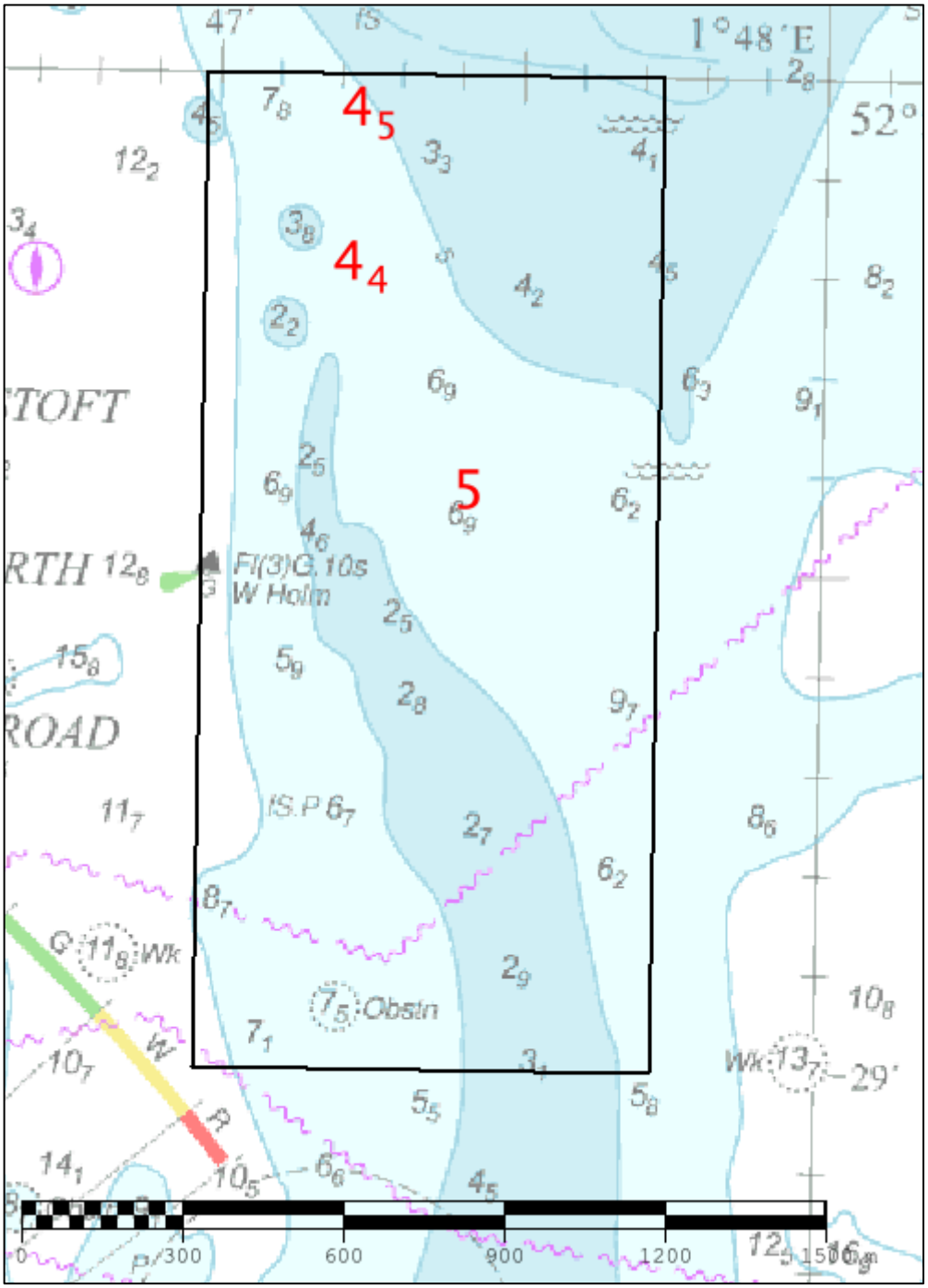


*Figure 6: Controlling/Significant Depth soundings highlighted in Area C, overlaid on BA Chart 1535-0. Area shows three depths of significance between the two shoal areas.*

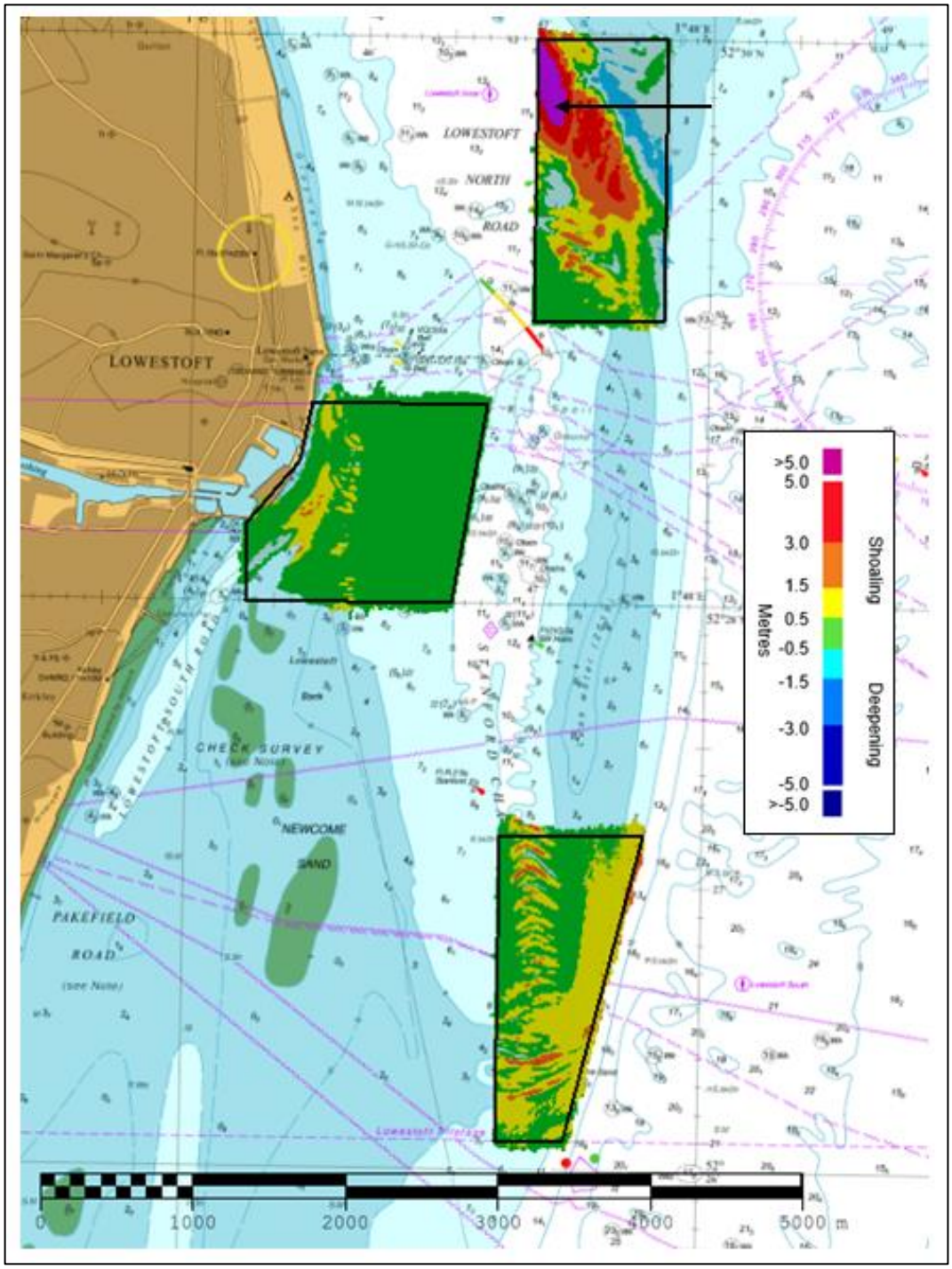


*Figure 7: Difference surface showing bathymetric changes between the 2021 and 2020 surveys overlaid on BA Chart 1535-0 (Black arrow represents sandwave migration since 2020 survey)*

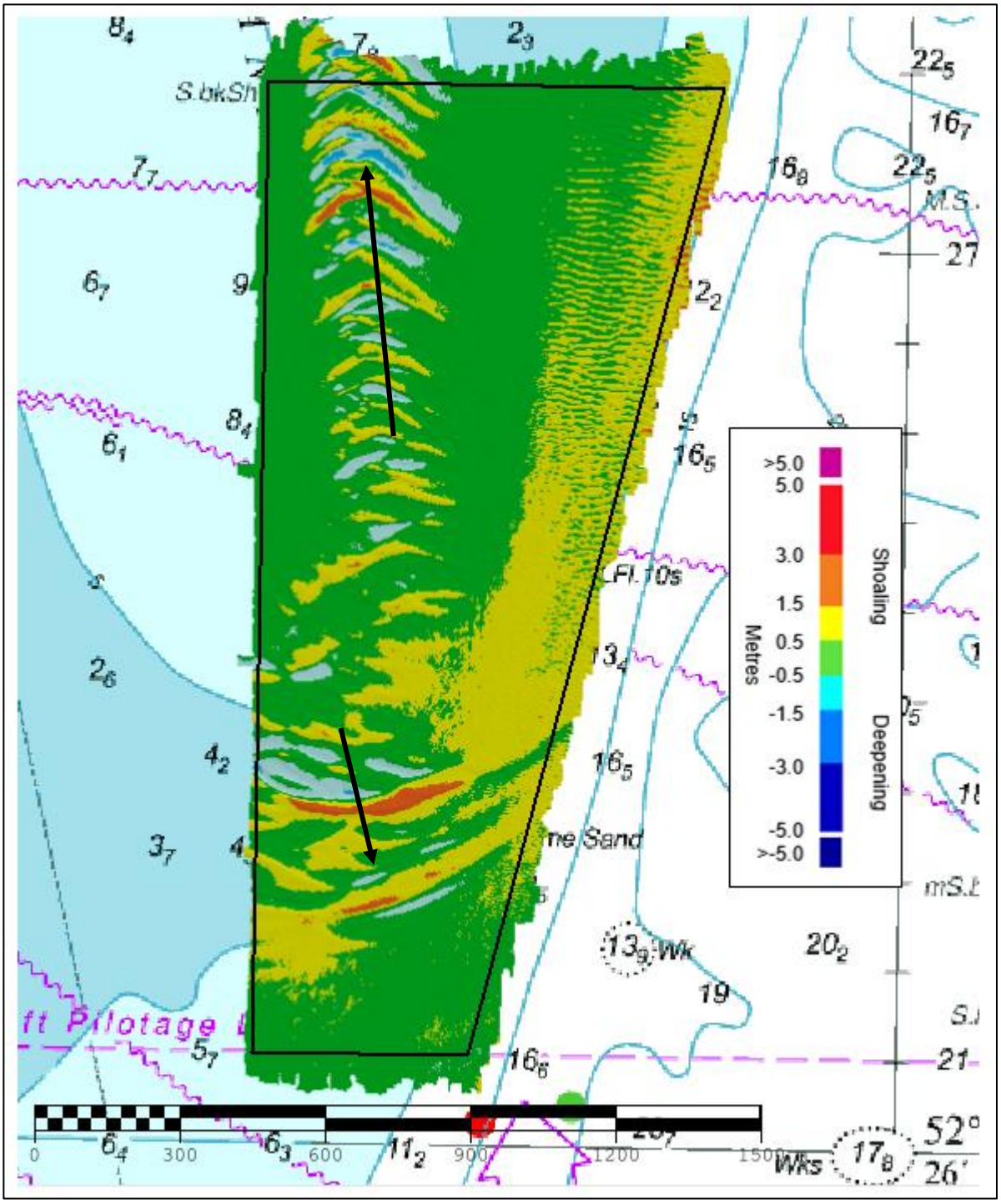


*Figure 8: Difference surface showing close-up of bathymetric changes for Area A between the 2021 and 2020 surveys overlaid on BA Chart 1535-0. (Black arrows represent sandwave migration since 2020 survey).*

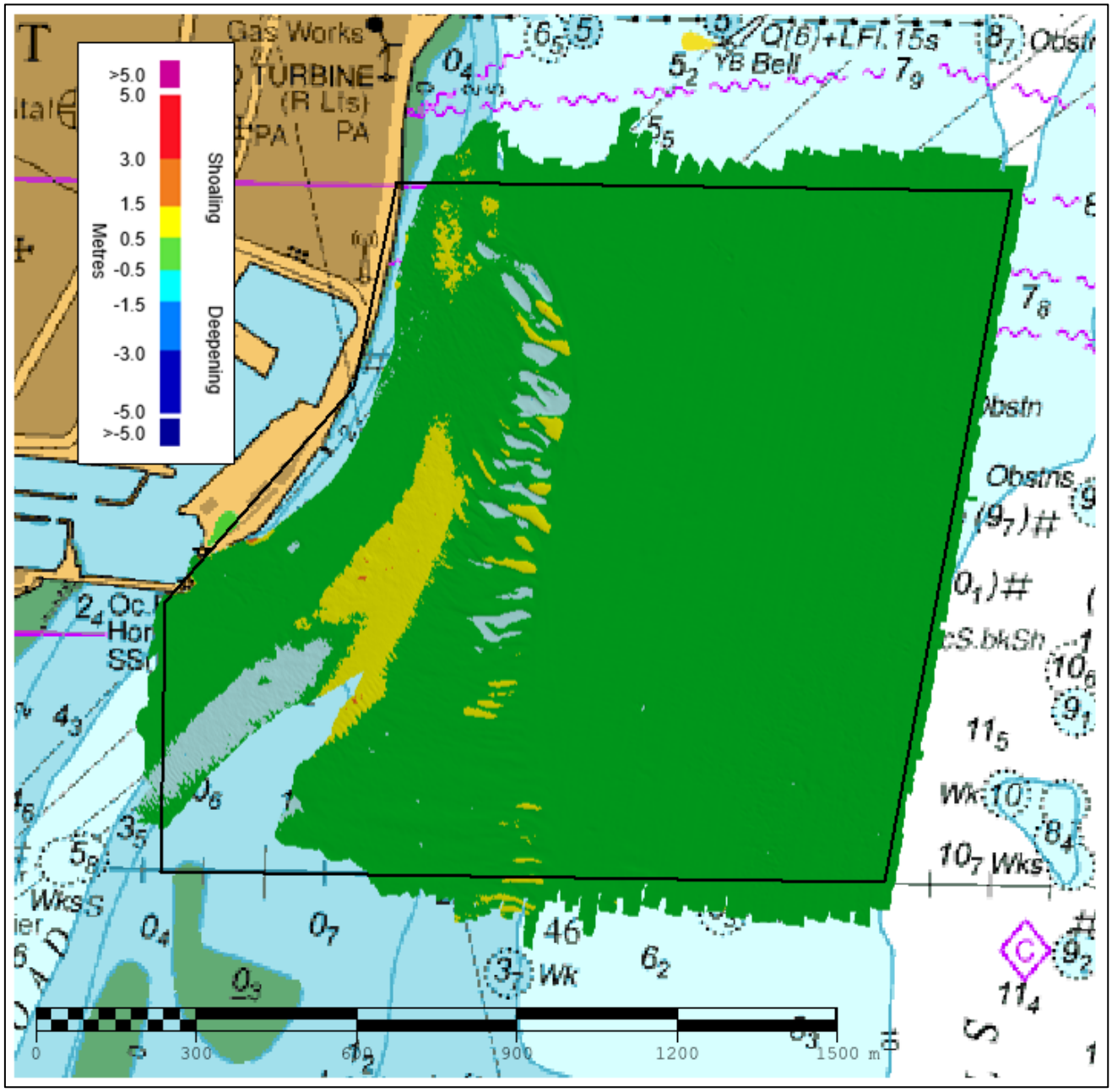


*Figure 9: Difference surface showing close-up of bathymetric changes for Area B between the 2021 and 2020 surveys overlaid on BA Chart 1535-0.*

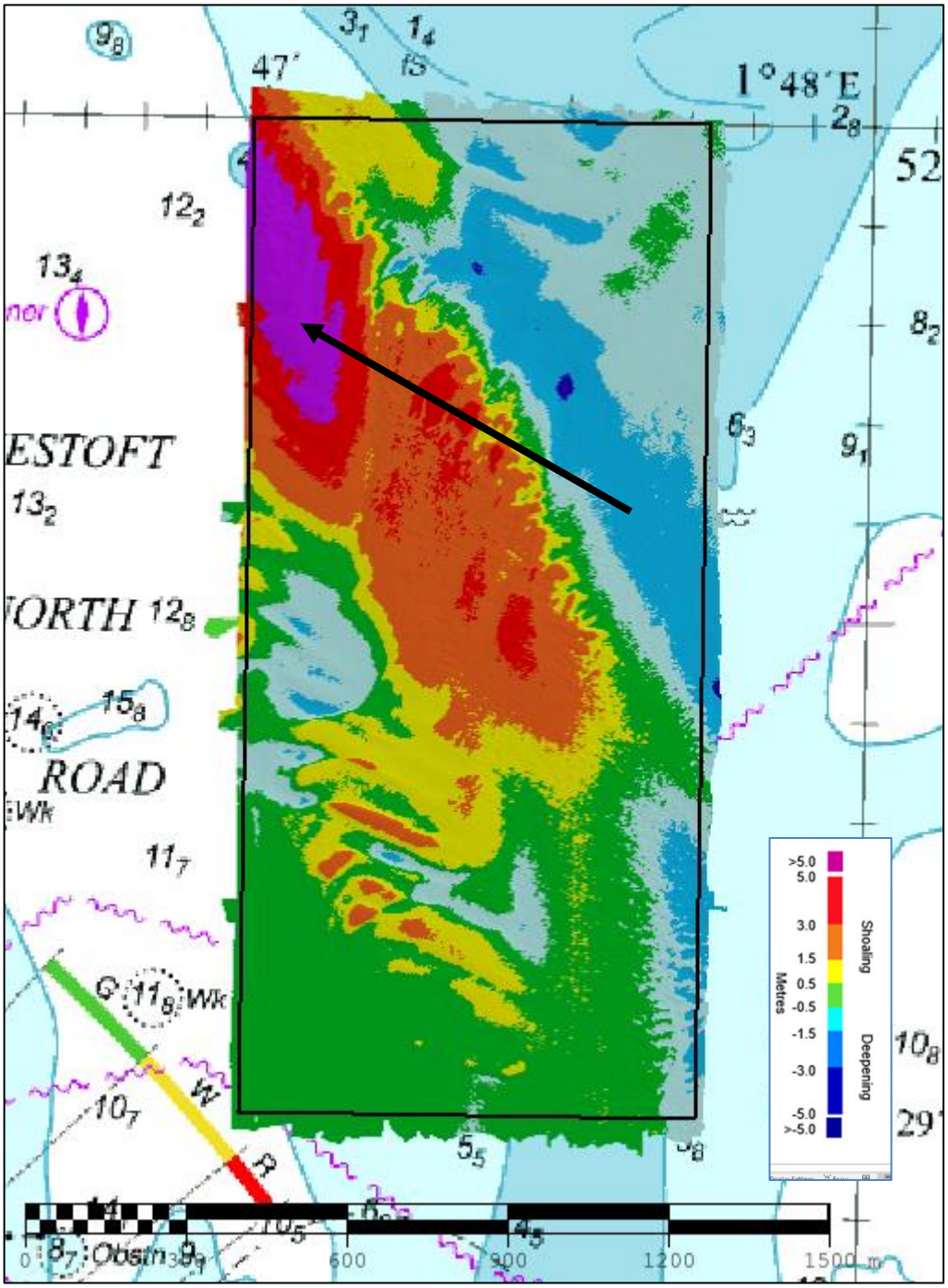


*Figure 10: Difference surface showing close-up of bathymetric changes for Area C between the 2021 and 2020 surveys overlaid on BA Chart 1535-0. (Black arrow represents sandwave migration since 2020 survey).*

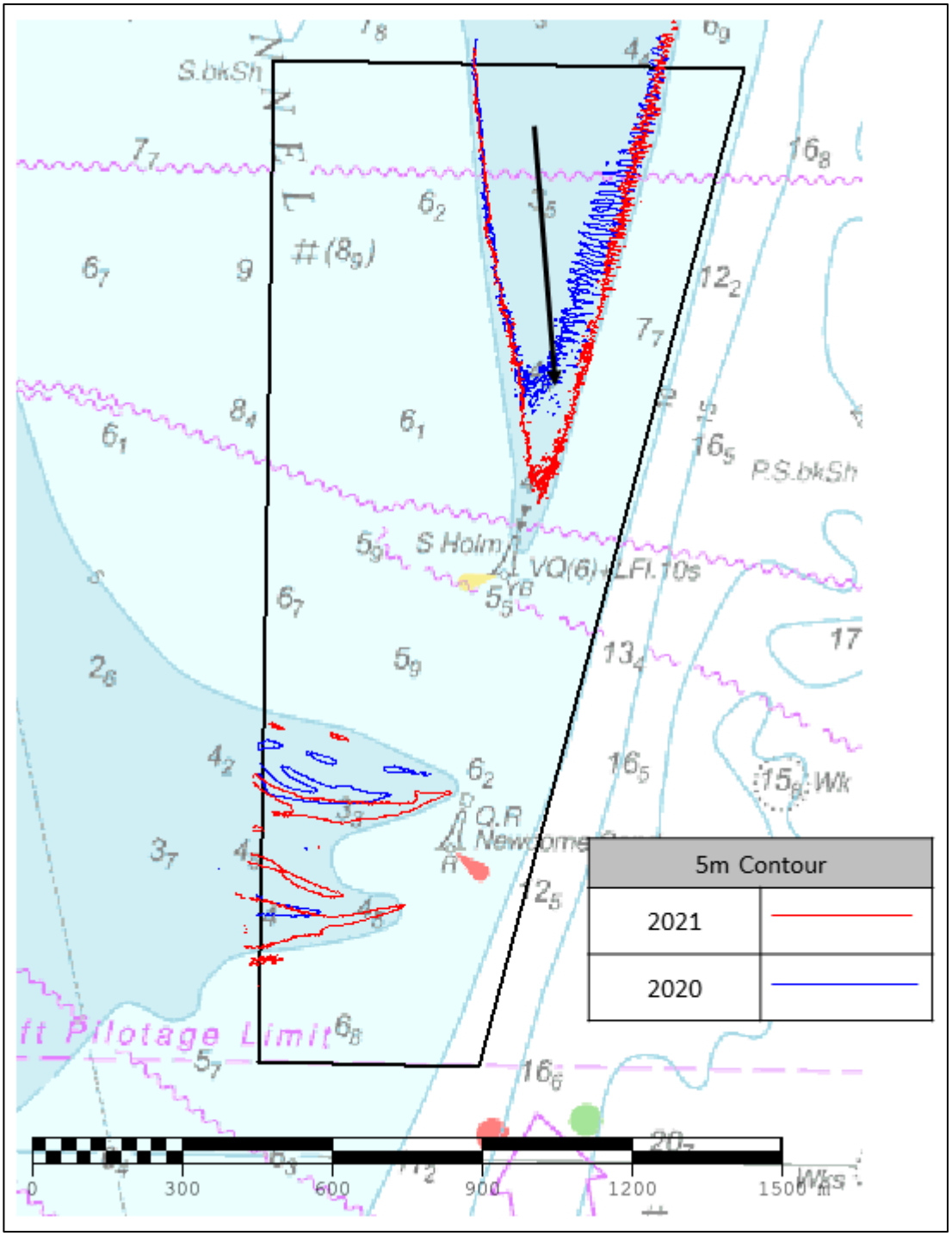


*Figure 11: Contour plot showing changes in the 5m contours between 2021 (red) and 2020 (blue) for Area A. Black arrow represents feature migration.*

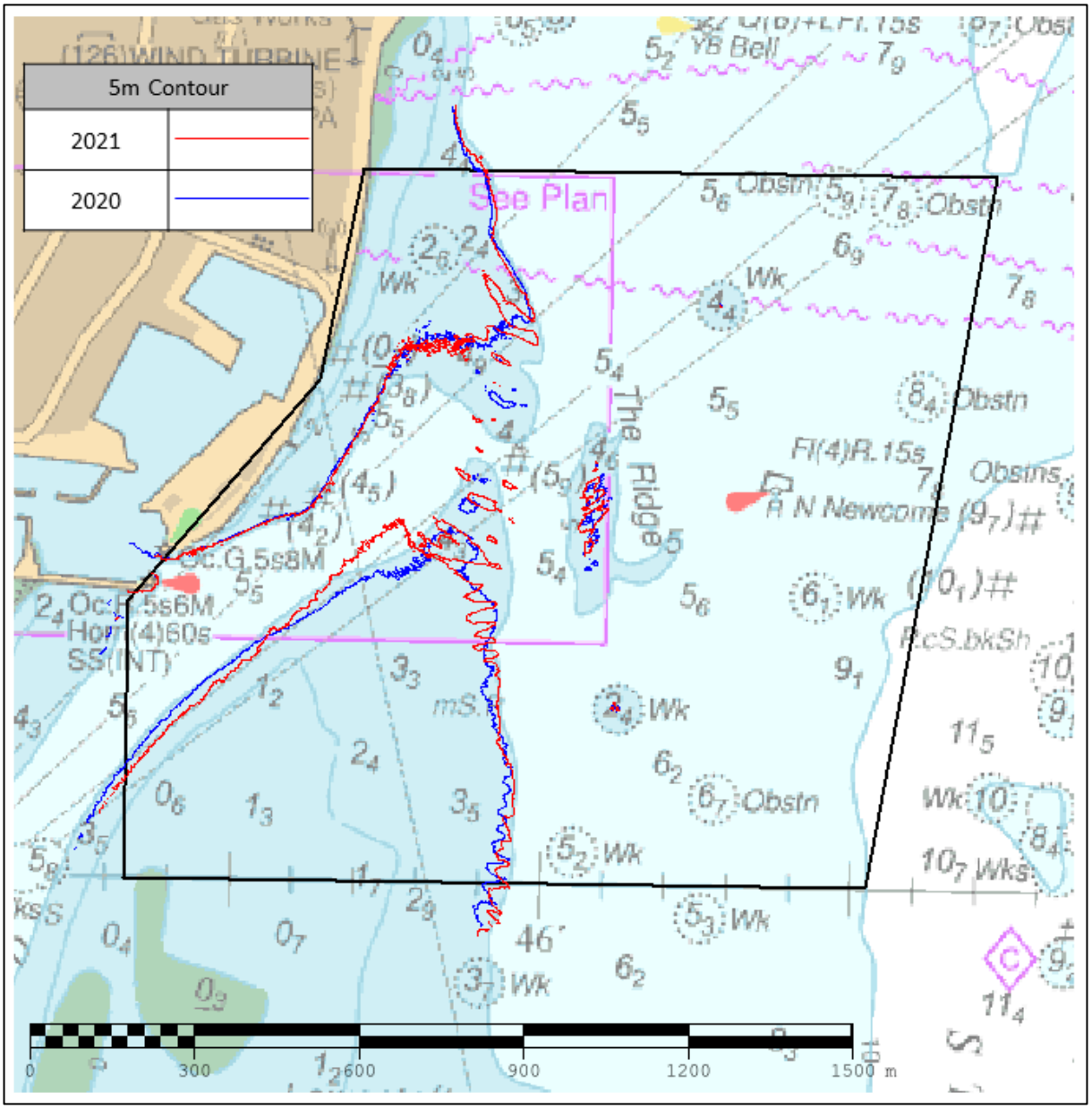


*Figure 12: Contour plot showing changes in the 5m contours between 2021 (red) and 2020 (blue) for Area B.*

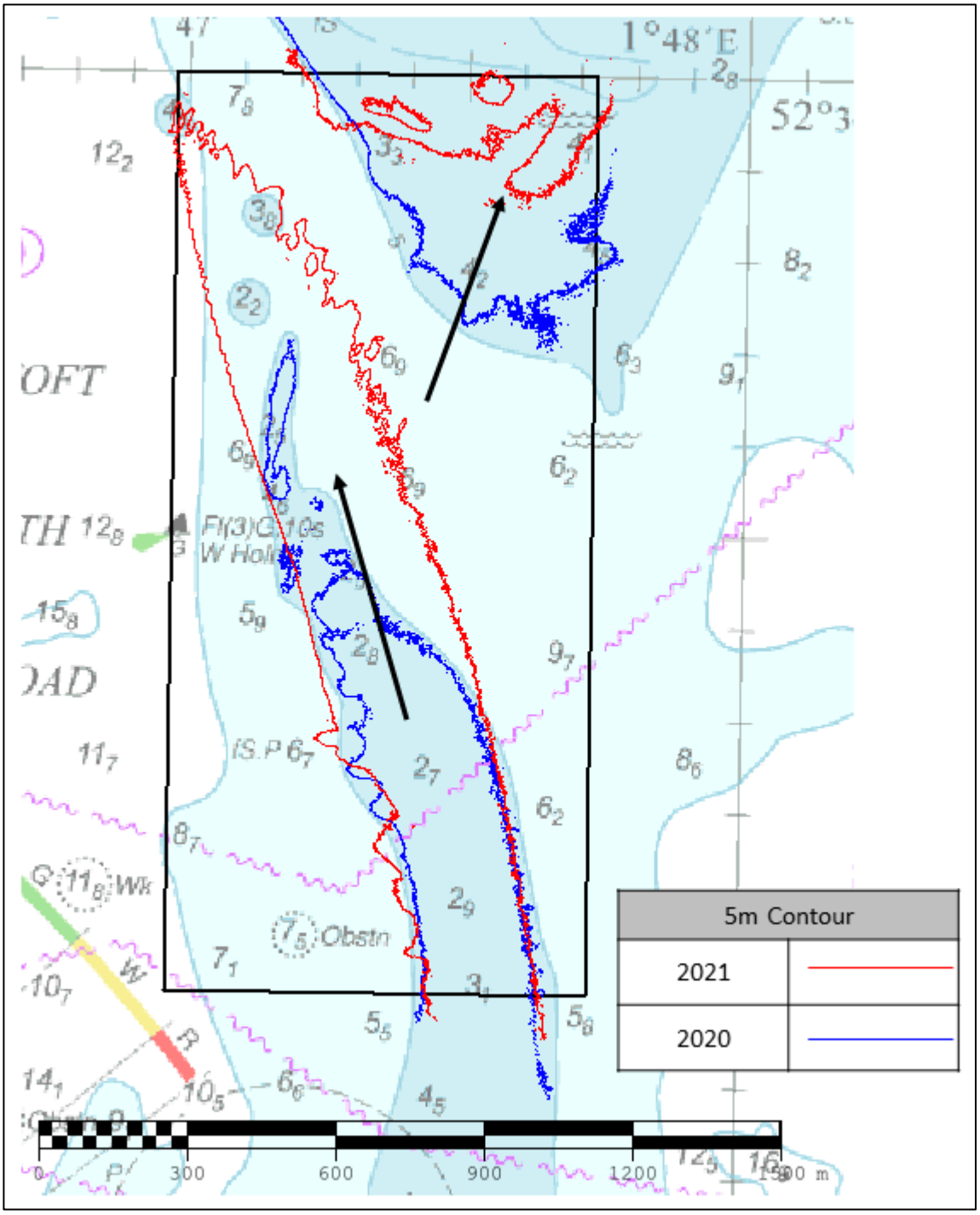


*Figure 13: Contour plot showing changes in the 5m contours between 2021 (red) and 2020 (blue) for Area C. Black arrow represents feature migration.*

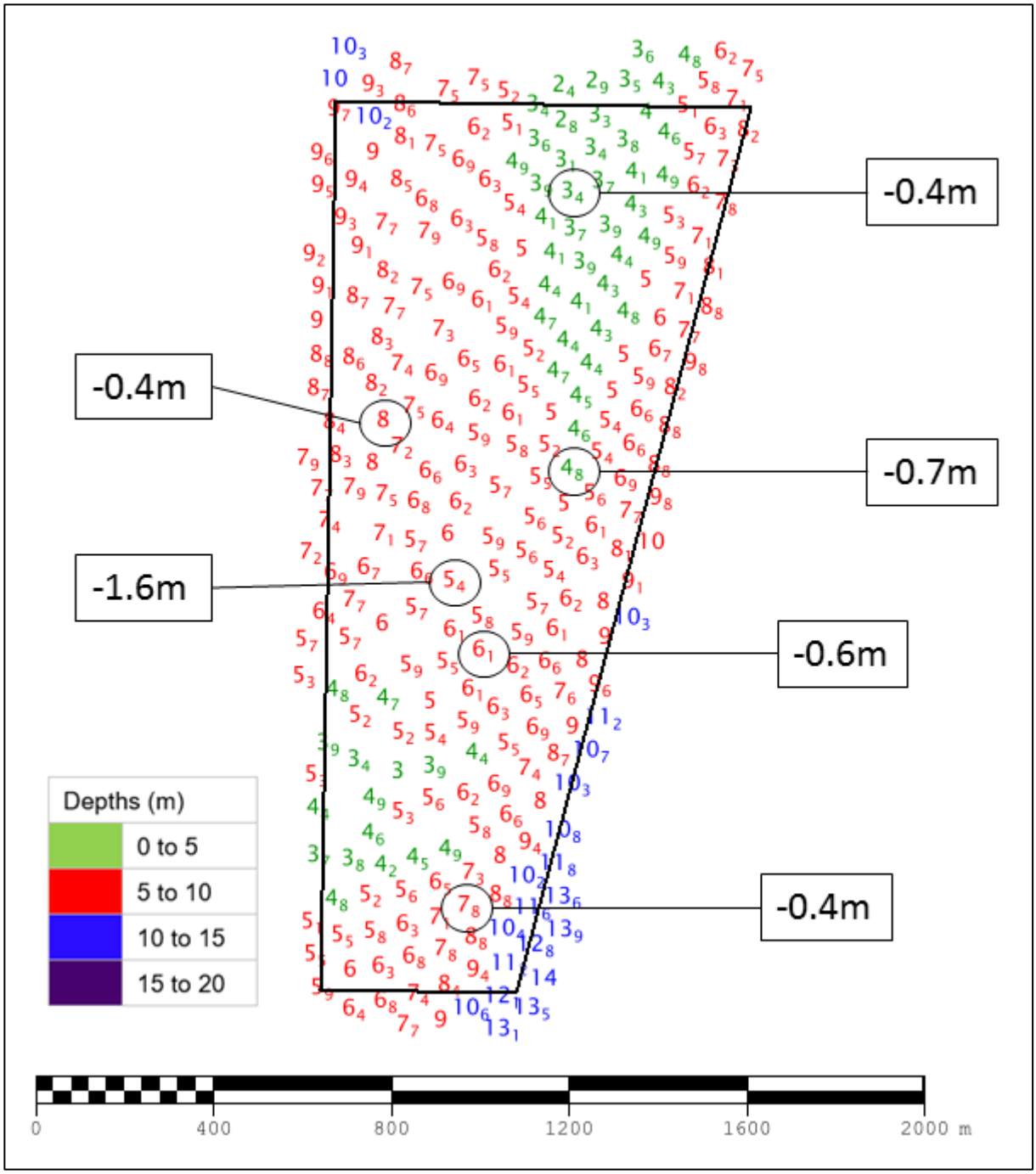


*Figure 14: Colour banded depth plot of Area A from the 2021 survey with selected depth changes since the 2020 survey. Positive values (+) represent deepening. Negative values (-) represent shoaling.*

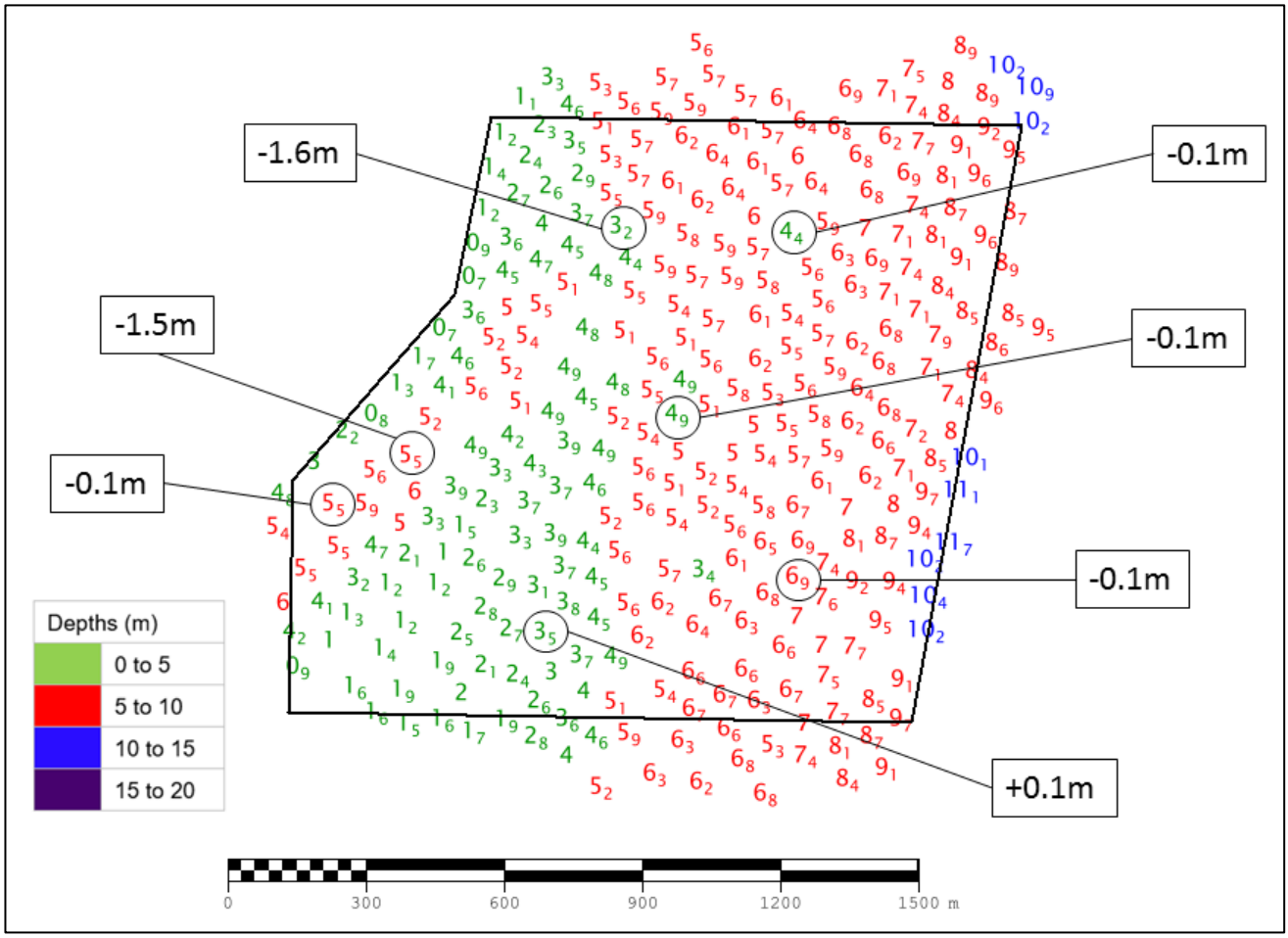


*Figure 15: Colour banded depth plot of Area B from the 2021 survey with selected depth changes since the 2020 survey. Positive values (+) represent deepening. Negative values (-) represent shoaling.*

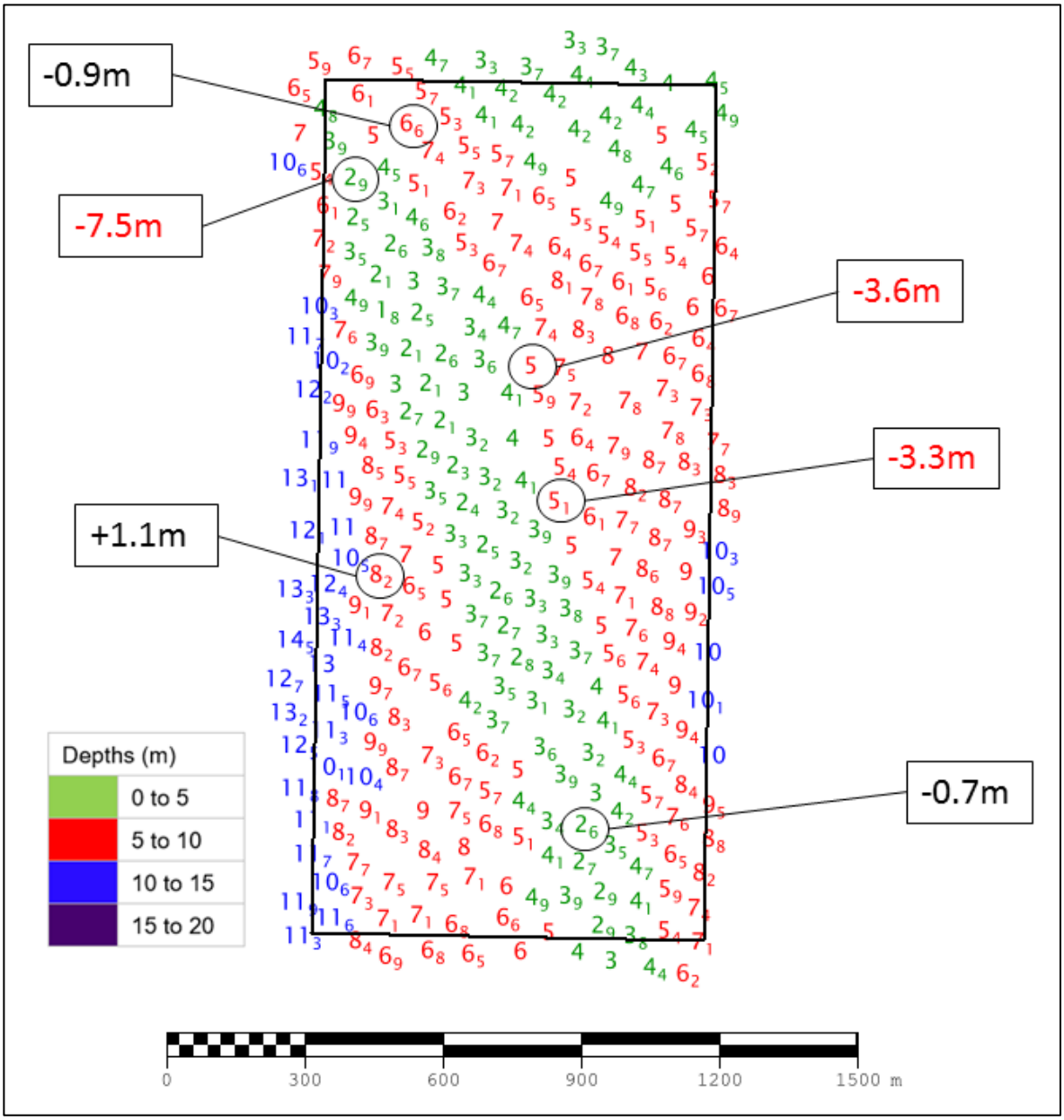


*Figure 16: Colour banded depth plot of Area C from the 2021 survey with selected depth changes since the 2020 survey. Positive values (+) represent deepening. Negative values (-) represent shoaling. This area saw significant movement of the South section of Holm Sand, so large differences due to this movement have been highlighted in red here.*

## 6. RECOMMENDATIONS FOR FUTURE SURVEYS

### Survey Interval

6.1 Depths in the areas remain hazardous and changeable to deep draught vessels navigating the area surrounding Lowestoft, therefore EA10 focused areas should remain on the annual survey interval.

### Survey Area

6.2 The current focused areas of EA10A and EA10B adequately cover current areas of seabed change and allow for possible future change, so no current adjustments are required to these areas.

6.3 However, Area C has shown the northwest migration trend of the 5m contours on W Holm, moving out of the current survey area and into Lowestoft North Road. Whilst it is moving into the EA8 Full area limits, EA8 is not due for resurvey until 2029. Therefore, analysis of the data suggests that the EA10C area be moved and extended northwest to track the movement of the 5m contour:

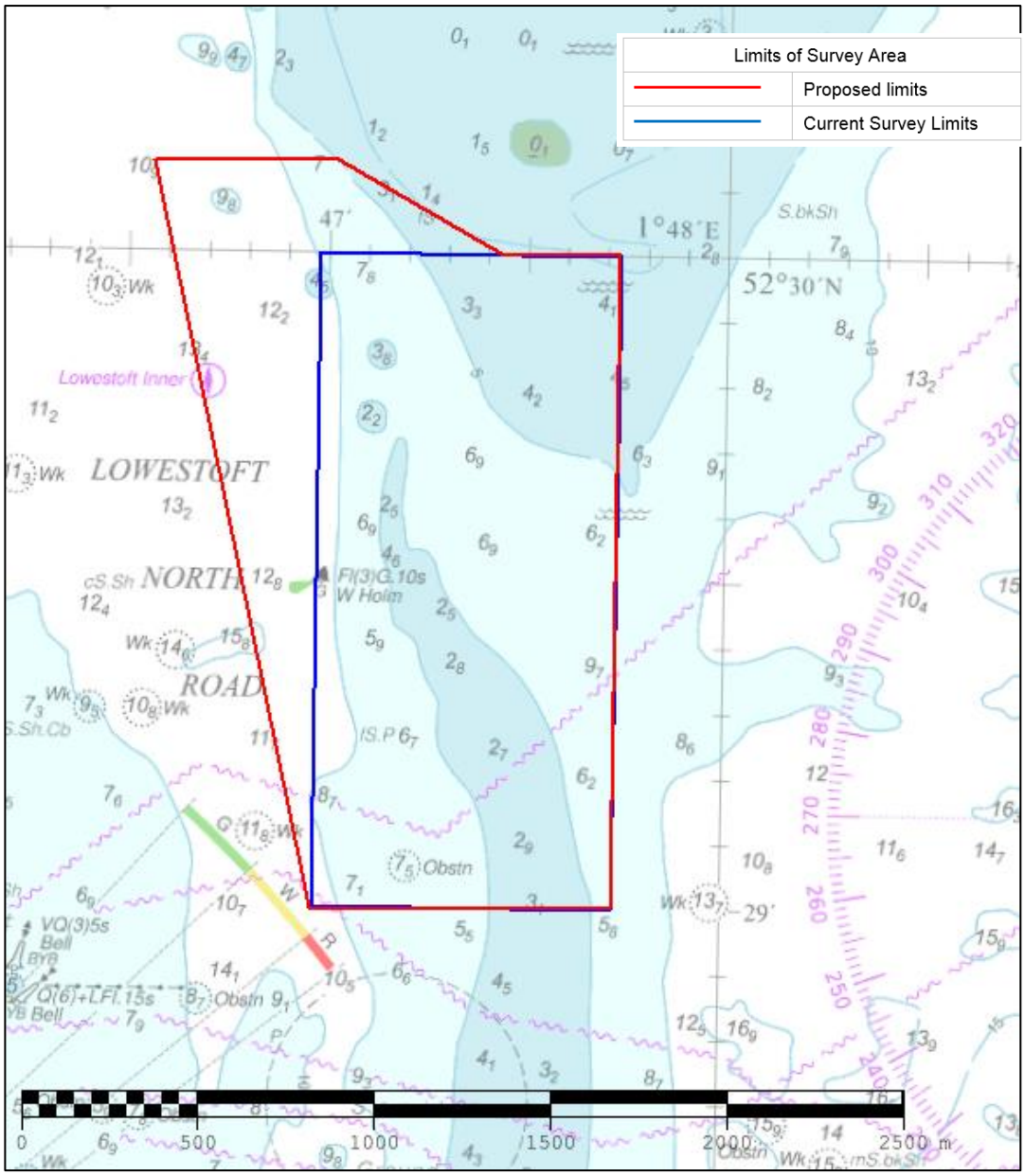


*Figure 17: Recommended changes to survey limits of area EA10C*

The coordinates of the recommended adjusted survey area limits for the annual focused area EA10C are shown below:

EA10C total area: 2.16 $km^2$

| | Latitude | Longitude |
|---|---|---|
| 1 | 52-30.000858N | 001-47.728386E |
| 2 | 52-29.000556N | 001-47.728626E |
| 3 | 52-28.997124N | 001-46.975380E |
| 4 | 52-30.136638N | 001-46.556142E |
| 5 | 52-30.141300N | 001-47.018016E |
| 6 | 52-30.000642N | 001-47.430996E |

If changes are agreed upon, the Full EA10 area will also be updated accordingly.