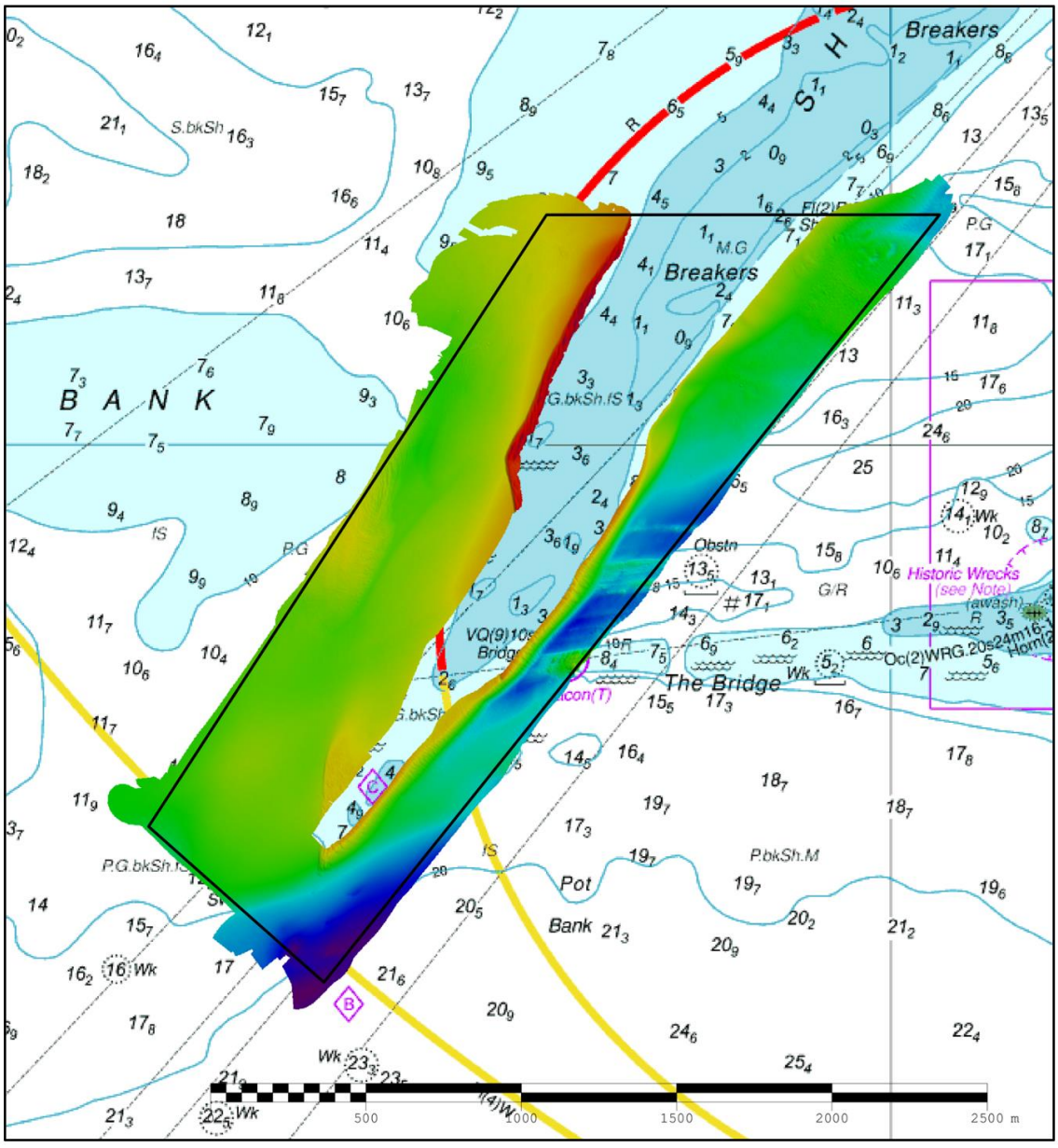
UK Hydrographic Office

NEEDLES CHANNEL (NC)

2025 ASSESSMENT

An assessment of the 2025 hydrographic survey of the area NC: to monitor recent seabed movement; to identify any implications for shipping; and to make recommendations for future surveys.



CONTENTS

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.

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

NEEDLES CHANNEL, 2025

1. SUMMARY

Changes Detected

1.1 Migration and shoaling of Shingles Bank in an eastward direction continues.

1.2 To the west of Shingles Bank there is deepening as the bank moves east.

1.3 Dolphin Bank is beginning to cause shoaling in the west of the Needles Channel (NC) area as it migrates eastward.

1.4 Depths in the northeast remain stable.

Reasons for Continuing to Resurvey the Area

1.5 Depths in this region remain hazardous and changeable particularly with the on-going migration of Shingles Bank into the main channel which sees high levels of traffic (see AIS data in Figure 9). Regular monitoring via resurveys is therefore required.

Recommendations

1.6 The rate of movement is slow enough that a 6-year survey cycle is still sufficient.

1.7 The NC area adequately captures the 5m and 10m around Shingles bank. If easterly movement continues the area may need to be shifted east in the future.

2. LOCATION

2.1 Survey interval at time of resurvey: 6 years

2.2 Area Covered: 2.07 km^2

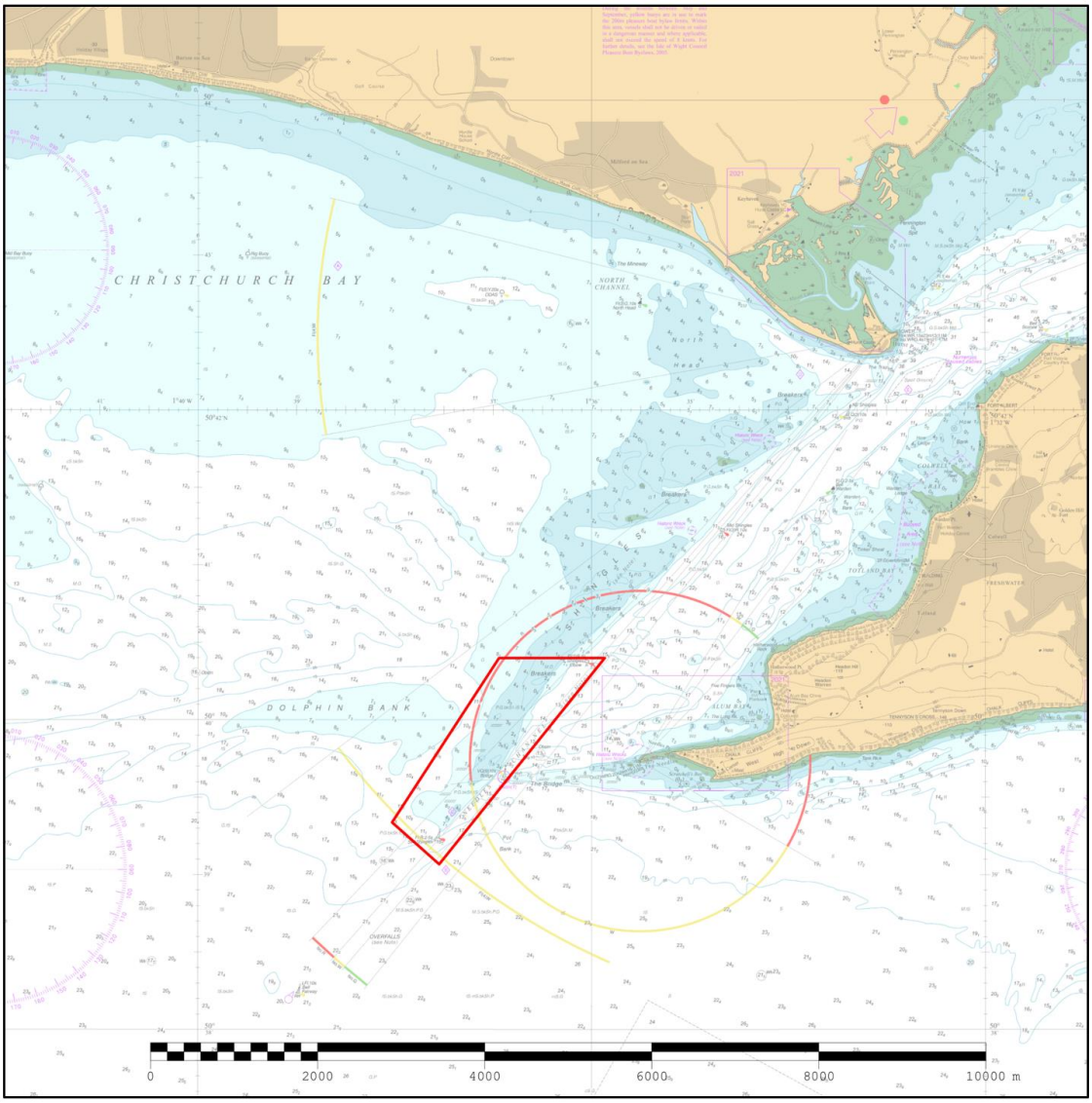


Figure 1: 2025 Needles Channel Routine Resurvey areas overlaid on BA Chart 2035 with area NC in red

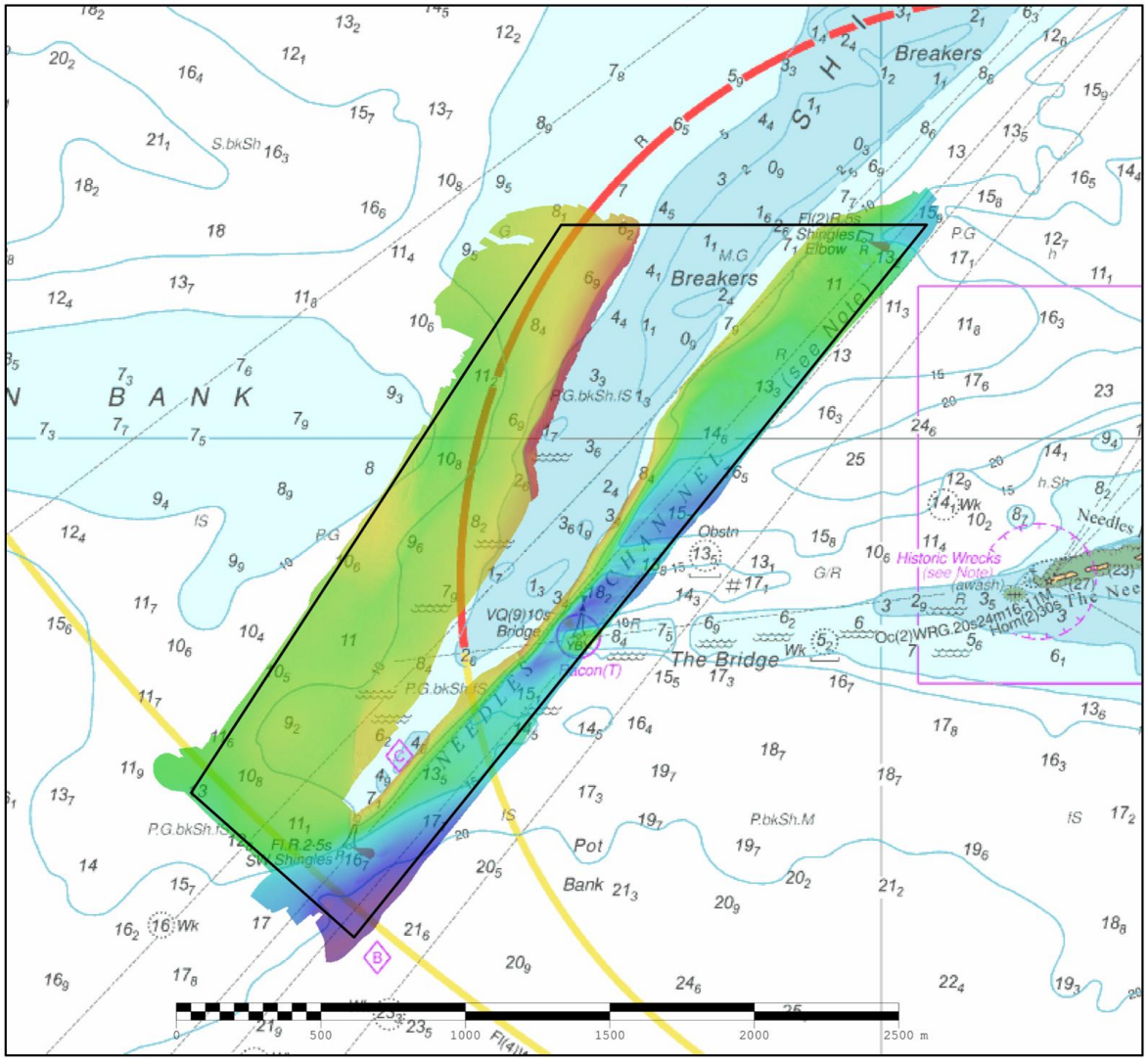


Figure 2: 2025 survey data overlaid on BA Chart 2035

3. REFERENCE SURVEY DETAIL

3.1 The previous survey was conducted as part of the 2018 Routine Resurvey Programme, surveyed in January 2019 as part of HI1631. More recent survey data collected by Trinity House in August 2023 has also been used as part of this routine resurvey report.

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 HI1868, surveyed in August 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 Figure 3 shows that the least depth captured in the 2025 survey is 1.3m, located on the west side of Shingles Bank, in the north of the survey area. It is likely that there are shoaler depths to the east of this point, however, due to prolonged adverse weather and sea state conditions and budgetary restrictions surveying was finished early and full coverage was not achieved. In the 2019 survey the least depth in the NC area was 1.04m, found approximately 370m directly to the east of the 2025 least depth.

5.2 In the south a depth of 6.6m can be seen in Figure 3, this has shoaled by 6.2m since 2019 as Shingles Bank migrates east, also seen in the 10m contour in Figure 7.

5.3 Difference surfaces in Figures 4 and 5 show that there is an overall trend of Shingles Bank migrating east, consistent with previous years. This is causing shoaler depths on the east of the bank and deepening on the west side of the bank. Figure 5 also shows that there is a patch of shoaling in the west of the NC area where Dolphin Bank is also migrating east and moving into the survey area. This can also be seen in the 10m contour in Figure 7.

5.4 The 5m contour in Figure 6 also shows the easterly movement of Shingles Bank, though unfortunately the contour to the east of the bank was not captured in 2025. Figure 7 and the difference surfaces in Figures 4 and 5 show movement in the north of the NC area is minimal with little movement of the 10m contour. In the centre both the 5m and 10m contours show continued easterly movement towards the west cardinal buoy marking The Bridge. In the south, Figure 7 shows little to no movement of the eastern 10m contour since 2023, but a significant distance, up to 125m, between 2019-2023.

5.5 Figure 8 shows that in the northeast of the area there is little change in depth, also visible as green in the difference surfaces in Figures 4 and 5.

5.6 AIS data from 2024 seen in Figure 9 shows that the majority of vessels in the area are navigating via the Needles Channel, showing the importance of continuing to monitor the movement of the bank as it moves east.

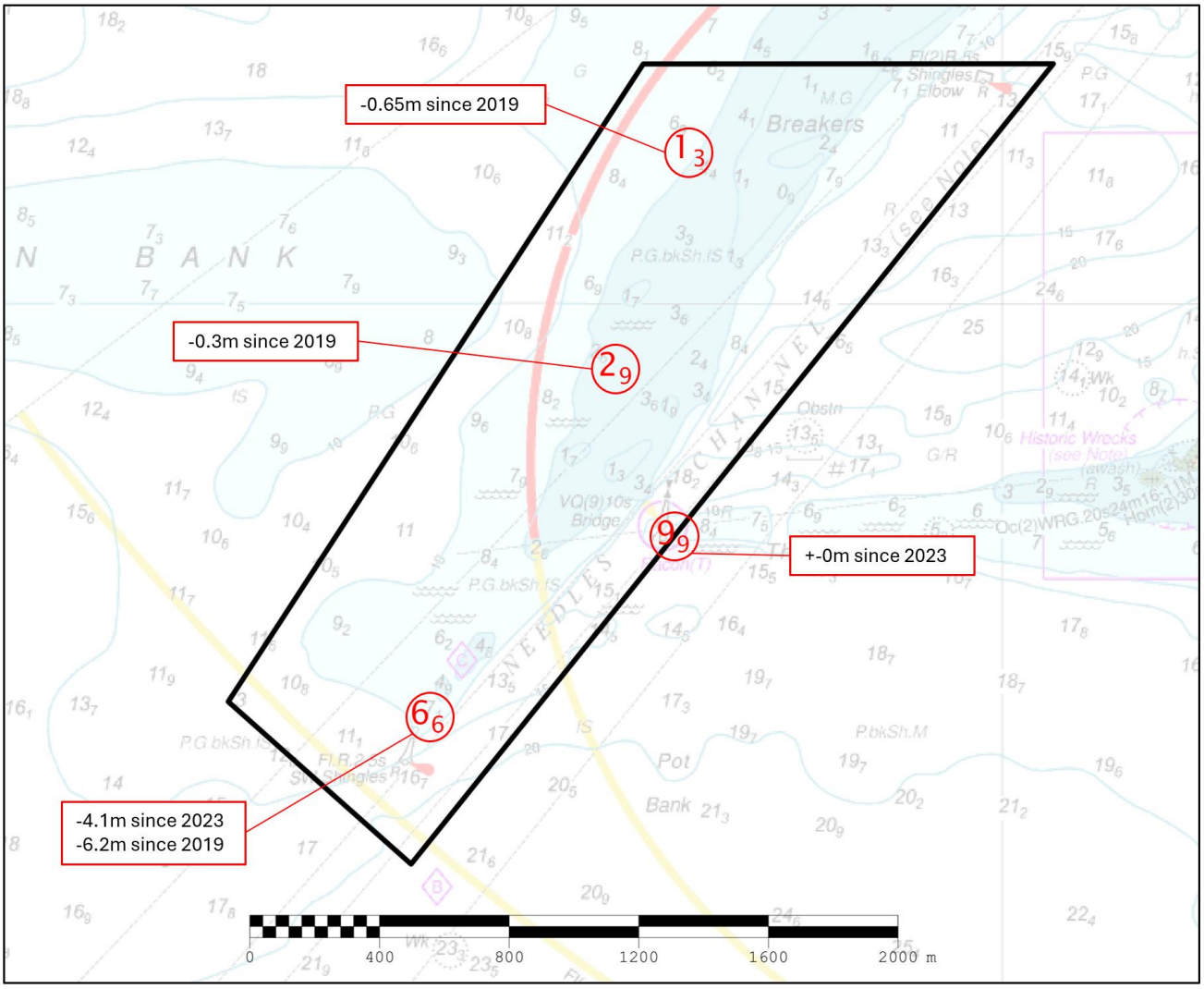


Figure 3: Significant Depth soundings highlighted, overlaid on BA Chart 2035

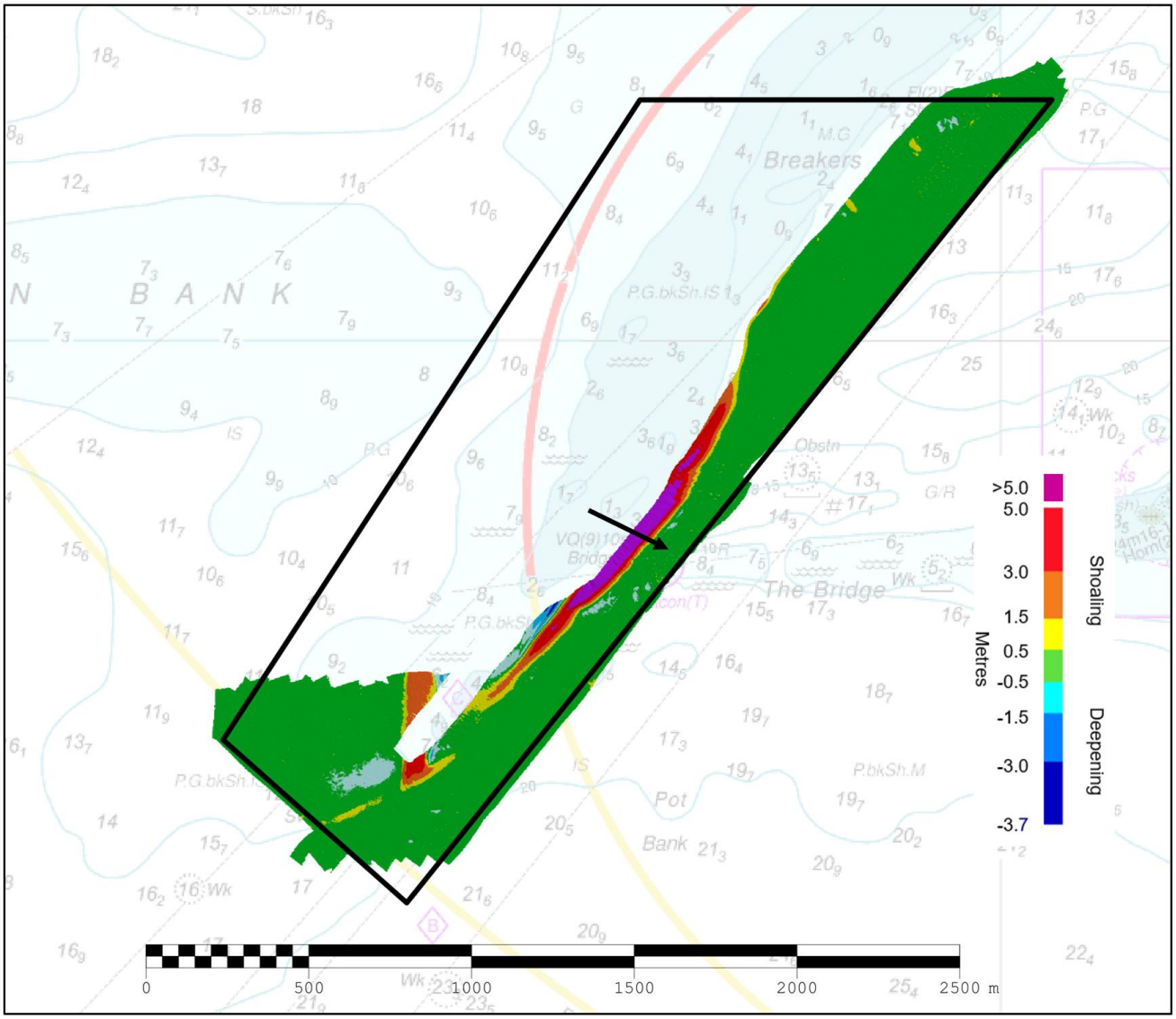


Figure 4: Difference surface showing bathymetric changes between the 2023 and 2025 surveys overlaid on BA Chart 2035 (Black arrows represent sandwave migration since 2023 survey)

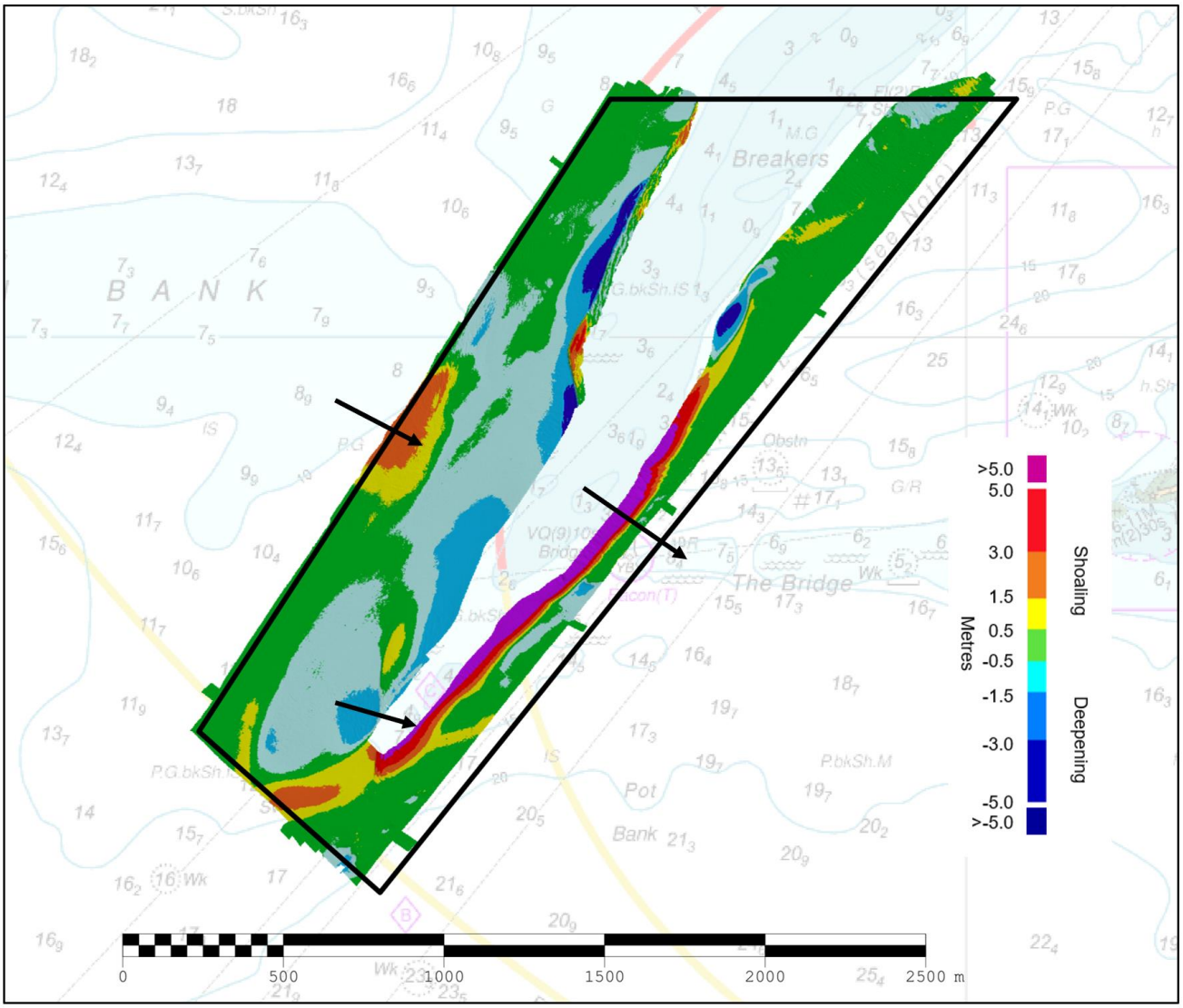


Figure 5: Difference surface showing bathymetric changes between the 2019 and 2025 surveys overlaid on BA Chart 2035 (Black arrows represent sandwave migration since 2019 survey)

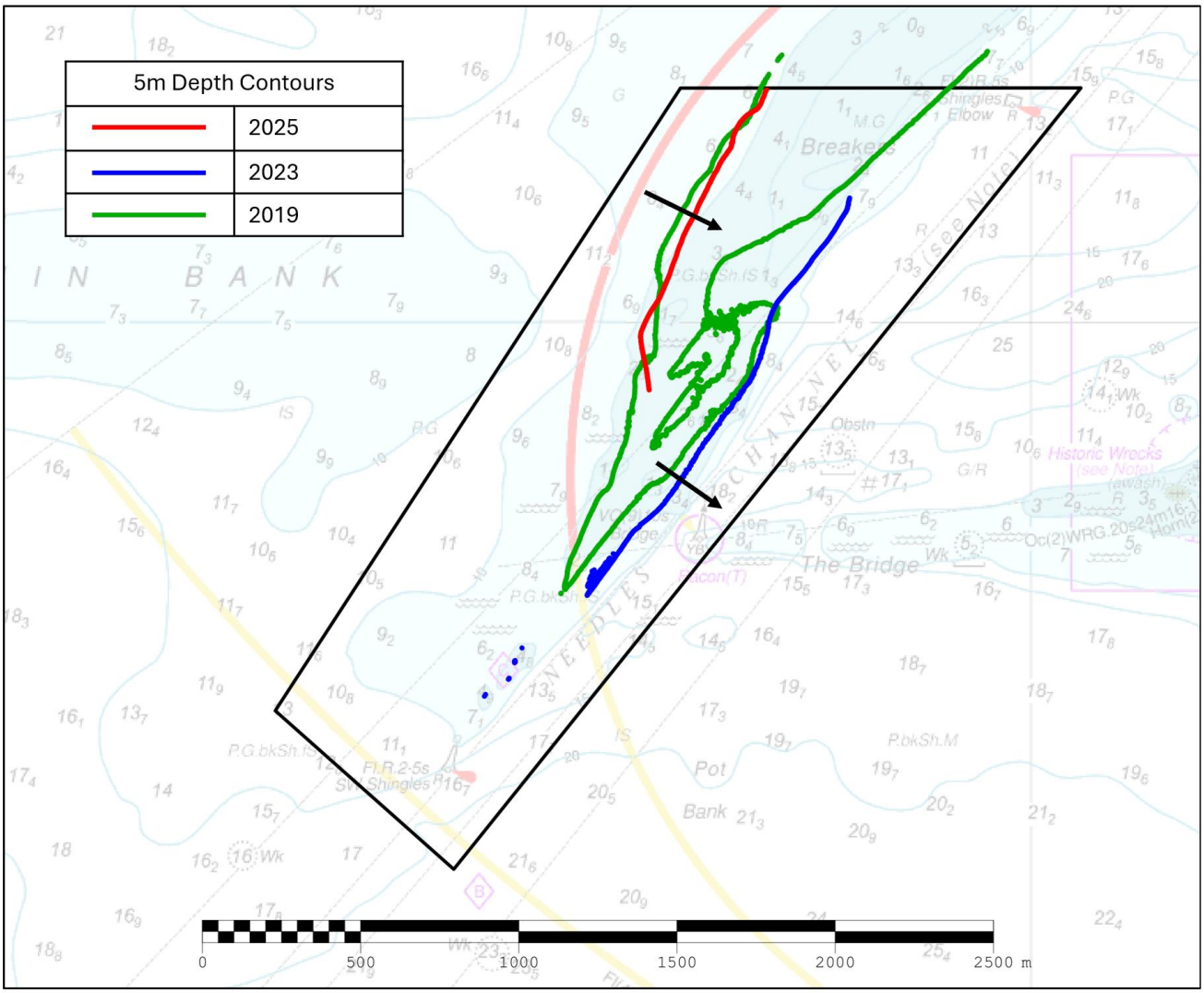


Figure 6: Contour plot showing changes in the 5m contours between 2025 (red), 2023 (blue) and 2019 (green). Black arrow represents feature migration

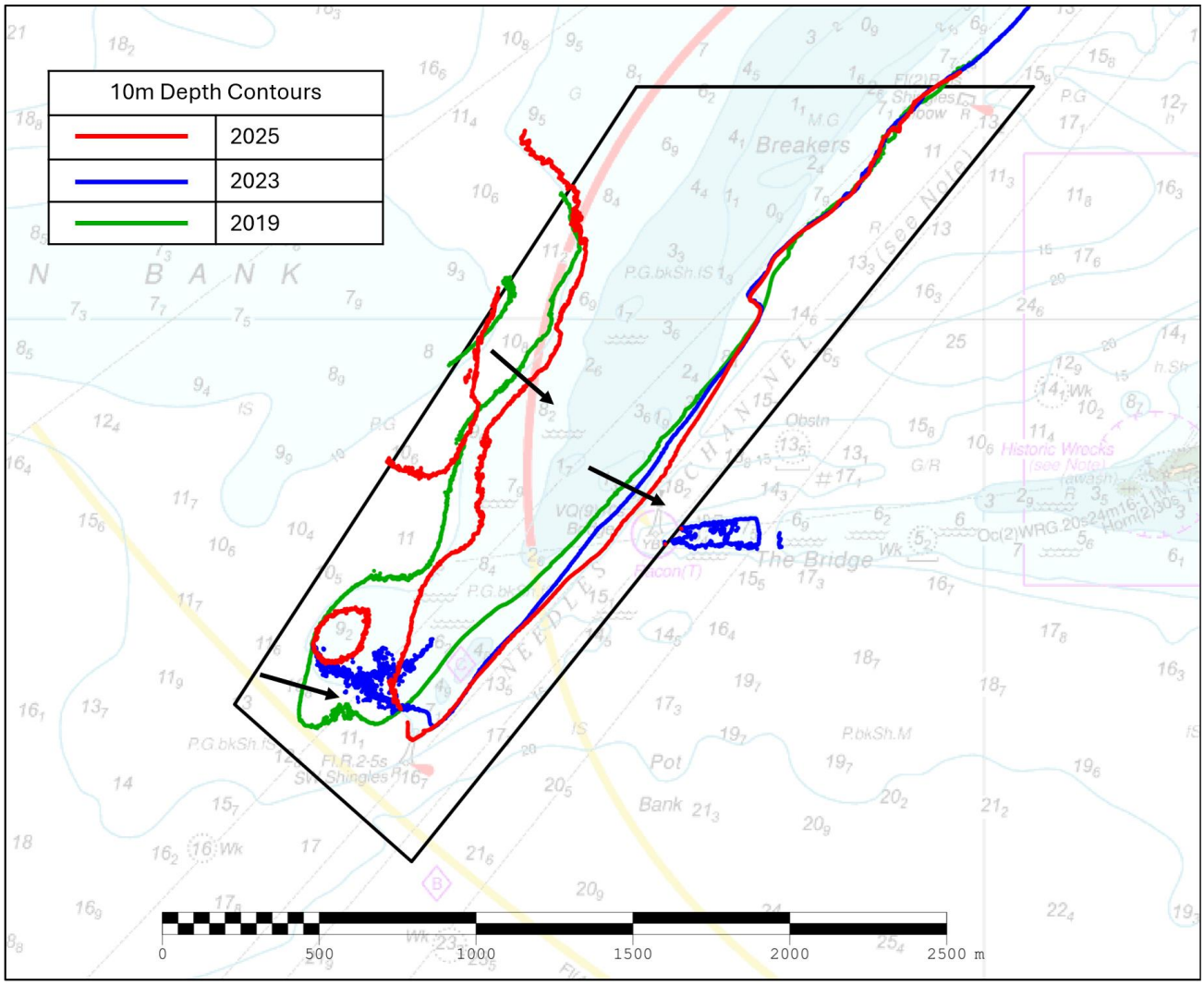


Figure 7: Contour plot showing changes in the 10m contours between 2025 (red), 2023 (blue) and 2019 (green). Black arrow represents feature migration

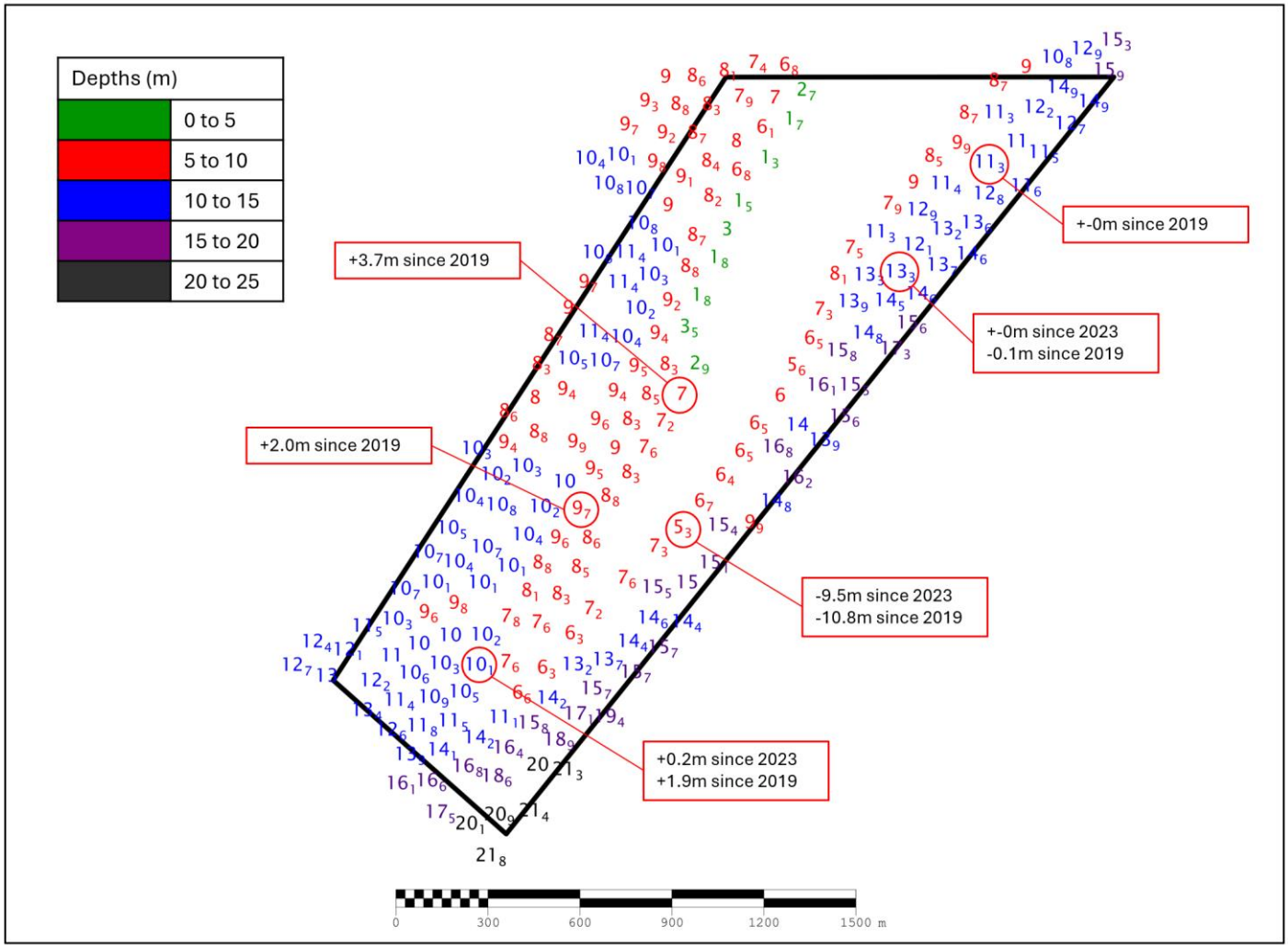


Figure 8: Colour banded depth plot from the 2025 survey with selected depth changes since the 2019 and 2023 surveys. Positive values (+) represent deepening. Negative values (-) represent shoaling

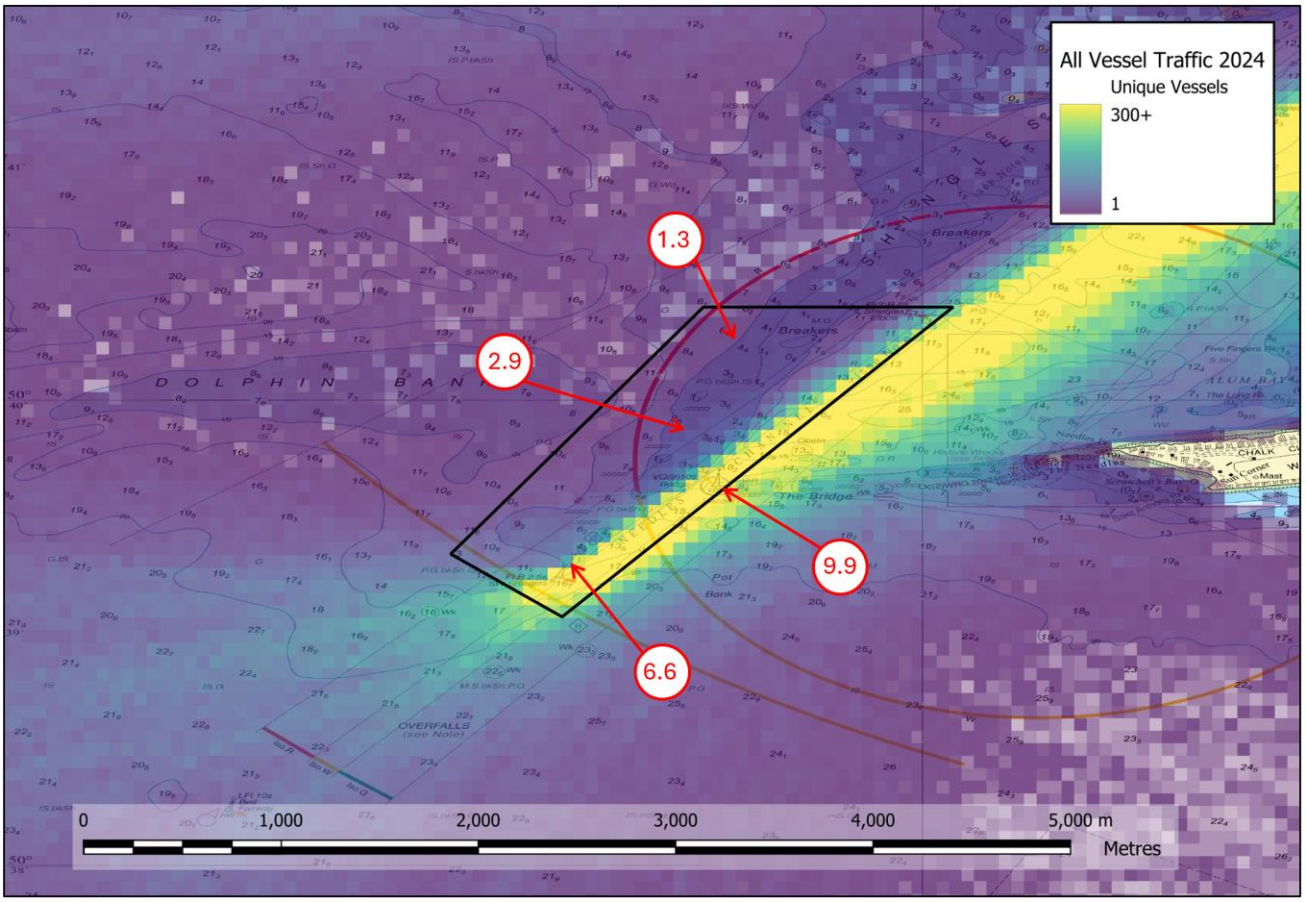


Figure 9: AIS heatmap at 100m resolution grid size. Density unit is unique vessels within the grid square within 2024. NC area in black and significant depth soundings (m) overlaid on chart 2035

6. RECOMMENDATIONS FOR FUTURE SURVEYS

Survey Interval

6.1 Given the relatively slow rate of movement, and the annual monitoring of the buoy line by Trinity House, Needles Channel should remain on the 6-year survey interval.

Survey Area

6.2 Despite the easterly movement seen at Shingles Bank, the NC area still captures the 5m and 10m contours well. Consideration may be given in the future to shifting the NC area to the east if migration continues. The wreck of the Varvassi was scheduled to be included in the 2025 survey; however, due to budgetary constraints, this was not undertaken. It should be incorporated into the 2026 Routine Resurvey Programme.