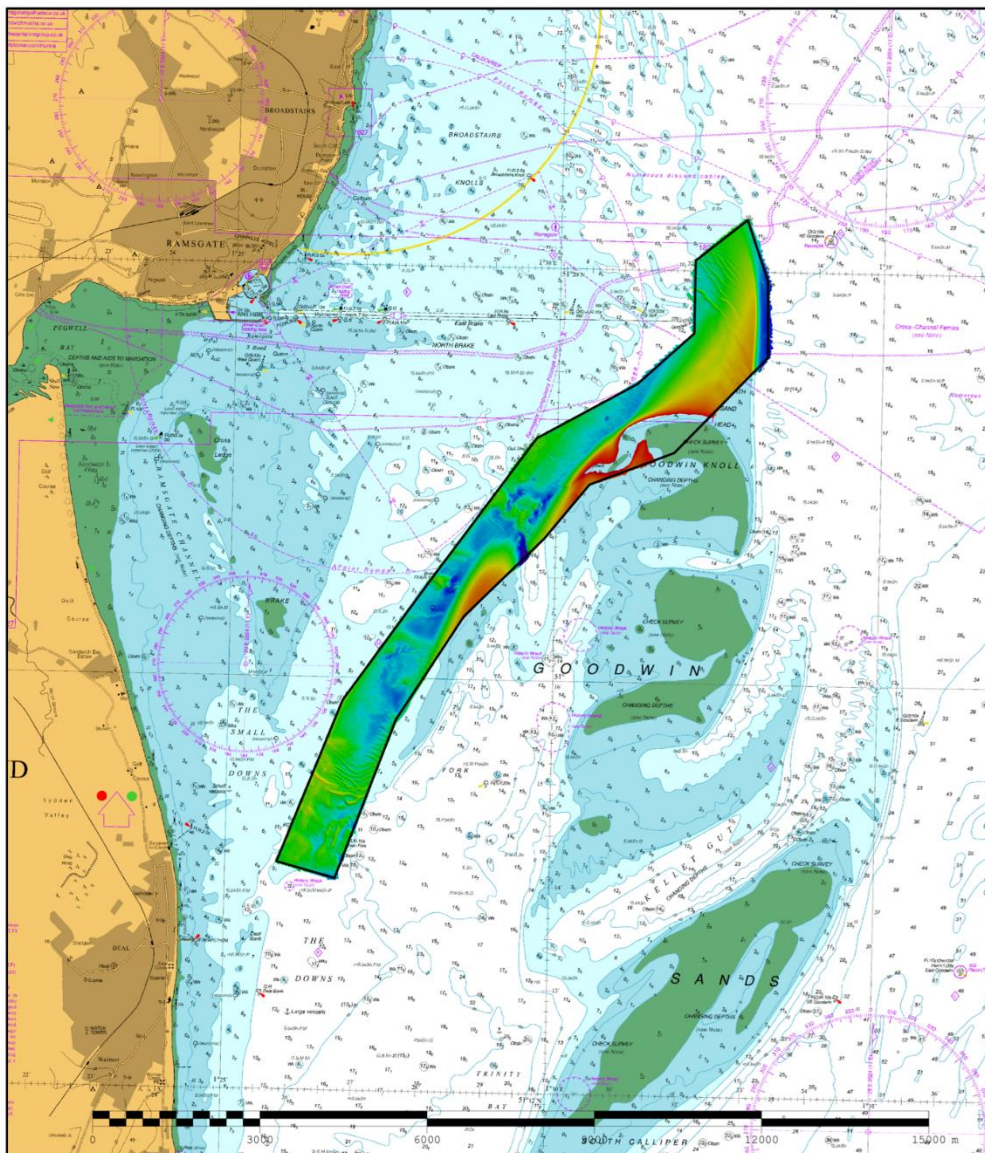




UK Hydrographic
Office

DOVER STRAIT GULL STREAM FOCUSED (GS2A) 2024 ASSESSMENT

An assessment of the 2024 hydrographic survey of the area GS2A: 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.

GS2A GULL STREAM, 2024

1. SUMMARY

Changes Detected

- 1.1 Goodwin Knoll continues to migrate west into Gull Stream, with the shoalest significant depth of 0.1m.
- 1.2 North Sand Head is generally shoaling. A controlling depth of 3.8m remains in place for vessels traversing the bank but this has moved 130m south since the 2021 survey (HI1743).
- 1.3 The sandbank to the west of Goodwin, and bordering Gull Stream to the east, is migrating south west.
- 1.4 In the south of the survey area there are sand waves migrating north, but little change to overall depths.

Reasons for Continuing to Resurvey the Area

- 1.5 Continued migration of sediment and changing depths around Goodwin Knoll present a potential hazard to vessels navigating Gull Stream and North Sand Head enroute to Ramsgate Harbour, see Figure 10.

Recommendations

- 1.6 Given the location of the area in relation to Ramsgate Harbour and the changing depths around Gull Stream the focused survey interval should remain at 3 years and full survey at 6 years.
- 1.7 The focused area sufficiently covers Gull Stream, North Sand Head and the migration of Goodwin Knoll, no changes are recommended.

2. LOCATION

- 2.1 Survey interval at time of resurvey: 3 years Focused, with the Full area surveyed every 6 years.
- 2.2 Area Covered: 16.24 km²

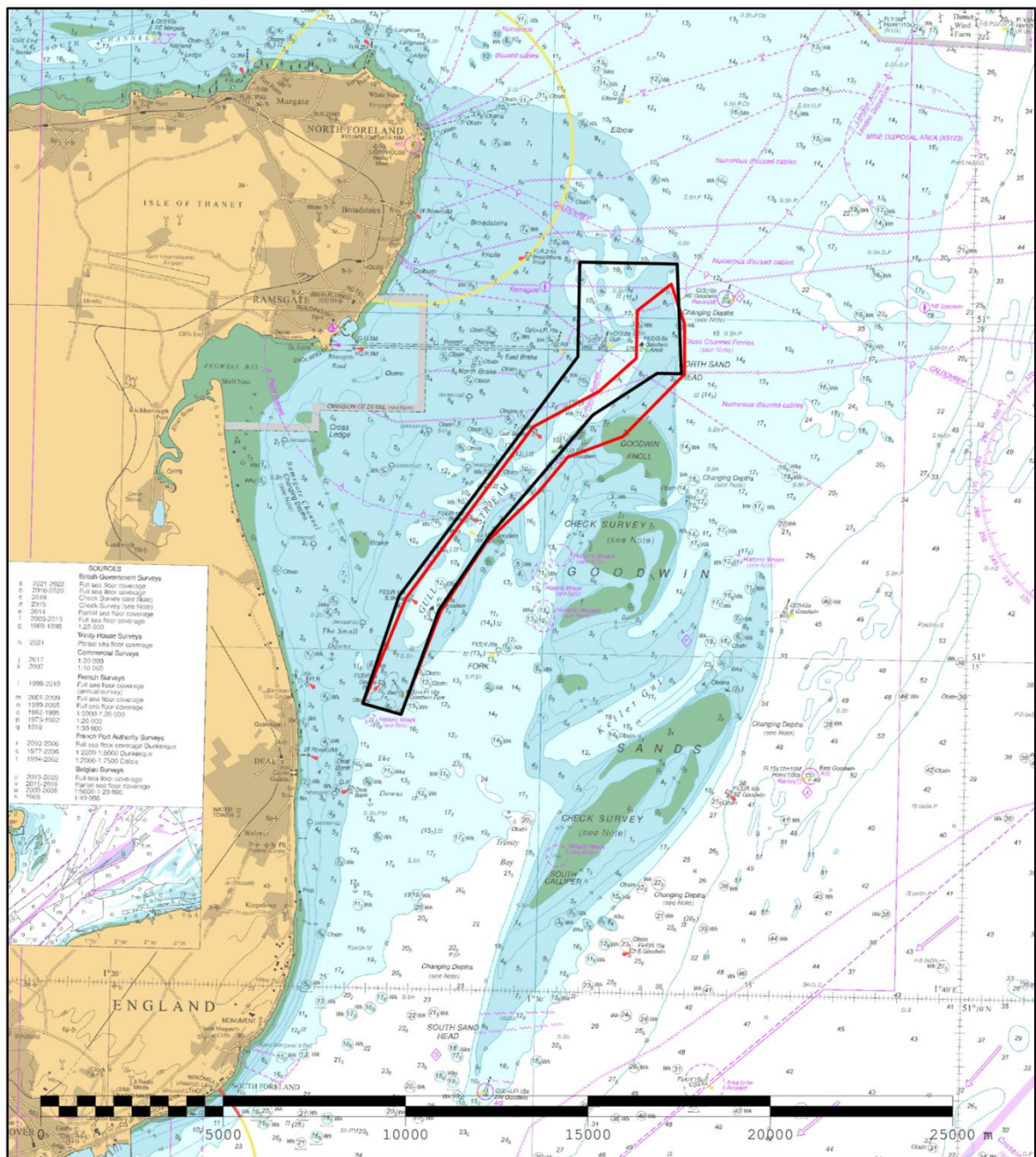


Figure 1: 2024 Dover Strait Routine Resurvey areas and GS2A full area overlaid on BA Chart 0323-0 with area GS2A in red

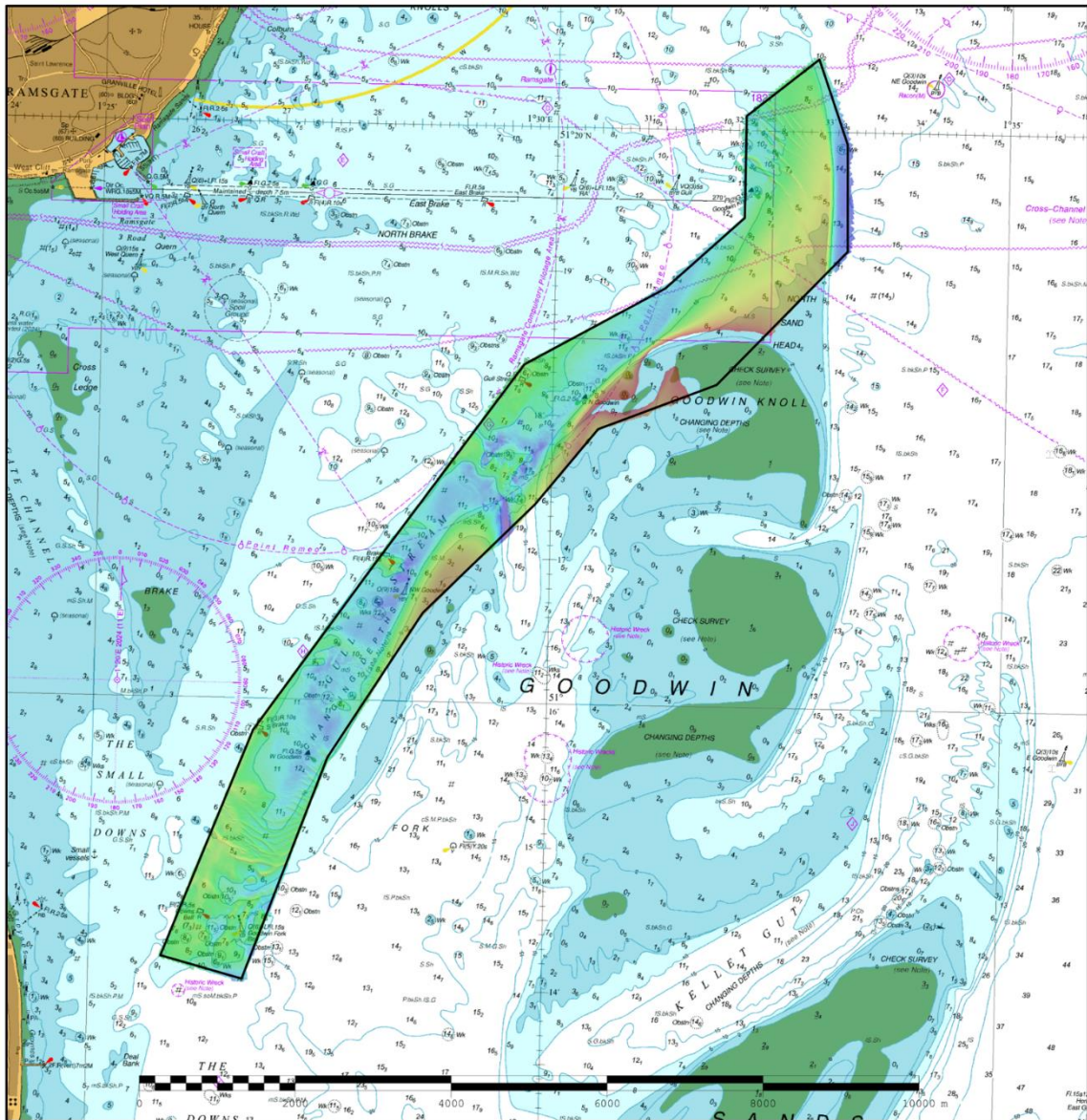


Figure 2: 2024 survey data overlaid on BA Chart 1828-0

3. REFERENCE SURVEY DETAIL

- 3.1 The previous focused survey was conducted as part of the 2021 Routine Resurvey Programme, surveyed between August and September 2021 as HI1741. Preceding that the focused area was surveyed in January 2019 as part of HI1617 GS2a Gull Stream and HI1618 GS2b North Sand Head. The previous full survey was conducted in August and September 2015 as part of HI1484.
- 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 focused survey is HI1866, surveyed in July 2024 as part of 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 Figure 3 shows the significant depths in the survey area. To the south the controlling depth is 5.2m, which was not covered in the 2021 or 2019 surveys. Moving north, depths of 8.8m and 7.6m are found in the Gull Stream channel, which are significantly shoaler than the general depths in their respective locations, however the 8.8m depth has been stable since 2019, only deepening by 0.1m.

The shoalest significant depth is 0.1m, found to the northeast of Goodwin Knoll. This point was not covered by the focused survey in 2021 but was just captured on the edge of the 2019 survey where it was 13m deeper. This indicates that Goodwin Knoll is migrating west, causing shoaling along the eastern edge of the Gull Stream. There are more shallow depths further to the east, shoaling up as you head towards Goodwin Knoll, but these areas are unlikely to see any regulated traffic, as seen in Figure 10.

To the north of North Sand Head the controlling depth for vessels looking to head east and enter the Gull Stream channel or the Ramsgate Harbour is 3.8m. Unfortunately, this point was not covered by the 2019 or 2021 surveys, but the 5.1m depth to the north has shoaled by 0.8m since 2019, and 0.5m since 2021, which shows that generally the area appears to be slowly shoaling. This is also seen in Figure 9 where the 4.6m sounding on the sand bank has shoaled by 2m since 2019 and by 1m since 2021.

- 5.2 The difference surfaces in Figures 4 and 5 show the depth changes since 2021 and 2019 respectively. Both show shoaling of the eastern edge of the Gull Stream as Goodwin Knoll migrates west. This movement can be seen in Figure 6 where the 5m contour has moved west, and also in Figure 7 which shows the 10m contour has moved up to 200m west since 2019.
- 5.3 Figures 6 and 7 show the 5m and 10m contour movement from 2019 and 2021 compared to the most recent survey. To the east of Goodwin in the middle of the survey area both the 5m and 10m contours can be seen migrating to the south west. The 5m contour has moved approx. 270m southwest since 2019, and the 10m approx. 220m in the same direction. This is also seen in Figure 9, where the circled 12.1m sounding has deepened by 6.4m since 2019 as the sand bank migrates south.
- 5.4 In the south of the survey area there is an area of sandwaves which are migrating north, as can be seen in the 10m contours in Figure 8. Despite this movement the general depths in the area remain relatively unchanged, as can be seen in Figure 9, where the 10.2m sounding to the south has only changed by 0.2m since 2019.

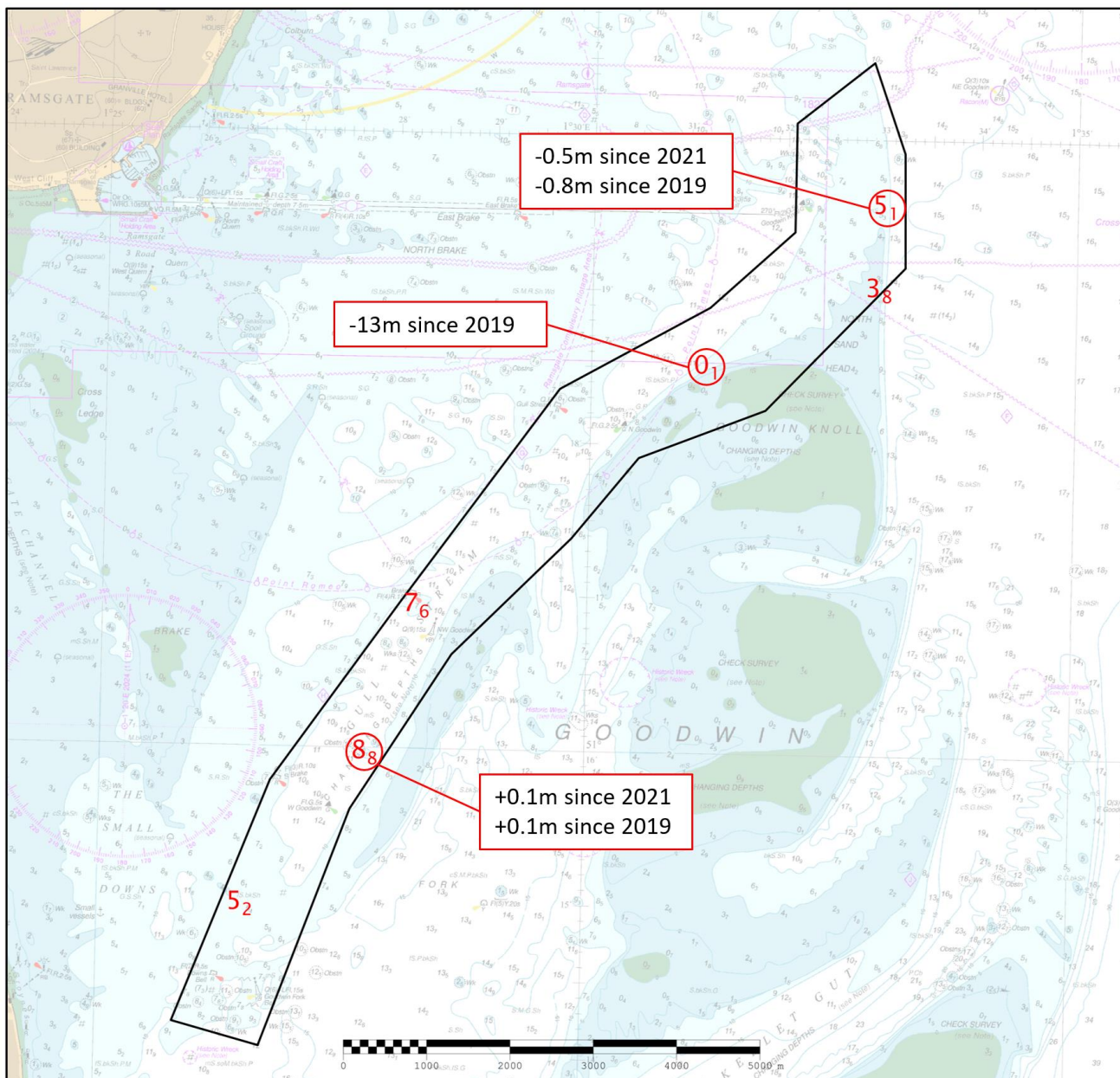
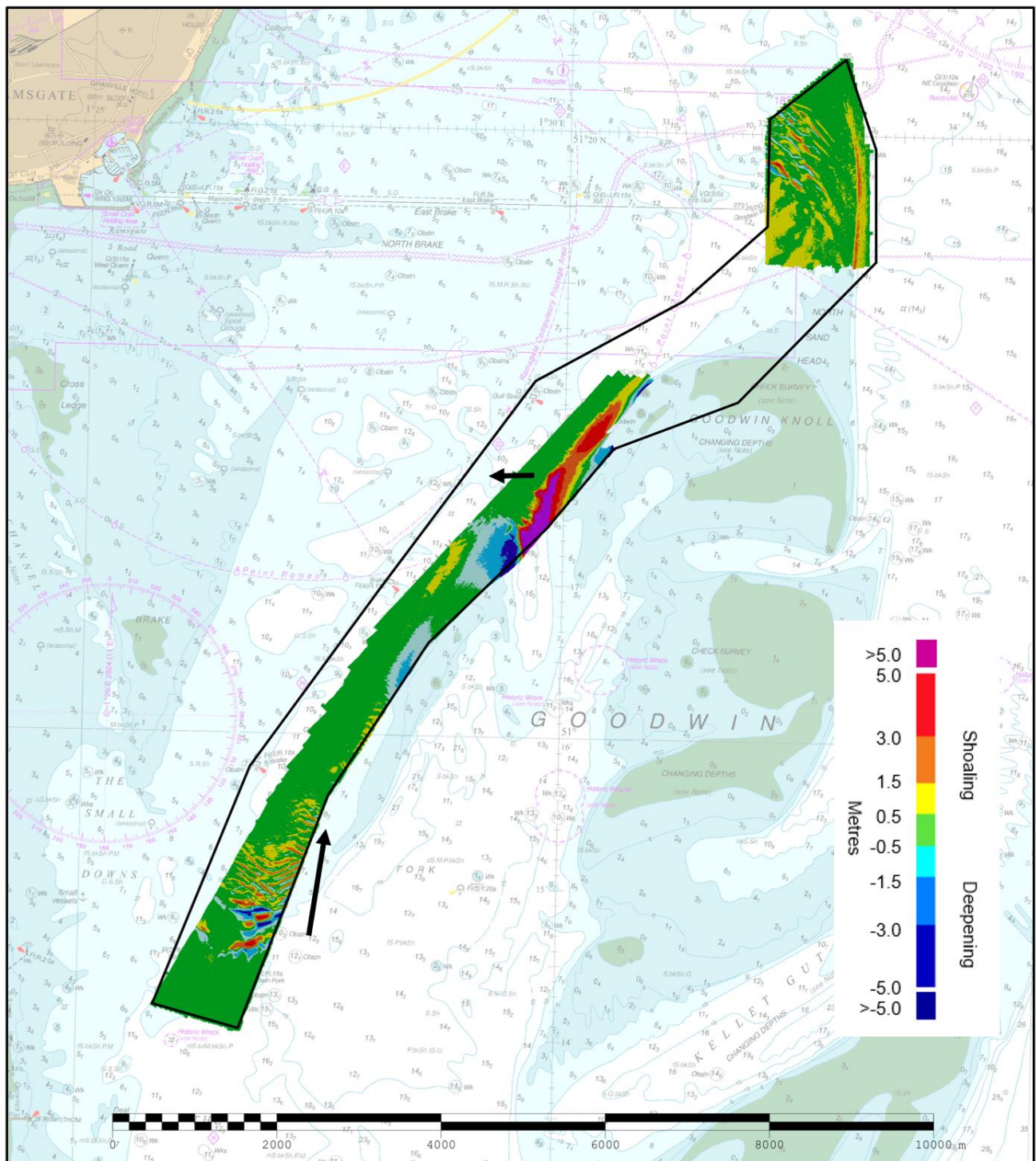


Figure 3: Significant depth soundings highlighted, overlaid on BA Chart 1828-0. Positive values represent deepening, negative values represent shoaling.



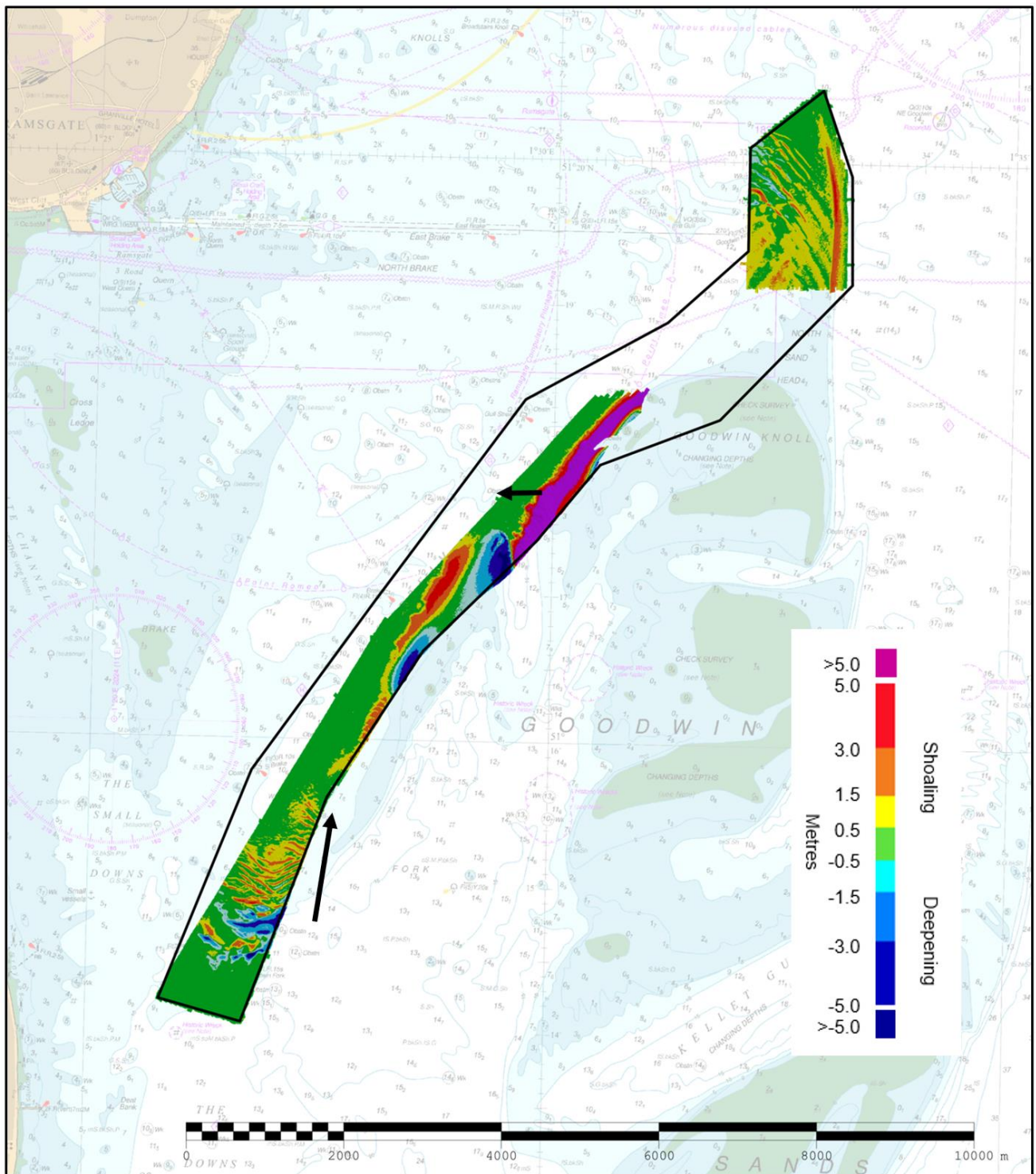


Figure 5: Difference surface showing bathymetric changes between the 2019 and 2024 surveys overlaid on BA Chart 1828-0 (Black arrows represent sandwave migration since 2019 survey)

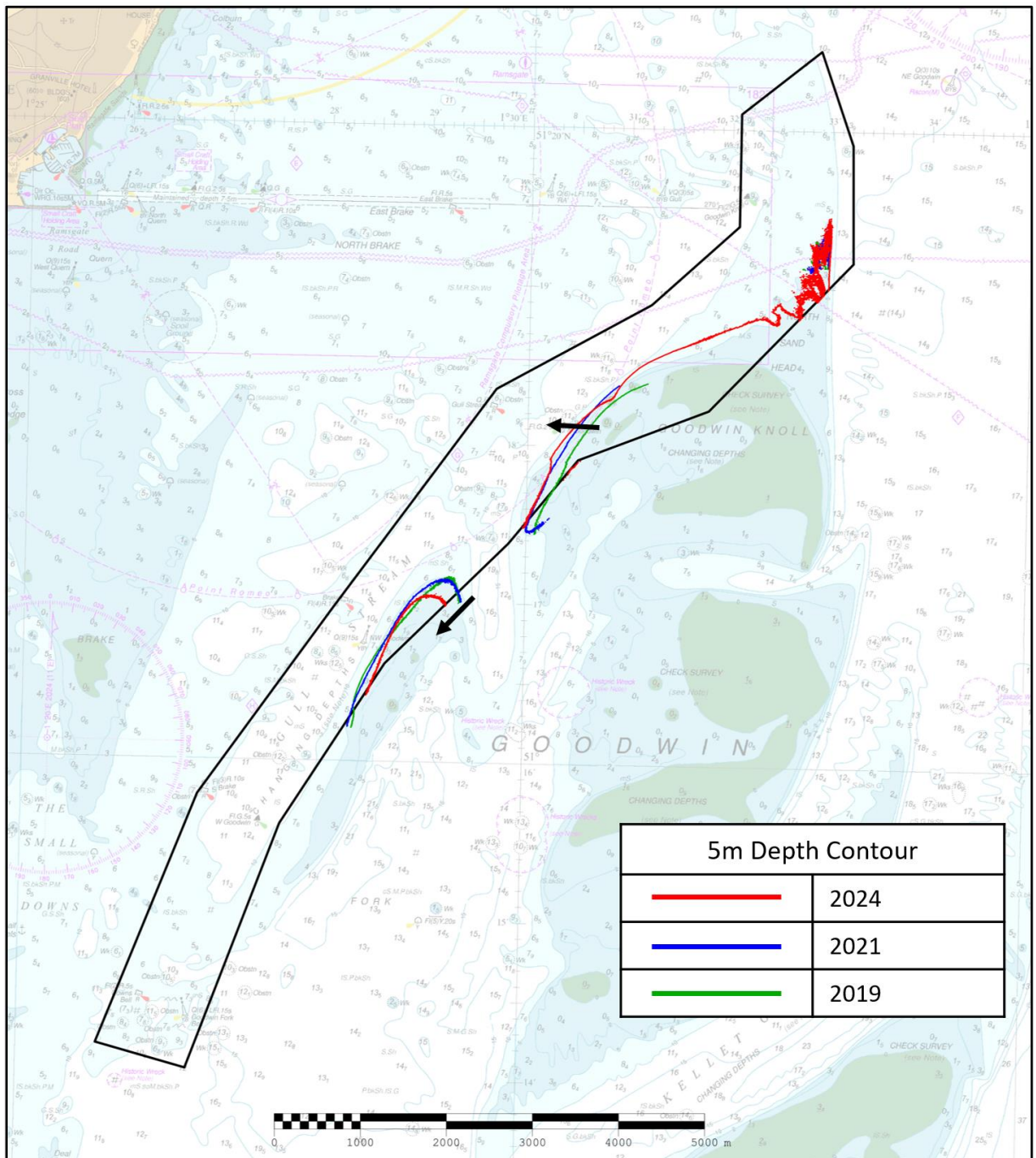


Figure 6: Contour plot showing changes in the 5m contours between 2019 (green), 2021 (blue) and 2024 (red). Black arrow represents feature migration.

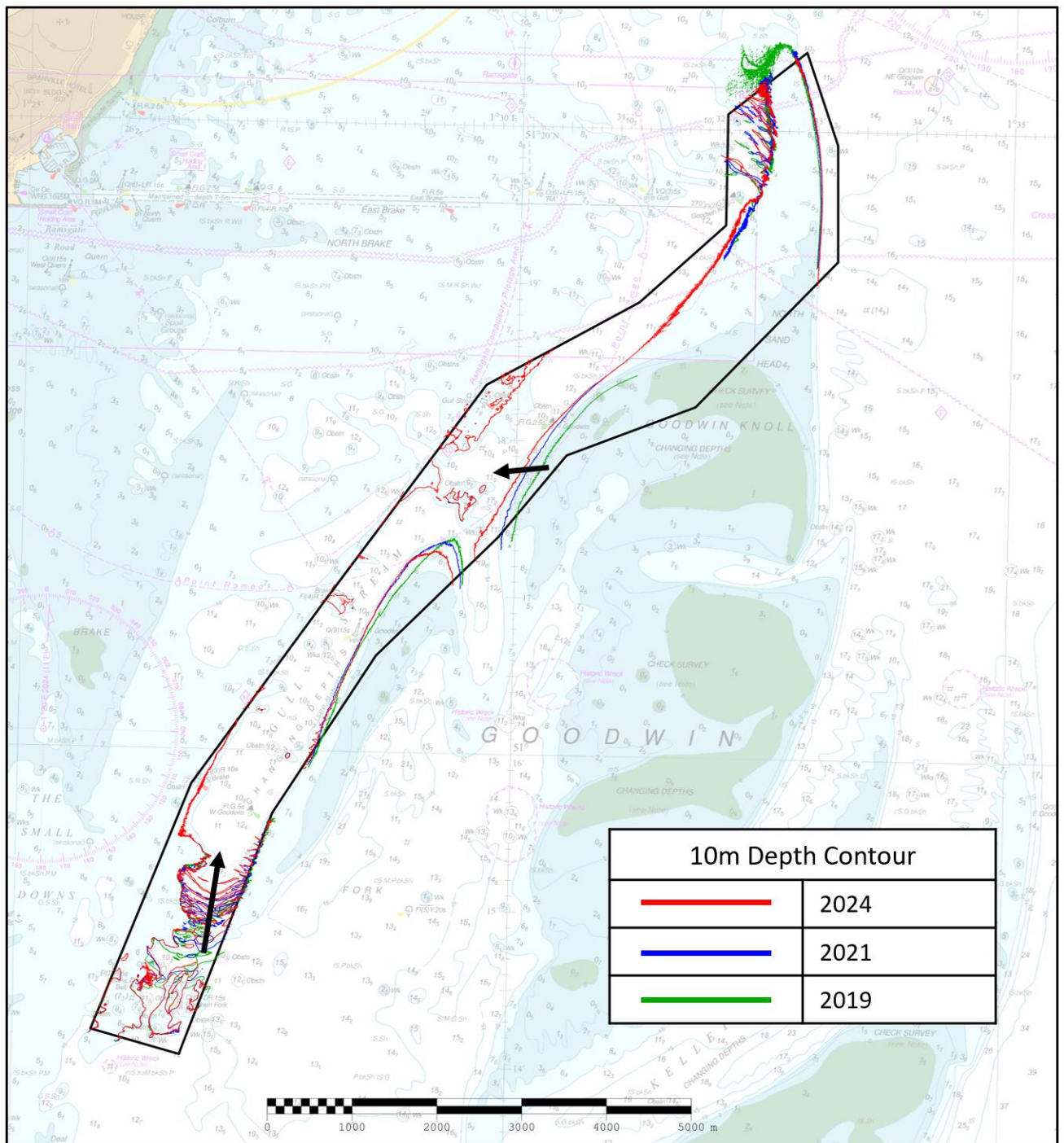


Figure 7: Contour plot showing changes in the 10m contours between 2019 (green), 2021 (blue) and 2024 (red). Black arrow represents feature migration.

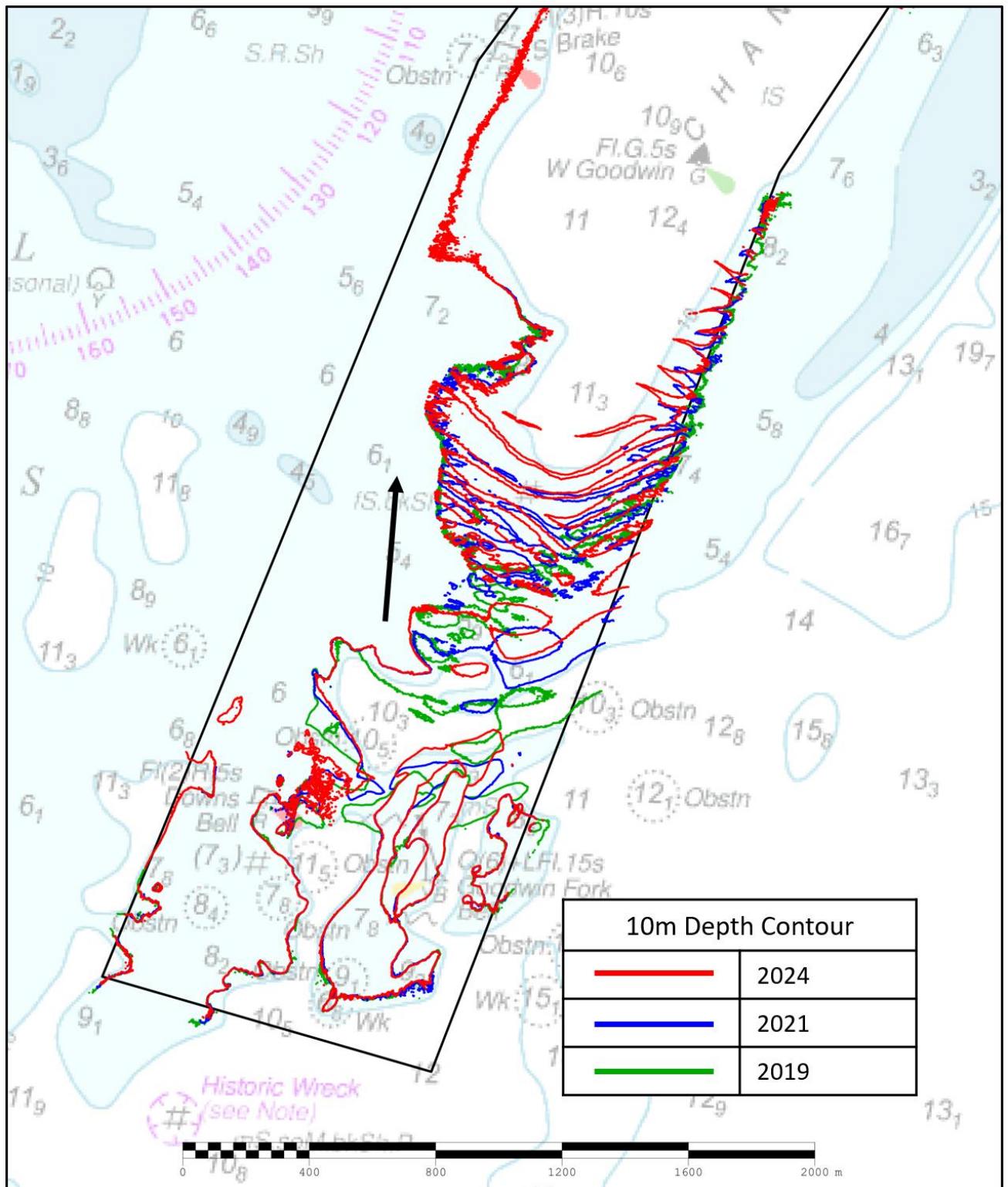


Figure 8: Contour plot showing changes in the 10m contours in the south of the focused area between 2019 (green), 2021 (blue) and 2024 (red). Black arrow represents feature migration.

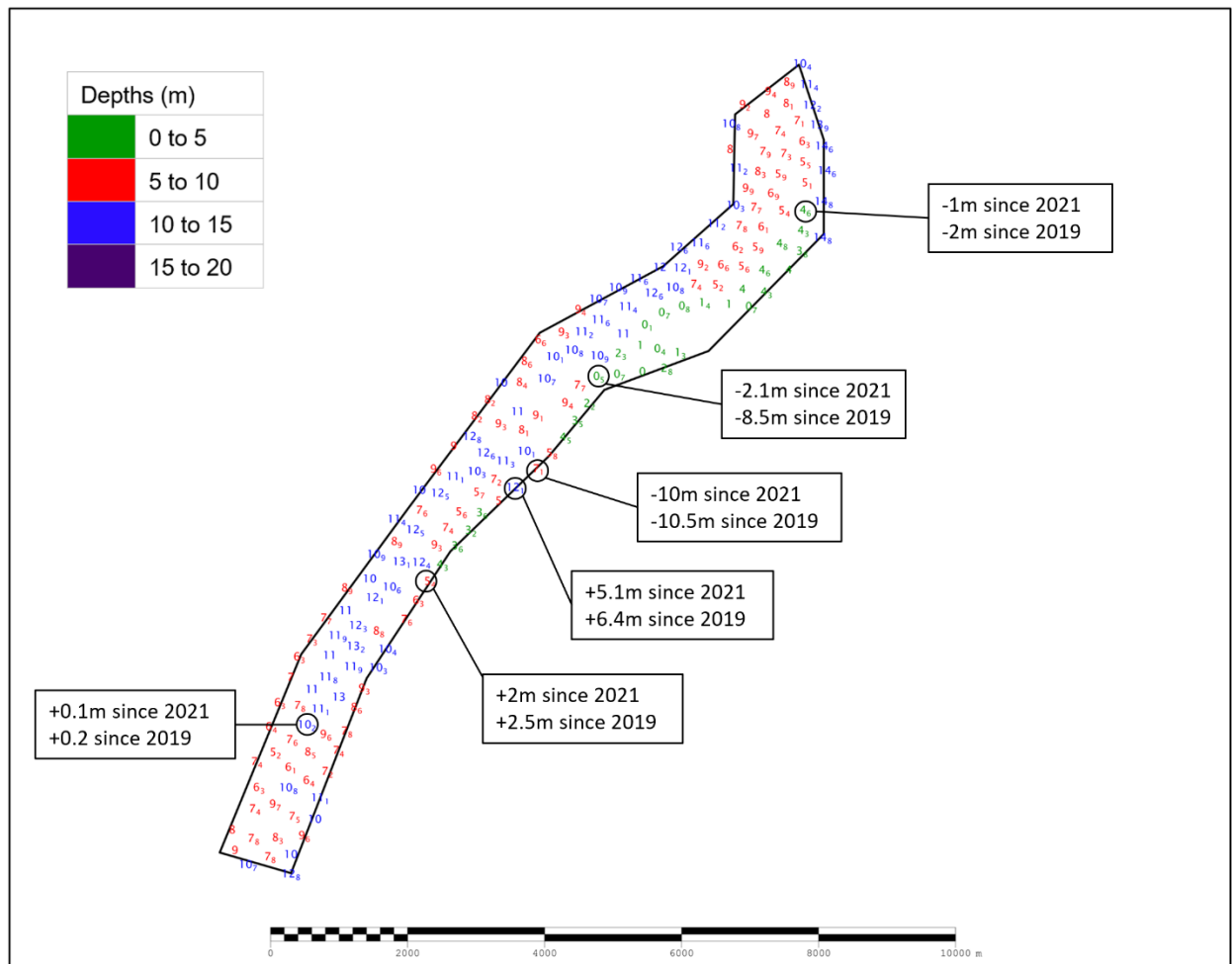


Figure 9: Colour banded depth plot from the 2024 survey with selected depth changes since the 2021 and 2019 focused surveys. Positive values (+) represent deepening. Negative values (-) represent shoaling.

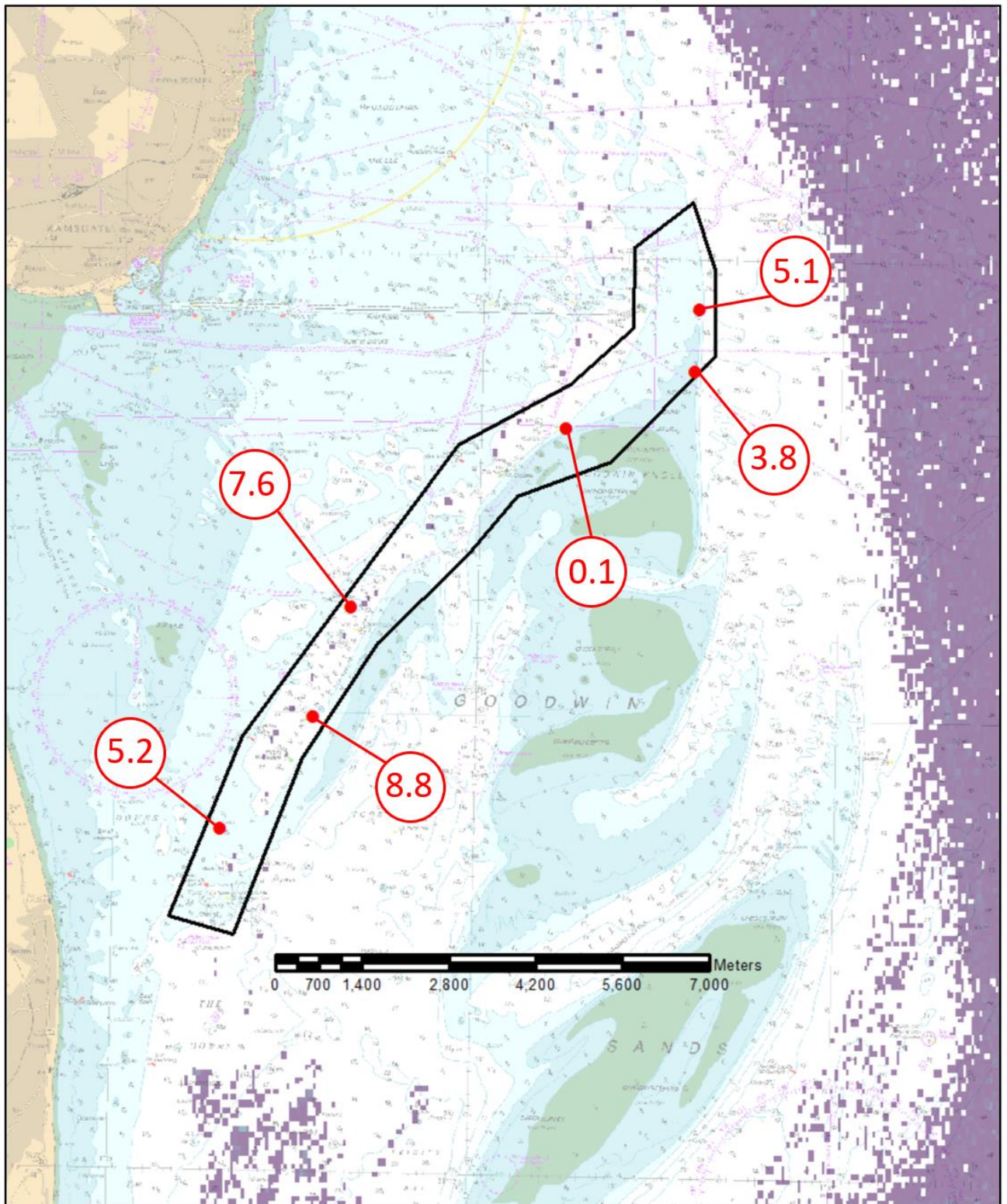


Figure 10: AIS ECDIS regulated annual tanker, passenger, and cargo vessel data from 2023 with Routine Resurvey area GS2A and controlling depth soundings (m) overlaid.

6. RECOMMENDATIONS FOR FUTURE SURVEYS

Survey Interval

- 6.1 The migration of Goodwin Knoll west into the Gull Stream presents a potential hazard to vessels using the channel to access Ramsgate Harbour. The 3-year interval sufficiently captures the

changing depths from the last two focused surveys, so it is recommended that it continues the 3-year interval with the full area surveyed every 6 years.

- 6.2 Trinity House survey the Gull Stream frequently to ensure that buoyage adequately demarcates the western edge of the banks. However, the RRS surveys allow for a detailed assessment of bank movements to the west of Goodwin Knoll.

Survey Area

- 6.3 Following the 2021 focused surveys, GS2a and GS2b were combined into one polygon to better encompass the contours on the migrating western bank of Goodwin Knoll. This new polygon adequately covers the Gull Stream channel, and the northern reaches of North Sand Head, therefore, no changes are recommended this year.
- 6.4 There is a gap between the 2024 (HI1866) and 2021 (HI1743) focused areas covering the bank West of Goodwin and East of Gull Stream see Figure 11. This gap has not been surveyed since 2015, so depths in this area are outdated and not consistent with the surrounding data. Following the 2021 survey of GS4 the western boundary was extended to meet up with the GS2A boundary (covering the gap, see Figure 11), this is due to be covered by GS4 checklines in 2027, but consideration could be given to undertaking this checkline survey earlier.

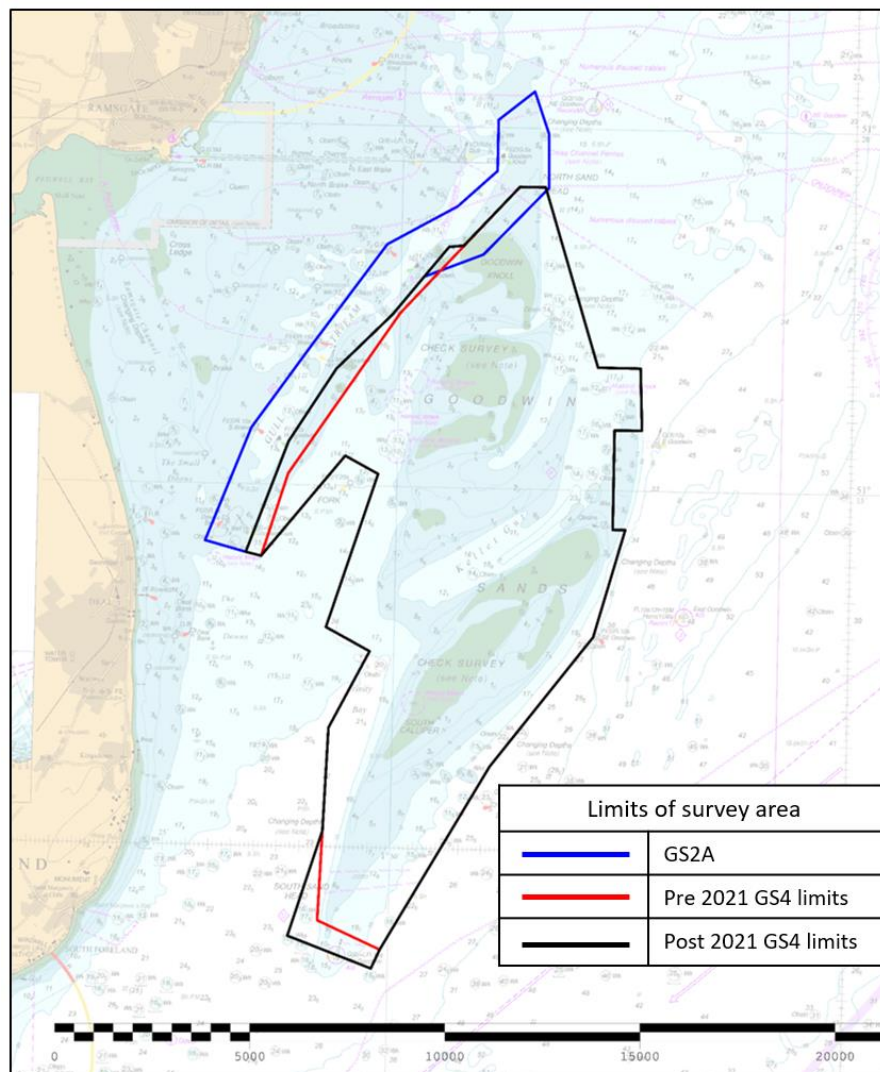


Figure 11: Limits of GS2A (blue), GS4 before the 2021 amendment (red) and GS4 after the 2021 amendment (black)