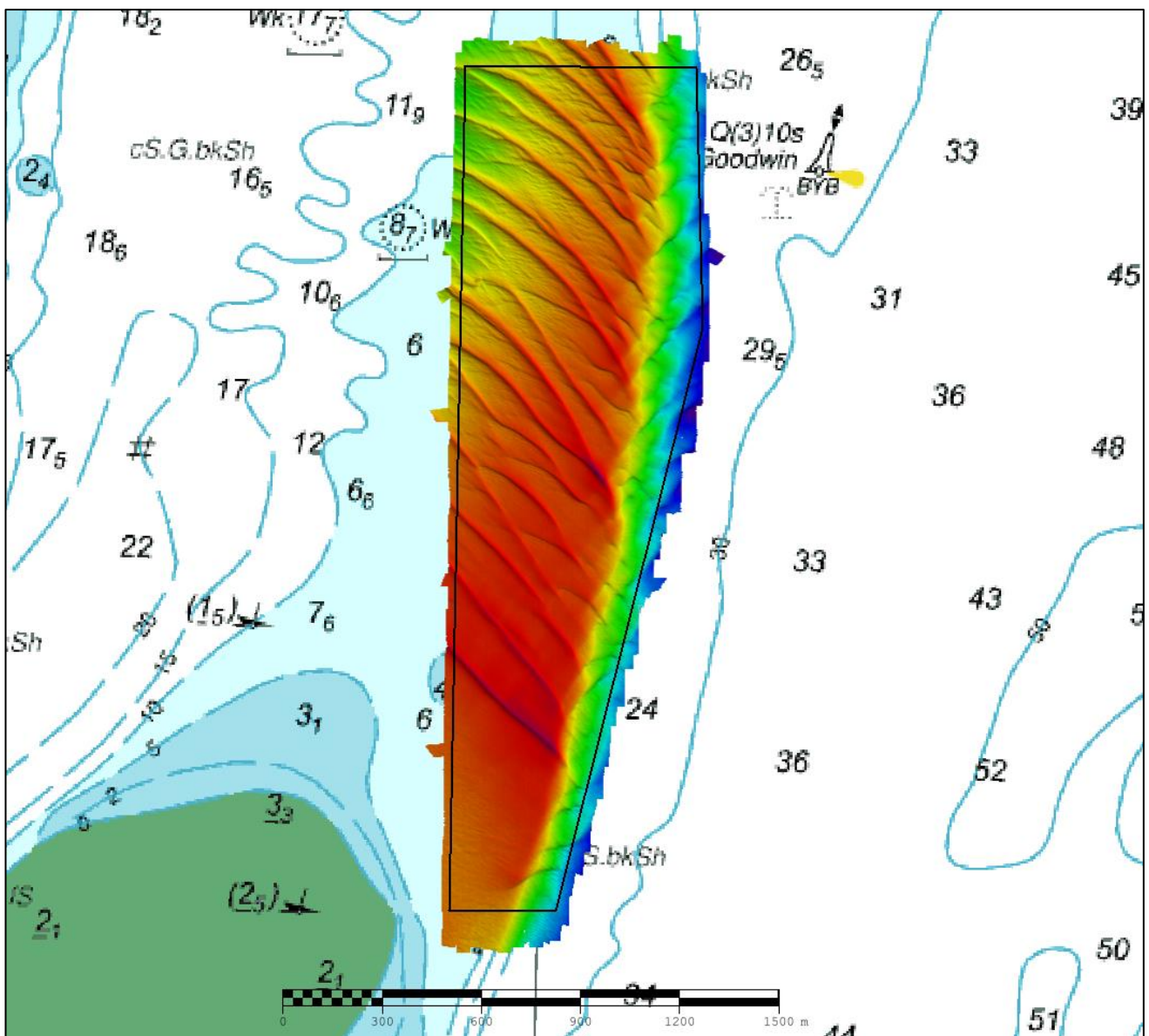




UK Hydrographic  
Office

## DOVER STRAIT - GOODWIN SANDS NORTHERN HEAD TO SOUTH CALLIPER (GS3) 2021 ASSESSMENT

An assessment of the 2021 hydrographic survey of the area GS3: 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).

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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 VORF Model.

## **GS3 NORTHERN HEAD OF SOUTH CALLIPER 2021**

### **1. SUMMARY**

#### **Changes Detected**

- 1.1 GS3 covers the Northern head of the South Calliper Shoal to the east of Goodwin Sands. There is continued migration of sediment eastwards, which is consistent with historical trends.
- 1.2 Significant changes observed along the eastern edge of the survey since 2015, in particular the southern part of the area due to the eastward migration of the bank.
- 1.3 Least depth within the survey area is now 3.7m, compared with 3.1m in 2015. The least depth is now located in the south part of the survey area compared to the least depths in the centre of the survey from 2015 (3.1m) and 2009 (2.2m) surveys.

#### **Reasons for Continuing to Resurvey the Area**

- 1.4 The continued migration of sediment and resulting shoaling of areas towards the Goodwin east cardinal buoy and the shipping traffic to the east of this buoy support the continued monitoring of this area.

#### **Recommendations**

- 1.5 GS3 should remain on the 6-year survey interval.
- 1.6 It is recommended that the survey area is extended eastwards towards Goodwin Buoy due to the significant easterly migration of sediment.

### **2. LOCATION**

- 2.1 Survey interval at time of resurvey: 6 years
- 2.2 Area Covered: 1.76 km<sup>2</sup>

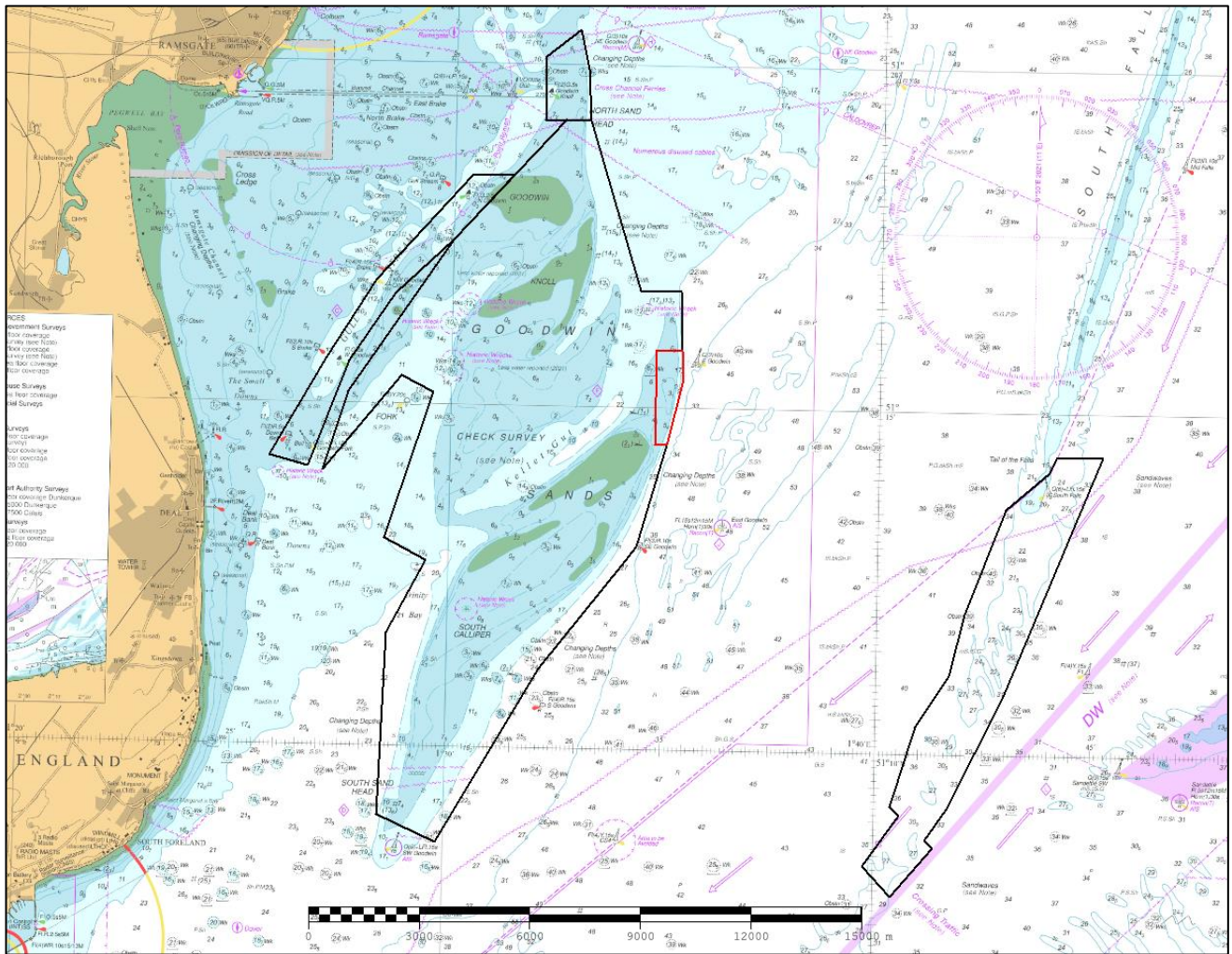


Figure 1: 2021 Dover Strait Routine Resurvey areas overlaid on BA Chart 0323-0 with area GS3 in red

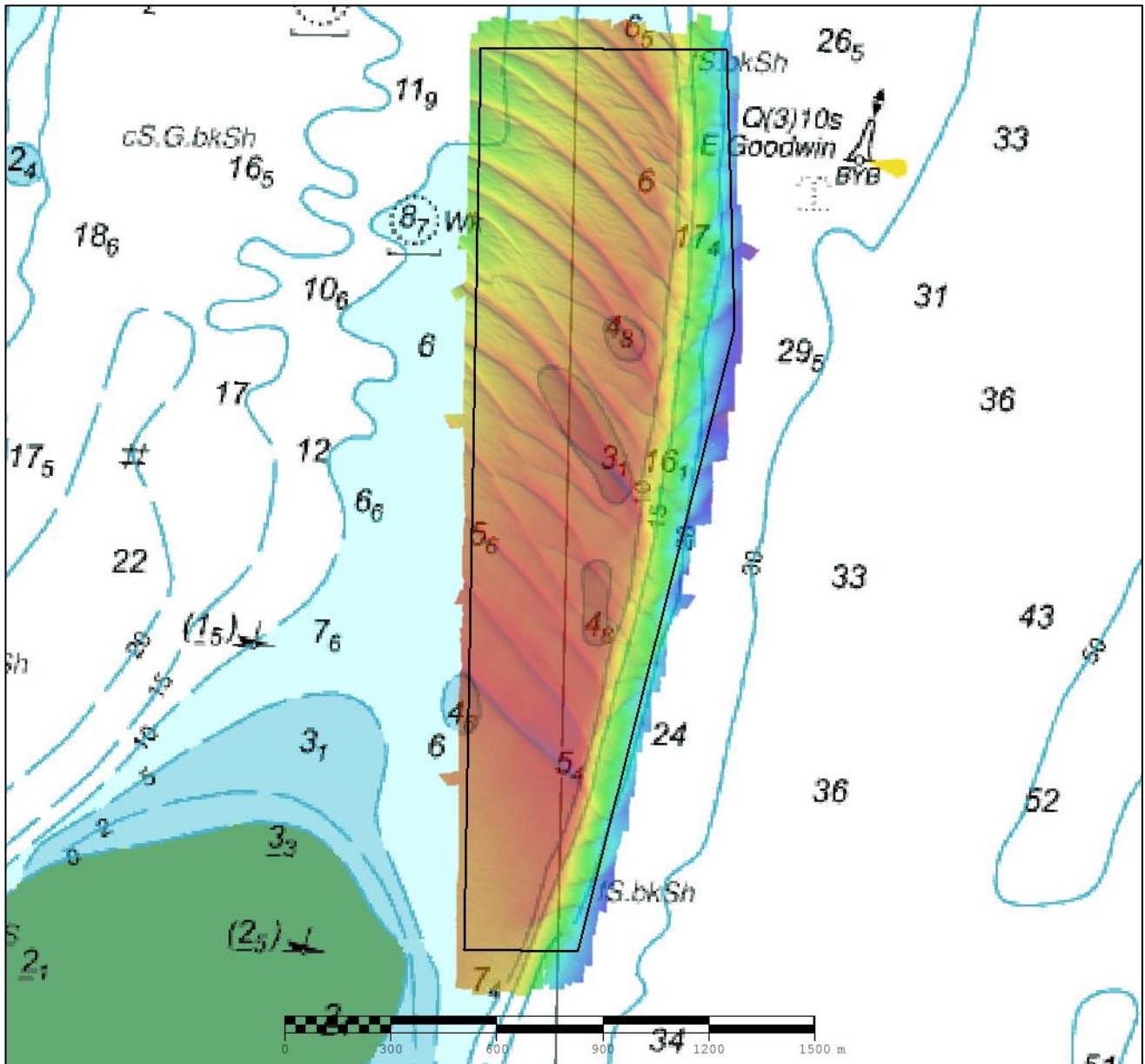


Figure 2: 2021 survey data overlaid on BA Chart 1828-0

### 3. REFERENCE SURVEY DETAIL

- 3.1 The previous survey conducted within the Routine Resurvey Programme was conducted in August to September 2015 as part of HI1484. The previous RRS survey was conducted in July to September 2009 as part of HI1294.
- 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 survey from the 2021 Routine Resurvey Programme was conducted in September to October 2021 as part of HI1742.
- 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 Significant depths from the 2021 survey can be seen in Figure 3, with the least depth of 3.7m located in the south of the survey, which is 2.2m shallower than in the same point in the 2015 survey. The least depth is approximately 890m further south than the least depths for the previous 2015 (3.1m) and 2009 (2.2m) surveys which are located in the centre of the survey area.
- 5.2 The difference surfaces in Figures 4 and 5 all show significant shoaling along the eastern edge of the survey area due to the eastern migration of the bank. There is also migration of sandwaves and scour in the north-west of the survey area in an east-north-easterly direction. The eastern migration of the 10m contour can be seen more clearly in the contour plot of Figure 6.
- 5.3 The largest differences within the survey area since 2015, shown in Figure 5, show a difference of -9.73m in the south-east associated with the migration of the bank eastwards, resulting in the new least depth position. The largest deepening since 2015 is +5.04m in the north-west.
- 5.4 Figure 7 is a colour banded depth plot, with the above changes since the 2015 and 2009 surveys. Significant depths changes are associated with the migration of the bank and migration of sandwaves as the bedforms have changed position.

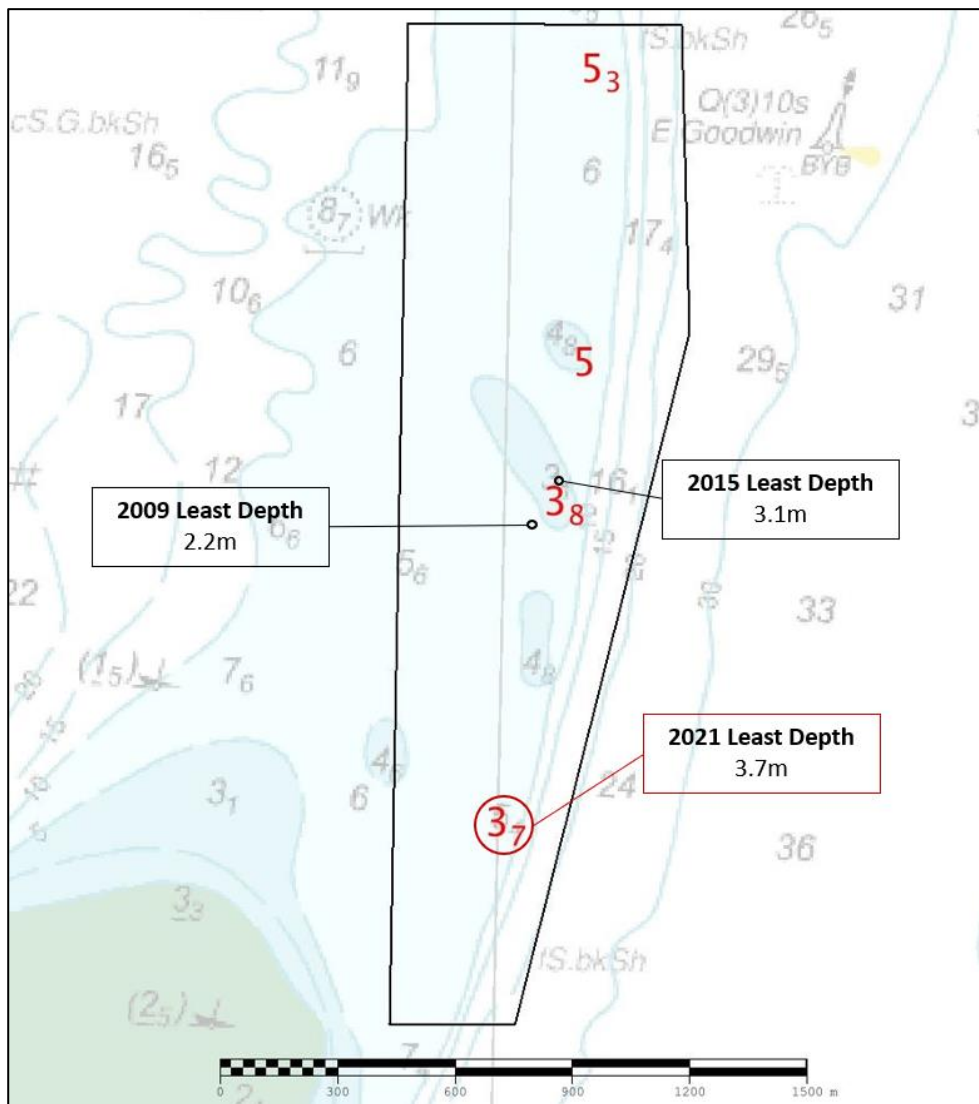


Figure 3: Significant depth soundings highlighted, overlaid on BA Chart 1828-0

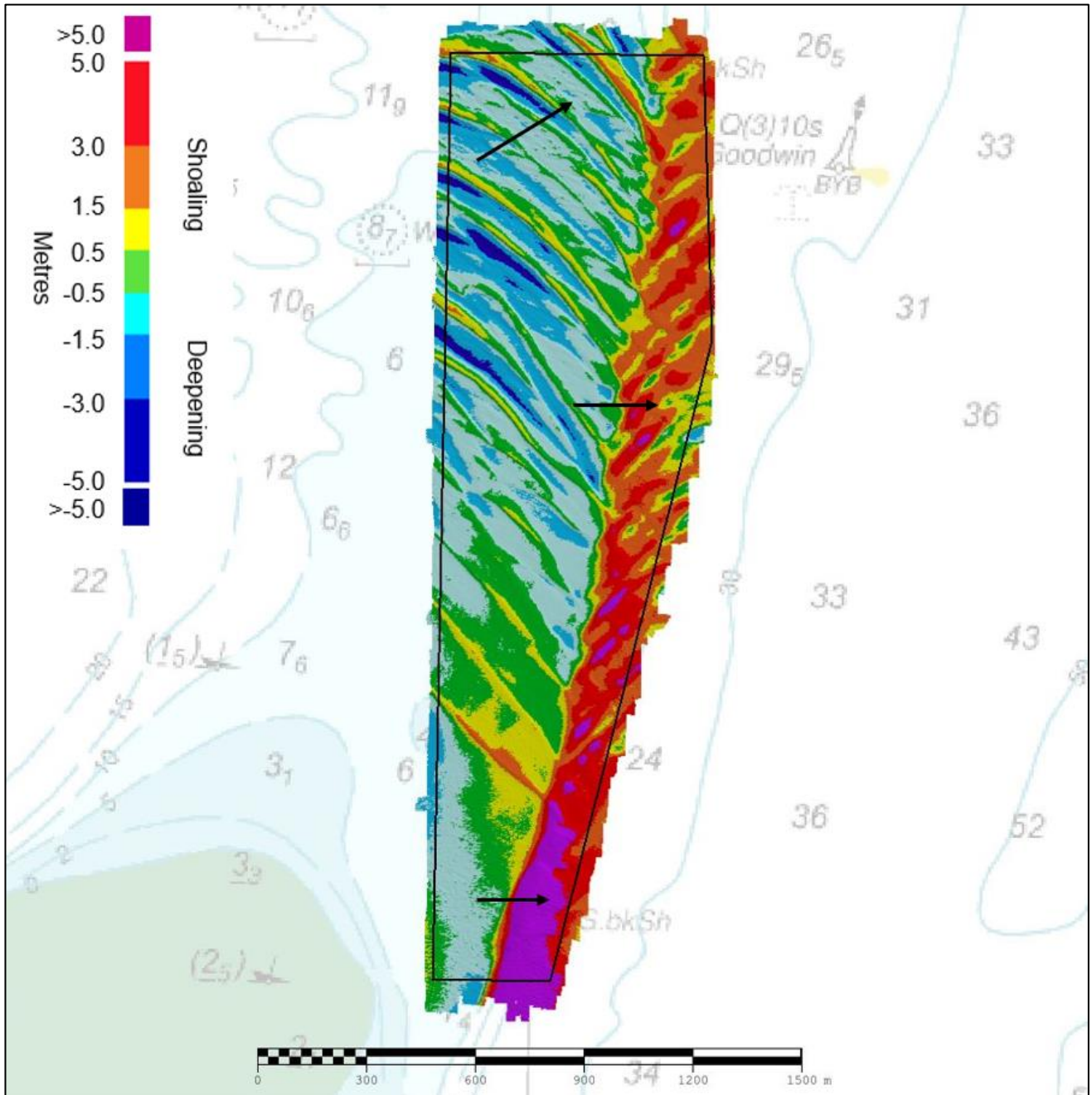


Figure 4: Difference surface showing bathymetric changes between the 2021 and 2015 surveys overlaid on BA Chart 1828-0 (Black arrows represent sandwave migration since 2015 survey)

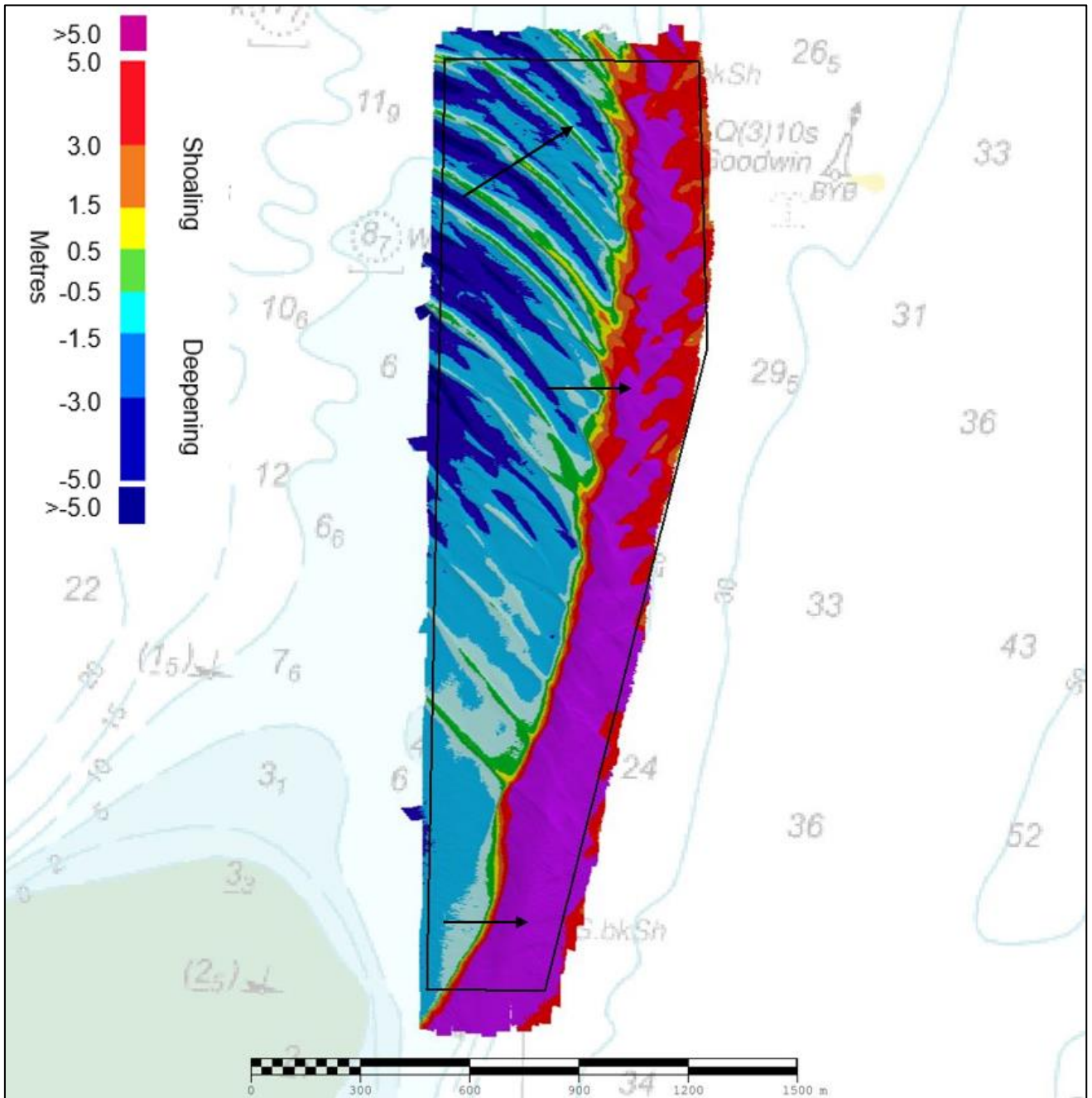


Figure 5: Difference surface showing bathymetric changes between the 2021 and 2009 surveys overlaid on BA Chart 1828-0 (Black arrows represent sandwave migration since 2009 survey)



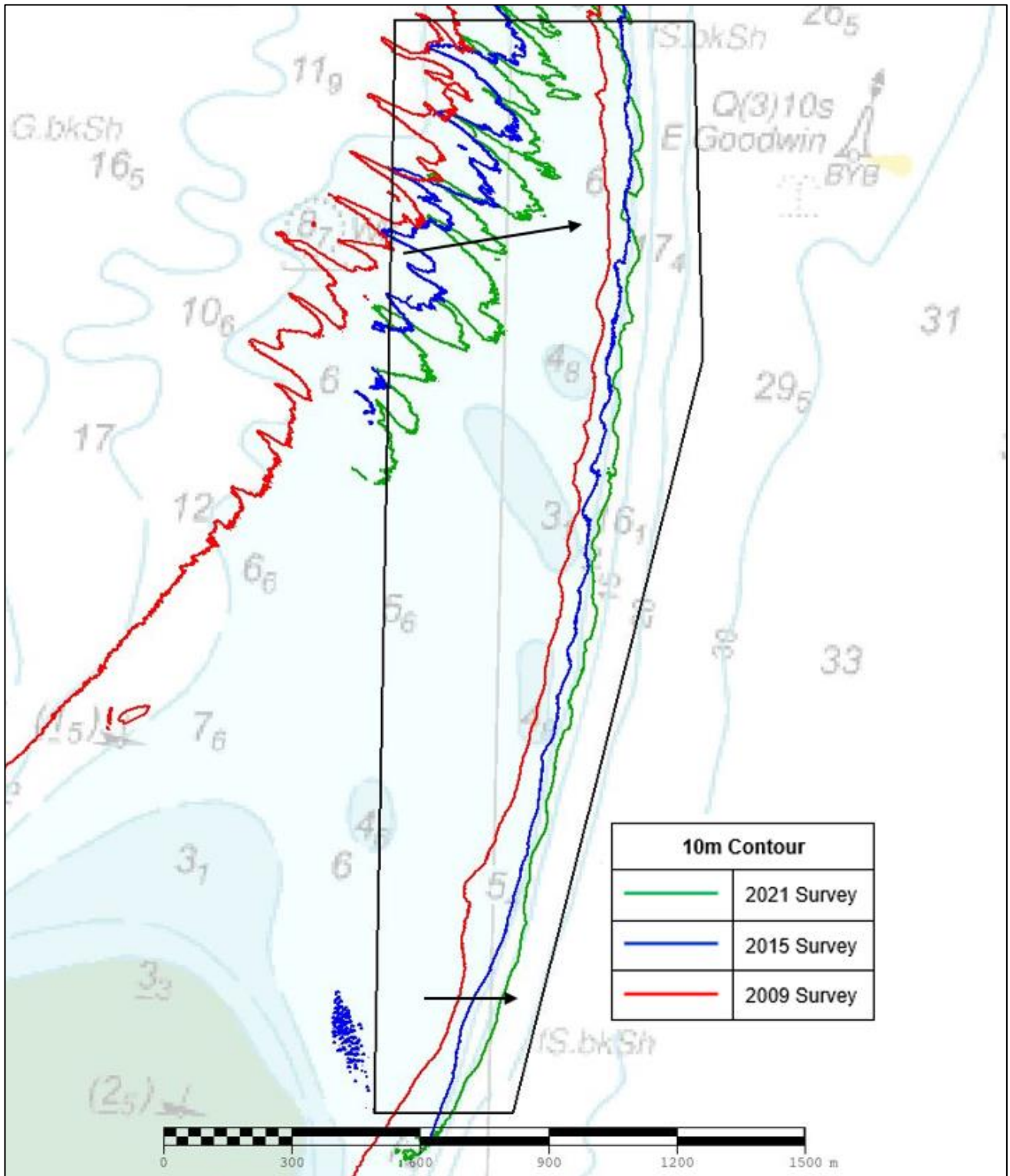


Figure 6: Contour plot showing changes in the 10m contours for survey area between 2021 (green), 2015 (blue) and 2009 (red). Black arrow represents the sandwave migration.

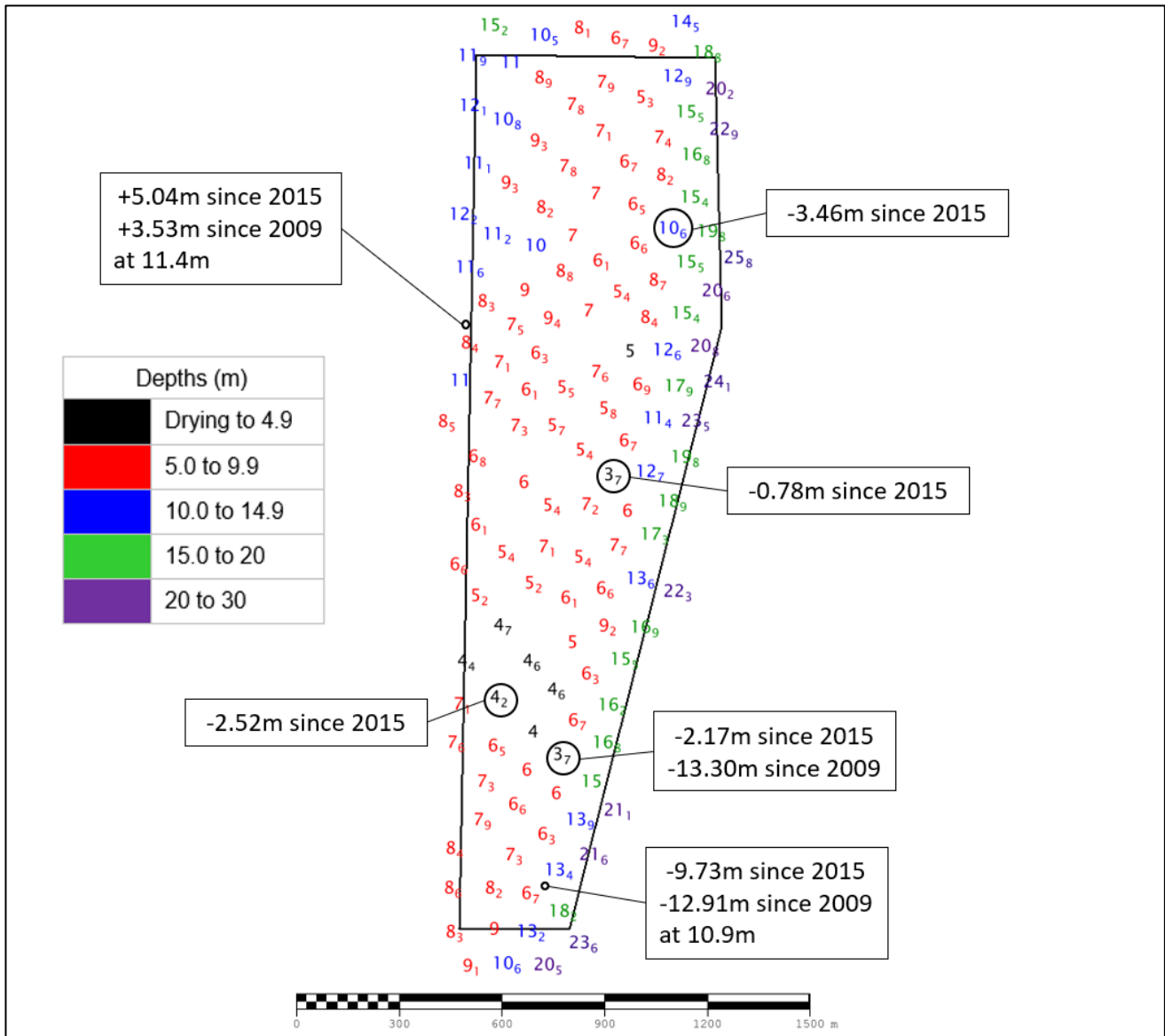


Figure 7: Colour banded depth plot from the 2021 survey with selected depth changes since the 2015 and 2009 surveys. Positive values (+) represent deepening. Negative values (-) represent shoaling.

## 6. RECOMMENDATIONS FOR FUTURE SURVEYS

### Survey Interval

- 6.1 Due to the continued shoaling of the Northern Head of the South Calliper Shoal towards the east, this should continue to be monitored so the 6-year frequency should be maintained.

### Survey Area

- 6.2 After the 2015 survey, the area of GS3 was reduced as the upper section was incorporated into the GS4 area with a 12-year survey interval. The controlling depth is monitored within the main survey boundaries, but the significant eastwards movement of sediment needs further monitoring. Therefore, the eastwards extension of GS3 towards Goodwin Buoy should take place as per the below diagram.

The proposed limit changes to GS3 are as follows:

Latitude	Longitude
51.263862N	001.579506E
51.263981N	001.594960E
51.256953N	001.595047E
51.240989N	001.588224E
51.240900N	001/579513E

Figure 8: Proposed new survey area coordinates of area GS3 (Total area 2.35 km<sup>2</sup>)

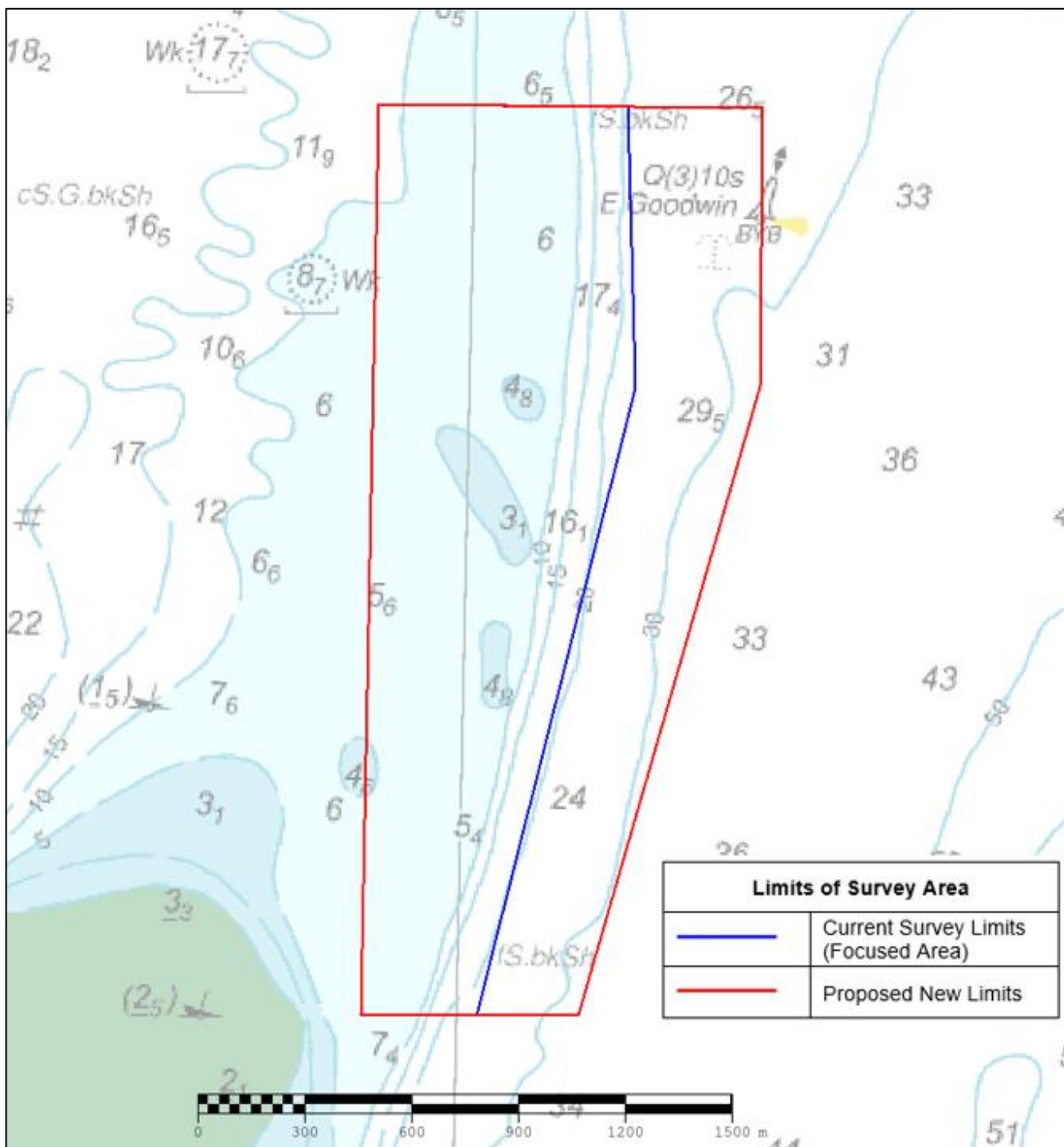


Figure 9: Proposed changes to survey limits of area GS3