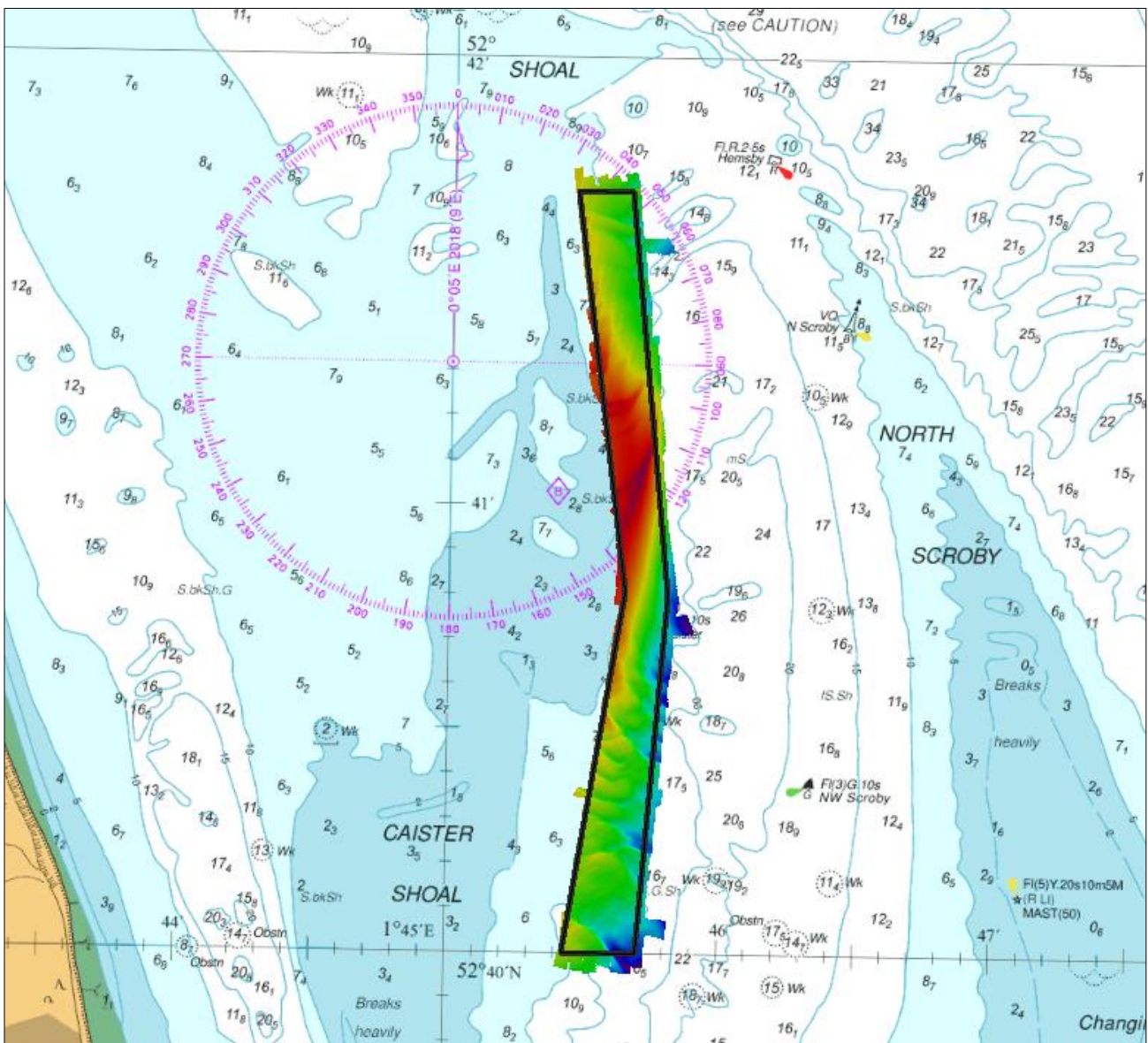




UK Hydrographic
Office

EAST ANGLIA COCKLE SHOAL FOCUSED AREA (EA3A) 2018 ASSESSMENT

An assessment of the 2018 hydrographic survey of the area EA3a Cockle Shoal Focused Area: to monitor recent seabed movement; to identify any implications for shipping; and to make recommendations for future surveys.



CONTENTS

1. SUMMARY	1
2. LOCATION	1
3. REFERENCE SURVEY DETAIL	3
4. COMPARISON SURVEY DETAIL	3
5. DESCRIPTION OF RECENT BATHYMETRIC CHANGE	4
6. RECOMMENDATIONS FOR FUTURE SURVEYS	8

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.

This material is protected by Crown Copyright. It may be downloaded from the UK Hydrographic Office's (UKHO) web site and printed in full for personal or non-commercial internal business use. Extracts may also be reproduced for personal or non-commercial internal business use on the condition that the UK Hydrographic Office is acknowledged as the publisher and the Crown is acknowledged as the copyright owner.

Applications for permission to reproduce the material for any other purpose (including any distribution of the material or extracts to third parties) can be made interactively on the UKHO's web site (www.ukho.gov.uk), by e-mail to intellectualproperty@ukho.gov.uk or in writing to Intellectual Property, UK Hydrographic Office, Admiralty Way, Taunton, Somerset, TA1 2DN.

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

COCKLE SHOAL FOCUSED AREA (EA3A), 2018

1. SUMMARY

Changes Detected

- 1.1 Caister Shoal continues to migrate north-eastwards which is consistent with historical trends.
- 1.2 Some stability in the northern section of EA3a.
- 1.3 Significant shoaling in the central region with some sections shoaling 15.2m since 2016.
- 1.4 Some shoaling in the south-west section of EA3a.

Reasons for Continuing to Resurvey the Area

- 1.5 Depths in the area remain hazardous and highly changeable around Cackle Shoal to deep draught vessel navigating the area and therefore require continued monitoring through annual resurveys.

Recommendations

- 1.6 Given the location of the area and the mobility and changes in the seabed, EA3a should remain on the annual survey interval and the full survey EA3 should remain maintain its 3-year frequency.
- 1.7 Based on the mobility of the survey area in certain areas, EA3a should be extended eastward and slightly south-west to account for the ongoing migration of the sand waves in the area.

2. LOCATION

- 2.1 Survey interval at time of resurvey: The full EA3 area is surveyed every 3 years with two annual focused areas covering EA3a and EA3b.
- 2.2 Area Covered: 0.92 km²

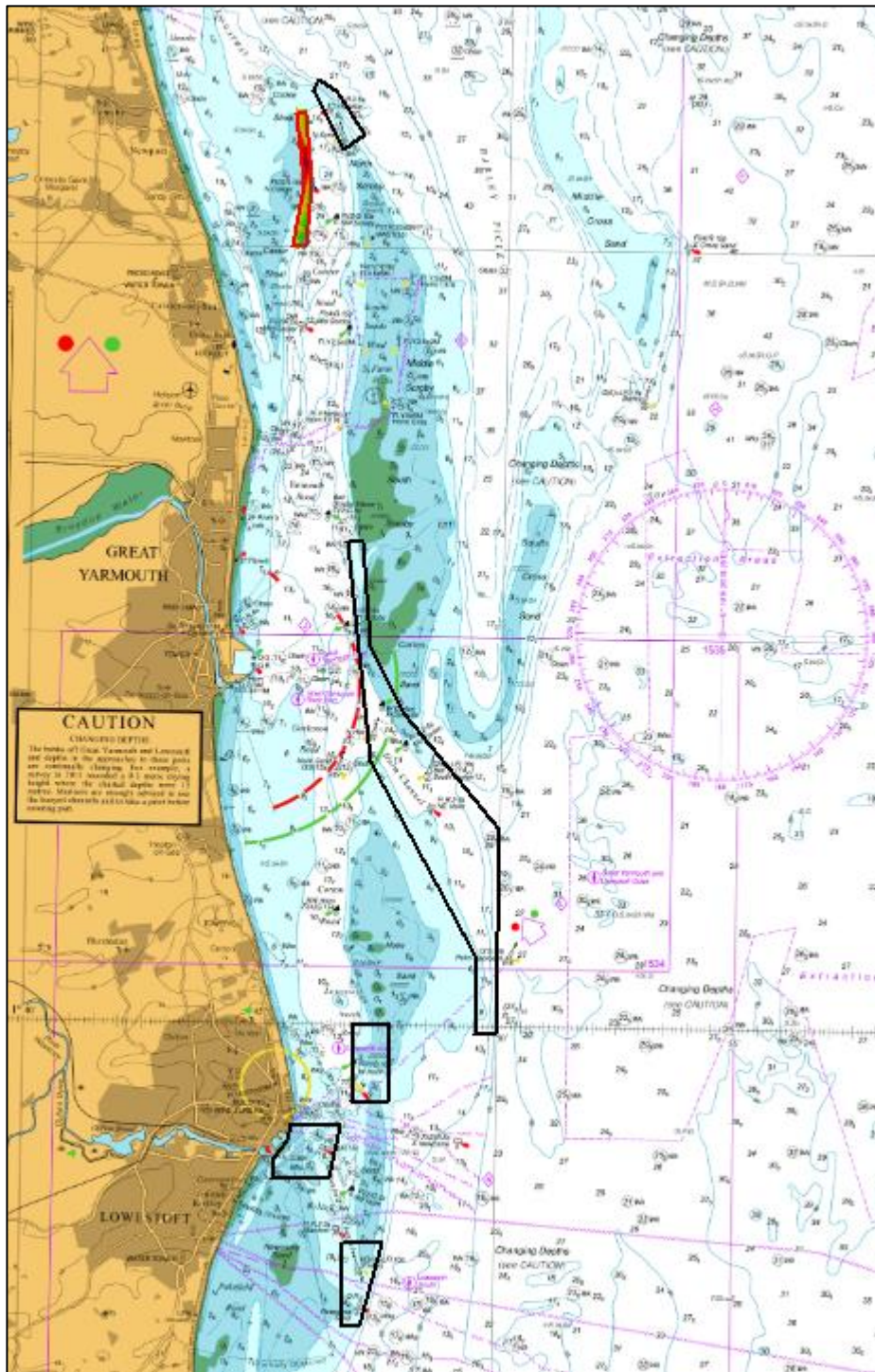


Figure 1: 2018 East Anglia RRS areas overlaid on BA Chart 1543-0 with EA3a Cockle Shoal Focused Area in red

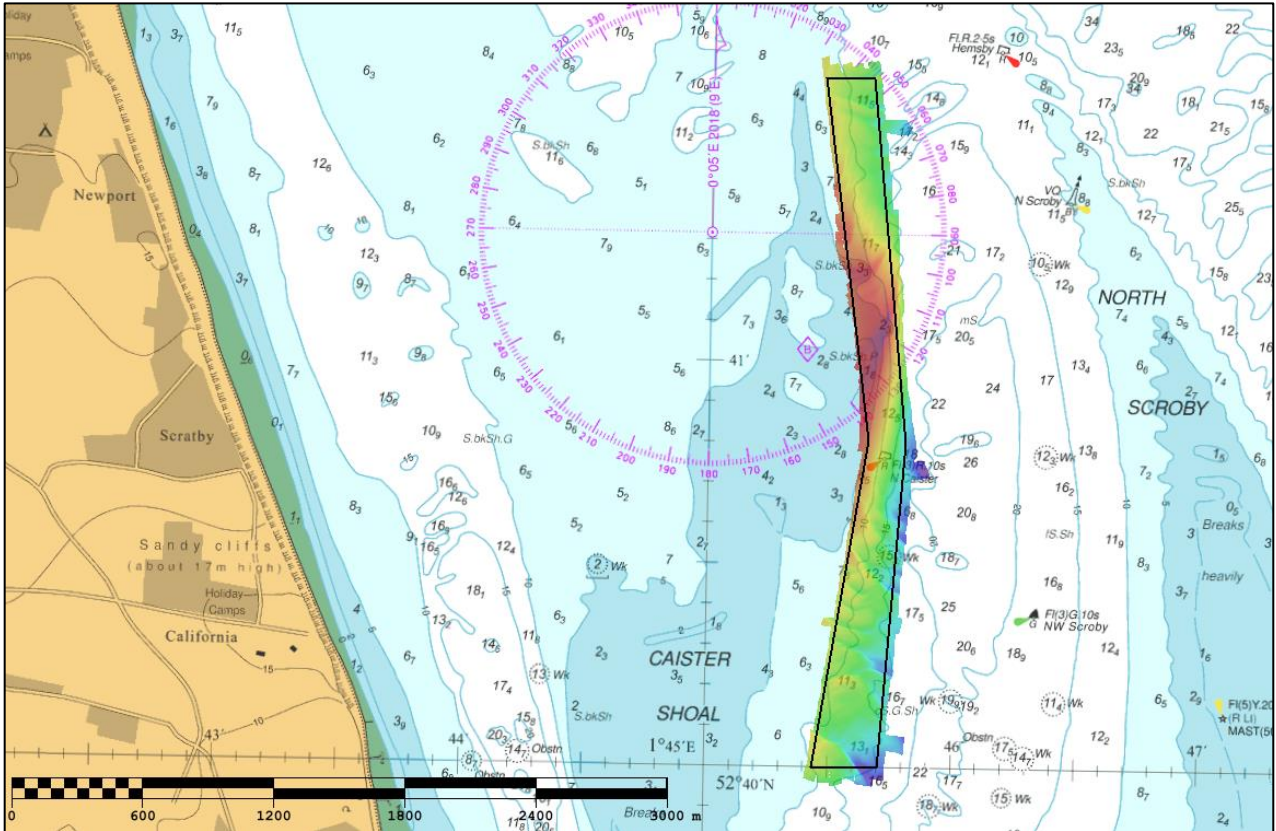


Figure 2: 2018 EA3a Cockle Shoal Focused Area survey data overlaid on BA Chart 1534-0

3. REFERENCE SURVEY DETAIL

- 3.1 The previous full survey was conducted as part of the 2017 Routine Resurvey Programme between July and November 2017 as part of HI1545. The previous focused surveys were conducted as part of the 2016 Routine Resurvey Programme between September and November 2016 as part of HI1521.
- 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. COMPARISON SURVEY DETAIL

- 4.1 The latest focused survey as part of the 2018 Routine Resurvey Programme was conducted in October 2018 as part of HI1608.
- 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 Figures 3 to 6 show a north-eastwards migration of Caister Shoal within EA3a, which is consistent with historical trends in the area.
- 5.2 The difference plots also show significant shoaling in the central region of the survey, with some shoaling in the south-west region as well. The northern section of EA3a shows stability. The south-east section shows deepening of the seabed which appears to be consistent since at least 2015.
- 5.3 The depth plot in Figure 7 shows that the least depth in the 2018 survey is 2.1 meters, located approximately 580m north of Caister buoy and has changed by -7.3m since 2017 and -11.6m since 2016.
- 5.4 The largest difference shown in Figure 7 shows a difference of -9.2m since 2017 and -15.2m since 2016 located approximately 630m north of Caister buoy.
- 5.5 The contour plot in figure 6 confirms a north-eastwards migration of sand waves within the survey area since 2015.

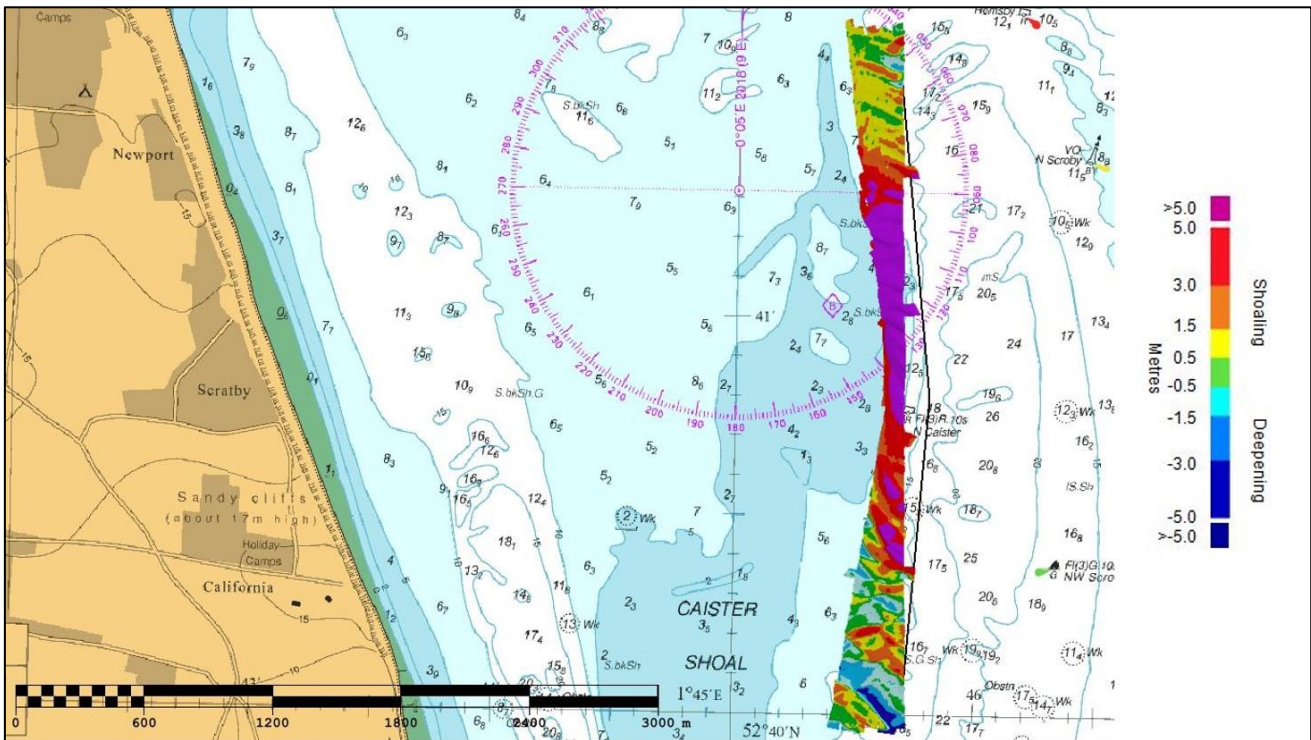


Figure 3 – Difference Plot 2018-2015 EA3a overlaid on BA Chart 1534-0

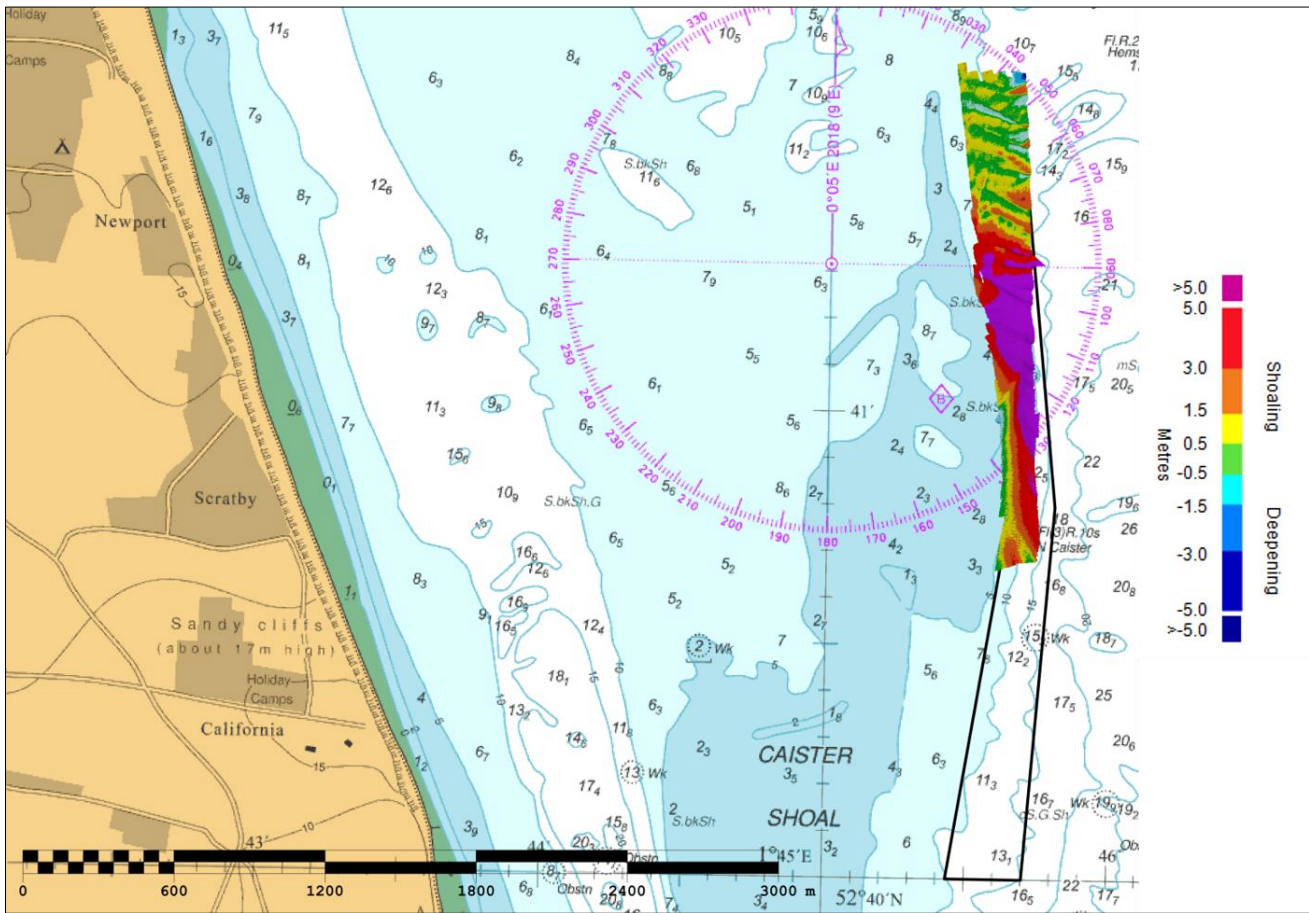


Figure 4 – Difference Plot 2018-2016 EA3a overlaid on BA Chart 1534-0

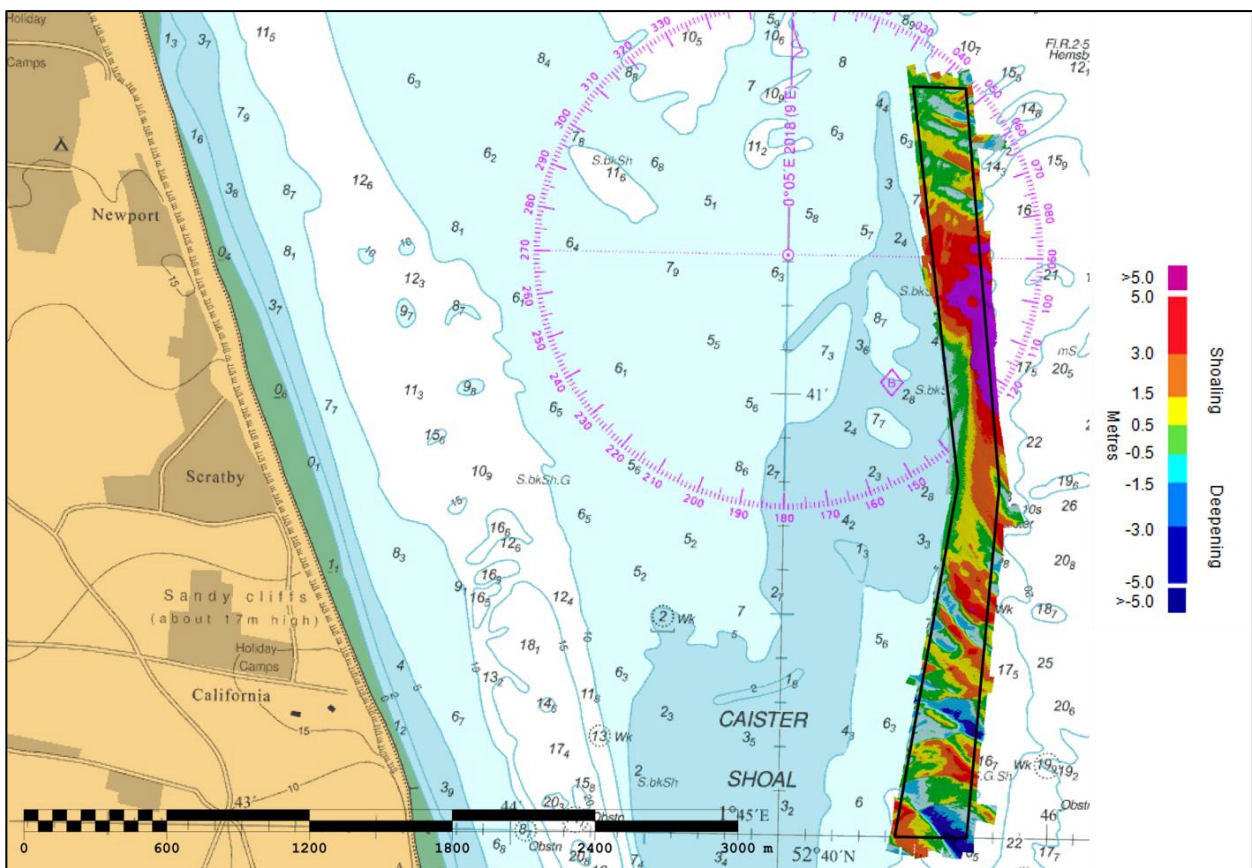


Figure 5 – Difference Plot 2018-2017 EA3 and EA4 overlaid on BA Chart 1534-0

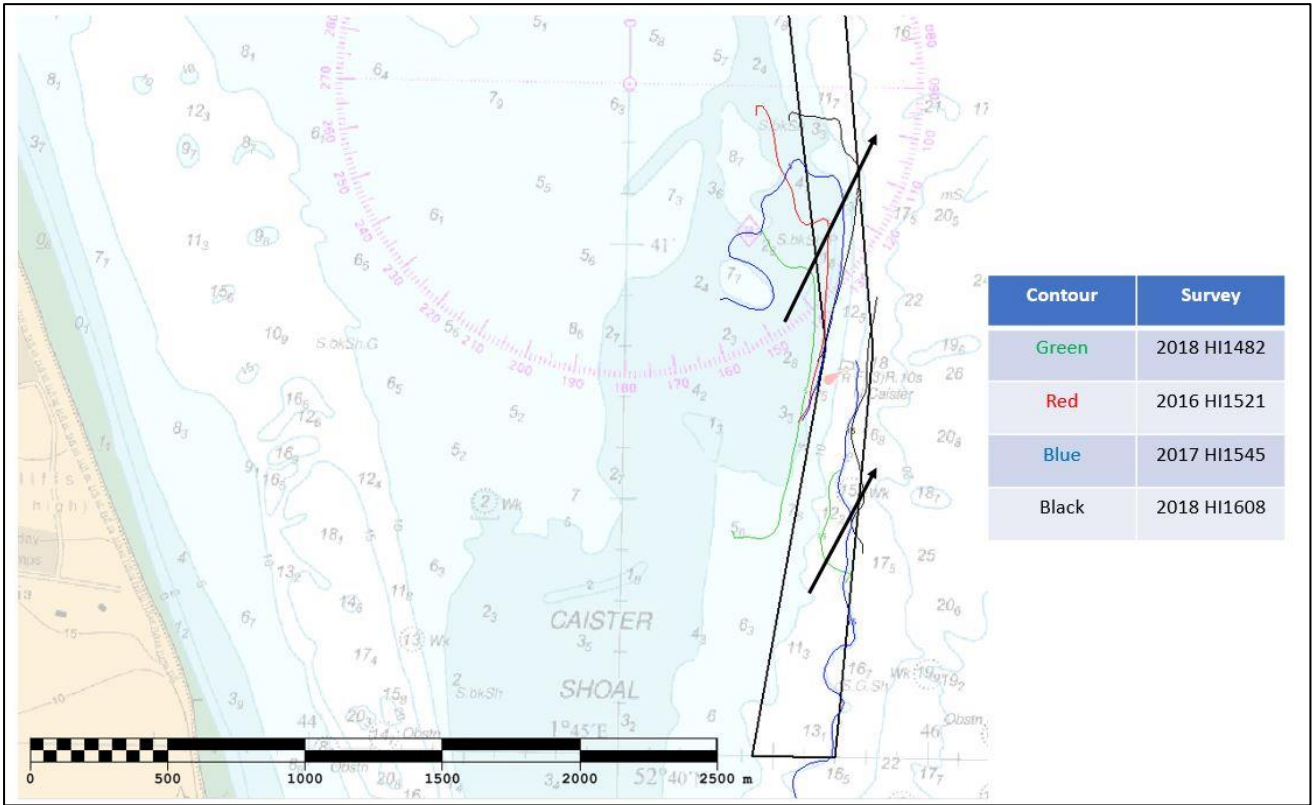
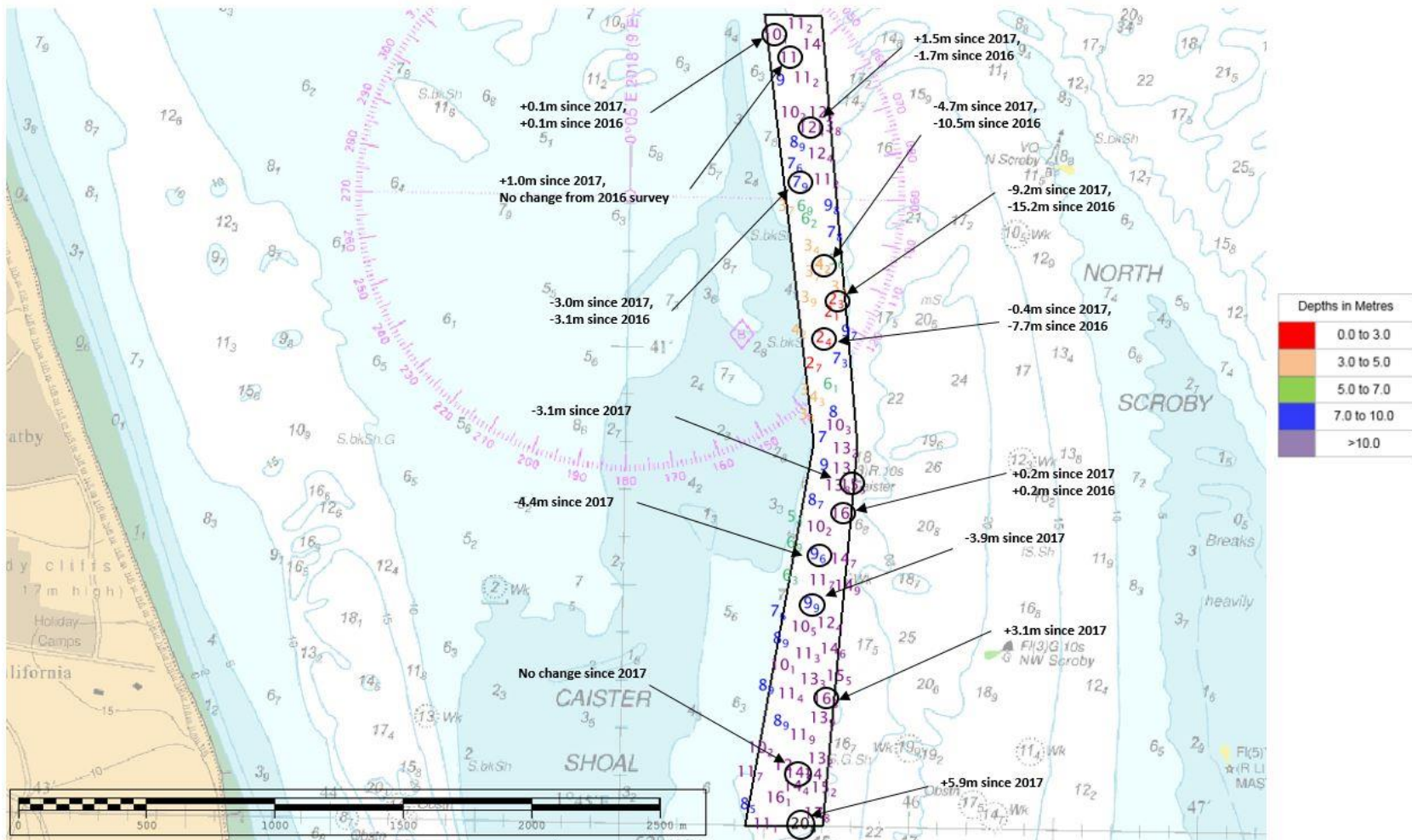


Figure 6 – Depiction of 5m and 15m contours moving north-eastwards from 2015 - 2018 overlaid on BA Chart 1534-0. Contours have been smoothed and some contours have been removed for visual purposes.



Positive values (+) represent deepening. Negative values (-) represent shoaling.

Figure 7: Colour banded depth plot from the 2018 survey with selected depth changes since the 2017 Focused survey and 2016 Full Survey.

6. RECOMMENDATIONS FOR FUTURE SURVEYS

Survey Interval

6.1 Given the location of the area and the mobility and changes in the seabed, the focused survey EA3a should remain on the annual survey interval and the full survey EA3 should remain at 3 years.

Survey Area

6.2 Based on the mobility of the survey area in certain areas, EA3a should be extended eastward and slightly south-west to account for the on-going migration of Caister Shoal.

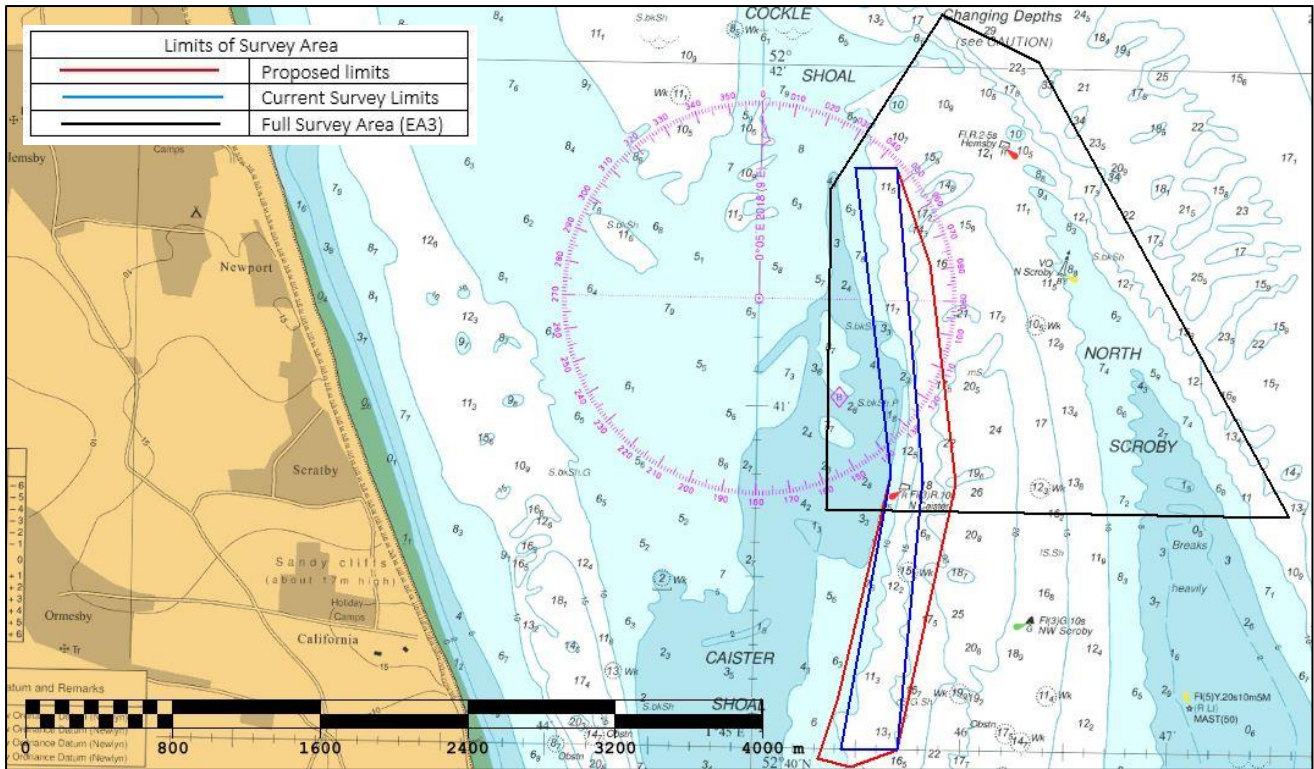


Figure 8: Recommended changes to survey limits of area EA3a

The coordinates of the recommended adjusted survey area limits for the annual focused area EA3a are shown below:

EA3a total area: 1.12 km²

A	52.69504N	1.75756E
B	52.69500N	1.76083E
C	52.69041N	1.76361E
D	52.67968N	1.76597E
E	52.66666N	1.76166E
H	52.66575N	1.75796E
I	52.66616N	1.75533E
J	52.66897N	1.75684E
K	52.68009N	1.76076E