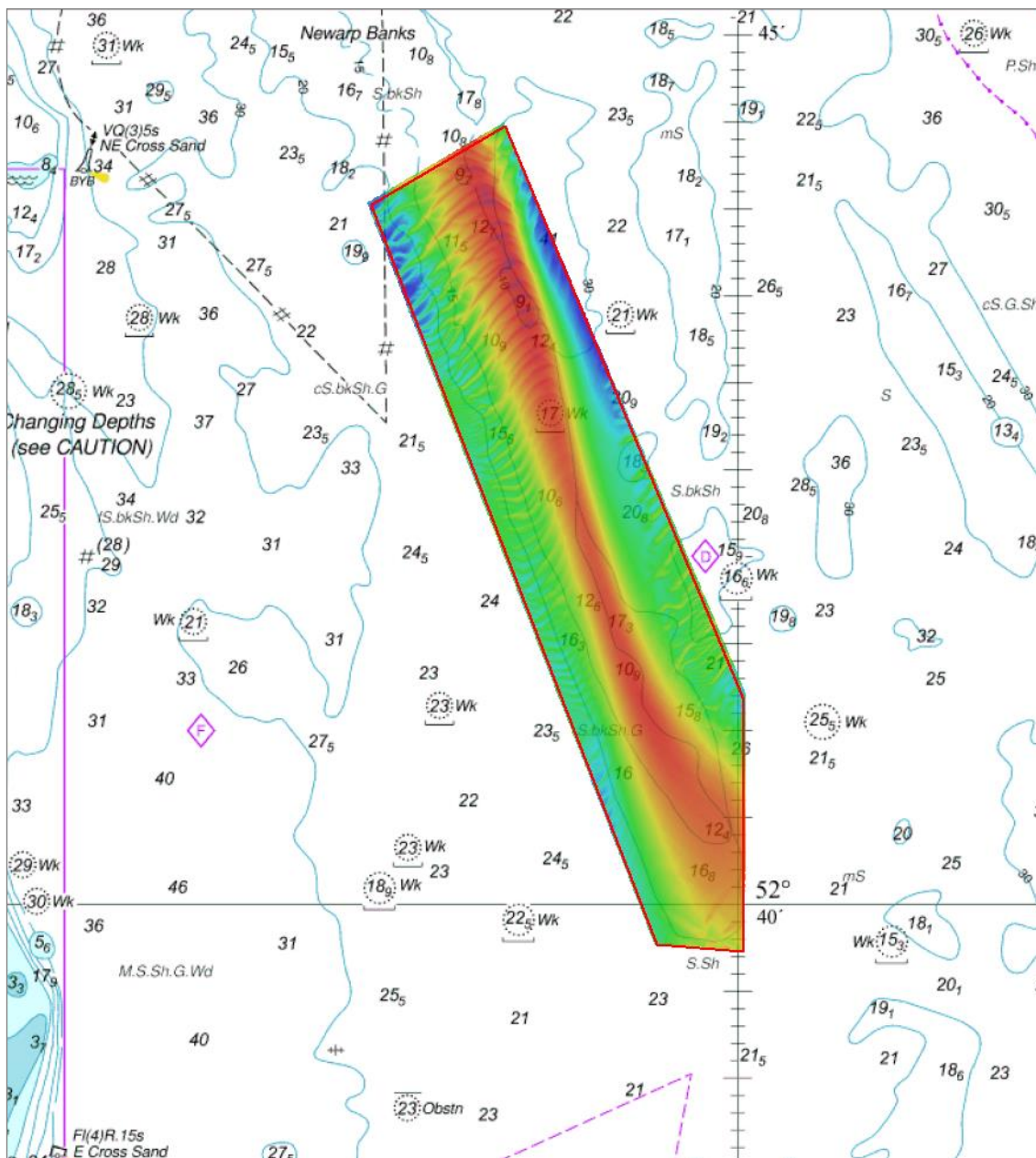




EAST ANGLIA NEWARP BANKS (SOUTHEAST)

ASSESSMENT ON THE ANALYSIS OF ROUTINE RESURVEY AREA EA2B
FROM THE 2014 SURVEY



EAST ANGLIA

NEWARP BANKS (SOUTHEAST)

Assessment EA2B/2014

An assessment of the 2014 hydrographic survey of the area: to monitor recent seabed movement; to identify any implications for shipping; and to make recommendations for future surveys.

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NEWARP BANKS (SOUTHEAST), 2014

1. EXECUTIVE SUMMARY

The Area and Recent Changes

- 1.1 The area covers the south-eastern part of Newarp Banks and was established as a provisional routine re-survey area following analysis of the 2011 survey of Area EA2 to the north. A survey interval for the area has yet to be established and analysis has been conducted against the last survey of the area, conducted in 1983.
- 1.2 The minimum depth in the area has shoaled from 10.6 metres to 8.7 metres and is found further to the north than in the 1983 survey. The bank has migrated eastwards by up to 400 metres. The 15-metre contour delimiting the southern extent of the bank has extended 1,000 metres south-eastwards.

Reasons for Continuing to Resurvey the Area

- 1.3 The area requires resurveying for the following reasons:
 - The bank contains depths which are close to the draught of shipping observed using the area and minimum depths have shoaled by nearly 2 metres since the previous survey.
 - The bank shows long term migration to the east.

Recommendations

- 1.4 It is recommended that the area is incorporated into area EA2a to the north, which has a re-survey interval of 12 years, with limits revised to take into account changes in the extent of the bank.

2. INTRODUCTION

- 2.1 This Assessment is produced by the United Kingdom Hydrographic Office (UKHO) for the Maritime and Coastguard Agency (MCA).
- 2.2 Analysis of the Routine Resurvey Areas forms part of the Civil Hydrography Programme (CHP) and the reports are made available to members of the Committee On Shipping Hydrography (COSH) through the UKHO website, before being 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 Department for Transport (including the MCA) and the MOD (including the UKHO).

3. HISTORY

- 3.1 The area was established as a provisional routine re-survey area following analysis of the 2011 survey of area Newarp Bank (EA2a) to the north. A survey interval for the area has yet to be established.
- 3.2 The area was surveyed as part of a wider CHP survey in 2014 and this is the first report on the area. Prior to this the area was last surveyed in 1983. A shoal investigation in the north of the area was conducted by an RN vessel on 16 October 2012 after encountering 'depths less than 10 metres in an area with charted depths 15-20m during passage'. Area details are shown in [Annex A](#).

4. DESCRIPTION OF THE AREA

- 4.1 Newarp Banks delimit the northern end of an ebb Channel, with EA2b covering the southern part of the bank. Within EA2b sandwaves lie along much of the western side of the bank, with these extending up over the bank in the northern part of the area. These sandwaves are up to 2 metres high over the top of the bank and up to 6 metres high in the deeper water along the western side of the bank.
- 4.2 The 2014 survey overlaid on chart 1543, along with net sediment transport based on sandwave asymmetry and general bank migration since the last survey are shown at [Annex C](#).

5. SHIPPING IN THE AREA

- 5.1 The area east of Cross Sands is used extensively by shipping on passage off East Anglia. Sample AIS data from 2012 shows vessels drawing up to 7.6 metres crossing the bank, with vessels drawing up to 8.5 metres transiting parallel to the bank.
- 5.2 The general indicative routes are shown at [Annex B](#).

6. 1983 SURVEY DETAILS

- 6.1 The survey was conducted between 26 April and 13 July in conjunction with other survey tasks. During the period a total of 5 days were lost to surveying due to gales or strong winds.
- 6.2 Soundings were obtained using a Type 780 singlebeam echo sounder. It was calibrated by bar check once a week and regular checks were made of the Sound Velocity settings.
- 6.3 Positions were fixed by Nordtech Hifix 6 Chain. Depths were reduced to Chart Datum using tidal observations at Britannia Pier, Great Yarmouth.

7. 2014 SURVEY DETAILS

- 7.1 The survey was conducted between 12 April and 14 September 2014. Over 20% of operational time was lost due to weather downtime and there were many instances of the vessel's speed being decreased due to marginal weather conditions.
- 7.2 Survey data was acquired using a Kongsberg Simrad EM2014D multibeam echo sounder. PosMV positioning data was post processed through Pospac and referenced to ETRS89. Soundings were reduced to Chart Datum using the resultant Smoothed Best Estimate Trajectory (SBET) heights combined with the UKHO VORF Model.
- 7.3 The survey achieved IHO Order 1a standard.

8. DESCRIPTION OF RECENT BATHYMETRIC CHANGE

- 8.1 Colour banded depth plots of the 1983 and 2014 surveys are at [Annexes E](#) and [F](#) respectively and allow visual comparisons.
- 8.2 A variability plot, at [Annex G](#), shows the changes in depth between the 1983 and 2014 surveys. The variances highlight the bank migration that has occurred. Shoaling in excess of 20 metres in the north reflects the eastward migration of the bank into previously deep water.
- 8.3 Comparison plots of the 10, 15 and 20 metre contours are at [Annexes H, I](#) and [J](#).

8.4 Since the 1983 survey, the bank has migrated eastwards by up to 400 metres. The minimum depth in the area has also reduced from 10.6 metres to 8.7 metres, with the minimum depth in the 2014 survey found further to the north than in the 1983 survey. The 15-metre contour delimiting the southern extent of the bank has extended 1,000 metres south-eastwards as a result of shoaling.

8.5 Cross-sections showing the change between the two surveys are at [Annex D](#).

9. IMPLICATIONS FOR SHIPPING

9.1 The minimum depth of 8.7 metres over the bank is deeper than the draught of shipping observed using the area, but nearly 2 metres shoaler than that found in the 1983 survey.

10. RECOMMENDATIONS FOR FUTURE SURVEYS

10.1 It is recommended that the area is incorporated into area EA2a to the north, which has a re-survey interval of 12 years, with revised limits to take into account changes in the extent of the bank, as shown in [Annex K](#).

10.2 A bank lying 4.6 km to the east was also covered by the 2014 survey and has shoaled since last surveyed, with the minimum depth reducing from 15.3 metres in a 1994 survey to 13.4 metres. The need to incorporate additional areas into a re-survey programme and prioritisation is being examined under a study by the MCA.

Proposed Revised Limits:

	Latitude	Longitude
1	52.673550N	002.007700E
2	52.662575N	002.007700E
3	52.662575N	001.989870E
4	52.735018N	001.945800E
5	52.742784N	001.967500E

AREA SPECIFICATIONS
(Including Survey History)

REGION: East Anglia**NAME:** Newarp Banks (Southeast)**AREA:** EA2b**LIMITS:**

Area co-ordinates are referred to WGS84 Datum

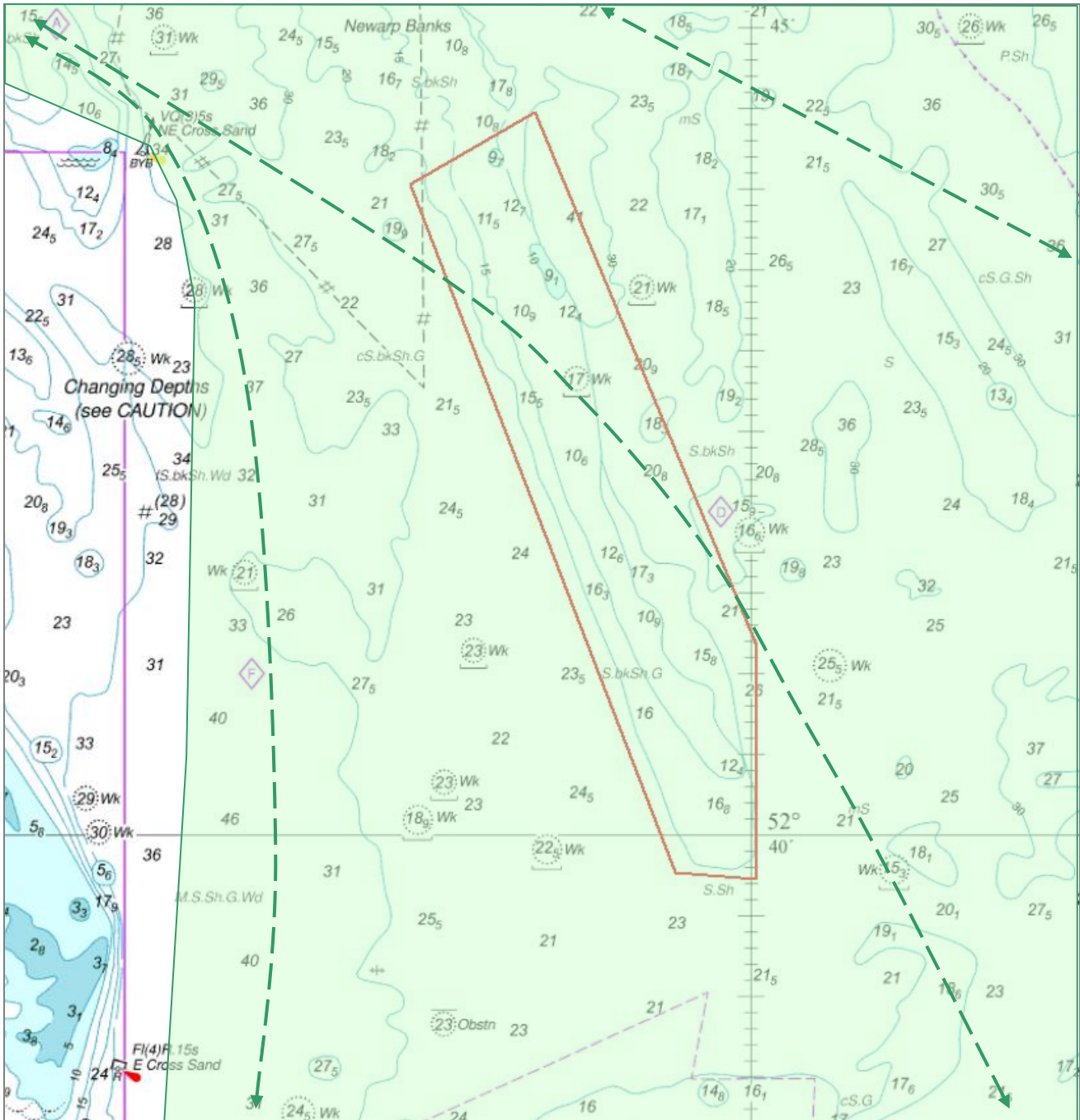
A	52.68615°N	2.000880°E
B	52.66204°N	2.000880°E
C	52.66265°N	1.987099°E
D	52.73371°N	1.942057°E
E	52.77412°N	1.963233°E

AREA SIZE: 4.20 SQ NM (14.00 SQ km)**SURVEY INTERVAL:** to be determined**SURVEYS:** (conducted at 1:25,000 scale unless stated (not applicable to multibeam surveys))

Year	Survey	File Ref	Data	Comment
1983	K9197	H2054/82	s.t.	
2014	HI1428	2014-101130	m	

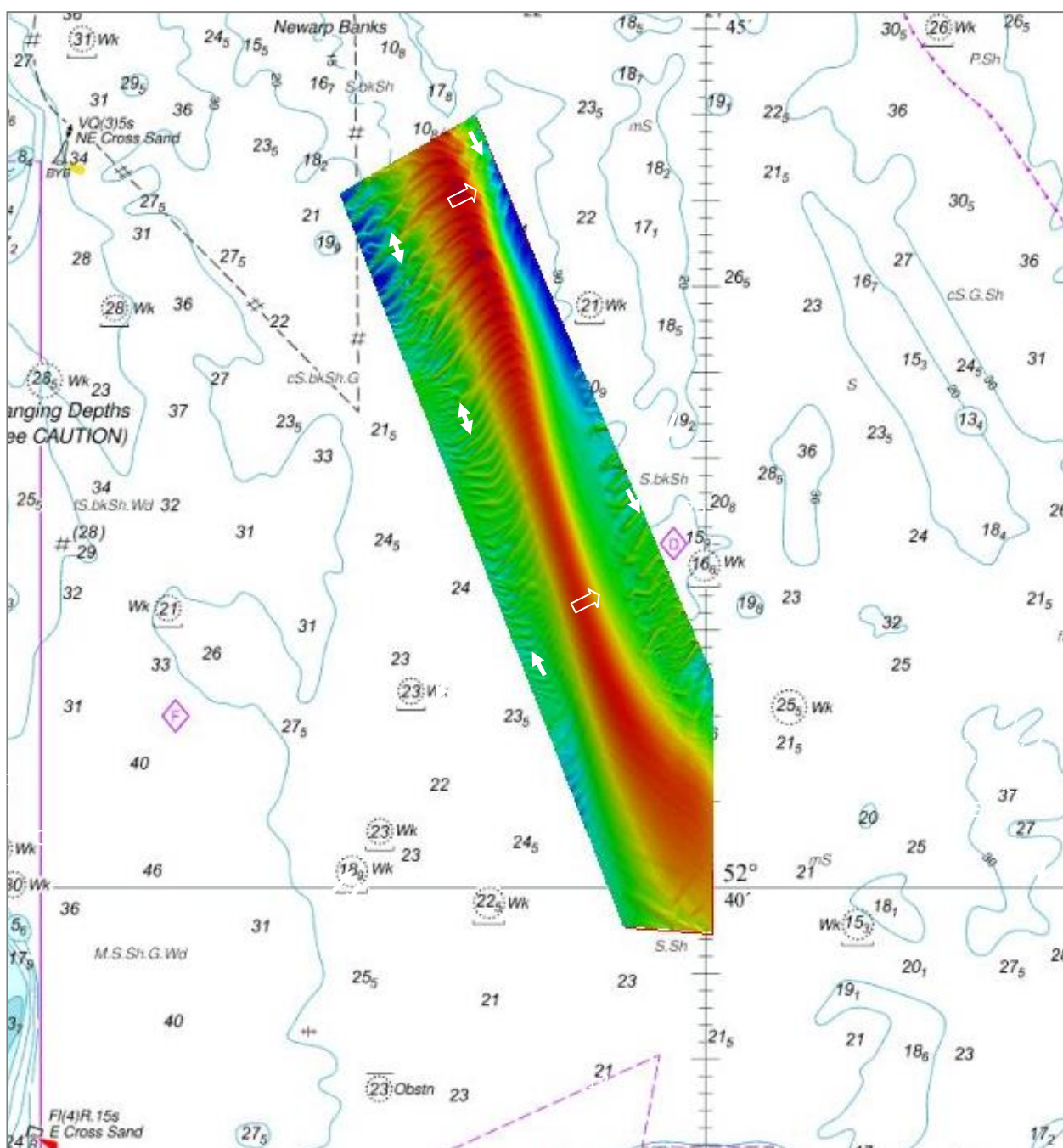
KEY: s = sonar sweep, t = seabed texture tracing, d = digital data, m = multibeam digital data**REPORTS:** None**ASSESSMENTS:** 2014 HI1428**LARGEST SCALE CHART:** BA 1543 (1:75,000)

SHIPPING ROUTES



- General shipping area
- Indicative routes

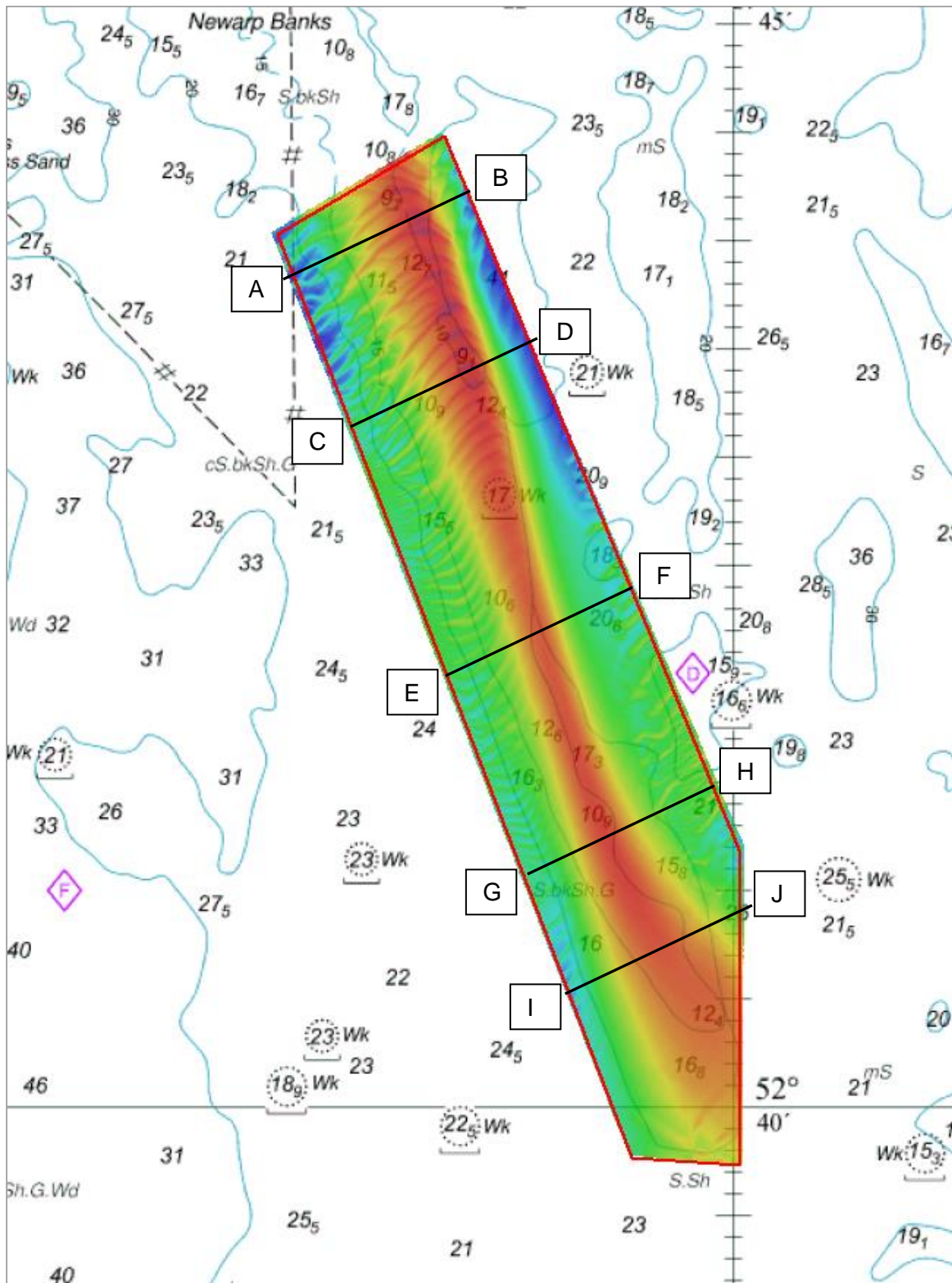
2014 SURVEY DATA OVERLAID ON CHART 1543

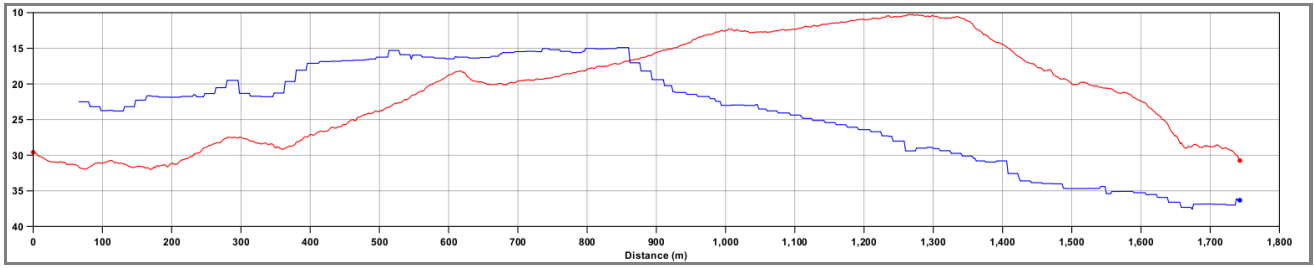


→ Sediment transport based on sandwave asymmetry

⇨ Bank migration

2014 SURVEY DATA OVERLAID ON CHART 1543
AND CROSS-SECTION PROFILES

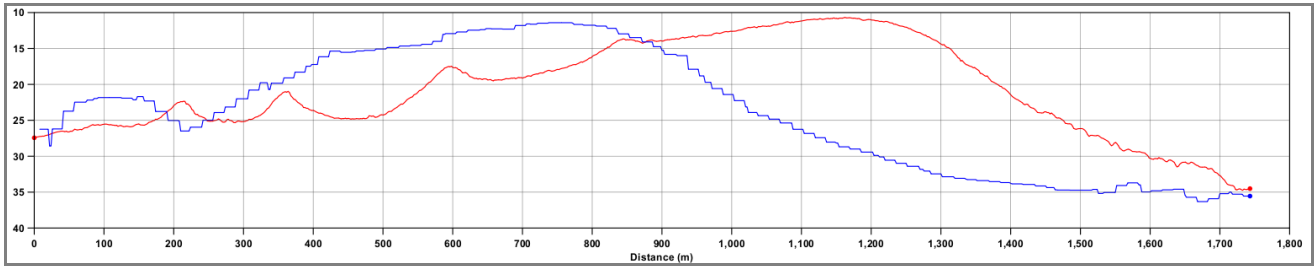




A

Profile A-B

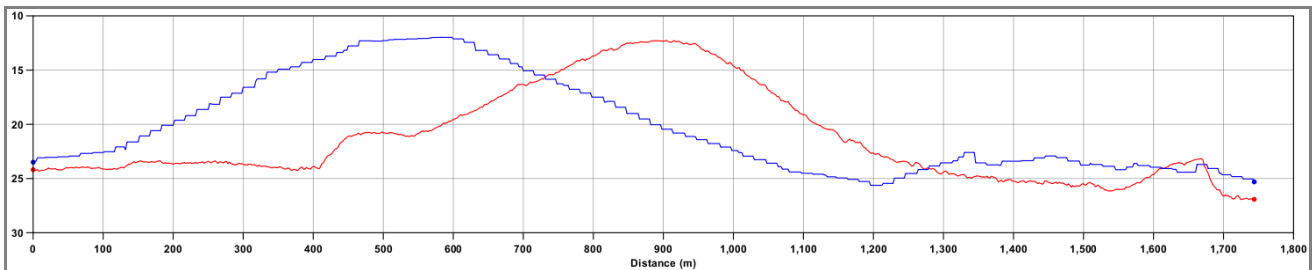
B



C

Profile C-D

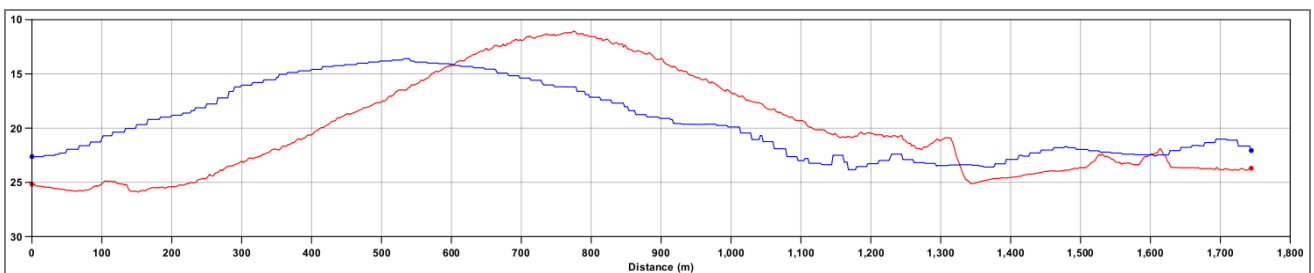
D



E

Profile E-F

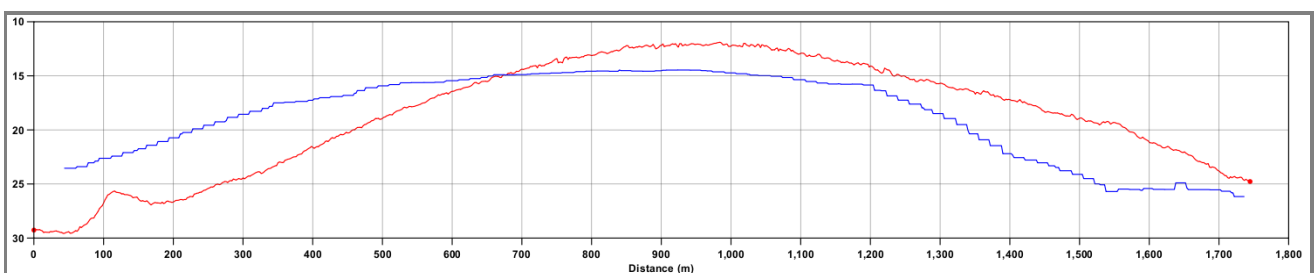
F



G

Profile G-H

H



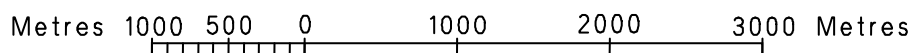
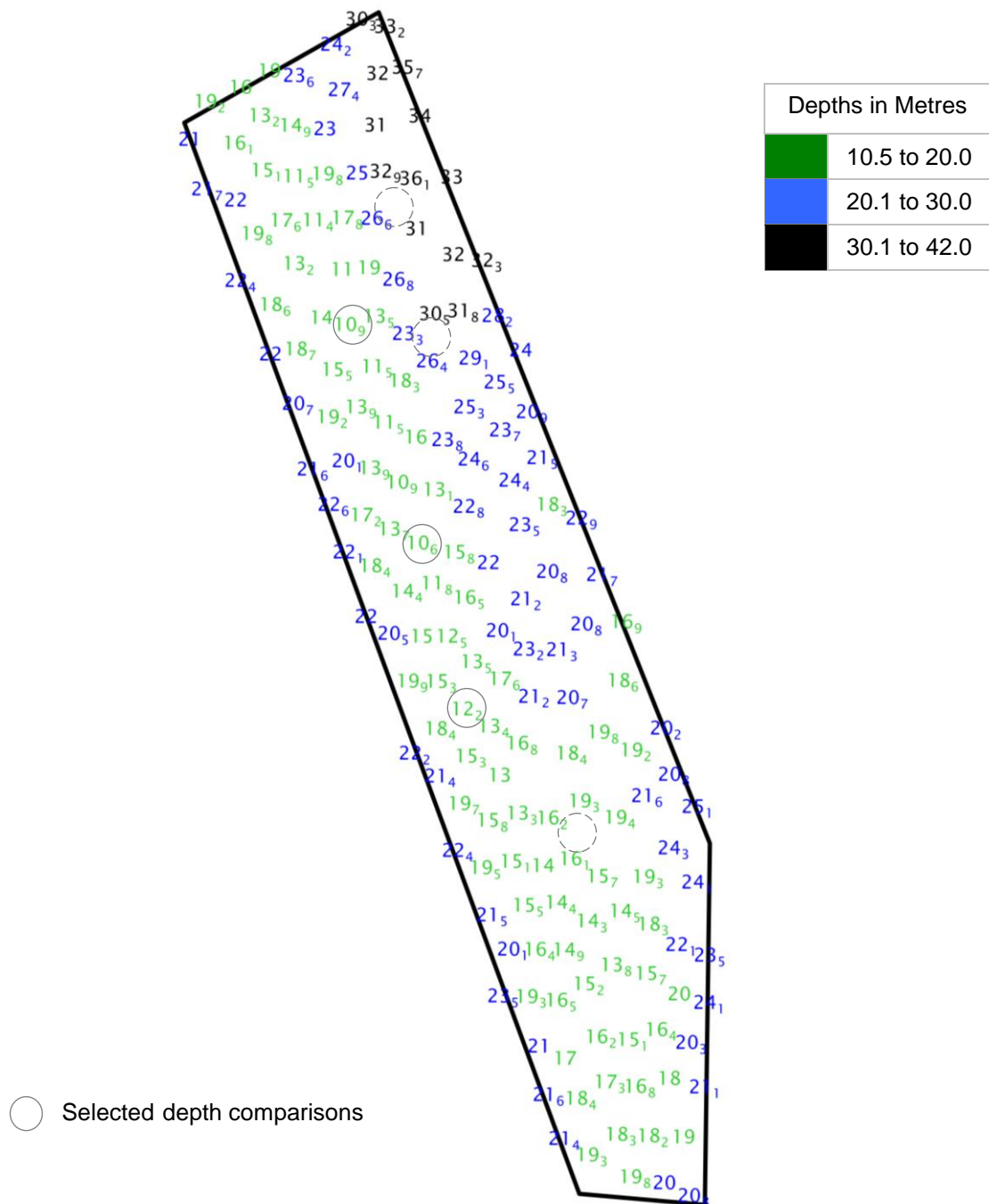
I

Profile I-J

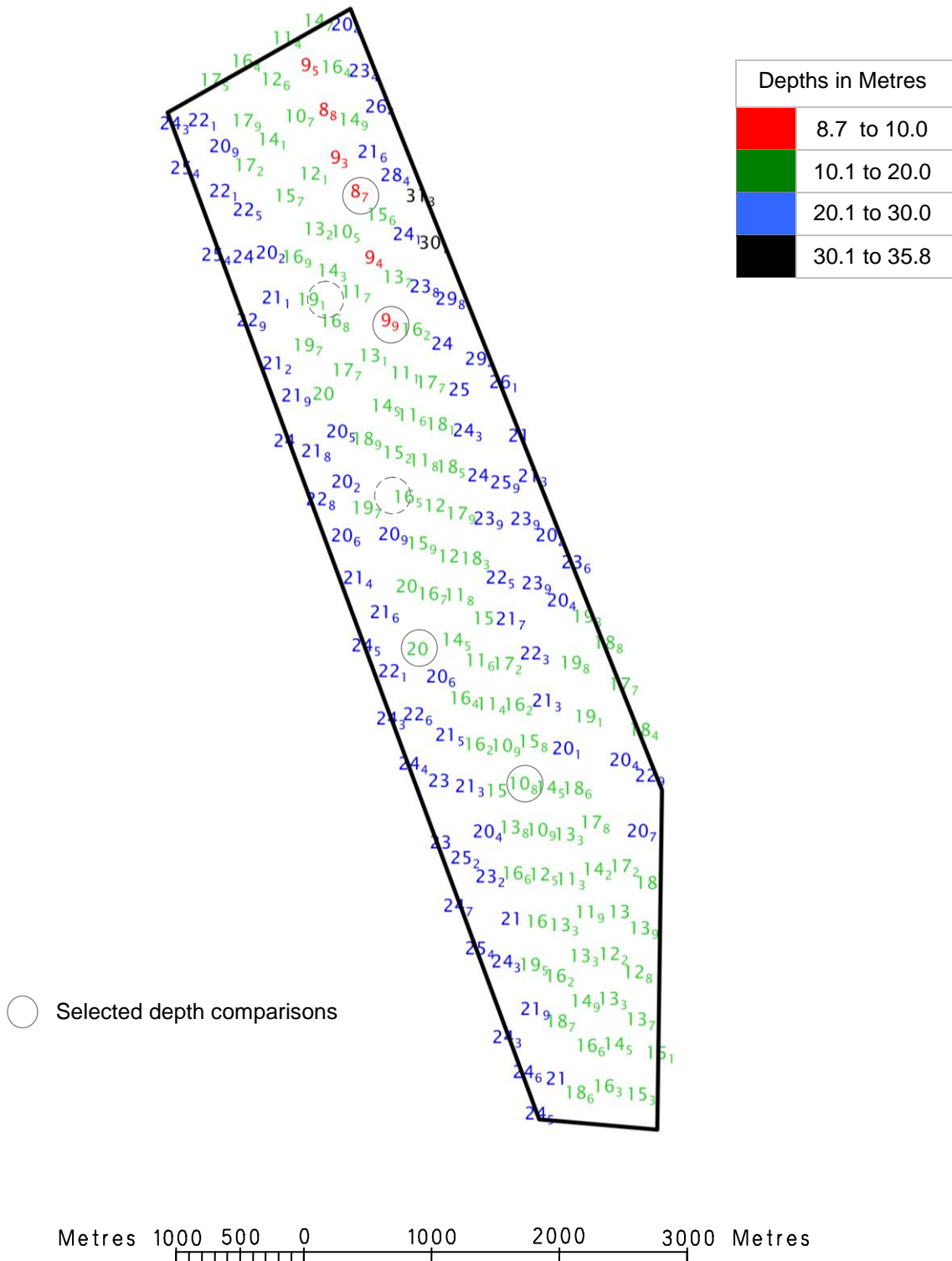
J



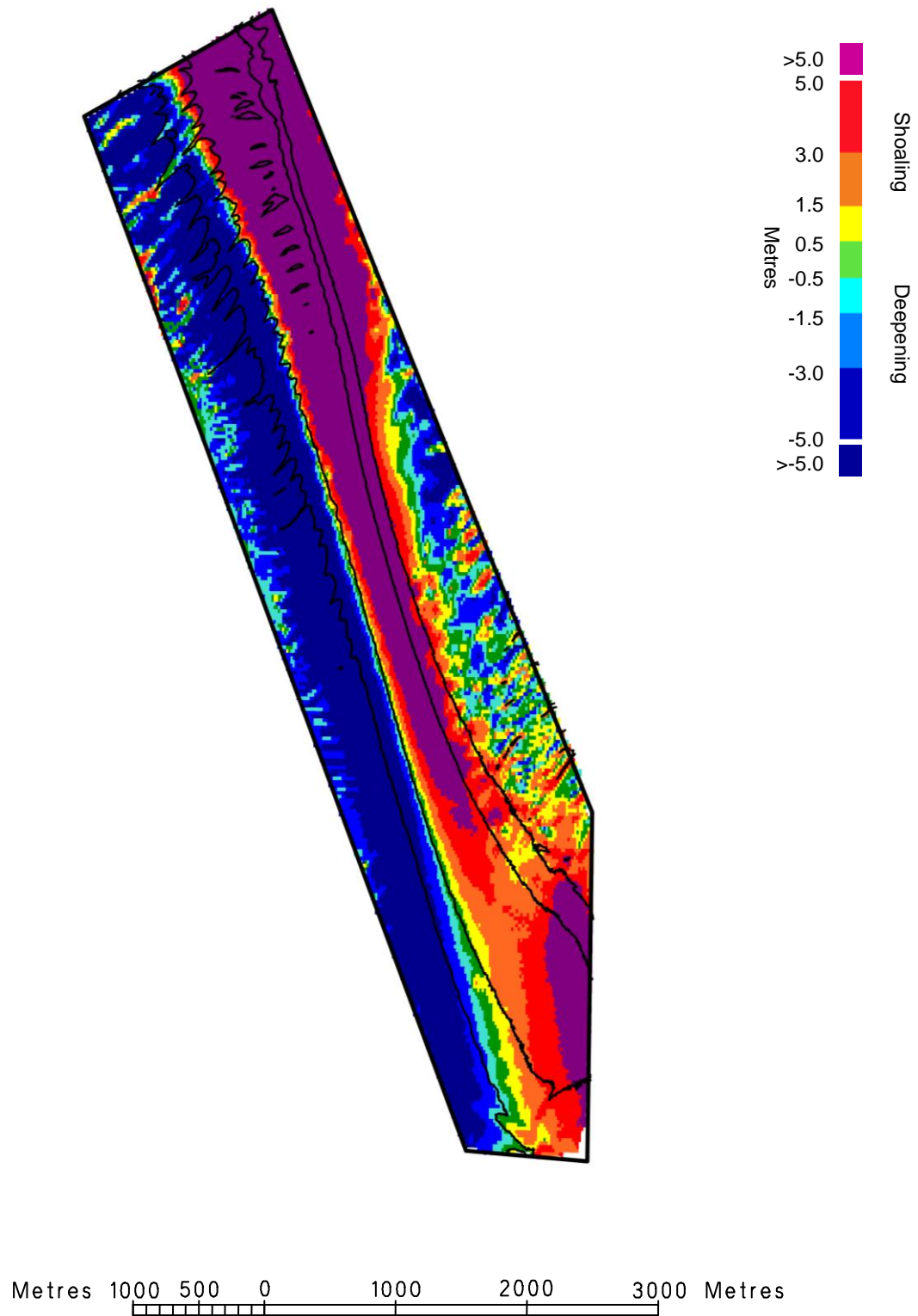
COLOUR BANDED DEPTH PLOT
 FROM THE 1983 SURVEY
 SHOWING SELECTED DEPTHS
 SCALE 1:50,000



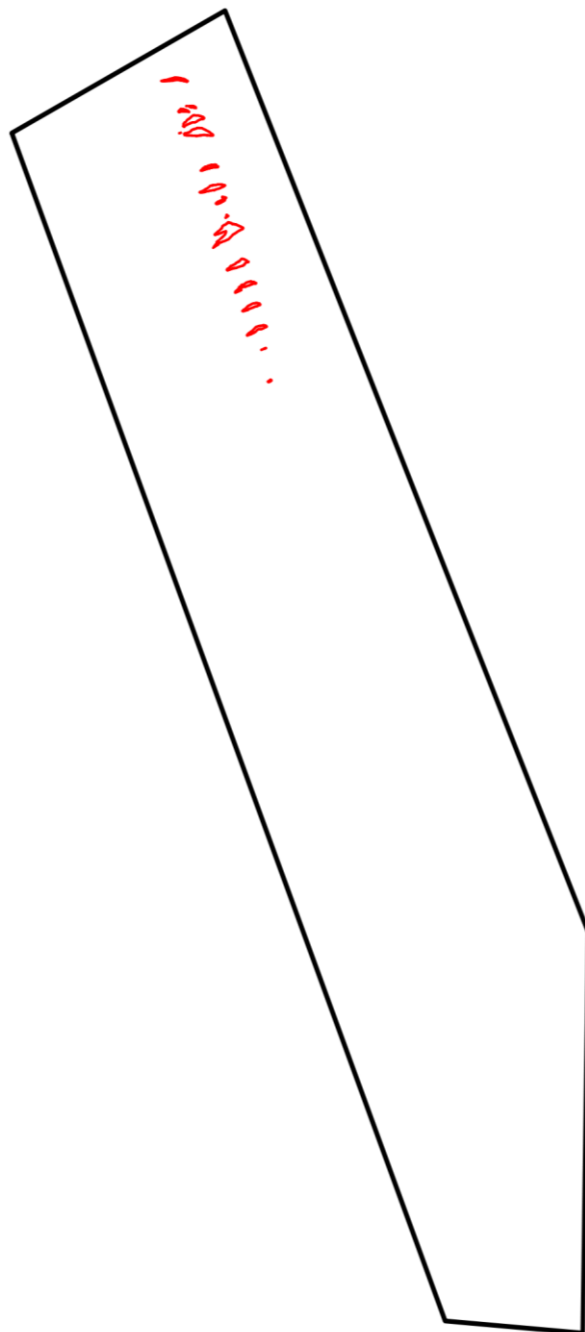
COLOUR BANDED DEPTH PLOT
 FROM THE 2014 SURVEY
 SHOWING SELECTED DEPTHS
 SCALE 1:50,000




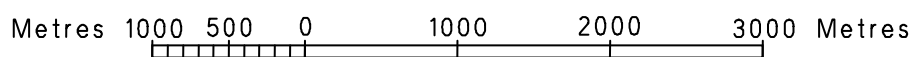
VARIABILITY PLOT SHOWING
BATHYMETRIC CHANGES BETWEEN THE 1983 AND 2014 SURVEY DATA
AND CHARTED CONTOURS FROM THE 2014 SURVEY
SCALE 1:50,000



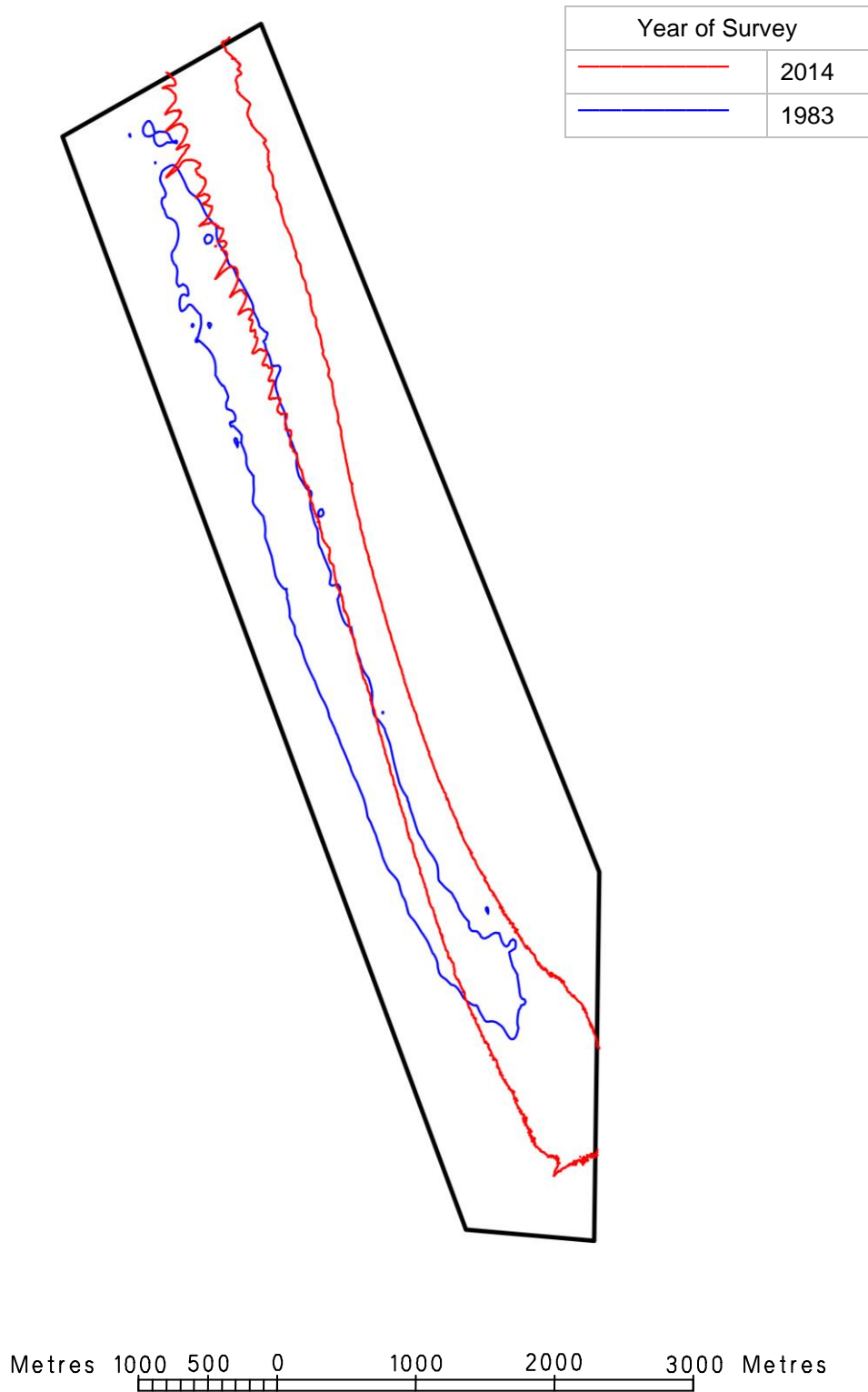
COMPOSITE DIAGRAM OF THE
10 METRE CONTOUR FROM THE 1983 AND 2014 SURVEYS
SCALE 1:50,000



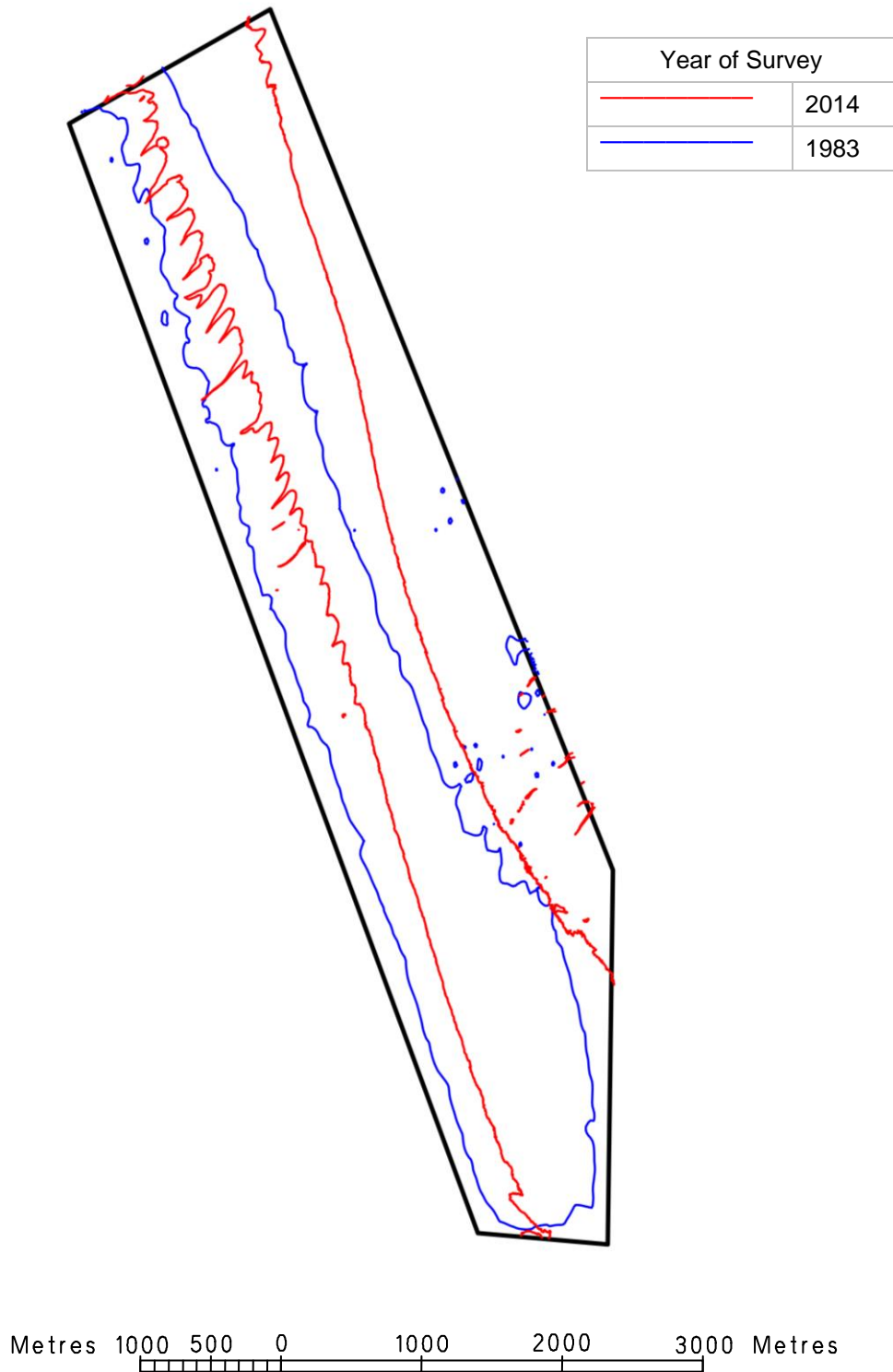
Year of Survey	
	2014
No Contour	1983



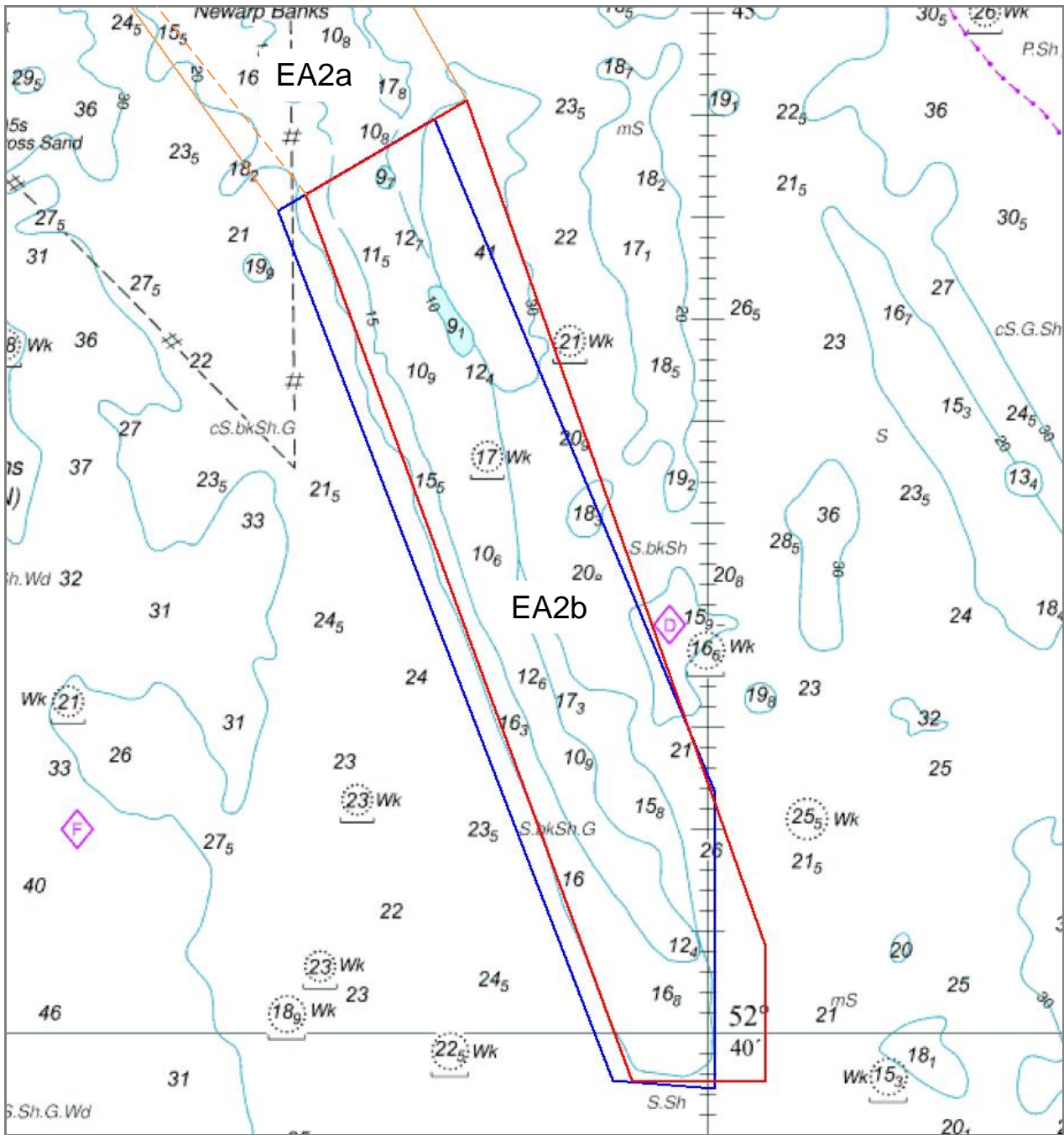
COMPOSITE DIAGRAM OF THE
15 METRE CONTOUR FROM THE 1983 AND 2014 SURVEYS
SCALE 1:50,000







COMPOSITE DIAGRAM OF THE
20 METRE CONTOUR FROM THE 1983 AND 2014 SURVEYS
SCALE 1:50,000



PROPOSED NEW LIMITS FOR AREA EA2B



Key	
	Current Limits
	Proposed 12 Year Limits
	Area EA2a
	Adjustment to Area EA2a