

DOVER STRAIT

WEST SANDETTIE

ASSESSMENT ON THE ANALYSIS OF ROUTINE RESURVEY AREA DWR H FROM THE 2013 SURVEY



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Assessment DWR H/2013

A summary assessment of the 2013 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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WEST SANDETTIE, 2013

1 EXECUTIVE SUMMARY

The Area and Recent Changes

- 1.1 Area DWR H is currently surveyed on a 6-year cycle under the Civil Hydrography Programme.
- 1.2 It covers part of a sandwave field extending north-east from Sandettié Bank. Sample AIS data shows only a small number of vessels passing through the area, with most using the north-east bound traffic lane passing well to the west of DWR H.
- 1.3 Minimum depths over sandwaves are up to 0.6 metres shallower than in the 2006 survey, although previous analysis has found no evidence of a long-term trend in changes to minimum depths.
- 1.4 Sandwaves in the south of the area have migrated south-westwards by up to 75 metres.

Reasons for Continuing to Resurvey the Area

1.5 The area covers large mobile sandwaves, up to 11 metres in height and covers part of the north-east bound Deep Water Route.

Recommendations

1.6 Analysis in previous reports showed no evidence of a long-term trend in changes to minimum depths over sandwaves, but with variability between surveys. Considering the limited change in the area, depth of water available and draught of shipping observed using the area, it is recommended that the survey frequency is extended from 6 to 12 years, with the existing limits retained.

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 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 DfT (including the MCA) and the MOD (including the UKHO).

3 HISTORY

- 3.1 The area was established in 1984, when an Understanding between the Hydrographers of the Netherlands, Belgium, France and the United Kingdom was reached on national responsibilities for hydrographic surveying in the southern North Sea and Dover Strait. In effect the Understanding modified the surveying limits that would be delineated by official territorial waters / continental shelf boundaries in order to ensure that efficient and coherent surveys are conducted.
- 3.2 The first report was produced in 1987 and concluded that further surveying on a 6-year cycle was required.

3.1 The second report was produced in 1997 and examined five surveys conducted between 1984 and 1995. This report observed a sandwave migration of 180 metres in a southwest direction in the south of the area over that period and confirmed the survey interval as 6 years. The area size was reduced, removing an area of little change, by revising the western limit. A report into the 2001 survey retained the 6-year re-survey frequency.

4 DESCRIPTION OF THE AREA

- 4.1 DWR H lies to the north of Sandettié Bank, in the north-east bound lane of the Dover Strait Traffic Separation Scheme, in an area designated by the IMO as a Deep Water Route. It comprises an area of 4.1 sq NM (14.10 sq km).
- 4.2 The seabed comprises mainly of coarse sand and some fine sand with shell and pebbles. An extensive sandwave field dominates the area, with sandwaves up to 11 metres in height and generally orientated NW/SE.
- 4.3 The largest sandwaves occur along the southern boundary.
- 4.4 Details of the area, including the survey history, are at <u>Annex A</u>. The limits are shown at <u>Annex B</u>, along with implied sediment transport based on sandwave asymmetry.

5 SHIPPING IN THE AREA

5.1 Most vessels using the north-east bound traffic lane passes well to the west DWR H, as depicted in <u>Annex C</u>. Sample AIS data shows a small number of vessels passing through the area, with the maximum draught vessel passing across the north of DWR H and reporting a draught of 16.9 metres. Historical data shows ferry traffic passing through the area, crossing the north-east bound lane en-route between Ramsgate and Ostend; currently there is no service between these two ports and draught of vessel was small in relation to depth of water in the area.

6 2006 SURVEY DETAILS

- 6.1 The area was surveyed as part of a much wider survey of the Dover Strait, commencing work in 2006 and completing in 2007. Much of the survey was run later in the year than usual and will potentially produce deeper depths over sandwaves due to the effects of winter storms.
- 6.2 Positioning was by DGPS. A tidal model was established using the Dover Tide Station supported by two independent offshore stations. One was situated near Beachy Head and the other near South Galloper Bank.
- 6.3 The assessed accuracy of depth measurements met IHO S-44 (4th Edition) Order 1.

7 2013 SURVEY DETAILS

- 7.1 The survey was conducted between 13 November and 10 December, in conjunction with other areas and with standby periods due to variable weather conditions.
- 7.2 Depths in the survey were reduced to Chart Datum using GPS heights, with ellipsoidal height to chart datum taken from the Vertical Offshore Reference Framework (VORF). The survey achieved IHO S-44 (5th Edition) Order 1a standard.
- 7.3 In both surveys, full seafloor cover with multibeam was achieved.

8 DESCRIPTION OF RECENT BATHYMETRIC CHANGE

- 8.1 Colour banded depth plots of the 2006 and 2013 surveys are at <u>Annexes D</u> and <u>E</u> respectively and allow a comparison of depth values.
- 8.2 A variability plot, at <u>Annex F</u>, shows the changes in depth between the 2006 and 2013 surveys.
- 8.3 Comparison plots of the 30 and 35 metre contours are at <u>Annex G</u> and <u>H</u>.
- 8.4 The variability plot mainly reflects migration of sandwaves, most noticeably in the south of the area. Cross-sections at <u>Annex B</u> show the increased mobility in this area, with sandwaves migrating by up to 75 metres since the 2006 survey.
- 8.5 There is no consistent shoaling or deepen over sandwaves. In the north of the area, some sandwaves are up to 0.6 metres shallower than in the 2006 survey, while depths over others are slightly deeper. On the northern border part of a sandwave has moved southwestwards into the area resulting in a shallower depth on the depth plot.
- 8.6 The minimum depth in the 2013 survey is 24.4 metres in the south of the area, 0.2 metres shallower than in the 2006 survey.
- 8.7 Longer term variability has been examined in surveys from 1988 onwards, as shown in figure 8.1, the location of these areas are shown at <u>Annex G</u>. These observed depths show limited change between surveys.

Year	Area A	Area B	Area C
1988	28.5	28.4	25.3
1989	28.2	29.2	25.6
1995	27.8	28.5	25.3
2001	28.0	28.9	25.0
2006	28.2	28.8	25.5
2013	27.8	28.3	25.8
Range	0.7	0.9	0.8

Figure 8.1: minimum depths found in selected areas shown at Annex G

9 IMPLICATIONS FOR SHIPPING

- 9.1 Although depths over selected sandwaves are up to 0.6 metres shallower than the 2006 survey, minimum depth of water exceeds the draught of shipping observed using the area by over 10 metres at Chart Datum.
- 9.2 The report on the 2001 survey noted that "Changes in the height of the sandwaves within the area appear cyclical, with no long-term trend evident" and latest changes appear to be within that variability.

10 RECOMMENDATIONS FOR FUTURE SURVEYS

10.1 Analysis in previous reports showed no evidence of a long-term trend in changes to minimum depths over sandwaves, but with variability between surveys. Considering the limited change in the area, depth of water available and draught of shipping observed using the area, it is recommended that the survey frequency is extended from 6 to 12 years, with the existing limits retained.

AREA SPECIFICATIONS (Including Survey History)

REGION: Deep Water Route

NAME: West Sandettie

AREA: DWR H

LIMITS:

А	51.30883°N	1.98333°E
В	51.30880°N	2.01390°E
С	51.27400°N	1.98350°E
D	51.25383°N	1.91833°E
Е	51.25550°N	1.91667°E

Area co-ordinates are referred to WGS84

AREA SIZE: 4.08 sq NM (14.0 sq km)

SURVEY INTERVAL: 6 yr

SURVEYS: (conducted at 1:25,000 scale (not applicable to multibeam surveys))

Year	Survey	File Ref	Data	Year	Survey	File Ref	Data
1981	K8495	H2820/71		1995	M2514	HH090/649/01	s.t.d.
1984	K9389	H2892/83	s.t	2001	M3585	HH090/934/01	s.t.d.
1987	M1133	H4029/86	s.t.	2006	HI1159		m
1988	M1250	H6344/87	s.t.d	2013	HI1434		m
1989	M1344	HH090/460/01	s.t.d				

KEY: s = sonar sweep, t = seabed texture tracing, d = digital data, m = multibeam digital data

REPORTS: 1987 Latest Survey included K9389

- 1997 Latest Survey included M2514
- 2001 Latest Survey included M3585

ASSESSMENTS: none

REMARKS: 1984 Area H established 1997 Report reduces limits

LARGEST SCALE CHART: BA 323



SUN ILLUMINATED VIEW OF THE 2013 SURVEY OVERLAID ON CHART 323 AND CROSS SECTION COMPARISONS

Sediment transport based on sandwave asymmetry





SHIPPING ROUTES



Main shipping route based on sample AIS data

Lower density indicative routes

COLOUR BANDED DEPTH PLOT FROM THE 2006 SURVEY SHOWING SELECTED DEPTHS SCALE 1:45,000



COLOUR BANDED DEPTH PLOT FROM THE 2013 SURVEY SHOWING SELECTED DEPTHS SCALE 1:45,000



+0.2

Difference between 2006 and 2013 surveys

VARIABILITY PLOT SHOWING BATHYMETRIC CHANGES BETWEEN THE 2006 AND 2013 SURVEYS AND CHARTED CONTOURS FROM THE 2013 SURVEY SCALE 1:45,000



COMPOSITE DIAGRAM OF THE 30 METRE CONTOUR FROM THE 2006 AND 2013 SURVEYS SCALE 1:45,000



COMPOSITE DIAGRAM OF THE 35 METRE CONTOUR FROM THE 2006 AND 2013 SURVEYS SCALE 1:45,000

