



Traffic Survey during Geophys Work

SSE Renewables

(Technical Note)

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1. Introduction

This technical note presents analysis of AIS and Radar shipping traffic data collect from the *Chartwell* during the geophysical survey between the 25th August and the 19th September 2012 (also involving the *Lia* survey vessel).

Radar and AIS recording equipment was fitted on the *Chartwell* by Anatec at the start of the survey to collect data to help meet the maritime traffic survey data requirements for offshore renewable energy sites specified by the MCA.

2. Survey Activity

The tracks of the survey vessels *Chartwell* and *Lia* during the survey period, relative to the nearby SSER Agreement for Lease areas, are shown in Figure 2.1.

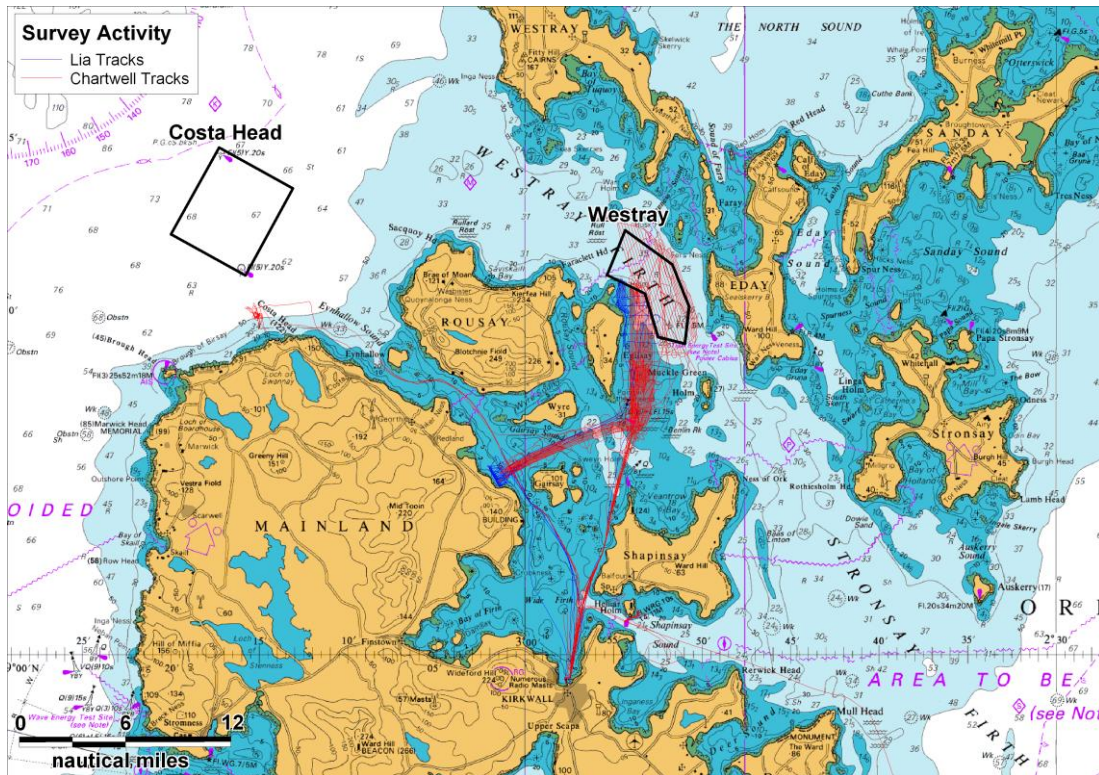


Figure 2.1 Tracks of Survey Vessel *Chartwell* during Survey Period

Due to weather conditions, the *Chartwell* was only out of Kirkwall Harbour on 14 of the 26 days. Time spent away from harbour each day is estimated in Figure 2.2.

In total, the *Chartwell* was out of the harbour for approximately 112 hours out of a possible 624 hours (including travel time). Most of this time was spent in and around the Westray AfL. The exception was 25th August 2012 when the *Chartwell* travelled to Costa Head and remained in the area for approximately four hours.

The survey vessel *Lia* was recorded on AIS by the *Chartwell* on 9 days between the 7th and 19th September 2012.

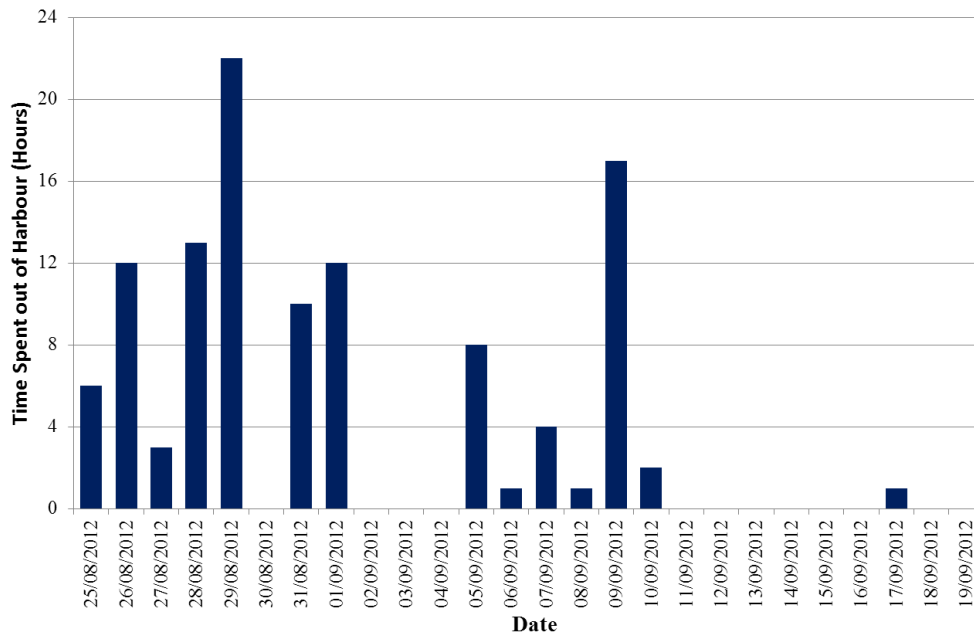


Figure 2.2 Aggregate Time out of Kirkwall Harbour by *Chartwell*

3. AIS Data Analysis

3.1 General Overview

AIS data was continuously recorded during the 26 day survey including the time spent in Kirkwall Harbour.

Most vessels were tracked up to 15nm and some were tracked up to 20nm although this varied depending on the position of the *Chartwell*. For example, when in Kirkwall, tracking of targets to the north tended to be superior to targets to the east, presumably due to the line-of-sight being blocked by land features, such as hills.

Based on the information available from AIS, the vessel tracks colour-coded by ship type, length and draught (where broadcast) are presented in Figure 3.1 to Figure 3.3.

(Note, the tracks of the survey vessels *Chartwell* and *Lia* have been excluded from these figures. Also note the Cantick Head AFL is to be revised and is likely to move west.)

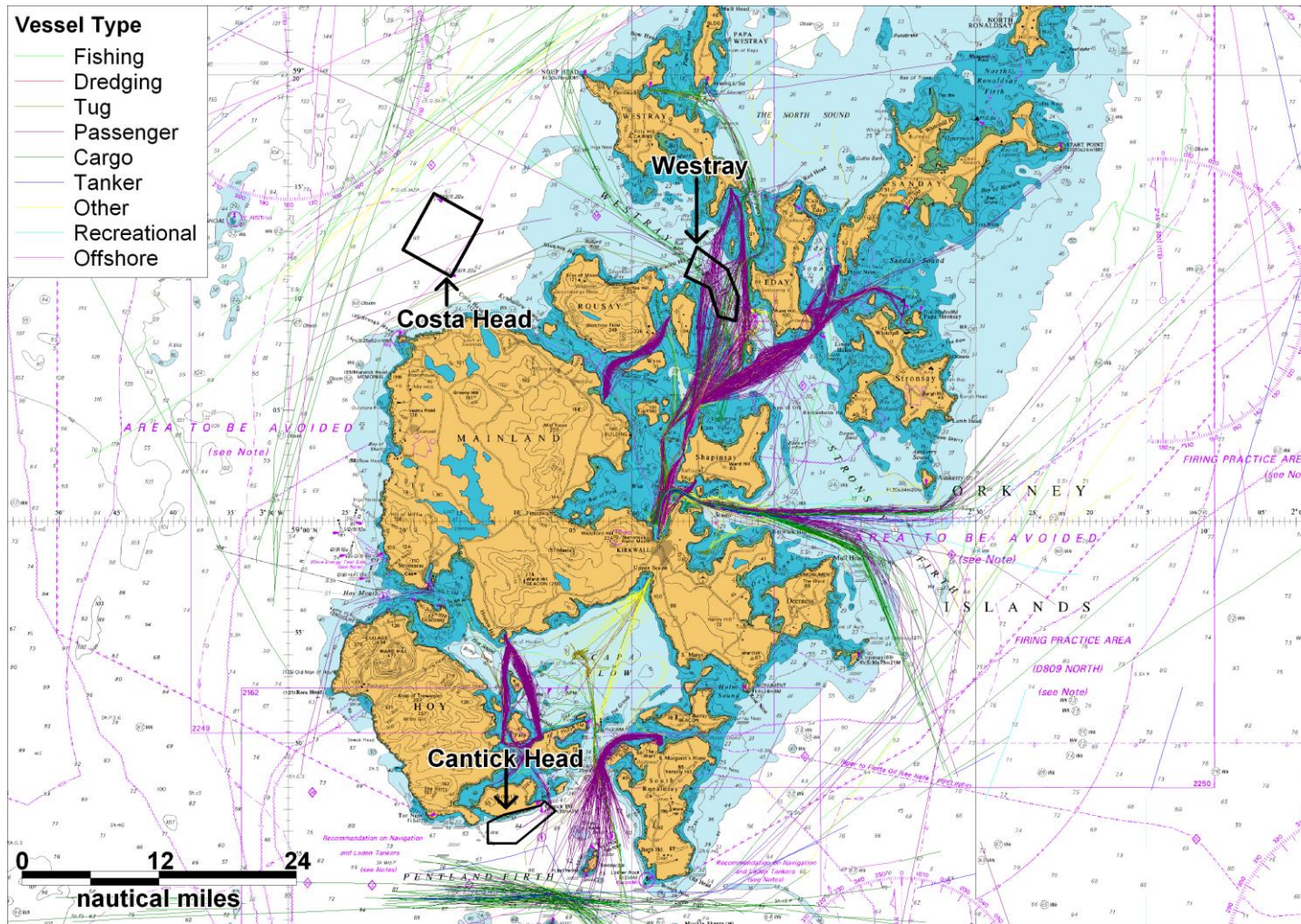


Figure 3.1 AIS Tracks colour-coded by Vessel Type (26 Days)

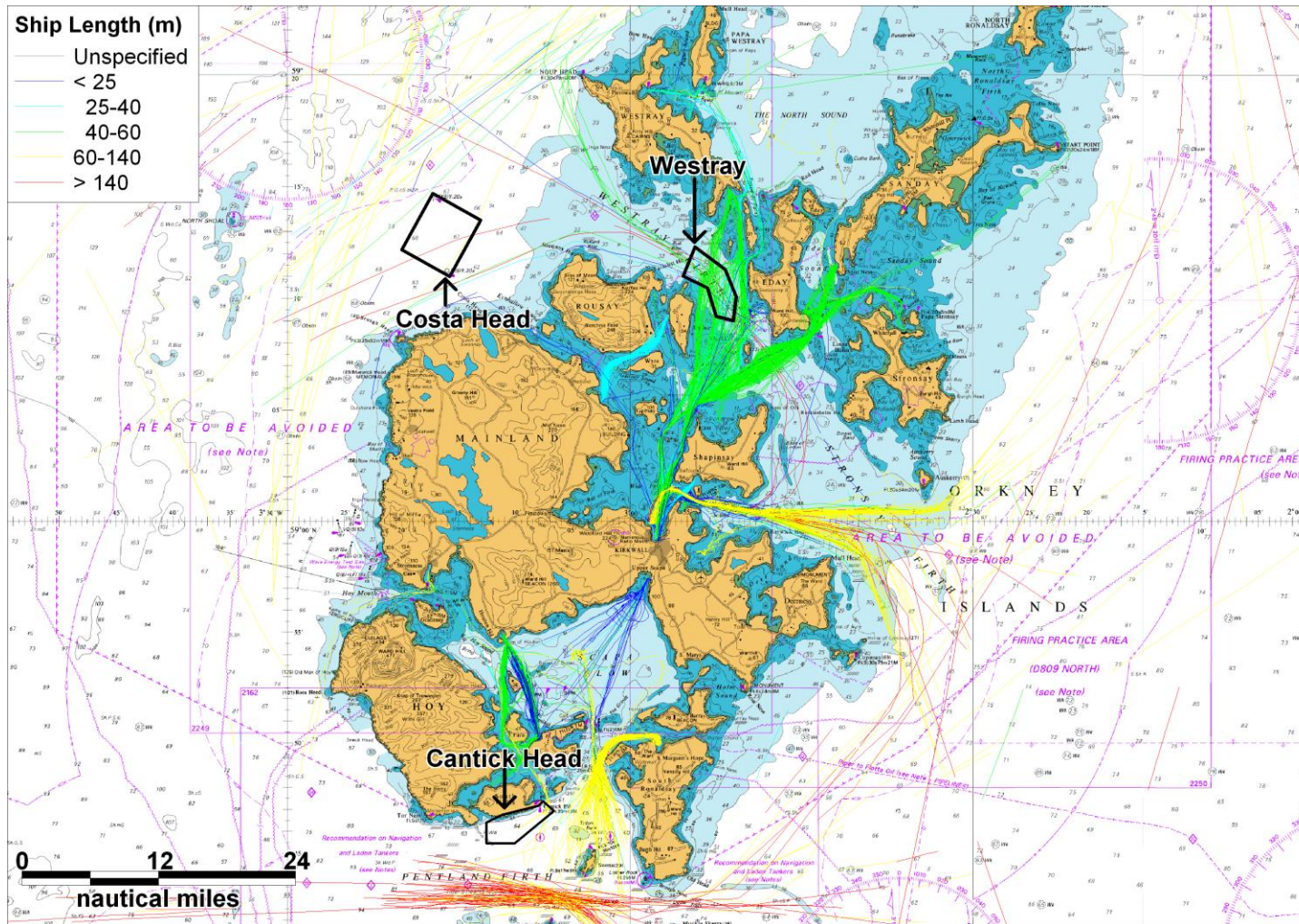


Figure 3.2 AIS Tracks colour-coded by Ship Length (26 Days)

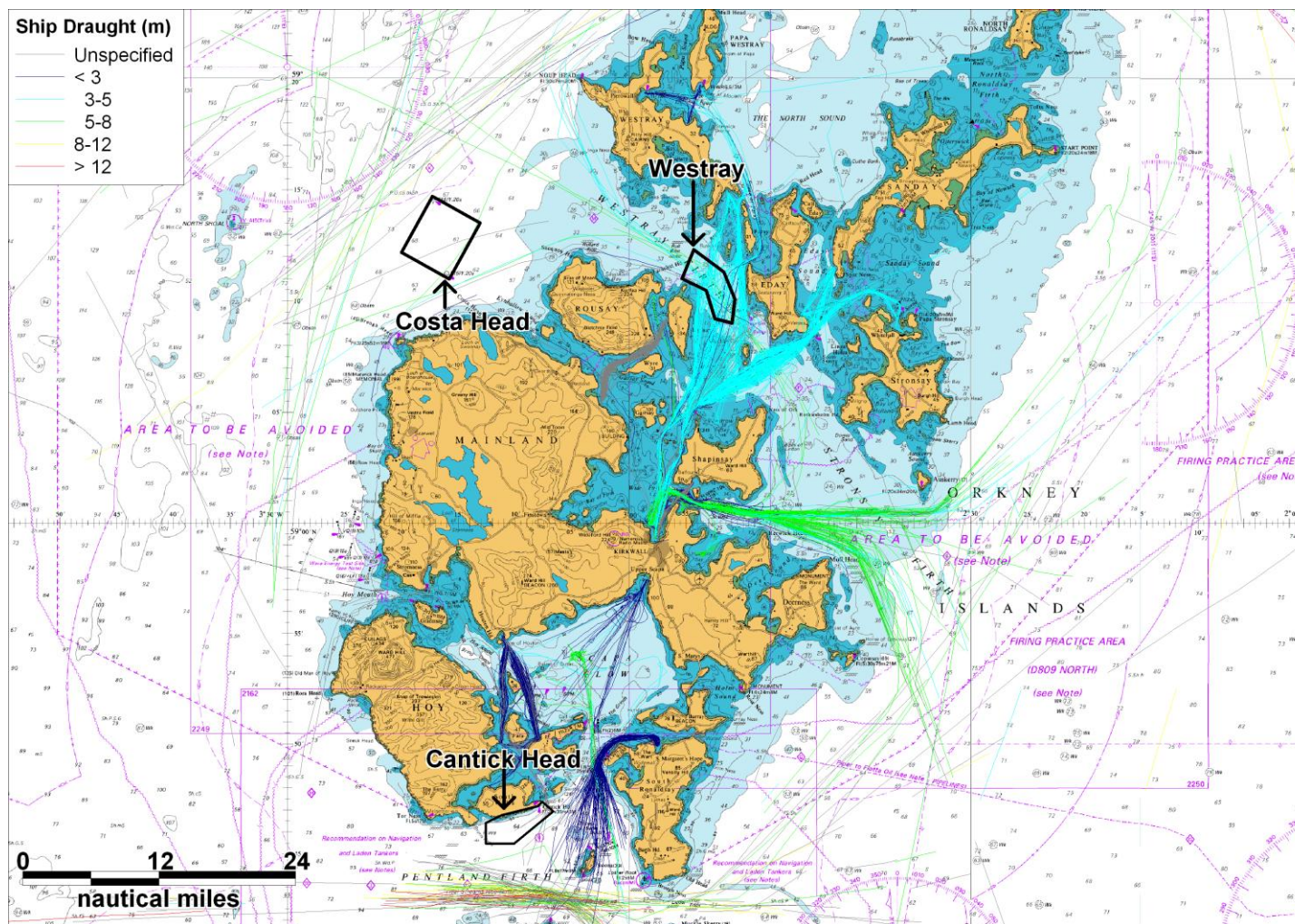


Figure 3.3 AIS Tracks colour-coded by Ship Draught (26 Days)

The ship types recorded on AIS during the survey period are presented Figure 3.4.

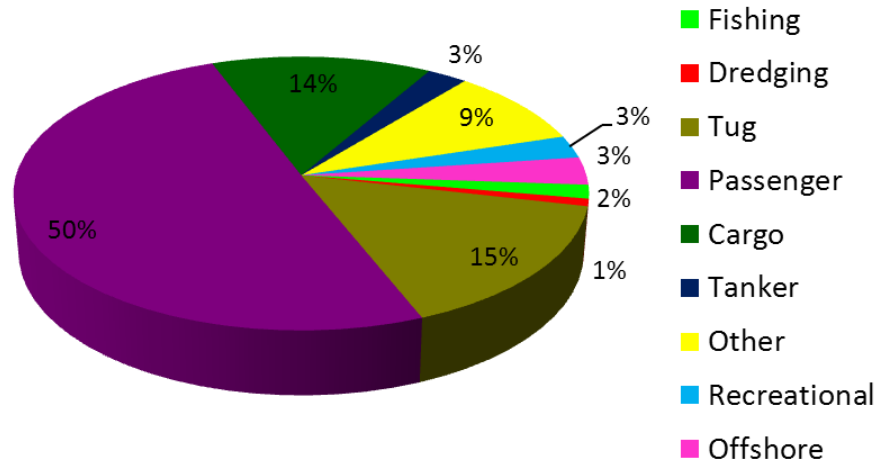


Figure 3.4 Vessel Types identified during Survey

Half were passenger vessels, which were mainly Orkney Ferries providing an inter-island service. Tugs (15%) and cargo vessels (14%) were also frequently tracked during the survey. ‘Other’ vessels (9%) mainly related to pilot boats, tenders and local vessels.

A small proportion of fishing vessels were tracked on AIS during the survey period but it should be noted that AIS carriage is not mandatory for vessels under 24m in length. Some smaller vessels may carry it voluntarily.

The vessel length distribution is summarised in Figure 3.5. Ship lengths ranged from 6m to 300m, with an average of 59m. The longest vessel recorded was the pipelaying vessel *Solitaire* at 300m LOA recorded on the 9 September travelling toward the Firth of Forth.

The draught distribution is summarised in Figure 3.6. The vessel with the deepest draught was the bulk carrier vessel *Yarrowonga* with a draught of 14.5m travelling toward Sweden.

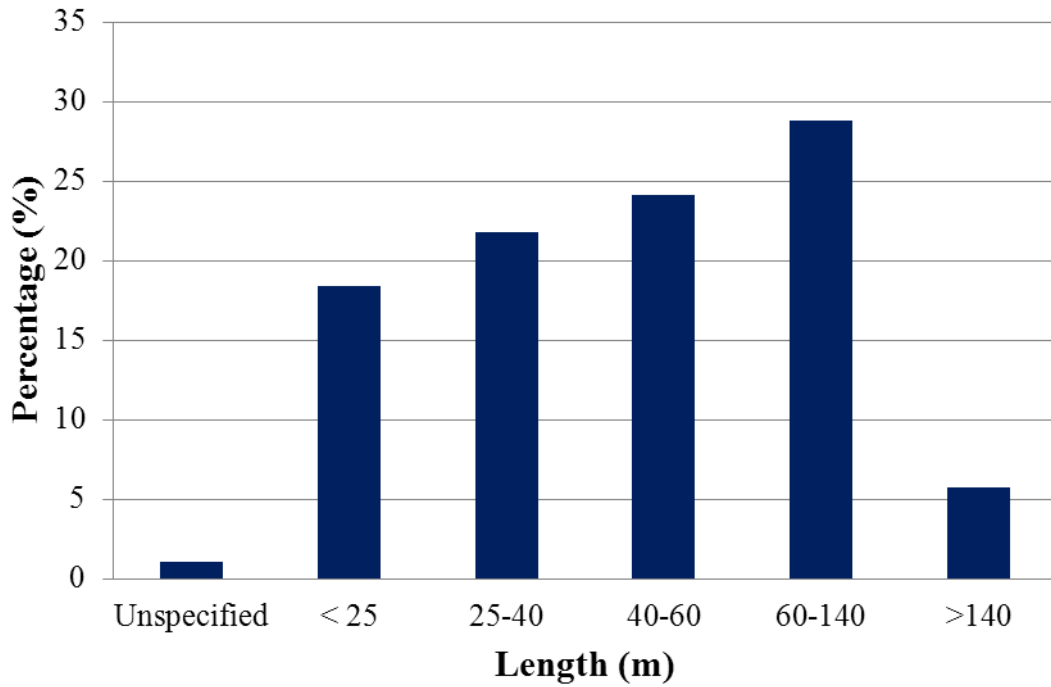


Figure 3.5 Length Distribution of Recorded Vessels during Survey

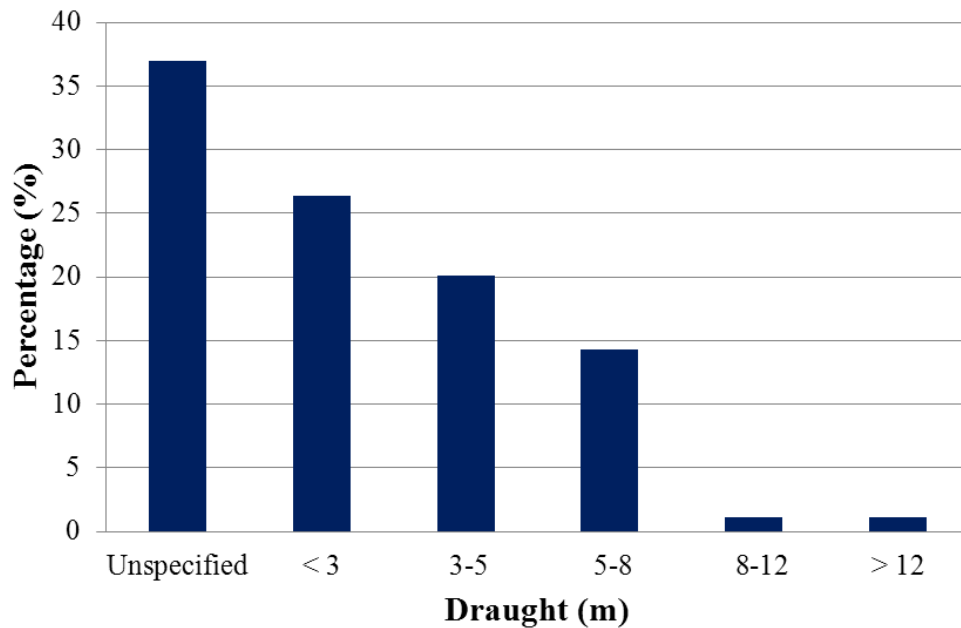


Figure 3.6 Draught Distribution of Recorded Vessels during Survey

3.2 Site-Specific Review

More detailed plots of the tracks recorded in the vicinity of each of the SSER AfL areas are presented in Figure 3.7 to Figure 3.9.

During the survey, the total number of tracks recorded travelling through each of the SSER AfL areas was as follows:

- Westray: 94 tracks
- Costa Head: 2 tracks
- Cantick Head: 10 tracks

However, it should be noted the coverage of each area varied depending on the position of *Chartwell*. The Westray AfL was covered for the majority of the time, whereas coverage of Costa Head and Cantick Head is estimated at just over half the time.

The majority of vessels travelling through Westray were the inter-island Ro-Ro passenger vessels *Earl Thorfinn*, *Earl Sigurd*, *Varagen* and the Fish Carrier *Island Senior*. The longest and deepest draught vessel to transit the Westray AfL was the passenger vessel *Albatros* travelling towards Oban, with a length of 205m and a draught of 7.5m.

Two vessels were recorded travelling through the Costa Head AfL area. One was the survey vessel *Kommandor Stuart* on 27 August traveling to Londonderry. The second was the passenger vessel *Albatros* travelling toward Oban which was recorded passing through both Westray and Costa Head after departing Kirkwall.

The passenger vessel *Hamnavoe* (112m length) was recorded on nine occasions travelling through the Cantick Head AfL using the bad weather route via Scapa Flow, rather than the normal route west of Hoy. The tug *Harald* (30m length) was the only other vessel tracked travelling through Cantick Head travelling toward Widewall Bay on 10 September. Neither vessel broadcast their draught.

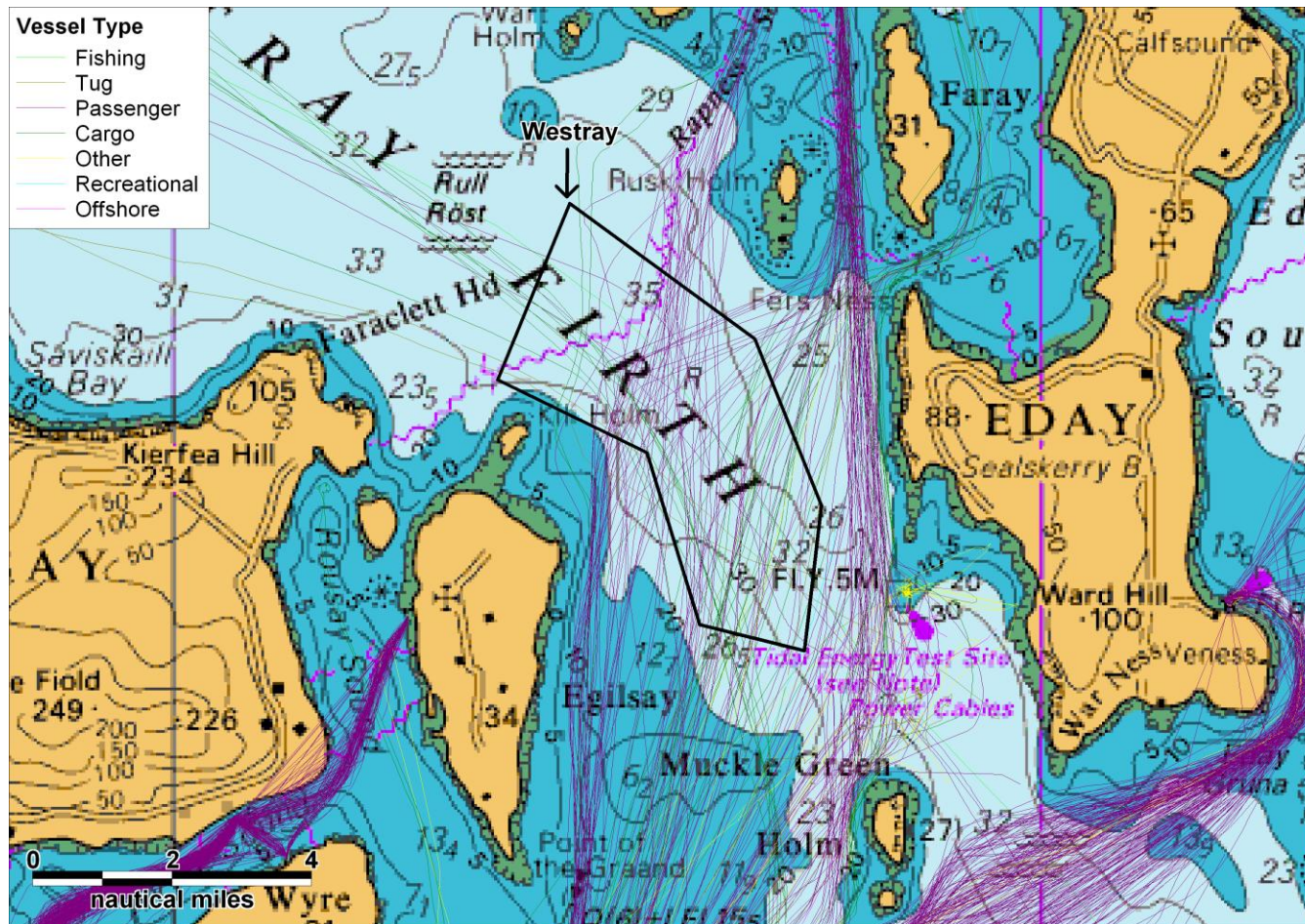


Figure 3.7 Detailed Overview of AIS data around Westray

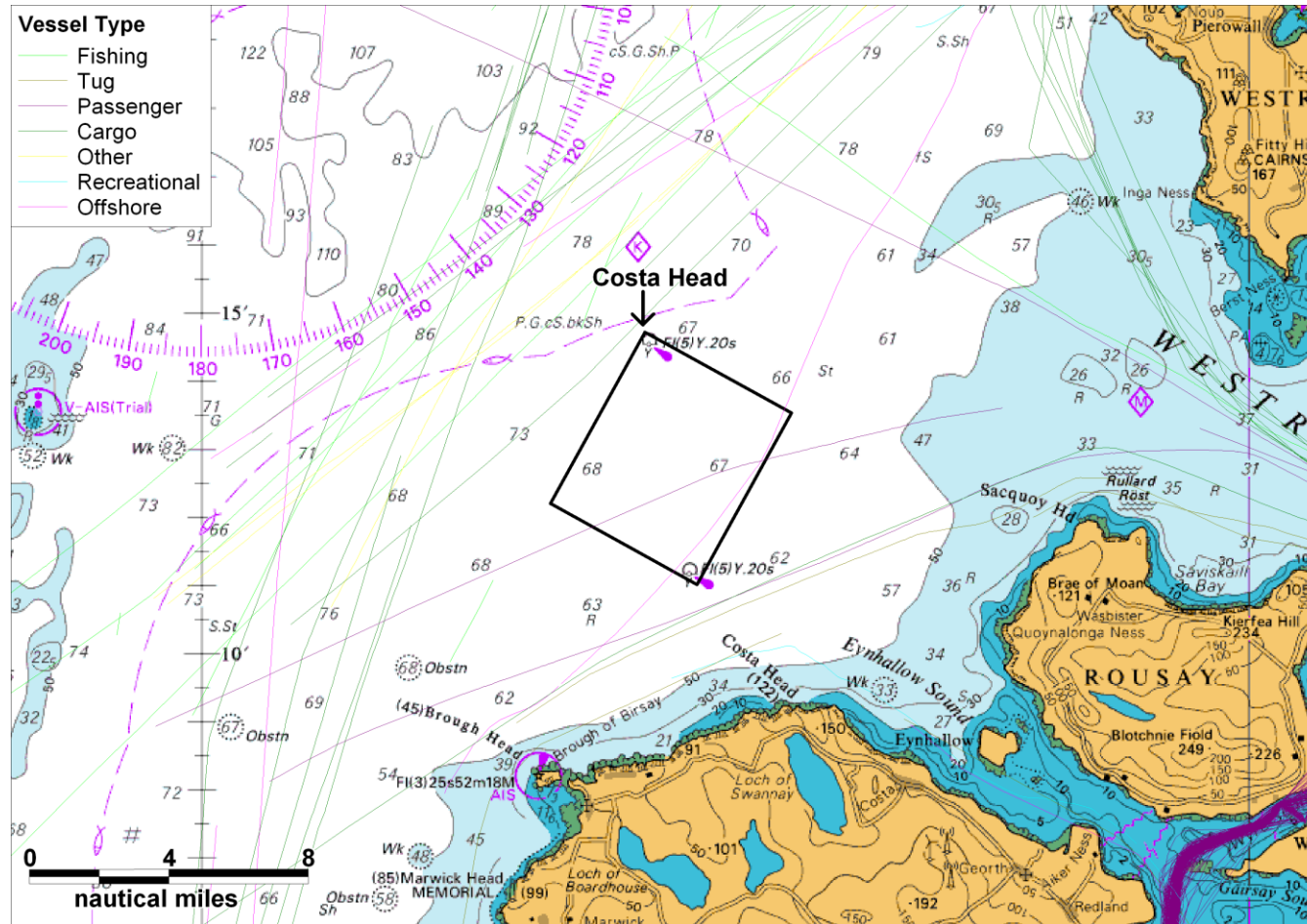


Figure 3.8 Detailed Overview of AIS data around Costa Head

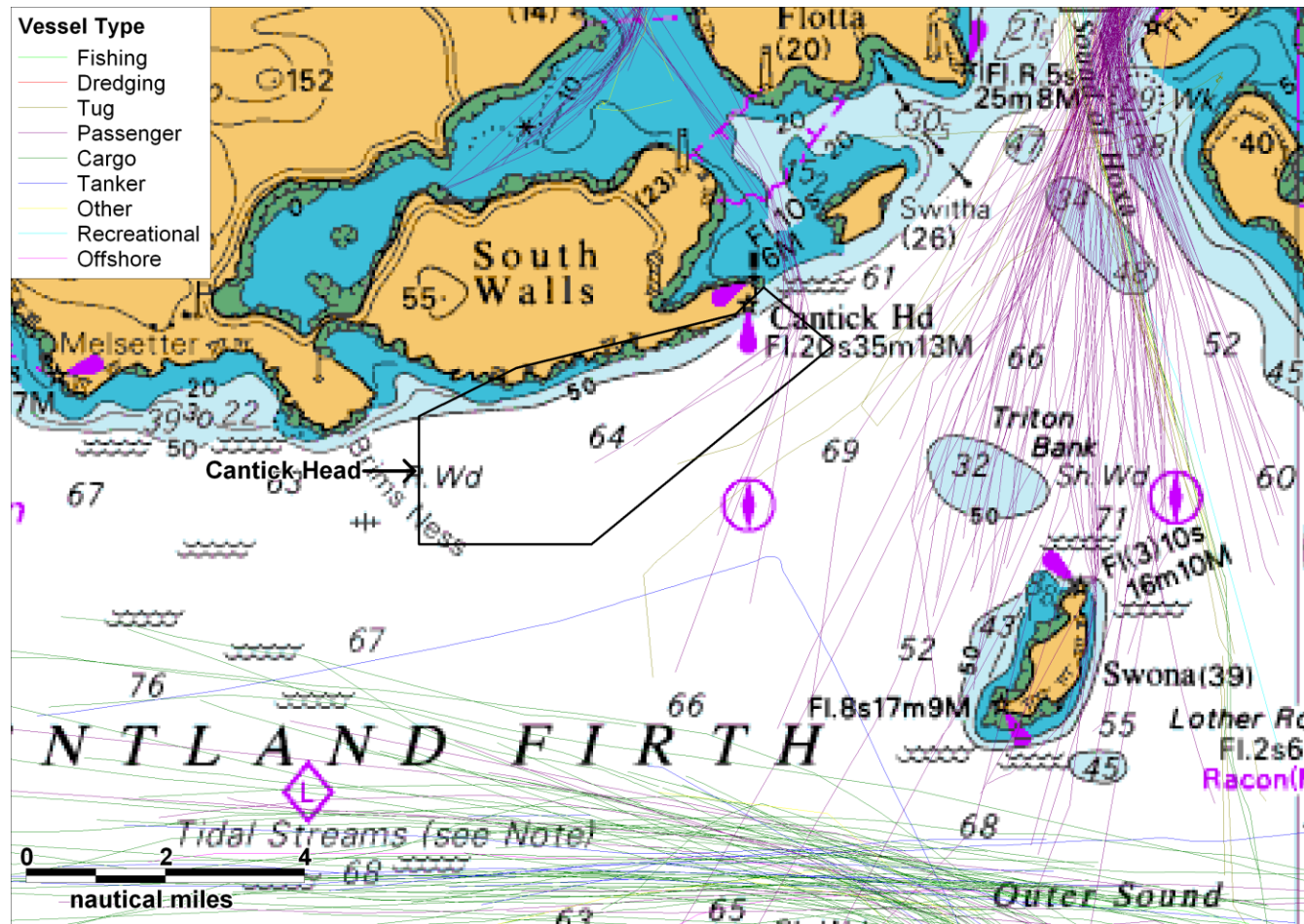


Figure 3.9 Detailed Overview of AIS data around Cantick Head

4. Radar Data Analysis

Radar tracking of non-AIS vessels was carried out when the *Chartwell* was performing the geophys survey in and around Westray.

Radar tracking tends to be over a shorter range than AIS, and depends on the scanner height, target size as well as the weather and sea conditions. The range of radar for the *Chartwell* tended to approximately 6-8nm (only tracking smaller targets).

Non-AIS vessels were tracked on six of the 14 days out of harbour. Vessels recorded by the radar during the survey period are presented Figure 4.1.

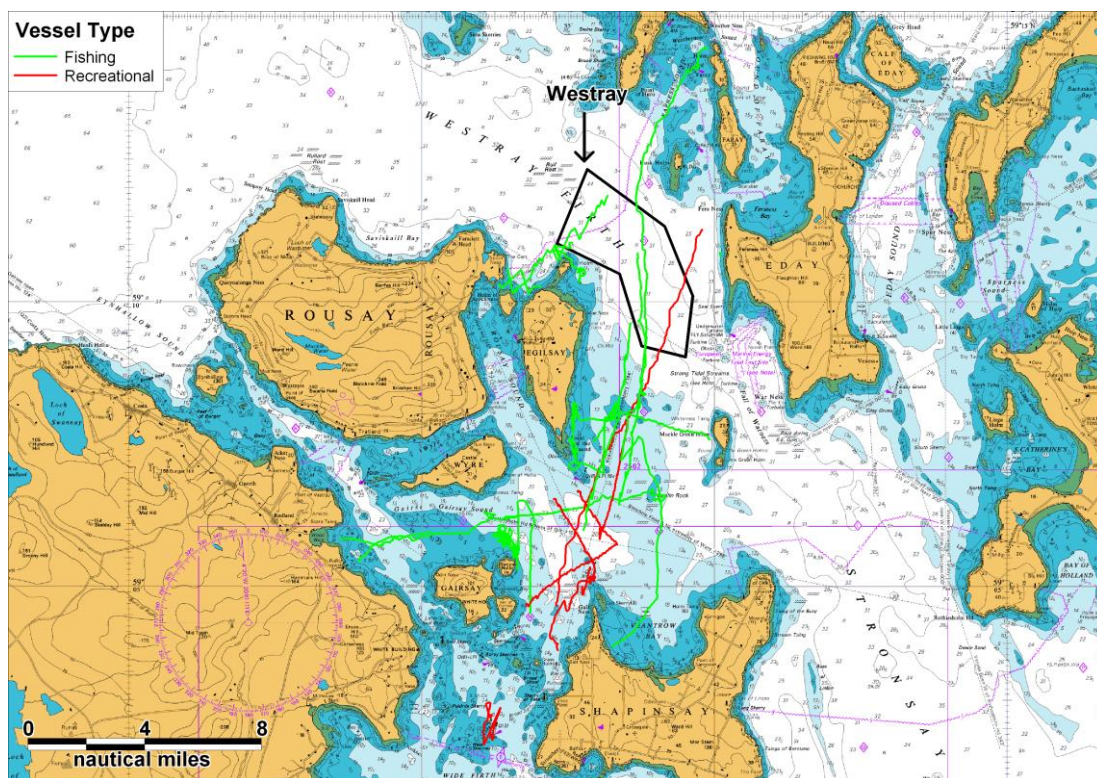


Figure 4.1 Radar Data collected during *Chartwell* Survey

All the vessels tracked were either fishing vessels (14 tracks) or recreational vessels (6 tracks).

The creel vessel *Hildona* at 11m registered in Lerwick was tracked on four separate occasions. The 7m creel vessel *Enterprise*, also registered in Lerwick, was tracked on two separate occasions. Other fishing vessels were logged but not identified by name.

Similarly, the recreational vessels traveling within the area were not identified by name.