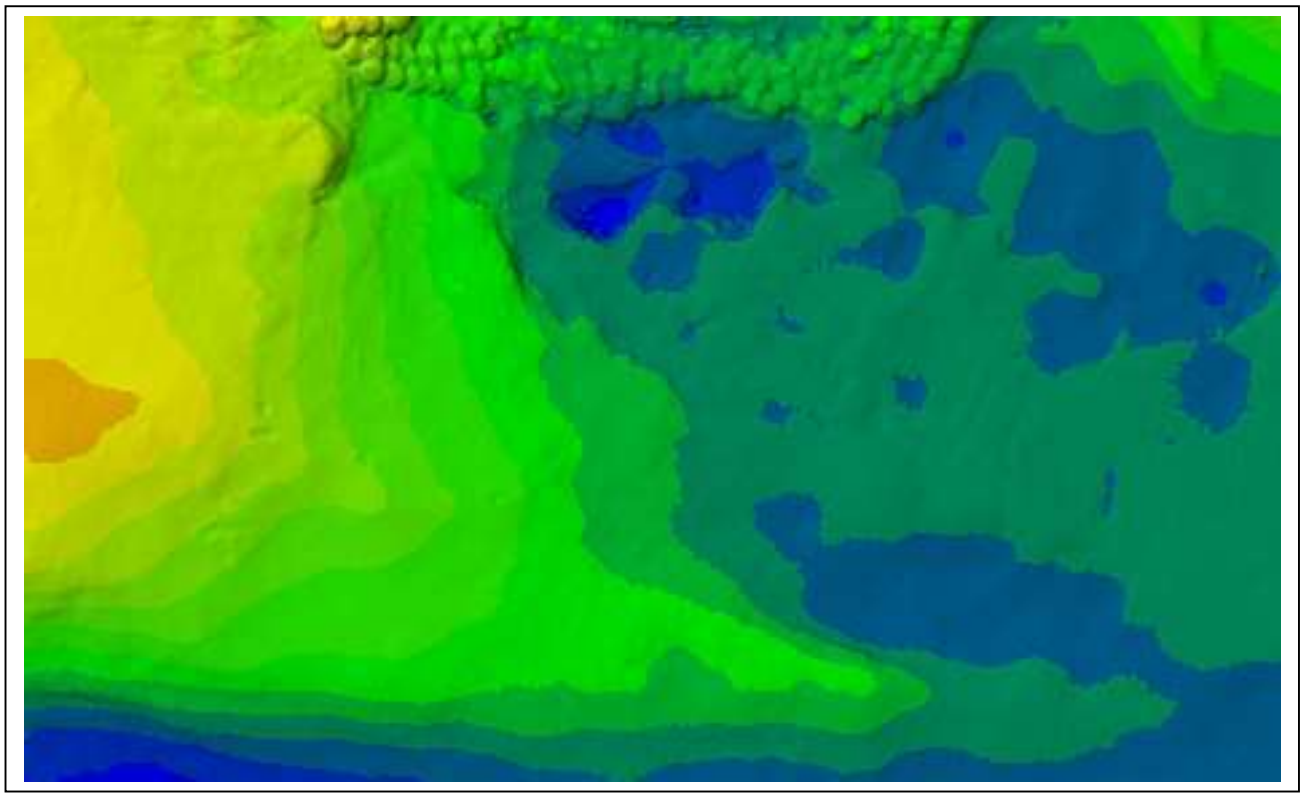

Civil Hydrography Plan 2021 - 2031

Issued August 2023

Version 4

Isle of Man Government

isle of man harbours
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infrastructure / bun-troggalys

Contents

1. Introduction

1.1 The United Nation Convention of Safety of Life at Sea (SOLAS) is extended to the Isle of Man via the UK. The UK has delegated the responsibility to meet this obligation to the Crown Dependencies. As a Coastal State obligation under the International Maritime Organization Instruments Implementation (III) Code, the Department of Infrastructure is responsible "for the collection and compilation of hydrographic data and the publication, dissemination and keeping up to date of all nautical information necessary for safe navigation (SOLAS Chapter V; regulation 9).

1.2 The Department of Infrastructure ("the Department") is responsible for funding, managing and delivering the Civil Hydrography Programme (CHP) to prioritise the survey and mapping of the Island's territorial waters, comprising an area in excess of 3970 km^2 and approximately 85% of the Island's total territory.

1.3 The purpose of the CHP is to provide high-quality hydrographic data that underpin the production of national nautical charts and publications, and to maximise the benefit to maritime security, the marine environment and efficient maritime transport. It prioritises areas of highest navigational safety risk and surveys and maps the Island's territorial waters.

1.3 The Department's Cartography Office has assisted with the production of this CHP. There has been much reliance on the use of Geographic Information Systems (GIS) which has enabled the consideration of the prioritisation of survey areas particularly in respect of navigational safety and the maritime environment.

1.4 The Department will continue to work alongside the UK Hydrographic Office (UKHO) to ensure the survey requirements adequately meet the IHO Order 1a as defined by the International Hydrographic Organization (IHO)[1]. The Department has a Memorandum of Understanding with the UKHO within which the Department agrees to supply data to the UKHO for inclusion within any of its products to ensure navigational safety is maintained.

[1] "Standards for Hydrographic Surveys, Special Publication S44, Edition 6"

1.5 This plan has been developed in order to address the lack of up to date survey data for Manx territorial waters. Intentions are to carry outwork in a phased manner commencing with areas of most concern. The plan will be reviewed on annual basis to ascertain the depth changes since the previous surveys and can be adapted as required.

2. Undertaking the survey work

2.1 The Department has identified the priority areas as part of this CHP, and will undertake the work, as and when required. However, the first surveys of a particular area will help establish the future baselines for the whole of the Island's territorial sea.

2.2 Elements of the work which is to be subcontracted out will have a survey specification prepared in collaboration with the Maritime Coastguard Agency (MCA) and the UKHO to ensure it is to the required standard and is undertaken by a suitably qualified surveyor and team (as necessary). This CHP does not contain specification information; rather, each tender exercise will contain the brief as appropriate.

2.3 Whilst the Department is responsible for gathering and compiling the hydrographic data for the Island's territorial seas, there will be occasions when other survey works are undertaken by other parties in pursuance of data gathering. As part of any consents given for this work, the Department in conjunction with the Department of Environment, Food and Agriculture will ensure any useable/relevant data collected to the required standards is passed to the UKHO.

3. Preparation and formulation of the CHP

3.1 The preparation and formulation of the CHP has been based around a number of factors and these include the following:

- traffic flow;
- sea bed characteristics;
- sea bed mobility;
- dates of previous surveys; and,
- long term planning for re-survey work.

3.2 The initial step will be for a baseline survey of the priority areas to IHO standards to be carried out over the first few years to give a better understanding of any future requirements for re-survey. This will then help with future planning to determine which areas, if any, are required to be resurveyed on a regular basis so that they continue to be safe for navigation.

4. Traffic Flow

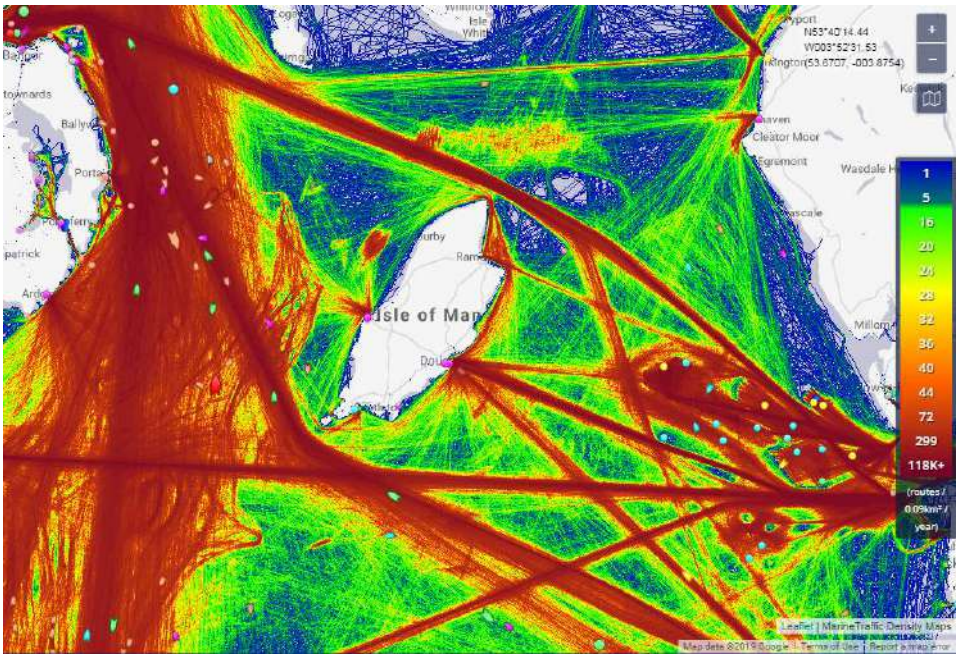
4.1 The Department has evaluated the traffic flow in the Manx territorial sea by means of AIS (Automatic Identification System) monitoring.

4.2 The Traffic flow in and around the Isle of Man follows the main routes listed below:

- route one is the local ferry traffic operated by the Isle of Man Steam Packet Company running inbound and outbound of Douglas;
- route two is vessels passing the North of Island, mainly from Heysham to Belfast; and,
- route three is passing the South of the Island with main routes between Liverpool and Belfast.
- Ramsey to Glasson and Belfast.

4.3 Figure 1 below shows a visual representation of these traffic routes shown in red around the Island. These main routes are shown to have at least 118K sailings in a 12 month period. These areas show the highest traffic density and therefore show the main areas of concern as part of this plan. Each point on the image is taken as an individual data point and vessels passing that particular point will contribute to the total.

Figure 1 – Vessel traffic around the Isle of Man (Source www.MarineTraffic.com)



5. Sea bed mobility

5.1 The mobility of the sea bed is based on a number of factors and has been assessed in the Manx Marine Environmental Assessment (MMEA Chapter 2.1[2]). See also Appendix 1 for visual.

5.2 The seabed type was determined through image analysis and sediment particle size analysis.

5.3 The areas of heavy traffic flow to the south of the Island and the approaches to Douglas harbour are shown to be areas of stable bedrock overlaid with gravels and therefore have high stability.

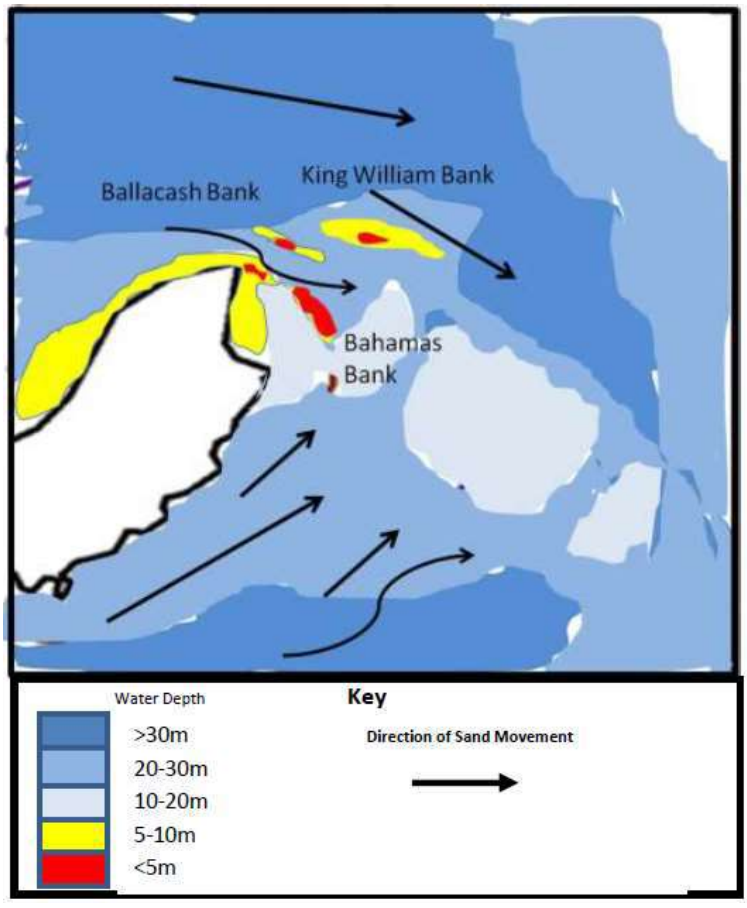
5.4 The area around the north of the Island comprises of sand/muddy sand and mixed sand/stone which have low levels of stability.

[2] Available at https://www.gov.im/media/1363392/ch-21-hydrology-climatology.pdf

5.5 Another factor related to sea bed mobility is that of the prevailing currents around the Island. The northern route passes a number of sand banks and the sand migration characteristics are considered below:

'Around the north of the Isle of Man are to be found a series of sand banks known as 'Banner banks'. Active Banner banks such as those found in this region can accumulate sand from more than 30m water depth to the active wave base (although it is uncommon for such banks to dry completely). The low banks extending for up to 40km towards the southeast from the north of the Isle of Man are associated with the Bahama Bank on the eastern side of the Point of Ayre. Away from the northern tip of the Island the King William Bank is thought to be partly decoupled from the eddy-induced flow that sustains the Banner banks in the region. The net movement of sand-waves has been shown to run from west to east across the King William Bank (Figure 4). Holmes & Tappen (1995) have suggested that the Banner banks on the east side of the Isle of Man, in the long-term, are leaking sand towards the open shelf and as such should be regarded as temporary sinks for sand captured around the north of the Island.' (MMEA Chapter 2.1). See Figure 2 below.

Figure 2 - Regional physiographical and sand transport setting of banner banks to the north of the Isle of Man (Redrawn from Holmes & Tappen 2005)



6. Risk Assessment

6.1 The risk for grounding incidents in waters outside of the Island's harbours has been assessed between severity and likelihood. The three main areas of concern have been risk assessed individually.

6.2 The Isle of Man Ship Registry (Department for Enterprise) is the Flag State and Port State Authority for the Isle of Man and it investigates any incidents involving Manx flagged vessels worldwide and Manx and foreign flagged vessels within Manx waters. The Ship Registry produces an annual report which includes an overview of accidents/incidents and can be viewed on this website[3] . The reports shown are from 2008 to present and show no reported grounding incidents within Manx waters for the past 10 years. Investigated reports are also listed[4].

6.3 There have been reported incidents involving vessels which have grounded however these incidents have been due to other factors and not reported as hydrographical issues.

6.4 The northern route

The northern route is used extensively by a wide range of vessels and these include larger deeper drafted commercial vessels down to smaller shallow drafted pleasure craft.

- the northern route through the banks has had no reported groundings due to hydrographical issues in the past 20+ years;
- the northern route has more than 118,000 reported sailings annually as per the AIS data from Marine Traffic (see section 4.3);
- the depths reported in the area range from less than 5m to a depth of 43m;
- the sea bed stratum is made up of mainly of sand and therefore would have low impact to a vessel grounding;

[3] https://www.iomshipregistry.com/forms-reports/annual-reports/

[4] https://www.iomshipregistry.com/forms-reports/casualty-reports/

- the mobility of the sea bed is of concern in the area as the currents and the seabed mediums are conducive to movement; and,
- the banks have been well marked with buoys by the Northern Lighthouse Board (NLB) as the General Lighthouse Authority for the Isle of Man.

With all these factors taken into account the risk is deemed to be low or acceptable with a score of 4.

6.5 The southern route

The southern route is also used by a number of vessels and these include large deep drafted commercial vessels down to smaller shallow drafted pleasure craft.

- the southern route which passes south of the Calf of Man has also had no reported grounding due to hydrographical issues in the past 20+ years;
- the southern route has more than 118,000 reported sailings annually as per the AIS data from Marine Traffic (see section 4.3);
- the depths reported in the area range from 40m to 75m;
- the sea bed is made up of rock, mixed gravel, mixed stone and sand; and,
- the mobility of the sea bed is deemed to be low as the seabed is of a heavier nature.

With all these factors taken into account the risk to vessels is deemed to be low or acceptable.

6.6 The main harbour routes

The main harbour routes are considered to be focused on the three main commercial harbours for the Island - Douglas, Peel and Ramsey. Douglas being the main commercial harbour with 24 hr access has 118,000+ sailings annually (see section 4.3) by ferries and tankers but also includes commercial fishing vessels and pleasure craft which are shallower drafted. Douglas also serves as an alternative Pilot boarding/waiting area for Liverpool Pilots.

- the approaches have had no reported groundings due to hydrographical issues in the past 20+ years;
- the approaches for Douglas and Peel have reported depths from 7m to 42m;
- Ramsey approach dries out completely as Ramsey is a tidal harbour but this is well publicised via nautical publications and charts;

- the sea bed on these approaches is made up of mixed mearl, mixed gravel and sand.
- the sea bed mobility is deemed to be low in most areas.

With all these factors taken into account the risk to vessels is deemed to be low.

7.0 Priority Plan

7.1 The Territorial Sea as a whole (shown in Figure 3) is required to be surveyed over time a taking into account all previously described criteria. It has been determined that as a starting point, the 10 areas (shown in Figure 4) will be surveyed in their entirety over a 10 year period to enable a good baseline for hydrography to be established within the priority areas around the coastline. This programme will endeavour to ensure a full view of the priority areas and thereafter analysis of the survey data will assist in the identification of any further areas of concern. The priority plan identifies that the areas of seabed which are of greatest concern will be surveyed first. While the full extent of these 10 areas have been surveyed, the longer term plan will be adjusted to allow for re-survey work as and when appropriate.

Figure 3 – Isle of Man territorial sea

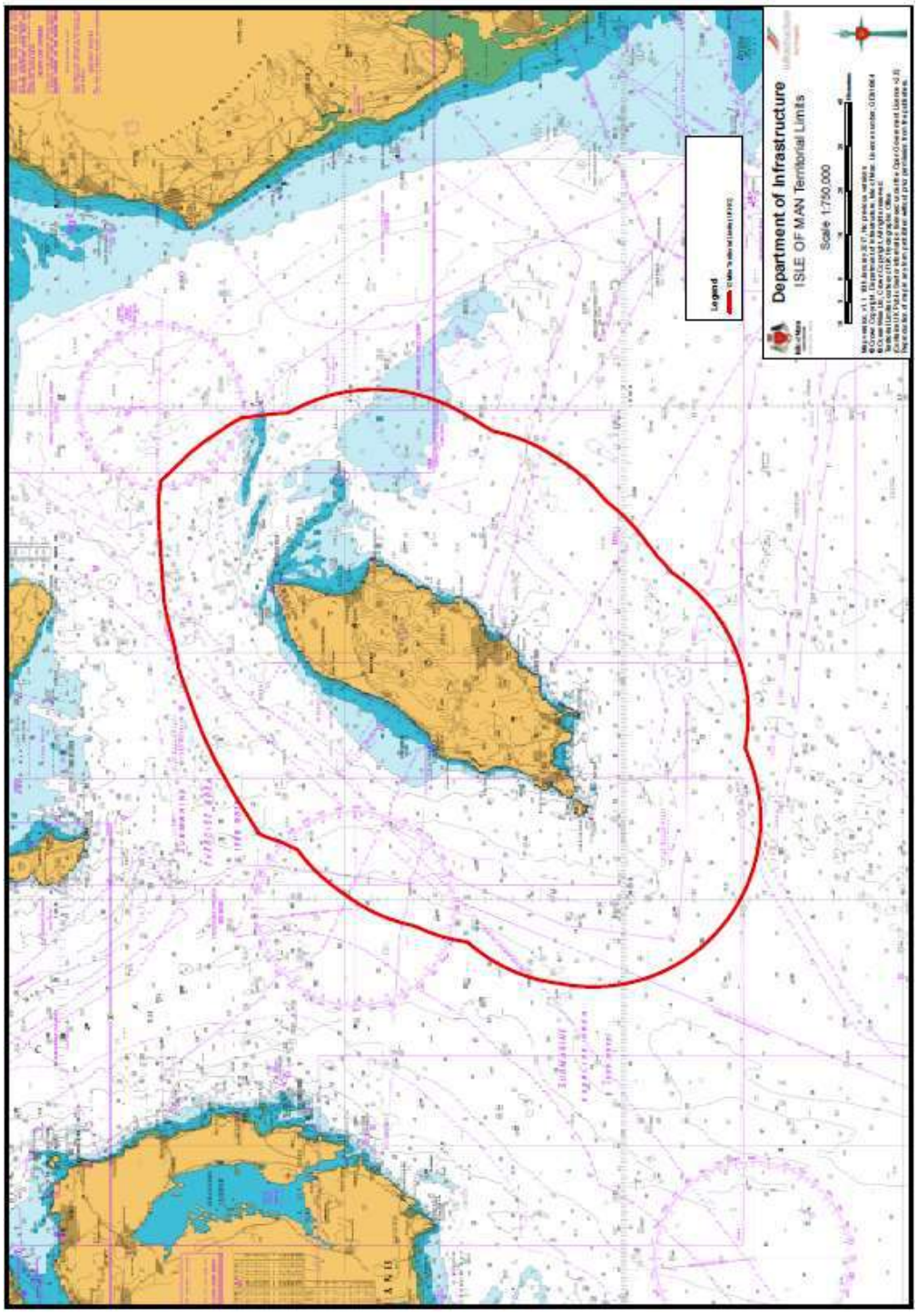
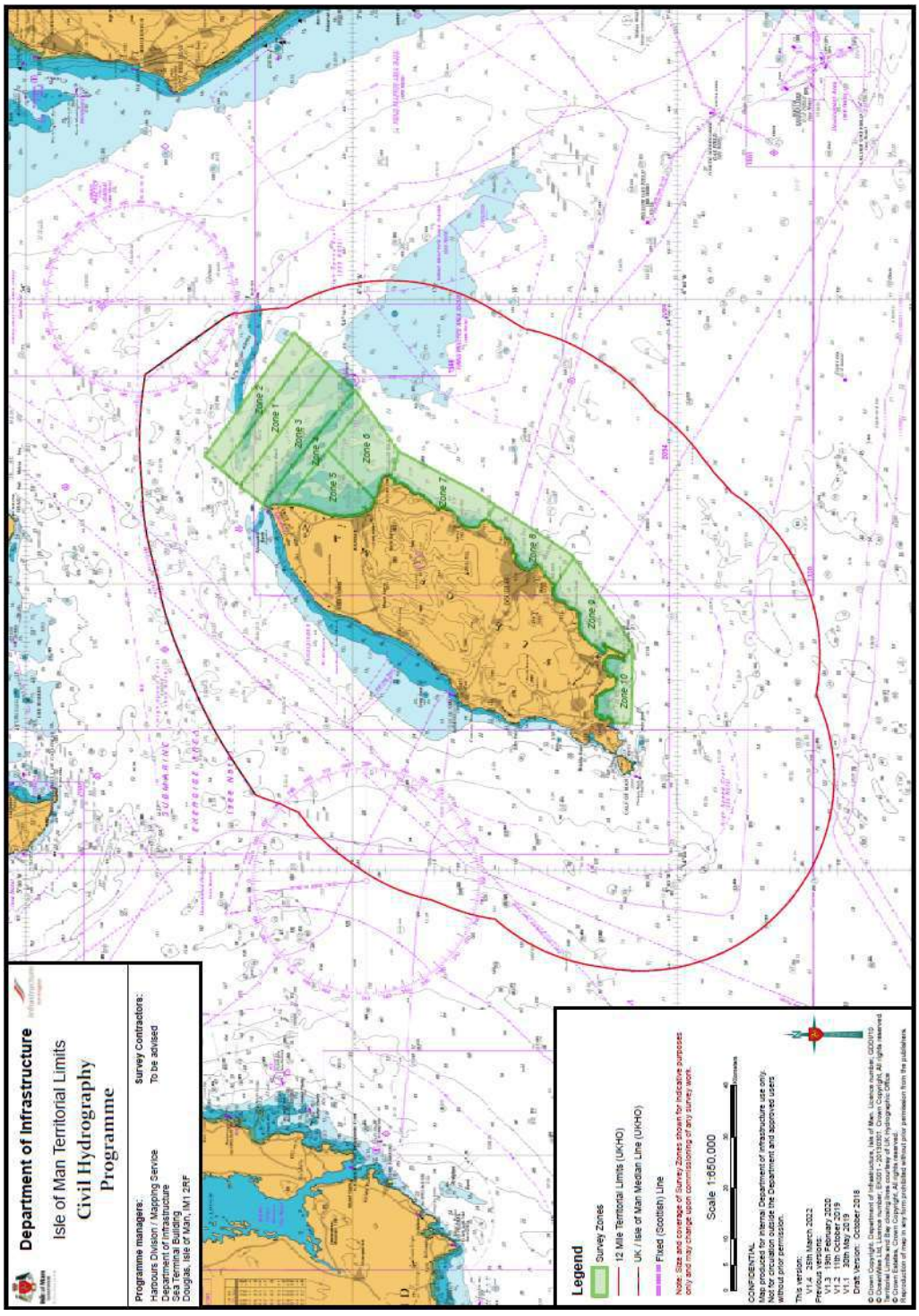


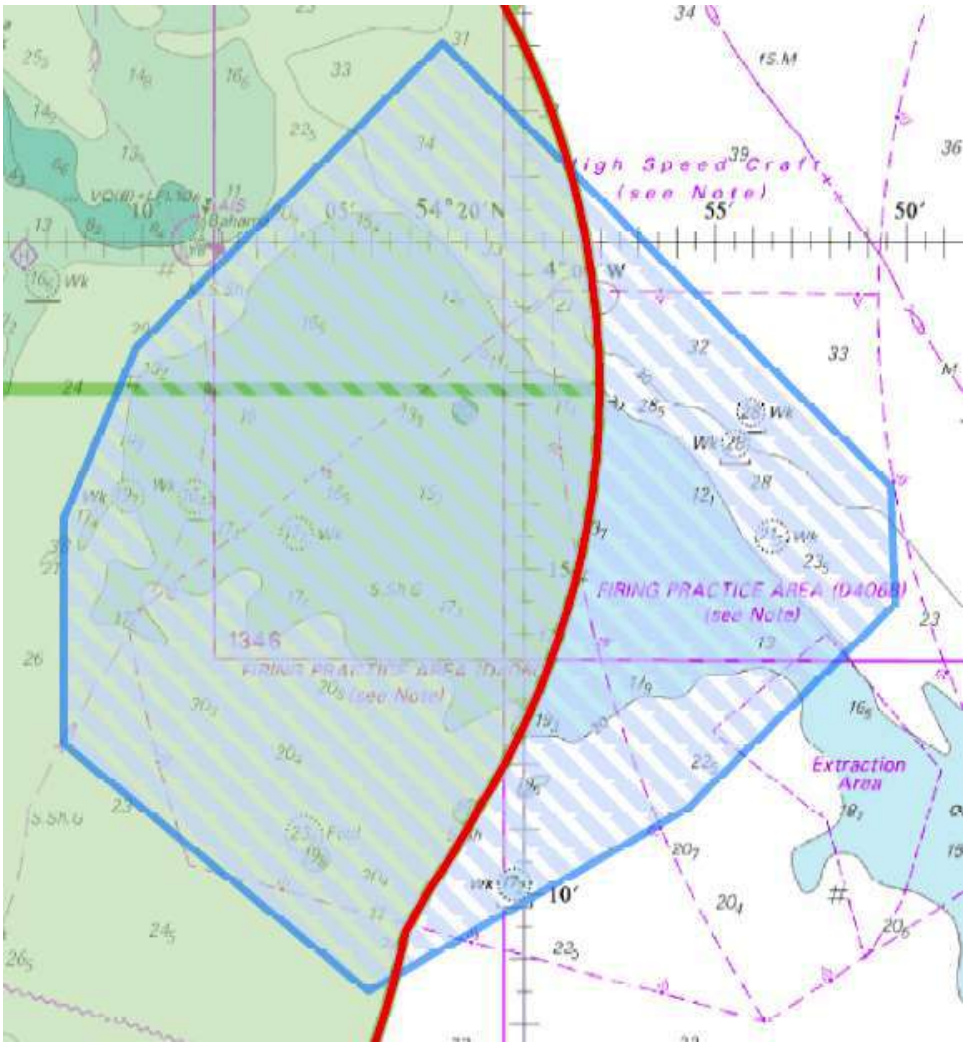
Figure 4 – Isle of Man territorial sea by survey area



7.2 Surveyed Area under Licence

The survey area shown below has been carried under licence from the Department for carbon fuel exploration. This has come at no cost to the Department but the Bathymetric Data recorded will be provided. This survey was carried out in 2020.

Figure 5 – Private Enterprise Survey Area



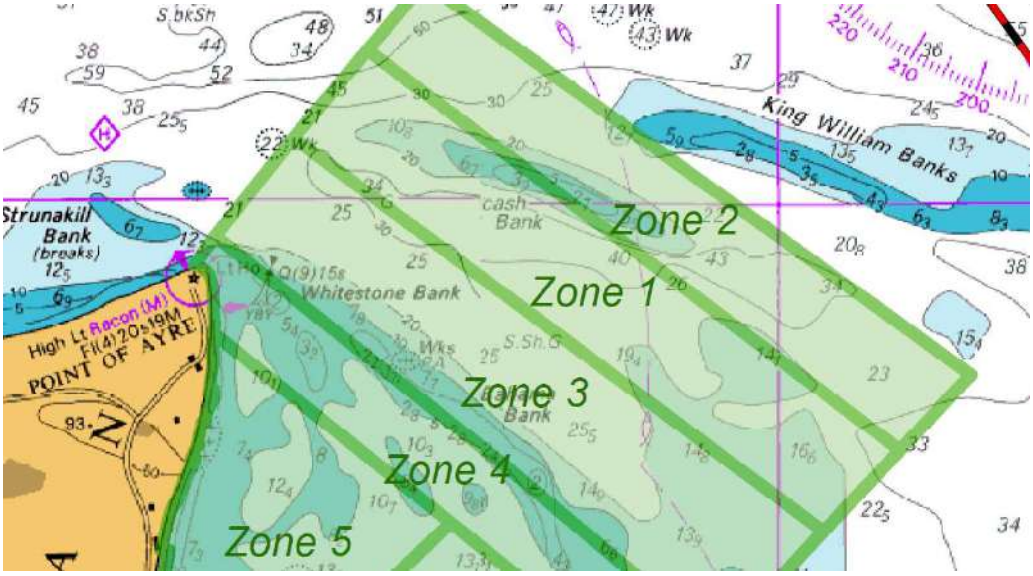
7.3 Survey of Harbour limits

Survey of Harbour limits will be carried out on an ad-hoc basis as they are areas that require regular re-survey.

7.4 Survey Area 1

Survey Area 1 includes an area of the northern route which passes the northern sand banks previously described in 6.4. This area is to be surveyed first as the area of greatest concern due to the shallow water and mobile seabed.

Figure 6 - Survey Area 1

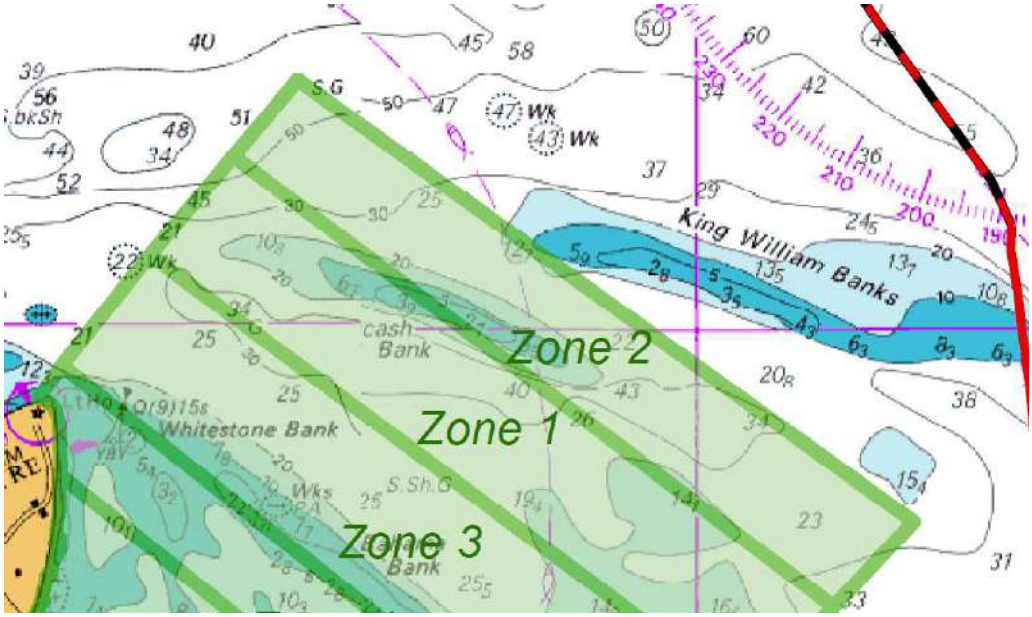


The Survey Area passes to the Southern edge of Ballacash Bank and will cover the main channel that is used.

7.5 Survey Area 2

Survey Area 2 covers the Northern part of Ballacash Bank and the channel between Ballacash Bank and King William Banks

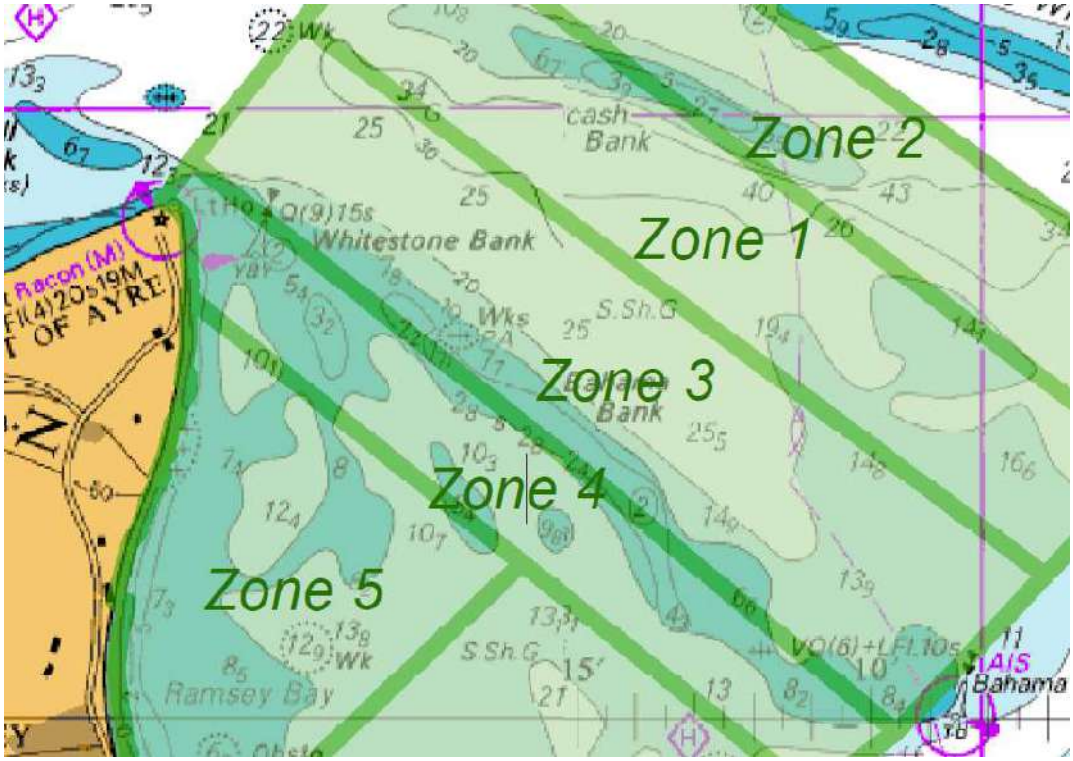
Figure 7 - Survey Area 2



7.6 Survey Area 3

This area covers the remainder of the Ballacash channel and the Northern edge of Bahama Bank.

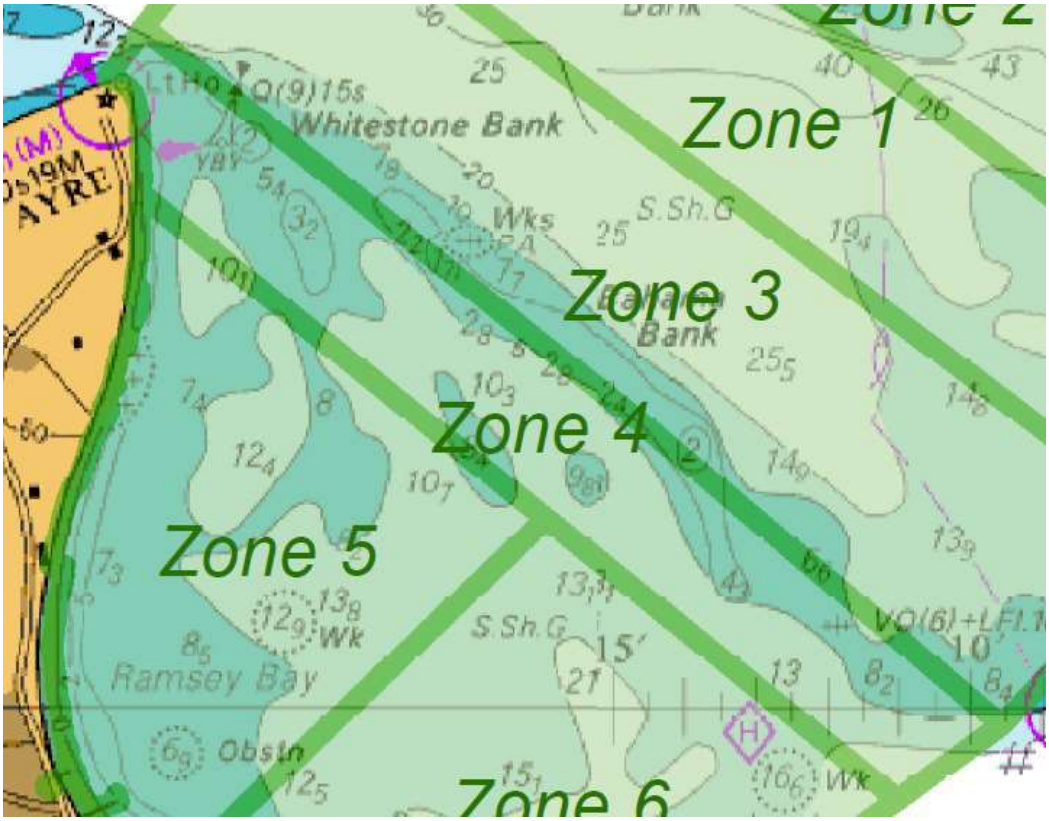
Figure 8 - Survey Area 3



7.7 Survey Area 4

Survey Area 4 will complete the priority surveys of the Northern Banks and approaches which will fulfil the need of the risk assessment for the area of highest priority.

Figure 9 - Survey Area 4



7.8 Survey Area 5

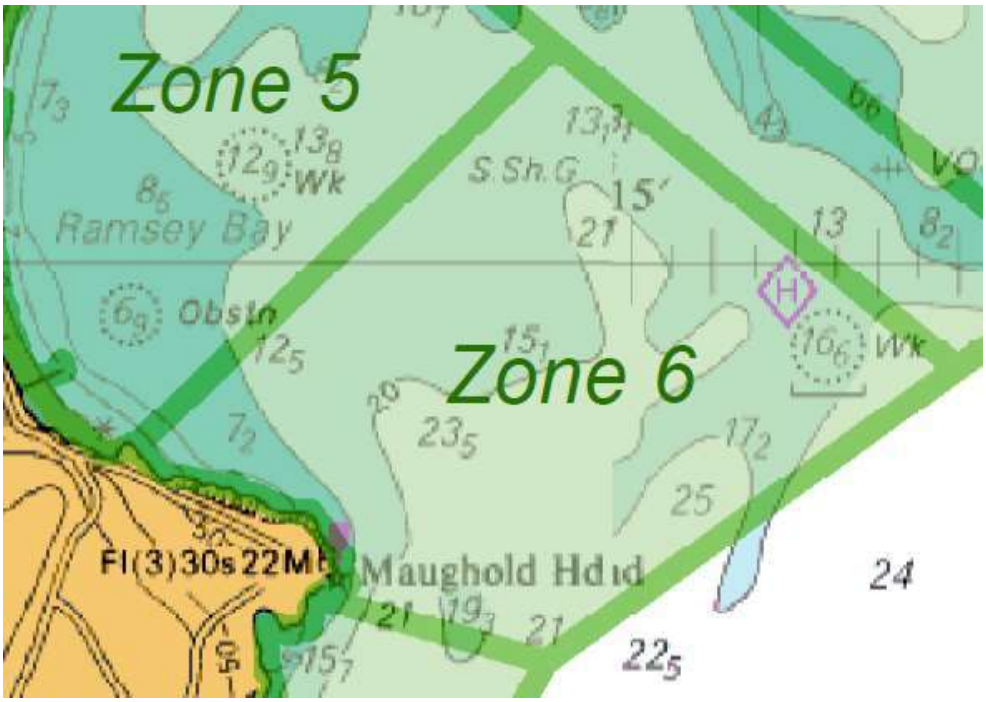
This area will cover the sank bed areas of Ramsey Bay and Ramsey approaches.

Figure 10 - Survey Area 5

7.9 Survey Area 6

Survey Area 6 will cover the remainder of Ramsey bay and the approaches from the North to Maughold Head.

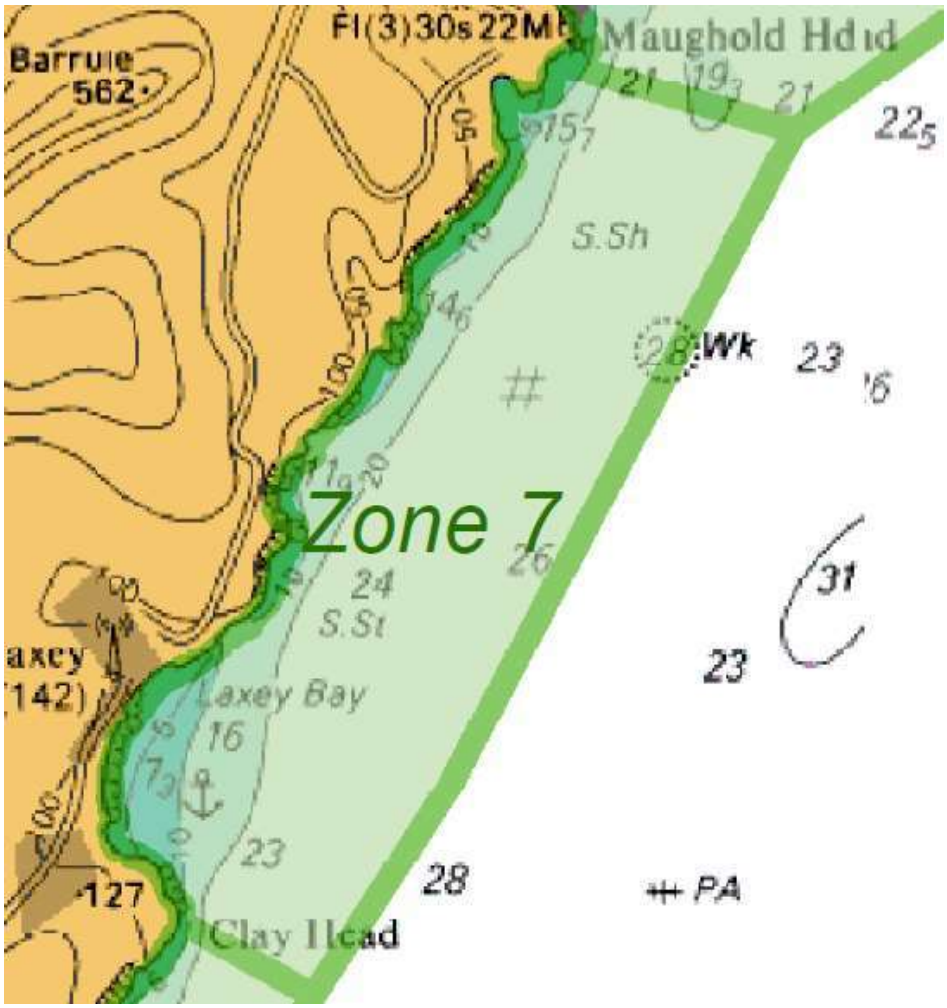
Figure 11 – Survey Area 6



7.10 Survey Area 7

Area 7 will cover the area between Clay Head and Maughold Head.

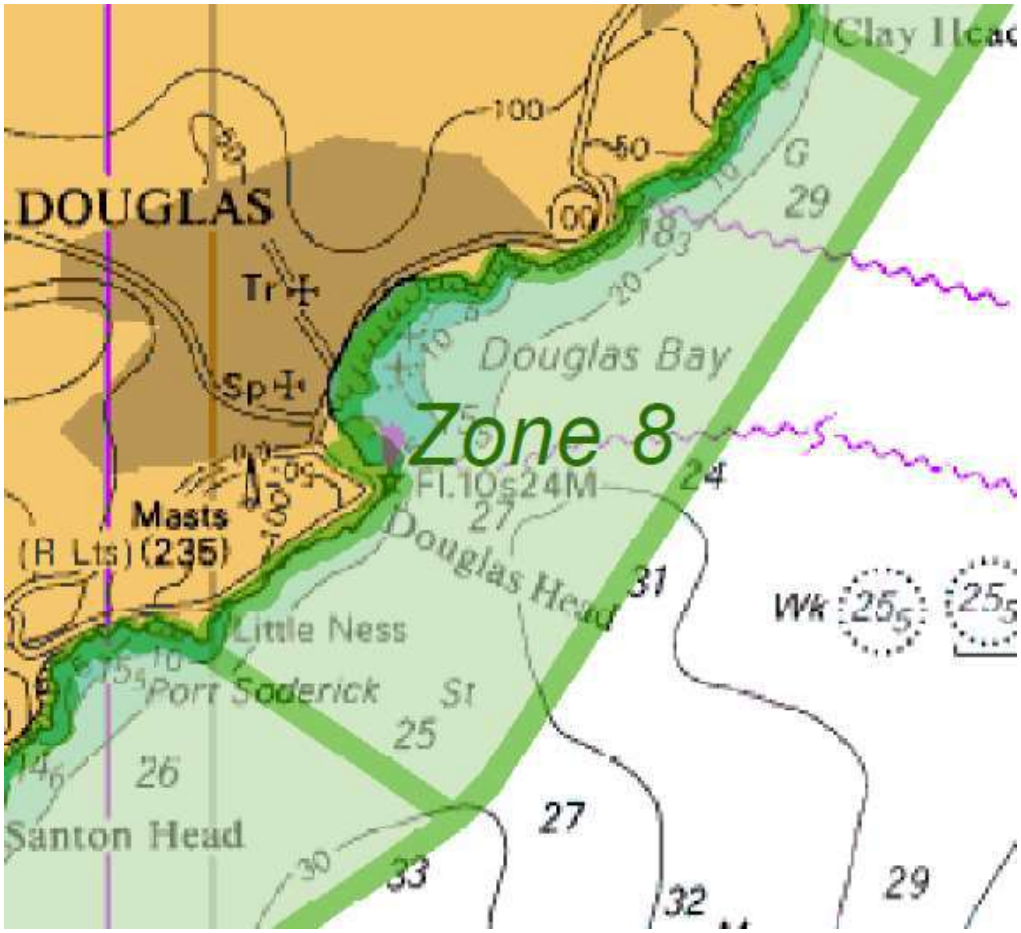
Figure 12 – Survey Area 7



7.11 Survey Area 8

Survey area 8 will cover Douglas harbour approaches, Douglas Bay and the 2 anchorage areas for Douglas.

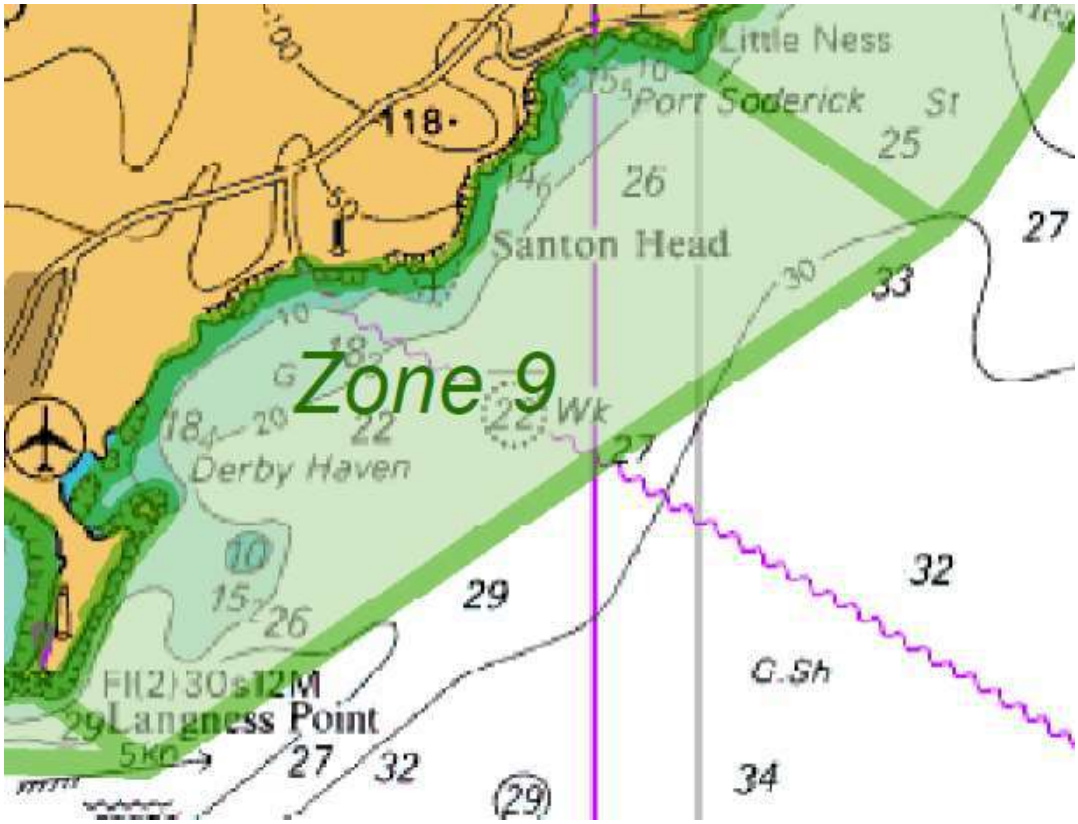
Figure 13 – Survey Area 8



7.12 Survey Area 9

This will cover Port Soderick to Langness

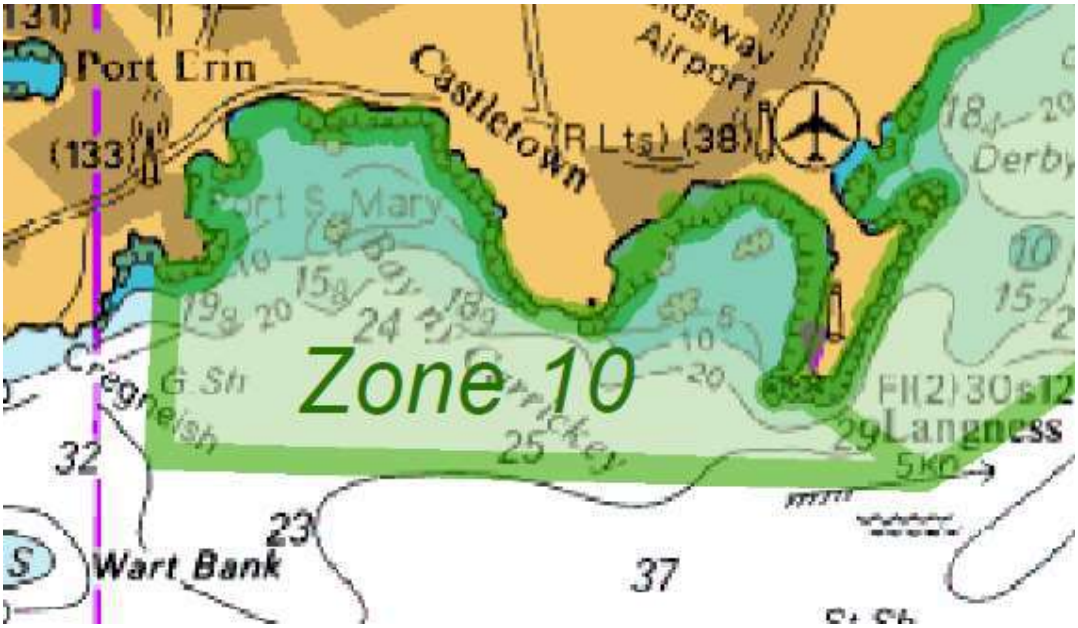
Figure 14 – Survey Area 9



7.13 Survey Area 10

Area 10 covers from Langness to Port St Mary.

Figure 15 – Survey Area 10



8.0 Quality assurance and future planning

8.1 As stated previously the standards to be achieved for each of the surveys will be set out during the tender process with assistance from the MCA and the UKHO. The post survey analysis will be checked and verified also in conjunction with the UKHO. This will ensure that the data collected is to the required IHO standards and will enable the UKHO to accept this information by way of the Department of Infrastructure discharging its responsibility under SOLAS for hydrography. This working arrangement forms part of a Memorandum of Understanding between the Department of Infrastructure and the UK Hydrographic Office.

8.2 Future planning for re-survey work will be undertaken as the current planned survey data is formalised and analysed. Future planning of surveys will need to be assessed once comparisons are made of the historical data and the current planned surveys.

Appendix 1 Seabed strata (Source MMEA Chapter 2.1)