

Paper Chart Production at Imray

Lucy Wilson, Managing Director of Imray Laurie Norie & Wilson Ltd, a RIN Corporate Partner, explains how Imray paper charts are produced from electronic data supply.

The UKHO's recent announcement about the withdrawal of its paper nautical charts by 2026 is reverberating through the industry (see page 4 of this edition of Navigation News). For Imray, in the small craft and leisure sailing market, it presents exciting opportunities.

Despite the drop in demand for paper charts in the commercial shipping sector, Imray cater to a different customer and paper charts continue to sell in healthy and sustainable volumes.

There's a new generation of sailors who approach us for paper and digital charts for their adventures. There are die-hard navigators who sit around a table planning with a paper chart. There are sailing schools for whom small screens don't do the job. Imray charts suit the conditions on small craft, which are different to those vessels equipped with multiscreen ECDIS displays and multiple electronic redundancies.

Ships have no need for charts of the creeks and channels that leisure sailors enjoy exploring, and so we curate, edit and expand on the official information, sourcing missing detail and making charts just right for small craft navigation.

Imray also embraces the widespread use and benefits of electronic navigation. The choice isn't either-or. It can be both. There are parallels with packages of digital plus paper Ordnance Survey Leisure Maps on land.

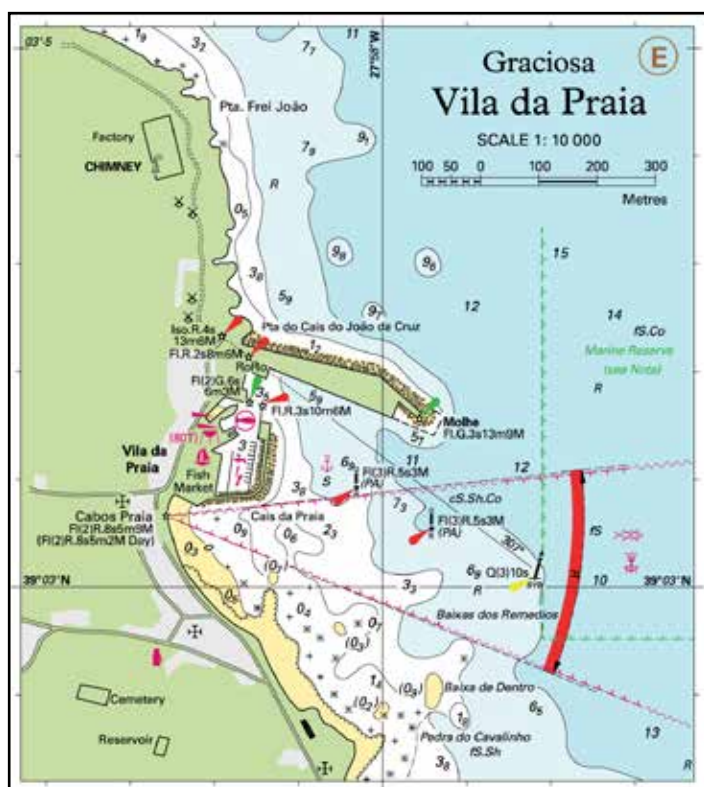
We use excellent, reliable, hydrographic office (HO) survey data as the primary source material. But, Imray's founders were using their own source data to publish charts from as early as the mid 1700s, and for small craft since yachting became a pastime in the late 1800s. The HO data has never painted a full picture for our market because official surveys focus first on the needs of shipping and commercial vessels.

Take this example of a large scale plan for Vila da Praia, Graciosa (see below), and compare it to the official chart. Imray is larger scale (more zoomed in), shows marina detail (marked as unsurveyed on the official chart), and is supplemented with symbols showing small craft facilities, anchorages, a fuel station, all of which are important to visiting yachts.

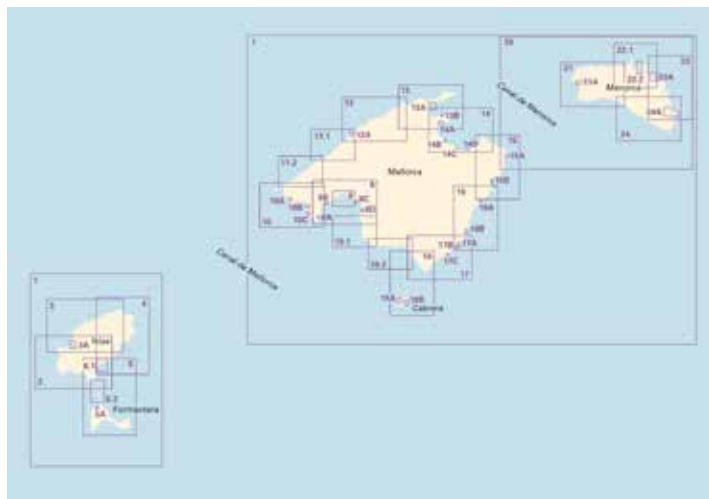
The quality of our charts is second to none; we're the only private chart producer, print or electronic, to be recognised by the Maritime and Coastguard Agency. We already work from the standard International Hydrographic Organisation S57-format ENC vector data supply to produce our gold standard, carefully curated Imray charts.

The design process

An Imray paper chart scheme, or electronic chart package, is



An Imray large-scale plan (left) compared to the official large-scale plan for Vila da Praia, Graciosa



An index diagram showing the chart scheme for designed for a chart pack.

designed by cartographers that are experts in hydrography, geographic information systems and design.

Logical decisions are made: What's the most useful area to be covered by a single paper chart sheet? Headland to safe water mark, island to mainland, a particular strait or channel might all influence the coverage.

The combination of our market and cartographic knowledge, and the expertise of local sailors (often pilot book authors), results in a series of outlines showing the extent and scale of each chart.

We're also influenced by the available source data. Are there any gaps in the official S57 data at the relevant scales? What are the survey dates? What alternative data is there? This is where our networks come into play.

We add to the S57 data from multiple sources including satellite imagery, first-hand research, pilot books and additional surveys. 'Imray' content is clearly tagged to keep track of its provenance.

The data process

S57 format vector data arrives from the HOs into the Imray Caris Hydrographic Production Database, our industry-standard geospatial database.



The raw S57 data dropped into our database. Note the text display, lack of small craft information, colour scheme

The same S57 data after our automated processes have run and the Imray portrayal has been applied (text not showing)

Automations convert raw data to show the familiar and intuitive Imray portrayal - the Imray symbols equivalent to International HO standards, and the familiar and logical Imray colour scheme

Automation reduces the opportunity for human error and increases efficiency, but subsequent interventions add the value; these are by the expert cartographer and sailor who edit, curate and verify.



Cartographers have now intervened in the data to add the Imray small craft data and tidy up the text annotations. This is now the Imray Digital raster chart for the area.

Caris Paper Chart Editor is used to apply the ephemera which makes paper charts suitable for navigation; marginalia, titles, scale information, graticule (the latitude/longitude grid on top of the chart).

Quality assurance

Strict quality assurance systems ensure reliable and current products. We're ISO9001 quality management certified as well as MCA recognised. Each project has a data-loading cartographer and a verifying cartographer, as well as further quality checks.

Cartography at source – a family of products

Because we do ‘cartography at source’ in a database rather than on individual files, we maintain and update just one dataset.

This is used across multiple paper and digital products, including paper passage charts, chart packs, small format paper charts, digital raster charts (static electronic charts that match paper chart images) for our Imray Digital chart packs, and in due course, Imray Digital vector charts (interactive electronic charts).

Printing

High resolution files are sent to our print room. They're printed that day, or on demand, or in quantities as required by distributors or chandlery.

We use the same large format PageWide digital printing presses used by HOs, customised for Imray's Pretex water resistant paper.

Updates

Like all leisure electronic and paper chart suppliers, we currently receive ENC data from the UKHO on a quarterly basis. We then also provide a weekly Notices to Mariners (NtM) service, which incorporates relevant data from the HO NtMs but also Imray information that's appropriate for our customers. We'll continue to support our paper charts with frequent updates beyond the 2026 UKHO withdrawal from the paper chart market.

The future

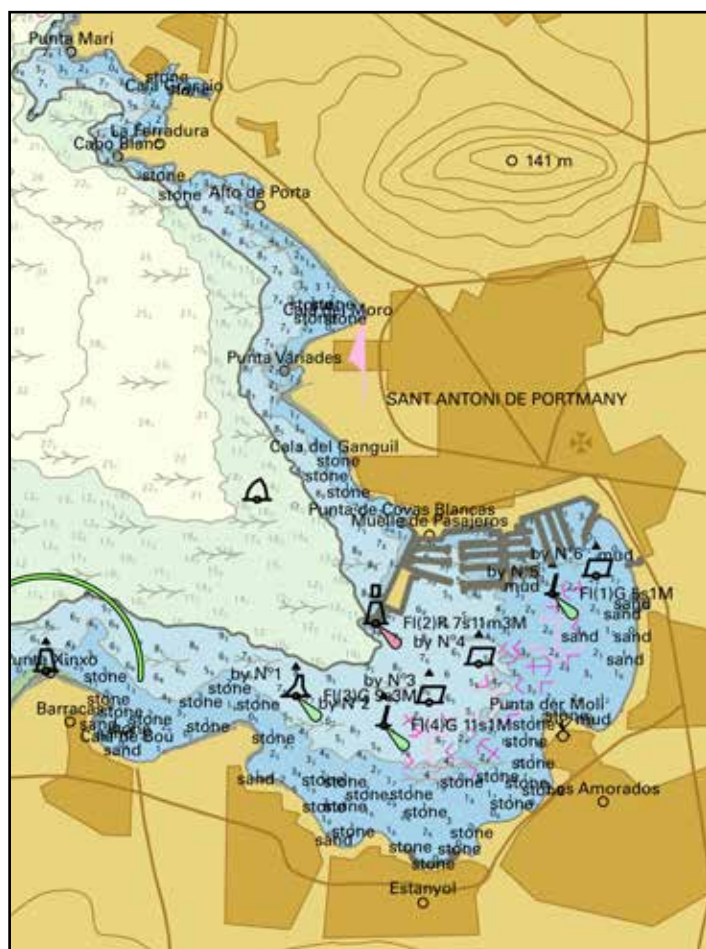
The S100 data framework – an evolution of S57 – will open opportunities for us to use standardised data from many different sources.

Cartography at source and print on demand allows more customisation and personalisation. We'll expand our range, produce charts on demand showing a radius from a particular coordinate, or offer charts with different added-value data for different sectors of the market. We'll offer subscriptions to paper charts with regular updates. We'll also continue to develop Imray digital products and vector charts, bringing those into www.explorewithimray.com and beyond.

I hope that this round-up from Imray's optic has been of interest and provides some context to the changes recently announced in relation to the Admiralty paper charts.



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The final Imray paper chart (right) plan once the cartographers have worked their magic, compared to the raw original source data (left).