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Agenda item [[2]](#footnote-2) 3.1

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Planned closure of the GLA DGPS Service

# Summary

This paper provides a brief overview of the General Lighthouse Authorities of the UK and Ireland’s (GLA) consultation on the future of its marine radiobeacon DGPS service and the conclusions drawn.

## Purpose of the document

To inform Committee members of the GLA decision and to provide information on the approach, consideration and outcome. Copies of the questionnaire used in the survey along with the anonymised results of the survey will accompany this paper.

# Introduction

The General Lighthouse Authorities of the UK and Ireland (GLA)[[3]](#footnote-3) provide differential GPS (DGPS) to users within their waters as part of the mix of marine aids‑to‑navigation (AtoN) provided to keep mariners safe and to protect the environment.

The GLA DGPS system was first introduced in 1995 as a trial system, being formally declared operation in 1997. The system consists of 14 DGPS reference stations (as shown in Figure 1), 6 far-field monitoring sites and 3 monitoring and control sites. The system is operated as a single AtoN, albeit one operated and maintained by three authorities.

While originally developed to counter position errors introduced by Selective Availability (SA), the main benefit became position integrity once SA was switched off in 2000.

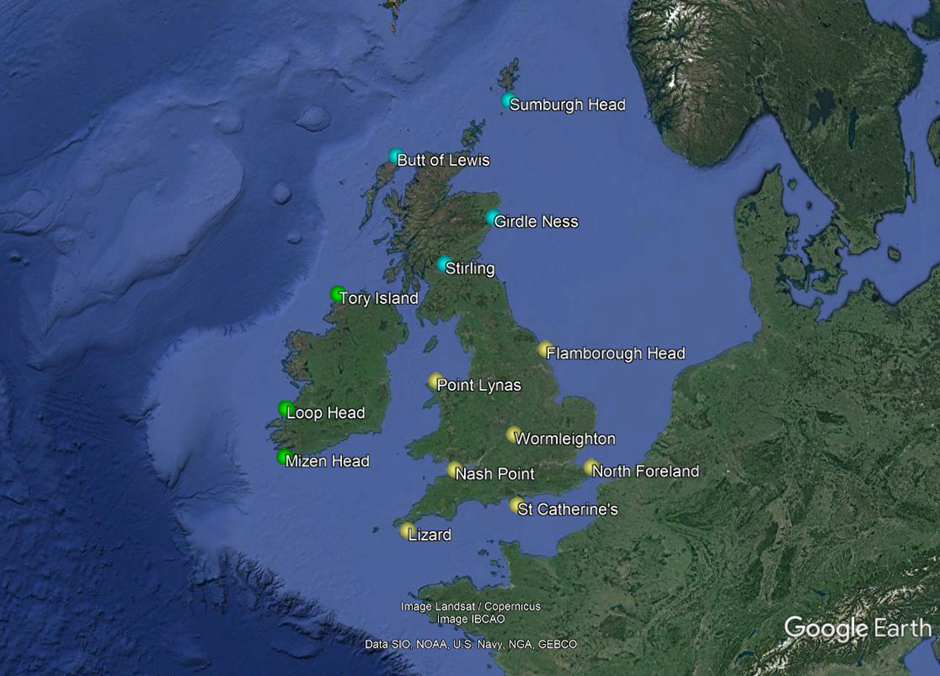


Figure 1: Location of the 14 GLA DGPS reference stations

# User consultation

The GLA service was partially replaced around a decade ago. Subsequently, the current infrastructure is approaching the end of its design life and the GLA conducted a stakeholder consultation to assess the requirements for the service going forward.

The consultation process sought input from stakeholders across the maritime sector, and beyond, through direct engagement and via a widely circulated user survey. GLA personnel interviewed vessel crews from across the UK and Ireland, and 153 people responded to the survey. Figure 2 provides an overview of the different respondent groups to the survey along with their percentage of total responses.

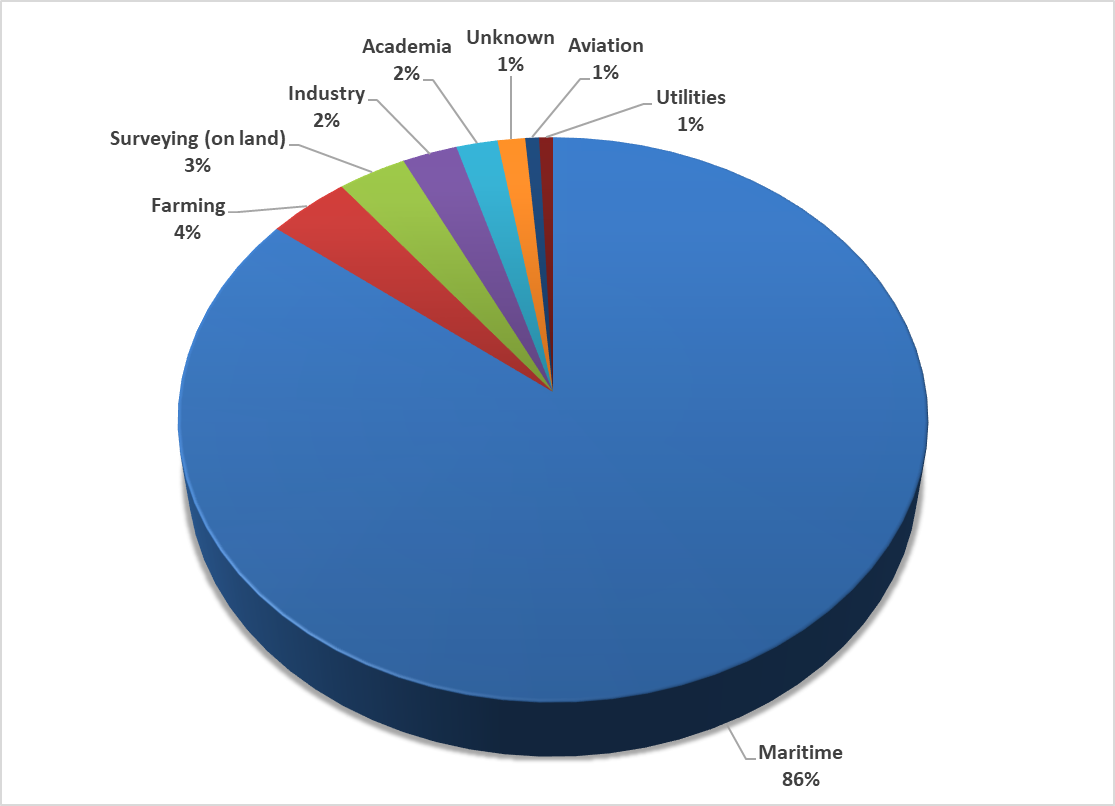


Figure 2: Percentage of survey responses received from different stakeholders and potential users

It can be seen that the vast majority of responses were from mariners and maritime operators (e.g. engineer, scientific officer, operations manager, harbour master etc.). Such responses presented mariners operating a wide range of vessels including ferries, container ships, tankers, liquid natural gas carriers, bulk carriers and leisure craft.

The survey resulted in a mix of responses, with the majority of mariners reporting that they use the GLA DGPS system for accuracy improvements and integrity, as one may expect, while others reported that they do not use it at all.

Mariners were asked which GNSS constellations they used today and those they expected to use in the future. All mariners reported using GPS today with around 40% also making use of GLONASS, and around 9% using Galileo too. From the response received, it is expected that more mariners will move to multi‑constellation receivers, making use of GPS, GLONASS, Galileo and BeiDou, over the next 5-10 years.

Face-to-face discussions concluded a similar mix of views; while the majority considered the GLA DGPS system a useful service, others reported that it wasn’t used. It was noted that DGPS works quietly in the background and therefore can be inconspicuous on the bridge until it is unable to work correctly at which point an alarm is raised to inform the bridge crew.

# Other factors for consideration

When considering maritime equipment evolution, it’s worth noting that marine radiobeacon DGPS is not mandated by the International Maritime Organization (IMO) for carriage on SOLAS vessels, although it is provided for in all maritime receiver standards and the spectrum is allocated internationally.

Following a change in maritime receiver standards in 2003, all receivers now include Receiver Autonomous Integrity Monitoring (RAIM). As the name suggests it’s another means of determining integrity, i.e. whether the position solution is safe to use. It was also recognised that differential corrections are available from other sources and that work is under way in Europe to introduce a maritime service to EGNOS, the European SBAS. Maritime SBAS, via EGNOS, is expected to be available around 2022.

It is important to note that today’s maritime receivers are not tested for how they apply SBAS data as that functionality is not part of the current receiver standards, however work is in hand to update these. Mariners wishing to take advantage of SBAS information in the future would need to upgrade their receiver to one that is type approved for SBAS use (expected 2022-23).

Also of interest is the expected move by mariners towards multi-GNSS (and multi-frequency) positioning over the next 5-10 years; which questions the longevity of a single GNSS augmentation approach.

# GLA decision and planned outcomes

After careful consideration of the results of the consultation process, recognising that today’s GNSS are able to meet all but the most stringent accuracy requirements, and that position integrity can be provided by alternative means (RAIM or by mariner’s validating their position via other visual and electronic aids‑to‑navigation), the GLA have concluded that their DGPS system is now redundant.

The GLA recognise the need to provide adequate notice and support continuity of service going forward. As such, the GLA DGPS system will remain operational until 31st March 2022, at which point the signals will cease.

It is recognised that while SBAS, such as EGNOS across Europe, should provide useful services to the mariner in time, there is no guarantee that they will come to fruition. Similarly, it is anticipated that alternative sources of integrity will continue to improve as mariners move to multiple satellite constellation receivers, with more satellites and signals available, and as RAIM algorithms advance. The use of all available satellite constellations with advanced RAIM algorithms in the future is expected to provide greater positional accuracy and integrity than is available today with marine radiobeacon DGPS.

# Action requested of the Committee

The Committee is requested to:

* Note the GLA decision and the scheduled closure date.

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-1)
2. Leave open if uncertain [↑](#footnote-ref-2)
3. GLA comprises of The Commissioners of Irish lights, The Northern Lighthouse Board and Trinity House. [↑](#footnote-ref-3)