

Navigation Committee

16 April 2026

Agenda item number 14

Lower tidal rivers channel management- marker post specifications

Report by Head of Operations

Purpose

This report sets out the proposed scope and approach for updating the channel-management framework for the lower Bure, Yare and Waveney. Specifically, it seeks the view of the Committee on posts in the low Bure and lower Yare and whether they should be left in place, left in place and repainted, removed or repositioned.

Broads Plan context

The development of an updated channel-management approach for the lower tidal rivers supports several objectives in the Broads Plan 2022–2027. It aligns with Theme C: Maintaining and enhancing the navigation, which sets out strategic objectives to:

- C2 – Maintain existing navigation infrastructure and ensure channel-marking, signage and aids to navigation are clear, consistent and support safe boating.
- C3 – Manage water space to reduce hazards, improve safety and support sustainable boating and other recreational activities.

The work also contributes to Theme A: Responding to climate change and flood risk, notably A3, which seeks to improve resilience to flooding and coastal change by managing river processes and supporting adaptive approaches within dynamic tidal environments.

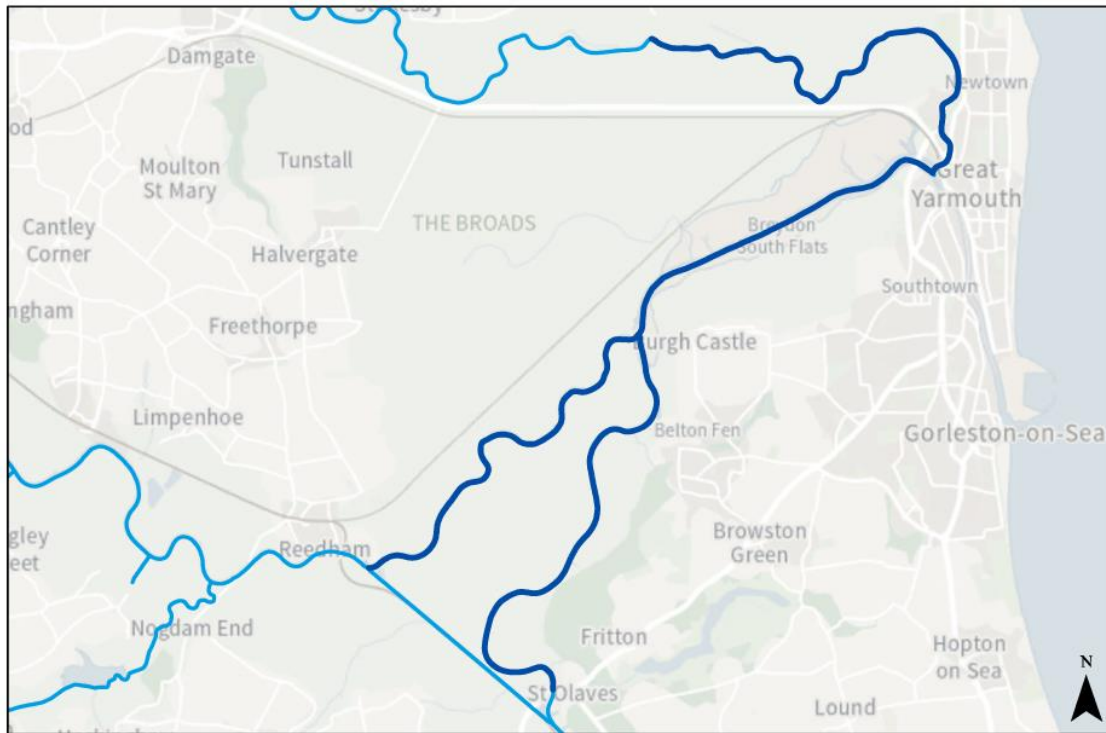
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1. Introduction

- 1.1. The transfer of Breydon Water and the Lower Bure from the Great Yarmouth Harbour Authority to the Broads Authority was affected through Section 35 of the Broads Authority Act 2009, which from the appointed day made these waters part of the Broads navigation area. From June 2012, the 1988 Act, the 2009 Act, byelaws made, directions given and Broads Authority management applied to these waters.
- 1.2. The transfer addressed long-recognised inconsistencies in management and enabled a single navigation authority to oversee this critical link between the northern and southern Broads. A key driver was to improve navigation safety, as Breydon Water was, and remains, one of the most challenging areas for boaters due to strong tides, shallow mudflats and complex channel approaches. Following the handover, the Broads Authority implemented significant safety enhancements within Breydon Water, including new channel-marking posts, clearer signage, standardised bridge gauge boards and measures to discourage vessels from cutting navigation corners, often with disastrous effects. The overall aim was to reduce the number of groundings and improve clarity for inexperienced boaters and this has been successful.
- 1.3. As the Authority's [Safety Management System](#) (SMS) explains, the Authority's powers, policies and practical management arrangements must be based on a formal safety assessment to ensure risks are reduced to a level that is as low as reasonably practicable (ALARP). In terms of user experience and safety, these river stretches are the most dynamic, shallow-prone and tide-sensitive waters in the Broads, and they demand careful timing and helmsmanship.
- 1.4. This report, therefore, aims to inform members and seek their views on the intended scope, evidence needs and programme for developing a refreshed, SMS-aligned channel management approach that supports safe and sustainable navigation on these strategically important waterways.
- 1.5. The channel-marking principles and management techniques are set out in the [Waterways Management Strategy and Action Plan 2022/23–2026/27](#), which identifies dredging and channel marking as core operational activities, essential for maintaining safe and clearly defined navigation routes across the Broads system. The Strategy emphasises that variations in channel use and physical character demand tailored, evidence-based approaches to marking and maintaining navigable waterways. The areas marked in dark blue in Figure 1 all have a Waterways Specification depth of 2.0 metres below mean water level (see section 3.2.2. of the Waterways Management Strategy for more background on dredging depths and how these are monitored and maintained).

1.6. Figure 1 – Map showing the tidal river sections (dark blue) proposed for review



- 1.7. Channel profiles in the Broads, as set out in Appendices 1 and 2 of the Waterways Management Strategy, provide indicative widths and depths to guide safe navigation, but they are not fixed limits. Because different waterways vary considerably in character and use, a single standard profile is rarely appropriate or cost-effective for managing access or safety. Natural processes such as sediment movement and deposition, bank change and vegetation growth continually alter the available channel, so hydrographic evidence and operational judgements are needed to reflect actual conditions on the ground. This flexible approach ensures channel definition supports safe and efficient navigation while making best use of resources.
- 1.8. Marker posts are typically used to indicate the deeper areas of a channel, outside of which, natural processes are allowed to operate. By marking the channel required for safe passage, the Authority can focus dredging efforts where evidence shows they are most needed. This approach recognises that the Broads' waterways are dynamic and that navigation management must work with (as much as possible), rather than wholly work against the natural evolution of the channel.
- 1.9. The channel management options available are exemplified by the inside of a wide river bend (over 25 m) where sediment naturally accumulates in the slower flow. Routinely dredging the bend would maintain a navigable depth across the whole river width, but at the cost of frequent return dredge campaigns. Installing marker posts along the inside of the bend, where water depths are stable, and the waterway specification depth can be met, is a more cost-effective maintenance regime. A lower intervention option would be to install signage directing boat users to avoid the inside of bends and

shallow margins. The potential negative impact on sailing vessels from posts in the channel needs to be considered.

2. Current situation – Breydon Water

- 2.1. For context, Breydon Water has consistent channel marking defined by continuous lines of red and green navigation posts that guide vessels safely through the tidal estuary, keeping them within the maintained channel and away from the extensive shallow mudflats. Work completed in recent years by the Broads Authority has refined this system by replacing all previous timber markers with steel posts and adding additional markers to make the channel easier to visualise and follow, particularly for less-experienced boaters.
- 2.2. As described in the Waterways Management Strategy (Section 4.5), the space between the green and red marker posts defines the managed channel. In the case of Breydon Water, this indicates where water depths are aimed to be at least 2.0 m below mean low water (the Waterways Specification depth for this area). Repeating a hydrographic survey at least every five years updates water depth information, allowing sediment management to be targeted to maintain the specification depth as closely as possible.

3. Current situation – lower tidal rivers

- 3.1. On the River Bure between Bure Mouth and Runham Swim, there is a collection of historic timber posts in the channel, some of which are painted and have a navigation channel marking function. There are more recent steel marker posts installed by the Environment Agency to mark the base of the concrete revetment-style erosion protection along sections of the southern (true right) bank where there is no vertical sheet piling. Some other posts have historically served as hazard markers, and some bends in the river have yellow buoys indicating shallow areas on the inside of the bends. To ensure consistency and clarity across this suite of markers, a systematic review of the ownership, position, colour and function of each marker is required.
- 3.2. On the lower River Yare, upstream from Turntide Jetty to the junction of Haddiscoe Cut opposite Reedham, there are again multiple types of marker posts present. The roughly paired green and red channel marker posts continue for a short distance upstream from Breydon Water, reducing to red markers on the inside of the bend as far as Berney Mill. Where the Environment Agency set back floodbanks during the Broadland Flood Alleviation Project (BFAP), the navigational safety mitigation for the removal of river edge piling and the river's obvious edge was to place rows of marker posts. As the river edge has now stabilised and is fully vegetated, the need for these marker posts as visual aids is much reduced, and their presence is open for discussion. These posts may not all be positioned optimally to indicate the navigable channel.
- 3.3. On the lower Waveney, the green and red markers on either side of the channel continue from Breydon Water as far as Burgh Castle. Continuing upstream to St Olaves, there are only a few isolated hazard marks.

4. Options for change

- 4.1. The first step is to review all the marker posts on the lower rivers to identify whether they are true channel markers (indicating the maintained channel to the waterways specification depth) or hazard markers (some of which may be painted the wrong colour). The second step will consider whether the post in each position still serves a useful function (as either a channel or a hazard marker). Once reviewed, the actions for each post are either to:-
- leave in place.
 - leave in place and repaint to the appropriate colour.
 - remove entirely.
 - move to a better position nearby.
- 4.2. The Environment Agency posts on the Bure are hazard marks painted as if they are channel markers. The debate is whether these posts still serve a useful hazard-marking function, and, if so, whether a change of colour may be required or whether they should be removed. The Committee's view is sought.
- 4.3. In the lower Yare, the Environment Agency posts are painted green or red and are generally positioned in the channel. Some serve as effective channel markers, whilst others are hazard marks. The Committee's view on whether the latter should be removed or repainted would be helpful.

5. Financial and risk implications

- 5.1. As set out earlier, the SMS requires that navigation risks are reduced to a level that is ALARP. Many of the navigation assets inherited by the Authority and those installed by partner organisations are in declining condition and need maintenance or replacement. Prior to these decisions, the Authority needs to ensure the cost-effectiveness of its interventions and manage the ongoing costs associated with the maintenance of these navigation assets.
- 5.2. Over the decades, the marker posts have been installed for a variety of purposes without consistent or clearly defined roles. This mix of purposes creates ongoing risks for the safe and effective management of the Authority's navigation area.

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Background papers: [Safety Management System](#) ;
[Waterways Management Strategy and Action Plan 2022/23 - 2026/27](#)

[Broads Plan](#) strategic objectives: C1, C2, C3 A3