Navigation Committee

Agenda 05 September 2024

10.00am

Yare House, 62-64 Thorpe Road, Norwich, NR1 1RY

John Packman, Chief Executive – Thursday, 29 August 2024

Under the Openness of Local Government Bodies Regulations (2014), filming, photographing and making an audio recording of public meetings is permitted. These activities however, must not disrupt the meeting. Further details can be found on the Filming, photography and recording of public meetings page.

Introduction

1. To receive apologies for absence
2. To receive declarations of interest (see Appendix 1 to the Agenda for guidance on your participation having declared an interest in the relevant agenda item)
3. To note whether any items have been proposed as matters of urgent business
4. **To receive and confirm the minutes of the Navigation Committee meeting held on 6 June 2024** (Pages 4 - 15)
5. **Summary of actions and outstanding issues following discussion at previous meetings** (Pages 16 - 18)

Reports for information

6. **Chief Executive's report and current issues** (Pages 19 - 27)
   Report by Chief Executive
7. **Income and Expenditure** (Pages 28 - 44)
   Report by Director of Finance
8. **Construction, Maintenance, and Ecology work programme – progress update** (Pages 45 - 50)
   Report by Head of Construction, Maintenance, & Ecology and Ecology & Design Supervisor
9. **Waterways and Compliance report** (Pages 51 - 59)
   Report by Head of Construction, Maintenance & Ecology and Waterways and Recreation Officer

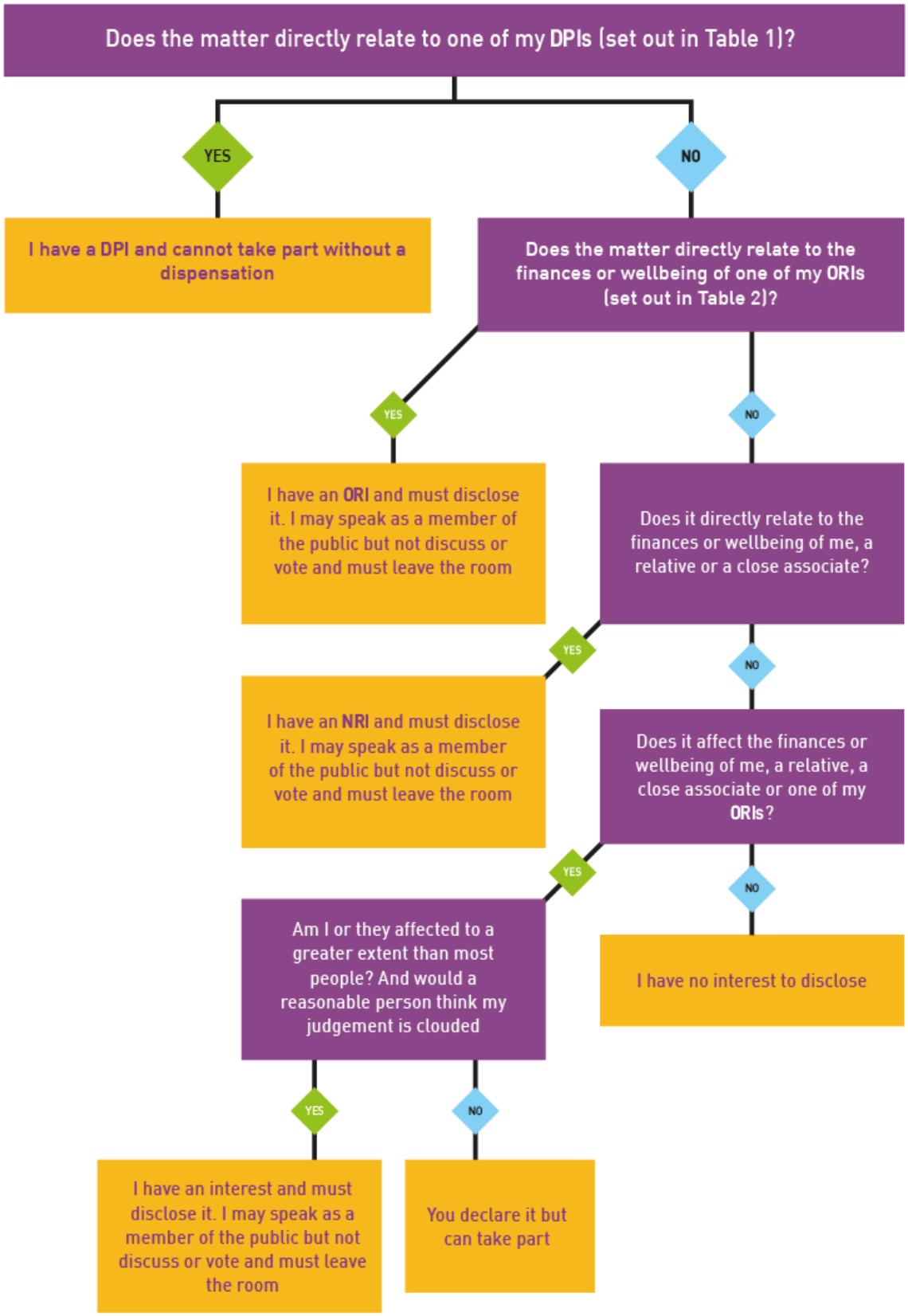
10. **Future proofing Broads Authority public moorings** (Pages 60 - 67)
    Report by Head of Construction, Maintenance, and Ecology

Other matters

11. **To note the date of the next meeting – Thursday 7 November 2024 at 10.00am Yare House, 62-64 Thorpe Road, Norwich, NR1 1RY.**

For further information about this meeting please contact the Governance team

Appendix 1 – Extract from the Local Government Association Model Councillor Code of Conduct



Navigation Committee

Minutes of the meeting held on 06 June 2024

Please note these are draft minutes and will not be confirmed until the next meeting.

Present

Alan Goodchild – in the Chair, Harry Blathwayt, Stephen Bolt, Peter Dixon, Leslie Mogford, Greg Munford, Bob Neate, Michael Scott, Remus Sawyerr, Simon Sparrow, and Daniel Thwaites.

In attendance

Dan Hoare – Head of Construction, Maintenance and Ecology, Emma Krelle – Director of Finance, Rob Leigh - Head of Communications, John Packman - Chief Executive, Rob Rogers - Director of Operations, Sara Utting – Senior Governance Officer, Lorraine Taylor – Governance Officer.

1. Apologies and welcome

The Chair welcomed everyone to the meeting.

Apologies were received from Mark Collins and Paul Thomas.

Openness of Local Government Bodies Regulations 2014

The Chair explained that the meeting was being audio-recorded. All recordings remained the copyright of the Broads Authority and anyone wishing to receive a copy should contact the Governance Team. The minutes remained the formal record of the meeting. He added that the law permitted any person to film, record, photograph or use social media in order to report on the proceedings of public meetings of the Authority. This did not extend to live verbal commentary. The Chair needed to be informed if anyone intended to photograph, record or film so that any person under the age of 18 or members of the public not wishing to be filmed or photographed could be accommodated. The Chair of the meeting had the right to exclude any person acting in a way that could disrupt the meeting.

Chair's announcements

The Chair reminded Members that they were in the pre-election period of heightened sensitivity and Members should refrain from speaking in a way which seeks to influence voters.

The Chair advised that it was Greg Munford's last meeting as his term of office ended on 30 June 2024. He personally wanted to thank Greg for his time on the Navigation Committee and his wise contributions to many debates. Greg had always provided sound advice on many subjects and would be sincerely missed and that he wished him well for the future.

The Chair added that it would be amiss for him not to mention Bill Dickson, whose term of office would end with the appointment of a new Chair at the annual meeting on 26 July. Although not a member of the Navigation Committee, Bill had always had an interest in the Navigation Committee and had attended many of the meetings and it remained for him to wish Bill well for the future and thanked him for his devotion to the Authority during his time as a Member.

2. Declarations of interest

Members expressed their declarations of interest as set out in Appendix 1 of these minutes.

3. Matters of urgent business

No items were proposed as a matter of urgent business.

4. Minutes of last meeting

The minutes of the meeting held on 11 April 2024 were signed by the Chair as a correct record of the meeting.

5. Summary of actions and outstanding issues following discussions at previous meetings

Members received a report summarising the progress of issues that had recently been presented to the Committee. The Chief Executive (CE) said that there was an opportunity to update the document by removing some of the historic/outdated information, subject to Members' agreement, as follows:

Network Rail Swing Bridge £10 million refurbishment programme.
The Summary of Actions column needed to be altered to reflect that the replacement of Trowse Swing Bridge with a fixed bridge would now be unlikely to happen because Network Rail had undertaken some further work which showed that if they wanted to improve the speed of the trains to London, it would be more cost-effective for them to carry out works before the bridge in Trowse rather than putting another bridge across the river. Therefore, the CE suggested that this part should be removed. In relation to the Progress so far column, the CE proposed that historic information be removed up to April 2024's update, which gave the current position on the swing bridges.

Carrow Road Bridge Repairs.
The council had carried out some repairs, and he did not think there was anything further planned in the near future, so proposed that historic updates were deleted up to March 2023. He added that he did not think that Carrow Road Bridge would entirely go away as an issue because at some stage it would need major investment. The issue about whether the bridge should be fixed or repaired so that it could open would be something that the Navigation Committee would need to keep an eye on.

A Member commented that in the report it said that the bridge was fit for purpose and asked whether the CE could confirm what that meant and whether the bridge could be lifted. The CE replied that the bridge could open, however, he understood that there were significant issues around opening the bridge and the impact it would have on the road surface. The CE added that in the future Carrow Bridge would come back as an issue for the committee to discuss, and that there was a legal obligation to Norfolk County Council as owners of the bridge to ensure that the bridge could be lifted. However, from the council's view, if they wished to open the bridge on a regular basis, it would need to invest significantly in its repair.

A Member commented that he understood that Trowse Bridge did not work. The CE said that it did open, but this had to be done manually due to issues with the automated system of opening the jacks. The issue of Trowse Bridge was not whether it could be opened, but the frequency of the trains meant there was little opportunity for the bridge to be opened.

The CE said that on the Broads Authority's Summary of actions and outstanding issues, there was an item relating to Haven Bridge and the current dispute between Peel Ports and Norfolk County Council regarding the opening of the bridge. The CE suggested to the Members that this item was added to the Summary of actions and outstanding issues report to the Navigation Committee.

Members agreed to the proposed changes to the summary of actions and outstanding issues, as outlined above.

6. Navigation Committee priorities update

Members received the report of the Chief Executive (CE). The CE reminded Members that in 2023 a workshop was held where it was decided what priorities the Navigation Committee wanted officers to address and a list was drawn up and presented at the September 2023 meeting. He thought it would be helpful if he provided an update on the status of the priorities and added that many of the actions had been completed, but there were a couple of things that were still outstanding.

One priority in particular was sustainable boating and it was hoped to have produced a report on this, however, the work that the Authority had been doing was focused on installing electric charging points. The other priority was paddle sports, however, this had to be re-prioritised due to a number of external issues that officers' time had been taken up with, such as the Section 31 appeal by the Hire Boat Federation.

The CE said that this was an opportunity for the Committee to look at whether this was still the correct list of priorities or whether there was anything missing that the Committee would like officers to focus on in terms of producing reports in the coming year.

A Member commented that in terms of sustainable boating, he had recently read a report from British Marine which said that from an environmental point of view there were no cases where electrification of larger boats was beneficial. The CE said that, in terms of the hire boat fleet, the amount of carbon that was released by people travelling by car to the Broads far exceeded the amount of carbon produced by boats. The bigger issue was around how to change people's patterns of travel and the need to look at what more can be done by promoting people using public transport to access the Broads. Through National Park Partnerships, BMW were working on a project called Recharge in Nature, which was looking at charging points that could be installed in hire boat company yards that would charge both boats and vehicles.

A discussion took place in regard to charging points, cabling infrastructure within the Broads, and hybrid technology for propulsion. It was generally agreed that the infrastructure needed to be improved, however this would prove to be expensive. Members commented that the

company involved in the onshore cable corridor project would be looking at how the local community in Norfolk could benefit from the new infrastructure, and that they might be interested in helping with the infrastructure in the Broads. It was suggested that the Authority contacts the company involved. The CE said that the Authority had potential projects ready to go if an opportunity came along.

A Member asked that with the combination of factors including sea level rise, increase in salination and increase in flooding, should climate change be a key priority on the list. The CE replied that climate change was a high priority for both the Broads Authority and Broadland Futures Initiative (BFI) who were focused on climate change and rising sea level, the risks involved and planning for the long-term.

A Member commented that there were gaps in moorings and demasting and masting points, and asked whether the committee could be informed on moorings whose leases were up for renewal, thereby keeping an emphasis on this subject as regularly as possible. The CE said that he would look to bring an update report on mooring status and what the current issues were.

A Member commented that regarding the future of the hire boat industry, that it would be wise to resend the letter to the Minister following the General Election, irrespective of results.

A comment was made by a Member that it was vital that the Authority looked at landowner engagement, as without them on board the Authority was limited to what could be achieved.

Members agreed that they would welcome a report on paddleboarding and the health and safety issues involved.

A Member asked whether paddleboard toll income had reduced. The CE said that there had been a reduction in toll income for this group, however, the weather was playing a significant part in this and hopefully once the warmer weather returned, there would be an increase in toll income. A Member asked whether Paddle UK (formerly British Canoeing) provided the Authority with numbers of paddleboarders in the Broads area. The CE explained that the Authority receives income from Paddle UK and it was possible to track numbers from that, however, the Authority was currently looking at mobile phone data as a way of tracking the number of visitors to the Broads.

It was confirmed that the CE would draw up a schedule based on the priorities list and that a report on paddleboarding and an update on moorings would be brought to a future Navigation Committee meeting.

7. Recreation and Tourism Strategy

Members received the report of the Head of Communications (HC). The HC provided an overview of the report and Strategy and that it would be presented to the Broads Authority on 26 July 2024.

The HC said that it had been a difficult process to renew the Strategy and to produce something that was sensitive to the industry and the ongoing challenges, being reactive to the opportunities that existed, as well as the consideration of all comments received during the

stakeholder consultation whilst being mindful of the Authority's statutory obligations, core purposes, and the balance of economic, environmental and social needs and priorities.

The HC said that in relation to previous discussions on agenda item number 6, there was a section within the Strategy that focussed on promoting other forms of transport, thereby reducing carbon emissions. 70% of visitor economy carbon emissions for the Broads came from cars travelling to and from the Broads. On the subject of paddle sports, Paddle UK reported that, between 2018 and 2022, their membership had risen by 259%, which gave an idea of the scale of growth of paddle sports in the UK.

The HC thanked everyone who had taken part in producing the Strategy by offering comments, support and constructive feedback. In particular he wanted to thank Maria Conti as her expertise had been an enormous help during the process. He added that this was a collaborative Strategy and the Authority and VtB could not deliver the action plan behind the Strategy without the help of partners.

A Member asked whether there were any particular areas within the Strategy that the Navigation Committee should focus on. The HC said that sustainable tourism was moving to regenerative tourism as it was not just about reducing the impact but having a positive impact. This meant that the conversation around sustainable boating and the growth in paddle sports was important, encouraging visitors to return to the Broads, thinking about the infrastructure for tourism and supporting the industry.

A Member commented that under item 3.3 (page 14 of the Strategy) it mentioned under-represented groups. However, in objective 7 (page 24 of the Strategy), it was clear about people with disabilities and people from urban areas, but he did not see anything about ethnic minorities and thought that this should be included. The HC acknowledged this.

A Member commented that within the Strategy it mentioned that many overnight craft were concentrated on the northern Broads and asked whether there were any navigation barriers to craft getting from the northern Broads to the southern Broads. A Member commented that he did not think that there were any barriers, however, the increase in short-term bookings meant that people did not have the time to travel south. The HC said that patterns from 2020 and 2021 showed that there were a lot of new boaters on the Broads and they were staying closer to where they had hired the boat and did not travel too far. The HC said that there was quite a bit of work done to encourage people to cross Breydon Water safely. The Authority had produced a number of safety videos, one of which was dedicated to crossing Breydon Water, there were also guides within Broadcaster, and the Rangers had introduced this year a new initiative called Demystifying Breydon Water event which had proved very popular. A Member asked whether the southern Broads could be promoted more and added that there were a lot of great places in that area but they do not feature much as the focus tended to be on the northern rivers.

8. Chief Executive's report and current issues

Members received the report from the Chief Executive (CE) on the significant matters relating to the maintenance and management of the waterways. The CE said that he could confirm that Defra were giving the Authority some additional funding which meant that it could purchase the items set out in Table 1 of the report, including the new concrete pump which would be used for the Authority's dredging activity, replacement Hilux vehicles, and a new steel welfare unit. The CE said that this was a very welcome injection of money.

9. Annual income and expenditure 2023/24

Members received the report of the Director of Finance (DF). The DF said that this was the annual report that came to the committee which showed the actual income and expenditure compared to the budget and was the basis of the draft Statement of Accounts which was published on 31 May 2024.

The DF provided an update as at the end of May, and there was a forecast deficit of £141,065 on the toll income for private and hire boats. Compared to the same point last year, the deficit was at £123,000 and at the end of 2023/24 that deficit had reduced to £79,000. There was, therefore, the possibility that some of the current deficit would be made up over the summer. The DF said that the Head of Tolls had carried out a comparison on the figures and on the private side, the biggest percentage decrease was on outboard dinghies which was 11.6%, followed by rowing (which included paddleboards and canoes) which was down by 10.8%. On the hire side, the biggest percentage decrease was on rowing at 11.8% decrease on last year.

The DF said that in response to a previous question regarding income from Paddle UK, this would be received in October and was not currently reflected in the boat numbers.

A Member suggested that those who owned a cruiser yacht or dinghy but only used them once a year would not buy a toll and commented that there was a lot of ill-feeling from private boat owners. The Chief Executive (CE) said that it was apparent that the pressure on people's income was having an effect on the tolls and that some boat owners were delaying paying the toll until they had received a contravention notice.

A Member said that the hire boat industry could not sustain the increase in tolls. The CE said that this was a delicate issue and that the subject of tolls would be debated at the dedicated briefing in October with Members, where it would be discussed as to what extent the Authority could maintain its existing services. The CE said that this was the reason why the Chair of the Authority wrote to the Minister to say that the Authority was getting to the point where the maintenance of the waterways was no longer feasible just from the income from tolls, and was why the Authority was arguing that it needed support from central government to maintain this important facility.

A Member commented that the Authority was spending less on dredging than in the past. The CE said that the Authority was spending more on maintaining the waterways than it had ever before. The DF explained that within the accounts the operation costs sat under a range of

different headings, and the figure for dredging, for example, did not include the staff time involved.

The CE said that from recent survey carried out by the NSBA, it was clear that the boating community wanted more moorings, more dredging, more weed cutting, and more tree cutting. This was why the Authority lobbied the Government to give more money to contribute to helping maintain navigation. He added that he thought that in the future, the maintenance of the system would cost more and that more maintenance would need to be done. A Member commented that the Broads was a unique environment and it was necessary to see the continuance of maintenance.

A Member said that it was sad to see the shortfall in tolls on small boats such as dinghies as he saw that these craft were important for the future of the Broads as it was children that often used them. The CE commented that the BA had made a significant decision a number of years ago to make the tolls fairer for smaller boats, which made it exceptionally good value to have smaller sailing dinghies on the Broads. He added that they had seen no increase in tolls over the last few years, and in fact had seen a decrease. The CE said that he did not think it was cost as to why there were fewer sailing dinghies, but more to do with wider social changes in terms of what was available for young people to do. The CE said that in the past the Broads Authority had grant aided sailing dinghies for some of the sailing clubs.

A Member asked that when payment was received from Paddle UK, did the Authority receive an accurate number of paddleboarders in the Broads area. The DF confirmed that numbers were received. The Head of Communications said that the Authority was informed how many were registered in Norfolk and Suffolk but it would not include those who visited the Broads who were registered elsewhere in the country.

A Member said that it was difficult looking at numbers in isolation. There was some discussion on how navigation costs were presented and a Member suggested that it would be a valuable exercise to look at costs and budget, so that answers could be provided as to how the front-line costs were prioritised.

A Member suggested that the DF meet with Navigation Committee Member, Bob Neate (a Chartered Accountant specialising in auditing and advising large corporates) so that between them they would be able to devise some training that would provide Members an opportunity to understand how the accounts work.

The DF said that there would be a Statement of Accounts training on 16 July and if there were subjects that Members want covered, could they let her know. A Member said that having sat on these workshops, the DF did an excellent job on explaining the accounts and answering questions and added that the session in July was the right environment to ask questions relating to the income and expenditure.

10. Construction, Maintenance and Ecology work programme – progress update

Members received the report of the Head of Construction, Maintenance and Ecology (HCME). The HCME said that he had two updates to the report, the first was responding to a question from the last Navigation Committee in relation to the work to the quay heading at Repps Bank and the possibility of the capping height being raised. The HCME said that the mooring would not be raised up higher than the existing structure due to the design of the piling, therefore it would have to be a like-for-like replacement and would be similar to the quay heading either side. The HCME said that this did not answer the issue of rising water levels, however, in terms of other moorings where brand new piling was being installed, they would look to raise levels of quay headings.

The HCME said that the second update was that table 2 of the report was in under item 5.2 when it should be under item 6.2.

The HCME highlighted some key points in the report including Appendix 2 which set out the delivery achievements in 2023/24. There had been some slippage in two key projects, one was due to the breakdown of the older concrete pump which impacted the dredging volume and progress on the upper Bure. The second was on the lower Yare at Haddiscoe Cut where the dredging was delayed by a couple of unplanned issues, the first due to finishing the Oulton Broad dredging, and the second because dredging had to be stopped to transport the new crawler crane back to the Dockyard. This meant that there was a shortfall in dredging by 6,000m^3 but this was work had moved into 2024/25. The HCME added that when the team were not dredging, they picked up various maintenance work such as setting up the marker post replacement project at Breydon, and mooring maintenance tasks.

The HCME said at the beginning of each year staff time and budget were allocated across different work types such as water plant cutting and dredging, and in Appendix 3 of the report it set out the planned and actual time spent on navigation work types. For the reasons mentioned earlier, one area that had slightly less time spent working was on dredging, however, this was offset by increased water plant cutting.

The HCME referred to section 6 and Defra's request to public bodies to look at herbicide and pesticide use. Data had been collected around storage and use of herbicides and pesticides to provide a baseline on which the Authority could then target reductions in the future. The data also enabled the Authority to demonstrate to Defra that targets were being met and within best practice.

The HCME confirmed that the channel marker project in Breydon Water was now complete and all original timber posts and temporary buoys had now been replaced with steel posts. The next priority in terms of marker posts, would be looking at the condition of the posts from the upstream of Bure mouth on the Lower Bure. The Chief Executive (CE) said that credit needed to be given to the HCME and the team. By taking the initiative of purchasing a second-hand crane from Holland, training the team, and the hire of a pile driver enabled the Authority to install the posts at a cost which was significantly less than what a contractor would charge.

The Chair commented that since the marker posts had been installed it had made Breydon Water much safer.

A Member asked whether there was any use for hard wearing "copper coat" type antifoulants on boats rather than using those using herbicides. The HCME said that copper would still leach into the water, but possibly at a slower rate than other product types, such as ablative antifoul paints. The Authority, however, used products that did not leach toxic chemicals into the water and added that evidence showed that vessels moored within the Broads area accumulated very little algal growth, questioning the value of applying antifoulant paints in the Broads.

A Member asked that once the Environment Agency (EA) had completed their hydrological study in the lower Bure area, would the EA carrying out any dredging if required in relation to flood alleviation, and if that was the case, how much control would the Broads Authority have of the depth in that area and was the Authority content that any dredging would not lead to higher salt incursion into the northern rivers. The HCME said that the Authority's approach to dredging was to model mean low water depth and set a Waterways Specification depth across 66% of the width of the channel below this mean low water level. The Authority had detailed and accurate hydrographic survey data which are updated every five years, and this picked up where sediment had built up and helped Authority to make an informed decision on which areas to target for dredging. At September's Navigation Committee meeting, the HCME would provide a report on dredging targets and achievement. The question that had been asked of the EA was whether dredging a deeper depth through the lower end of the River Bure would facilitate evacuation of water from the northern rivers out through Yarmouth – all this would depend on low water levels in Yarmouth which did not happen last winter, as high water in Yarmouth prevented water flowing out. The HCME said that they were expecting the results from the EA in late July. If dredging was needed solely for a conveyance purpose, where the Authority was not the Risk Management Authority for flood work, a discussion would need to be had on funding with the EA, which has this responsibility.

A Member commented on Appendix 3 of the report that the difference between planned and actual work was about 400 days, and asked how this was calculated as he thought that this would reduce the expenditure on the navigation figures. The HCME said that part of those 400 days was from other work areas not listed, however, he would provide the Member with a more detailed breakdown and would report back.[1]

11. Date of next meeting

The next meeting of the Navigation Committee would be held on 5 September 2024 commencing at 10am (venue to be confirmed).

[1] The HCME reported back to the Member after the meeting that the breakdown of variation in planned and actual time spent was detailed in section 5.2 of the report.

The meeting ended at 11:50am

Signed

Chairman

Appendix 1 – Declaration of interests: Navigation Committee, 06 June 2024

Member	Agenda/minute	Nature of interest
Peter Dixon	10	Residence at Hickling Broad

Navigation Committee

05 September 2024
Agenda item number 5

Summary of actions and outstanding issues following discussions at previous meetings

Title	Meeting date	Lead officer	Summary of actions	Progress so far	Target date
Network Rail Swing Bridge £10 million refurbishment programmme	19/10/2017	John Packman	Network Rail Whole Life Strategy planning for swing bridges.	Historical updates (date range October 2019 to April 2024) have been removed. All historical updates can be found in previous versions of the Summary of Actions and Outstanding Issues available via the committee papers on the Broads Authority website. **April 2024:** Network Rail confirmed that the work to the Somerleyton and Reedham swing bridges was complete. Work included extensive brickwork repairs to reinforce the control boxes, a full upgrade to the electrical system, a full upgrade and replacement of the manual winch system to enable the bridge to be swung open manually by the bridge operator if there was a problem with the machinery, and replacement of the navigation lights. What was not clear was whether, as part of the scheme, the lifting equipment and jacks within the control box had been completed and the Authority was waiting to receive confirmation from Network Rail. Network Rail had been unable to go ahead with the Oulton swing bridge repairs as they were more substantial than first thought. **May 2024:** Network Rail have confirmed that they are continuing to look at ways in which, in the long term, they might be able to address the issue of the two Swing Bridge thermally expanding and not being operable in very hot weather. However, these are likely to entail structural works and will require additional funding, so they do not currently have a timeline for this. For the time being, they have instead undertaken a smaller, though still significant, set of works. Together with a consistent maintenance regime, these will prevent the bridges from deteriorating and make failures less likely. **June 2024:** As agreed in Navigation Committee meeting on 06/06/2024, historic updates have been removed up until April 2024 updates. **August 2024:** No updates to report.	

Title	Meeting date	Lead officer	Summary of actions	Progress so far	Target date
Carrow Road Bridge Repairs	15/04/2021	John Packman	Briefing provided at Navigation Committee meeting in April 2021, outlining Norfolk County Council's proposals for the repair of Carrow Road bridge. Further information is awaited from the County Council.	Historical updates (date range October 2019 to April 2024) have been removed. All historical updates can be found in previous versions of the Summary of Actions and Outstanding Issues available via the committee papers on the Broads Authority website. **April 2024:** It is understood that some repairs have been carried out and the bridge was fit for purpose at present. **June 2024:** No further update. As agreed in Navigation Committee meeting on 06/06/2024, historic updates have been removed up until April 2024 updates. **August 2024:** Norfolk County Council reported that repairs were due to take place to the Bridge on 22 August 2024.	10/06/2021
New on-line tolls software	07/09/2023	Bill Housden	Strategic Priority for 2023 and 2024. Scoping work complete.	**September 2023:** Currently engaged on pre-market engagement on upgrade of internal system. Progress report on viability of updating internal system to the latest software due in January 2024. **October 2023:** Progress report on viability of updating internal system to the latest software due in January 2024. **December 2023:** Schedule of works received to upgrade internal system to latest software version. Meeting has taken place to discuss possible future cloud hosting and costs of hosting have been requested. Printing and database adhoc reporting for cloud based hosting under investigation. **March 2024:** Costings for upgrading the internal tolls system for cloud hosting have been received along with costs for reworking the existing online payment application. This work, which replicates current functionality in a supported & secure environment is scheduled for the period April to June 2024. **April 2024:** A contract had been let for the upgrade of the internal system software for cloud hosting this underpins the online tolls system, and this part of the project is planned to be completed by end of June 2024. **May 2024:** Work on upgrading the internal system to the latest software version is progressing well. **August 2024:** Upgraded internal system is undergoing testing, and work has started on the replacement public facing annual toll payment site.	24/01/2024
Funding the waterways of the Broads National Park	11/01/2024	John Packman	To track the progress on making the case for central Government funding to support the maintenance of the Broads waterways.	**January 2024:** The paper was presented to the committee on 11 January 2024 and received unanimous support to endorse the paper for adoption by the Broads Authority. On 26 January 2024, the Broads Authority unanimously endorsed the paper and supported the Chair in writing to the Secretary of State for the Environment.	

Title	Meeting date	Lead officer	Summary of actions	Progress so far	Target date
				March 2024: Funding paper sent to the Minister and a response received on 18 March. **April 2024:** As reported at the Navigation Committee on 11 April, the Minister confirmed that the Government remained committed to supporting the vital role Protected Landscapes play in protecting our precious wildlife, and the importance they have for tourism, the regional economy, and public access. The Minister was optimistic that a more sustainable funding model for our Protected Landscapes could be developed. **June 2024:** As discussed at the Navigation Committee meeting held on 6 June 2024, the Chair would write to the Minister again following the General Election. **August 2024:** Broads Authority Chair has written to the new Minister.	
Haven Bridge	06/06/2024	John Packman	The Great Yarmouth Ports Leisure Users meeting on 2 April had a long discussion regarding the problems with the Haven Bridge. There is a dispute between Peel Ports and Norfolk County Council regarding opening the bridge which is having an adverse impact on commercial and private boat owners based in the Broads.	**June 2024:** The Chief Executive has been in touch with the CEO at Norfolk County Council to help facilitate a way forward between the two parties - Norfolk County Council and Peel Ports. **July 2024:** Temporary arrangements agreed by Peel Ports and Norfolk County Council have allowed the bridge to open. The Monitoring Officer has written to the Great Yarmouth Port Authority reminding it of its statutory duties. **August 2024:** Response received from Great Yarmouth Port Authority and meeting to be arranged to discuss Haven Bridge.	
EA Modelling of the Lower Bure	06/06/2024	Dan Hoare	Environment Agency contractors modelling the impact of the removal of sediment from the Lower Bure.	**August 2024:** Awaiting final report.	

Date of report: 21 August 2024

Navigation Committee

05 September 2024
Agenda item number 6

Chief Executive's report and current issues

Report by Chief Executive

Purpose

To provide a briefing on significant matters relating to the maintenance and management of the waterways.

Broads Plan context

All strategic actions under Theme C: Maintaining and enhancing the navigation.

Contents

1. Introduction

1.1. The Authority's Annual Meeting was held on 26 July at which Harry Blathwayt was elected as Chairman for the coming year and Tristram Hilborn re-appointed as Vice-Chairman. Tim Jickells and Tony Grayling have been elected as Chairman and Vice-Chairman of the Planning Committee.

1.2. At the time of writing, staff are dealing with several incidents across the Broads including boat fires and vessels stuck under bridges. Unfortunately, there have been several fatalities and staff are liaising with the police, individuals effected and relevant boat yards, investigating the details and reporting as necessary.

2. Navigation patrolling and performance targets

2.1. The report of the significant use of powers by the rangers is displayed in Appendix 1 and reflects the busy period. Appendix 2 shows the average navigation/countryside splits are higher on the navigation side as would be expected during the summer when patrolling is a priority. There have been 2 successful prosecutions, one for overstaying on 24- hour moorings and one for unauthorised letting go of a vessel.

3. Sunken and abandoned vessel update

3.1. The sunken and abandoned update is contained in Appendix 3. All cases are in process where they are affecting the navigation.

4. Planning enforcement update

4.1. There are no further enforcement matters with navigation implications to report.

Author: John Packman

Date of report: 21 August 2024

Appendix 1 – Rangers exercise of powers analysis

Appendix 2 – Ranger duties total time allocated and actual days

Appendix 3 – Sunken and abandoned vessels current position as atat 07 August 202407/08/2024

Appendix 4 – Prosecutions dealt with in court for non-payment of tolls since 26/07/2024

Appendix 5 – Prosecutions dealt with in court for navigation offences since 06/06/2024 26 July 2024

Appendix 1 – Rangers exercise of powers analysis

Table 1

Verbal warnings	**Wroxham launch** Wroxham and upper Bure	**Irstead launch** Ant	**Ludham launch** Hickling, Potter Heigham, upper Thurne	**Ludham launch 2** lower Thurne and lower Bure	**Norwich launch** Norwich and upper Yare	**Hardley Launch** Reedham, Chet and middle Yare	**Burgh St Peter launch** Oulton Broad and upper/ middle Waveney	**Breydon launch** Breydon water, lower Waveney and Yare
Care and caution	48	31	10	47	14	1	20	
Speed	952	381	267	233	78	56	96	22
Other	113	53	8	12	111	12	4	

Table 2

Written warnings	**Wroxham launch**	**Irstead launch**	**Ludham launch**	**Ludham launch 2**	**Norwich launch**	**Hardley Launch**	**Burgh St Peter launch**	**Breydon launch**
Care and caution	1	2	0	0	0			
Speed	16		0	3	2	2	3	
Other	7	9	5	3		10	8	3
Special directions	38	0	1		25	44	125	31

Table 3

Launch patrols	Wroxham launch	Irstead launch	Ludham launch	Ludham launch 2	Norwich launch	Hardley Launch	Burgh St Peter launch	Breydon launch
Launch staffed by ranger	122	122	118	118	119	112	119	122
Volunteer patrols								
IRIS reports	8	5	1	5	7	9	4	14

Table 4

Broads Control total calls

Contact method	Number of calls
Telephone	9131
VHF	1420
Total	**10551**

Appendix 2 – Ranger duties: total time allocated and actual days

Table 1

Broads Authority corporate duties

Work area	Annual allocation (days)	Actual days to date
Training	122	46.96
Broads Control	362	135.07
Team meetings, work planning	318	131.93
Partnership working	76	12.43
Assisting other sections	76	27.30
Billets and boatsheds	25	4.12
Launch – general		4.56
Trailers - general		0.27
Vehicle maintenance		4.26
Other equipment repair		0.41
Total	**979**	**367.30**

Table 2

Navigation duties

Work area	Annual allocation (days)	Actual days to date
Patrolling	2136	975.76
Escorts	44	11.08
Prosecution files	0	8.24
Bankside tree management	108	13.34
Obstruction removal	26	7.64
Channel markers and buoys	30	12.50
Signs and boards maintenance	34	21.82
Adjacent waters	96	41.42
Reactive mooring maintenance	100.5	22.84
Total	**2574.5**	**22.84**

Table 3

Conservation, recreation, countryside maintenance

Work area	Annual allocation (days)	Actual days to date
Fen management	146	2.77
Lake, riverbank restoration	100	0
Invasive species control	32.5	0
Other conservation work	145	26.49
Pollution response		1.62
Visitor site maintenance	194	81:18
Public Engagement	97	35:20
Public footpath work	38	6.66
Education work	69	2.84
Total	**821.5**	**156.76**

Team total up to 08 August 2024

Percentage Navigation: 88%

Percentage National Park: 12%

Appendix 3 – Sunken and abandoned vessels current position as at 07 August 2024

Description	Location found	Action	Notice affixed	Result
Motor Cruiser	Old River Yare, Thorpe	Vessel sunk at owners moorings	No	Not affecting the navigation
Motor Cruiser	Sutton/Stalham cut	Hull only, marked with yellow posts	No	Not affecting the navigation
Motor Cruiser	River Yare, Trowse	Vessel sunk behind rail bridge wooden fenders	Yes	Difficult access. Will attempt to raise next extreme low water. Not affecting the navigation.
Motor Cruiser	River Wensum, Trowse	Sunk at mooring, marked with yellow buoy	No	Waiting for dredging kit to be in area.
3x motor cruisers	River Chet, Loddon	3 vessels sunk after fire	No	Vessel boomed and lit. Working with marina and insurance company to raise
Blue and White Cruiser	Surlingham	Believed abandoned	Yes	Possible owner found
Aux Yacht	Oulton Broad	Believed abandoned	Yes	Awaiting deadline of notice
Aux Yacht	Potter Heigham	Believed abandoned	Yes	Awaiting deadline of notice

Appendix 4 – Prosecutions dealt with in court for non-payment of tolls since 26 July 2024

Type of vessel	Fined	Costs awarded	Victim surcharge	Compensation
Motor	£200.00	£210.00	£80.00	£442.53
Houseboat	£220.00	£215.00	£88.00	£125.60
Motor	£220.00	£230.00	£88.00	£527.62
Motor	£220.00	£230.00	£88.00	£272.32
Aux Yacht	£220.00	£230.00	£88.00	£188.88
Houseboat	£220.00	£165.00	£88.00	£213.50
Houseboat	£220.00	£165.00	£88.00	£213.50
Rowing	£100.00	£210.00	£40.00	£42.69

Appendix 5 – Prosecutions dealt with in court for navigation offences since 06 June 2024

Type of vessel	Offence	Fined	Costs awarded	Victim surcharge	Other
Assorted	Overstaying	£800	£650	£440	£300 for obstruction
Motor	Letting Go a Vessel	£660	£850	£264	£1200 compensation

Navigation Committee

05 September 2024
Agenda item number 7

Income and Expenditure

Report by Director of Finance

Purpose

To present the actual Navigation income and expenditure for the four-month period to 31 July 2024 and provide a forecast of the projected expenditure at the end of the financial year (31 March 2025).

Contents

1. Introduction

1.1. This report gives a summary of the income and expenditure for the Navigation budget up until 31 July, any amendments to the Latest Available Budget (LAB), Forecast Outturn (predicted year end position) and the movements on the earmarked reserves.

2. Overview of actual income and expenditure

Table 1

Actual Navigation income and expenditure by Directorate to 31 July 2024

Directorate	Profiled Latest Available Budget £	Actual income and expenditure £	Actual variance £
Income	(4,189,137)	(4,029,047)	- 160,090
Operations	1,216,951	824,203	+ 392,748
Strategic Services	191,018	187,481	+ 3,537
Finance & Support Services	481,891	435,260	+ 46,631
Projects, Corporate Items and Contributions from Earmarked Reserves	(234,669)	(30,871)	- 203,798
Net (Surplus) / Deficit	**(2,533,946)**	**(2,612,974)**	**+ 79,028**

2.1. Core Navigation income is below the profiled budget at the end of month four. The overall position as at 31 July 2024 is a favourable variance of £79,028 or a 3.12% difference from the profiled LAB. This is principally due to:

- An overall adverse variance of £160,090 within toll income:
  - Hire Craft is £98,113 below the profiled budget.
  - Private Craft is £65,212 below the profiled budget.
  - Short Visit and Other Tolls income is £2,856 above the profiled budget.
  - Investment income is £379 above the profiled budget.
- An underspend within Operations relating to:
  - Construction, Maintenance and Ecology salaries is £30,604 under the profiled budget due to the budgeted pay award not being agreed by the unions.

- Equipment, Vehicles and Vessels is £196,362 under the profiled budget due to delays in expenditure from the earmarked reserves. There has also been income that has been transferred to the earmarked reserves as a result of selling old equipment, this had not been budgeted for.
- Practical Maintenance is £86,505 under the profiled budget due to timing differences.
- Ranger Services is £65,684 under the profiled budget due to the budgeted pay award not being agreed by the unions. There has also been delays in expenditure form the earmarked reserves and timing differences on the launch repairs.

- An underspend within Finance & Support Services relating to:
  - Legal is £12,006 under the profile budget due to timing differences.
  - ICT is £16,378 under the profiled budget due to minimal spend on the upgrade to the tolls system, which is being funded from the earmarked reserves.
- An adverse variance within reserves relating to:
  - Plant, Vessels and Equipment is under the profiled budget due to timing differences on vehicle and equipment replacements.
  - Computer Software is under the profiled budget due to the minimal spend so far on the upgrade to the tolls system.

2.2. The charts at Appendix 1 provide a visual overview of actual income and expenditure compared with both the original budget and the LAB.

3. Latest Available Budget

3.1. The Authority's income and expenditure is monitored against the Latest Available Budget (LAB) for 2024/25. The LAB is based on the original budget for the year, with adjustments for known and approved budget changes such as carry-forwards and budget virements. Full details of movements from the original budget are in Appendix 2.

Table 2
Adjustments to Navigation LAB

Item	Authorisation reference	Amount £
Original budget 2024/25 - surplus	Broads Authority 26/01/24 Agenda item number 10	(114,294)
Carry forward requests	Broads Authority 10/05/24 Agenda item number 10	27,080
LAB as at 31 July 2024	n/a	**(87,214)**

3.2. The LAB therefore provides for a navigation surplus of £87,214 in 2024/25 as at 31 July 2024.

4. Overview of forecast outturn 2024/25

4.1. Budget holders have been asked to comment on the expected income and expenditure at the end of the financial year in respect of all budget lines for which they are responsible.

4.2. As at the end of July 2024, the forecast indicates there has been no change compared to the LAB:

- The total forecast income is £4,506,451.
- Total expenditure is forecast to be £4,420,765.
- The resulting surplus for the year is forecast to be £85,686.

4.3. The forecast outturn reflects the following changes from the LAB as shown in Table 3. The forecast deficit represents an adverse variance of £1,528 against the LAB.

Table 3
Adjustments to Forecast Outturn

Item	Amount £
Forecast outturn surplus as per LAB	(87,214)
Decrease to Hire Craft Tolls	31,058
Decrease to Private Craft Tolls	87,421
Decrease to Salary costs following vacancies	(16,951)
Decrease to Practical maintenance expenditure due to postponing works at Potter Heigham & Martham	(100,000)
Forecast outturn surplus as at 31 July 2024	**(85,686)**

5. Reserves

Table 4
Navigation Earmarked Reserves

Reserve name	Balance at 1 April 2024 £	In-year movements £	Current reserve balance £
Property	(618,682)	(796)	(619,478)
Plant, Vessels and Equipment	(492,192)	(20,027)	(512,219)
Premises	(217,435)	2,867	(214,568)

Reserve name	Balance at 1 April 2024 £	In-year movements £	Current reserve balance £
Computer Software	(127,533)	9,900	(117,633)
Total	**(1,455,842)**	**(8,056)**	**(1,463,898)**

5.1. The Property reserve contains the income from land rental at Oulton Broad. The Plant, Vessels and Equipment reserves contains the income from the sale of the old vehicles, JCBs and trailers. It has also funded two vehicles and a welfare unit.

6. Conclusion

6.1. The forecast outturn position for the year suggests a surplus within the Navigation budget, which would result in a Navigation Reserve balance of approximately £563,000 at the end of 2024/25 (before any year-end adjustments). This would mean the Navigation Reserve would be above the recommended 10% at 11.6%. Year-end transfers of interest to the earmarked reserves and the next £50,000 repayment to National Park mean it will fall to approximately 10.4%. This will be highly dependent on the level of interest received.

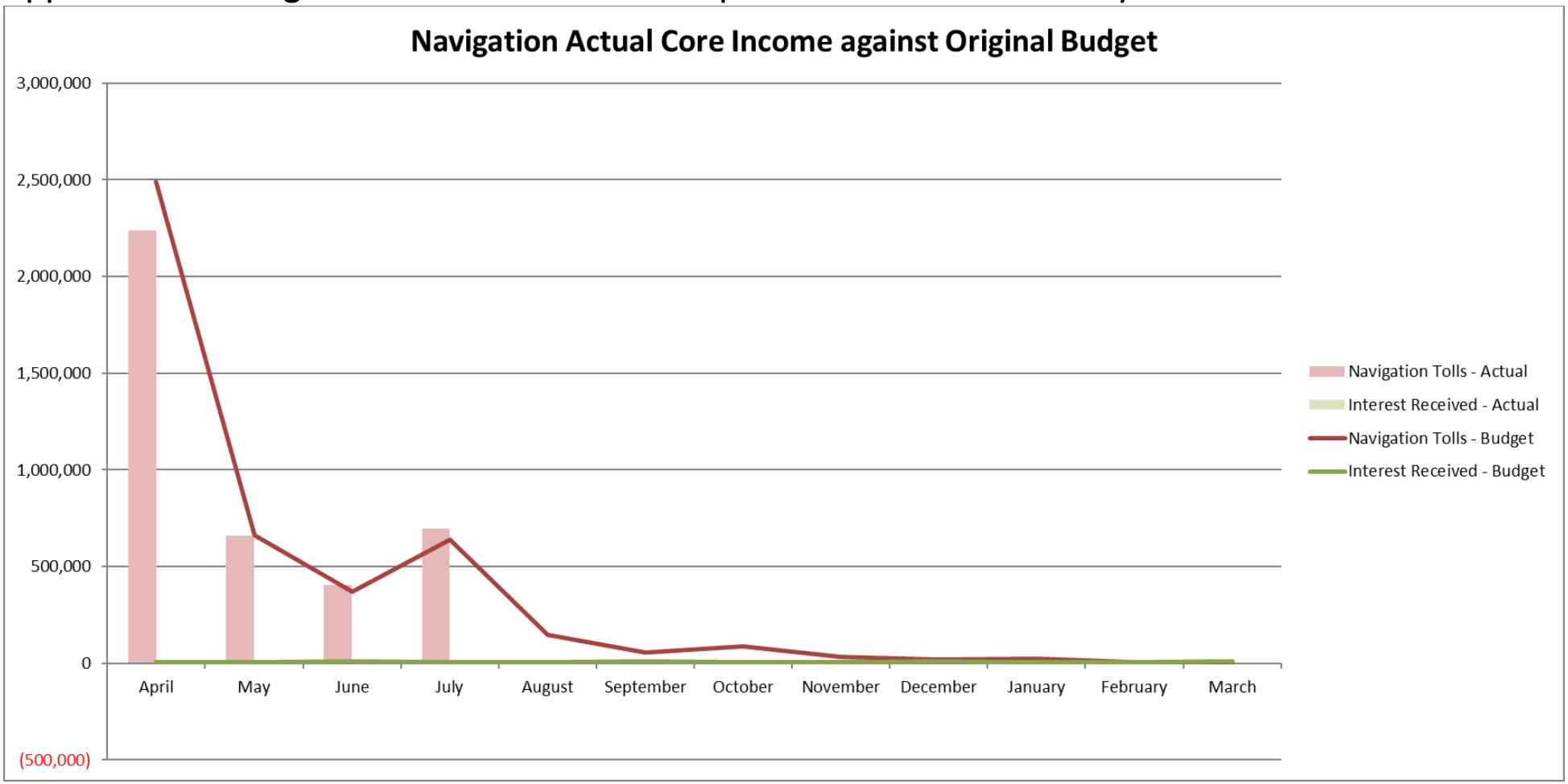
Author: Emma Krelle

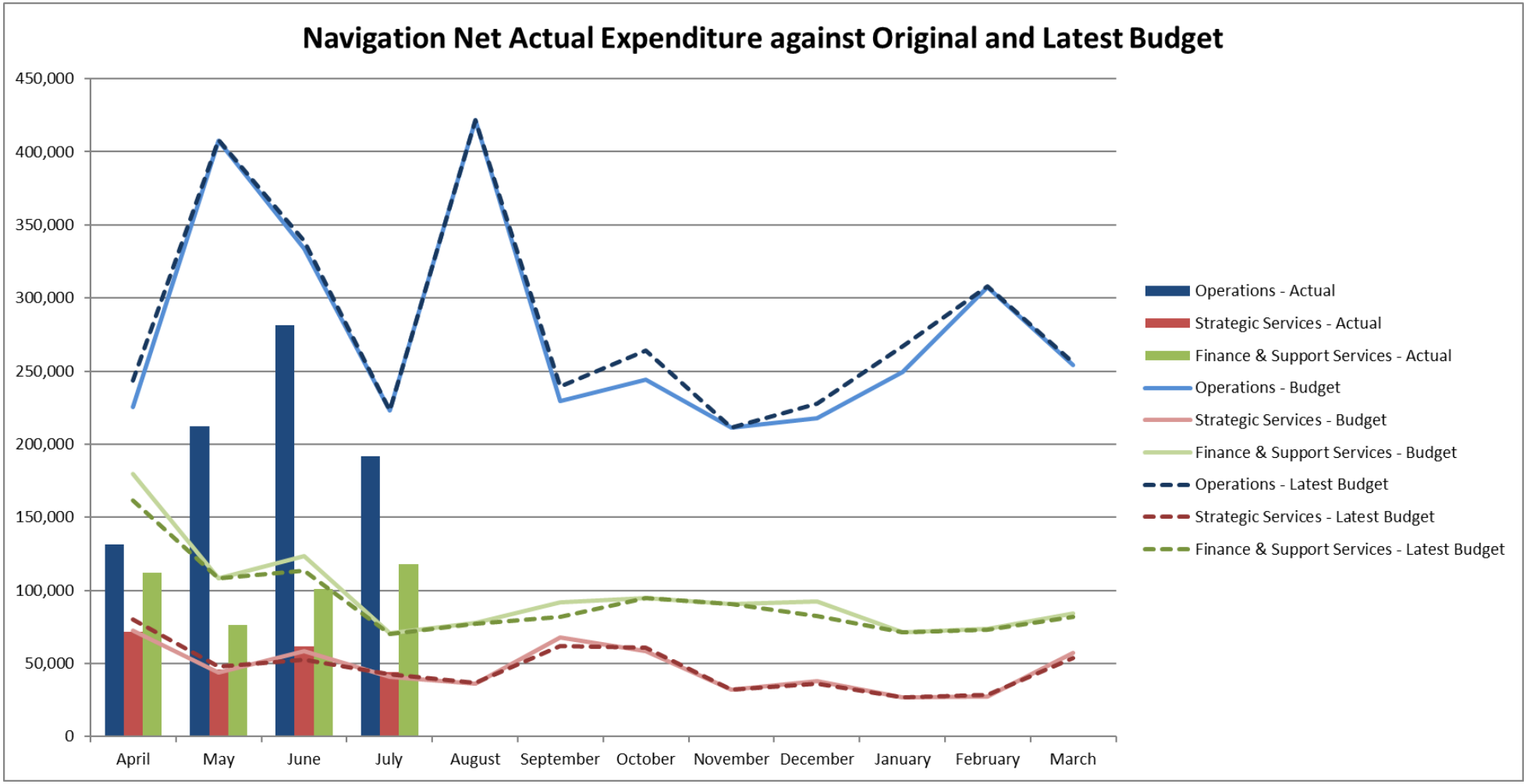
Date of report: 22 August 2024

Appendix 1 – Navigation actual income and expenditure charts to 31 July 2024

Appendix 2 – Financial monitor: Navigation income and expenditure 2024/25

Appendix 1 – Navigation actual income and expenditure charts to 31 July 2024




Navigation Net Actual Expenditure against Original and Latest Budget
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
April
May
June
July
August
September
October
November
December
January
February
March
Operations - Actual
Strategic Services - Actual
Finance & Support Services - Actual
Operations - Budget
Strategic Services - Budget
Finance & Support Services - Budget
Operations - Latest Budget
Strategic Services - Latest Budget
Finance & Support Services - Latest Budget

Appendix 2 – Financial monitor: Navigation income and expenditure 2024/25

Table 1

Income

Row Labels	Original budget (Navigation) £	Budget adjustments (Navigation) £	Latest Available Budget (Navigation) £	Forecast outturn (Navigation) £	Forecast outturn variance (Navigation) £
Total Income	**(4,624,930)**	**0**	**(4,624,930)**	**(4,506,451)**	**- 118,479**
National Park Grant	**0**	**0**	**0**	**0**	**+ 0**
Income	0	0	0	0	+ 0
Hire Craft Tolls	**(1,436,000)**	**0**	**(1,436,000)**	**(1,404,942)**	**- 31,058**
Income	(1,436,000)	0	(1,436,000)	(1,404,942)	- 31,058
Private Craft Tolls	**(3,006,000)**	**0**	**(3,006,000)**	**(2,918,579)**	**- 87,421**
Income	(3,006,000)	0	(3,006,000)	(2,918,579)	- 87,421
Short Visit Tolls	**(60,000)**	**0**	**(60,000)**	**(60,000)**	**+ 0**
Income	(60,000)	0	(60,000)	(60,000)	+ 0
Other Toll Income	**(32,930)**	**0**	**(32,930)**	**(32,930)**	**+ 0**
Income	(32,930)	0	(32,930)	(32,930)	+ 0
Interest	**(90,000)**	**0**	**(90,000)**	**(90,000)**	**+ 0**
Income	(90,000)	0	(90,000)	(90,000)	+ 0

Table 2
Operations

Row Labels	Original budget (Navigation) £	Budget adjustments (Navigation) £	Latest Available Budget (Navigation) £	Forecast outturn (Navigation) £	Forecast outturn variance (Navigation) £
Total Operations	**3,408,924**	**27,080**	**3,436,005**	**3,321,771**	**+ 114,233**
Construction and Maintenance Salaries	**1,041,095**	**0**	**1,041,095**	**1,041,095**	**+ 0**
Salaries	1,041,095	0	1,041,095	1,041,095	+ 0
Expenditure	0	0	0	0	+ 0
Equipment, Vehicles & Vessels	**430,780**	**0**	**430,780**	**430,780**	**+ 0**
Income	(840)	0	(840)	(840)	+ 0
Expenditure	431,620	0	431,620	431,620	+ 0
Water Management	**75,000**	**0**	**75,000**	**75,000**	**+ 0**
Expenditure	75,000	0	75,000	75,000	+ 0
Land Management	**0**	**0**	**0**	**0**	**+ 0**
Income	0	0	0	0	+ 0
Expenditure	0	0	0	0	+ 0
Practical Maintenance	**366,825**	**27,080**	**393,905**	**293,905**	**+ 100,000**
Income	(26,425)	(38,025)	(64,450)	(64,450)	+ 0
Expenditure	393,250	65,105	458,355	358,355	+ 100,000
Waterways and Recreation Strategy	**31,530**	**0**	**31,530**	**31,530**	**+ 0**

Row Labels	Original budget (Navigation) £	Budget adjustments (Navigation) £	Latest Available Budget (Navigation) £	Forecast outturn (Navigation) £	Forecast outturn variance (Navigation) £
Income	0	0	0	0	+ 0
Salaries	25,130	0	25,130	25,130	+ 0
Expenditure	6,400	0	6,400	6,400	+ 0
Ranger Services	**1,192,875**	**0**	**1,192,875**	**1,192,875**	**+ 0**
Income	0	0	0	0	+ 0
Salaries	842,525	0	842,525	842,525	+ 0
Expenditure	350,150	0	350,150	350,150	+ 0
Pension Payments	200	0	200	200	+ 0
Safety	**99,780**	**0**	**99,780**	**85,547**	**+ 14,233**
Income	(500)	0	(500)	(500)	+ 0
Salaries	72,190	0	72,190	57,957	+ 14,233
Expenditure	28,090	0	28,090	28,090	+ 0
Premises	**76,888**	**0**	**76,888**	**76,888**	**+ 0**
Income	(1,820)	0	(1,820)	(1,820)	+ 0
Expenditure	78,708	0	78,708	78,708	+ 0
Operations Management and Administration	**94,152**	**0**	**94,152**	**94,152**	**+ 0**
Salaries	90,492	0	90,492	90,492	+ 0

Row Labels	Original budget (Navigation) £	Budget adjustments (Navigation) £	Latest Available Budget (Navigation) £	Forecast outturn (Navigation) £	Forecast outturn variance (Navigation) £
Expenditure	3,660	0	3,660	3,660	+ 0
Project Funding	**0**	**0**	**0**	**0**	**+ 0**
Pension Payments	0	0	0	0	+ 0

Table 3

Strategic Services

Row Labels	Original budget (Navigation) £	Budget adjustments (Navigation) £	Latest Available Budget (Navigation) £	Forecast outturn (Navigation) £	Forecast outturn variance (Navigation) £
Total Strategic Services	**482,086**	**0**	**482,086**	**482,086**	**+ 0**
Development Management	**5,126**	**0**	**5,126**	**5,126**	**+ 0**
Income	0	0	0	0	+ 0
Salaries	5,126	0	5,126	5,126	+ 0
Expenditure	0	0	0	0	+ 0
Pension Payments	0	0	0	0	+ 0
Strategy and Projects Salaries	**29,287**	**0**	**29,287**	**29,287**	**+ 0**
Income	0	0	0	0	+ 0
Salaries	29,287	0	29,287	29,287	+ 0
Expenditure	0	0	0	0	+ 0
Biodiversity Strategy	**0**	**0**	**0**	**0**	**+ 0**
Income	0	0	0	0	+ 0
Expenditure	0	0	0	0	+ 0
Human Resources	**84,408**	**0**	**84,408**	**84,408**	**+ 0**
Income	0	0	0	0	+ 0
Salaries	51,720	0	51,720	51,720	+ 0

Row Labels	Original budget (Navigation) £	Budget adjustments (Navigation) £	Latest Available Budget (Navigation) £	Forecast outturn (Navigation) £	Forecast outturn variance (Navigation) £
Expenditure	32,688	0	32,688	32,688	+ 0
Volunteers	**22,577**	**0**	**22,577**	**22,577**	**+ 0**
Salaries	18,122	0	18,122	18,122	+ 0
Expenditure	4,455	0	4,455	4,455	+ 0
Communications	**96,141**	**0**	**96,141**	**96,141**	**+ 0**
Income	0	0	0	0	+ 0
Salaries	86,496	0	86,496	86,496	+ 0
Expenditure	9,645	0	9,645	9,645	+ 0
Visitor Centres and Yacht Stations	**202,523**	**0**	**202,523**	**202,523**	**+ 0**
Income	(143,960)	0	(143,960)	(143,960)	+ 0
Salaries	277,903	0	277,903	277,903	+ 0
Expenditure	68,580	0	68,580	68,580	+ 0
Strategic Services Management and Administration	**42,024**	**0**	**42,024**	**42,024**	**+ 0**
Salaries	40,704	0	40,704	40,704	+ 0
Expenditure	1,320	0	1,320	1,320	+ 0
Strategy and Projects	**0**	**0**	**0**	**0**	**+ 0**
Expenditure	0	0	0	0	+ 0

Table 4

Finance & Support Services

Row Labels	Original budget (Navigation) £	Budget adjustments (Navigation) £	Latest Available Budget (Navigation) £	Forecast outturn (Navigation) £	Forecast outturn variance (Navigation) £
Total Finance & Support Services	**1,157,763**	**0**	**1,157,763**	**1,155,045**	**+ 2,718**
National Park Grant	**0**	**0**	**0**	**0**	**+ 0**
Expenditure	0	0	0	0	+ 0
Legal	**35,000**	**0**	**35,000**	**35,000**	**+ 0**
Income	(5,000)	0	(5,000)	(5,000)	+ 0
Expenditure	40,000	0	40,000	40,000	+ 0
Governance	**132,947**	**0**	**132,947**	**132,947**	**+ 0**
Salaries	101,557	0	101,557	101,557	+ 0
Expenditure	31,390	0	31,390	31,390	+ 0
Chief Executive	**53,696**	**0**	**53,696**	**53,696**	**+ 0**
Salaries	53,301	0	53,301	53,301	+ 0
Expenditure	396	0	396	396	+ 0
Asset Management	**76,606**	**0**	**76,606**	**73,888**	**+ 2,718**
Income	(4,135)	0	(4,135)	(4,135)	+ 0
Salaries	25,466	0	25,466	22,748	+ 2,718
Expenditure	55,275	0	55,275	55,275	+ 0

Row Labels	Original budget (Navigation) £	Budget adjustments (Navigation) £	Latest Available Budget (Navigation) £	Forecast outturn (Navigation) £	Forecast outturn variance (Navigation) £
Finance and Insurance	**318,119**	**0**	**318,119**	**318,119**	**+ 0**
Salaries	159,768	0	159,768	159,768	+ 0
Expenditure	158,351	0	158,351	158,351	+ 0
Collection of Tolls	**228,380**	**0**	**228,380**	**228,380**	**+ 0**
Salaries	215,880	0	215,880	215,880	+ 0
Expenditure	12,500	0	12,500	12,500	+ 0
ICT	**262,695**	**0**	**262,695**	**262,695**	**+ 0**
Income	0	0	0	0	+ 0
Salaries	119,750	0	119,750	119,750	+ 0
Expenditure	142,945	0	142,945	142,945	+ 0
Premises – Head Office	**50,320**	**0**	**50,320**	**50,320**	**+ 0**
Income	0	0	0	0	+ 0
Expenditure	50,320	0	50,320	50,320	+ 0

Table 5

Projects and Corporate items

Row Labels	Original budget (Navigation) £	Budget adjustments (Navigation) £	Latest Available Budget (Navigation) £	Forecast outturn (Navigation) £	Forecast outturn variance (Navigation) £
Total Projects and Corporate Items	**4,263**	**0**	**4,263**	**4,263**	**+ 0**
Partnerships / HLF	**0**	**0**	**0**	**0**	**+ 0**
Income	0	0	0	0	+ 0
Salaries	0	0	0	0	+ 0
Expenditure	0	0	0	0	+ 0
Corporate Items	**4,263**	**0**	**4,263**	**4,263**	**+ 0**
Expenditure	4,263	0	4,263	4,263	+ 0
Pension Payments	4,263	0	4,263	4,263	+ 0

Table 6

Contributions from earmarked reserves

Row Labels	Original budget (Navigation) £	Budget adjustments (Navigation) £	Latest Available Budget (Navigation) £	Forecast outturn (Navigation) £	Forecast outturn variance (Navigation) £
Total contributions from Earmarked Reserves	**(542,400)**	**0**	**(542,400)**	**(542,400)**	**+ 0**
Earmarked Reserves	**(542,400)**	**0**	**(542,400)**	**(542,400)**	**+ 0**

Row Labels	Original budget (Navigation) £	Budget adjustments (Navigation) £	Latest Available Budget (Navigation) £	Forecast outturn (Navigation) £	Forecast outturn variance (Navigation) £
Expenditure	(542,400)	0	(542,400)	(542,400)	+ 0

Table 7

Net (Surplus) / Deficit

Row Labels	Original budget (Navigation) £	Budget adjustments (Navigation) £	Latest Available Budget (Navigation) £	Forecast outturn (Navigation) £	Forecast outturn variance (Navigation) £
Grand Total	**(114,294)**	**27,080**	**(87,214)**	**(85,686)**	**- 1,528**

Navigation Committee

05 September 2024
Agenda item number 8

Construction, Maintenance and Ecology work programme progress update

Report by Head of Construction, Maintenance & Ecology and Ecology & Design Supervisor

Purpose

To give an update on the Broads Authority's management activities to maintain public navigation, develop mooring facilities for public use and demonstrate the effective use of available resources in managing the Broads waterways.

Broads Plan context

C1: Maintain navigation water depths to defined specifications, reduce sediment input, and dispose of dredged material in sustainable and beneficial ways.
C2: Maintain existing navigation water space and develop appropriate opportunities to extend access for various types of craft.
C3: Manage water plants, riverside trees and scrub, and seek resources to increase operational targets.
C4: Maintain and improve safety and security standards and user behaviour on the waterways.

Contents

1. Maintaining water depths for navigation

1.1. The detailed breakdown in Appendix 1 gives progress and volumes for the dredging programme for 2024/25 (April 2024 to end July 2024). A total of 12,800 m³ of dredged sediment was removed from the prioritised sites. This figure represents 35% of the programmed target of 36,630 m³ for the year.

1.2. Active dredging projects this summer includes in the Rockland Broad area - Navigation Closure & Restrictions due to dredging works at River Yare, Norwich, and the continuation of the work in the Upper Bure, between Wroxham and Coltishall - Update - Navigation restrictions due to dredging works on. Since the start of the Upper Bure project in January 2024, the lagoon where the sediment is being treated now contains over 13,400 cubic metres in volume (as dredged from the river). This material is dewatering well and has already shrunk considerably in volume. The Construction Team has suffered from some breakdowns with key pieces of equipment so far on this project. The concrete pump and the excavator used for dredging have both had parts failures, which has added to the time required on site to complete the work. The project is set to continue for the remainder of this calendar year. The next phase of work involves six weeks working downstream towards Wroxham Bridge. Then attention turns to the narrower section of the river upstream of Coltishall. After the planned dredging is completed, the dried sediment will be eventually spread on the adjacent field for agricultural benefit.

1.3. Phase 1 of the dredging in the River Yare area (Fleet Dyke and some of the marked channel through Rockland Broad) has now been completed. All dredged sediment has been placed behind a floodbank along the Short Dyke as a stockpile for future Environment Agency flood defence work. This re-use area is now full and the sediment is now starting to dry out. Phase 2 involves completing the dredging in the marked channel of Rockland Broad and then the approach channels to Bargate Broad. Buoys will be placed along the channel dredged to 1.5 m below meal low water level, on the southern edge of Bargate Broad. This sediment is destined for the Environment Agency's flood defence maintenance work at Postwick Marshes further upstream on the River Yare. As the placement of the dredged material is going to be over the floodbank, the project requires the concrete pump to do this. Dredging on the River Yare will resume in the new year once the concrete pump is finished on the Upper Bure.

1.4. The current contract for hydrographic surveys to inform the dredging programme has come to an end this year. An open tender will be released in September to refresh this contract. This gives an opportunity to embrace new technological advances and drive value for money for this vital information gathering phase of the Broads sediment management process.

2. Maintaining safe public mooring facilities

2.1. Current active work includes the refurbishment of the piled edge and quay heading at Repps Bank 24 hour mooring at Potter Heigham. This works has been pushed into the summer months due to the unprecedented and continued high water levels in the River Thurne area.

2.2. Repiling at Womack Island 24-hour mooring has been completed. Repairs to the damaged quay heading at Ranworth 24-hour mooring has also been completed.

2.3. For the more detailed reports on the minor mooring maintenance work completed, these are included in the Chief Executive's regular public Broads Briefings.

3. Water Plant Management

3.1. All areas of known water plant growth where this has been observed to cause a significant impediment to vessels in the public navigation has been managed well this season. The three water plant harvesters have been active in rotation. The overall abundance of growth does not seem to have been as vigorous as the previous two years. This has allowed one of the harvester vessels to be used on Rockland Broad to collect lily rhizomes that have floated free during the dredging operation. Over 20 tonnes of plant material have been gathered and incorporated in the dredged sediment re-use site.

4. Riverside Tree Management

4.1. Work over the coming autumn and winter (2024/25) will be the third year of our agreed five year programme (2022/23 to 2026/27) Riverside tree and scrub management. Prioritised sections for management in 2024/25 are subject to final operational work planning with landowner agreements for work on their land being confirmed. The plan will be reported at the next meeting.

5. Our resources

5.1. From the additional Defra grant received in 2024/25 the priority capital items agreed for purchase includes: -

- A new concrete pump system for facilitating dredging operations (awaiting specification of a new system and final pricing from our existing supplier)
- Six replacement 4x4 vehicles for use across the operational teams (three delivered with the remainder due by the end of September 2024)
- Excavator dipper arm extension for our 14 tonne JCB excavator (on order)
- Slotted weed bucket for dyke clearance (on order)
- Steel welfare hut (delivered and in use)

6. Channel Marking

6.1. With the replacement of all the channel marker posts in Breydon Water completed, the next priority is the review of marker posts where they occur in the lower tidal rivers (Yare, Waveney and Bure). All these assets are recorded in the Authority's GIS mapping system. The scope of this review to be completed by the end of December 2024 will include:

- the purpose of the marker (Trinity House marks, hazard marker, channel marker, other posts)
- is a marker still needed at that location
- is the marker in the correct position
- other maintenance requirements

6.2 The outcomes of this review will be shared with stakeholders with any agreed amendments to the current channel marking policy updated into the Waterways Management Strategy.

Author: Dan Hoare & Sue Stephenson

Date of report: 15 August 2024

Broads Plan strategic objectives: C1, C2, C3, C4

Appendix 1 – Annual dredging progress 2025/25 (April 2024 to end July 2024)

Appendix 1 – Annual dredging progress 2024/25 (to end July 2024)

Project title **Dredge site and sediment re-use location**	**Active Broads Authority dredging weeks completed/planned**	**Planned volume removed m³**	**Actual volume removed m³**	**Planned annual project cost[1]**	**Actual project cost**
River Bure (continuation from 2023/24) Juby's Farm to Hoveton Viaduct	18/27	17,900	8,530	£190,710	£94,000
Lagoon re-use site *NB: Planned volume includes Bridge Broad (2,870m³) which is no longer part of the work programme*					
River Yare Rockland Broad (channels & dykes)	7/26	13,500	4,270	£190,020	£43,840
Rockland Short Dyke & Postwick Marshes re-use sites & Postwick Tip					
River Ant Stalham Dyke	0/3	830	0	£37,140	0
Hunsett Mill re-use site; work planned to start December 2024					
River Yare Bargate Broad	0/4	2,400	0	£45,150	£70
Postwick Marshes re-use & Postwick Tip					
River Thurne Catfield Dyke	0/4	2,000	0	£27,350	£170
Deferred to 2025/26 due to delays in completing the Upper Bure project					

Project title Dredge site and sediment re-use location	Active Broads Authority dredging weeks completed/planned	Planned volume removed m^3	Actual volume removed m^3	Planned annual project cost[1]	Actual project cost
Site restoration	-	-	-	-	
Future site preparation Survey, mitigation & set-up	-	-	-	-	£3,640
Dredging support activities	-	-	-	-	£3,790
Total	**25/64**	**36,630**	**12,800**	**490,370**	**145,510**

Navigation Committee

05 September 2024
Agenda item number 9

Waterways compliance report

Report by Head of Construction, Maintenance & Ecology and Waterways and Recreation Officer

Purpose

This report provides members with information on sediment management and Waterways Specification compliance, as defined in the Waterways Management Strategy. The updated figures are based on new hydrographic surveys carried out in 2024, as part of the planned five-year rolling programme which covers all areas of the public navigation in the Broads.

Broads Plan context

This report relates to the Broads Authority's aim to manage sediment in the Navigation Area, as described in the Broads Plan objective:-

C1 - Maintain navigation water depths to defined specifications, reduce sediment input and dispose of dredged material in sustainable and beneficial ways

Contents

1. Introduction

1.1. The Authority adopted the Waterways Management Strategy (WMS) in 2021. A critical outcome of the WMS is to direct the Authority's dredging operations to achieve the Waterway Specification for individual management units within the navigation area. This means that the Authority is focusing its dredging efforts so that waterways users in

the Broads have enough water depth most of the time, except during very rare low tides. Where compliance falls short of the targets, then action can be identified and planned into the future dredging programme.

1.2. Compliance assessments are based on an analysis of hydrographic survey data, allowing actual bed profiles to be compared with the desired specification profiles defined in the strategy. Advances in sonar hydroacoustic technology now allow very high-resolution data of the entire bed area of the management units to be compared with the desired profile. This allows for a far more accurate assessment and mapping of non-compliant areas and quantifying the amount of sediment to be removed to achieve compliance.

1.3. The spatial and numerical data analysis allows the identification of non-compliant areas and where these can be economically dredged. High-resolution mapping also identifies sediment accumulation more accurately, thus driving efficiency when it comes to targeting sediment removal. The Authority now has hydrographic data covering the entire navigable system in a high-resolution format. The plan is to resurvey the navigation area on a rolling five-year programme to ensure accurate and relatively up-to-date data is available to inform future dredging operations.

1.4. As part of the five-year rolling programme, the locations surveyed in January 2024 include all the Management Units in the Upper Thurne (*except the large area of Hickling Broad outside the marked channel*).

1.5. In this same surveying window, Oulton Broad, Wayford Bridge to Barton Broad, Sutton Dyke, Stalham Dyke and Haddiscoe Cut were surveyed after dredging to allow assessment of the results.

2. Waterway specification compliance summary

2.1. The updated sediment compliance and prioritisation table is included in Appendix 1. The Management Units are ranked based on the final column “Priority Score”.

2.2. The description of the columns in Appendix 1 is described in Table 1.

Management Unit	**Sediment Volume (m^3)**	**Non-compliant area (%)**	**Proportion of economically dredgable sediment (%)**	**Activity Index**	**Priority Score**
Definable waterbody area (river stretch or broad) where hydrographic data has been captured	Volume of sediment in cubic metres needed to be dredged to achieve the Waterways Specification	Percentage of the surface area of the Management Unit that has some accumulated sediment	Percentage of the Sediment Volume which is in a layer greater than 30 cm (i.e. deep mud)	The average Activity index as generated by mobile phone activity on the water within the	Score calculated by multiplying the values in the previous three columns and

Management Unit	Sediment Volume (m^3)	Non-compliant area (%)	Proportion of economically dredgable sediment (%)	Activity Index	Priority Score
		above the Waterways Specification		Management Unit	dividing by 100

Table 1. Description of the columns in Appendix 1

2.3. The Activity Index is derived from analysis of spatial data held by a subscription service that maps movement of mobile phones. The data is summarised for areas within the Management Unit where nothing other than waterways recreation can be occurring and is presented as an index on a scale of roughly zero to five. This method replaces the previous waterways boating survey that used to be carried by staff and volunteers every five years at fixed points over a weekend in the summer. The benefits of the mobile phone spatial data approach are that it's cheaper, can be repeated for any time span (2021 onwards) and operates down to a far greater resolution (100 m grid) over the whole Broads areas.

2.4. Table 2 shows the total volume of sediment identified to fully achieve the Waterways Specification within each river.

Table 2. Total sediment volume identified for dredging

River	Sediment Volume 2024 (m^3)
Ant	63,582
Bure	150,475
Chet	2,253
Thurne	307,975
Waveney	92,168
Yare/ Wensum	238,311
Total Volume	**854,764**

3. Financial implications

3.1. By ranking each of the Management Units by dredging priority (as per Appendix 1), the Authority can update and modify the 5-year dredging plan to ensure the targeted deployment of limited resources. The dredging programme is then shaped according to users' needs, particularly Management Units, the availability and cost of sediment re-use options, and efficient mobilisation and deployment of staff and equipment.

3.2. Updates on the plan and progress of the dredging programme are given at each Navigation Committee meeting in the regular Construction, Maintenance and Ecology section report.

4. Risk implications

4.1. As part of the Authority's compliance with the Port Marine Safety Code through the Safety Management System, the specified waterway depths are managed through the Authority's dredging programme to reduce risks to river users. Where measured water depths do not meet the Waterways Specifications, the prioritisation process outlined in this report allows for the generation of a dredging programme to target projects to bring about the greatest benefits to waterways users. This cyclical process of surveying, project planning, dredging, re-surveying and reporting enables the Authority to do this effectively and transparently.

Author: Dan Hoare & Jo Thompson

Date of report: 19 August 2024

Broads Plan strategic objectives: **C1** - Maintain navigation water depths to defined specifications, reduce sediment input and dispose of dredged material in sustainable and beneficial ways

Appendix 1 – Prioritisation of locations for future dredging to achieve Waterways Specifications

Appendix 1 – Prioritisation of locations for future dredging to achieve Waterways Specifications

River	Management Unit	Sediment Volume (m^3)	Non-compliant area (%)	Proportion of economically dredgable sediment (%)	Activity Index	Priority Score
Bure	Salhouse Broad	17,237	90.0	82	2.76	202.7
Thurne	Catfield Dyke	3,643	82.2	89	2.76	202.7
Waveney	Geldeston Dyke	2,278	89.2	94	2.36	198.4
Yare	Rockland Broad (outside marked channel)	116,022	98.6	100	1.86	182.6
Yare	Bargate Broad	14,452	94.0	100	1.67	156.0
Waveney	Haddiscoe Cut	29,914	63.8	88	2.32	130.3
Bure	Horstead to Coltishall Common	5,844	60.7	89	2.41	129.8
Thurne	Somerton Boat Dyke	638	77.1	56	2.85	122.9
Yare	Thorpe River Green	4,820	58.5	73	2.77	118.5
Bure	Hoveton Viaduct Bridge to Salhouse	18,483	41.6	71	3.97	116.7
Bure	Cockshoot Dyke	418	84.4	90	1.43	108.9
Yare	Bishops Bridge to Postwick	20,975	25.1	85	5.03	107.8
Ant	Barton Broad to Ludham Bridge	19,548	68.0	53	2.91	104.7

River	Management Unit	Sediment Volume (m^3)	Non-compliant area (%)	Proportion of economically dredgable sediment (%)	Activity Index	Priority Score
Yare	Rockland Broad (channels & dykes)	14,562	61.9	89	1.90	104.0
Ant	Sutton Dyke	8,577	64.9	56	2.74	100.3
Bure	South Walsham Broad	9,450	70.3	62	2.27	98.9
Yare	Langley Dyke	1,174	39.5	80	2.92	91.8
Thurne	Martham Dyke	663	100.0	100	0.91	91.3
Thurne	Horsey Mere	49,950	97.4	33	2.61	83.2
Yare	New Mills to Bishops Bridge	3,665	23.0	86	4.06	80.3
Bure	Marina Quays to Bure Mouth	9,127	29.8	87	3.03	78.5
Bure	Salhouse Broad to Horning Church	14,965	21.8	70	4.93	75.7
Bure	Acle Dyke	3,679	86.3	97	0.82	68.7
Thurne	Martham Ferry to West Somerton Drainage Mill	5,592	49.0	64	2.07	64.9
Ant	Womack Dyke	3,304	48.9	53	2.47	63.5
Ant	Ludham Bridge to Ant Mouth	2,296	45.7	46	3.00	62.7
Waveney	Oulton Broad	28,214	59.5	44	2.36	62.0
Ant	Upton Dyke	763	43.8	70	1.97	60.6
Ant	Smallburgh Canal	992	26.4	98	2.21	57.1
Thurne	Hickling outside channel	193,018	81.7	60	1.12	54.5
Ant	Tyler's Cut	1,415	64.9	50	1.65	53.8

River	Management Unit	Sediment Volume (m^3)	Non-compliant area (%)	Proportion of economically dredgable sediment (%)	Activity Index	Priority Score
Bure	Malthouse Broad	6,215	52.1	49	2.10	53.1
Yare	Bargate (channel and dykes)	2,015	42.3	86	1.39	50.9
Yare	Deal Ground to Trowse Eye	1,975	28.1	83	2.12	49.4
Waveney	Stalham Dyke	5,773	47.6	68	1.53	49.0
Thurne	Hickling Broad (inside channel)	16,463	68.1	49	1.46	49.0
Thurne	Turkey Broad	7,744	43.8	65	1.70	48.2
Bure	Mautby Marsh Mill to Marina Quays	23,666	25.0	91	1.97	44.9
Yare	Hardley Dyke	2,709	64.0	98	0.69	43.4
Thurne	Deep/Deep Go Dyke	1,316	14.5	83	3.47	42.0
Ant	Lime Kiln Dyke	1,209	49.2	58	1.42	40.7
Bure	Coltishall Common to Jubys Farm	11,409	57.6	64	1.02	37.3
Bure	Juby's Farm to Caen Meadow	3,089	25.9	56	2.52	36.8
Thurne	Wayford Bridge to Barton Broad	8,794	44.0	53	1.35	31.5
Bure	Caen Meadow to Hoveton Viaduct Bridge	3,129	25.7	52	1.91	25.7
Bure	Acle Bridge to Stokesby	6,228	13.0	84	2.34	25.5
Yare	Thurne Dyke	339	70.9	18	1.83	23.9

River	Management Unit	Sediment Volume (m^3)	Non-compliant area (%)	Proportion of economically dredgable sediment (%)	Activity Index	Priority Score
Bure	Fleet Dyke	4,015	39.7	57	1.05	23.6
Thurne	Heigham Sound	5,977	57.3	36	1.08	22.6
Waveney	Beccles to Burgh St Peter	13,105	9.2	84	2.78	21.5
Ant	Upstream of Wayford Bridge	1,498	46.3	40	1.16	21.5
Bure	Horning Church to Thurne Mouth	9,631	19.2	62	1.65	19.7
Ant	Barton Broad (inside channel)	13,167	22.8	45	1.92	19.6
Thurne	Candle Dyke	306	6.2	80	3.61	17.9
Ant	Barton Broad (outside channel)	12,371	35.2	39	1.26	17.4
Bure	Waxham Cut	7,656	80.4	91	0.23	16.9
Ant	Stokesby to Herringby Hall	7,019	13.5	90	1.19	14.4
Bure	St Olaves to Breydon	7,816	4.9	90	3.03	13.4
Thurne	Thurne Mouth to Acle Bridge	3,565	9.5	54	2.48	12.7
Yare	Postwick to Brundall	20,963	14.3	86	0.95	11.6
Thurne	Meadow Dyke	1,494	45.1	43	0.54	10.6
Waveney	Geldeston to Beccles	2,769	9.3	65	1.74	10.5
Chet	Loddon to Chet Mouth	2,253	19.1	37	1.44	10.2
Yare	Reedham to Upper Seven Mile House	305	4.9	78	2.20	8.4
Waveney	Oulton Dyke	2,717	3.0	70	3.73	7.7

River	Management Unit	Sediment Volume (m^3)	Non-compliant area (%)	Proportion of economically dredgable sediment (%)	Activity Index	Priority Score
Yare	Brundall to Cantley	15,184	7.1	81	1.23	7.0
Bure	Herringby Hall to Mautby Marsh Mill	3,375	6.4	86	1.10	6.1
Bure	Thurne Mouth to Martham Ferry	1,347	4.6	44	2.62	5.2
Waveney	Burgh St Peter to St Olaves	2,233	2.1	78	2.86	4.6
Waveney	Breydon Water (inside channel)	5,165	1.6	91	1.52	2.2
Bure	Upper Seven Mile House to Breydon	823	1.3	76	2.13	2.1
Yare	Cantley to Reedham	1,914	2.2	74	1.04	1.7
Bure	Ranworth Dam	345	1.0	63	1.71	1.0

Navigation Committee

05 September 2024
Agenda item number 10

Future proofing Broads Authority public moorings

Report by Head of Construction, Maintenance & Ecology

Purpose

To provide an interim review on selected aspects of the Authority's strategy for public mooring provision. This report updates members on mooring design and specifications; increasing resilience for continued safe and practical moorings in the face of climate change; and managing the risks and costs of adopted approaches.

Broads Plan context

A2 - Work towards making all Broads Authority operations carbon neutral by 2030 and carbon zero by 2040.

C2 - Maintain existing navigation water space and develop appropriate opportunities to extend access for various types of craft

- Develop understanding of long-term trends in water levels and impacts on navigation, and refresh mean water level data using standardised methodology

E1 - Improve the integrated network of access routes and points (with easier access for people with mobility and sensory needs), linked to visitor facilities

- Maintain and where possible enhance BA 24-hour free mooring network, informed by boat census and strategic priority sites data

Contents

1. Introduction

1.1. This report seeks to set the Broads Authority's provision of public moorings in the context of future challenges from climate change. Of critical importance in this challenge are the design and maintenance regimes needed to ensure the Authority provides functional and safe locations to moor vessels. This report progresses planned objectives in the Authority's Integrated Access Strategy (IAS), chiefly objective "M4 Feasibility study of different mooring design options and consultation".

1.2. The following principles embedded in the IAS are applicable to the question of future resilience of public mooring provision:

- 4.3 Financial cost effectiveness – to ensure that the cost and value for money of all projects is evaluated at the outset and the financial viability considers a broad range of benefits, such as to public health and the local economy.
- 4.7 Access for All - Ensure provision of safe access with adoption of the least restrictive options following the design principles of coherent; safe; comfortable; and attractive: to encourage and enable people of all ages and abilities to experience the Broads' countryside and waterways.
- 4.8 Innovative design - All access infrastructure to be consistent with local planning policies whilst delivering user benefits and value for money.
- 4.9 Asset liabilities - When considering acquiring new assets, the Broads Authority should consider the cumulative implications of taking on new liabilities, in particular the potential cost of replacing physical assets, maintenance costs over duration of tenure, etc.
- 4.10 Climate change resilience - Project design should consider the potential impacts of climate change, such as changes in weather patterns and water levels, to support long-term resilience and adaptation.

1.3. This report focusses on operational decisions around fundamental mooring designs; details of quay heading and vertical piling arrangements and specifications; and surfacing types on the landward side of the moorings. Additional reporting on the following mooring related IAS objectives and the budgeting to achieve them shall be completed by the end March 2025:

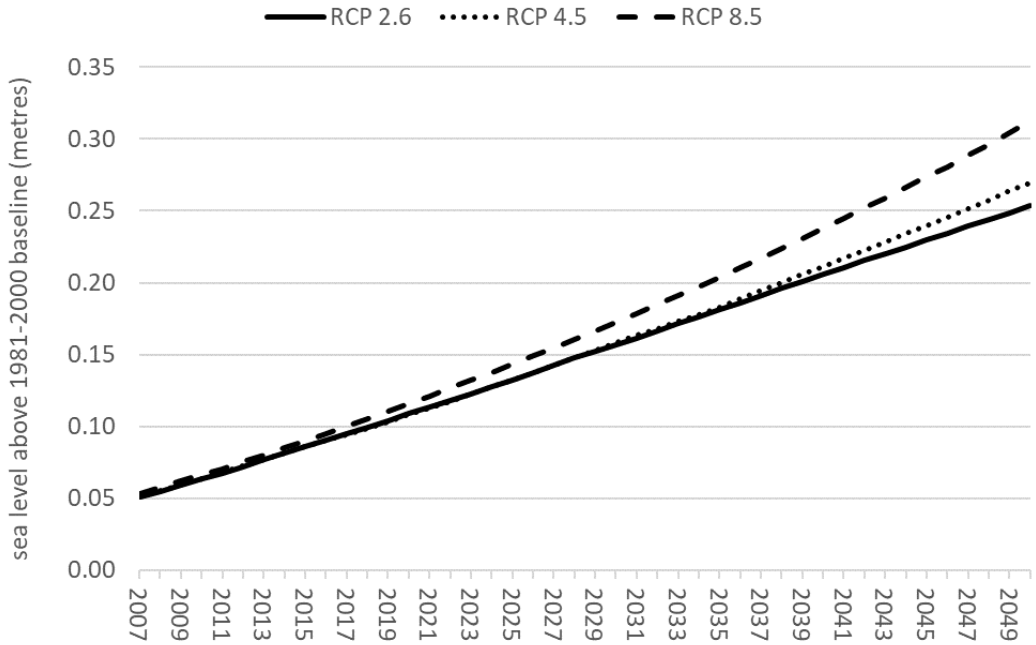
- M3 Identify locations for new short-stay moorings in gaps identified by gap analysis
- M4 Review de-masting provision in the Broads and develop a prioritisation methodology to guide future investment in new provision

2. Water level changes in the Broads

2.1. Based on UK climate change projections (UKCP18) UK Climate Projections (UKCP) - Met Office, making some allowances for climate change in the Authority's forward asset management planning, enables development of projects and strategies that can adapt to a future climate change scenarios. With this adaptive approach we are seeking to develop solutions that are more effective in the long-term and for a range of climate change scenarios.

2.2. UKCP18 provide projections of relative mean sea level rise around the whole UK coast. As an example of the challenges to come, Figure 1 shows the increase in sea level at Great Yarmouth for three climate change scenarios. RCP stands for Representative Concentration Pathways (RCP). These are climate change scenarios which project future greenhouse gas concentrations. These pathways (or trajectories) describe future greenhouse gas concentrations (not emissions) and have been formally adopted by the Intergovernmental Panel on Climate Change (IPCC). These scenarios are adopted in Defra guidance of climate change resilience and are used by the Environment Agency for all flood risk management decision making, see Flood risk assessments: climate change allowances. RCP 2.6 is the low emission pathway; RCP 4.5 is medium-low and RCP 8.5 is high.

Figure 1. UK climate change predictions for sea level rise by 2050 for Great Yarmouth. (data extracted from UKCP18 databases August 2024, based on the 50th percentile which represents the central estimate (median) amongst the individual model projections)



2.3. Given that we are now in 2024, the predicted sea level rise at Great Yarmouth through to 2050, using this government endorsed approach, is in the range 12.6 to 17.5 cm. This rise does not consider the predicted changes in rainfall which will also increase water

levels in the Broads. Further modelling of the combined impacts of sea level, river flow and rainfall intensity and its impacts in the Broads will be carried out by of the Broadland Futures Initiative (BFI). BFI will use the climate change predictions to guide the Broadland hydrological model which underpins all the discussions and decisions to be had about water management over the timescale of that initiative.

2.4. For Broads Authority public moorings (and any other physical asset sensitive to water level in the Broads) any long-term structural modifications clearly need to build in resilience to climate change and water level increases. The materials lifespan of moorings constructed to "standard" vertical steel piling designs should last somewhere between 30-50 years. The impact of a predicted water level increase over the next 25 years of between 12.6 – 17.5 cm from rising sea level alone. This starts to focus design and location decisions about how the Authority builds in resilience and continues to offer safe public moorings. This has been highlighted by the prolonged and exceptionally high water levels, particularly across the norther rivers in the Broads over the autumn/winter of 2023/24.

3. Mooring design

3.1. The Broads Authority manages public moorings with a range of vertical piling designs and a handful of pontoon moorings. The user experience is largely driven by what lies above the waterline and the provision of mooring furniture available for them to fix lines to. The engineering considerations required to achieve an effective mooring in a tidal system, often with unstable peat soils, is not without its challenges. Also added to this is the complex inherited history of the various designs and materials that make up the suite of existing older moorings in the Broads.

3.2. Despite this inherent variability, where the Authority seeks to fully reconsider its mooring provision at a particular location, opportunities to build in climate change resilience are available. Most commonly when the vertical piling (steel or in some cases timber) is being completely replaced, this allows opportunity to increase the design level of the top of the piling and the effective level of the quay heading.

3.3. To demonstrate how variable the quay heading level is above the water level at different sites, Table 1 shows the effective mooring "freeboard" at the 24 hour moorings prioritised for full piling replacement. This approach attempts to set a standard condition for determining freeboard. As mean high water level (calculated as the average of all high water peaks between 1993 and 2019 at that location) has a unique gradient along each river valley, the freeboard values have taken into account the local MHW value for that mooring. The methodology for the calculation of mean high water level is presented in section 4.1.2 of the Authority's Waterways Management Strategy.

3.4. What has not been defined before in standard details for Broads Authority public moorings is the minimum effective freeboard that is safe and convenient for boat users. This is usually greater than the typically low freeboard preferred by canoe and

paddleboard users. As an example, if we take 30 cm as a workable freeboard measurement above MHW and add resilience of these sites to water level rise, adopting the upper range of 17.5 cm increase. then any mooring being repiled should aim for a minimum final capping level at least 47.5 cm above MHW for that location.

Table 1. Mooring freeboard and future level increases at 24 hour moorings due for repiling.

Mooring	Average height of current capping above MHW level (cm)	Increase in piling level (cm) required to retain 30 cm freeboard by 2050
Deep Dyke	30.0	17.5
White Slea	46.6	0.9
Deep Go Dyke	45.2	2.3
Catfield Staithe	38.8	8.7
Dilham Staithe	50.1	none
Hoveton Viaduct	46.1	1.4
Wroxham Castle Staithe	37.3	10.2
Somerleyton	30.2	17.3
Herringfleet	24.1	23.4
Worlingham	64.7	none

3.5. Table 1 shows that most existing moorings would need some increase in height to retain resilience through until 2050. Using the example of 30 cm freeboard, where moorings require raising to meet this resilience target, the height increase varies between 0.9 to 23.4 cm. Further work is required to gain this data for all the Authority's moorings and to better understand the full picture.

3.6. For all refurbishment and repiling work that is not strictly on a like for like basis, prior discussion with the Environment Agency is required to determine whether a Flood Risk Activity Permit (FRAP) is required. Similar conversations with the Authority's planning team will also be required.

4. Alternatives to hard-edged, vertical piled moorings

4.1. Where physical space in the waterbody allows, floating pontoon moorings offer consistent freeboard at all states of tide. This option works well in marinas and open water where there is sufficient width for finger pontoons, or alongside existing river edges where ramps can be used for pedestrian access and allow alongside mooring of vessels. A benefit of this approach is that the land footprint is minimal, requiring only the area for the ramp landing and any fixings. Depending on the river location and tidal

range, pontoons do not have to rely on a hard piled edge for their entire length, so offer savings in terms of materials and maintenance costs.

4.2. Where boaters do not need to gain access to land, such as at demasting or temporary lay-by moorings near bridges, floating pontoons offer an ideal solution. Usually, they are in line with the channel, so the process of coming alongside and then casting off is safe and simple. The positional fixing is via steel piles, that allow the pontoon to rise and fall with the tide. The Authority manages six pontoons which are for temporary lay-by usage. Two 24 hour moorings also have pontoons

4.3. In areas of low tidal rise and fall, horizontal boards set on vertical piles, can be used for alongside mooring. This is a common method in inland waterways where water levels are maintained at a set level. Locations with this design in the Broads are mainly limited to third party layby moorings near bridges. If used for alongside mooring, the benefits are that landward engineering is not required which reduces costs, but pedestrian access to land is not provided.

4.4. Pile moorings are not common in the Broads. Around Breydon Bridge there are some single piles with vertical mooring “handles” for mooring lines (jug-eared handles), as well as the same type of handles installed on the dolphins in that area. Pile moorings benefit from being relatively simple and cost effective to install and can cope with high tidal rise and fall. The number of vessels that can moor at pile moorings is limited, as well as not being that easy to moor against under certain wind directions. Options for this type of mooring in more remote areas of the wider tidal rivers has the potential to add to the diversity of mooring types, capacity and diversity of overnight experiences and fill gaps in provision where harder engineering would be very difficult or costly.

5. Mooring surfacing

5.1. An element in the fundamental design of moorings is the surfacing on the landward side of the timber capping of traditional quay heading. This is the zone where the mooring posts are positioned, and where people alight from their vessels when mooring up. As such, the surfacing is critical for safe use of the site in all weather conditions.

5.2. Of the 63 mooring locations (includes split sites that have different surfacing) that the Authority manages for public use, Table 2 gives the number of locations and total area of each surfacing type (assuming a standard 1.2 m width of path behind the quay heading)

5.3. Over the winter 2023/24, which has seen exceptionally high river levels, the moorings with wood chip surfacing have suffered particularly badly. Where water over-topped the moorings, the wood chip has floated away and left unacceptable surface conditions. The additional material and staff time cost of replacing this each time there is a high water event can be avoided by replacement with compacted crushed aggregate.

Table 2. Number and area of different surfacing types behind Authority moorings

Surfacing type	Number of mooring locations	Total area of surfacing type (m^3)
Compacted crushed aggregate (Type I granite)	35	4,310
Grass	16	1,930
Wood chip	7	500
Gravel	3	260
Asphalt	2	180

5.4. The few sites with gravel surfacing are under review. One site near an urban centre suffers from repeat theft of the gravel, so is planned to be replaced with compacted crushed aggregate. Another site has trialled a hard plastic mesh with gravel within the mesh grid, as used in car parks and other areas exposed to heavy usage. The surfacing has held up well, but the main issue, other than the greater cost per square metre compared to other surfaces, is in terms of maintenance. If any work or repairs are needed to this quay heading or the mooring posts, the complexity and time to complete the task is increased, as larger areas of mesh and gravel need to be removed to access the area to be maintained. This means simple repairs often carried out by the ranger team at other sites, requires the maintenance team with additional equipment and materials to complete the task at this trial location, increasing staff time and materials costs.

6. Financial implications

6.1. To best understand the financial implications of both the long-term maintenance of the existing mooring assets, as well as the strategic ambitions to increase provision in certain instances, the outcomes of a report to be completed of the Integrated Access Strategy due for completion by the end of March 2025 will reveal more. The scope of this report will be the asset replacement cost (re-piling on a like for like basis, plus climate change resilience), as well as the interim refurbishment of the timber quay heading that typically has a shorter life span. This report offers the opportunity to reset the forward budget requirements to maintain the existing mooring stock, as well as understand the Authority's capacity to expand provision as per the strategic ambitions.

6.2. Where different means of providing moorings of public use in the Broads offer cost efficiencies, identify opportunities where and how this can be done will be highlighted.

7. Risk implications

7.1. Safety considerations for users are foremost in all thoughts and decisions regarding publicly accessible moorings owned or managed by the Broads Authority. Once these minimum safety standards are met, subsequent decision making can then cover wider

and longer-term strategic aims, such as the distribution and capacity of moorings across the navigable system, planning for the Authority's long-term maintenance liabilities, working towards achieving Net Zero by 2050 and increasing resilience to the predicted impacts of climate change.

8. Conclusion

8.1. Views are sought from the Navigation Committee on the issues raised. Questions for consideration are:

1. What are thoughts on the suggested approach to setting a safe and practical mooring freeboard height above mean high water levels?
2. What are the thoughts on mooring design options other than the traditional vertical piling with timber quay heading?
3. What are thoughts on replacement of all wood chip mooring surfacing with compacted crushed aggregate given the cost, maintenance and future resilience benefits?

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Background papers: Integrated Access Strategy (IAS) 2023; Waterways Management Strategy

Broads Plan strategic objectives: A2; C2; E1