Navigation Committee

15 April 2021
Agenda item number 11

Construction Maintenance and Ecology work programme – progress update

Report by Head of Construction, Maintenance and Ecology

Purpose

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

Broads Plan context

Construction, Maintenance and Ecology activities contribute to multiple objectives, in particular to Aspirations 3, 4 and 6 to manage sediment sustainably, maintain a safe open navigation, and maintain the access network and visitor facilities.

Contents

1. Maintaining water depths for navigation

1.1. The detailed breakdown in Appendix 1 gives the volumes for the annual dredging programme to the end of February 2021. A total of 42,590 m^3 of dredged sediment has been removed from the prioritised sites. This figure represents 103% of the programmed target of 41,400m^3 for 2020/21.

1.2. Since the new year, the dredging of identified shoals in Haddiscoe Cut has been completed. While the team was in the area, they also dug out the bar that rapidly accumulates on the downstream side of Bure Mouth. The final phase of dredging to complete the CANAPE project work at Hickling Broad is ongoing, with just over 10,000 m^3 of sediment placed within the lagoon created by the geotextile bags. Dredging to waterways specification between Candle Dyke and Martham Ferry on the River Thurne has been completed. While the team were in the area, many of the bungalows on this stretch took up the offer of dredging out their boat cuts, for a contribution towards the cost of the work. All of the dredged material from the River Thurne has been used in the Chara Bay reedbed creation. Half the length of Catfield Dyke from the Broad, towards the 24 hour moorings, was also dredged with the Authority's mudpump sending the sediment to the Chara Bay reedbed. The planting to be placed on the geotextile bags has had to be deferred until September 2021 due to persistent high water levels in February and March this year.

1.3. The dredge work plan for April 2021 to March 2022 is in Appendix 2. The long reach excavators on pontoons are required for the planting of reed rhizomes on the CANAPE project reedbed in Hickling in autumn 2021, this deployment of heavy plant and equipment gives a further opportunity to continue dredging to bring the River Thurne upstream of Martham Ferry in line with waterways specification depth. The Ecology & Design Team are working up a detailed project and environmental mitigation plan, as working with Norfolk Wildlife Trust (as landowner), Environment Agency and Natural England is required whilst operating in this Protected Site. Water quality, water plants, fish and over-wintering waterfowl will need to be considered during this project. Updates on the project plan will provided.

1.4. Other dredging projects planned for 2021/22 are on the River Chet, with material to be placed along the currently closed public footpath. The long term plan is to rebuild the surface of the footpath, whilst the Authority's Waterways & Recreation Officer and Norfolk County Council seek funding for other engineering works that will enable the footpath to reopen. The upper section of the River Waveney near Geldeston is to be tackled, with sediment disposal being planned onto the Authority's small parcel of land near the Lock's Inn. Oulton Broad dredging is planned for the summer, with preparations for the filling of the area within Peto's Marsh currently on-going.

2. Maintaining safe public mooring facilities

2.1. The first phase of refurbishment of the timber capping at How Hill 24-hour mooring has been completed. Additional 100 metre sections will be completed over the next two years, to prevent disruption at this popular location. At the time of writing, the Authority is still awaiting final confirmation of the wording of the lease agreement with the landowner at St Benet's 24-hour mooring, although agreement in principle has been settled. Negotiations between the landowner and Broadland Environmental Service Ltd (BESL) are ongoing regarding the future of the steel sheet piling. The tender process for the procurement of a contractor to carry out the timber refurbishment

works was successfully completed by the Authority. Works were due to start in March 2021. The contractor is poised to start work in April, as soon as assurances on the lease agreement between the Authority and the landowner are confirmed.

3. Our resources

3.1. After 17 years of service to the Authority, Shaun Taylor, an Operations Technician in the Maintenance Team retired in March. Eloise Dey, Trainee Technician, was successful in the subsequent recruitment to fill this vacancy and starts as an Operations Technician as of 1 April.

3.2. The equipment replacement programme, as funded through reserve budget and a Public Works Loan Board loan, was completed for the 20/21 financial year. As previously reported, five steel "NATO" work pontoons were delivered back in the autumn. A new, 20 tonne, JCB 12 metre long reach excavator is also due for delivery in mid April. The 18 tonne JCB excavator with extra wide "bog" tracks that has been used for fen management work over the past 15 years was sold earlier in the year. The fen work will be carried out in the future by a combination of the larger long reach excavators and the 13 tonne, standard reach Doosan excavator.

3.3. Electrification of the vehicle fleet continues. The Plant & Equipment Team has put a new all-electric Vauxhall Vivaro van into active use, based from the Dockyard. Within the Construction Team, a mild hybrid Ford Transit is being used. The latter offers fuel efficiencies from a diesel engine.

3.4. To other explore ways reduce the carbon budget of the operational work of the Authority, a trial of a diesel replacement is set to start in April. A supply of Hydrotreated Vegetable Oil (HVO) has been secured and various plant and vessels will be run on this to check for any running issues with the older engines in use. As the fuel is certified as a direct diesel replacement, even capable of being mixed in the same tank, few issues are expected. The fuel gives a 90% reduction in carbon dioxide emissions, so could potentially be a very positive route whilst other technological developments are brought to the marine and heavy plant engine markets, such as hydrogen fuel cells. As ever in the Broads, supply logistics are a major challenge, with the Authority ideally being one of many customers bulk purchasing in the Norfolk/Suffolk area to make the cost per litre more attractive. For a review of HVO usage see HVO and GTL – alternative fuels with few drawbacks | Environment (commercialfleet.org). If any yards, or those operating heavy plant are keen to discuss supply options, then please get in touch.

3.5. At the Thorpe Dockyard site, the Authority's partnership with Boat Safety Scheme (BSS), to develop a national centre for training BSS examiners is well underway. A selection of test vessels are now in position which have been prepared with safety "errors" waiting for would be examiners to discover and learn from. The first round of training is planned for late June 2021.

4. Managing water plants

4.1. Following a meeting of the Upper Thurne Working Group in November, a sub-group was formed to discuss and plan actions to ensure recreational boating impacts of water plant growth were managed in a sustainable way. Actions agree to be followed up by the Authority were:

- Investigate feasibility of limited cutting of milfoil areas on the edges of the channel and 10 m radius around marker posts (Ecologists to monitor growth and seek assent from Natural England)
- Increase boater awareness, seek to install signage alerting users of risk of water plants outside the marked channel
- Share with the clubs the dates when the cutter is in Hickling
- Deploying additional buoys during the summer toward Pleasure Boat Dyke entrance and between marker posts where dense plant beds are immediately adjacent to the marked channel
- Arrange a scientific peer review of the 2020 stonewort cutting report

4.2. The final report of the 2020 Broads Annual Water Plant survey is available here https://www.broads-authority.gov.uk/__data/assets/pdf_file/0028/377641/The-Broads-Annual-Water-Plant-Monitoring-Report-2020.pdf

5. Other navigation works

5.1. The intended completion of the Waterways Management Strategy and Action Plan has been delayed due to COVID. One key piece of progress has been the successful update of the "mean low water" levels used across the Broads. Mean low water level is the computer model baseline from which water depths from the annual hydrographic survey are compared to and from which the Waterways Specification compliance is reported from. These levels have now been calculated using Environment Agency river level data, including locations not previously incorporated into the previously used model.

5.2. This update of the modelled surface has improved the accuracy of the total volume of sediment identified as being outside the Waterways Specification and therefore highlighted as requiring dredging. For example, in the River Wensum through Norwich, previous mean low water level was based on limited data extrapolated from Brundall, generating 7,400 m^3 of sediment requiring dredging. With additional water level data included from the head of navigation at New Mills, the sediment volume required to meet Waterways Specification changes to 4,400 m^3. On the River Waveney between Oulton and Beccles, where good provision of water level data has always been available, there was less than a 5% reduction in calculated sediment volume. Across all the navigable Broads and Rivers, the greater accuracy of the mean low water level model has reduced total sediment volume identified as requiring dredging from

1,010,000 m^3 to 640,000 m^3. This type of accurate information is critical for prioritising dredging projects and ensuring value for money when expensive resources are to be deployed. More detailed information is available if members of the committee are interested.

5.3. Due to Haven Bridge being closed, the Authority's contractor planned for installing and replacing marker posts on Breydon Water has not been able to start work before the start of the season. To ensure safety in this area, the Authority's Construction Team work programme has been reviewed, with the decision taken to mobilise the Authority's own staff and equipment to carry out this task. This will mean a reduction in the planned amount of dredging activity in 2021/22. All of the staff time however remains on priority navigation tasks. 2021/22 is also a year in which several dredging sites are due for the final restoration phase to be completed. Typically these sites require staff time and excavators to reshape the sediment to the required final design.

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Date of report: 30 March 2021

Background papers: The Broads Annual Water Plant Monitoring Report 2020

HVO and GTL – alternative fuels with few drawbacks | Environment (commercialfleet.org)

Broads Plan strategic actions: 2.1; 2.3; 3.1; 3.2; 4.2; 6.1

Appendix 1 – Dredging progress 2020-21

Appendix 2 – Dredging Plan 2021-22

Appendix 1 - Dredging progress 2020-21

Project title	**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 – COMPLETED South Walsham & Acle to Oby (Apr-May)	6/8	2,000	4,605	40,703	36,820
River Waveney – COMPLETED Oulton Broad to Peto's Marsh (May-Sept)	13/20	8,500	7,655	110,104	88,730
River Yare – COMPLETED Prioritised shoals between Trowse & Cantley (Jun-Sept)	16/15	6,400	8,570	114,507	95,590
River Thurne River Thurne sites & Catfield Dyke to Chara Bay (Oct-Mar)	20/19	8,000	10,520	150,664	83,750
River Yare – COMPLETED Haddiscoe Cut to Raveningham (Nov-Dec)	10/20	8,500	8,240	106,990	62,900
River Thurne, Waxham Cut – COMPLETED Sidecast (Jan-Feb)	6/7	6,000	3,000	26,862	10,590

1 project costs include staff time for all elements (pre-works ecological mitigation, site set-up, active dredging & site restoration); BA plant; & budgetary expenditure (equipment hire, survey costs, contractor costs, mitigation works, materials & consumables etc); within the reporting period.

Project title	**Active Broads Authority dredging weeks** completed/ planned	**Planned volume removed m³**	**Actual volume removed m³**	**Planned annual project cost** [1]	**Actual project cost**
Lower Bure Plough dredge (Mar)	Contractor	2,000	0	10,000	0
Site restoration Waxham Cut (Phase 1), Tyler's Cut	-	-	-	12,000	13,250
Site preparation Peto's Marsh, Carlton Marshes	-	-	-	16,000	8,550
Total	**71/89**	**41,400**	**42,590**	**587,830**	**400,180**

Appendix 2 – Dredging Plan 2021/22

Project title	**Active dredging weeks** completed/ planned	**Planned volume removed m³**	**Actual volume removed m³**	**Planned annual project cost** [2]	**Actual project cost**
River Waveney Beccles to Geldeston (June-Sept)	/17	6,000		121,260	
River Waveney Oulton Broad to Peto's Marsh (May-Aug)	/13	6,000		119,230	
River Thurne Martham to Somerton, sediment to Hickling (Sept-Jan)	/13	3,490		85,480	
River Chet Loddon to Hardley Flood bank (Nov to Feb)	/15	8,000		112,360	
Site Restoration Beccles, Oby Mill, Rockland Short Dyke, Six Mile House, Waxham Cut	-	-		19,340	
Total	**/58**	**23,490**		**457,670**	

2 project costs include staff time for all elements (pre-works ecological mitigation, site set-up, active dredging & site restoration); BA plant; & budgetary expenditure (equipment hire, survey costs, contractor costs, mitigation works, materials & consumables etc); within the reporting period.