Navigation Committee

20 October 2022
Agenda item number 10

Waterways Specification Compliance

Report by Waterways and Recreation Officer

Purpose

This report provides the Committee with information on the level of compliance with the waterway specifications defined in the Waterways Management Strategy based on the most recent analysis of hydrographic survey data available.

Broads Plan context

This report relates to the Broads Authority's aim to reduce sediment input to the Broads system and accelerate sediment removal as laid out in Strategic Action 3.1 of the Broads Plan 2017.

Contents

1. Introduction

1.1. The Waterways Management Strategy (WMS) was adopted by the Authority in 2021 with one aim being to direct the Authority's dredging operations to achieve compliance with ideal waterway specifications defined in the WMS for individual management units within the navigation area.

1.2. Assessment of compliance is based on an analysis of hydrographic survey data which allows for actual bed profiles to be compared with the desired profiles defined in the strategy. Advances in sonar hydroacoustic technology now allows 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 of non-compliant areas and the amount of sediment that would need to be removed to achieve compliance.

1.3. This method analysed in a GIS environment lets officers identify which non-compliant areas are economically dredgable. Economically dredgable sediment is defined as a non-compliant area over 300 mm above the required depth in the waterway specification. High resolution mapping also allows for sediment to be targeted more accurately while operations are in progress. The Authority now has data covering the entire system in a high-resolution format and will resurvey the navigation area on a rolling 5-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 of hydrographic surveying, 26 areas were surveyed during 2021/22, including the; River Ant - Upstream Wayford Bridge, Barton Broad to Ludham bridge, Ludham Bridge to Ant Mouth; River Wensum - New Mills to Bishops Bridge and through to Postwick; River Bure - Salhouse Broad; River Yare - Rockland Broad Channel & Dykes, Hardley Dyke, Langley Dyke; River Thurne - Thurne Dyke and Martham Boat Dyke.

1.5. Additionally, during 2021/22 the following areas were surveyed after dredging to allow assessment of the results achieved; Waxham Cut, Oulton Broad, Hickling Broad marked channel, Deep Go Dyke and Heigham Sound marked channel.

2. Waterway specification compliance summary

2.1. The sediment compliance and prioritisation table are included on the subsequent pages. This table takes the data collected (as described above) and prioritises the areas to be dredged according to the percentage of non-compliance area, the proportion of it which is economic dredge and the level of vessel usage.

River	Location	Sediment Volume	Non Compliance area %	Proportion of Economic dredge	Level of use (1-3)	Priority Score	Notes
Bure	Salhouse Broad	17,237	90.0	0.82	3	222.7	
Ant	Barton Broad to Ludham Bridge	19,548	68.0	0.83	3	169.0	
Ant	Stalham Dyke	8,718	64.3	0.68	3	131.8	
Bure	South Walsham Broad	9,450	70.3	0.62	3	130.9	
Yare	Rockland Broad (channels & dykes)	15,080	62.8	0.89	2	112.2	
Bure	Horstead to Coltishall Common	5,844	60.7	0.88	2	106.7	
Bure	Bridge Broad	2,682	77.2	0.66	2	101.4	
Ant	Sutton Dyke	12,245	65.5	0.76	2	99.9	
Yare	Rockland Broad (outside channel)	110,257	96.1	1.00	1	95.8	
Bure	Malthouse Broad	6,670	52.6	0.59	3	93.7	
Waveney	Oulton Broad	31,716	62.2	0.50	3	92.7	
Bure	Hoveton Viaduct Bridge to Salhouse	18,483	41.6	0.70	3	87.7	
Ant	Wayford Bridge to Barton Broad	10,502	50.3	0.57	3	85.5	
Bure	Acle Dyke	3,685	86.5	0.97	1	84.2	
Waveney	Geldeston Dyke	2,278	89.2	0.94	1	84.1	
Bure	Slaughter House Yard to Bure Mouth	7,290	31.3	0.82	3	77.4	
Bure	Cockshoot Dyke	418	84.4	0.90	1	75.9	

River	Location	Sediment Volume	Non Compliance area %	Proportion of Economic dredge	Level of use (1-3)	Priority Score	Notes
Waveney	Haddiscoe Cut	17,770	43.7	0.86	2	75.3	Survey out of date; Priority for resurvey
Bure	Coltishall Common to Jubys Farm	11,409	57.6	0.64	2	73.6	
Thurne	Catfield Dyke	3,785	73.7	0.96	1	70.4	
Bure	Fleet Dyke	4,015	39.7	0.57	3	67.9	Survey out of date; Priority for survey
Thurne	Heigham Sound	7,832	65.5	0.50	2	65.9	
Thurne	Hickling Broad (inside channel)	17,966	85.7	0.25	3	65.5	
Ant	Tyler's Cut	1,415	64.9	0.50	2	65.2	
Ant	Ludham Bridge to Ant Mouth	2,296	45.7	0.46	3	63.2	
Yare	Langley Dyke	1,174	39.5	0.80	2	62.8	
Bure	Mautby Marsh Mill to Slaughter House Yard	17,328	22.3	0.88	3	58.7	
Ant	Lime Kiln Dyke	1,209	49.2	0.59	2	58.0	
Thurne	Hickling outside channel	192,101	81.5	0.60	1	48.7	
Bure	Salhouse Broad to Horning Church	14,965	21.8	0.71	3	46.2	
Yare	Bishops Bridge to Postwick	20,975	25.1	0.85	2	42.8	

River	Location	Sediment Volume	Non Compliance area %	Proportion of Economic dredge	Level of use (1-3)	Priority Score	Notes
Yare	Thorpe Old River Yare	4,820	58.5	0.73	1	42.7	
Thurne	Womack Dyke	2,428	40.0	0.49	2	38.8	
Ant	Upstream of Wayford Bridge	1,498	46.3	0.40	2	37.3	
Thurne	Waxham Cut	2,056	46.1	0.81	1	37.3	
Bure	Horning Church to Thurne Mouth	9,624	19.2	0.62	3	35.7	
Thurne	Deep/Deep Go Dyke	1,342	24.6	0.67	2	33.2	
Bure	Stokesby to Herringby Hall	6,087	12.8	0.86	3	33.0	
Ant	Barton Broad (inside channel)	13,447	23.3	0.46	3	31.9	
Thurne	Thurne Dyke	374	73.1	0.21	2	30.8	
Bure	Upton Dyke	763	43.8	0.70	1	30.7	Survey out of date; Priority for resurvey
Bure	Juby's Farm to Caen Meadow	3,089	25.9	0.57	2	29.4	
Ant	Turkey Broad	7,744	43.8	0.65	1	28.4	
Ant	Barton Broad (outside channel)	12,476	35.1	0.39	2	27.6	
Bure	Caen Meadow to Hoveton Viaduct Bridge	3,129	25.7	0.53	2	27.2	
Yare	Postwick to Brundall	20,963	14.2	0.86	2	24.5	
Waveney	Beccles to Burgh St Peter	13,105	9.2	0.84	3	23.2	

River	Location	Sediment Volume	Non Compliance area %	Proportion of Economic dredge	Level of use (1-3)	Priority Score	Notes
Yare	River Yare (Trowse Eye)	1,975	28.1	0.82	1	23.1	
Bure	Ranworth Dam	325	12.4	0.55	3	20.4	
Yare	Bargate (channel and dykes)	1,733	12.2	0.81	2	19.6	
Yare	New Mills to Bishops Bridge	2,799	21.7	0.86	1	18.6	
Thurne	Somerton Boat Dyke	370	61.9	0.30	1	18.4	
Bure	Acle Bridge to Stokesby	4,903	11.7	0.78	2	18.2	
Thurne	Martham Ferry to West Somerton Drainage Mill	2,974	38.7	0.45	1	17.2	
Bure	Herringby Hall to Mautby Marsh Mill	3,321	6.6	0.84	3	16.5	
Waveney	Oulton Dyke	2,717	11.8	0.70	2	16.5	
Bure	Thurne Mouth to Acle Bridge	3,580	9.5	0.54	3	15.4	
Thurne	Meadow Dyke	1,187	40.6	0.35	1	14.4	
Waveney	Geldeston to Beccles	2,769	9.3	0.65	2	12.1	
Yare	Brundall to Cantley	15,172	7.1	0.81	2	11.4	
Waveney	St Olaves to Breydon	7,816	4.9	0.90	2	8.8	
Thurne	Thurne Mouth to Martham Ferry	1,820	5.1	0.54	3	8.3	
Chet	Loddon to Chet Mouth	2,253	19.1	0.38	1	7.3	
Thurne	Candle Dyke	169	5.2	0.55	2	5.8	

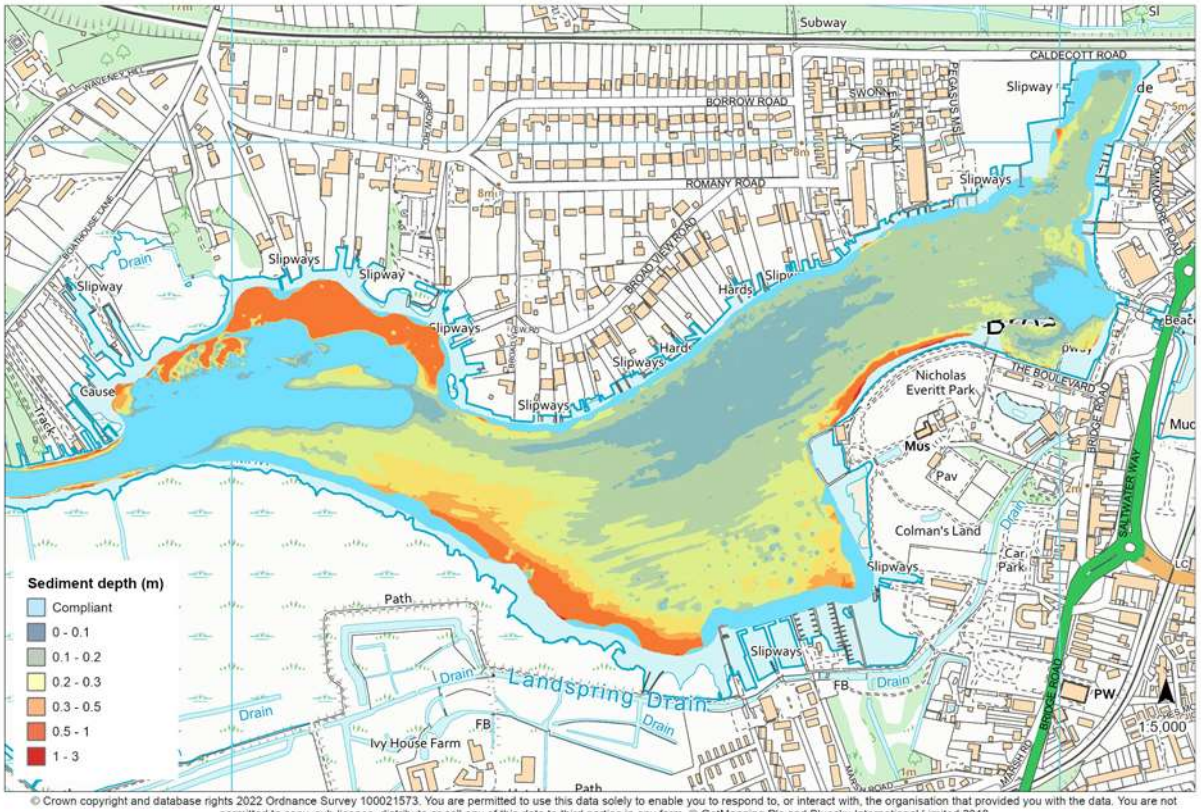
River	Location	Sediment Volume	Non Compliance area %	Proportion of Economic dredge	Level of use (1-3)	Priority Score	Notes
Thurne	Horsey Mere	8,990	36.9	0.15	1	5.4	
Yare	Cantley to Reedham	1,914	2.2	0.74	2	3.3	
Waveney	Burgh St Peter to St Olaves	2,102	2.1	0.77	2	3.2	
Waveney	Breydon Water (inside channel)	5,138	1.6	0.91	2	2.8	
Yare	Seven Mile House (Upper) to Breydon	823	1.3	0.76	2	2.0	
Yare	Reedham to Upper Seven Mile House	305	0.6	0.79	2	0.9	
Total sediment volume		**774,443**					

River	Sediment Volume m3
Ant	91,097
Bure	154,298
Chet	2,253
Thurne	243,395
Waveney	85,410
Yare/Wensum	197,990
Total volume	**774,443**

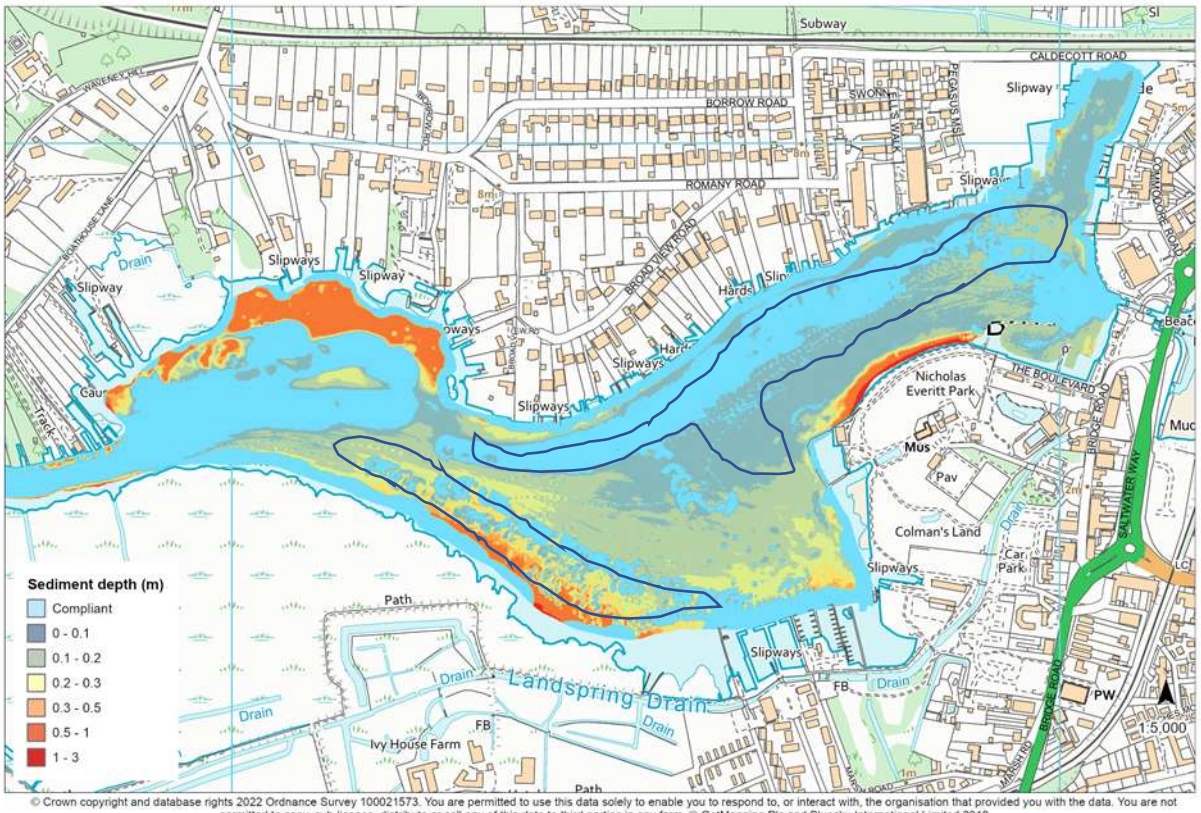
2.2. Oulton Broad provides a good case study of the impact of dredging on the compliance data. In 2021, this process identified Oulton Broad as the highest priority for dredging with a priority score of 175. 19% of its reportable area was compliant and following the subsequent dredging it is now 38% compliant. This difference is well illustrated in the two maps below which are drawn up from the hydrographic survey data.

2.3. The first map below shows the sediment depths in Oulton Broad in 2021, prior to dredging. The following map showed the surveyed sediment depths in 2022 after Broads Authority dredging. The dark blue line indicates where the most significant changes have been made along the central channel.

Oulton Broad - Sediment Depth 2021



Oulton Broad - Sediment Depth 2022



3. Financial implications

3.1. By ranking each of the areas of dredging (as per the table above), we are able to update and modify the 5-year dredging plan to ensure that we are continually deploying our limited resources in a targeted way in order to keep the navigation accessible for all river users.

4. Risk implications

4.1. As part of the Authority's compliance with the Port Marine Safety Code through the Safety Management System, it is vital the specified waterways depths are maintained to reduce risks to river users. This process of dredging, data collection and checking compliance enables the Authority to do this.

Author: Andrew Walters

Date of report: 06 October 2022

Broads Plan strategic actions: 3.1