REPORT FOR LOUGH NEAGH BLACKWATER DREDGING STEERING GROUP 1/SEP/2022 G DARBY LNP

BACKGROUND

On 27 June 2022 a group of senior staff from both Armagh Banbridge and Craigavon Borough Council and Mid Ulster Borough Council met at Oxford Island Craigavon to discuss the issues of dredging the mouth of the river Blackwater as a first stage one pilot action to develop the larger navigable part of the Blackwater River. This proposal will build on previous discussions between the Lough Neagh Partnership, the Department for Infrastructure and local stakeholders and local MLAs/MPs. After a number of presentations and discussions a way forward was agreed to commence in September 2022 after the summer recess. It was agreed that the tenders would be lead and coordinated by Mid Ulster District Council technical engineering section in September. This would be paid for upfront by Mid Ulster Council and then costs of two studies split between two Councils. The steering group would meet again at the end of Oct 2022.

WAY FORWARD

To progress this proposal MUDC will have to complete the following main actions (Please note, all these actions should be developed and implemented in consultation with NIEA and relevant stakeholders): It is important to note that Mark Levy from MUDC has already meet with Waterways Ireland engineering staff to get specifications for the bathometry and chemical sampling tenders. Appendix One and two are LNP thoughts of tender specification requirements that may be of some help and assistance with cost estimates and recommended consultants

a. Bathymetric survey of the project area to determine substrate depth and to quantify the volume of material to be removed (dredged) Sep 2022. See appendix One

b. Based upon the above survey, prepare a sediment sampling programme and collect surface and at depth samples. These are required to quantify potential contaminant levels and to inform how the dredged material will be disposed. Timescale: Sep 2022. See appendix Two

c. An extended Phase 1 habitat survey which is a core element of an ecological appraisal to highlight any potential ecological constraints to the proposal, as well as identifying opportunities for ecological enhancement. This is especially important in respect of the designation features of the River and Lough. Timescale: Oct 2022

d. These three surveys in combination will provide sufficient data to inform the next set of report requirements. These specifications can be discussed at the Oct steering group meeting: (Timescale Nov – Dec 2022)
    a. Habitat Regulation/ Appropriate Assessment Report
    b. Waste management and disposal methodology
    c. Implementation Environmental Management Plan
    d. Habitat/Species impact mitigation measures
    e. Cost
e. Make formal applications to NIEA, Planners and other relevant permission bodies: Timescale: Jan 2023

OTHER AREAS

A separate Blackwater Development Study and Plan and Lough Neagh Strategic Review and Plan has been developed by MUDC and LNP. The steering group for the dredging of the Blackwater should be extended to include senior representatives from the three main relevant Departments and act as a formal Management and Coordination Body for the Lough and navigable rivers. It was suggested that the new group are to meet twice a year and the use the above two plans as working tools. This builds on the formal passing of Lough Neagh and Navigable River motions by all three of the main Councils and the recent greater interest shown by Minister O Dowd and DFI staff in Lough Neagh.

APPENDIX ONE: BATHOMTRY SURVEY

Tender Purpose

Mid Ulster District Council wish to procure the services of a competent contractor to undertake a single beam bathymetric survey on a section of the River Blackwater, N. Ireland in advance of planned dredging works to maintain and deepen a proposed navigation channel. (MUDC to provide map area at mouth of river and at Canal cut and see estimate of sand accumulation at both sites and estimate which is the best preferred site with least amount of material to be dredged, the best value and better navigation requirements.)

Suggested company :

Six-West Ltd

3c Heron Wharf

Heron Wharf Road

Belfast

Tel: 028 90731917

Email: info@six-west.com

Web: https://six-west.com/service/survey/hydrographic-survey/

Estimated Cost £2000 - £4000

APPENDIX TWO: SEDIMENT SAMPLING SURVEY REQUIREMENTS

Tender Purpose

Mid Ulster District Council are seeking tender submissions to undertake a geo-environmental Sediment and Water Sampling survey on a section of the River Blackwater, N. Ireland (Map indicating area at river mouth and Canal Cut to be provided to NIEA) in advance of planned dredging works to maintain and deepen the existing channel where it enters Lough Neagh. The Sediment and Water sampling exercise will involve both the onsite collection and off site chemical analysis of sediment and water samples for potential contaminants. The sediment samples will also undergo Particle Size Analysis (PSA).

Supplier Requirements

1. Prepare a sediment sampling plan **which must be endorsed by the Northern Ireland Environment Agency (NIEA).** The sample plan will set out the sample locations as well as the specific biological, chemical and physical analysis requirements. At a minimum, sediment samples should be analysed for substances that are considered of most concern for the freshwater environment, those which have combined properties of persistence, toxicity and liability to bio accumulate including organotin compounds, heavy metals, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs) and oils.

2. Subject to the recommendations of the sediment sampling plan, complete a combination of ‘sediment surface’ and ‘at depth’ sampling within the dredge envelope. The ‘at depth’ samples will be determined from the results of a bathometric survey.

3. All samples, to be analysed by a Marine Management Organisation validated laboratory and compared against the Action 1 and Action 2 guidance values for sediment quality in the Northern Ireland Guidance: Dredging, Disposal and Aggregate Dredging, under Part 4 of the Marine and Coastal Access Act 2009 (NIEA, 2012).

4. Production of a report and associated maps outlining the analysis findings measured against existing waste management and disposal parameters and protocols. The validated laboratory must also provide a chain of custody evidence in support of the analysis results to prove samples have been handled and stored correctly.

Note on sediment quality standards

The input of heavy and trace metals may cause contamination in aquatic sediments. Assessing the environmental importance of metal concentrations can be done by comparing collected sediment quality data to known background concentrations and sediment quality standards, however, there are currently no freshwater sediment quality standards for NI or UK.

Information and standards exist for marine systems and dredged material disposal. A set of quality standards, comparable to the marine ones, are those provided by the Canadian Council of Ministers of the Environment (CCME). These are commonly used, globally, on freshwater projects due to the absence of other aquatic sediment quality thresholds. The CCME provide freshwater sediment quality guidelines for the following metals; arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), mercury (Hg), lead (Pb) and zinc (Zn). These metals are given sediment quality guidelines due to their known ability at high enough concentrations to cause toxic effects to aquatic species. The CCME defines two assessment values:

1. Interim Sediment Quality Guidelines (ISQG) / Threshold effect level (TEL): This represents the concentration below which adverse biological effects are rarely expected to occur.
2. Probable effect level (PEL): The level above which adverse effects are expected to occur frequently.

Where there are no suitable freshwater sediment quality standards, marine standards will be utilised such as the Action Levels provided by CEFAS. Definitions for CEFAS action levels are provided below:

1. AL-1: contaminant concentrations where concerns over the quantity and nature of the material and characteristics of the receiving area need to be taken into account; and
2. AL-2: contaminant concentrations which will generally preclude disposal at sea.

For this proposal, it is recommended that samples are compared against the Action Level 1 and Action Level 2 guidance values for sediment quality in the Northern Ireland Guidance: Dredging, Disposal and Aggregate Dredging, under Part 4 of the Marine and Coastal Access Act 2009 (NIEA, 2012) (see https://www.daera-ni.gov.uk/publications/northern-ireland-guidance-dredging-disposal-and-aggregate-dredging-under-part-4-marine-and-coastal)

Note on sediment sampling methodology.

- A combination of '*sediment surface*' and '*at depth*' sampling will take place. The '*at depth*' samples will be determined from the results of a bathometric survey but as an indication at this stage, they should be taken at depths of 1m and 3m below the substrate surface for all '*at depth'* sample locations.
- A sampling pattern will comprise 15 locations along the length of the canal and / or river mouth. The locations selected for analysis will determine the

presence of contaminants in the deposits. The selection criteria should be designed to maintain a representative coverage across the study area whilst also allowing for the distribution of contaminants within the deposit down to the likely dredging depth (dependent on the findings of the bathymetry survey as referenced above).

- Sediment samples will be analysed for substances that are considered of most concern for the freshwater environment, those which have combined properties of persistence, toxicity and liability to bioaccumulate. Samples should therefore be analysed for a range of determinants (organic matter content, metals, nutrients, polychlorinated biphenyls - PCBs, pesticides, polycyclic aromatic hydrocarbons - PAHs).

Suggested Company

RPS Consultancy

Estimated Cost

£5000 - £6000

Comhairle Ceantair
Lár Uladh
Mid Ulster
District Council

Mid Ulster District Council

River Blackwater

Summary Update

27th June 2022

Contents

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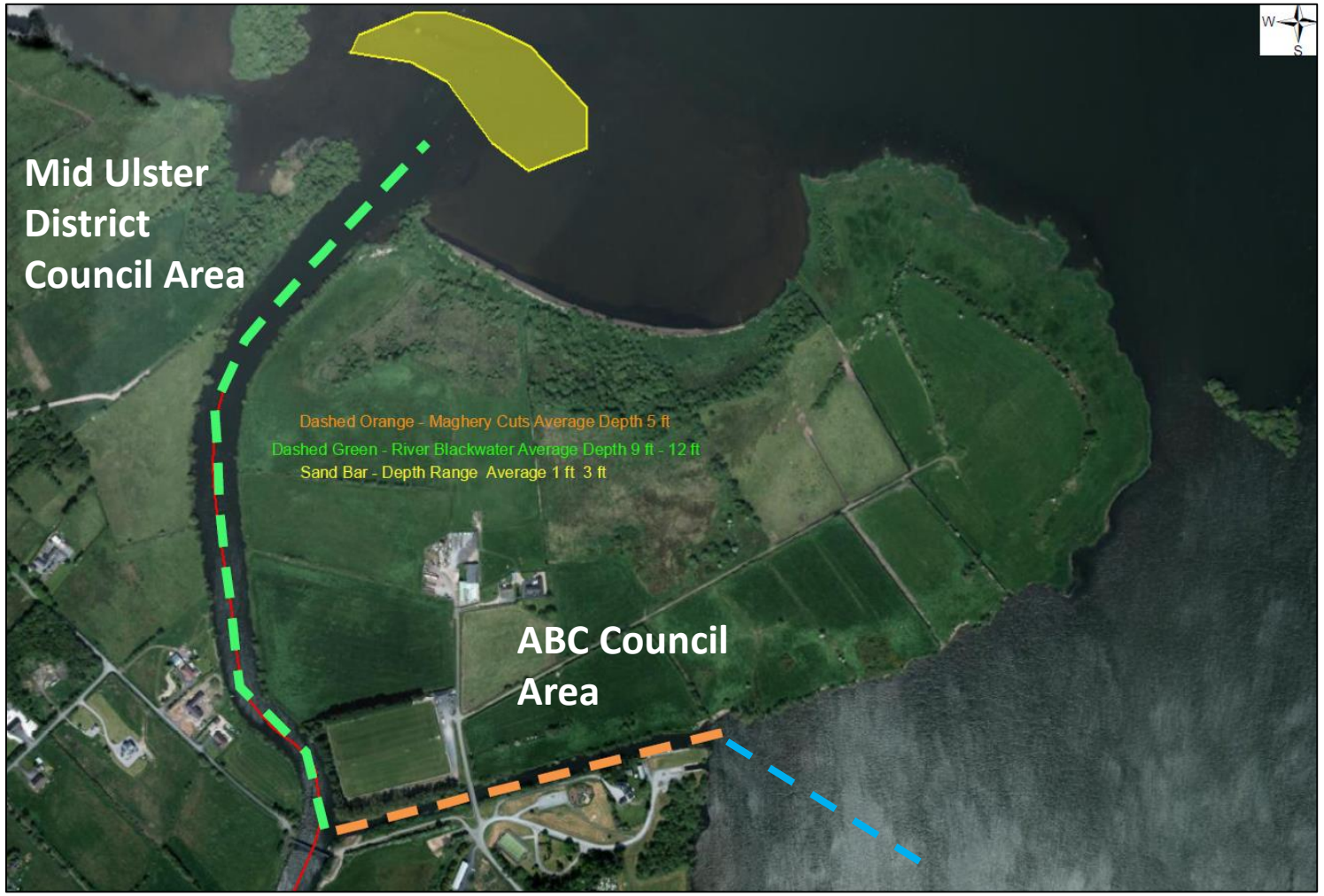
Overview Map

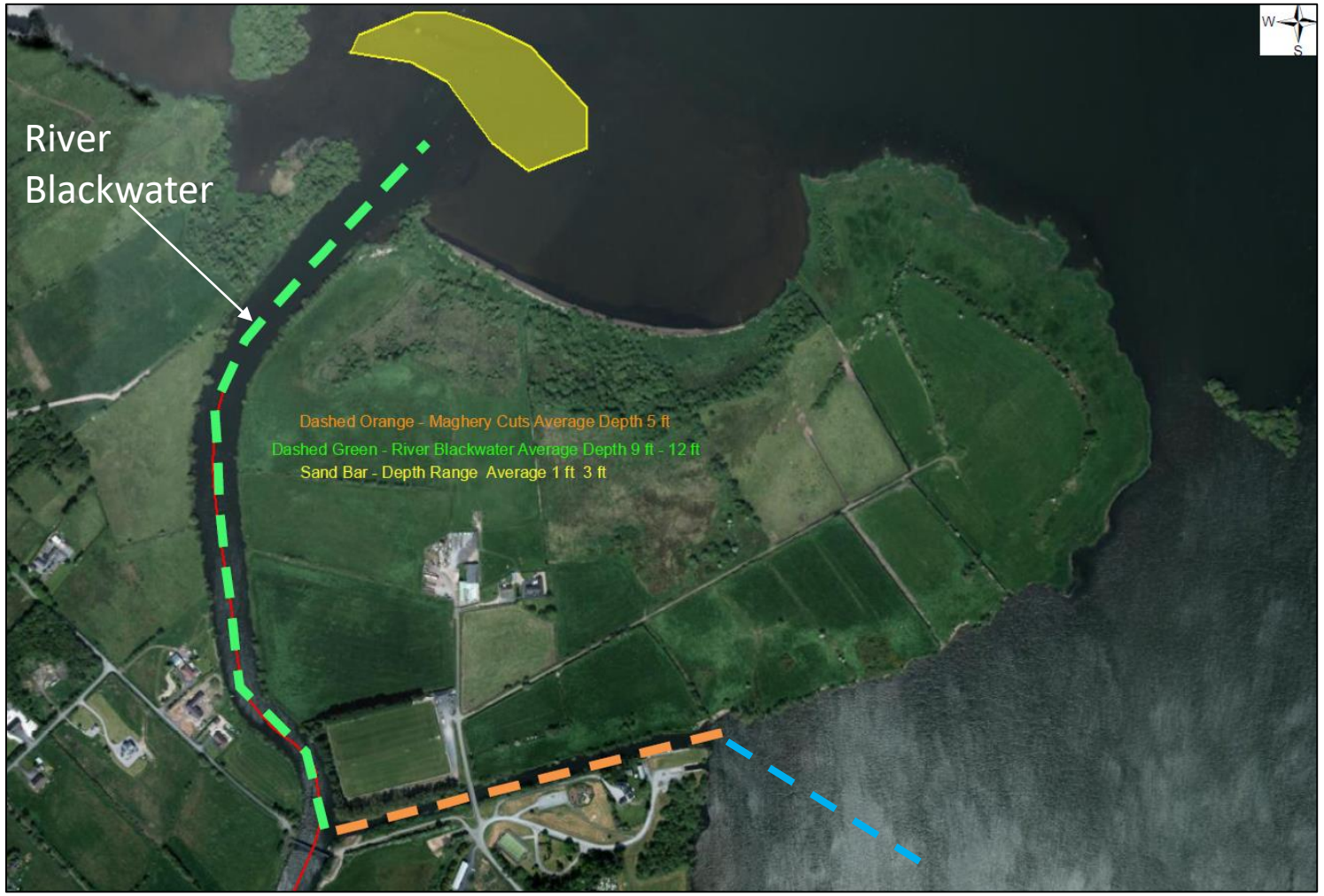
Three areas have been reviewed;

- The River Blackwater
- The sandbank located In Lough Neagh
- The Maghery Canal and canal entrance into Lough Neagh



River Blackwater Review

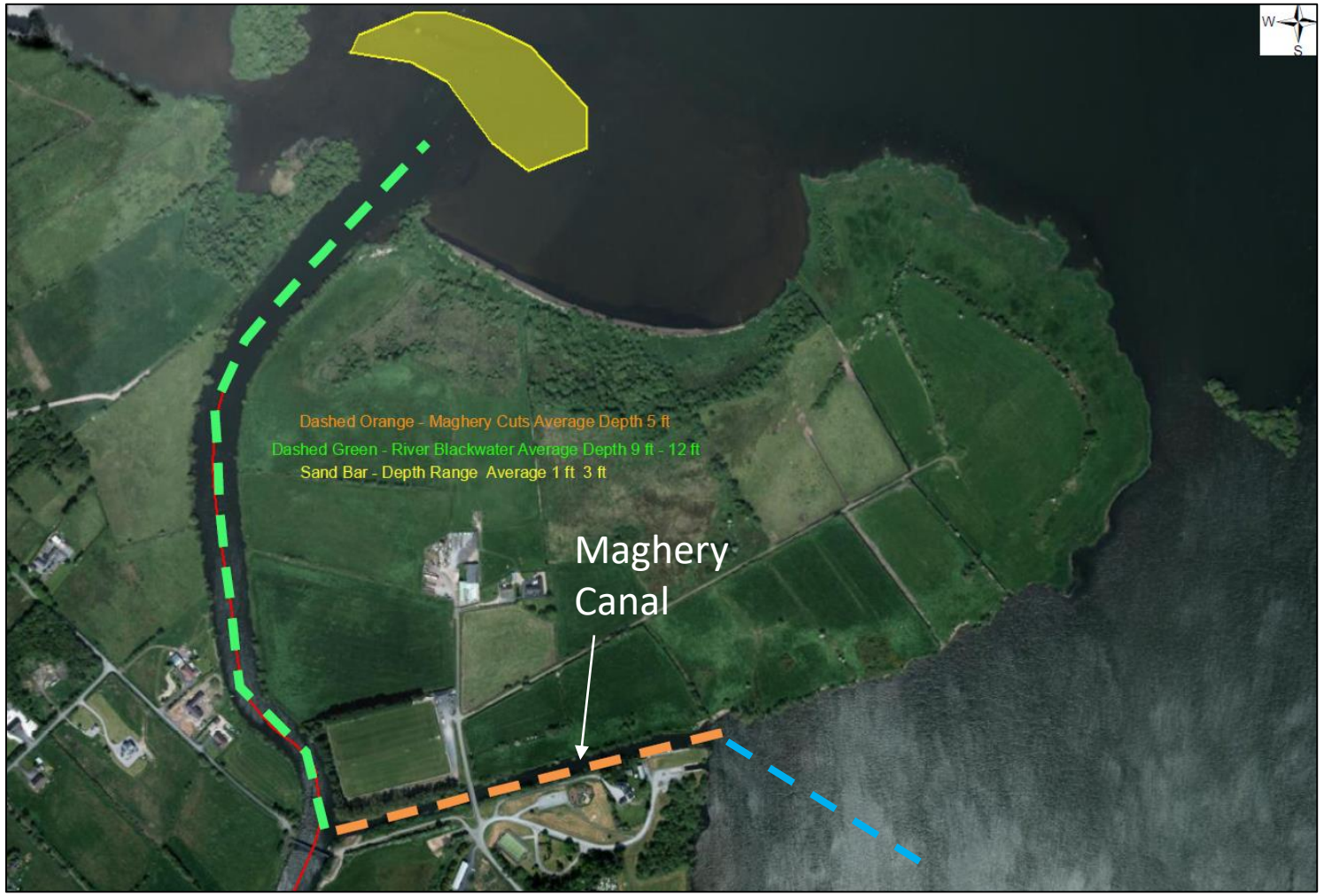
- Current navigation depth is 9-12ft (2.7m-3.6m)
- From advice from various specialists safe navigation is recommended at least 1.5m.
- Therefore there doesnt appear to be any issue along this section of the river.
- However, it would be important to complete a bathometric survey to confirm navigation depths and ensure it is consistent across the width and length of the river.
- Based on current info there would be no dredgeing works required.



*Map and survey info provided by DFI Rivers dated May 2021

Maghery Canal Review

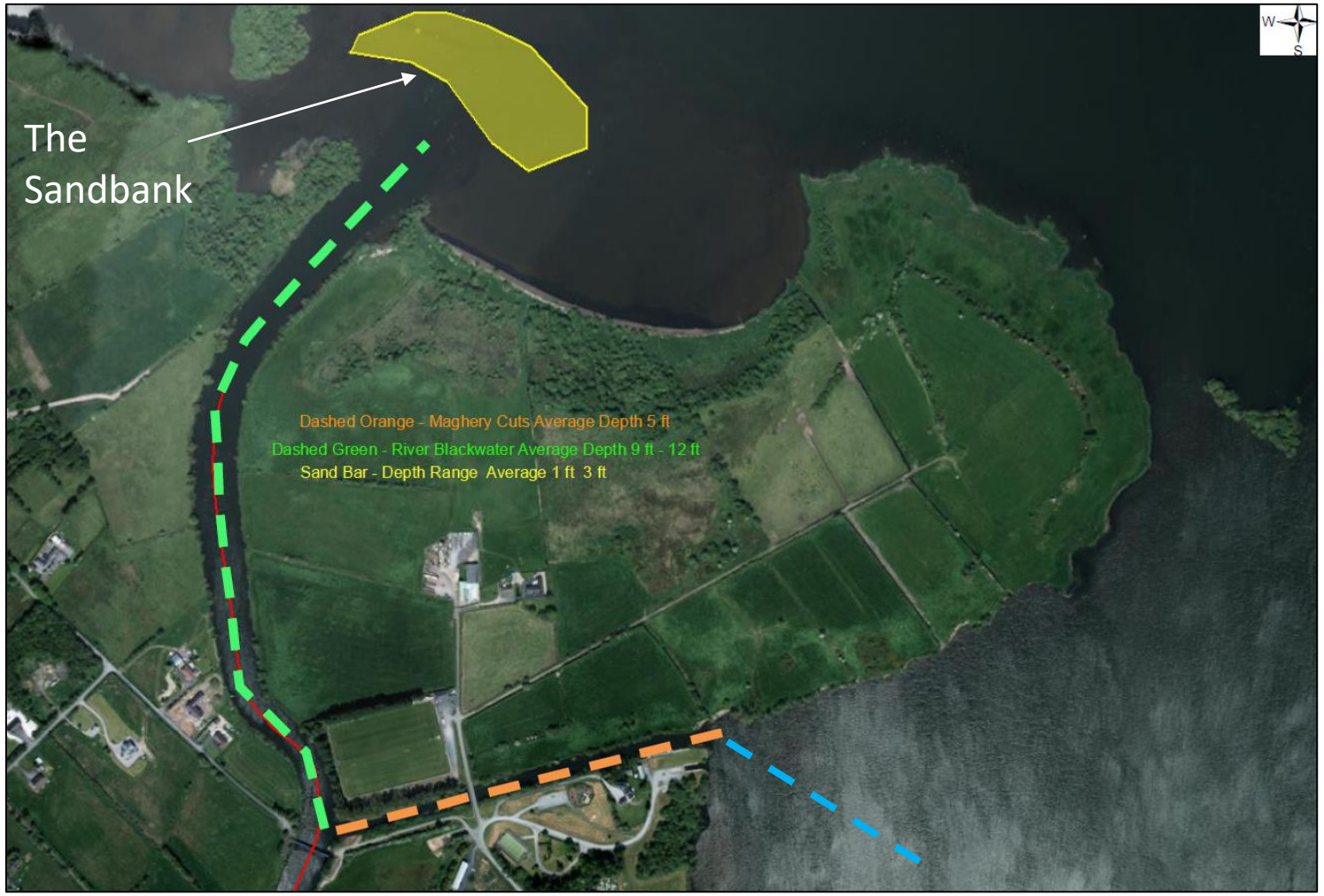
- Current navigation depth is 5ft (1.524m) along the canal.
- There is little freeboard in this section and it would be prudent to survey this but for consideration of costs 0.5m has been allowed for dredging.
- The section where the canal enters Lough Neagh has little navigation depth. DFI rivers hadn't completed investigation here but sand banks are evident in this section during navigation.
- Estimated dredging costs - £165k (3718m3) + dredging of the entrance channel (blue dashed line) estimate £300k
- A full bathometric survey will need completed to confirm the extent of works.



*Map and survey info provided by DFI Rivers dated May 2021

Sandbank Review

- Current navigation depth is 1-3ft (0.3m-0.9m)
- The sandbank is approx. 25,000m2
- From advice from various specialists safe navigation is recommended at least 1.5m.
- There would be two options;
  - Remove the entire sand bank Est cost of £3.6m (See table at end)
  - Cut a 20m wide navigation channel through the sand bank. Est cost £280k
- An important note to consider unless there is a significant traffic volume of large boats through the channel then it will continue to silt up and the dredging process will need repeated every 5-7 years.



*Map and survey info provided by DFI Rivers dated May 2021

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Summary of Est Costs

- River Blackwater - £0.00
- Maghery Canal + entrance - £470k
- Sand bank – 20m navigation Channel - £280k
- Surveys - £38k + £20k for any others

- **Total - £808k + ICT fee Est £80k therefore project estimate is £900k approx.**

Surveys required would be the following and could be commenced now;

- HRA – I have been advised if full 3 stages are required then it could be in the region of £30k
- Bathometric survey - £5k - £8k (This will determine the volumes of material to be dredged to give a more accurate pre cost estimate.
- WAC Testing – Waste Acceptance Criteria to determine where is can be disposed. - £2k-4k

Background Calculation of Costs

Location	Overall Length	Chainage (m)	Section Length (m)	Width (m)	Adjusted Width (m)	Area m2	Existing Depth (m)	Proposed Depth (m)	Proposed Dredging Depth (m)	Volume m3	Excavate Disposal Rate per m3	Cost
River	880m					44,432m2	3		N/A	N/A	N/A	£0
BlackWater												
Green Line												

Location	Overall Length	Chainage (m)	Section Length (m)	Width (m)	Adjusted Width (m)	Area m2	Existing Depth (m)	Proposed Depth (m)	Proposed Dredging Depth (m)	Volume m3	Excavate Disposal Rate per m3	Cost
Option 1 - Dredge entire sand bank- Yellow Area						25,324m2	0.3	1.5	1.20	30389m3	£120	£3,646,656
Option 2- Cut a 20m channel through sand bank						1,926m2	0.3	1.5	1.20	2311m3	£120	£277,344

Location	Overall Length	Chainage (m)	Section Length (m)	Width (m)	Adjusted Width (m)	Area m2	Existing Depth (m)	Proposed Depth (m)	Proposed Dredging Depth (m)	Volume m3	Excavate Disposal Rate per m3	Cost
Maghery Canal	470m	0-50	50	21	19	950	1.524	1.70	0.176	167.2	£120	£20,064
Orange Line		50-100	50	16	14	700	1.524	1.70	0.176	123.2	£120	£14,784
		100-150	50	18	16	800	1.524	1.70	0.176	140.8	£120	£16,896
		150-200	50	22	20	1000	1.524	1.70	0.176	176	£120	£21,120
		200-250	50	18	16	800	1.524	1.70	0.176	140.8	£120	£16,896
		250-300	50	18	16	800	1.524	1.70	0.176	140.8	£120	£16,896
		300-350	50	16	14	700	1.524	1.70	0.176	123.2	£120	£14,784
		350-400	50	18	16	800	1.524	1.70	0.176	140.8	£120	£16,896
		400-450	50	18	16	800	1.524	1.70	0.176	140.8	£120	£16,896
		450-470	20	25	23	460	1.524	1.70	0.176	80.96	£120	£9,715
						7,810m2				1375m3		£164,947

Location	Overall Length	Chainage (m)	Section Length (m)	Width (m)	Adjusted Width (m)	Area m2	Existing Depth (m)	Proposed Depth (m)	Proposed Dredging Depth (m)	Volume m3	Excavate Disposal Rate per m3	Cost
Maghery Canal												
Entrance point to Lough Neagh			250	20		5000	1	1.50	0.5	2500	£120	£300,000
see dashed blue line on map												

*£120/m3 rate based on similar rates for dredging carried out by Waterways Ireland. The rate is dependent on the distance to the nearest waste facility.
NOTE - Consideration and risk should also be factored in that estimates exclude removal of potential rock.

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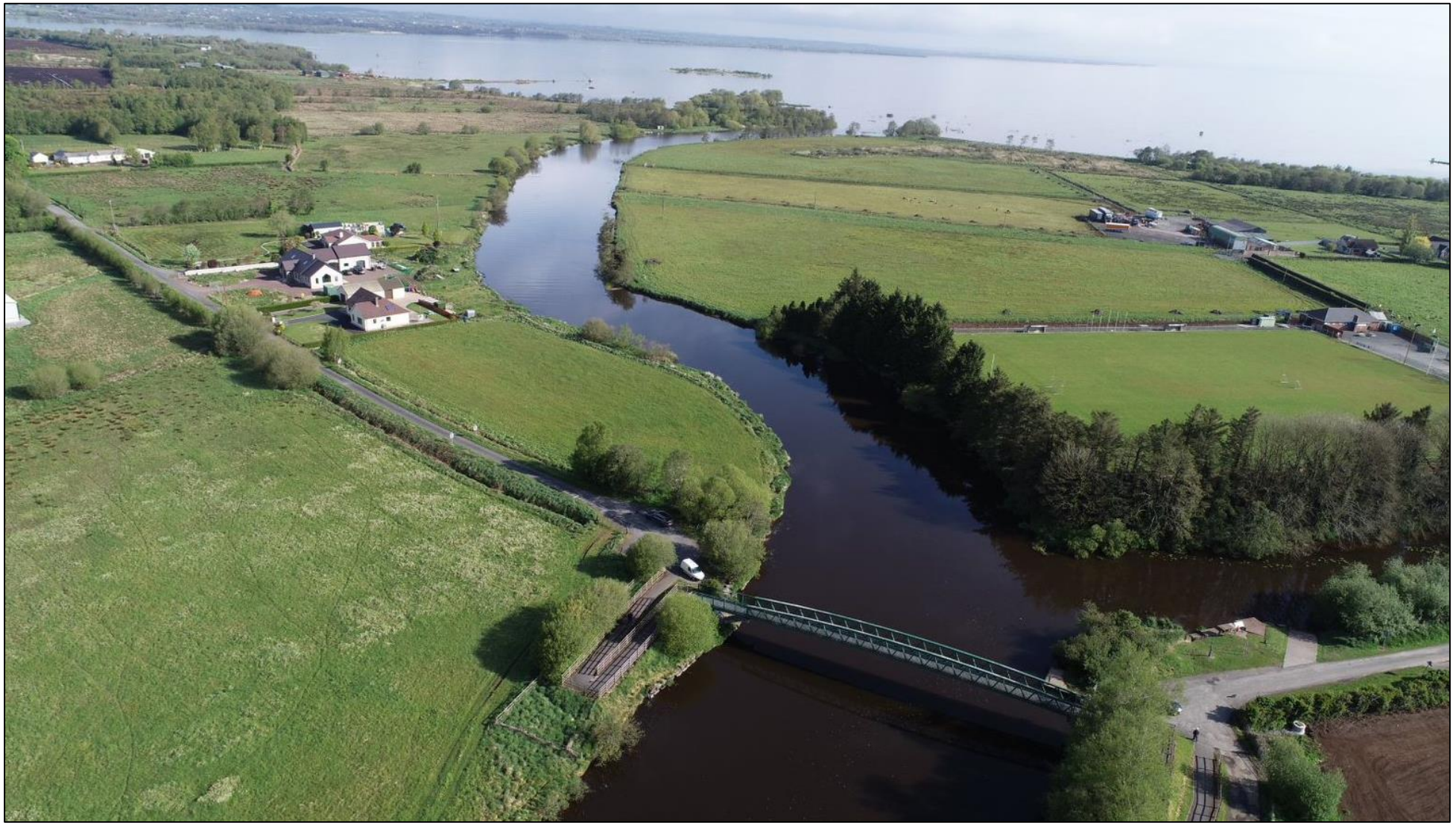
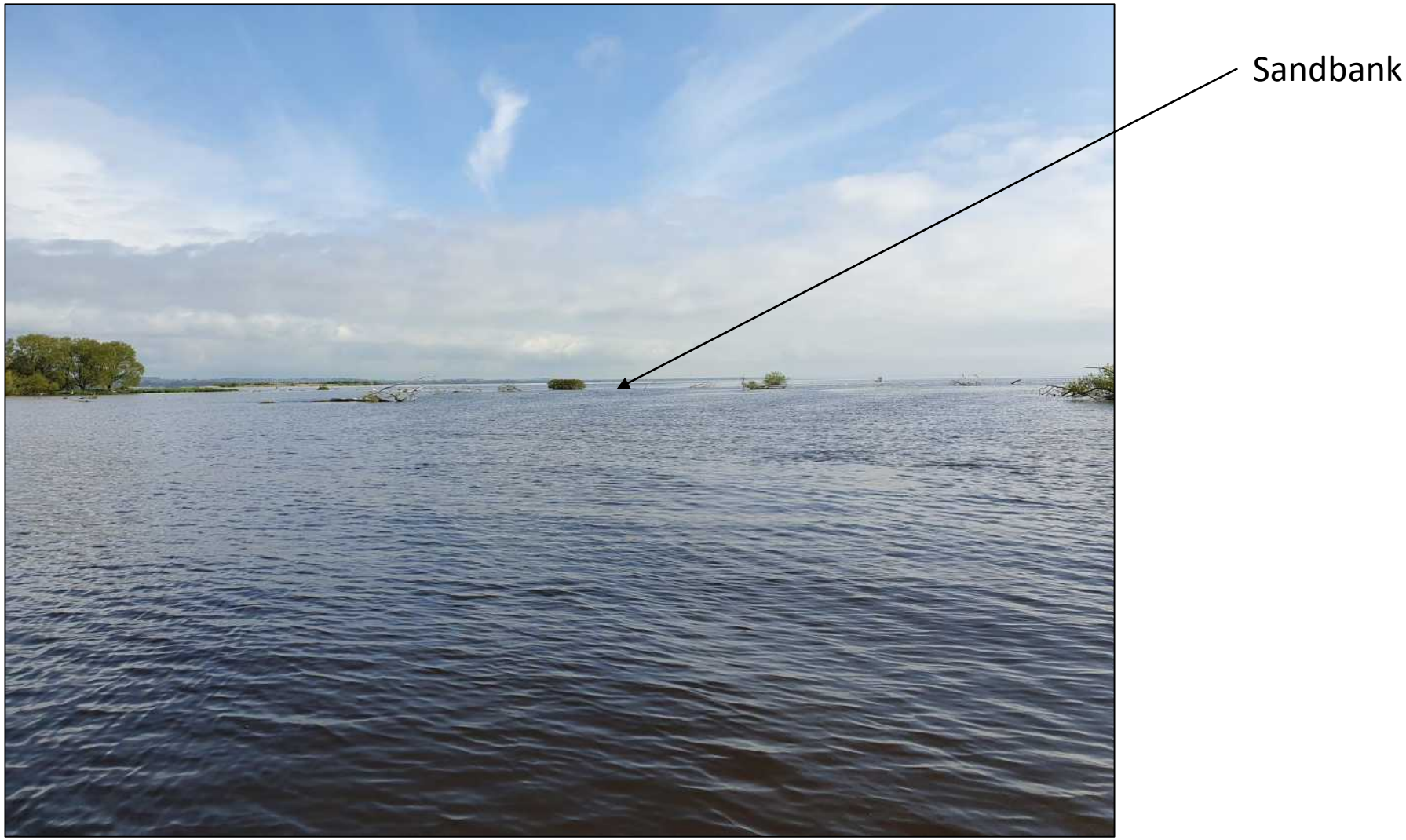
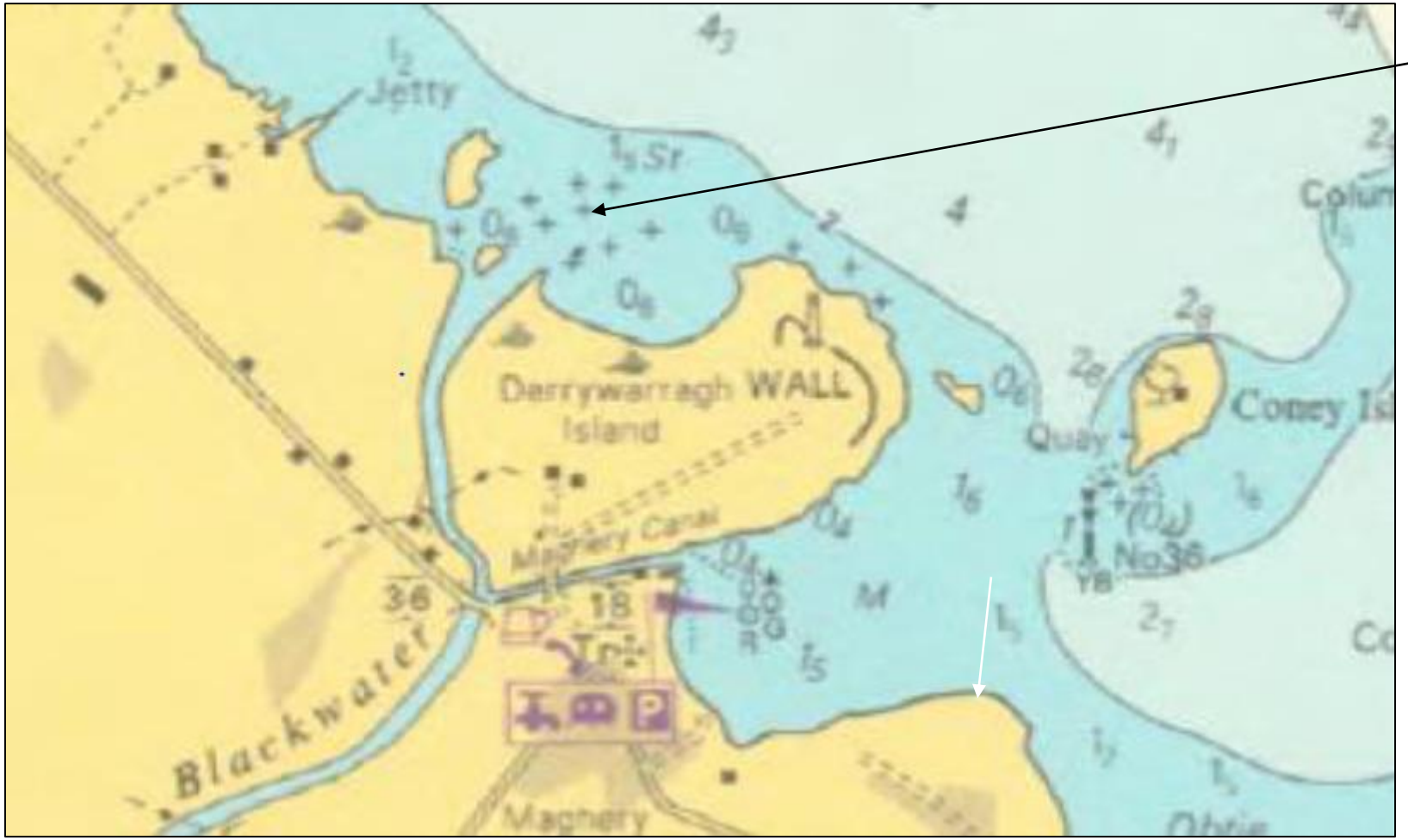
Maps and Images



Maps & Images

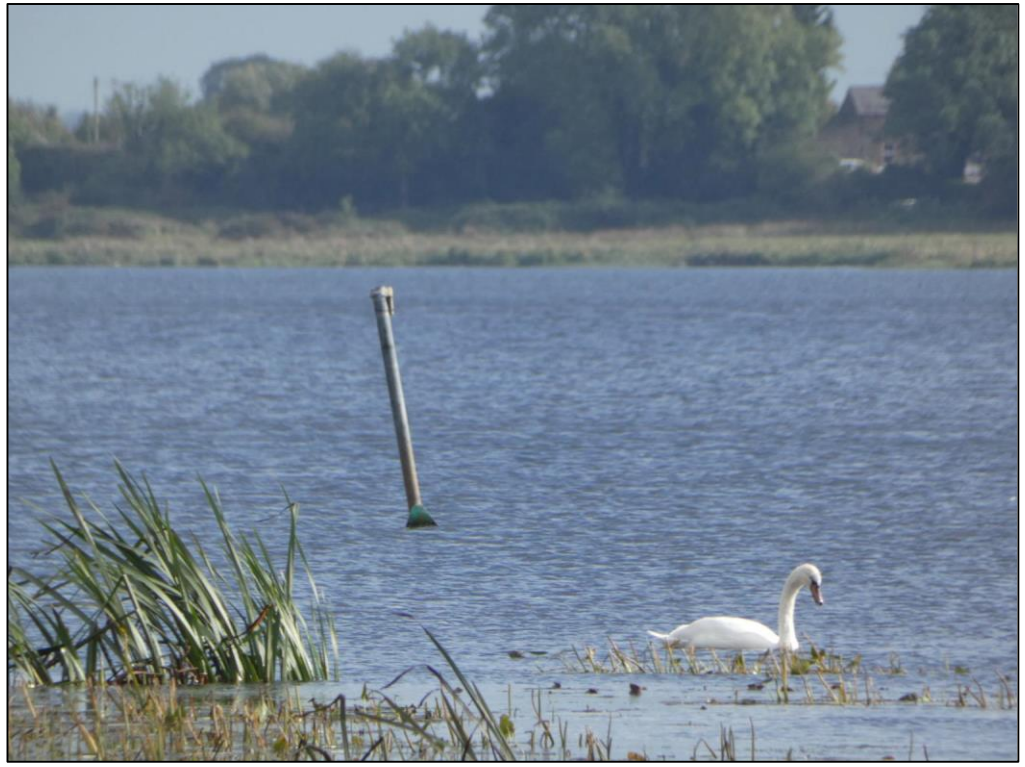


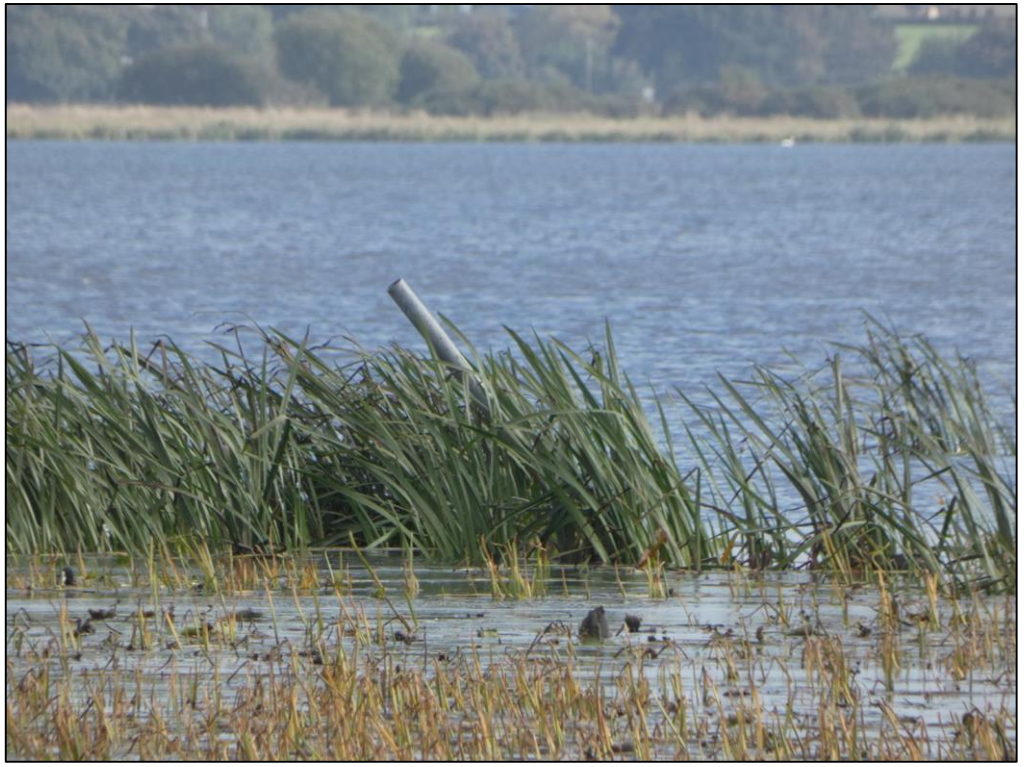
Maps & Images



Rock hazards

Maps & Images





Currently limited/poor navigation guidance

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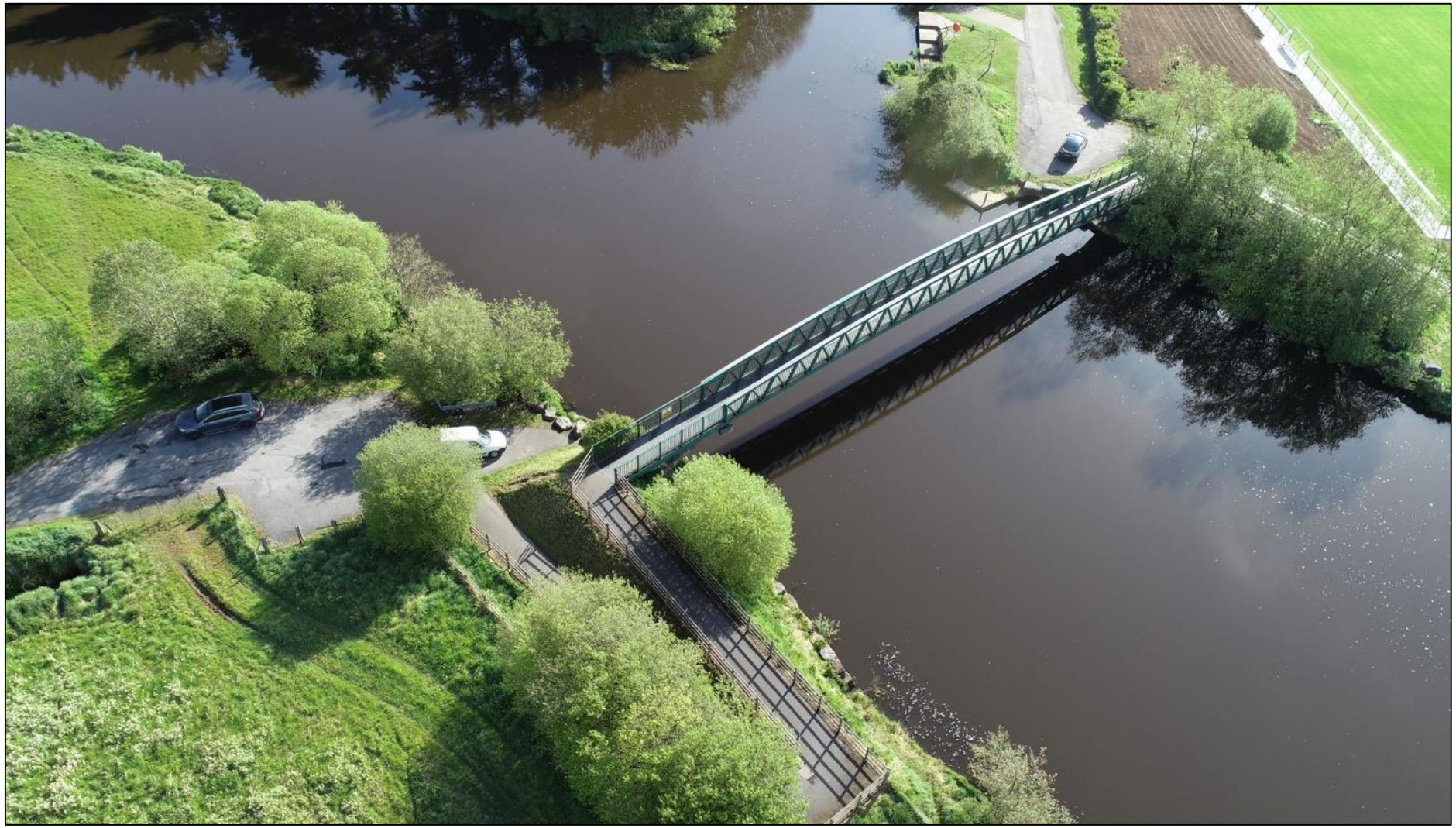
Maps & Images



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Maps & Images