



10th October 2025

File Note: River Condition Assessment

Site address: Val Wyatt, Willow Marina, Willow Lane, Wargrave, Berkshire, RG10 8LH

Ref: River Condition Assessment

Recipients: Richard Snowball

Proposal: Construction of three fixed pontoons supported by sheet piling.

Introduction

Arbtech Consulting Ltd was commissioned by Val Wyatt, Willow Marina to conduct a River Condition Assessment (RCA) survey along the watercourses that lie within 10m of the site boundary. The aim of the RCA was to ascertain the pre-development condition score of the watercourse and estimate the post-development condition scores using proposed site plans (included at **Appendix 1**) to inform a Biodiversity Net Gain (BNG) metric for the site, using Modular River Physical (MoRPh) surveys alongside a desk-based assessment. This file note contains the details of the RCA as produced by Cartographer and compliments the Biodiversity Net Gain Report (Arbtech, 2025).

Methodology

The methodology utilised for the RCA was: *A Guide To Assessing River Condition: Part of the Rivers and Streams Component of the BioDiversity Net Gain Metric January 2024 version* as presented within the Cartographer online tools to calculate River Condition Assessment - including the MoRPh Pro surveys. The site survey comprises blocks of five contiguous modules on a river, while the MoRPh River Type Pro survey gathers desk study information in order to help produce the maps on river condition and type, both of which produce the MoRPh Map, the MoRPh5 Map, the River Condition Map and the River Type Map.

The aim of the survey is to collect data relating to sediment, morphological, vegetative and aquatic features for each module from the bank top (10m from the top of each bank in terrestrial habitats), the bank face (between the bank face and the water level, including the marginal zone) and the channel itself including the river bed and water surface features. Subreaches of MoRPh5 surveys are repeated as necessary to ensure that a minimum of 20% of the length of river located within 10m of the site boundary is surveyed.

The watercourse subject to the RCA was a 250m stretch of the River Thames which runs adjacent to the western site boundary. For the purposes of this report, the watercourse is referred to as "River Thames". The extent of the survey is shown on the plan at **Appendix 2**.

The average width of the River Thames (in the surveyed area) is 106m (a large/navigable river) and as such, the length between each module survey was assigned as 50m. One subreach consist of a total of 5 MoRPh modules, which in this case equated to an overall length of 250m. The length of the River Thames that lies within 10m of the site boundary is approximately 128m. As such, the extent of the subreach equates to ~51% of the length of the watercourse within 10m, in excess of the minimum 20% requirement.

The reach of the watercourse is defined as the section of the river between two notable changes in flow. The upstream location of River Thames (SU 77643 78668) chosen is where a large developed island is located in the middle of the channel with what appears to be weirs and bridges narrowing the channel , while the downstream location (SU 77387 81674) is situated where the River Thames meets another apparent weir adjacent to a developed island.

As part of the assessment the watercourse is assessed for 'overdeepening', using the following formula:

$$\text{River shape} = (\text{Average MoRPh width}) / (\text{Average (water depth+lower bank height)})$$

The guidance states:

"If River shape has a value of < 2 the river is highly likely to be overdeep."

If River shape has a value of < 4 the river is likely to be overdeep, especially if the Average width is greater than 10 m.

Whatever the value of the River shape index, you should use your professional judgement to interpret the River shape value and consider whether this simple numerical estimate of overdeepening seems reasonable at your site. If the presence of an overdeep channel seems to be a reasonable judgement then the RCA for your site should be reduced by one class (e.g. from Good to Fairly Good, or from Moderate to Fairly Poor) when it is entered into the BM3.0 spreadsheet. At the same time, this reduction in the Final Condition Score also becomes an important indicator of how the river environment could be 'improved'."

Limitations

The survey was undertaken during suitable weather conditions, and water level was not considered to be abnormally high. However, due to the width of the River Thames at this location and the left bank being inaccessible, the right bank is the only bank that has been fully surveyed. From observations using binoculars, the surveyor was able to see that the left bank was vertical and also supported by sheet piling/concrete however, more vegetation was apparent on the bank to and bank face but due to the distance, it was unable to be classified accurately. Furthermore, due to the width of and the type of river, the depth has been measured from either directly next to the bank face or from a minor wooden jetty to try and measure as far into the river as possible. The turbidity of the water in all modules except module 4 did not allow for the bed material to be categorised as it was not visible.

Results

The site survey was conducted on 6th October 2025 (location shown in **Appendix 3**), by Modular River Survey Team RCA accredited ecological surveyor, Kat Aburrow BSc, in accordance with the guidance (The MoRPH Survey Technical Reference Manual, 2022) (**Appendix 4**).

The pre-development RCA has been based upon the MoRPH survey, while the post-development RCA is based upon the proposed site plan.

The results of the baseline and proposed MoRPH surveys for this section of the River Thames are shown in **Table 1** below.

Table 1. RCA outputs of Baseline and Post-development Scenario for this section of the River Thames.

Category	Baseline	Post-development
Preliminary Condition Score	-0.263	-0.032
River Shape	45.848	45.848
Average Width (m)	106.4	106.4
Positive Index Average	0.737	0.737
Negative Index Average	-1.000	0.769
River Category	Navigable river/canal	Navigable river/canal
A1: Braiding Index	N/A	N/A
A2: Sinuosity Index	1.005	1.005
A3: Anabranching Index	1.000	1.000
A4: Level of Confinement	Unconfined	Unconfined
A5: Reach Valley Gradient	0.00025	0.00025
A6: Bedrock Reach	No	No
A7: Coarsest Bed Material	N/A	N/A
A8: Average Bed Material	N/A	N/A
Calculated River Type	Navigable river/canal	Navigable river/canal
Overridden River Type	No	No
River Condition Output	Fairly Poor	Fairly Poor

Table 2. Baseline Positive and Negative Indicator Results

Group B	Score	Group C	Score	Group D	Score	Group E	Score
B1	1	C1	0	D1	0	E1	2
B2	0	C2	1	D2	0	E2	0
B3	0	C3	2	D3	1	E3	1
B4	0	C4	1	D4	1	E4	2
B5	-3	C5	0	D5	-1	E5	1
		C6	0			E6	3
		C7	0			E7	0
		C8	-4			E8	0
		C9	-3			E9	-2
		C10	0			E10	0
						E11	0
						E12	0

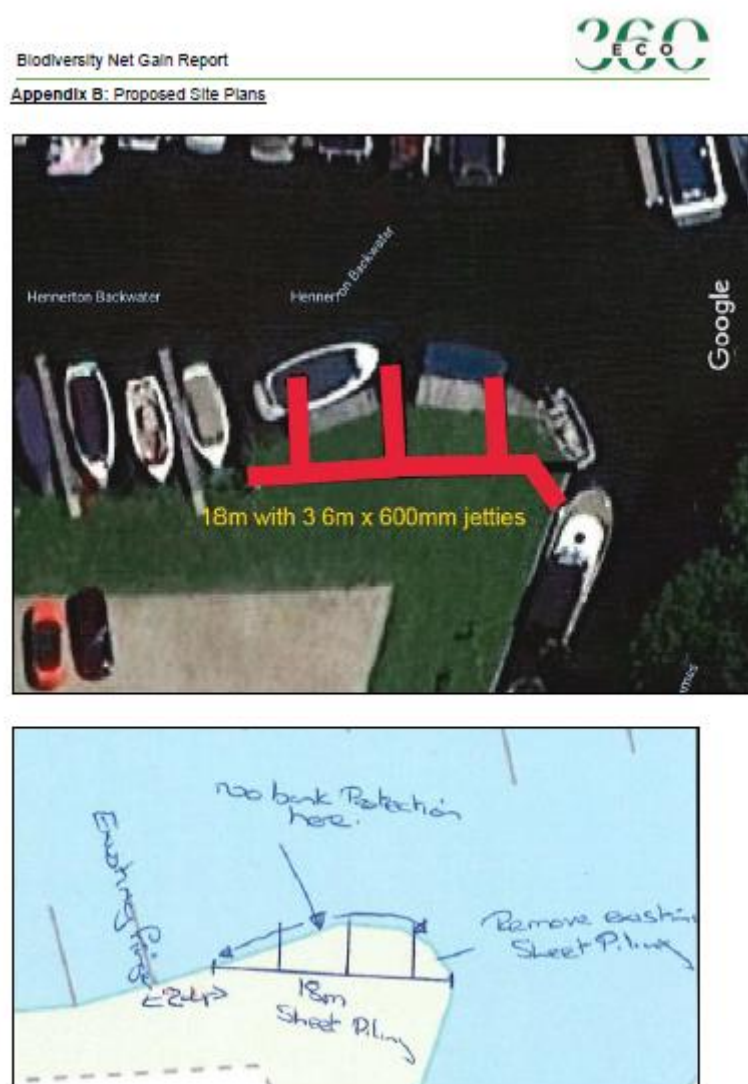
The river shape was calculated as 45.848, therefore it is considered unlikely that this watercourse is overdeep and the condition output has not been adjusted.

The development proposals will have a very minor negative impact of the river, however this does not lower the condition score significantly as the baseline conditions is already “fairly poor”. As the site is currently used as a marina for small pleasure boats with all bank faces reinforced by sheet piling and concrete to support the mooring of boats and minor jetties, it is unlikely that enhancements to the bank top, bank face, channel margin or channel bed can realistically be delivered. It is unlikely that areas of short grassland used as an amenity space for the marina will be left unmanaged to develop into a more natural habitat and inclusions of wood piles and organic matter are counter-productive to the functioning and safety of the marina.

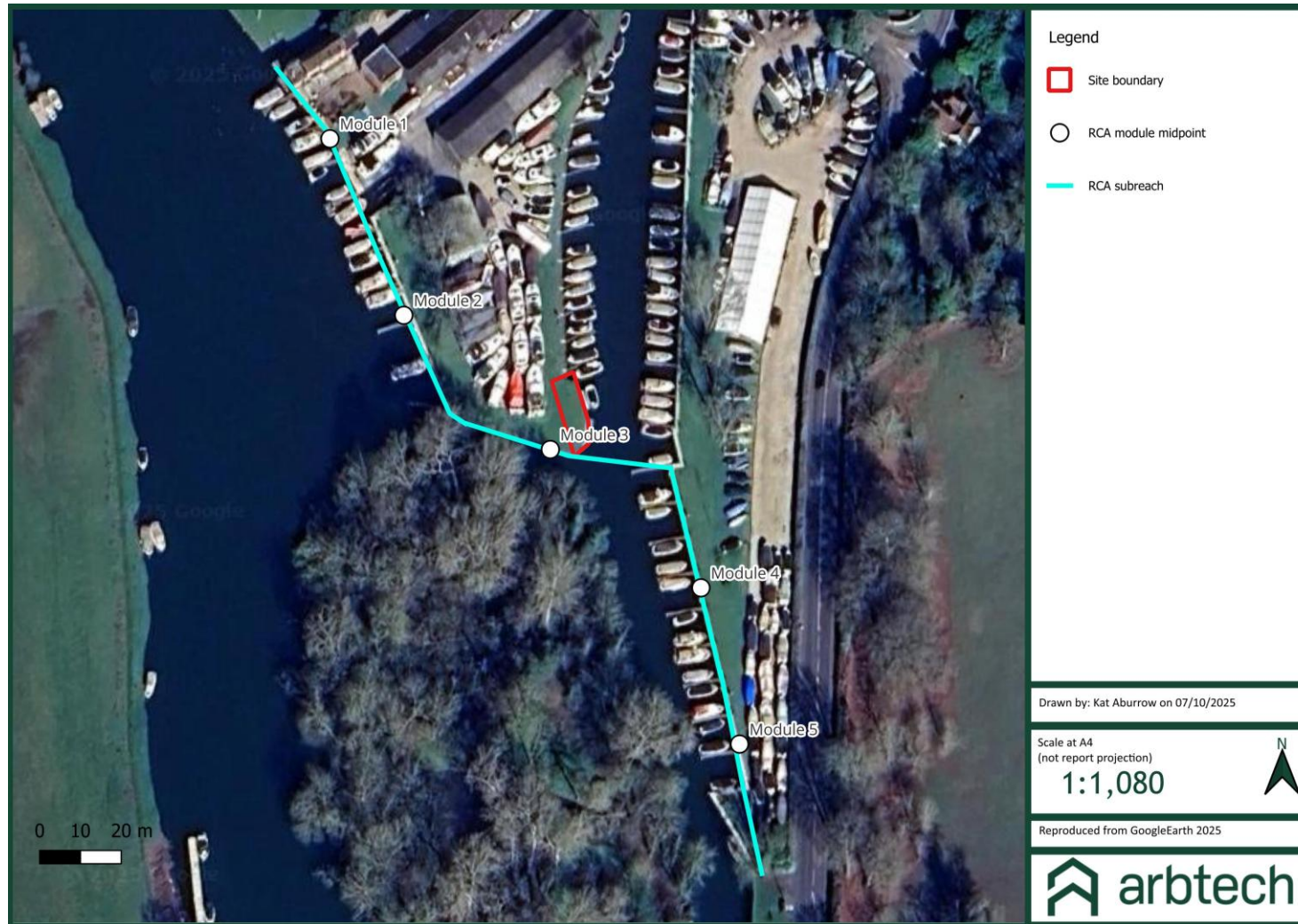
Conclusion

As shown in **Table 1**, under the current proposals, a minor negative impact in river condition is generated as a result of the proposed development and as such, the watercourse should be entered as ‘retained’ in fairly poor condition within the BNG assessment (subject to any changes in riparian or watercourse encroachment). As enhancements will not increase condition score, to achieve the 10% uplift required in watercourse units, offsite enhancements or the purchase of biodiversity credits could be explored to accompany the application.

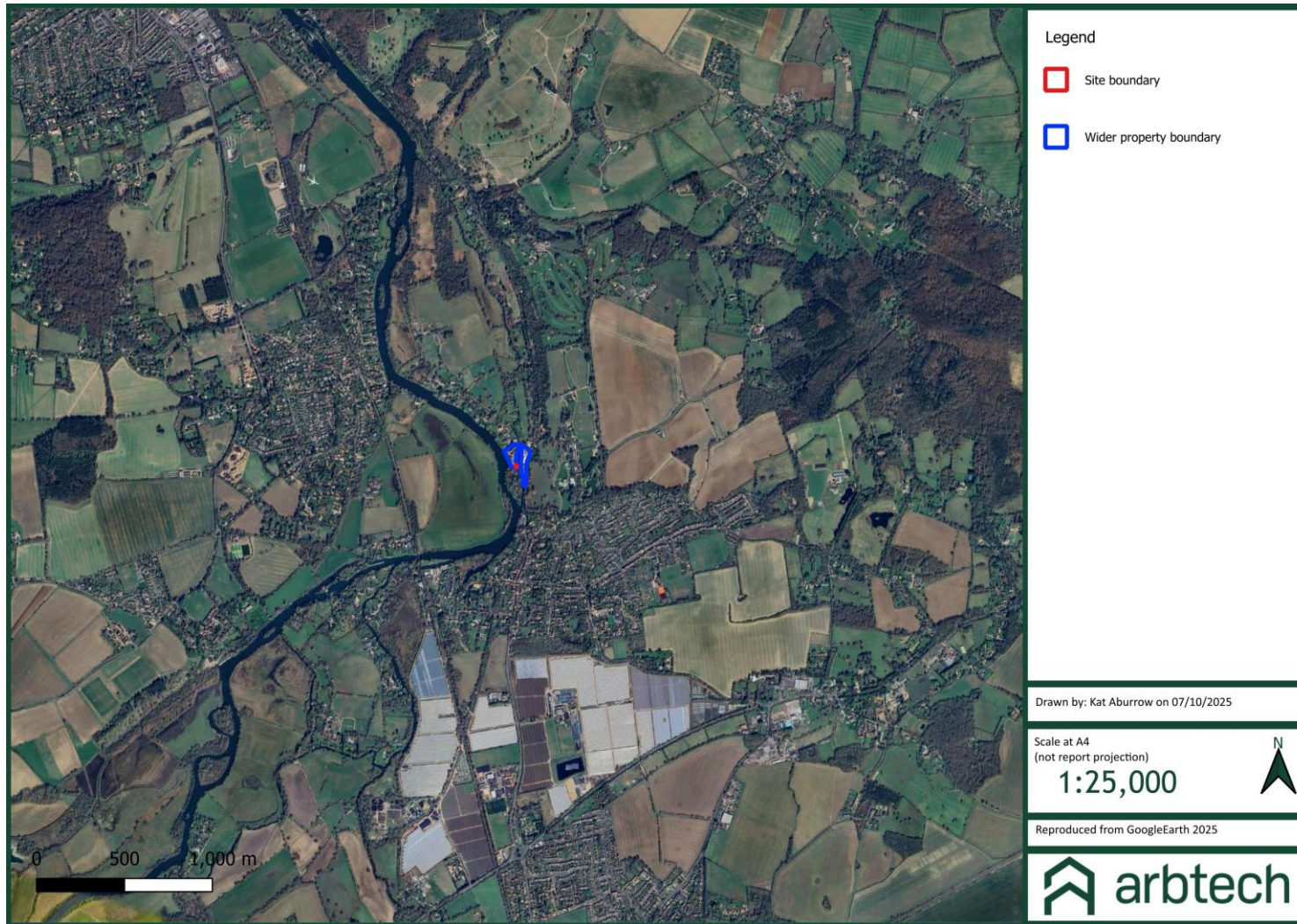
Appendix 1: Proposed Development



Appendix 2: MoRPh Survey Locations



Appendix 3: Site location



Appendix 4: RCA Certification



Modular River Survey

River Condition Assessment Certificate

Name **Kat Aburrow**

Email **kataburrow@arbtech.co.uk**

Level **Qualified Surveyor**

*Approved on 14/05/2025 by the
Cartographer RCA Team and RGS
for Continuing Professional
Development*



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