



14th November 2025

File Note: River Condition Assessment

Site address: Markfield Road, Ratby, Leicester, LE6 0LU

Ref: River Condition Assessment

Recipients: Ryan Pasch

Proposal: The construction of a small intimate glamping retreat.

Introduction

Arbtech Consulting Ltd was commissioned by Ryan Pasch to conduct a River Condition Assessment (RCA) survey along slate brook which lies within 10m of the site boundaries. The aim of the RCA was to outline ascertain the pre-development condition score of the watercourses 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.

Methodology

The methodology utilised for the RCA was: *A Guide To Assessing River Condition: Part of the Rivers and Rivers Component of the BioDiversity Net Gain Metric BM3.1 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 each watercourse located within 10m of the site boundary is surveyed.

The watercourse subject to the RCA was Slate Brook, which lies along the southern red line site boundaries. One subreach consists of a total of 5 MoRPh modules equating to 50m or 100m for each length. The average width of the Slate Brook was under 5m wide and therefore the modules are comprised of 10m lengths.

Two 50m sub-reaches were carried out on the Slate Brook as such covering 100m of the 280m (covering 35%).

The MoRPh survey locations are shown at **Appendix 2**.

The reach of the watercourse is defined as the section of the river between two notable changes in flow. The upstream location of the Slate Brook was identified to be SK 48580 07879 and the downstream located at SK 49357 07443.

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

River shape = (Average MoRPh width) / (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

No limitations associated with the RCA.

Results

Baseline

The site survey was conducted on 11th November 2025, by Modular River Survey Team RCA accredited Consultant Ecologist, Millie Holland, in accordance with the guidance (The MoRPh Survey Technical Reference Manual, 2022). The weather conditions were suitable at the time of survey.

The pre-development RCA has been based upon the MoRPH surveys, while the post-development RCA is based upon the proposed site plan included at

Appendix 1.

The results of the baseline and post-development MoRPh survey for the Slate Brook are shown in **Table 1** below.

Given that the watercourse shape for all subreaches was less than 4, it is considered likely that the watercourses are overdeep, and therefore the overall condition scores have downgraded, where applicable.

Table 1. Outputs of Baseline and Post-development River Condition Assessment for the Dane in Shaw Brook.

Subreach 1		
Category	Baseline	Post-development
Preliminary Condition Score	-0.988	-0.988
River Shape	1.282	1.282
Average Width (m)	0.83	0.83
Positive Index Average	1.526	1.526
Negative Index Average	-0.538	-0.538
River Category	Other river	Other river
A1: Braiding Index	1	1
A2: Sinuosity Index	1.033	1.033
A3: Anabranching Index	1	1
A4: Level of Confinement	Unconfined	Unconfined
A5: Reach Valley Gradient	0.02283	0.02283
A6: Bedrock Reach	FALSE	FALSE
A7: Coarsest Bed Material	Boulder	Boulder
A8: Average Bed Material	Cobble	Cobble
Calculated River Type	C - Straight/sinuuous to step-pool, coarsest B0/BE, average C0	C - Straight/sinuuous to step-pool, coarsest B0/BE, average C0
Overridden River Type	No	No
River Condition Output	Moderate – downgraded to Fairly poor as a result of being likely over deep	Moderate – downgraded to Fairly poor as a result of being likely over deep
Subreach 2		
Category	Baseline	Post-development

Preliminary Condition Score	1.457	1.510
River Shape	1.553	1.553
Average Width (m)	0.98	0.98
Positive Index Average	1.842	1.895
Negative Index Average	-0.385	-0.385
River Category	Other river	Other river
A1: Braiding Index	1	1
A2: Sinuosity Index	1.033	1.033
A3: Anabranching Index	1.000	1.000
A4: Level of Confinement	Unconfined	Unconfined
A5: Reach Valley Gradient	0.02283	0.02283
A6: Bedrock Reach	FALSE	FALSE
A7: Coarsest Bed Material	Boulder	Boulder
A8: Average Bed Material	Cobble	Cobble
Calculated River Type	C - Straight/sinuuous to step-pool, coarsest BO/BE, average CO	C - Straight/sinuuous to step-pool, coarsest BO/BE, average CO
Overridden River Type	No	No
River Condition Output	Fairly Good – downgraded to Moderate as a result of being likely over deep	Fairly Good – downgraded to Moderate as a result of being likely over deep

Table 3. Watercourse and riparian encroachment for both water courses.

Encroachment		
Riparian Encroachment	Left Bank	Right Bank
Subreach 1	No encroachment	Major – agricultural land present within 5m.
Subreach 2		
Watercourse Encroachment		
Subreach 1	No encroachment	
Subreach 2		

Post Development

The proposals will result in the following changes:

- Planting of grassland and trees along the bank top of the left bank (subreach 2)

The above changes do not result in any changes to the proposed condition of this section of watercourse, as demonstrated in **Table 1**.

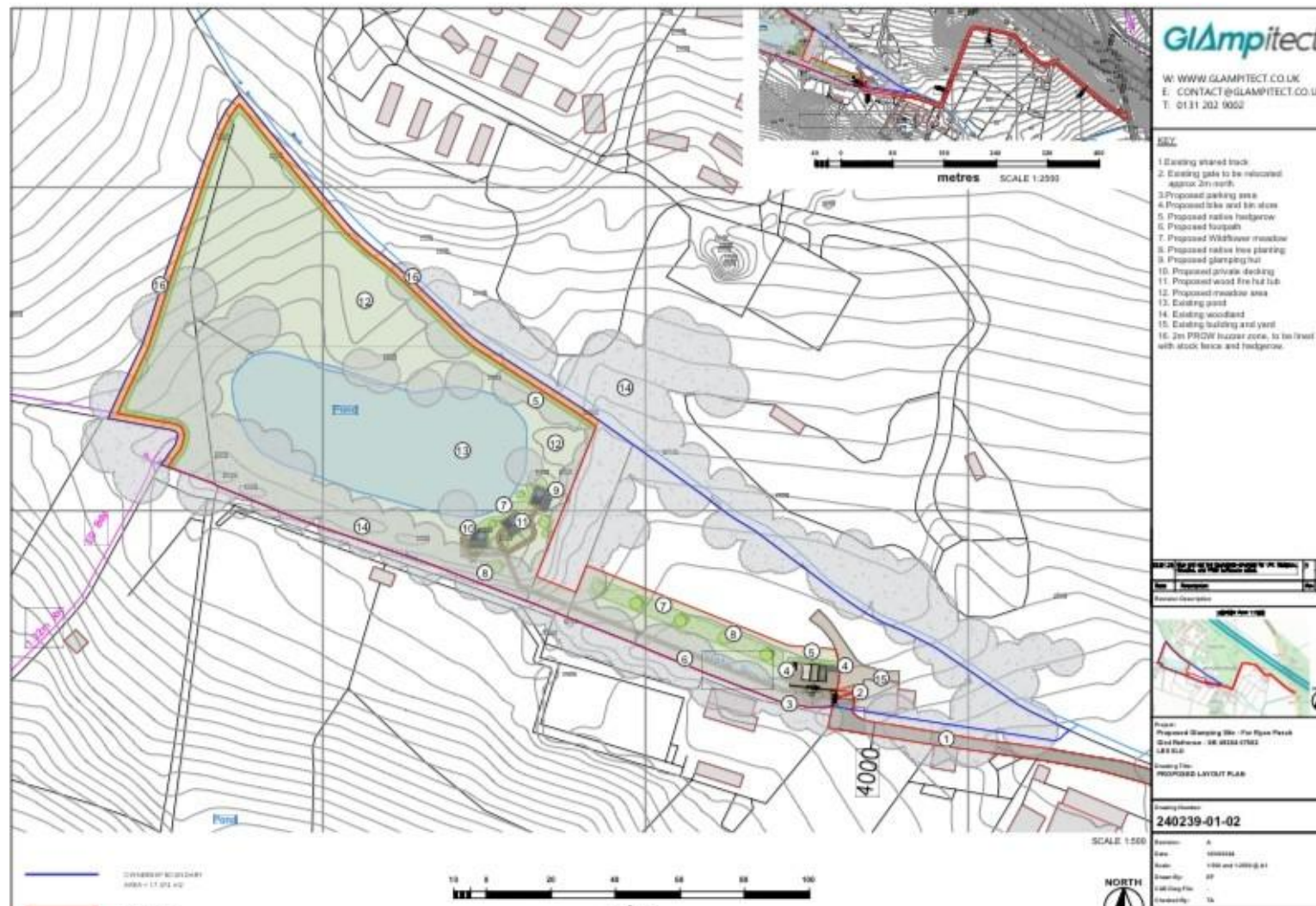
Given that the watercourse shape was 1.282 (subreach 1) and 1.553 (subreach 2), it is considered highly likely that this brook is over deep, and therefore, the overall condition scores have been altered.

Conclusion and Recommendations

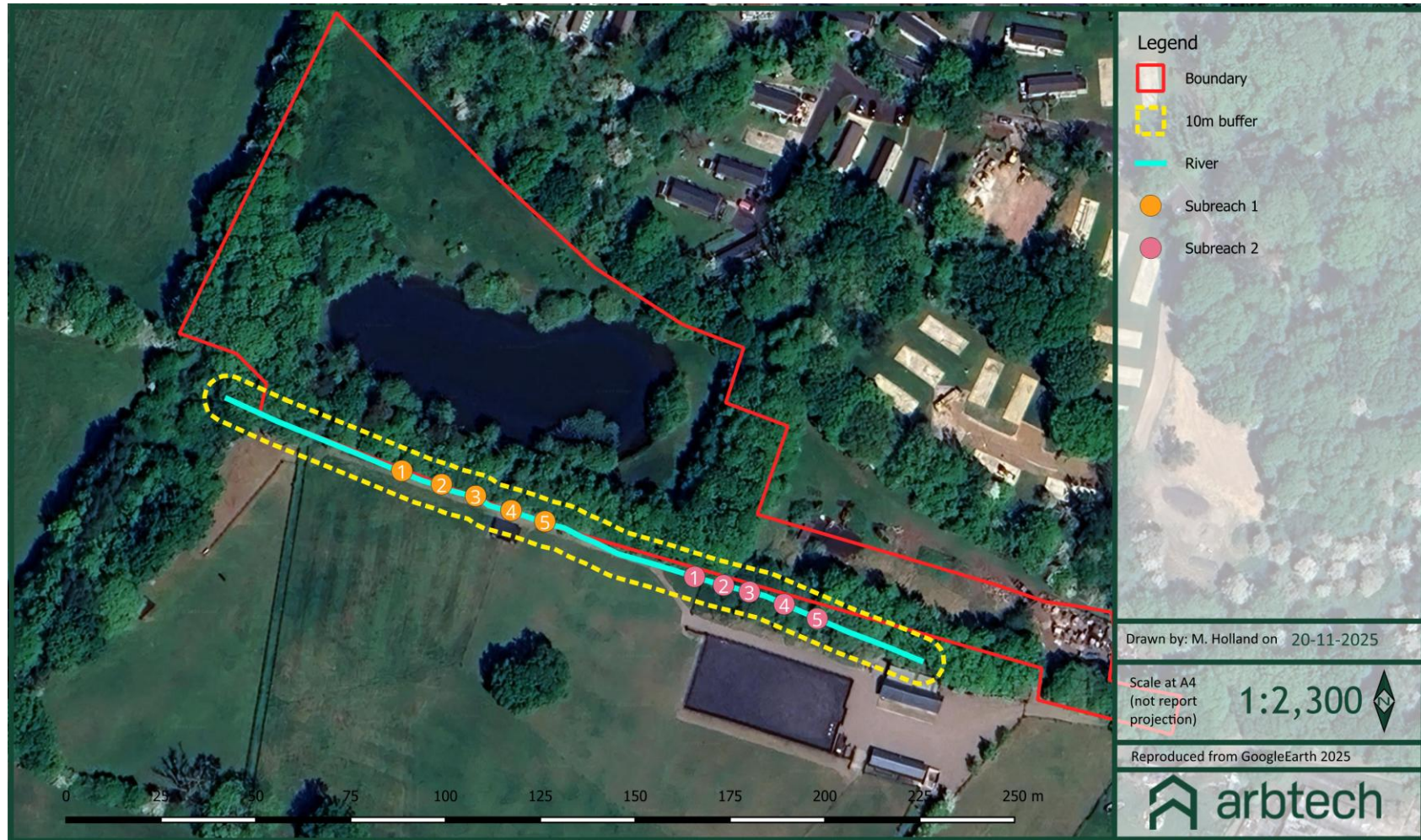
As shown in Tables 1 & 2, no changes in condition are generated for Slate Brook. As such the sections of watercourse should be entered into the BNG assessment as follows:

- Subreach 1 = Fairly Poor as retained, with baseline encroachment as detailed within Table 3, and subject to post-development encroachment
- Subreach 2 = Moderate as retained, with baseline encroachment as detailed within Table 3, and subject to post-development encroachment

Appendix 1: Proposed Development



Appendix 2: MoRPh Survey Locations



BACK PAGE

Arbtech Consultant's Contact details:

Millie Holland BSc (Hons), MSc,

Consultant Ecologist

millieholland@arbtech.co.uk

Arbtech Consulting Ltd

<https://arbtech.co.uk>

Limitations

Arbtech Consulting Limited has prepared this report for the sole use of the above-named Client or his agents in accordance with our General Terms and Conditions, under which our services are performed. It is expressly stated that no other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by us. This report may not be relied upon by any other party without the prior and express written agreement of Arbtech Consulting Limited. The assessments made assume that the sites and facilities will continue to be used for their current purpose without significant change. The conclusions and recommendations contained in this report are based upon information provided by third parties. Information obtained from third parties has not been independently verified by Arbtech Consulting Limited.

Copyright

© This report is the copyright of Arbtech Consulting Limited. Any unauthorised reproduction or usage by any person other than the addressee is strictly prohibited