



24th October 2025

## File Note: River Condition Assessment

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**Site address:** Waterside Hotel & Leisure Club, Wilmslow Road, Didsbury, Manchester, M20 5WZ

**Ref:** River Condition Assessment

**Recipients:** Waterside Hotel and Leisure Club

**Proposal:** Proposed Flood Defence works

### Introduction

Arbtech Consulting Ltd was commissioned by Waterside Hotel and Leisure Club to conduct a River Condition Assessment (RCA) survey along the River Mersey, which lies within 10m of the site boundaries. The aim of the RCA was to ascertain the pre-development condition score of the watercourse 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 the River Mersey, which lies along the western boundary of the site. Approx. 170m of the River Mersey lies within 10m of the red line boundary. One subreach consists of a total of 5 MoRPh modules equating to 50m or 200m for each length. The average width of the River Mersey was over 20m wide and therefore the modules are comprised of 40m lengths.

A single subreach was surveyed comprising 5 x 40m MoRPh5 surveys. This covers the full length of the River Mersey within 10m of site boundary.

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 River Mersey was identified to be SJ 86795 90000 where there is a major weir which changes the river flow, and the downstream located at SJ 85315 89415 where Micker Brook joins the River Mersey from the south.

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 Statutory Biodiversity Metric 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 nature and material of the channel bed construction of the River Mersey was not visible in all MoRPh5 modules conducted, however it has been assumed that the river bed material is consistent throughout all MoRPh5 modules conducted.

## Results

The site survey was conducted on 23<sup>th</sup> October 2025, by Modular River Survey Team RCA accredited Principal Ecologist, Leo Plevin MCIEEM, 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 has been based on development plans and impacts to both bank top and bank face profiles. No in channel interventions are proposed.

The results of the baseline MoRPh survey for the River Mersey are shown in **Table 1** below.

Baseline and post-development watercourse and riparian encroachment is also provided in **Table 2**.

The watercourse shape was less more than 4, and watercourse is not considered to be overdeep, therefore the preliminary condition score is maintained.

**Table 1.** Outputs of Baseline and Post-development River Condition Assessment for the River Mersey

| Category                    | Baseline                                       | Post-development |
|-----------------------------|------------------------------------------------|------------------|
| Preliminary Condition Score | 0.223                                          | As Baseline      |
| River Shape                 | 4.677                                          |                  |
| Average Width (m)           | 29                                             |                  |
| Positive Index Average      | 1.684                                          |                  |
| Negative Index Average      | -1.462                                         |                  |
| River Category              | Other River                                    |                  |
| A1: Braiding Index          | 1                                              |                  |
| A2: Sinuosity Index         | 1.235                                          |                  |
| A3: Anabranching Index      | 0                                              |                  |
| A4: Level of Confinement    | Partly confined                                |                  |
| A5: Reach Valley Gradient   | 0.00185                                        |                  |
| A6: Bedrock Reach           | FALSE                                          |                  |
| A7: Coarsest Bed Material   | Cobble                                         |                  |
| A8: Average Bed Material    | Gravel / Pebble                                |                  |
| Calculated River Type       | F - Straight/sinuuous, coarsest CO, average GP |                  |
| Overridden River Type       | No                                             |                  |
| River Condition Output      | Fairly Poor                                    |                  |

As the proposed works are to install new flood defence infrastructure on the bank top of the right bank only, with the new flood wall being constructed behind the existing sheet piling atop the right bank face, and the proposed embankment constructed within an existing area of hard standing car parking within the southern portion of the site. It is considered that the baseline condition of the river would not change and that positive and negative indexes associated with the bank top and extent of natural and artificial surfaces would not change significantly to that recorded during the baseline.

**Table 2a.** Watercourse and riparian encroachment baseline

| Encroachment             |                                               |                                |
|--------------------------|-----------------------------------------------|--------------------------------|
| Riparian Encroachment    | Left Bank                                     | Right Bank                     |
| River Mersey             | Major (Agriculture)                           | Major (Commercial Development) |
| Watercourse Encroachment |                                               |                                |
| River Mersey             | Minor – Some artificial reinforcement present |                                |

**Table 2b.** Watercourse and riparian encroachment post-development

| Encroachment             |                                               |                                |
|--------------------------|-----------------------------------------------|--------------------------------|
| Riparian Encroachment    | Left Bank                                     | Right Bank                     |
| River Mersey             | Major (Agriculture)                           | Major (Commercial Development) |
| Watercourse Encroachment |                                               |                                |
| River Mersey             | Minor – Some artificial reinforcement present |                                |

There is also unlikely to be any change to the watercourse or riparian encroachment across the length of the River Mersey adjacent to the site. The left bank will not be impacted by the proposed works, additionally there will be no change to the nature of development within the riparian zone of the right bank. There will also be no addition or reduction of artificial revetment or other associated features within the watercourse footprint.

### Conclusion and Recommendations

The current proposals are unlikely to result in a positive or negative change to the overall condition of the River Mersey associated with the western boundary of the site due to the nature and location of construction works at the site. There are limited opportunities for enhancement of the right bank top as part of the proposals and it is considered that any proposed enhancement would not significantly affect the condition score or encroachment extent associated with the river and its banks.

In order for the proposed development to result in a net gain for watercourse units, it is anticipated that offsite units or statutory watercourse credits would be required. This will be determined through a Biodiversity Net Gain Assessment and through input of the above data into the Statutory Biodiversity Metric.

## Appendix 1: Proposed Development



## Appendix 2: MoRPh Survey Locations



**Arbtech Consultant's Contact details:**

Leo Plevin BSc (Hons), MSc, MCIEEM

Principal Ecologist

leoplevin@arbtech.co.uk

**Arbtech Consulting Ltd**

<https://arbtech.co.uk>

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