

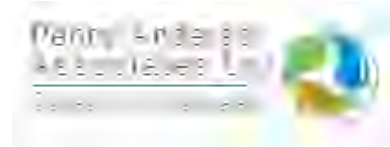


BRUNTWOOD

ALBERTON HOUSE, MANCHESTER

BIODIVERSITY NET GAIN ASSESSMENT





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BIODIVERSITY NET GAIN ASSESSMENT

Penny Anderson Associates Limited
'Park Lea'
60 Park Road
Buxton
Derbyshire
SK17 6SN

Project Manager and Author
Sarah Ross BSc (Hons), PhD, MCIEEM, CEnv

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This project has been undertaken in accordance with PAA policies and procedures on quality assurance.

Signed: _____

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1. INTRODUCTION

- 1.1 Penny Anderson Associates (PAA) has been commissioned by Bruntwood to complete a Biodiversity Net Gain (BNG) assessment of Alberton House, Manchester (hereafter referred to as the 'site'). The site is proposed for re-development.
- 1.2 The BNG assessment is based on an ecological survey of the site previously carried out and reported (PAA 2022), which included a Phase 1 habitat survey along with a building/tree inspection for potential roosting bats and nesting birds.
- 1.3 The above surveys provide an ecological baseline of the site and evaluate the value of the ecological receptors prior to development, to enable an assessment of the longer-term effect of the development on features of ecological interest.
- 1.4 This BNG assessment report forms part of the evaluation of the effect of the proposed development on ecological features of the site. It uses a Biodiversity Impact Calculator that aims to quantify in value, habitats and features in 'biodiversity units' using a metric¹ to assess if the development is likely to result in no net loss, net loss or net gain to biodiversity.

Policy Context

- 1.5 The National Planning Policy Framework (NPPF 2021) provides guidance for local authorities on the content of the Local Plans and is a material consideration in determining planning applications. Briefly, with an overall focus on sustainable development, the NPPF states that developments should aim to engender positive outcomes for habitats and biodiversity, with a particular focus on the maintenance and creation of ecological networks.
- 1.6 The NPPF identifies the following principals that should be applied by local planning authorities when determining planning applications:
 - a. If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
 - b. Development on land within or outside a Site of Special Scientific Interest (SSSI), and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of SSSI;
 - c. Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
 - d. Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

¹ Metrics are surrogates, or combinations of measurements that provide an assessment of the biodiversity value of an area. It allows the biodiversity impact of a development to be quantified and if necessary, the compensatory action required to off-set the biodiversity loss (Defra 2012).

- 1.7 The NPPF states that the planning system should contribute to and enhance the natural environment through a range of actions, including:
- Protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils;
 - Recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services; and
 - Minimising impacts on biodiversity and providing net gains for biodiversity including establishing coherent ecological networks that are more resilient to current and future pressures.
- 1.8 To protect and enhance biodiversity and geodiversity, plans should:
- Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
 - promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.
- 1.9 The Greater Manchester Five-Year Environment Plan includes a high-level commitment to supporting the delivery of Biodiversity Net Gain across the city region. As part of proposals being brought forward by the Government's 25-Year Environment Plan and the Environment Bill, all developments under the Town and Country Planning Act will need to achieve net gain for biodiversity of 10%².

² www.greatermanchester-ca.gov.uk/what-we-do/environment/natural-environment/biodiversity-net-gain (accessed 06/07/22)

2. BIODIVERSITY NET GAIN METRIC APPROACH

2.1 The Calculator applied in this assessment is the Biodiversity Metric 3.1, which replaces the earlier Defra Metric versions. This Metric is used to calculate the biodiversity units of a site before and after the proposed development. The Calculator spreadsheet and associated guidance notes were available via the Natural England 'Access to Evidence' web pages³.

2.2 The information required to complete the Calculator is:

- Area of each habitat (ha) and length of linear features (km), e.g. hedgerows;
- Habitat type;
- Habitat condition;
- Impact from development; and
- Proposed biodiversity mitigation/compensation measures.

Habitat and Linear Feature Assessment

2.3 The existing habitats, linear features and habitat condition calculations are based on a Phase 1 habitat survey carried out in 2021 and updated in 2022 (PAA 2022). The update survey in 2022 included a River Condition Assessment (RCA) using the methodology⁴ required for Metric 3.1 as the scheme is within 10m of the bank of the River Irwell. The habitat map is provided in Appendix 1.

2.4 The current Landscape Plans for the scheme were used to identify the proposed habitats and post-development land use types (Appendix 2), along with input from the Design Team.

2.5 Existing habitats were digitised accurately to British National Grid using Ordnance Survey vector mapping as a base, along with high resolution aerial photography as a guide, as part of the previous Phase 1 habitat survey results preparation. These datasets were available for use in the BNG assessment process. The areas (ha) of the development proposal features were provided to PAA by the Design Team.

2.6 The Calculator requires that each habitat is given a 'distinctiveness' score that includes parameters such as species-richness, diversity, rarity and the degree to which habitats support species rarely found in other habitats. This is completed automatically by the Calculator when the habitat type is selected, and the categories comprise:

- Very High;
- High;
- Medium;
- Low; and
- Very Low.

2.7 The Calculator also requires a 'condition' assessment for each habitat and feature, and this is allocated to each habitat based on the guidelines and targets provided in the methodology (Parks

³ www.publications.naturalengland.org.uk/publication/6049804846366720 (downloaded June 2022)

⁴ www.modularriversurvey.org/river-condition/

et al. 2021a, 2021b) and the Phase 1 habitat survey results, along with ecological expertise and knowledge of the site where necessary. Condition categories available, which vary slightly depending on the habitat in question, within the Calculator are:

- Good;
- Fairly Good;
- Moderate;
- Fairly Poor;
- Poor; and
- Not Applicable.

2.8 Finally, the 'strategic significance' of the habitat is allocated depending on the identification of the habitat in that location being nationally or locally significant. This is evaluated from local plans, designations, etc. In the absence of any relevant strategic documentation indicating the habitat in that area is of strategic significance for biodiversity, then the area is given a value of 1.

2.9 The Calculator then requires the GIS⁵-generated data (ha or km) to be input for each of the habitats as classified under each of the following categories:

- Area of habitat retained – kept on site throughout any development of landscaping process and featuring in final site designs;
- Area of habitat enhanced - kept on site throughout any development or landscaping process but enhance (for wildlife) as part of the design;
- Area of habitat lost – this is calculated by the Calculator once other fields are completed; and
- Area of habitat created – this is calculated by the Calculator once other fields are completed.

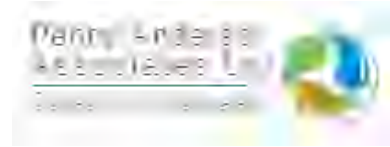
2.10 The area of each habitat type created is then entered along with the same suite of associated characteristics (i.e. condition, strategic significance) and automatically generated data (e.g. distinctiveness).

2.11 As part of the proposed habitat creation and restoration, the Calculator takes into account 'risk factors'. These include:

- Temporal factors – time required to reach target condition (the creation of a habitat, e.g. woodland takes time to mature and reach target condition). The temporal factor is generated automatically for each proposed habitat type but additional data covering delays in habitat creation or advance habitat creation due to specific project schedules can be accommodated in the overall assessment; and
- Difficulty factors – risk of failure of achieving habitats through restoration and/or creation. Some restoration and enhancements measures are more difficult to achieve than others. The Calculator automatically selects the level of difficulty depending on the habitat chosen.

2.12 Linear features, such as hedgerows, ditches and streams are assessed separately within the methodology. The current length of the feature is entered and the feature condition is selected based on the guidelines presented in the methodology. The lengths to be retained, removed or

⁵ Geographic Information System



enhanced are added to the spreadsheet along with any new linear features to be created. The units calculated pre- and post-development are compared and the number of 'hedge biodiversity units' or 'river biodiversity units' delivered under the proposed scheme is automatically calculated.

3. PRE- AND POST-DEVELOPMENT HABITATS AND THEIR CONDITION

Overview

- 3.1 Alberton House fronts onto St. Mary's Parsonage in central Manchester and the rear of the building looks out onto the River Irwell, close to Spinningfields and Deansgate. There are two building blocks forming an 'L'-shape, one five storeys tall and the other 11. Both are faced with red brick and have a flat roof.
- 3.2 In terms of soft landscaping features on site, there are areas of formal planting at the front of the building and, at the back, a cantilever balcony over slabbed, sloping ground that runs down to the adjacent narrow corridor of self-seeded trees and other vegetation on the banks of the River Irwell.
- 3.3 The surroundings are mostly urbanised, comprising built structures and roads. There are some public open spaces in the wider landscape, the largest being Parsonage Gardens. The highly urbanised River Irwell runs adjacent to the east of the site. There are some self-seeded trees in narrow bands along the banks, along with frequent giant hogweed⁶ (*Heracleum mantegazzianum*), butterfly-bush (*Buddleja davidii*) and occasional Himalayan balsam (*Impatiens glandulifera*).

Existing Habitats

- 3.4 The site is dominated by hardstanding and built structures (Appendix 1). Habitats are limited to areas of ornamental/introduce shrub planting at the entrance to the building, plus several urban trees. Urban Tree helper within Metric 3.1 was used calculate the area values of urban trees within the assessment. Tree sizes were classed as Medium for the 7no. semi-mature lime trees (*Tilia* sp.) on the approach to Trinity Bridge and Small for the single young non-native birch tree (*Betula nigra*) near the entrance, based on the Tree Constraint survey data for the site (Bowland Tree Consultancy 2022).
- 3.5 The River Irwell runs along the northern boundary of the site, and some species from the riverbank have self-seeded onto the paved area underlying the cantilever balcony that forms part of the site.
- 3.6 In terms of condition, the urban trees were considered to be in Poor condition as they failed a number of targets set for this habitat. For the ornamental/introduced shrub habitat, no condition assessment is required. For the RCA of the River Irwell, the assessment also identified the habitat condition as Poor, due to its highly urbanised nature. The Condition Assessment sheets for the baseline habitats are provided in Appendix 3.
- 3.7 A summary of the baseline habitats on site and their condition in relation to the BNG assessment are provided in Table 1.

⁶ Botanical species names follow Stace 2019.

Table 1 Summary of Baseline Habitats and Features

Pre-Development Habitat Area Type	Value	Distinctiveness	Condition
Area Features	(ha)		
Introduced shrub	0.0128	Low	N/A
Developed land; sealed surface	0.221	V. Low	N/A - Other
Urban Tree (7no. semi-mature lime trees, on approach to Trinity Bridge)	0.0285	Medium	Poor
Urban Tree (1no. young birch tree within ornamental planting)	0.0041	Medium	Poor
Linear Features	(km)		
River Irwell corridor	0.042	High	Poor

Post-development Habitats

- 3.8 Please refer to Appendix 2, which presents the landscape plans available at the time of the assessment. It should be recognised that the landscape proposals may be subject to minor amendments, however, the broad habitat types and sizes are expected to remain very similar as the design develops.
- 3.9 The total area of the site is estimated as 0.2338 ha. A total of 3no. semi-mature lime trees along the approach to Trinity Bridge are to be retained and enhanced (underplanted with pollinator-friendly soft landscaping). The River Irwell river corridor is not encroached upon any further than is currently the case (with some likely benefits from the proposed management/control of invasive non-native plant species). All other habitats on site will be lost.
- 3.10 The post-development habitat features comprise:
- Raised planters (S1, Appendix 2) under newly planted lime trees (0.0058 ha);
 - Raised planters (S2, Appendix 2) under retained lime trees (0.0116 ha);
 - Urban trees, *Tilia cordata* 'Greenspire'⁷, 30 to 60cm girth (4no.);
 - Semi-mature lime trees retained (3no.);
 - Roof terrace planting with pollinator-friendly plants and small trees (0.0132 ha);
 - Building and hardstanding (0.2032 ha); and
 - River Irwell river corridor retained (0.042 km).
- 3.11 The value (ha or km), distinctiveness and condition assigned to each habitat feature is summarised in Table 2. The distinctiveness criterion is automatically selected by the Calculator. Habitat condition is assessed according to the Condition Assessment criteria set within Metric 3.1 against the landscape proposals and a brief rationale for the selection of habitat condition is given for each habitat and linear feature. Appendix 4 provides the Condition Assessment for the proposed habitats on site. As the River Irwell corridor is assessed as not being impacted in any

⁷ Species of tree classed as native within the assessment

significant way by the scheme, no additional post-development RCA was completed for the adjacent River Irwell.

Table 2 Summary of Habitats and Features Post-development

Post-Development Habitat Area Type	Value	Distinctiveness	Condition
Area Features	(ha)		
Ground level planters (S1)	0.0058	Low	N/A
Intensive green roof	0.0132	Low	Moderate
Ground level planters (S2)	0.0116	Low	N/A
Developed land; sealed surface	0.2032	V. Low	N/A - Other
Urban Trees ⁸ with underplanting (S1)	0.1099	Medium	Moderate
Urban Tree within hardstanding on St Mary's Parsonage	0.0366	Medium	Poor
Urban Trees retained and enhanced with new underplanting (S2)	0.0285	Medium	Moderate
Linear Features	(km)		
River Irwell corridor	0.042	High	Poor

- 3.12 The ground level planters proposed along the Trinity Bridge Approach (S1 and S2 on the Landscape Plans, Appendix 2) do not require a Condition Assessment under Metric 3.1, however the planting will be designed to include ecologically beneficial/pollinator-friendly species.
- 3.13 The urban trees (*Tilia cordata*), either proposed to be planted with the canopy oversailing newly planted vegetation below or retained and enhanced with new underplanting (being previously within hardstanding), are assessed as attaining Moderate condition over time. They are judged to be able to be able to meet three of the Urban Tree Condition Assessment criteria, as follows: (1) native species, (2) continuous canopy and (6) >20% canopy oversailing vegetation.
- 3.14 The urban tree (*Tilia cordata*) proposed within the hardstanding of St Mary's Parsonage is classed as attaining Poor condition due to its setting within the paved area with no associated ground level planting. It is judged to be able to meet two of the Urban Tree Condition Assessment criteria, as follows: (1) native species and (2) continuous canopy.
- 3.15 The roof terrace habitat is predominantly planting beds with herbaceous plants, grasses and shrubs that will be designed to include pollinator-friendly species. The planting also includes a number of small multi-stemmed trees. The habitat is categorised as 'intensive green roof' habitat type and allocated a Moderate condition based on the aspirations of the design and the percentage of the area set aside to planting. This habitat is judged to be able to meet all three 'Core' Condition Assessment criteria of the Urban habitat type, as follows: (1) varied vegetation structure, (2) diverse planting mix to include native and non-native species beneficial to wildlife, and (3) no non-native invasive plant species. The additional criterion (4c2) will not be met as the roof terrace design and proposed function does not enable 70% of the roof area to put aside to soil and vegetation.

⁸ Urban tree area values calculated using the Urban Tree Helper in Metric 3.1

- 3.16 The River Irwell corridor is assessed as unlikely to change in terms of condition or extent of encroachment bank and/or river as a result of the scheme. The condition of the habitat is allocated as Poor which is the baseline condition of this highly urbanised river. The proposed management/control of invasive non-native plant species along the section of the river bank within the scheme boundary will confer some benefits to the condition of the site, but would not be significant enough to alter the condition within the Metric.

4. ASSESSMENT RESULTS

Results Summary

- 4.1 A summary of the results is presented in Table 3 and the complete BNG Metric outputs are presented in Appendix 5 (supplied separately from this report).
- 4.2 The baseline habitat type was dominated by built/hardstanding with introduced shrub and urban trees (the latter being High value features assessed as being in Poor condition). These habitats contributed 0.03 and 0.13 habitat biodiversity units, respectively.
- 4.3 The adjacent River Irwell corridor is highly urbanised and identified as being in Poor condition (following RCA methodology), contributing 0.22 river biodiversity units.
- 4.4 The purpose of the landscape design is to make best use of the constrained space to provide ground level and roof level planting that is reflective of the urban location and proposed use. The design would include ground level planting beds, retained/enhanced and newly planted (large 30 to 60cm girth) urban trees along with a roof garden with biodiverse planting beds and small trees.
- 4.5 As Table 3 (below) shows, under the proposed Landscape Plan for the site, the net biodiversity balance for habitats is assessed as:
- +282.01% area unit gain in terms of habitats;
 - +0.00% linear unit gain for river/stream feature (River Irwell corridor) indicating no change; and
 - No linear unit gain for hedgerow features, as no hedgerow features occur in either the baseline or proposed habitat datasets.
 - Trading rules are met.

Table 3 Summary of Metric Outputs

Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	282.01%
	Hedgerow units	0.00%
	River units	0.00%

Conclusions

- 4.6 The +282.01% increase in habitat biodiversity units (area-based) is largely achieved by enhancing/including urban trees with underplanting (0.34 habitat biodiversity units, when combining both created and enhanced urban tree categories), along with the roof terrace planting scheme (0.05 habitat biodiversity units). The ground level planters contribute 0.03 habitat biodiversity units to the assessment.
- 4.7 The River Irwell corridor retains 0.22 river biodiversity units under the assessment as it is predicted to remain largely unchanged by the scheme. The proposed management/control of invasive non-native plant species along the section of the riverbank within the scheme boundary will confer benefits to the condition of the site but would not be significant enough to alter the condition within Metric 3.1.
- 4.8 Alongside the planted habitats, there are additional 'artificial' habitat features proposed within the scheme, comprising bat roosting and bird nesting boxes which help support local populations of fauna. Whilst these features cannot be included in the formal Metric calculation, they are considered to support the biodiversity gains on site. These features will be situated close to new and existing habitats to improve their potential for use by target species groups.

- 4.9 The proposed scheme would benefit from a suitable habitat management plan to establish and then maintain habitats (including bat/bird boxes) over the longer-term.

5. REFERENCES

- Bowland Tree Consultancy. 2022. *Arboricultural Constraints Appraisal. Alberton House, Manchester.* Unpublished report to Bruntwood.
- NPPF, 2021. *National Planning Policy Framework, updated July 2021.* Ministry of Housing, Communities and Local Government.
- PAA, 2022. *Alberton House, Manchester. Ecological Assessment.* Unpublished report to Bruntwood.
- Panks, S., White, N., Newsome, A., Potter, J., Heydon, M., Mayhew, E., Alvares, M., Russell, T., Scott, S. J., Heaver, M., Scott, S.H., Treweek, J., Butcher, B., Stone, D., 2021a. *The Biodiversity Metric 3.0: auditing and accounting for biodiversity value. Technical supplement (July 2021).* Natural England.
- Panks, S., White, N., Newsome, A., Potter, J., Heydon, M., Mayhew, E., Alvares, M., Russell, T., Scott, S.J., Heaver, M., Scott, S.H., Treweek, J., Butcher, B., Stone, D., 2021b. *Biodiversity metric 3.0: Auditing and accounting for biodiversity – User Guide (July 2021).* Natural England.
- Stace, C., 2019. *New Flora of the British Isles. Fourth Edition.* C & M Floristics.

6. ABBREVIATIONS

BNG	Biodiversity Net Gain
NPPF	National Planning Policy Framework
PAA	Penny Anderson Associates Ltd
RCA	River Condition Assessment
SSSI	Site of Special Scientific Interest
GIS	Geographic Information System

APPENDICES

APPENDIX 1

Phase 1 Habitats Map



APPENDIX 2

Landscape Proposals

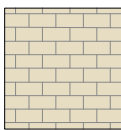


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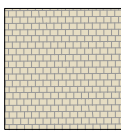
BOUNDARIES

PLANNING BOUNDARY

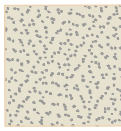
HARDWORKS



Yorkstone Flags [REF: P1]
Material: Yorkstone flags
Colour: Buff, to match existing
Size: Tbc following site survey
Finish: 50% shot blasted, 50% wire sawn
Bond: Random stretcher, flexibly laid



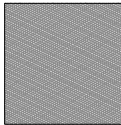
Yorkstone Setts [REF: P2]
Material: Yorkstone setts
Colour: Buff, to match existing
Size: W150mm x Lrandom 150-300mm x D75mm
Finish: 50% shot blasted, 50% wire sawn
Bond: Random stretcher, rigidly laid
Notes: 8-12mm joints to allow paving to turn corners



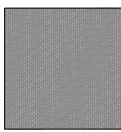
Loose aggregate (to tree surrounds) [REF: P3]
Material: loose aggregate
Size: 80mm depth
Colour: Buff 'Scandinavian'
Manufacturer: Leeson Polyurethanes
Notes: Used as surface finish around existing tree.



Coloured Tarmac [REF: P4]
Material: tarmac
Colour: Natural Quartzite
Manufacturer: Tarmac Utilicolour
Notes: To engineers specification



Granite building edge trim [REF: P5]
Material: Granite
Colour: Natural Quartzite
Size: W60mm x L80mm x D80mm
Finish: Cropped sides, natural finish
Bond: Stack, flexibly laid
Manufacturer: Hardscape Ltd



Granite building edge trim [REF: P6]
Material: Granite
Colour: Azul noche
Size: W60mm x L80mm x D80mm
Finish: Cropped sides, flamed face
Bond: Stack, flexibly laid
Manufacturer: Hardscape Ltd



Corduroy tactile paving [REF: P7]
Material: Granite
Colour: Azul noche
Size: W400mm x L400mm x D75mm
Finish: Fine picked
Manufacturer: Hardscape Ltd
Notes: To top and bottom of steps



Corduroy tactile paving [REF: P8]
Material: Concrete
Colour: Natural
Size: W400mm x L400mm x H50mm
Manufacturer: Marshalls
Notes: To bottom of ground floor terrace steps

SOFTWORKS



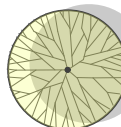
Amenity Planting
Planting mix to be developed at RIBA Stage 04



Western Boundary Planting
Planting mix to be developed at RIBA Stage 04

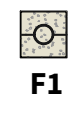


TREE - PROPOSED STANDARD

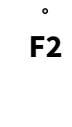


TREE - EXISTING RETAINED

STREET FURNITURE



Tree Grille [REF: F1a]
Material: Galvanised steel
Size: 1590 x 1590 mm
Manufacturer: Logic street furniture
Notes: 500mm diameter inner aperture



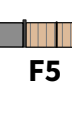
Fixed bollard [REF: F12a]
Material: Stainless Steel
Product: Excalibur Security Fixed Bollard
Finish: Brushed
Size: 125mm diameter, 900mm height
Supplier: ATG or Similar



Granite Cylinders [REF: F2]
Material: Granite
Colour: Azul Noche
Finish: Honed
Size: 600 x 450 mm
Manufacturer: Hardscape
Notes: Mechanically fixed



Bespoke cycle stands [REF: F4]
Material: Blackened steel with timber top detail
Colour: Black & natural
Size: TBC
Notes: Local fabricator to be sourced.



Terraced Seating [REF: F5]
Size: Varies
Material: Granite topped with timber
Colour: Scottish Green Schist
Finish: Fine picked
Notes: Subject to further design development, to include arm rests and anti skate detail



Free Standing Tables & Chairs [REF: F6]
Material: Powder coated steel
Supplier: Fermob or similar and approved

Product: Bistro Table (2 Person) [REF: 6a]
Size: 740mm (h) x 960mm (diameter)
Product: Bistro Chair
Size: 820mm (h) x 420mm (w) 420mm (w)

Product: Bistro Table (4 Person) [REF: 6b]
Size: 740mm (h) x 1170mm(l) x 770mm (w)
Product: Bistro Chair
Size: 820mm (h) x 420mm (w) 420mm (w)

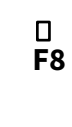
Number and Colour: 7 Bistro Table (2 Person), 5 Bistro Table (4 Person), 34 Bistro Chairs in total;

7no. Bistro Tables (2 Person) in Anthracite
14no. Bistro Chairs in Anthracite

5no. Bistro Tables (4 Person) in Ice Mint
20no. Bistro Chairs in Ice Mint



Handrail [REF: F7]
Material: Blackened steel & hardwood timber bespoke
Finish: Steel: lacquered, Hardwood: oiled
Notes: Handrail 850mm above ground line off step nosing, protruding 300mm beyond top and bottom step nosing

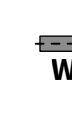


Recycling Bins [REF: F5]
Size: tbc
Notes: Bin housing to contain 240L bins.

EXTERNAL STEPS & WALLS



Step Type 1 [REF: ST1]
Material: Granite
Colour: Gris Cadalso Step and Azul Noche nosing
Size: W:600 x L400mm x D150mm
Finish: Bush hammered with contrasting nosing
Manufacturer: Hardscape Ltd
Notes: 400mm tread, 50mm overlap between step units, bottom step unit 200mm depth, L&R end unit specials



Retaining Wall [REF: W1]
Material: Granite clad retaining wall
Colour: Gris Cadalso
Finish: Fine picked
Notes: Underlit glass ballustrade included. Subject to further design development. To engineer's design



Granite Clad Planters [REF: W1a]
Material: Granite
Colour: Gris Cadalso
Finish: Fine picked
Size: Varies
Manufacturer: Hardscape



Retaining Wall [REF: W2]
Material: Exposed aggregate concrete wall
Notes: To engineers design.



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NOTES:
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3. All dimensions are in millimetres unless otherwise stated.
4. All setting out, levels and dimensions to be agreed on site.
5. The dimensions of all materials must be checked on site before being laid out.
6. This drawing must be read with the relevant specification clauses and detail drawings.
7. Order of construction and setting out to be agreed on site.

P01	17.06.22	For Planning	JC	RM
Revision	Date	Description	Drawn	Apprvd.

Plantit I.E. Limited
E: info@plantit-ie.com W: plantit-ie.com
MANCHESTER
2 Back Grafton St., Altrincham, WA14 1DY
T: 0161 928 9281
LONDON
Unit 6 Waterside, 44-48 Wharf Road, London, N1 7UX
T: 0207 253 5678
LIVERPOOL
Tempest 5.3, 12 Tithebarn Street, Liverpool, L2 2DT
T: 0151 363 1230

Client Bruntwood

Project Alberton House

Drg Title Landscape GA - Ground Floor

Created on	Created by	Approved by
17-01-22	JC	RM

Scale	Size	Workstage
1:150	A1	Planning

Drg No.	Suitability	Revision
2805-PLA-GF-XX-DR-L-0001	S3	P03



KEY

BOUNDARIES

PLANNING BOUNDARY

- SOFTWORKS
- S1** **Amenity Planting**
Planting mix to be developed at RIBA Stage 04
- S2** **Western Boundary Planting**
Planting mix to be developed at RIBA Stage 04
- TREE - PROPOSED STANDARD**
- TREE - EXISTING RETAINED**



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P01	17.06.22	For Planning	JC	RM
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E: info@plant-ie.com W: plant-ie.com
MANCHESTER
2 Back Grafton St., Altrincham, WA14 1DY
T: 0161 928 9281
LONDON
Unit 6 Waterside, 44-48 Wharf Road, London, N1 7UX
T: 0207 253 5678
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T: 0151 363 1230

Client Bruntwood

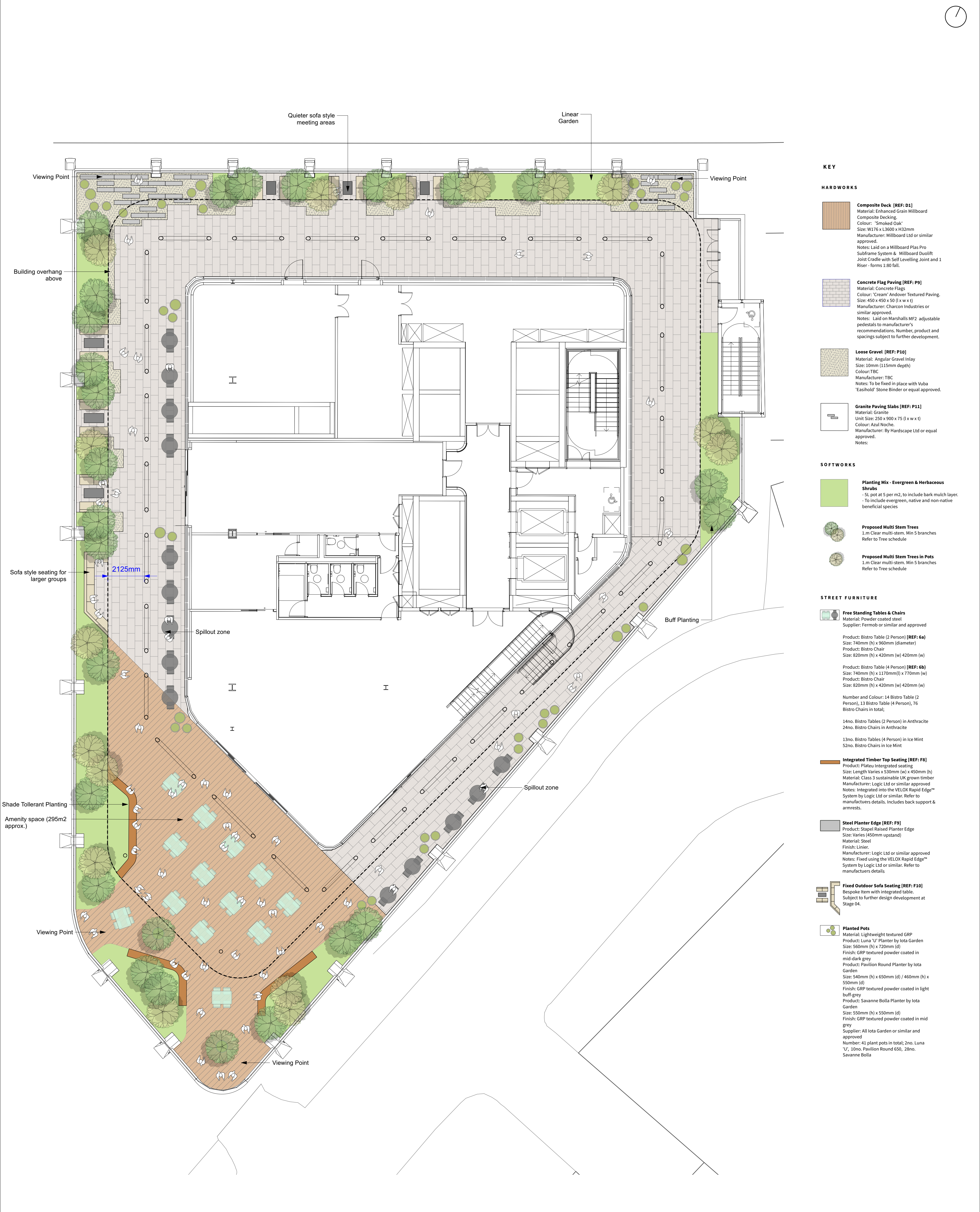
Project Alberton House

Drg Title Softworks GA

Created on	Created by	Approved by
17-01-22	JC	RM

Scale	Size	Workstage
1:150	A1	Planning

Drg No.	Suitability	Revision
2805-PLA-GF-XX-DR-L-2000	S3	P01



KEY

HARDWORKS

- Composite Deck [REF: D1]**
Material: Enhanced Grain Millboard Composite Decking.
Colour: "Smoked Oak"
Size: W176 x L3600 x H32mm
Manufacturer: Millboard Ltd or similar approved.
Notes: Laid on a Millboard Plas Pro Subframe System & Millboard Duolift Joist Cradle with Self Levelling Joint and 1 Riser - forms 1:80 fall.
- Concrete Flag Paving [REF: P9]**
Material: Concrete Flags
Colour: "Cream" Andover Textured Paving.
Size: 450 x 450 x 50 (l x w x t)
Manufacturer: Charcon Industries or similar approved.
Notes: Laid on Marshalls MF2 adjustable pedestals to manufacturer's recommendations. Number, product and spacings subject to further development.
- Loose Gravel [REF: P10]**
Material: Angular Gravel Inlay
Size: 10mm (115mm depth)
Colour: TBC
Manufacturer: TBC
Notes: To be fixed in place with Vuba 'Easishold' Stone Binder or equal approved.
- Granite Paving Slabs [REF: P11]**
Material: Granite
Unit Size: 250 x 900 x 75 (l x w x t)
Colour: Azul Noche.
Manufacturer: By Hardscape Ltd or equal approved.
Notes:

SOFTWORKS

- Planting Mix - Evergreen & Herbaceous Shrubs**
- 5L pot at 5 per m2, to include bark mulch layer.
- To include evergreen, native and non-native beneficial species
- Proposed Multi Stem Trees**
1.1m Clear multi-stem. Min 5 branches
Refer to Tree schedule
- Proposed Multi Stem Trees in Pots**
1.1m Clear multi-stem. Min 5 branches
Refer to Tree schedule

STREET FURNITURE

- Free Standing Tables & Chairs**
Material: Powder coated steel
Supplier: Fermob or similar and approved
- Product: Bistro Table (2 Person) [REF: 6a]
Size: 740mm (h) x 960mm (diameter)
Product: Bistro Chair
Size: 820mm (h) x 420mm (w) 420mm (w)
- Product: Bistro Table (4 Person) [REF: 6b]
Size: 740mm (h) x 1170mm(l) x 770mm (w)
Product: Bistro Chair
Size: 820mm (h) x 420mm (w) 420mm (w)
- Number and Colour: 14 Bistro Table (2 Person), 13 Bistro Table (4 Person), 76 Bistro Chairs in total;
- 14no. Bistro Tables (2 Person) in Anthracite
24no. Bistro Chairs in Anthracite
- 13no. Bistro Tables (4 Person) in Ice Mint
52no. Bistro Chairs in Ice Mint
- Integrated Timber Top Seating [REF: F8]**
Product: Plateau Integrated seating
Size: Length Varies x 530mm (w) x 450mm (h)
Material: Class 3 sustainable UK grown timber
Manufacturer: Logic Ltd or similar approved
Notes: Integrated into the VELOX Rapid Edge™ System by Logic Ltd or similar. Refer to manufacturers details. Includes back support & armrests.
- Steel Planter Edge [REF: F9]**
Product: Stapel Raised Planter Edge
Size: Varies (450mm upstand)
Material: Steel
Finish: Linier.
Manufacturer: Logic Ltd or similar approved
Notes: Fixed using the VELOX Rapid Edge™ System by Logic Ltd or similar. Refer to manufacturers details
- Fixed Outdoor Sofa Seating [REF: F10]**
Respoke item with integrated table
Subject to further design development at Stage 04.
- Planted Pots**
Material: Lightweight textured GRP
Product: Luna 'U' Planter by Iota Garden
Size: 560mm (h) x 720mm (d)
Finish: GRP textured powder coated in mid-dark grey
Product: Pavilion Round Planter by Iota Garden
Size: 540mm (h) x 650mm (d) / 460mm (h) x 550mm (d)
Finish: GRP textured powder coated in light buff grey
Product: Savanne Bolla Planter by Iota Garden
Size: 550mm (h) x 550mm (d)
Finish: GRP textured powder coated in mid grey
Supplier: All Iota Garden or similar and approved
Number: 41 plant pots in total; 2no. Luna 'U', 10no. Pavilion Round 650, 28no. Savanne Bolla

		Client		Bruntwood							
		Project		Alberton House							
		Drg Title		Landscape GA - Roof Terrace							
		Created on		01-03-22		Created by		JC		Approved by	
										FF	
		Scale		1:100		Size		A1		Workstage	
										Planning	
		Drg No.		2805-PLA-RT-XX-DR-L-0001		Suitability		S3		Revision	
										P01	
		Date		17.06.22		Description		For Planning		JC RM	
										Drawn	
										Apprvd.	

Client

Bruntwood

Project

Alberton House

Drg Title

Landscape GA - Roof Terrace

Created on

01-03-22

Created by

JC

Approved by

FF

Scale

1:100

Size

A1

Workstage

Planning

Drg No.

2805-PLA-RT-XX-DR-L-0001

Suitability

S3

Revision

P01

Planit I.E. Limited

E: info@planit-ie.com W: planit-ie.com

MANCHESTER

2 Back Grafton St., Altrincham, WA14 1DY

T: 0161 928 9281

LONDON

Unit 6 Waterside, 44-48 Wharf Road, London, N1 7UX

T: 0207 253 5678

LIVERPOOL

Tempest 5.3, 12 Tithebarn Street, Liverpool, L2 2DT

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-

Planting Mix - Evergreen & Herbaceous Shrubs

 - 5l. pot at 5 per m², to include bark mulch layer.
 - To include evergreen, native and non-native beneficial species
-

Proposed Multi Stem Trees

1.m Clear multi-stem. Min 5 branches

Refer to Tree schedule
-

Proposed Multi Stem Trees in Pots

1.m Clear multi-stem. Min 5 branches

Refer to Tree schedule

	Tree Schedule				
Abr.	Species	Size	Height	Pot Size	Quantity
	MULTI STEM TREES				
Am	Amelanchier Lamarckii	2 - 2.5m	Multi Stem	Container Grown	9
Bn 'MS'	Betula nigra	2m	Multi Stem	Container Grown	9
Bp 'MS'	Betula pendula	2m	Multi Stem	Container Grown	8
Sv (ML)	Syringa vulgaris 'Mme Lemoine'	1.5m	Multi Stem	Container Grown	8
Ca	Corylus avellana	1.5m	Multi Stem	Container Grown	8



Betula nigra

Client	Bruntwood		
Project	Alberton House		
Drg Title	Softworks - Roof Terrace		
Created on	Created by	Approved by	
01-03-22	JC	FF	
Scale	Size	Workstage	
1:100	A1	Planning	
Drg No.	Suitability	Revision	
2805-PLA-RT-XX-DR-L-0004	S3	P01	

Plant I.E. Limited

E: info@plant-ie.com **W:** plant-ie.com

MANCHESTER
2 Back Grafton St, Altrincham, WA14 1DY
T: 0161 928 9281

LONDON
Unit 6 Waterside, 44-48 Wharf Road, London, N1 7UX
T: 0207 253 5678

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APPENDIX 3
Condition Assessment Sheets – Baseline Habitats (To follow)

Survey cover sheet			
Date	27/06/22	Site name or location	Alberton Haze, Manchester.
Weather conditions	Dry, fine	Project/development name	Alberton Haze
Surveyor name(s)	Sarah Ross	Onsite/offsite	on site
Metric 3.1 survey reference	BRUN02.2	Reason for assessment (if not baseline condition survey)	Baseline.
Notes			
Urban trees along approach to B Trinity Bridge.			

Condition Sheet: URBAN TREES Habitat Type			
UKHab Habitat Type(s)			
Urban - Urban tree			
Site name/location	Alberton Hoek	Onsite/offsite	On site.
Central grid reference of habitat	SJ 8347 9841	Unique polygon reference	3
Limitations (if applicable)	—	Metric 3.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	—
Habitat Description			
X7 lime trees, semi-mature, along approach to Trinity Bridge			
Covers the following topographical formations most commonly found in urban areas¹: Individual Trees: Young trees over 75mm in diameter measured at 1.5m from ground level and individual semi-mature and mature trees of significant stature and size that dominate their surroundings whose canopies are not touching but that are in close proximity to other trees. Perimeter Blocks: Groups or stands of trees within and around boundaries of land, former field boundary trees incorporated into developments, individual trees in gardens whose canopies overlap continuously Linear Blocks: Lines of trees along streets, highways, railways and canals whose canopies may or may not overlap continuously.			
Condition Assessment Criteria		Condition Achieved (Y/N)	Notes/Justification
1	The tree is a native species(or more than 70% within the block are native species).	Y	lime trees
2	The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).	Y	
3	The tree is mature ² or veteran ³ (or more than 50% within the block are mature ² or veteran ³).	N	
4	There is little or no evidence of an adverse impact on tree health by anthropogenic activities such as vandalism or herbicide use. There is no current regular pruning regime so the trees retain >75% of expected canopy for their age range and height.	N	closely managed urban trees

5	Micro-habitats for birds, mammals and insects are present e.g. presence of deadwood, cavities, ivy or loose bark	N	
6	More than 20% of the tree canopy area is oversailing vegetation beneath.	N	within handstanding
			Number of criteria passed
Condition Assessment Result	Condition Assessment Score	Score Achieved x/✓	
Passes 5 or 6 of 6 criteria	Good (3)		
Passes 3 or 4 of 6 criteria	Moderate (2)		
Passes 0, 1 or 2 of 6 criteria	Poor (1)	✓	
Suggested enhancement interventions to improve condition score			
Underplant with suitable habitat. retain where possible			

Survey cover sheet			
Date	27/06/22	Site name or location	Albertan Hs.
Weather conditions	dry, fine	Project/development name	" "
Surveyor name(s)	Samir Ross	Onsite/offsite	on site
Metric 3.1 survey reference	BRUNO2.2	Reason for assessment (if not baseline condition survey)	Baseline
Notes			
Single young tree in ornamental planting at front of building			

Condition Sheet: URBAN TREES Habitat Type			
UKHab Habitat Type(s)			
Urban - Urban tree			
Site name/location	Alberton House	Onsite/offsite	On site
Central grid reference of habitat	SJ 8349 9842	Unique polygon reference	4
Limitations (if applicable)	—	Metric 3.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	—
Habitat Description			
Single young non-native birch tree within ornamental planting			
Covers the following topographical formations most commonly found in urban areas¹: Individual Trees: Young trees over 75mm in diameter measured at 1.5m from ground level and individual semi-mature and mature trees of significant stature and size that dominate their surroundings whose canopies are not touching but that are in close proximity to other trees. Perimeter Blocks: Groups or stands of trees within and around boundaries of land, former field boundary trees incorporated into developments, individual trees in gardens whose canopies overlap continuously Linear Blocks: Lines of trees along streets, highways, railways and canals whose canopies may or may not overlap continuously.			
Condition Assessment Criteria		Condition Achieved (Y/N)	Notes/Justification
1	The tree is a native species(or more than 70% within the block are native species).	N	Betula nigra
2	The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).	Y	Single tree
3	The tree is mature ² or veteran ³ (or more than 50% within the block are mature ² or veteran ³).	N	
4	There is little or no evidence of an adverse impact on tree health by anthropogenic activities such as vandalism or herbicide use. There is no current regular pruning regime so the trees retain >75% of expected canopy for their age range and height.	N	Managed tree

5	Micro-habitats for birds, mammals and insects are present e.g. presence of deadwood, cavities, ivy or loose bark	N	
6	More than 20% of the tree canopy area is oversailing vegetation beneath.	Y	within planting bed
			Number of criteria passed
Condition Assessment Result	Condition Assessment Score	Score Achieved x/✓	
Passes 5 or 6 of 6 criteria	Good (3)		
Passes 3 or 4 of 6 criteria	Moderate (2)		
Passes 0, 1 or 2 of 6 criteria	Poor (1)	✓	
Suggested enhancement interventions to improve condition score			
			

APPENDIX 4
Condition Assessment Sheets – Proposed Habitats
(To follow)

Survey cover sheet			
Date	01/07/22	Site name or location	Alberton Hs.
Weather conditions	—	Project/development name	" "
Surveyor name(s)	Samh Ross	Onsite/offsite	on site
Metric 3.1 survey reference	BRUN02.2	Reason for assessment (if not baseline condition survey)	post-development plan/proposal review
Notes			
Assessment of proposed ^{x7} Urban tree planting across scheme, as approach to Trinity Bridge.			

Condition Sheet: URBAN TREES Habitat Type			
UKHab Habitat Type(s)			
Urban - Urban tree			
Site name/location	Alberton Hawk	Onsite/offsite	on site
Central grid reference of habitat	SJ 8347 9841	Unique polygon reference	—
Limitations (if applicable)	—	Metric 3.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	—
Habitat Description			
x3 lime trees proposed for planting at ground level by Trinity Bridge. Expected to develop to Medium category size over time.			
Covers the following topographical formations most commonly found in urban areas¹: Individual Trees: Young trees over 75mm in diameter measured at 1.5m from ground level and individual semi-mature and mature trees of significant stature and size that dominate their surroundings whose canopies are not touching but that are in close proximity to other trees. Perimeter Blocks: Groups or stands of trees within and around boundaries of land, former field boundary trees incorporated into developments, individual trees in gardens whose canopies overlap continuously Linear Blocks: Lines of trees along streets, highways, railways and canals whose canopies may or may not overlap continuously.			
Condition Assessment Criteria		Condition Achieved (Y/N)	Notes/Justification
1	The tree is a native species(or more than 70% within the block are native species).	Y	lime trees (x3)
2	The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).	Y	
3	The tree is mature ² or veteran ³ (or more than 50% within the block are mature ² or veteran ³).	N	
4	There is little or no evidence of an adverse impact on tree health by anthropogenic activities such as vandalism or herbicide use. There is no current regular pruning regime so the trees retain >75% of expected canopy for their age range and height.	N	likely to be managed

5	Micro-habitats for birds, mammals and insects are present e.g. presence of deadwood, cavities, ivy or loose bark	N	
6	More than 20% of the tree canopy area is oversailing vegetation beneath.	Y	underplanted
			Number of criteria passed
Condition Assessment Result	Condition Assessment Score	Score Achieved x/✓	
Passes 5 or 6 of 6 criteria	Good (3)		
Passes 3 or 4 of 6 criteria	Moderate (2)	✓	
Passes 0, 1 or 2 of 6 criteria	Poor (1)		
Suggested enhancement interventions to improve condition score			

Survey cover sheet			
Date	01/07/22	Site name or location	Alberton Haze
Weather conditions	—	Project/development name	Alberton Haze
Surveyor name(s)	Sarah Ross	Onsite/offsite	on site
Metric 3.1 survey reference	BRUN02.2	Reason for assessment (if not baseline condition survey)	post-development proposal review.
Notes			
Assessment of proposed single urban tree on streetscape of St Mary's Passage.			

Condition Sheet: URBAN TREES Habitat Type			
UKHab Habitat Type(s)			
Urban - Urban tree			
Site name/location	Alberton Hs.	Onsite/offsite	on site
Central grid reference of habitat	SJ 8350 9839	Unique polygon reference	—
Limitations (if applicable)	—	Metric 3.0 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	—
Habitat Description			
Single lime tree proposed for St Mary's Passage streetscape. Expected to develop to Medium size over time			
Covers the following topographical formations most commonly found in urban areas¹: Individual Trees: Young trees over 75mm in diameter measured at 1.5m from ground level and individual semi-mature and mature trees of significant stature and size that dominate their surroundings whose canopies are not touching but that are in close proximity to other trees. Perimeter Blocks: Groups or stands of trees within and around boundaries of land, former field boundary trees incorporated into developments, individual trees in gardens whose canopies overlap continuously Linear Blocks: Lines of trees along streets, highways, railways and canals whose canopies may or may not overlap continuously.			
Condition Assessment Criteria		Condition Achieved (Y/N)	Notes/Justification
1	The tree is a native species(or more than 70% within the block are native species).	Y	lime tree x1
2	The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).	Y	
3	The tree is mature ² or veteran ³ (or more than 50% within the block are mature ² or veteran ³).	N	
4	There is little or no evidence of an adverse impact on tree health by anthropogenic activities such as vandalism or herbicide use. There is no current regular pruning regime so the trees retain >75% of expected canopy for their age range and height.	N	likely to be managed

5	Micro-habitats for birds, mammals and insects are present e.g. presence of deadwood, cavities, ivy or loose bark	2	
6	More than 20% of the tree canopy area is oversailing vegetation beneath.	2	within handstanding
			Number of criteria passed
Condition Assessment Result	Condition Assessment Score	Score Achieved x/✓	
Passes 5 or 6 of 6 criteria	Good (3)		
Passes 3 or 4 of 6 criteria	Moderate (2)		
Passes 0, 1 or 2 of 6 criteria	Poor (1)	✓	
Suggested enhancement interventions to improve condition score			

Survey cover sheet			
Date	01/07/22	Site name or location	Alberston House
Weather conditions	—	Project/development name	" "
Surveyor name(s)	Sarah Ross	Onsite/offsite	on site
Metric 3.1 survey reference	BRUNOL2	Reason for assessment (if not baseline condition survey)	Post development proposal review.
Notes			
Assessment of proposed roof terrace design (intensive green roof).			

4c2	Biodiverse green roofs - have a varied depth of 80 - 150mm at least 50% is at 150mm and is planted and seeded with wildflowers and sedums or is pre-prepared with sedums and wildflowers. To achieve Good condition some additional habitat, such as sand piles, logs etc should be present.		
Essential criterion 2&3 achieved? (must be achieved to score a good condition for non biodiverse green roofs) (Y/N)			Y
Number of criteria passed			3
Condition Assessment Result	Condition Assessment Score	Score Achieved x/✓	
If 3 criteria assessed:			
• Passes 3 of 3 core criteria; AND • Meets the requirements for good condition within criteria 2 and 3	Good (3)		
• Passes 2 of 3 core criteria; OR • Passes 3 of 3 core criteria but does not meet the requirements for good condition within criteria 2 and 3	Moderate (2)		
• Passes 0 or 1 of 3 core criteria	Poor (1)		
If 4 criteria assessed:			
• Passes 3 of 3 core criteria; AND • Meets the requirements for good condition within criteria 2 and 3; AND • Passes additional criterion 4a or 4b	Good (3)		
• Passes 2 of 3 of 4 criteria; OR • Passes 4 of 4 criteria but does not meet the requirements for good condition within criteria 2 and 3	Moderate (2)	✓	
• Passes 0 or 1 of 4 criteria	Poor (1)		
Suggested enhancement interventions to improve condition score			
Word need to meet criterion 4c1 to achieve Good condition.			
Notes			
Footnote 1: For Biodiverse green roofs only - experience has shown that a range of sedums species (native, naturalised, and non-native) support wildflowers during hot periods. Therefore, for Criteria 2 a Biodiverse green roof can have non-native sedums and still achieve Good condition. Footnote 2: For Criteria 3 – For green roof habitat types only - <i>Buddleja davidii</i> should be assessed alongside Schedule 9 species. This species impairs the health of the local ecosystem and reduces the biodiversity potential of the roof. It is also a sign that a roof has not been planted and seeded correctly in sub-sequent years.			

Condition Sheet: URBAN Habitat Type			
UKHab Habitat Type			
Sparsely vegetated land - Ruderal/ephemeral Urban - Allotments Urban - Biodiverse green roof [Use Urban condition sheet as default. Where there are areas of grassland, scrub or other habitat above the minimum mappable area threshold, record and assess these as the relevant habitat type] Urban - Bioswale Urban - Cemeteries and churchyards [Use Urban condition sheet as default. Where there are areas of grassland, woodland or scrub above the minimum mappable area threshold, record and assess these as the relevant habitat type] Urban - Façade-bound green wall Urban - Ground based green wall Urban - Intensive green roof Urban - Open mosaic habitats on previously developed land Urban - Rain garden Urban - Sustainable urban drainage feature [in the context of the Biodiversity Metric, this habitat type refers to open SUDS with vegetation and/or open water] Urban - Vacant / derelict land / bare ground			
Site name/location	Albertan House	Onsite/offsite	on site
Central grid reference	558349 9842	Unique polygon reference	—
Limitations (if applicable)	—	Metric 3.1 survey reference (if condition assessment of this polygon relates to a wider habitat survey)	—
Habitat Description Intensive green roof - design includes native and ecologically beneficial plants, including small trees.			
See UKHab			
Condition Assessment Criteria		Condition Achieved (Y/N)	Notes/Justification
CORE CRITERIA - applicable to all urban habitat types:			
1	Vegetation structure is varied, providing opportunities for insects, birds and bats to live and breed. A single ecotone (i.e. scrub, grassland, herbs) should not account for more than 80% of the total habitat area.	Y	Mixed planting incl. trees/shrubs
2	There is a diverse range of flowering plant species, providing nectar sources for insects. These species may be either native, or non-native but beneficial to wildlife. NB - To achieve GOOD condition, criterion 2 must be satisfied by native species only (rather than non-natives beneficial to wildlife). Note that Biodiverse green roofs are exempt from this requirement, and can include non-native sedums, as set out in footnote 1.	Y	Native + non-native beneficial
3	Invasive non-native species (Schedule 9 of WCA) cover less than 5% of total vegetated area. NB - To achieve GOOD condition, criterion 3 must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).	Y	
ADDITIONAL CRITERION - only applicable to Open mosaic on previously developed land habitat type:			
4a	The site shows spatial variation, forming a mosaic of at least four early successional communities (a) to (h) PLUS bare substrate AND pools. (a) annuals; (b) mosses/liverworts; (c) lichens; (d) ruderals; (e) inundation species; (f) open grassland; (g) flower-rich grassland; (h) heathland.	—	
ADDITIONAL CRITERION - only applicable to Bioswale and SUDS habitat types:			
4b	The water table is at or near the surface throughout the year. This could be	—	
ADDITIONAL CRITERION - only applicable to green roof habitat types (select as necessary):			
4c1	Intensive green roofs – have a minimum of 50% native and non-native wildflowers - 70% of the roof area is soil and vegetation (including water features)	N	70% criteria unlikely to be met due to roof terrace requirements.

Map 1



Modular River Physical (MoRPh) Field Survey (ver 12)

Sheet 1 - GENERAL INFORMATION

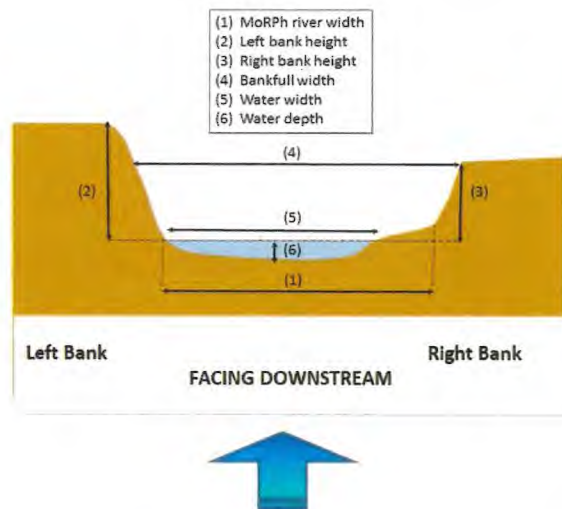
RECORD WHAT YOU SEE NOT WHAT YOU KNOW

PROJECT DETAILS (Optional)	
Project name	Alberton Hare
Project code	BRONQ2.2

1.1 SURVEYOR AND SURVEY CONDITIONS	
Surveyor	Sarah Ross
Survey date and time	27/6/22
Module surveyed from?	left / <u>right</u> / both banks
Bed visible?	Yes / <u>No</u>
Adverse conditions?	Yes / <u>No</u>
If yes, describe e.g. elevated flow, turbid water, etc	-

1.3 CHANNEL DIMENSIONS (m)	
Cross section GPS	
1. MoRPh river width	20
2. Left bank height	6
3. Right bank height	5
4. Bankfull width	20
5. Water width	20
6. Water depth	2

Multi-MoRPh Channel Dimensions	
If surveying multiple adjoining modules: a minimum of ONE (REPRESENTATIVE) SET OF CHANNEL DIMENSIONS should be measured for each group - up to 10 modules.	
TIP!:- Bridges provide a good location for estimating dimensions of larger rivers.	



PROJECT DETAILS (Optional)	
WFD Water Body ID	GB1120691452
Survey type (monitoring, pre-project post-project, post-recovery, scenario, training)	baseline

1.2 MODULE NAME AND LOCATION	
River name	R. Irwell
Location/Reach name	Blackfriar to Albert Bridge
SubReach name (used to reference a sub-reach of contiguous modules)	BAB
Module number (1, 2, 3... number from upstream to downstream within SubReach)	01
Riverfly site reference (optional)	-
Module length (m) (I)	40
NGR / GPS - Midpoint	ST 83550 98510

(i) Determining your Module Length	
River width (m) (ii)	Module length (m)
< 5 m	10 m
5 to < 10 m	20 m
10 to < 20 m	30 m
20 to < 30 m	<u>40 m</u>
Large & navigable rivers and canals	50 m

(ii) Predominant MoRPh river width is used to determine module length. It is estimated as the typical water width plus any area of bare sediment or emergent aquatic plants at the water edge.
If river ≥ 30 m wide it is usually too large for a full MoRPh Survey. For Large & navigable rivers and canals a reduced MoRPh survey is possible, focusing on the banktops and faces and those bed features that are visible

Identifying the LEFT AND RIGHT BANK	
The LEFT and RIGHT BANK of a river are on the left and right sides of the channel when facing in a downstream direction with the water flowing away from you	

1.4 PHOTOGRAPHS (max 4)	
Fixed point photograph taken with NGR / GPS? (Y/N)	N
Photo ref 1 (iv)	13 across
Photo ref 2	14 downstream
Photo ref 3	15 upstream
Photo ref 4	
We recommend 3 photos from the midpoint, one across, one looking upstream and one downstream to cover entire module. Photo 4 could be of special features or to support notes/queries.	

NOTES

Use this box to enter details where you are unsure of any measurements / records you have made.

Water depth estimated

WFD: Irwell to / Manchester Ship Canal (1rk to Confluence with Upper Mersey) - heavily modified, Moderate Ecological Status.

Map 1

River Survey (MoRPh ver 12)

Sheet 2 - BANK TOP: FLOODPLAIN MEASUREMENTS

RECORD WHAT YOU SEE NOT WHAT YOU KNOW (within 10 m of bank edge)

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE	ABUNDANCE	NOTES
2.1 BANK TOP - ARTIFICIAL / MANAGED GROUND COVER		LB	RB	
Artificial ground cover	Artificial ground cover (Fp, Tr, Ic, Re, Sy, Ld, Ar, Pv, Pr, Pw, Ow)	DOMINANT TYPE	LB	RB
		SUB-DOMINANT TYPE (see (I))	LB	RB
			A / T / P / E	A / T / P / E
			A / P / E	A / P / E
2.2 BANK TOP - NATURAL / LIGHTLY MANAGED GROUND COVER		LB	RB	
Terrestrial vegetation	Unvegetated (bare soil / rock)		A / T / P / E	A / T / P / E
	Mosses / lichens		A / T / P / E	A / T / P / E
	Short/creeping herbs/grasses		A / T / P / E	A / T / P / E
	Tall herbs/grasses		A / T / P / E	A / T / P / E
	Scrub or shrubs		A / T / P / E	A / T / P / E
	Saplings or trees		A / T / P / E	A / T / P / E
	Fallen trees (ONLY those with a significant proportion on bank top)		A / T / P / E	A / T / P / E
	Leaning trees		A / T / P / E	A / T / P / E
	J-shaped trees		A / T / P / E	A / T / P / E
	Tree/shrub branches trailing into channel		A / T / P / E	A / T / P / E
	Large wood (wood pieces > 1m long, > 10 cm diameter)		A / T / P / E	A / T / P / E
	Predominant tree type (Absent, Deciduous, Coniferous, Mixed)		A / D / C / M	A / D / C / M
Non-native invasive plant species	Himalayan balsam		A / T / P / E	A / T / P / E
	Japanese knotweed		A / T / P / E	A / T / P / E
	Giant hogweed		A / T / P / E	A / T / P / E
	Floating pennywort		A / T / P / E	A / T / P / E
	Other: NAME SPECIES		A / T / P / E	A / T / P / E
	Other: NAME SPECIES		A / T / P / E	A / T / P / E
2.3 BANK TOP - WATER RELATED FEATURES		LB	RB	
Water-related features	Pond	Disconnected from river at time of survey	A / T / P / E	A / T / P / E
		Connected to river by water-filled channel at time of survey	A / T / P / E	A / T / P / E
	Side channel - free flowing separate channel including tributaries and fish passes		A / T / P / E	A / T / P / E
	Wetland (recorded by dominant vegetation type)	Short non-woody vegetation (e.g. mosses, sedges)	A / T / P / E	A / T / P / E
		Tall, non-woody vegetation (e.g. reeds, rushes)	A / T / P / E	A / T / P / E
		Shrubs and trees (e.g. alder / willow carr)	A / T / P / E	A / T / P / E

SUB-DOMINANT TYPE
ONLY RECORD if it occupies > 20% of area within 10m of bank edge

ABUNDANCE CODES
A/T/P/E abundance codes on sheet 2 refer to proportion of area within 10 m of bank edge along the module length. Circle one of:
A = absent,
T = trace (< 5%),
P = present (5% - <33%),
E = extensive (> 33%)

PLANT IDENTIFICATION
See MoRPh field guide

NOTES (ctd.)

Bank all hardstanding + (or buildings (commercial).

Maphi

River Survey (MORPh ver 12)

Sheet 3 - BANK FACE AND CHANNEL MARGIN MEASUREMENTS

RECORD WHAT YOU SEE NOT WHAT YOU KNOW

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE	ABUNDANCE	NOTES
3.1 BANK FACE - PROFILE				
Bank face - Profile	Natural / artificial bank profile	DOMINANT TYPE (V, Vo, Vu, Vt, St, Gt, Cm, Rs, Ts, Em, Sm, Pc)	LB RB LB RB	SUB-DOMINANT TYPE ONLY RECORD if it occupies > 20% of the bank length
		SUB-DOMINANT TYPE (see (ii))		
3.2 BANK FACE - MATERIALS				
Bank face - Natural materials	Bank face sediment (AR, BE, BO, CO, GP, SA, SI, CL, OR, PE, EA, NV)	Sediment size (top 2/3)	LB RB	WHICH PART OF THE BANK IS REINFORCED? A = absent T = mainly the top B = mainly the bottom W = Whole bank face
		Sediment size (bottom 1/3)	LB RB	
Bank face - Reinforcement	Which part of the bank is reinforced? (NOTE SPECIFIC CODES IN BOX (ii))		A / T / B / W	SUB-DOMINANT TYPE ONLY RECORD if it occupies > 20% reinforced area
	How extensive is the reinforcement horizontally along the module?		A / T / P / E	
	Bank reinforcement	DOMINANT TYPE (CC, CB, BR, SP, WP, BW, RR, GA, WS, RE, BC, WO)	Reinforcement type	
		SUB-DOMINANT TYPE (see (iii))	Reinforcement type	
3.3 BANK FACE / CHANNEL MARGIN - FEATURES				
Natural physical features	Bare / unvegetated side bar (< 50% vegetation cover)	Sediment size	LB RB	ABUNDANCE CODES A/T/P/E abundance codes on sheet 3 refer to proportion of bank length occupied by feature, APART FROM 'Terrestrial vegetation on bank face' and 'Non-native invasive plant species' in section 3.4, which refer to proportion of bank face area: A = 0%, T = < 5%, P = 5% - < 33%, E = > 33%
	Vegetated side bar (> 50% vegetation cover)	Sediment size	LB RB	
	Berm (if unsure whether berm/bench record as berm)		LB RB	
	Bench (if unsure whether berm/bench record as berm)		LB RB	
	Stable cliff (> 0.5 m)		LB RB	
	Eroding cliff (> 0.5 m)		LB RB	
	Toe		LB RB	
	Nest holes or animal burrows		LB RB	
	Marginal backwater		LB RB	
	Tributary junction / confluence: RECORD AS COUNT		LB RB	
Artificial physical features	Pipes / outfalls (if appear potentially functional): RECORD AS COUNT		LB RB	Maj (Major) = > 20% channel width; Int (Intermediate) = 10-20% width; Min (Minor) = < 10% width
	Jetty		Maj / Int / Min	
	Deflector		Maj / Int / Min	
	Other: INSERT FEATURE NAME		Maj / Int / Min	
3.4 BANK FACE / CHANNEL MARGIN - VEGETATION				
Terrestrial vegetation on bank face	Unvegetated (bare earth or rock)	LB RB	LB RB	Fallen trees (ONLY those with a significant proportion on bank face)
	Mosses / lichens	LB RB	LB RB	
	Short/creeping herbs/grasses	LB RB	LB RB	
	Tall herbs/grasses	LB RB	LB RB	
	Scrub or shrubs	LB RB	LB RB	
	Saplings or trees	LB RB	LB RB	
	Large wood (pieces > 1m long, > 10 cm diameter)	LB RB	LB RB	
		LB RB	LB RB	
Aquatic vegetation at bank-water margin	Liverworts, mosses, lichens	LB RB	LB RB	Amphibious
	Emergent broad-leaved	LB RB	LB RB	Filamentous algae
	Emergent linear-leaved (incl horsetails)	LB RB	LB RB	
Non-native Invasive plant species	Himalayan balsam	LB RB	Other: RECORD SPECIES NAME	
	Japanese knotweed	LB RB		
	Giant hogweed	LB RB	Other: RECORD SPECIES NAME	
	Floating pennywort	LB RB		

Sheet 4 - CHANNEL BED MEASUREMENTS

MorPh 1.

RECORD WHAT YOU SEE NOT WHAT YOU KNOW

MEASUREMENT CATEGORY	MEASUREMENT TYPE		ABUNDANCE	MEASUREMENT TYPE	ABUNDANCE
4.1 CHANNEL BED - MATERIALS					
Channel bed - Natural materials	Bed sediment size	Bedrock (BE)	A / T / P / E	Silt (and finer non-sticky particles, SI)	A / T / P / E
		Boulder (BO)	A / T / P / E	Clay (CL)	A / T / P / E
		Cobble (CO)	A / T / P / E	Organic (leaves, twigs etc. not fully decomposed) (OR)	A / T / P / E
		Gravel-Pebble (GP)	A / T / P / E		
		Sand (SA)	A / T / P / E	Peat (PE)	A / T / P / E
	Silt overlying coarser sediments	Continuous silt layer (the form of underlying coarser sediments is visible)	A / T / P / E	Patchy thin layer (some coarser particles protrude through the silt layer)	A / T / P / E
	Channel bed - Reinforcement	Bed reinforcement extent		A / T / P / E	(i) SUB-DOMINANT REINFORCEMENT TYPE: ONLY RECORD if it occupies > 20% reinforced area
		CODE / DESCRIPTION			
Bed reinforcement materials		DOMINANT TYPE (CC, CB, BR, SP, WP, BW, RR, GA, WS, RE, BC, WO)	reinforcement type		
		SUB-DOMINANT TYPE (see (i))	reinforcement type		

4.2 WATER SURFACE					
Water surface flow patterns	Flow types	Free fall (FF)	(A) / T / P / E	Rippled (RP)	(A) / T / P / E
		Chute (CH)	(A) / T / P / E	Smooth (SM)	(A) / T / P / E
		Broken standing waves (BW)	(A) / T / P / E	No perceptible flow (NP)	(A) / T / P / E
		Unbroken standing waves (UW)	(A) / T / P / E		
		Upwelling (UP)	(A) / T / P / E	Dry (DR)	(A) / T / P / E

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE / DESCRIPTION	ABUNDANCE	NOTES
4.3 CHANNEL BED - FEATURES				
Channel bed - Natural physical features	Exposed bedrock		(A) / T / P / E	ABUNDANCE CODES A/T/P/E abundance codes on sheet 4 refer to proportion of the area of the river bed within the module length. Circle one of: A = absent, T = trace (< 5%), P = present (5% - <33%), E = extensive (> 33%)
	Exposed unvegetated boulders / rocks (< 50% vegetation cover)		(A) / T / P / E	
	Exposed vegetated boulders / rocks (> 50% vegetation cover)		(A) / T / P / E	
	Bare / unvegetated mid channel bar (< 50% vegetation cover)	sediment size	(A) / T / P / E	
	Vegetated mid channel bar (>50% vegetation cover)	sediment size	(A) / T / P / E	
	Island		(A) / T / P / E	
	Cascade		(A) / T / P / E	
	Pool: RECORD AS COUNT		/	
	Riffle: RECORD AS COUNT		/	
	Step (steep boulder/bedrock feature <2m high, mainly chute and free fall): RECORD AS COUNT		/	
Channel bed - Artificial features	Waterfall (steep boulder/bedrock feature >2m high, mainly free fall): RECORD AS COUNT		/	WEIR TYPES / SIZES Major: permanent, impermeable, impounding structure across entire channel width Intermediate: semi-permeable, loose stone / wood structure across entire channel width Minor: highly permeable, transient feature across entire channel width
	Large trash (car parts, trolleys, traffic cones etc)		(A) / T / P / E	
	Major weir (see (ii)): RECORD AS COUNT		/	
	Intermediate weir (see (ii)): RECORD AS COUNT		/	
	Minor weir (see (ii)): RECORD AS COUNT		/	
	Bridge piers in river bed: RECORD AS COUNT		/	
	Bridge shadow (see (iii))		Wide / Int / Narr	
	Culvert: RECORD AS COUNT		/	BRIDGE SHADOW Wide = > 25 m channel length, Int (Intermediate) = 10-25 m, Narr (Narrow) = < 10m

MEASUREMENT CATEGORY	MEASUREMENT TYPE	ABUNDANCE	MEASUREMENT TYPE	ABUNDANCE
4.4 CHANNEL BED - VEGETATION				
Vegetation within wetted channel (aquatic vegetation)	Unvegetated (bare river bed)	A / T / P / E	Amphibious	A / T / P / E
	Liverworts, mosses, lichens	A / T / P / E	Submerged broad-leaved	A / T / P / E
	Emergent broad-leaved	A / T / P / E	Submerged linear-leaved	A / T / P / E
	Emergent linear-leaved (incl horsetails)	A / T / P / E	Submerged fine-leaved	A / T / P / E
	Floating leaved (rooted)	A / T / P / E	Filamentous algae	A / T / P / E
	Free floating	A / T / P / E	Channel choked with plants?	YES/NO
Vegetation interacting with wetted channel (terrestrial vegetation)	Vegetation shading channel	A / T / P / E	Large wood dam (in channel and crosses entire channel): RECORD AS COUNT	—
	Submerged tree roots	A / T / P / E		
	Trees/shrubs/saplings growing on river bed	A / T / P / E	Fallen trees (ONLY those with a significant proportion in channel): RECORD AS COUNT	—
	Large wood in channel (pieces > 1m long, >10 cm wide)	A / T / P / E		
	Discrete accumulations of organic material in channel (e.g. twigs, leaves)	A / T / P / E		
Non-native invasive plant species	Himalayan balsam	A / T / P / E	Other: RECORD SPECIES NAME	A / T / P / E
	Japanese knotweed	A / T / P / E		
	Giant hogweed	A / T / P / E	Other: RECORD SPECIES NAME	A / T / P / E
	Floating pennywort	A / T / P / E		

Marph 2.

Modular River Physical (MoRPh) Field Survey (ver 12)

Sheet 1 - GENERAL INFORMATION

RECORD WHAT YOU SEE NOT WHAT YOU KNOW

4

PROJECT DETAILS (Optional)	
Project name	Alberton Haze
Project code	VRUN02.2

PROJECT DETAILS (Optional)	
WFD Water Body ID	
Survey type (monitoring, pre-project post-project, post-recovery, scenario, training)	baseline

1.1 SURVEYOR AND SURVEY CONDITIONS	
Surveyor	Sarah Ross
Survey date and time	27/6/22
Module surveyed from?	Left / right / both banks
Bed visible?	(Yes / No) <u>part</u>
Adverse conditions?	Yes / No
If yes, describe e.g. elevated flow, turbid water, etc	

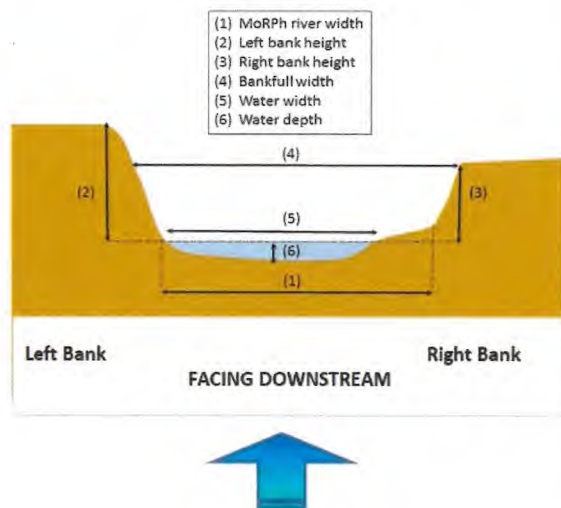
1.2 MODULE NAME AND LOCATION	
River name	River Inwell
Location/Reach name	Blackfries to Albert Br.
SubReach name (used to reference a sub-reach of contiguous modules)	BAB
Module number (1, 2, 3... number from upstream to downstream within SubReach)	02
Riverfly site reference (optional)	-
Module length (m) (i)	40
NGR / GPS - Midpoint	SJ 83520 98480.

1.3 CHANNEL DIMENSIONS (m)	
Cross section GPS	
1. MoRPh river width	30
2. Left bank height	6
3. Right bank height	5
4. Bankfull width	30
5. Water width	30
6. Water depth	1.5

Multi-MoRPh Channel Dimensions
If surveying multiple adjoining modules: a minimum of ONE (REPRESENTATIVE) SET OF CHANNEL DIMENSIONS should be measured for each group - up to 10 modules.
TIP!:- Bridges provide a good location for estimating dimensions of larger rivers.

(i) Determining your Module Length	
River width (m) (ii)	Module length (m)
< 5 m	10 m
5 to < 10 m	20 m
10 to < 20 m	30 m
20 to < 30 m	40 m
Large & navigable rivers and canals	50 m

(ii) Predominant MoRPh river width is used to determine module length. It is estimated as the typical water width plus any area of bare sediment or emergent aquatic plants at the water edge.
If river ≥ 30 m wide it is usually too large for a full MoRPh Survey. For Large & navigable rivers and canals a reduced MoRPh survey is possible, focusing on the banktops and faces and those bed features that are visible



Identifying the LEFT AND RIGHT BANK
The LEFT and RIGHT BANK of a river are on the left and right sides of the channel when facing in a downstream direction with the water flowing away from you

1.4 PHOTOGRAPHS (max 4)	
Fixed point photograph taken with NGR / GPS? (Y/N)	N
Photo ref 1 (iv)	10 across
Photo ref 2	11 towards footbridge downstream
Photo ref 3	12 upstream
Photo ref 4	

We recommend 3 photos from the midpoint, one across, one looking upstream and one downstream to cover entire module. Photo 4 could be of special features or to support notes/queries.

NOTES

Use this box to enter details where you are unsure of any measurements / records you have made.

Very similar to Marph 3.

Sheet 2 - BANK TOP: FLOODPLAIN MEASUREMENTS

RECORD WHAT YOU SEE NOT WHAT YOU KNOW (within 10 m of bank edge)

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE	ABUNDANCE	NOTES
2.1 BANK TOP - ARTIFICIAL / MANAGED GROUND COVER				
Artificial ground cover	Artificial ground cover (Fp, Tr, Ic, Re, Sy, Ld, Ar, Pv, Pr, Pw, Ow)	DOMINANT TYPE	LB: IC RB: Fp	LB: A/T/P/E RB: A/T/P/E
		SUB-DOMINANT TYPE (see (I))	LB: / RB: /	LB: A/P/E RB: A/P/E
2.2 BANK TOP - NATURAL / LIGHTLY MANAGED GROUND COVER				
Terrestrial vegetation	Unvegetated (bare soil / rock)		LB: A/T/P/E RB: A/T/P/E	ABUNDANCE CODES A/T/P/E abundance codes on sheet 2 refer to proportion of area within 10 m of bank edge along the module length. Circle one of: A = absent, T = trace (< 5%), P = present (5% - <33%), E = extensive (> 33%)
	Mosses / lichens		LB: A/T/P/E RB: A/T/P/E	
	Short/creeping herbs/grasses		LB: A/T/P/E RB: A/T/P/E	
	Tall herbs/grasses		LB: A/T/P/E RB: A/T/P/E	
	Scrub or shrubs		LB: A/T/P/E RB: A/T/P/E	
	Saplings or trees		LB: A/T/P/E RB: A/T/P/E	
	Fallen trees (ONLY those with a significant proportion on bank top)		LB: A/T/P/E RB: A/T/P/E	
	Leaning trees		LB: A/T/P/E RB: A/T/P/E	
	J-shaped trees		LB: A/T/P/E RB: A/T/P/E	
	Tree/shrub branches trailing into channel		LB: A/T/P/E RB: A/T/P/E	
	Large wood (wood pieces > 1m long, > 10 cm diameter)		LB: A/T/P/E RB: A/T/P/E	
	Predominant tree type (Absent, Deciduous, Coniferous, Mixed)		LB: A/D/C/M RB: A/D/C/M	
	Non-native invasive plant species	Himalayan balsam		
Japanese knotweed			LB: A/T/P/E RB: A/T/P/E	
Giant hogweed			LB: A/T/P/E RB: A/T/P/E	
Floating pennywort			LB: A/T/P/E RB: A/T/P/E	
Other: NAME SPECIES			LB: A/T/P/E RB: A/T/P/E	
Other: NAME SPECIES			LB: A/T/P/E RB: A/T/P/E	
2.3 BANK TOP - WATER RELATED FEATURES				
Water-related features	Pond	Disconnected from river at time of survey	LB: A/T/P/E RB: A/T/P/E	
		Connected to river by water-filled channel at time of survey	LB: A/T/P/E RB: A/T/P/E	
	Side channel - free flowing separate channel including tributaries and fish passes		LB: A/T/P/E RB: A/T/P/E	
	Wetland (recorded by dominant vegetation type)	Short non-woody vegetation (e.g. mosses, sedges)	LB: A/T/P/E RB: A/T/P/E	
		Tall, non-woody vegetation (e.g. reeds, rushes)	LB: A/T/P/E RB: A/T/P/E	
		Shrubs and trees (e.g. alder / willow carr)	LB: A/T/P/E RB: A/T/P/E	

NOTES (ctd.)

Bank tops dominated by hardstanding and buildings with only sparse / scattered self-seeded vegetation.

Sheet 3 - BANK FACE AND CHANNEL MARGIN MEASUREMENTS

RECORD WHAT YOU SEE NOT WHAT YOU KNOW

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE	ABUNDANCE	NOTES	
3.1 BANK FACE - PROFILE					
Bank face - Profile	Natural / artificial bank profile	DOMINANT TYPE (V, Vo, Vu, Vt, St, Gt, Cm, Rs, Ts, Em, Sm, Pc)	LB RB	LB RB	
		SUB-DOMINANT TYPE (see (ii))	LB RB	LB RB	
3.2 BANK FACE - MATERIALS Bank face - Natural materials: Bank face sediment (AR, BE, BO, CO, GP, SA, SI, CL, OR, PE, EA, NV) Bank face - Reinforcement: Which part of the bank is reinforced? (NOTE SPECIFIC CODES IN BOX (ii)) How extensive is the reinforcement horizontally along the module? Bank reinforcement: DOMINANT TYPE (CC, CB, BR, SP, WP, BW, RR, GA, WS, RE, BC, WO) SUB-DOMINANT TYPE (see (iii))					
3.3 BANK FACE / CHANNEL MARGIN - FEATURES Natural physical features: Bare / unvegetated side bar (< 50% vegetation cover) Vegetated side bar (>50% vegetation cover) Berm (if unsure whether berm/bench record as berm) Bench (if unsure whether berm/bench record as berm) Stable cliff (> 0.5 m) Eroding cliff (> 0.5m) Toe Nest holes or animal burrows Marginal backwater Tributary junction / confluence: RECORD AS COUNT Artificial physical features: Pipes / outfalls (if appear potentially functional): RECORD AS COUNT Jetty Deflector Other: INSERT FEATURE NAME					
3.4 BANK FACE / CHANNEL MARGIN - VEGETATION Terrestrial vegetation on bank face: Unvegetated (bare earth or rock) Mosses / lichens Short/creeping herbs/grasses Tall herbs/grasses Scrub or shrubs Saplings or trees Large wood (pieces > 1m long, > 10 cm diameter) Aquatic vegetation at bank-water margin: Liverworts, mosses, lichens Emergent broad-leaved Emergent linear-leaved (incl horsetails) Non-native invasive plant species: Himalayan balsam Japanese knotweed Giant hogweed Floating pennywort					

Sheet 4 - CHANNEL BED MEASUREMENTS

RECORD WHAT YOU SEE NOT WHAT YOU KNOW

MEASUREMENT CATEGORY	MEASUREMENT TYPE		ABUNDANCE	MEASUREMENT TYPE	ABUNDANCE
4.1 CHANNEL BED - MATERIALS					
Channel bed - Natural materials	Bed sediment size	Bedrock (BE)	A / T / P / E	Silt (and finer non-sticky particles, SI)	A / T / P / E
		Boulder (BO)	A / T / P / E	Clay (CL)	A / T / P / E
		Cobble (CO)	A / T / P / E	Organic (leaves, twigs etc. not fully decomposed) (OR)	A / T / P / E
		Gravel-Pebble (GP)	A / T / P / E		
		Sand (SA)	A / T / P / E	Peat (PE)	A / T / P / E
	Silt overlying coarser sediments	Continuous silt layer (the form of underlying coarser sediments is visible)	A / T / P / E	Patchy thin layer (some coarser particles protrude through the silt layer)	A / T / P / E
Channel bed - Reinforcement	Bed reinforcement extent		A / T / P / E	(i) SUB-DOMINANT REINFORCEMENT TYPE: ONLY RECORD if it occupies > 20% reinforced area	
			CODE / DESCRIPTION		
	Bed reinforcement materials	DOMINANT TYPE (CC, CB, BR, SP, WP, BW, RR, GA, WS, RE, BC, WO)	reinforcement type		
		SUB-DOMINANT TYPE (see (ii))	reinforcement type		

4.2 WATER SURFACE					
Water surface flow patterns	Flow types	Free fall (FF)	A / T / P / E	Rippled (RP)	A / T / P / E
		Chute (CH)	A / T / P / E	Smooth (SM)	A / T / P / E
		Broken standing waves (BW)	A / T / P / E	No perceptible flow (NP)	A / T / P / E
		Unbroken standing waves (UW)	A / T / P / E		
		Upwelling (UP)	A / T / P / E	Dry (DR)	A / T / P / E

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE / DESCRIPTION	ABUNDANCE	NOTES
4.3 CHANNEL BED - FEATURES				
Channel bed - Natural physical features	Exposed bedrock		A / T / P / E	ABUNDANCE CODES A/T/P/E abundance codes on sheet 4 refer to proportion of the area of the river bed within the module length. Circle one of: A = absent, T = trace (< 5%), P = present (5% - <33%), E = extensive (> 33%)
	Exposed unvegetated boulders / rocks (< 50% vegetation cover)		A / T / P / E	
	Exposed vegetated boulders / rocks (> 50% vegetation cover)		A / T / P / E	
	Bare / unvegetated mid channel bar (< 50% vegetation cover)	sediment size	A / T / P / E	
	Vegetated mid channel bar (>50% vegetation cover)	sediment size	A / T / P / E	
	Island		A / T / P / E	
	Cascade		A / T / P / E	
	Pool: RECORD AS COUNT			
	Riffle: RECORD AS COUNT			
	Step (steep boulder/bedrock feature <2m high, mainly chute and free fall): RECORD AS COUNT			
Channel bed - Artificial features	Waterfall (steep boulder/bedrock feature >2m high, mainly free fall): RECORD AS COUNT			WEIR TYPES / SIZES Major: permanent, impermeable, impounding structure across entire channel width Intermediate: semi-permeable, loose stone / wood structure across entire channel width Minor: highly permeable, transient feature across entire channel width
	Large trash (car parts, trolleys, traffic cones etc)		A / T / P / E	
	Major weir (see (ii)): RECORD AS COUNT			
	Intermediate weir (see (ii)): RECORD AS COUNT			
	Minor weir (see (ii)): RECORD AS COUNT			
	Bridge piers in river bed: RECORD AS COUNT			
	Bridge shadow (see (iii))		Wide / Int / Narr	
	Culvert: RECORD AS COUNT			BRIDGE SHADOW Wide = > 25 m channel length, Int (Intermediate) = 10-25 m, Narr (Narrow) = < 10m

MEASUREMENT CATEGORY	MEASUREMENT TYPE	ABUNDANCE	MEASUREMENT TYPE	ABUNDANCE
4.4 CHANNEL BED - VEGETATION				
Vegetation within wetted channel (aquatic vegetation)	Unvegetated (bare river bed)	A / T / P / E	Amphibious	A / T / P / E
	Liverworts, mosses, lichens	A / T / P / E	Submerged broad-leaved	A / T / P / E
	Emergent broad-leaved	A / T / P / E	Submerged linear-leaved	A / T / P / E
	Emergent linear-leaved (incl horsetails)	A / T / P / E	Submerged fine-leaved	A / T / P / E
	Floating leaved (rooted)	A / T / P / E	Filamentous algae	A / T / P / E
	Free floating	A / T / P / E	Channel choked with plants?	YES/NO
Vegetation interacting with wetted channel (terrestrial vegetation)	Vegetation shading channel	A / T / P / E	Large wood dam (in channel and crosses entire channel): RECORD AS COUNT	
	Submerged tree roots	A / T / P / E		
	Trees/shrubs/saplings growing on river bed	A / T / P / E	Fallen trees (ONLY those with a significant proportion in channel): RECORD AS COUNT	
	Large wood in channel (pieces > 1m long, >10 cm wide)	A / T / P / E		
	Discrete accumulations of organic material in channel (e.g. twigs, leaves)	A / T / P / E		
Non-native invasive plant species	Himalayan balsam	A / T / P / E	Other: RECORD SPECIES NAME	A / T / P / E
	Japanese knotweed	A / T / P / E		
	Giant hogweed	A / T / P / E	Other: RECORD SPECIES NAME	A / T / P / E
	Floating pennywort	A / T / P / E		

Modular River Physical (MoRPh) Field Survey (ver 12)

Sheet 1 - GENERAL INFORMATION

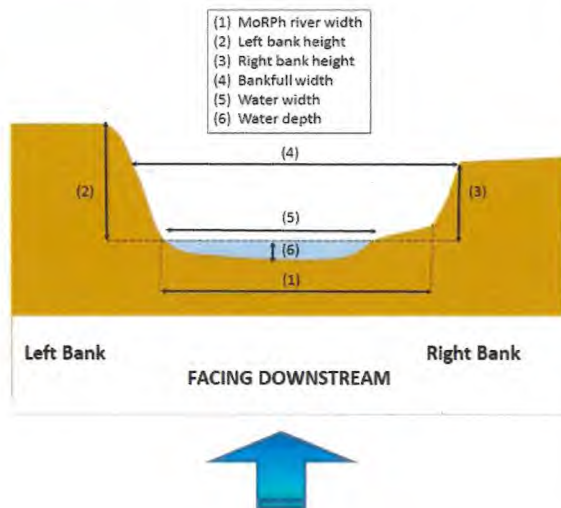
RECORD WHAT YOU SEE NOT WHAT YOU KNOW

PROJECT DETAILS (Optional)	
Project name	
Project code	

1.1 SURVEYOR AND SURVEY CONDITIONS	
Surveyor	
Survey date and time	
Module surveyed from?	left / right / both banks
Bed visible?	Yes / No
Adverse conditions?	Yes / No
If yes, describe e.g. elevated flow, turbid water, etc	

1.3 CHANNEL DIMENSIONS (m)	
Cross section GPS	
1. MoRPh river width	25m
2. Left bank height	5m
3. Right bank height	5m
4. Bankfull width	25m
5. Water width	25m
6. Water depth	1.50m

Multi-MoRPh Channel Dimensions
If surveying multiple adjoining modules: a minimum of ONE (REPRESENTATIVE) SET OF CHANNEL DIMENSIONS should be measured for each group - up to 10 modules.
TIP!:- Bridges provide a good location for estimating dimensions of larger rivers.



PROJECT DETAILS (Optional)	
WFD Water Body ID	
Survey type (monitoring, pre-project post-project, post-recovery, scenario, training)	baseline.

1.2 MODULE NAME AND LOCATION	
River name	River Irwell
Location/Reach name	BAB Blackfries to Atherton
SubReach name (used to reference a sub-reach of contiguous modules)	03 BAB
Module number (1, 2, 3... number from upstream to downstream within SubReach)	03
Riverfly site reference (optional)	-
Module length (m) (i)	40
NGR / GPS - Midpoint	55 8348 9845

(i) Determining your Module Length	
River width (m) (ii)	Module length (m)
< 5 m	10 m
5 to < 10 m	20 m
10 to < 20 m	30 m
20 to < 30 m	40 m
Large & navigable rivers and canals	50 m

(ii) Predominant MoRPh river width is used to determine module length. It is estimated as the typical water width plus any area of bare sediment or emergent aquatic plants at the water edge.
If river ≥ 30 m wide it is usually too large for a full MoRPh Survey.
For Large & navigable rivers and canals a reduced MoRPh survey is possible, focusing on the banktops and faces and those bed features that are visible

Identifying the LEFT AND RIGHT BANK
The LEFT and RIGHT BANK of a river are on the left and right sides of the channel when facing in a downstream direction with the water flowing away from you

1.4 PHOTOGRAPHS (max 4)	
Fixed point photograph taken with NGR / GPS? (Y/N)	N
Photo ref 1 (iv)	1 across
Photo ref 2	2 downstream
Photo ref 3	3 upstream
Photo ref 4	

We recommend 3 photos from the midpoint, one across, one looking upstream and one downstream to cover entire module. Photo 4 could be of special features or to support notes/queries.

NOTES

Use this box to enter details where you are unsure of any measurements / records you have made.

Giant hogweed along eastern bank LHS river.

Sheet 2 - BANK TOP: FLOODPLAIN MEASUREMENTS

3

RECORD WHAT YOU SEE NOT WHAT YOU KNOW (within 10 m of bank edge)

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE	ABUNDANCE	NOTES
2.1 BANK TOP - ARTIFICIAL / MANAGED GROUND COVER		LB	RB	
Artificial ground cover	Artificial ground cover (Fp, Tr, Ic, Re, Sy, Ld, Ar, Pv, Pr, Pw, Ow)	DOMINANT TYPE	LB	RB
		SUB-DOMINANT TYPE (see (I))	LB	RB
		IP	FP	A / T / P / E
		/	/	A / P / E
2.2 BANK TOP - NATURAL / LIGHTLY MANAGED GROUND COVER		LB	RB	
Terrestrial vegetation	Unvegetated (bare soil / rock)		A / T / P / E	A / T / P / E
	Mosses / lichens		A / T / P / E	A / T / P / E
	Short/creeping herbs/grasses		A / T / P / E	A / T / P / E
	Tall herbs/grasses		A / T / P / E	A / T / P / E
	Scrub or shrubs		A / T / P / E	A / T / P / E
	Saplings or trees		A / T / P / E	A / T / P / E
	Fallen trees (ONLY those with a significant proportion on bank top)		A / T / P / E	A / T / P / E
	Leaning trees		A / T / P / E	A / T / P / E
	J-shaped trees		A / T / P / E	A / T / P / E
	Tree/shrub branches trailing into channel		A / T / P / E	A / T / P / E
	Large wood (wood pieces > 1m long, > 10 cm diameter)		A / T / P / E	A / T / P / E
	Predominant tree type (Absent, Deciduous, Coniferous, Mixed)		A / D / C / M	A / D / C / M
Non-native invasive plant species	Himalayan balsam		A / T / P / E	A / T / P / E
	Japanese knotweed		A / T / P / E	A / T / P / E
	Giant hogweed		A / T / P / E	A / T / P / E
	Floating pennywort		A / T / P / E	A / T / P / E
	Other: NAME SPECIES		A / T / P / E	A / T / P / E
	Other: NAME SPECIES		A / T / P / E	A / T / P / E
2.3 BANK TOP - WATER RELATED FEATURES		LB	RB	
Water-related features	Pond	Disconnected from river at time of survey	A / T / P / E	A / T / P / E
		Connected to river by water-filled channel at time of survey	A / T / P / E	A / T / P / E
	Side channel - free flowing separate channel including tributaries and fish passes		A / T / P / E	A / T / P / E
	Wetland (recorded by dominant vegetation type)	Short non-woody vegetation (e.g. mosses, sedges)	A / T / P / E	A / T / P / E
		Tall, non-woody vegetation (e.g. reeds, rushes)	A / T / P / E	A / T / P / E
		Shrubs and trees (e.g. alder / willow carr)	A / T / P / E	A / T / P / E

SUB-DOMINANT TYPE
ONLY RECORD if it occupies > 20% of area within 10m of bank edge

ABUNDANCE CODES
A/T/P/E abundance codes on sheet 2 refer to proportion of area within 10 m of bank edge along the module length. Circle one of:
A = absent,
T = trace (< 5%),
P = present (5% - < 33%),
E = extensive (> 33%)

PLANT IDENTIFICATION
See MoRPh field guide

NOTES (ctd.)

Bank tops all hardstanding / buildings (commercial)

Sheet 3 - BANK FACE AND CHANNEL MARGIN MEASUREMENTS

RECORD WHAT YOU SEE NOT WHAT YOU KNOW

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE	ABUNDANCE	NOTES	
3.1 BANK FACE - PROFILE					
Bank face - Profile	Natural / artificial bank profile	DOMINANT TYPE (V, Vo, Vu, Vt, St, Gt, Cm, Rs, Ts, Em, Sm, Pc)	LB RB	LB RB	
		SUB-DOMINANT TYPE (see (ii))	LB RB	LB RB	
3.2 BANK FACE - MATERIALS Bank face - Natural materials: Bank face sediment (AR, BE, BO, CO, GP, SA, SI, CL, OR, PE, EA, NV) Bank face - Reinforcement: Which part of the bank is reinforced? (NOTE SPECIFIC CODES IN BOX (ii)) How extensive is the reinforcement horizontally along the module? Bank reinforcement: DOMINANT TYPE (CC, CB, BR, SP, WP, BW, RR, GA, WS, RE, BC, WO) SUB-DOMINANT TYPE (see (iii))					
3.3 BANK FACE / CHANNEL MARGIN - FEATURES Natural physical features: Bare / unvegetated side bar (< 50% vegetation cover) Vegetated side bar (> 50% vegetation cover) Berm (if unsure whether berm/bench record as berm) Bench (if unsure whether berm/bench record as berm) Stable cliff (> 0.5 m) Eroding cliff (> 0.5m) Toe Nest holes or animal burrows Marginal backwater Tributary junction / confluence: RECORD AS COUNT Artificial physical features: Pipes / outfalls (if appear potentially functional): RECORD AS COUNT Jetty Deflector Other: INSERT FEATURE NAME					
3.4 BANK FACE / CHANNEL MARGIN - VEGETATION Terrestrial vegetation on bank face: Unvegetated (bare earth or rock) Mosses / lichens Short/creeping herbs/grasses Tall herbs/grasses Scrub or shrubs Saplings or trees Large wood (pieces > 1m long, > 10 cm diameter) Aquatic vegetation at bank-water margin: Liverworts, mosses, lichens Emergent broad-leaved Emergent linear-leaved (incl horsetails) Non-native invasive plant species: Himalayan balsam Japanese knotweed Giant hogweed Floating pennywort					

Sheet 4 - CHANNEL BED MEASUREMENTS

RECORD WHAT YOU SEE NOT WHAT YOU KNOW

MEASUREMENT CATEGORY	MEASUREMENT TYPE	ABUNDANCE	MEASUREMENT TYPE	ABUNDANCE	
4.1 CHANNEL BED - MATERIALS					
Channel bed - Natural materials	Bed sediment size	Bedrock (BE)	A / T / P / E	Silt (and finer non-sticky particles, SI)	A / T / P / E
		Boulder (BO)	A / T / P / E	Clay (CL)	A / T / P / E
		Cobble (CO)	A / T / P / E	Organic (leaves, twigs etc. not fully decomposed) (OR)	A / T / P / E
		Gravel-Pebble (GP)	A / T / P / E	Peat (PE)	A / T / P / E
		Sand (SA)	A / T / P / E		
	Silt overlying coarser sediments	Continuous silt layer (the form of underlying coarser sediments is visible)	A / T / P / E	Patchy thin layer (some coarser particles protrude through the silt layer)	A / T / P / E
Channel bed - Reinforcement	Bed reinforcement extent		A / T / P / E	(I) SUB-DOMINANT REINFORCEMENT TYPE: ONLY RECORD if it occupies > 20% reinforced area	
	Bed reinforcement materials	DOMINANT TYPE (CC, CB, BR, SP, WP, BW, RR, GA, WS, RE, BC, WO)	reinforcement type		✓
		SUB-DOMINANT TYPE (see (I))	reinforcement type		✓
4.2 WATER SURFACE					
Water surface flow patterns	Flow types	Free fall (FF)	A / T / P / E	Rippled (RP)	A / T / P / E
		Chute (CH)	A / T / P / E	Smooth (SM)	A / T / P / E
		Broken standing waves (BW)	A / T / P / E	No perceptible flow (NP)	A / T / P / E
		Unbroken standing waves (UW)	A / T / P / E		
		Upwelling (UP)	A / T / P / E	Dry (DR)	A / T / P / E
MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE / DESCRIPTION	ABUNDANCE	NOTES	
4.3 CHANNEL BED - FEATURES					
Channel bed - Natural physical features	Exposed bedrock		A / T / P / E	ABUNDANCE CODES A/T/P/E abundance codes on sheet 4 refer to proportion of the area of the river bed within the module length. Circle one of: A = absent, T = trace (< 5%), P = present (5% - <33%), E = extensive (> 33%)	
	Exposed unvegetated boulders / rocks (< 50% vegetation cover)		A / T / P / E		
	Exposed vegetated boulders / rocks (> 50% vegetation cover)		A / T / P / E		
	Bare / unvegetated mid channel bar (< 50% vegetation cover)	sediment size	A / T / P / E		
	Vegetated mid channel bar (>50% vegetation cover)	sediment size	A / T / P / E		
	Island		A / T / P / E		
	Cascade		A / T / P / E		
	Pool: RECORD AS COUNT				
	Riffle: RECORD AS COUNT				
	Step (steep boulder/bedrock feature <2m high, mainly chute and free fall): RECORD AS COUNT				
Waterfall (steep boulder/bedrock feature >2m high, mainly free fall): RECORD AS COUNT					
Channel bed - Artificial features	Large trash (car parts, trolleys, traffic cones etc)		A / T / P / E	WEIR TYPES / SIZES Major: permanent, impermeable, impounding structure across entire channel width Intermediate: semi-permeable, loose stone / wood structure across entire channel width Minor: highly permeable, transient feature across entire channel width	
	Major weir (see (ii)): RECORD AS COUNT				
	Intermediate weir (see (ii)): RECORD AS COUNT				
	Minor weir (see (ii)): RECORD AS COUNT				
	Bridge piers in river bed: RECORD AS COUNT				
	Bridge shadow (see (iii))		Wide / Int. / Narr		
Culvert: RECORD AS COUNT					
BRIDGE SHADOW Wide = > 25 m channel length, Int (Intermediate) = 10-25 m, Narr (Narrow) = < 10m					
MEASUREMENT CATEGORY	MEASUREMENT TYPE	ABUNDANCE	MEASUREMENT TYPE	ABUNDANCE	
4.4 CHANNEL BED - VEGETATION					
Vegetation within wetted channel (aquatic vegetation)	Unvegetated (bare river bed)	A / T / P / E	Amphibious	A / T / P / E	
	Liverworts, mosses, lichens	A / T / P / E	Submerged broad-leaved	A / T / P / E	
	Emergent broad-leaved	A / T / P / E	Submerged linear-leaved	A / T / P / E	
	Emergent linear-leaved (incl horsetails)	A / T / P / E	Submerged fine-leaved	A / T / P / E	
	Floating leaved (rooted)	A / T / P / E	Filamentous algae	A / T / P / E	
	Free floating	A / T / P / E	Channel choked with plants?	YES/NO	
Vegetation interacting with wetted channel (terrestrial vegetation)	Vegetation shading channel	A / T / P / E	Large wood dam (in channel and crosses entire channel): RECORD AS COUNT	✓	
	Submerged tree roots	A / T / P / E			
	Trees/shrubs/saplings growing on river bed	A / T / P / E	Fallen trees (ONLY those with a significant proportion in channel): RECORD AS COUNT	✓	
	Large wood in channel (pieces > 1m long, >10 cm wide)	A / T / P / E			
Non-native invasive plant species	Discrete accumulations of organic material in channel (e.g. twigs, leaves)	A / T / P / E			
	Himalayan balsam	A / T / P / E	Other: RECORD SPECIES NAME	A / T / P / E	
	Japanese knotweed	A / T / P / E			
	Giant hogweed	A / T / P / E	Other: RECORD SPECIES NAME	A / T / P / E	
Floating pennywort	A / T / P / E				

Modular River Physical (MoRPh) Field Survey (ver 12)

Sheet 1 - GENERAL INFORMATION

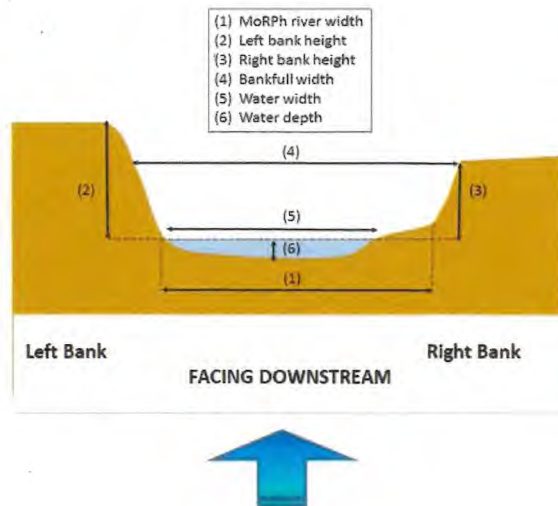
RECORD WHAT YOU SEE NOT WHAT YOU KNOW

PROJECT DETAILS (Optional)	
Project name	Alberton Hawk
Project code	BAN02

1.1 SURVEYOR AND SURVEY CONDITIONS	
Surveyor	Seamus Ross
Survey date and time	27/06/22
Module surveyed from?	left / right / both banks
Bed visible?	Yes / (No)
Adverse conditions?	Yes / (No)
If yes, describe e.g. elevated flow, turbid water, etc	/

1.3 CHANNEL DIMENSIONS (m)	
Cross section GPS	
1. MoRPh river width	25
2. Left bank height	5
3. Right bank height	5
4. Bankfull width	25
5. Water width	25
6. Water depth	1.5 - 2.0

Multi-MoRPh Channel Dimensions	
If surveying multiple adjoining modules: a minimum of ONE (REPRESENTATIVE) SET OF CHANNEL DIMENSIONS should be measured for each group - up to 10 modules.	
TIP!:- Bridges provide a good location for estimating dimensions of larger rivers.	



PROJECT DETAILS (Optional)	
WFD Water Body ID	
Survey type (monitoring, pre-project post-project, post-recovery, scenario, training)	

1.2 MODULE NAME AND LOCATION	
River name	R. Inwell
Location/Reach name	Blackfins → Albert Br.
SubReach name (used to reference a sub-reach of contiguous modules)	BAB
Module number (1, 2, 3... number from upstream to downstream within SubReach)	04
Riverfly site reference (optional)	-
Module length (m) (i)	40
NGR / GPS - Midpoint	55 8342 9843

(i) Determining your Module Length	
River width (m) (ii)	Module length (m)
< 5 m	10 m
5 to < 10 m	20 m
10 to < 20 m	30 m
20 to < 30 m	40 m
Large & navigable rivers and canals	50 m

(ii) Predominant MoRPh river width is used to determine module length. It is estimated as the typical water width plus any area of bare sediment or emergent aquatic plants at the water edge.

If river ≥ 30 m wide it is usually too large for a full MoRPh Survey. For Large & navigable rivers and canals a reduced MoRPh survey is possible, focusing on the banktops and faces and those bed features that are visible

Identifying the LEFT AND RIGHT BANK
The LEFT and RIGHT BANK of a river are on the left and right sides of the channel when facing in a downstream direction with the water flowing away from you

1.4 PHOTOGRAPHS (max 4)	
Fixed point photograph taken with NGR / GPS? (Y/N)	N
Photo ref 1 (iv)	4 across
Photo ref 2	5 down
Photo ref 3	6 up
Photo ref 4	
We recommend 3 photos from the midpoint, one across, one looking upstream and one downstream to cover entire module. Photo 4 could be of special features or to support notes/queries.	

NOTES

Use this box to enter details where you are unsure of any measurements / records you have made.

Similar to Morphs 5+3 but some self seeded willow on RHB plus frag. hardellia.

Sheet 2 - BANK TOP: FLOODPLAIN MEASUREMENTS

RECORD WHAT YOU SEE NOT WHAT YOU KNOW (within 10 m of bank edge)

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE	ABUNDANCE	NOTES
2.1 BANK TOP - ARTIFICIAL / MANAGED GROUND COVER				
Artificial ground cover	Artificial ground cover (Fp, Tr, Ic, Re, Sy, Ld, Ar, Pv, Pr, Pw, Ow)	DOMINANT TYPE	LB RB	LB RB
		SUB-DOMINANT TYPE (see (I))	LB RB	LB RB
2.2 BANK TOP - NATURAL / LIGHTLY MANAGED GROUND COVER Terrestrial vegetation Unvegetated (bare soil / rock) A/T/P/E A/T/P/E Mosses / lichens A/T/P/E A/T/P/E Short/creeping herbs/grasses A/T/P/E A/T/P/E Tall herbs/grasses A/T/P/E A/T/P/E Scrub or shrubs A/T/P/E A/T/P/E Saplings or trees A/T/P/E A/T/P/E Fallen trees (ONLY those with a significant proportion on bank top) A/T/P/E A/T/P/E Leaning trees A/T/P/E A/T/P/E J-shaped trees A/T/P/E A/T/P/E Tree/shrub branches trailing into channel A/T/P/E A/T/P/E Large wood (wood pieces > 1m long, > 10 cm diameter) A/T/P/E A/T/P/E Predominant tree type (Absent, Deciduous, Coniferous, Mixed) A/D/C/M A/D/C/M Non-native invasive plant species Himalayan balsam A/T/P/E A/T/P/E Japanese knotweed A/T/P/E A/T/P/E Giant hogweed A/T/P/E A/T/P/E Floating pennywort A/T/P/E A/T/P/E Other: NAME SPECIES A/T/P/E A/T/P/E Other: NAME SPECIES A/T/P/E A/T/P/E				
2.3 BANK TOP - WATER RELATED FEATURES Water-related features Pond Disconnected from river at time of survey A/T/P/E A/T/P/E Connected to river by water-filled channel at time of survey A/T/P/E A/T/P/E Side channel - free flowing separate channel including tributaries and fish passes A/T/P/E A/T/P/E Wetland (recorded by dominant vegetation type) Short non-woody vegetation (e.g. mosses, sedges) A/T/P/E A/T/P/E Tall, non-woody vegetation (e.g. reeds, rushes) A/T/P/E A/T/P/E Shrubs and trees (e.g. alder / willow carr) A/T/P/E A/T/P/E				

SUB-DOMINANT TYPE
ONLY RECORD if it occupies > 20% of area within 10m of bank edge

ABUNDANCE CODES
A/T/P/E abundance codes on sheet 2 refer to proportion of area within 10 m of bank edge along the module length. Circle one of:
A = absent,
T = trace (< 5%),
P = present (5% - <33%),
E = extensive (> 33%)

PLANT IDENTIFICATION
See MoRPh field guide

NOTES (ctd.)

Bank tops all urbanised

Sheet 3 - BANK FACE AND CHANNEL MARGIN MEASUREMENTS

RECORD WHAT YOU SEE NOT WHAT YOU KNOW

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE	ABUNDANCE	NOTES
3.1 BANK FACE - PROFILE				
Bank face - Profile	Natural / artificial bank profile	DOMINANT TYPE (V, Vo, Vu, Vt, St, Gt, Cm, Rs, Ts, Em, Sm, Pc)	LB RB	LB RB
		SUB-DOMINANT TYPE (see (ii))	LB RB	LB RB
3.2 BANK FACE - MATERIALS				
Bank face - Natural materials	Bank face sediment (AR, BE, BO, CO, GP, SA, SI, CL, OR, PE, EA, NV)	Sediment size (top 2/3)	LB RB	LB RB
		Sediment size (bottom 1/3)	LB RB	LB RB
Bank face - Reinforcement	Which part of the bank is reinforced? (NOTE SPECIFIC CODES IN BOX (II))		A / T / B / W	A / T / B / W
	How extensive is the reinforcement horizontally along the module?		A / T / P / E	A / T / P / E
	Bank reinforcement	DOMINANT TYPE (CC, CB, BR, SP, WP, BW, RR, GA, WS, RE, BC, WO)	LB RB	LB RB
3.3 BANK FACE / CHANNEL MARGIN - FEATURES				
Natural physical features	Bare / unvegetated side bar (< 50% vegetation cover)	Sediment size	LB RB	LB RB
	Vegetated side bar (> 50% vegetation cover)	Sediment size	LB RB	LB RB
	Berm (if unsure whether berm/bench record as berm)		LB RB	LB RB
	Bench (if unsure whether berm/bench record as berm)		LB RB	LB RB
	Stable cliff (> 0.5 m)		LB RB	LB RB
	Eroding cliff (> 0.5m)		LB RB	LB RB
	Toe		LB RB	LB RB
	Nest holes or animal burrows		LB RB	LB RB
	Marginal backwater		LB RB	LB RB
	Tributary junction / confluence: RECORD AS COUNT		LB RB	LB RB
Artificial physical features	Pipes / outfalls (if appear potentially functional): RECORD AS COUNT		LB RB	LB RB
	Jetty		LB RB	LB RB
	Deflector		LB RB	LB RB
	Other: INSERT FEATURE NAME		LB RB	LB RB
3.4 BANK FACE / CHANNEL MARGIN - VEGETATION				
Terrestrial vegetation on bank face	Unvegetated (bare earth or rock)	LB RB	LB RB	LB RB
	Mosses / lichens	LB RB	LB RB	LB RB
	Short/creeping herbs/grasses	LB RB	LB RB	LB RB
	Tall herbs/grasses	LB RB	LB RB	LB RB
	Scrub or shrubs	LB RB	LB RB	LB RB
	Saplings or trees	LB RB	LB RB	LB RB
	Large wood (pieces > 1m long, > 10 cm diameter)	LB RB	LB RB	LB RB
	Fallen trees (ONLY those with a significant proportion on bank face)	LB RB	LB RB	LB RB
Aquatic vegetation at bank-water margin	Liverworts, mosses, lichens	LB RB	LB RB	LB RB
	Emergent broad-leaved	LB RB	LB RB	LB RB
	Emergent linear-leaved (incl horsetails)	LB RB	LB RB	LB RB
	Amphibious	LB RB	LB RB	LB RB
Non-native invasive plant species	Himalayan balsam	LB RB	LB RB	LB RB
	Japanese knotweed	LB RB	LB RB	LB RB
	Giant hogweed	LB RB	LB RB	LB RB
	Floating pennywort	LB RB	LB RB	LB RB

Sheet 4 - CHANNEL BED MEASUREMENTS

RECORD WHAT YOU SEE NOT WHAT YOU KNOW

MEASUREMENT CATEGORY	MEASUREMENT TYPE	ABUNDANCE	MEASUREMENT TYPE	ABUNDANCE		
4.1 CHANNEL BED - MATERIALS						
Channel bed - Natural materials	Bed sediment size	Bedrock (BE)	(A) / T / P / E	Silt (and finer non-sticky particles, SI)	(A) / T / P / E	
		Boulder (BO)	(A) / T / P / E	Clay (CL)	(A) / T / P / E	
		Cobble (CO)	(A) / T / P / E	Organic (leaves, twigs etc. not fully decomposed) (OR)	(A) / T / P / E	
		Gravel-Pebble (GP)	(A) / T / P / E	Peat (PE)	(A) / T / P / E	
		Sand (SA)	(A) / T / P / E			
	Silt overlying coarser sediments	Continuous silt layer (the form of underlying coarser sediments is visible)	(A) / T / P / E	Patchy thin layer (some coarser particles protrude through the silt layer)	(A) / T / P / E	
Channel bed - Reinforcement	Bed reinforcement extent		(A) / T / P / E			
	Bed reinforcement materials	CODE / DESCRIPTION		(I) SUB-DOMINANT REINFORCEMENT TYPE: ONLY RECORD if it occupies > 20% reinforced area		
		DOMINANT TYPE (CC, CB, BR, SP, WP, BW, RR, GA, WS, RE, BC, WO)	reinforcement type			
		SUB-DOMINANT TYPE (see (I))	reinforcement type			
4.2 WATER SURFACE						
Water surface flow patterns	Flow types	Free fall (FF)	(A) / T / P / E	Rippled (RP)	(A) / T / P / E	
		Chute (CH)	(A) / T / P / E	Smooth (SM)	(A) / T / P / E	
		Broken standing waves (BW)	(A) / T / P / E	No perceptible flow (NP)	(A) / T / P / E	
		Unbroken standing waves (UW)	(A) / T / P / E			
		Upwelling (UP)	(A) / T / P / E	Dry (DR)	(A) / T / P / E	
MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE / DESCRIPTION	ABUNDANCE	NOTES		
4.3 CHANNEL BED - FEATURES						
Channel bed - Natural physical features	Exposed bedrock		(A) / T / P / E	ABUNDANCE CODES A/T/P/E abundance codes on sheet 4 refer to proportion of the area of the river bed within the module length. Circle one of: A = absent, T = trace (< 5%), P = present (5% - <33%), E = extensive (> 33%)		
	Exposed unvegetated boulders / rocks (< 50% vegetation cover)		(A) / T / P / E			
	Exposed vegetated boulders / rocks (> 50% vegetation cover)		(A) / T / P / E			
	Bare / unvegetated mid channel bar (< 50% vegetation cover)	sediment size	(A) / T / P / E			
	Vegetated mid channel bar (> 50% vegetation cover)	sediment size	(A) / T / P / E			
	Island		(A) / T / P / E			
	Cascade		(A) / T / P / E			
	Pool: RECORD AS COUNT					
	Riffle: RECORD AS COUNT					
	Step (steep boulder/bedrock feature < 2m high, mainly chute and free fall): RECORD AS COUNT					
Waterfall (steep boulder/bedrock feature > 2m high, mainly free fall): RECORD AS COUNT						
Channel bed - Artificial features	Large trash (car parts, trolleys, traffic cones etc)		(A) / T / P / E	WEIR TYPES / SIZES Major: permanent, impermeable, impounding structure across entire channel width Intermediate: semi-permeable, loose stone / wood structure across entire channel width Minor: highly permeable, transient feature across entire channel width		
	Major weir (see (ii)): RECORD AS COUNT					
	Intermediate weir (see (ii)): RECORD AS COUNT					
	Minor weir (see (ii)): RECORD AS COUNT					
	Bridge piers in river bed: RECORD AS COUNT					
	Bridge shadow (see (iii))		Wide / Int / Narr			
Culvert: RECORD AS COUNT						
BRIDGE SHADOW Wide = > 25 m channel length, Int (Intermediate) = 10-25 m, Narr (Narrow) = < 10m						
MEASUREMENT CATEGORY	MEASUREMENT TYPE	ABUNDANCE	MEASUREMENT TYPE	ABUNDANCE		
4.4 CHANNEL BED - VEGETATION						
Vegetation within wetted channel (aquatic vegetation)	Unvegetated (bare river bed)		(A) / T / P / E	Amphibious	(A) / T / P / E	
	Liverworts, mosses, lichens		(A) / T / P / E	Submerged broad-leaved	(A) / T / P / E	
	Emergent broad-leaved		(A) / T / P / E	Submerged linear-leaved	(A) / T / P / E	
	Emergent linear-leaved (incl horsetails)		(A) / T / P / E	Submerged fine-leaved	(A) / T / P / E	
	Floating leaved (rooted)		(A) / T / P / E	Filamentous algae	(A) / T / P / E	
	Free floating		(A) / T / P / E	Channel choked with plants?	YES/NO	
Vegetation interacting with wetted channel (terrestrial vegetation)	Vegetation shading channel		(A) / T / P / E	Large wood dam (in channel and crosses entire channel): RECORD AS COUNT		
	Submerged tree roots		(A) / T / P / E			
	Trees/shrubs/saplings growing on river bed		(A) / T / P / E		Fallen trees (ONLY those with a significant proportion in channel): RECORD AS COUNT	
	Large wood in channel (pieces > 1m long, > 10 cm wide)		(A) / T / P / E			
Non-native invasive plant species	Discrete accumulations of organic material in channel (e.g. twigs, leaves)		(A) / T / P / E			
	Himalayan balsam		(A) / T / P / E	Other: RECORD SPECIES NAME	(A) / T / P / E	
	Japanese knotweed		(A) / T / P / E			
	Giant hogweed		(A) / T / P / E	Other: RECORD SPECIES NAME	(A) / T / P / E	
	Floating pennywort		(A) / T / P / E			

Morph 5.

(P)

Modular River Physical (MoRPh) Field Survey (ver 12)

Sheet 1 - GENERAL INFORMATION

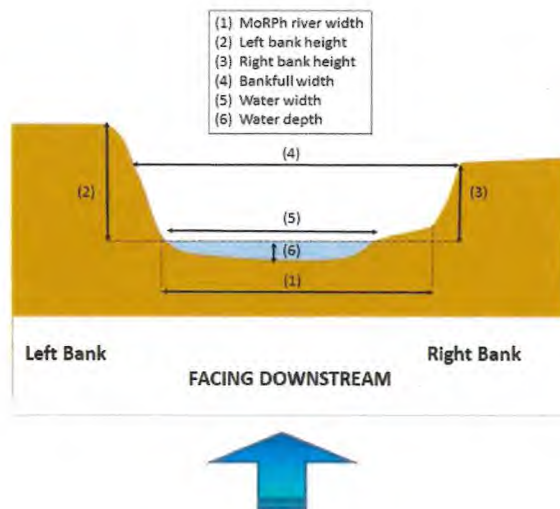
RECORD WHAT YOU SEE NOT WHAT YOU KNOW

PROJECT DETAILS (Optional)	
Project name	Alberton Flase
Project code	BRUNOZ

1.1 SURVEYOR AND SURVEY CONDITIONS	
Surveyor	Samir Ross
Survey date and time	27/06/22
Module surveyed from?	(left / right / both banks
Bed visible?	Yes / No
Adverse conditions?	Yes / No
If yes, describe e.g. elevated flow, turbid water, etc	

1.3 CHANNEL DIMENSIONS (m)	
Cross section GPS	
1. MoRPh river width	25
2. Left bank height	7
3. Right bank height	5
4. Bankfull width	25
5. Water width	25
6. Water depth	1.75

Multi-MoRPh Channel Dimensions	
If surveying multiple adjoining modules: a minimum of ONE (REPRESENTATIVE) SET OF CHANNEL DIMENSIONS should be measured for each group - up to 10 modules.	
TIP!:- Bridges provide a good location for estimating dimensions of larger rivers.	



PROJECT DETAILS (Optional)	
WFD Water Body ID	
Survey type (monitoring, pre-project post-project, post-recovery, scenario, training)	

1.2 MODULE NAME AND LOCATION	
River name	R. Inwell
Location/Reach name	Blackfries to Albert Bridge
SubReach name (used to reference a sub-reach of contiguous modules)	BAB
Module number (1, 2, 3... number from upstream to downstream within SubReach)	05
Riverfly site reference (optional)	-
Module length (m) (i)	40
NGR / GPS - Midpoint	85 8337 9840

(i) Determining your Module Length	
River width (m) (ii)	Module length (m)
< 5 m	10 m
5 to < 10 m	20 m
10 to < 20 m	30 m
20 to < 30 m	40 m
Large & navigable rivers and canals	50 m

(ii) Predominant MoRPh river width is used to determine module length. It is estimated as the typical water width plus any area of bare sediment or emergent aquatic plants at the water edge.

If river ≥ 30 m wide it is usually too large for a full MoRPh Survey. For Large & navigable rivers and canals a reduced MoRPh survey is possible, focusing on the banktops and faces and those bed features that are visible

Identifying the LEFT AND RIGHT BANK	
The LEFT and RIGHT BANK of a river are on the left and right sides of the channel when facing in a downstream direction with the water flowing away from you	

1.4 PHOTOGRAPHS (max 4)	
Fixed point photograph taken with NGR / GPS? (Y/N)	N
Photo ref 1 (iv)	7 across
Photo ref 2	8 up
Photo ref 3	9 down
Photo ref 4	
We recommend 3 photos from the midpoint, one across, one looking upstream and one downstream to cover entire module. Photo 4 could be of special features or to support notes/queries.	

NOTES

Use this box to enter details where you are unsure of any measurements / records you have made.

dist upstream of road bridge

Extensive signs of pollution on water's surface

Sheet 2 - BANK TOP: FLOODPLAIN MEASUREMENTS

RECORD WHAT YOU SEE NOT WHAT YOU KNOW (within 10 m of bank edge)

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE	ABUNDANCE	NOTES
2.1 BANK TOP - ARTIFICIAL / MANAGED GROUND COVER		LB	RB	SUB-DOMINANT TYPE ONLY RECORD if it occupies > 20% of area within 10m of bank edge
Artificial ground cover	Artificial ground cover (Fp, Tr, Ic, Re, Sy, Ld, Ar, Pv, Pr, Pw, Ow)	DOMINANT TYPE	RB	
		SUB-DOMINANT TYPE (see (I))	RB	
		IC	FP	A / T / P / E
				A / T / P / E
				A / P / E
				A / P / E

2.2 BANK TOP - NATURAL / LIGHTLY MANAGED GROUND COVER		LB	RB
Terrestrial vegetation	Unvegetated (bare soil / rock)	A / T / P / E	A / T / P / E
	Mosses / lichens	A / T / P / E	A / T / P / E
	Short/creeping herbs/grasses	A / T / P / E	A / T / P / E
	Tall herbs/grasses	A / T / P / E	A / T / P / E
	Scrub or shrubs	A / T / P / E	A / T / P / E
	Saplings or trees	A / T / P / E	A / T / P / E
	Fallen trees (ONLY those with a significant proportion on bank top)	A / T / P / E	A / T / P / E
	Leaning trees	A / T / P / E	A / T / P / E
	J-shaped trees	A / T / P / E	A / T / P / E
	Tree/shrub branches trailing into channel	A / T / P / E	A / T / P / E
	Large wood (wood pieces > 1m long, > 10 cm diameter)	A / T / P / E	A / T / P / E
	Predominant tree type (Absent, Deciduous, Coniferous, Mixed)	A / D / C / M	A / D / C / M
Non-native invasive plant species	Himalayan balsam	A / T / P / E	A / T / P / E
	Japanese knotweed	A / T / P / E	A / T / P / E
	Giant hogweed	A / T / P / E	A / T / P / E
	Floating pennywort	A / T / P / E	A / T / P / E
	Other: NAME SPECIES	A / T / P / E	A / T / P / E
	Other: NAME SPECIES	A / T / P / E	A / T / P / E

ABUNDANCE CODES
 A/T/P/E abundance codes on sheet 2 refer to proportion of area within 10 m of bank edge along the module length. Circle one of:
 A = absent,
 T = trace (< 5%),
 P = present (5% - < 33%),
 E = extensive (> 33%)

PLANT IDENTIFICATION
 See MoRPh field guide

2.3 BANK TOP - WATER RELATED FEATURES		LB	RB
Water-related features	Pond	Disconnected from river at time of survey	A / T / P / E
		Connected to river by water-filled channel at time of survey	A / T / P / E
	Side channel - free flowing separate channel including tributaries and fish passes		A / T / P / E
	Wetland (recorded by dominant vegetation type)	Short non-woody vegetation (e.g. mosses, sedges)	A / T / P / E
		Tall, non-woody vegetation (e.g. reeds, rushes)	A / T / P / E
		Shrubs and trees (e.g. alder / willow carr)	A / T / P / E

NOTES (ctd.)

Very steep sided loess/shale bank on LHB
 but some tree/shrub on bank top.

Sheet 3 - BANK FACE AND CHANNEL MARGIN MEASUREMENTS

RECORD WHAT YOU SEE NOT WHAT YOU KNOW

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE	ABUNDANCE	NOTES
3.1 BANK FACE - PROFILE				
Bank face - Profile	Natural / artificial bank profile	DOMINANT TYPE (V, Vo, Vu, Vt, St, Gt, Cm, Rs, Ts, Em, Sm, Pc)	LB RB	SUB-DOMINANT TYPE ONLY RECORD if it occupies > 20% of the bank length
		SUB-DOMINANT TYPE (see (ii))	LB RB	
3.2 BANK FACE - MATERIALS				
Bank face - Natural materials	Bank face sediment (AR, BE, BO, CO, GP, SA, SI, CL, OR, PE, EA, NV)	Sediment size (top 2/3)	LB RB	WHICH PART OF THE BANK IS REINFORCED? A = absent T = mainly the top B = mainly the bottom W = Whole bank face
		Sediment size (bottom 1/3)	LB RB	
Bank face - Reinforcement	Which part of the bank is reinforced? (NOTE SPECIFIC CODES IN BOX (ii))		LB RB	SUB-DOMINANT TYPE ONLY RECORD if it occupies > 20% reinforced area
	How extensive is the reinforcement horizontally along the module?		LB RB	
Bank reinforcement	Bank reinforcement	DOMINANT TYPE (CC, CB, BR, SP, WP, BW, RR, GA, WS, RE, BC, WO)	LB RB	SUB-DOMINANT TYPE ONLY RECORD if it occupies > 20% reinforced area
		SUB-DOMINANT TYPE (see (iii))	LB RB	
3.3 BANK FACE / CHANNEL MARGIN - FEATURES				
Natural physical features	Bare / unvegetated side bar (< 50% vegetation cover)	Sediment size	LB RB	ABUNDANCE CODES A/T/P/E abundance codes on sheet 3 refer to proportion of bank length occupied by feature, APART FROM 'Terrestrial vegetation on bank face' and 'Non-native invasive plant species' in section 3.4, which refer to proportion of bank face area: A = 0%, T = < 5%, P = 5% - < 33%, E = > 33%
	Vegetated side bar (> 50% vegetation cover)	Sediment size	LB RB	
	Berm (if unsure whether berm/bench record as berm)		LB RB	
	Bench (if unsure whether berm/bench record as berm)		LB RB	
	Stable cliff (> 0.5 m)		LB RB	
	Eroding cliff (> 0.5 m)		LB RB	
	Toe		LB RB	
	Nest holes or animal burrows		LB RB	
	Marginal backwater		LB RB	
	Tributary junction / confluence: RECORD AS COUNT		LB RB	
Artificial physical features	Pipes / outfalls (if appear potentially functional): RECORD AS COUNT		LB RB	Maj (Major) = > 20% channel width; Int (Intermediate) = 10-20% width; Min (Minor) = < 10% width
	Jetty		LB RB	
	Deflector		LB RB	
	Other: INSERT FEATURE NAME		LB RB	
3.4 BANK FACE / CHANNEL MARGIN - VEGETATION				
Terrestrial vegetation on bank face	Unvegetated (bare earth or rock)	LB RB	LB RB	Fallen trees (ONLY those with a significant proportion on bank face)
	Mosses / lichens	LB RB	LB RB	
	Short/creeping herbs/grasses	LB RB	LB RB	
	Tall herbs/grasses	LB RB	LB RB	
	Scrub or shrubs	LB RB	LB RB	
	Saplings or trees	LB RB	LB RB	
	Large wood (pieces > 1m long, > 10 cm diameter)	LB RB	LB RB	
		LB RB	LB RB	
Aquatic vegetation at bank-water margin	Liverworts, mosses, lichens	LB RB	LB RB	Amphibious
	Emergent broad-leaved	LB RB	LB RB	Filamentous algae
	Emergent linear-leaved (incl horsetails)	LB RB	LB RB	
Non-native invasive plant species	Himalayan balsam	LB RB	LB RB	Other: RECORD SPECIES NAME
	Japanese knotweed	LB RB	LB RB	
	Giant hogweed	LB RB	LB RB	Other: RECORD SPECIES NAME
	Floating pennywort	LB RB	LB RB	

Sheet 4 - CHANNEL BED MEASUREMENTS

RECORD WHAT YOU SEE NOT WHAT YOU KNOW

MEASUREMENT CATEGORY	MEASUREMENT TYPE		ABUNDANCE	MEASUREMENT TYPE	ABUNDANCE
4.1 CHANNEL BED - MATERIALS					
Channel bed - Natural materials	Bed sediment size	Bedrock (BE)	A / T / P / E	Silt (and finer non-sticky particles, SI)	A / T / P / E
		Boulder (BO)	A / T / P / E	Clay (CL)	A / T / P / E
		Cobble (CO)	A / T / P / E	Organic (leaves, twigs etc. not fully decomposed) (OR)	A / T / P / E
		Gravel-Pebble (GP)	A / T / P / E		
		Sand (SA)	A / T / P / E	Peat (PE)	A / T / P / E
	Silt overlying coarser sediments	Continuous silt layer (the form of underlying coarser sediments is visible)	A / T / P / E	Patchy thin layer (some coarser particles protrude through the silt layer)	A / T / P / E
Channel bed - Reinforcement	Bed reinforcement extent		A / T / P / E	(i) SUB-DOMINANT REINFORCEMENT TYPE: ONLY RECORD if it occupies > 20% reinforced area	
			CODE / DESCRIPTION		
	Bed reinforcement materials	DOMINANT TYPE (CC, CB, BR, SP, WP, BW, RR, GA, WS, RE, BC, WO)	reinforcement type		
SUB-DOMINANT TYPE (see (ii))		reinforcement type			

4.2 WATER SURFACE					
Water surface flow patterns	Flow types	Free fall (FF)	A/T/P/E	Rippled (RP)	A/T/P/E
		Chute (CH)	A/T/P/E	Smooth (SM)	A/T/P/E
		Broken standing waves (BW)	A/T/P/E	No perceptible flow (NP)	A/T/P/E
		Unbroken standing waves (UW)	A/T/P/E		
		Upwelling (UP)	A/T/P/E	Dry (DR)	A/T/P/E

MEASUREMENT CATEGORY	MEASUREMENT TYPE	CODE / DESCRIPTION	ABUNDANCE	NOTES
4.3 CHANNEL BED - FEATURES				
Channel bed - Natural physical features	Exposed bedrock		A/T/P/E	ABUNDANCE CODES A/T/P/E abundance codes on sheet 4 refer to proportion of the area of the river bed within the module length. Circle one of: A = absent, T = trace (< 5%), P = present (5% - <33%), E = extensive (> 33%)
	Exposed unvegetated boulders / rocks (< 50% vegetation cover)		A/T/P/E	
	Exposed vegetated boulders / rocks (> 50% vegetation cover)		A/T/P/E	
	Bare / unvegetated mid channel bar (< 50% vegetation cover)	sediment size	A/T/P/E	
	Vegetated mid channel bar (>50% vegetation cover)	sediment size	A/T/P/E	
	Island		A/T/P/E	
	Cascade		A/T/P/E	
	Pool: RECORD AS COUNT			
	Riffle: RECORD AS COUNT			
	Step (steep boulder/bedrock feature <2m high, mainly chute and free fall): RECORD AS COUNT			
Channel bed - Artificial features	Waterfall (steep boulder/bedrock feature >2m high, mainly free fall): RECORD AS COUNT			WEIR TYPES / SIZES Major: permanent, impermeable, impounding structure across entire channel width Intermediate: semi-permeable, loose stone / wood structure across entire channel width Minor: highly permeable, transient feature across entire channel width
	Large trash (car parts, trolleys, traffic cones etc)		A/T/P/E	
	Major weir (see (ii)): RECORD AS COUNT			
	Intermediate weir (see (ii)): RECORD AS COUNT			
	Minor weir (see (ii)): RECORD AS COUNT			
	Bridge piers in river bed: RECORD AS COUNT			
	Bridge shadow (see (iii))		Wide / Int / Narr	
	Culvert: RECORD AS COUNT			BRIDGE SHADOW Wide = > 25 m channel length, Int (Intermediate) = 10-25 m, Narr (Narrow) = < 10m

MEASUREMENT CATEGORY	MEASUREMENT TYPE	ABUNDANCE	MEASUREMENT TYPE	ABUNDANCE
4.4 CHANNEL BED - VEGETATION				
Vegetation within wetted channel (aquatic vegetation)	Unvegetated (bare river bed)	A/T/P/E	Amphibious	A/T/P/E
	Liverworts, mosses, lichens	A/T/P/E	Submerged broad-leaved	A/T/P/E
	Emergent broad-leaved	A/T/P/E	Submerged linear-leaved	A/T/P/E
	Emergent linear-leaved (incl horsetails)	A/T/P/E	Submerged fine-leaved	A/T/P/E
	Floating leaved (rooted)	A/T/P/E	Filamentous algae	A/T/P/E
	Free floating	A/T/P/E	Channel choked with plants?	YES/NO
Vegetation interacting with wetted channel (terrestrial vegetation)	Vegetation shading channel	A/T/P/E	Large wood dam (in channel and crosses entire channel): RECORD AS COUNT	
	Submerged tree roots	A/T/P/E		
	Trees/shrubs/saplings growing on river bed	A/T/P/E	Fallen trees (ONLY those with a significant proportion in channel): RECORD AS COUNT	
	Large wood in channel (pieces > 1m long, >10 cm wide)	A/T/P/E		
Non-native invasive plant species	Discrete accumulations of organic material in channel (e.g. twigs, leaves)	A/T/P/E		
	Himalayan balsam	A/T/P/E	Other: RECORD SPECIES NAME	A/T/P/E
	Japanese knotweed	A/T/P/E		
	Giant hogweed	A/T/P/E	Other: RECORD SPECIES NAME	A/T/P/E
	Floating pennywort	A/T/P/E		

APPENDIX 5

Defra Metric 3.1 Outputs (supplied separately from the report)

The Biodiversity Metric 3.1 - Calculation Tool

Start page

Project details

Planning authority:	Manchester City Council
Project name:	Alberton House
Applicant:	Bruntwood
Application type:	
Planning application reference:	
Assessor:	Dr Sarah Ross
Reviewer:	Sacha Rogers
Metric version:	3.1
Assessment date:	01/07/2022
Planning authority reviewer:	

Instructions

Main menu

Results

Cell style conventions

	Enter data
	Automatic lookup
	Result

View all

Reset view

On-site baseline map

Insert

On-site post intervention map

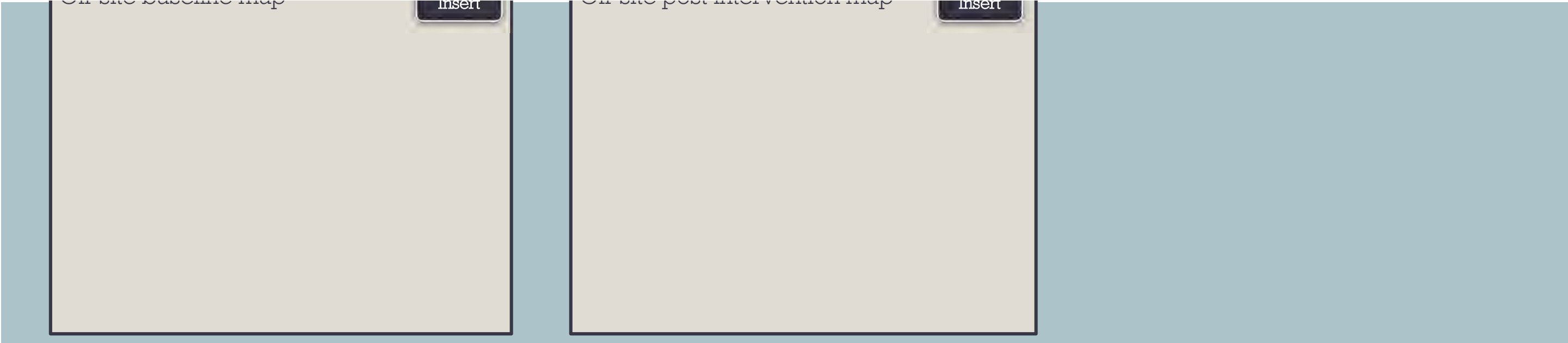
Insert

Off-site baseline map

Insert

Off-site post intervention map

Insert



Key

-  Area habitats
-  Hedgerows and lines of trees
-  Rivers and streams

The Biodiversity Metric 3.1 - Calculation Tool

Main menu

Start page

Instructions

Technical data

Results

Urban tree helper						
Tree size	Number of trees and area (ha) for each condition state					
	Poor	Area	Moderate	Area	Good	Area
Small	7	0.0285	1	0.0041		0.0000
Medium	1	0.0366	3	0.1099		0.0000
Large		0.0000		0.0000		0.0000
Total	8	0.0651	4	0.1139	0	0.0000

Start here

1

2

3

4

On-site
baseline

A-1 On-site
habitat
baseline



B-1
On-site hedge
baseline



C-1
On-site river
baseline



On-site post development

A-2 Habitat
creation



A-3 Habitat
enhancement



B-2 Hedgerow
creation



B-3 Hedgerow
enhancement



C-2 River creation



C-3 River
enhancement



Off-site baseline

D-1
Off-site
habitat baseline



E-1
Off-site hedge
baseline



F-1
Off-site river
baseline



Off-site post development

D-2 Off-site habitat
creation



D-3 Off-site habitat
enhancement



E-2 Off-site hedge
creation



E-3 Off-site hedge
enhancement



F-2 Off-site river
creation



F-3 Off-site river
enhancement



The Biodiversity Metric 3.1 - Calculation Tool Results

Return to start
page

Headline results

Detailed results

Habitat trading
summary

On-site baseline	Habitat units	0.16
	Hedgerow units	0.00
	River units	0.22
On-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	0.60
	Hedgerow units	0.00
	River units	0.22
On-site net % change (Including habitat retention, creation & enhancement)	Habitat units	282.01%
	Hedgerow units	0.00%
	River units	0.00%
Off-site baseline	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	0.00
	Hedgerow units	0.00
	River units	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	0.44
	Hedgerow units	0.00
	River units	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	282.01%
	Hedgerow units	0.00%
	River units	0.00%
Trading rules Satisfied?	Yes ✓	

Alberton House

Return to results menu

Detailed Results

Summary Figures

Net project biodiversity units (including all on-site & off-site habitat retention/creation)	Habitat units	0.44
	Hedgerow units	0.00
	River units	0.00

Total project biodiversity % change (including all On-site & Off-site Habitat Creation + Retained Habitats)	Habitat units	282.01%
	Hedgerow units	0.00%
	River units	0.00%

Combined habitat retention and enhancement

	Habitats	Hedgerows	Rivers
Total on-site and off-site baseline area / length	0.27	0.00	0.04
Total on-site and off-site baseline units	0.16	0.00	0.22
Total on-site and off-site baseline area / length retained	0.00	0.00	0.04
Total on-site and off-site baseline units retained	0.00	0.00	0.22
Area / length proposed for enhancement	0.01	0.00	0.00
Baseline units proposed for enhancement	0.05	0.00	0.00
Total on-site and off-site baseline area / length lost	0.25	0.00	0.00
Total on-site and off-site baseline units lost	0.11	0.00	0.00

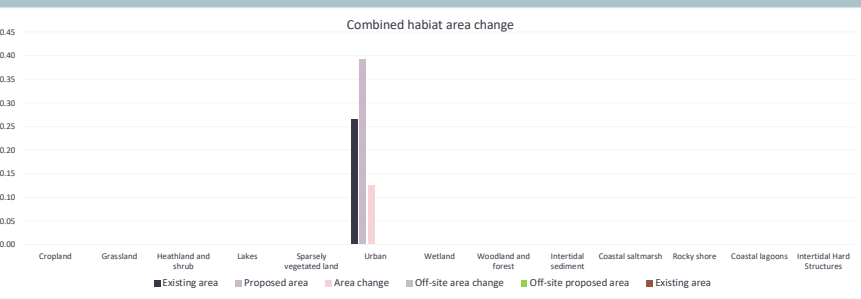
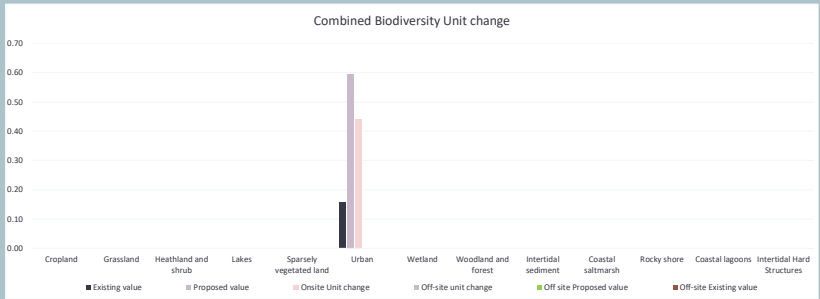
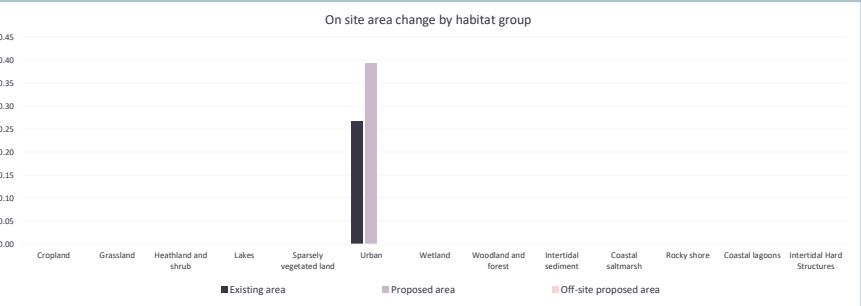
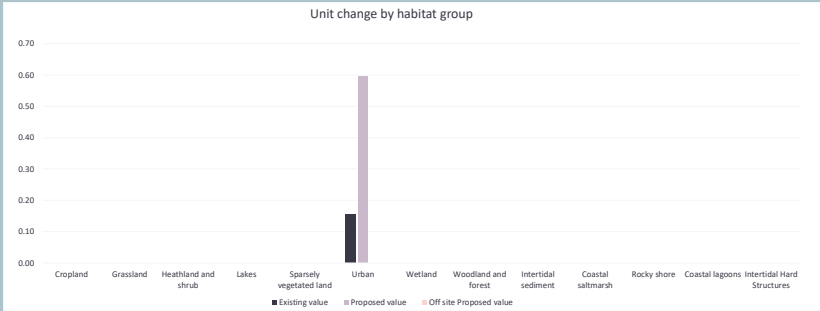
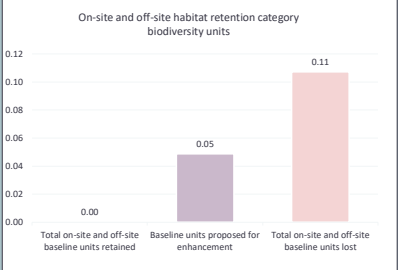
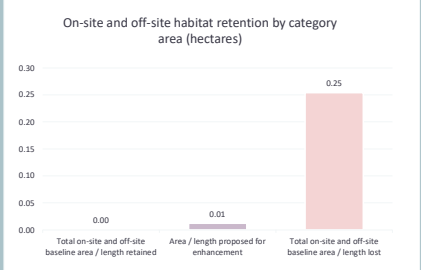
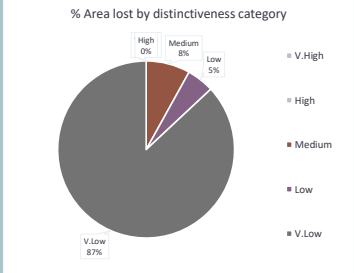
Area habitats

On site change by broad habitat type						
Habitat group	Baseline		Post development on site		Onsite Change	
	Existing area	Existing value	Proposed area	Proposed value	Area change	Onsite Unit change
Cropland	0.00	0.00	0.00	0.00	0.00	0.00
Grassland	0.00	0.00	0.00	0.00	0.00	0.00
Heathland and shrub	0.00	0.00	0.00	0.00	0.00	0.00
Lakes	0.00	0.00	0.00	0.00	0.00	0.00
Sparsely vegetated land	0.00	0.00	0.00	0.00	0.00	0.00
Urban	0.27	0.16	0.39	0.60	0.13	0.44
Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Woodland and forest	0.00	0.00	0.00	0.00	0.00	0.00
Intertidal sediment	0.00	0.00	0.00	0.00	0.00	0.00
Coastal saltmarsh	0.00	0.00	0.00	0.00	0.00	0.00
Rocky shore	0.00	0.00	0.00	0.00	0.00	0.00
Coastal lagoons	0.00	0.00	0.00	0.00	0.00	0.00
Intertidal Hard Structures	0.00	0.00	0.00	0.00	0.00	0.00

Off site change by broad habitat type						
Habitat group	Baseline		Post development Off-site		Off-site Change	
	Existing area	Off-site Existing value	Off-site proposed area	Off-site Proposed value	Off-site area change	Off-site unit change
Cropland	0.00	0.00	0.00	0.00	0.00	0.00
Grassland	0.00	0.00	0.00	0.00	0.00	0.00
Heathland and shrub	0.00	0.00	0.00	0.00	0.00	0.00
Lakes	0.00	0.00	0.00	0.00	0.00	0.00
Sparsely vegetated land	0.00	0.00	0.00	0.00	0.00	0.00
Urban	0.00	0.00	0.00	0.00	0.00	0.00
Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Woodland and forest	0.00	0.00	0.00	0.00	0.00	0.00
Intertidal sediment	0.00	0.00	0.00	0.00	0.00	0.00
Coastal saltmarsh	0.00	0.00	0.00	0.00	0.00	0.00
Rocky shore	0.00	0.00	0.00	0.00	0.00	0.00
Coastal lagoons	0.00	0.00	0.00	0.00	0.00	0.00
Intertidal Hard Structures	0.00	0.00	0.00	0.00	0.00	0.00

Combined on site and off site change by broad habitat type						
Habitat group	Baseline		On-site and Off-site post development		Combined change	
	Existing area	Existing value	Combined proposed area	Combined proposed value	Proposed area	Proposed value
Cropland	0.00	0.00	0.00	0.00	0.00	0.00
Grassland	0.00	0.00	0.00	0.00	0.00	0.00
Heathland and shrub	0.00	0.00	0.00	0.00	0.00	0.00
Lakes	0.00	0.00	0.00	0.00	0.00	0.00
Sparsely vegetated land	0.00	0.00	0.00	0.00	0.00	0.00
Urban	0.27	0.16	0.39	0.60	0.13	0.44
Wetland	0.00	0.00	0.00	0.00	0.00	0.00
Woodland and forest	0.00	0.00	0.00	0.00	0.00	0.00
Intertidal sediment	0.00	0.00	0.00	0.00	0.00	0.00
Coastal saltmarsh	0.00	0.00	0.00	0.00	0.00	0.00
Rocky shore	0.00	0.00	0.00	0.00	0.00	0.00
Coastal lagoons	0.00	0.00	0.00	0.00	0.00	0.00
Intertidal Hard Structures	0.00	0.00	0.00	0.00	0.00	0.00

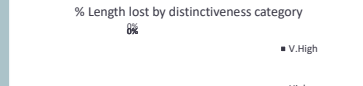
Combined area lost by distinctiveness band		
Category	Area lost (hectares)	Area lost (%)
V.High	0	
High	0	
Medium	0.0804	8
Low	0.0128	5
V.Low	0.221	87



Hedgerows and lines of trees

On site change by hedgerow type						
Hedgerow type	Baseline		Post development on site		Onsite Change	
	Existing length on-site	Existing value	Proposed length on-site	Proposed value on-site	On-site length change	On-site Unit change

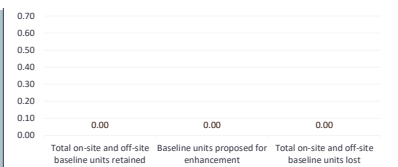
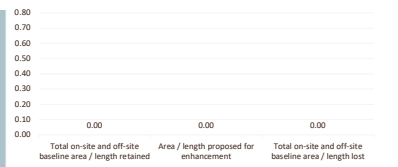
Combined length lost by distinctiveness band		
Category	Length lost (KM)	Length lost (%)



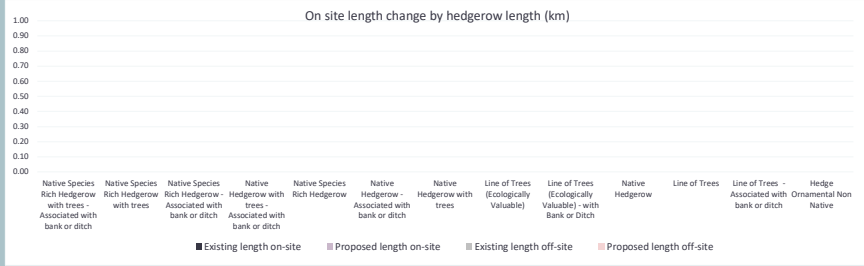
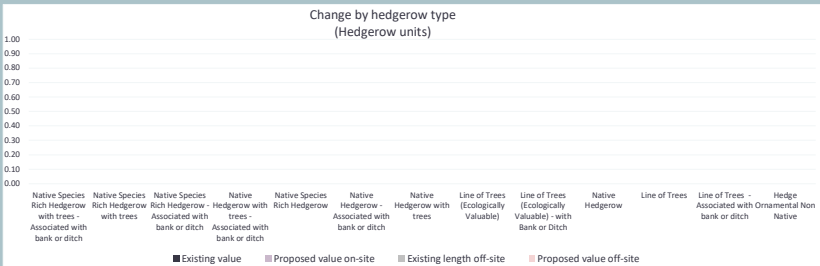
Hedgerows and Lines of Trees	Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
	Native Species Rich Hedgerow with trees	0.00	0.00	0.00	0.00	0.00	0.00
	Native Species Rich Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
	Native Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
	Native Species Rich Hedgerow	0.00	0.00	0.00	0.00	0.00	0.00
	Native Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
	Native Hedgerow with trees	0.00	0.00	0.00	0.00	0.00	0.00
	Line of Trees (Ecologically Valuable)	0.00	0.00	0.00	0.00	0.00	0.00
	Line of Trees (Ecologically Valuable) - with Bank or Ditch	0.00	0.00	0.00	0.00	0.00	0.00
	Native Hedgerow	0.00	0.00	0.00	0.00	0.00	0.00
	Line of Trees	0.00	0.00	0.00	0.00	0.00	0.00
	Line of Trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
	Hedge Ornamental Non Native	0.00	0.00	0.00	0.00	0.00	0.00

V.High	0	
High	0	
Medium	0	
Low	0	
V.Low	0	

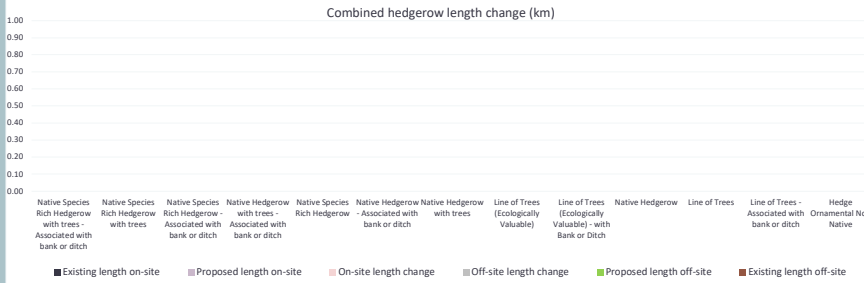
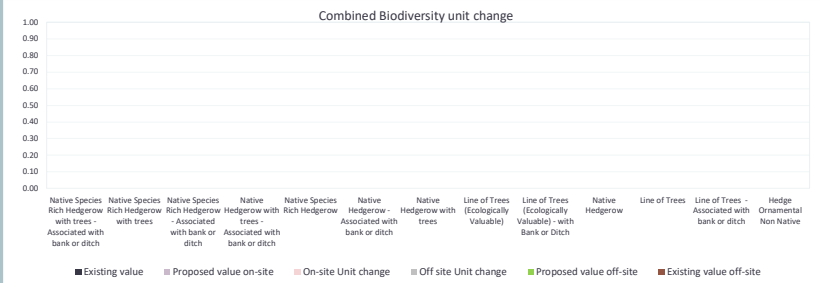
■ High
■ Medium
■ Low
■ V.Low



Off site change by hedgerow type						
Hedgerow type	Off site baseline		Post development off site		Off site Change	
	Existing length off-site	Existing value off-site	Proposed length off-site	Proposed value off-site	Off-site length change	Off site Unit change
Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow with trees	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow with trees	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees (Ecologically Valuable)	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees (Ecologically Valuable) - with Bank or Ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Hedge Ornamental Non Native	0.00	0.00	0.00	0.00	0.00	0.00



Combined on and off site change by hedgerow type						
Hedgerow type	Baseline		Post development on site		Onsite Change	
	Existing length	Existing value	Proposed length	Proposed value	length change	Onsite Unit change
Native Species Rich Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow with trees	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow with trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Species Rich Hedgerow	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow with trees	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees (Ecologically Valuable)	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees (Ecologically Valuable) - with Bank or Ditch	0.00	0.00	0.00	0.00	0.00	0.00
Native Hedgerow	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees	0.00	0.00	0.00	0.00	0.00	0.00
Line of Trees - Associated with bank or ditch	0.00	0.00	0.00	0.00	0.00	0.00
Hedge Ornamental Non Native	0.00	0.00	0.00	0.00	0.00	0.00



Rivers and Streams

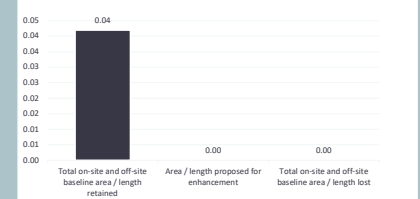
On site change by river type						
River type	Baseline		Post development on site		Onsite Change	
	Existing length	Existing value	Proposed length	Proposed value	length change	Onsite Unit change
Priority Habitat	0.0	0.0	0.0	0.0	0.0	0.0
Other Rivers and Streams	0.0	0.2	0.0	0.2	0.0	0.0
Ditches	0.0	0.0	0.0	0.0	0.0	0.0
Canals	0.0	0.0	0.0	0.0	0.0	0.0
Culvert	0.0	0.0	0.0	0.0	0.0	0.0

Combined length lost by distinctiveness band		
Category	Length lost (KM)	Length lost (%)
V.High	0	
High	0	
Medium	0	
Low	0	

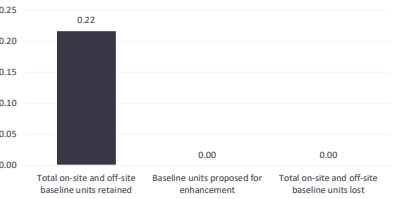
% Length lost by d
distinctiveness category

■ V.High
■ High
■ Medium
■ Low

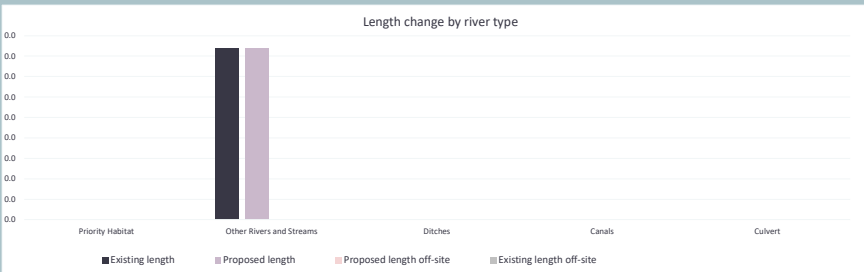
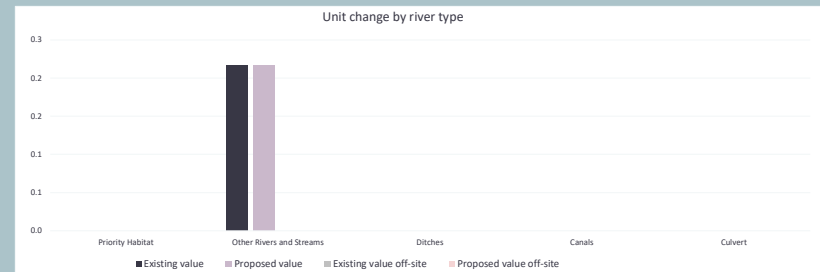
River length retained, proposed for enhancement or lost (length km)



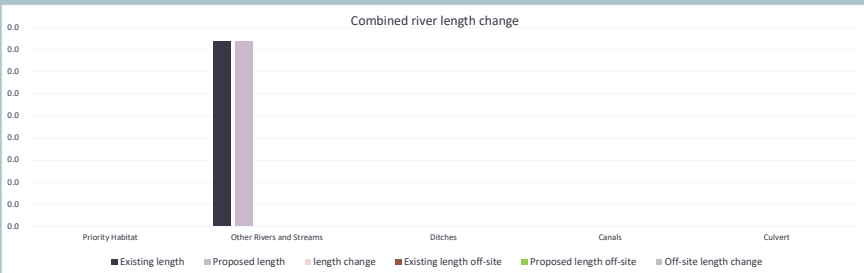
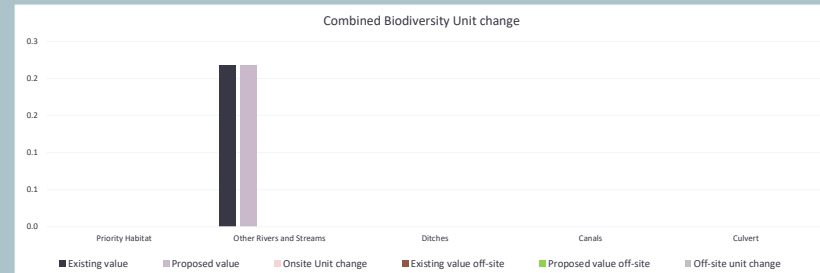
River retention category (Biodiversity units)



Off site change by river type						
River type	Baseline		Post development off-site		Off-site Change	
	Existing length off-site	Existing value off-site	Proposed length off-site	Proposed value off-site	Off-site length change	Off-site unit change
Priority Habitat	0.0	0.0	0.0	0.0	0.0	0.0
Other Rivers and Streams	0.0	0.0	0.0	0.0	0.0	0.0
Ditches	0.0	0.0	0.0	0.0	0.0	0.0
Canals	0.0	0.0	0.0	0.0	0.0	0.0
Culvert	0.0	0.0	0.0	0.0	0.0	0.0



Combined on and off site change by river type						
River type	Baseline		Post development on site		Onsite Change	
	Existing length	Existing value	Proposed length	Proposed value	length change	Onsite Unit change
Priority Habitat	0.0	0.0	0.0	0.0	0.0	0.0
Other Rivers and Streams	0.0	0.2	0.0	0.2	0.0	0.0
Ditches	0.0	0.0	0.0	0.0	0.0	0.0
Canals	0.0	0.0	0.0	0.0	0.0	0.0
Culvert	0.0	0.0	0.0	0.0	0.0	0.0



Ref	Habitats and areas			Distinctiveness		Condition		Strategic significance			Suggested action to address habitat losses	Ecological baseline
	Broad Habitat	Habitat Type	Area (hectares)	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic Significance multiplier		Total habitat units
1	Urban	Introduced shrub	0.0128	Low	2	Condition Assessment N/A	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same distinctiveness or better habitat required ≥	0.03
2	Urban	Developed land: sealed surface	0.221	V.Low	0	N/A - Other	0	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Compensation Not Required	0.00
3	Urban	Urban Tree	0.0285	Medium	4	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required (≥)	0.11
4	Urban	Urban Tree	0.0041	Medium	4	Poor	1	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1	Same broad habitat or a higher distinctiveness habitat required (≥)	0.02
5												
6												
7												
8												
		Total habitat area	0.27									0.18

Retention category biodiversity value						Bespoke compensation agreed for unacceptable losses	Comments	
Area retained	Area enhanced	Baseline units retained	Baseline units enhanced	Area habitat lost	Units lost		Assessor comments	Reviewer comments
0	0	0.00	0.00	0.01	0.03			
0	0	0.00	0.00	0.22	0.00			
0	0.0122	0.00	0.05	0.02	0.07		7 Medium size lime trees, 3 retained and enhanced with planting below. 4 lost but replaced on site. All classed as Poor condition as overailing hardstanding	
0	0	0.00	0.00	0.00	0.02		1 Small non-native tree, to be lost	
0.00	0.01	0.00	0.05	0.25	0.11			

Total area lost (excluding area of Urban trees and Green walls)	0.23
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C-1 Site River Baseline

Condense / Show Columns

Condense / Show Rows

[Main Menu](#)

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Penny Anderson
Associates Ltd
CONSULTANT ECOLOGISTS



Park Lea, 60 Park Road, Buxton, Derbyshire SK17 6SN

Registered Office as Above

Registered in England & Wales

Company No. 4223109

Directors: Mrs P Anderson

Mr P Worrall

Miss S Rogers