

BIODIVERSITY NET GAIN DESIGN STAGE ASSESSMENT

AUGUST 2024

Castlefield Viaduct Urban Park

Duke Street
Manchester
M3 4PU

**U R B A N
G R E E N**



QUALITY MANAGEMENT

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1 Executive Summary

- 1.1.1.1 The National Trust is proposing to continue the development of the Castlefield Viaduct in Castlefield, Manchester (hereafter referred to as ‘the site’).
- 1.1.1.2 The proposals include the extension of the pilot scheme urban park, with an event space and botanical garden, and the construction of a new access staircase aside the park’s proposed terminus at Egerton Street.
- 1.1.1.3 Urban Green has been appointed to carry out a Biodiversity Net Gain Design Stage Assessment to support a full planning application for the development of the site.
- 1.1.1.4 This assessment was conducted using the Statutory Biodiversity Metric to calculate the pre- and post-development biodiversity habitat units of the site for the proposed development.
- 1.1.1.5 The proposed development produces a 0.24 unit (24.43%) net gain in biodiversity for area habitats, and the trading rules have been satisfied for all habitats.
- 1.1.1.6 Consequently, the development does meet all local and national planning policy and off-site mitigation will not be necessary.
- 1.1.1.7 To ensure that the habitats proposed as part of the post-development design of this site reach the condition detailed within this report and the full gain in value to the environment is achieved by this site, a long-term management plan (usually 30 years) is required.
- 1.1.1.8 This length of management plan is required due to the complex nature of the habitats to be enhanced/created on site and the high value they will provide to the environment. This management plan is provided by Urban Green (Urban Green, 2024a) as a separate document and covers the recommended management practices for the proposed habitats discussed in this report.

2 Introduction

2.1 Scope

- 2.1.1.1 Urban Green has been instructed by The National Trust to carry out a Biodiversity Net Gain Design Stage Assessment on the Castlefield Viaduct in Manchester (hereafter referred to as ‘the site’) and produce our findings in a report.
- 2.1.1.2 The preliminary proposals include the extension of the pilot scheme urban park, with an event space and botanical garden, and the construction of a new access staircase aside the park’s proposed terminus at Egerton Street.
- 2.1.1.3 The author of the report is Sarah Pendle, MSc, Senior Biodiversity Net Gain Consultant at Urban Green. Sarah has experience providing Biodiversity Net Gain consulting services for a range of development schemes across the UK, including residential, commercial, and large infrastructure schemes.

2.2 Site Context

- 2.2.1.1 The site is located at National Grid Reference SJ 83013 97624 and comprises a total area of approximately 0.56ha (see Figure 1).
- 2.2.1.2 The site is located on a railway viaduct in a densely urban area of Manchester city centre, adjacent to an active tram line. The site is also located above the Bridgewater canal and approximately 260m east of the River Irwell.
- 2.2.1.3 Buildings surrounding the site are mostly commercial offices to the north and high-density residential apartments to the south. Due to the site’s location close to the city centre, there is a high level of disturbance present from main roads such as the A635 (M) present approximately 75m west of the site.

2.3 Purpose of Report

- 2.3.1.1 The report has been produced to document the methods, results and conclusions of a BNG Design Stage Assessment that was undertaken on site. The advice herein is based on both desk and field-based studies and intends to fulfil the following purposes:
 - Ensure the core principles of Biodiversity Net Gain, including following the mitigation hierarchy, are applied (Baker, et al., 2019);
 - Identify the baseline habitats present on site (pre-development), assess the condition and provide an indication of the ecological value of those habitats;
 - Identify the post development habitats present on site, assess the possible target condition and provide an indication of the likely importance of those habitats; and
 - Calculate the overall change in biodiversity score from pre- to post-development habitats (measured as habitat units).



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Legend: Red Line Boundary		0.4 Kilometers		N
Client: National Trust		Issue: 01	Figure: 01	U R B A N G R E E N A: Ground Floor, The Tower, Deva City Office Park, Trinity Way, Manchester M3 7BF T: +44 (0) 161 312 3131 weareurbangreen.co.uk
Project: Castlefield Viaduct		Scale @ A4 1:5000		
Title: Site Context		Approved by: CL	Checked by: SP	
Drawing Ref: UG_922_SITE_CONTEXT		Author: CL	Date: 29/07/2024	

2.4 Legislation and Policy

- 2.4.1.1 In England, a minimum of 10% BNG is mandatory under Schedule 7A of the Town and Country Planning Act 1990 (Appendix 1).

2.4.2 Local Policy

- 2.4.2.1 Manchester City Council adopted a local plan in 2012, which will remain in place until 2027. While this document does not directly reference Biodiversity Net Gain, **Policy EN 15** (Biodiversity and Geological Conservation) states:
- 2.4.2.2 Developers will be expected to identify and implement reasonable opportunities to enhance, restore or create new biodiversity, either on-site or adjacent to the site, contributing to linkages between valuable or potentially valuable habitat areas where appropriate.
- 2.4.2.3 Additionally, Greater Manchester Combined Authority (GMCA) have produced guidance relating to Biodiversity Net Gain within the 10 GM boroughs and set out a 10% target (GMCA, 2021):
- 2.4.2.4 The minimum level of Biodiversity Net Gain is considered to be achieved when the biodiversity units for the habitats (for example, area based habitats, rivers and/or hedges) impacted by the development is increased by 10% or more after the development.
- 2.4.2.5 If the calculations indicate that a net gain will not be delivered at this stage, either the design should be updated or additional areas for habitat compensation identified (either onsite or outside the development boundary).
- 2.4.2.6 Within the Places for Everyone Joint Development Plan, Policy JP-G8: A Net Enhancement of Biodiversity and Geodiversity also states that developments will be expected to:
- 2.4.2.7 Achieve a measurable net gain in biodiversity of no less than 10%.
- 2.4.2.8 Castlefield Viaduct also falls within the Castlefield Conservation Area, designated for its heritage value due to the presence of a Roman fort.

3 Methods

- 3.1.1.1 The Biodiversity Net Gain Assessment and Report follows the user guidance produced by Department for Environment, Food & Rural Affairs (2024a) and the good practice methodology as detailed within the *Biodiversity Net Gain: Good Practice Principles for Development* (Baker, et al., 2019).

3.2 Desk Study

- 3.2.1.1 Sources of information used in the desk study are presented in Table 1.

Table 1 – Desk Study Sources of Information

Source	Date Consulted	Information Sought
MAGiC website (www.magic.gov.uk)	16/07/2024	Locations of statutory designated sites within 1km of the site boundary. Locations of Natura 2000 sites (Ramsar, Special Area of Conservation (SAC) and Special Protection Area (SPA)) within 5km of the site boundary. Locations of European Protected Species Licences (EPSL) and Class Licences within 1km.
Natural England (https://designatedsites/.naturalengland.org.uk/)	16/07/2024	Relevant statutory designated site citations.
JNCC (https://jncc.defra.gov.uk/)	16/07/2024	Information on European wildlife sites. Details of relevant Section 41 species and habitats.
The Statutory Biodiversity Metric	16/07/2024	The Statutory Biodiversity Metric, including the tool itself, user guides and reference documentation associated with the tool.
Greater Manchester Nature Recovery Strategy	16/07/2024	Locally designated wildlife sites within 1km of site boundary. Records of protected and notable species within 1km of the site boundary.
Greater Manchester Biodiversity Action Plans	16/07/2024	Species and habitats which are given special conservation status at the local level.
Preliminary Ecological Appraisal ([Urban Green, 2024b])	16/07/2024	Notable species, habitats and designations identified on site and within a 1km radius.
Soft Landscape plan ([BDP, 2024])	16/07/2024	Habitat areas and conditions as to be included within the planning layout (post-development) for site.

3.3 Site Mapping

3.3.1 Existing Habitats

- 3.3.1.1 Due to access restrictions, the section of the viaduct that is directly adjacent to the tramline was assessed on a separate date to the rest of the site. The area adjacent to the tramline was subject to a field survey on the 6th December 2023, by Ecologist, Jake Healy, and Assistant Ecologist, Toby Mills. The weather conditions were 6°C, sunny and clear (1/8 okta), and a wind speed 1 Beaufort scale.
- 3.3.1.2 The remaining section of the viaduct was subject to a field survey on the 18th April 2024, by Ecologist, Barnaby Gardner, and Biodiversity Net Gain Consultants, Sarah Pendle and Tafara Musonza. The weather conditions were 10°C, overcast (7/8 okta), and a wind speed 1 Beaufort scale.
- 3.3.1.3 Plant species were identified and recorded, flora species listed as protected in the Wildlife and Countryside Act 1981 (as amended) and species which are indicators of important and/or uncommon habitats, were searched for during the survey. Any invasive species, including those listed on the revised (April 2010) Schedule 9 of the Wildlife and Countryside Act 1981 and the Invasive Alien Species (Enforcement and Permitting) Order 2019 were also searched for during the field survey.
- 3.3.1.4 Habitat types were identified and recorded using the Coreo habitat mapping application (V2.0) which utilises UKHab classifications (Butcher et al., 2023). Habitat types were based on the UKHab guidance provided and the assessor's best judgment while using these guidelines. Habitats were identified using primary codes and additional secondary codes have been used to record further information regarding various aspects of the site.
- 3.3.1.5 These habitats were subsequently mapped using ESRI ArcGIS Pro software, and habitat areas and lengths were calculated to demonstrate habitats within the proposed development and the surrounding area. The baseline habitat map is displayed in Appendix 2. A summary of primary and secondary codes can be found in Appendix 3.

3.3.2 Post-Development Habitats

- 3.3.2.1 The planning layout was provided by Twelve Architects & Masterplanners (2024) (see Appendix 4) in PDF and DWG format, detailing the areas of the proposed habitats, and an initial planting strategy has been provided by BDP (2024), detailing some indicative species to be used across the scheme. These were used to categorise the proposed habitats to inform the assessment. Calculations for areas relating to each habitat were also provided.

3.4 The Statutory Biodiversity Metric

- 3.4.1.1 The BNG calculation was undertaken utilising The Statutory Biodiversity Metric from the Department for Environment, Food & Rural Affairs, using data obtained from the field surveys.
- 3.4.1.2 The calculation was performed by a technically competent and experienced person as detailed in British Standard BS8683 - Suitably qualified person – definition in BS8683:2020.
- 3.4.1.3 The Statutory Biodiversity Metric uses habitat features as a proxy measure for capturing the value and importance of nature. The metric considers the size, ecological condition, location

and proximity to nearby ‘connecting’ features. The metric enables assessments to be made of the present and forecast future biodiversity value of a site.

3.5 Habitat Scoring

3.5.1.1 The Statutory Biodiversity Metric supplies reference documents and user guides to accurately evaluate and assess the different habitats on site. The methodology for the baseline and post development calculations are demonstrated in the following sections.

3.5.2 Minimum Mapping Units (MMU)

3.5.2.1 The UKHab classification system can be applied at various levels – fine scale, suitable for smaller sites, and large scale, used for broader landscapes. The fine scale level, which acknowledges areas of minimum 25m² and lengths of 5m, is considered appropriate for this site.

3.5.3 Baseline Units

3.5.3.1 To assess the quality of a habitat, and therefore calculate the units scored, the Statutory Biodiversity Metric utilises three scoring factors detailed as follows:

3.5.3.2 Condition

3.5.3.3 The condition of a habitat is assessed utilising the Condition Sheets provided for each habitat type (Department for Environment, Food & Rural Affairs, 2024b). These list positive indicators for each habitat and indicate how many of these indicators need to be present to meet certain thresholds of condition.

3.5.3.4 Condition sheets used within this assessment for pre- and post-development habitats are described in Table 2.

Table 2 – Conditions Sheets for Habitat Assessments

Condition Sheet	Habitats Assessed
Area Habitats	
Grassland (Medium, High and Very High)	Other Neutral Grassland
Urban	Sparsely Vegetated Land – Ruderal/Ephemeral

3.5.3.5 Distinctiveness

3.5.3.6 The distinctiveness of each habitat is automatically assigned by the tool, based upon national records of the occurrence and rarity of each habitat. Table 3 provides the basis of the distinctiveness assessment for area habitats.

Table 3 – Distinctiveness Assessment for Habitats

Distinctiveness Categories		
Category	Scores	Multiplier
Very High	8	Priority habitats as defined in Section 41 of the Natural Environment and Rural Communities (NERC) Act that are highly threatened, internationally scarce and require conservation action e.g. blanket bog.
High	6	Priority habitats as defined in Section 41 of the NERC Act requiring conservation action e.g. lowland fens.
Medium	4	Semi-natural habitats not classed as a Priority Habitat.
Low	2	Habitat of low biodiversity value. Temporary grass and clover ley; intensive orchard; rhododendron scrub.
Very Low (hedgerows)	1	Lowest biodiversity value possible e.g. non-native and ornamental hedgerow
Very Low (area and watercourse)	0	Little or no biodiversity value e.g. hard standing or sealed surface.

3.5.3.7 Strategic Significance

3.5.3.8 The idea of strategic significance works at a landscape scale. It gives additional unit value to habitats that are in preferred locations for biodiversity and other environmental objectives. Strategic significance utilises published local plans and objectives to identify local priorities for targeting biodiversity and nature improvement, such as Nature Recovery Areas, local biodiversity plans, National Character Area 14 objectives and green infrastructure strategies (see Table 4).

Table 4 – Strategic Significance Assessment for Habitats

Strategic Significance Categories	
Category	Score
High strategic significance Identified in Local Nature Recovery Strategy (LNRS) and delivers specified priorities, or identified local plans as ecologically important	1.15
Medium strategic significance Where LNRS is not available, good potential but not in area defined in local policy – using professional judgment	1.1
Low Strategic Significance Definitions for high or medium not met, i.e., does not deliver specific priorities outlined in LNRS/local plans	1

3.5.3.9 Consultation with MAGIC identified that there are no statutory or non-statutory designated sites present onsite or within 1km of the site.

3.5.3.10 However, the site falls within the Castlefield Conservation Area, designated for its heritage value due to the presence of a Roman fort. Therefore, all existing habitats and proposed habitats will be allocated a **high strategic significance**.

3.5.4 Local Nature Recovery Strategy

- 3.5.4.1 The Local Nature Recovery Strategy (LNRS) for Greater Manchester has been used to identify any habitats with high biodiversity interest and opportunities for habitat creation, enhancement or restoration onsite.
- 3.5.4.2 The site is not identified as having any existing habitats of high biological interest present; however, the River Irwell and the Bridgewater Canal are both adjacent to Castlefield Viaduct and are identified as water habitats of high biological importance.
- 3.5.4.3 There are a number of areas directly adjacent to the site which are identified as opportunities for tree-planting, riparian or canalside tree planting, and grassland creation. However, there are no opportunities for habitat creation identified onsite.

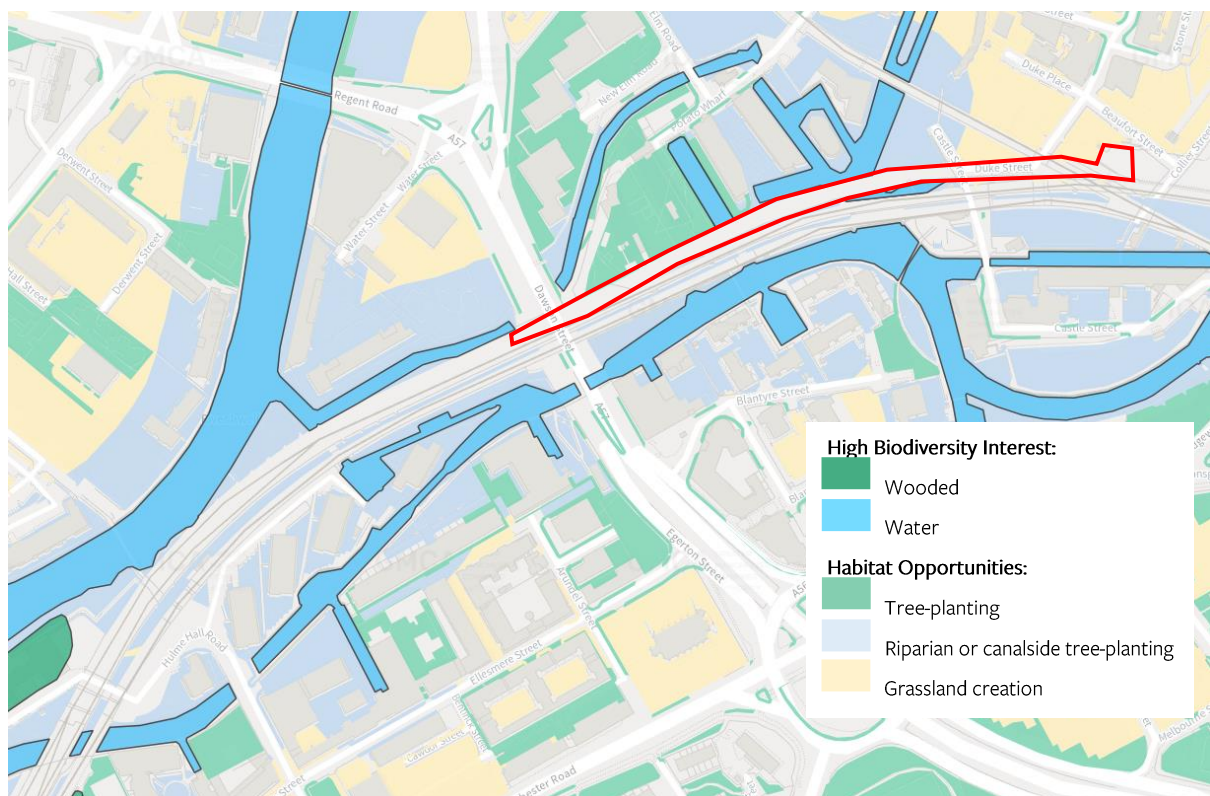


Figure 2. Greater Manchester LNRS existing habitats with high biodiversity interest, and opportunities habitat creation, restoration, and enhancement. Red line boundary for illustrative purposes.

3.5.5 Post-Development

- 3.5.5.1 Post-development habitats are subject to the same condition assessments as baseline habitats, based on information provided by the proposed landscape layout (Appendix 4). Two additional factors are considered within post-development landscapes which are detailed below.

3.5.5.2 Temporal Multiplier

3.5.5.3 For post development habitat creation or enhancement, a risk multiplier will be automatically applied by the tool to account for the period of diminished ecological value while the habitat reaches the targeted post development condition. This time and therefore risk multiplier differs between habitat types, if the habitat is being created or enhanced and how the habitat is to be managed. The predetermined multiplier is based on the average time to meet targeted condition assuming good practice principles and appropriate management strategies are applied.

3.5.5.4 Difficulty Multipliers

3.5.5.5 A risk multiplier will be automatically applied by the tool to account the ‘difficulty’ of habitat-specific enhancement or creation. There are two separate difficulty multipliers assigned to each habitat, one for creation and one for enhancement/restoration, recognising that the technical challenges will not necessarily be the same for both.

3.6 Constraints to the Survey

3.6.1.1 Whilst every effort has been made to provide a comprehensive description of the site, no investigation could ensure the complete characterisation and prediction of the natural environment.

3.6.1.2 A section of the viaduct was surveyed during December 2023. December is a suboptimal month for carrying out UKHab Habitat Surveys due to being outside of the optimal plant growing season. Therefore, it is likely that some plants are present on the site but were not evident at the time of the survey and were not recorded. This is not considered to be a significant constraint with regards to the general UKHab survey results as, due to the size and location of the site and limited extent of the habitats, it is considered very unlikely that any rare or priority plant species were missed.

3.6.1.3 Best possible effort was made during the mapping process to ensure that the habitat map accurately represents the area of habitats present on site. Some margin of error is possible due to the continuous and difficult to define nature of habitat boundaries, however this margin of error has been minimised using professional opinion of experienced ecologists and up to date aerial imagery. As such this is not expected to be a significant constraint and affect the overall Biodiversity Net Gain Calculation provided within this report.

3.6.1.4 The conclusions and recommendations detailed in this report are based upon the site redline boundary and the development proposals as outlined by the client at the time of writing. Should there be any changes to the site redline boundary or development proposals at a later stage, this assessment should be reviewed to determine whether any amendments or additional survey work is required.

4 Pre-Development Habitat Assessment

- 4.1.1.1 Baseline habitats were assessed following the methodology outlined in Section 3 and is supported by data from the Preliminary Ecological Appraisal (Urban Green, 2024b).
- 4.1.1.2 Habitat descriptions are provided below. Habitats with comparable structure and condition assessment results have been grouped for simplicity. The habitats have been given reference numbers for clarity regarding in-text and the metric calculation illustrates the numerical data.

4.2 Area Habitats

4.2.1 1) Urban – Developed Land; Sealed Surface (u1b)

- 4.2.1.1 The entrance to the viaduct is comprised of hardstanding, currently functioning as a carpark and access route for the tram.
- 4.2.1.2 The hard standing also extends along the viaduct, forming an access route along the relandscaped (Phase 1 Pilot scheme) section of the viaduct.
- 4.2.1.3 Hardstanding is classified as developed land; sealed surface, which is automatically allocated a condition score of **N/A** within the metric.



Photograph 1 – Path through centre of viaduct

4.2.2 2-4) Urban – Buildings (u1b)

- 4.2.2.1 Three small buildings are present at the entrance to the viaduct, functioning as temporary security building/office, and portable toilets.
- 4.2.2.2 Buildings are classified as developed land; sealed surface, which is automatically allocated a condition score of **N/A** within the metric.

4.2.3 5) Urban – Introduced Shrub (u 847)

- 4.2.3.1 Two beds containing ornamental species are present at the entrance of the site.
- 4.2.3.2 Introduced shrub is automatically allocated a condition score of **N/A** within the metric.

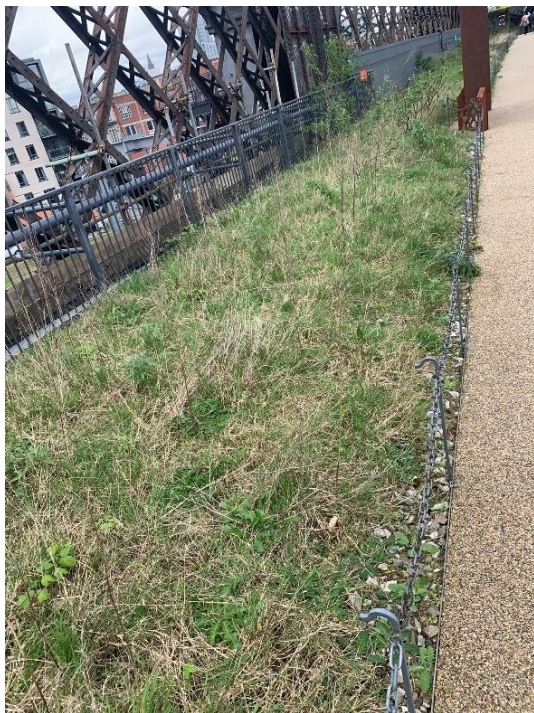


Photograph 2 – Flower beds near entrance

4.2.4 6) Grassland – Other Neutral Grassland (g3c)

4.2.4.1 Two strips of other neutral grassland are present along the walkway, comprising retained vegetation and railway ballast, which are characteristic of the vegetation along the viaduct prior to development.

4.2.4.2 Species present include creeping bent (*Agrostis stolonifera*), couch grass (*Elymus repens*), cat's-ear (*Hypochaeris radicata*), spear thistle (*Cirsium vulgare*), Yorkshire fog (*Holcus lanatus*), ribwort plantain (*Plantago lanceolata*), St John's wort (*Hypericum* sp.), willowherb (*Epilobium* sp.), vervain (*Verbena* sp.), and cushion spurge (*Euphorbia epithymoides*). Buddleia (*Buddleia davidii*) is also frequent within the grassland.



Photograph 3 – Other neutral grassland



Photograph 4 – Other neutral grassland

Table 5 – Condition Assessment for Grassland (Medium, High and Very High)

UK Hab Classification		Other Neutral Grassland				
Condition Sheet		Grassland (Medium, High and Very High)				
Condition A.	Criteria	The parcel represents a good example of its habitat type, with a consistently high proportion of characteristic indicator species present relevant to the specific habitat type. Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.	Pass	Condition Criteria D.	Cover of bracken <i>Pteridium aquilinum</i> is less than 20% and cover of scrub (including bramble <i>Rubus fruticosus</i> agg.) is less than 5%.	Pass
Condition B.	Criteria	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds, and small mammals to live and breed.	Pass	Condition Criteria E.	Combined cover of species indicative of sub-optimal condition and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species (as listed on Schedule 9 of WCA4) are present, this criterion is automatically failed.	Fail
Condition C.	Criteria	Cover of bare ground is between 1% and 5%, including localised areas (for example, a concentration of rabbit warrens).	Fail	Condition Criteria F.	There are 10 or more vascular plant species per m² present, including forbs that are characteristic of the habitat type. Note - this criterion is essential for achieving Good condition for non-acid grassland types only.	Fail
Condition	Poor	Passes 3 of 6 criteria and fails essential criterion A and F.				
Distinctiveness		Low				

4.2.5 7) Urban – Introduced Shrub (u 847)

4.2.5.1 Further beds of ornamental shrubs and flowering plants are present along the viaduct, formed from repurposed metal and railway sleepers.

4.2.5.2 These beds are comprised of a variety of ornamental species, including common cotton grass (*Eriophorum angustifolium*), Dutch garlic (*Allium hollandicum*), common Solomon's seal (*Polygonatum x hybridum*), stinking hellebore (*Helleborus foetidus*), New Zealand sedge

(*Carex Testacea*), common dogwood (*Cornus sanguinea*), and buddleia globose (*Buddleia globosa*).

- 4.2.5.3 Young trees are also present within these beds, however they are below the minimum size threshold to be classified as an individual tree (7.5cm diameter breast height). Tree species present include smooth serviceberry (*Amelanchier laevis*), birch (*Betula* sp.), beech (*Fagus sylvatica*), wild cherry (*Prunus avium*), and sycamore (*Acer pseudoplatanus*) (Photo 6&7).
- 4.2.5.4 A small pond is also present within the ornamental planting beds, containing some limited submerged aquatic species (Photo 8).
- 4.2.5.5 Introduced shrub is automatically allocated a condition score of **N/A** within the metric.



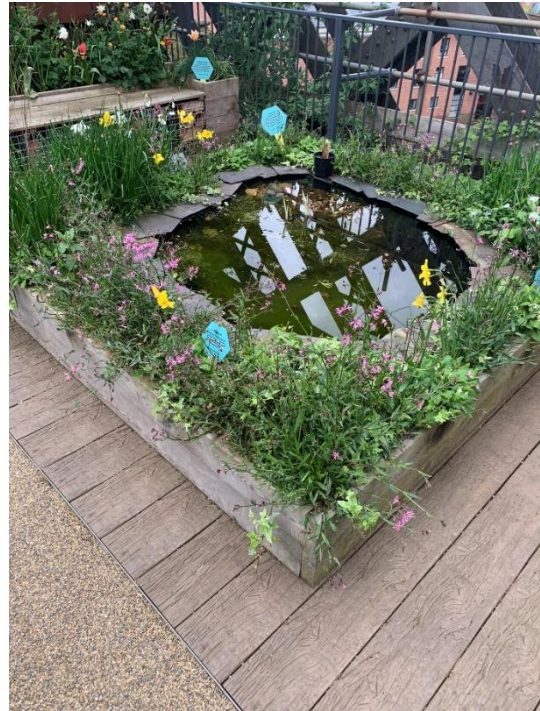
Photograph 5 – Ornamental shrub beds



Photograph 6 – Ornamental bed with young tree saplings



Photograph 7 – Ornamental shrub beds with young trees



Photograph 8 – Pond within planting beds



Photograph 9 – Ornamental planters screening entrance

4.2.6 8) Urban – Buildings (u1b5)

- 4.2.6.1 An event space building is present at the end of the landscaped section of the viaduct.
- 4.2.6.2 Buildings are classified as developed land; sealed surface, which is automatically allocated a condition score of **N/A** within the metric.

4.2.7 9) Sparsely Vegetated Land – Ruderal/Ephemeral (u1f 81 521 524)

- 4.2.7.1 The undeveloped section of the viaduct has been colonised by ruderal vegetation, which is growing on the abandoned railway ballast.

- 4.2.7.2 Full botanical surveys for this habitat area were completed by Urban Green in April 2024, and by a botany student from Manchester Metropolitan University in July 2023. The results have been combined into a full species list, which is available in Appendix 5.
- 4.2.7.3 Notable and frequent species present include marsh orchid (*Dactylorhiza* sp.), wild strawberry (*Fragaria vesca*), common centaury (*Centaureum erythraea*), multiple species of St John's wort (*Hypericum* sp.) and hawkweeds (*Hieracium* sp.).
- 4.2.7.4 This habitat is predominantly comprised of colonising vegetative plants and grasses. There is some variation in the structure of the habitat due to scattered saplings and shrubs; however, this is largely comprised of invasive cotoneaster and buddleia.
- 4.2.7.5 As the shrubs and saplings are young, they are not considered to provide sufficient cover for vertebrate species, such as nesting birds and hedgehogs. In addition, as the ground substrate is predominantly formed of railway ballast, the habitat is unsuitable for other mammalian species, such as rabbits, badgers and foxes. While these species could still use the viaduct for commuting and feeding, it is unlikely due to its location. As such, Condition Criterion A has been failed for this habitat.
- 4.2.7.6 However, this habitat does provide some suitable habitat for invertebrates, particularly pollinators. Birds and bats have also been found to use the viaduct, and fruiting shrubs present provide them with some limited food resources. Therefore, Condition Criterion B has been passed.
- 4.2.7.7 Many subspecies of cotoneaster are frequently found along this section of the viaduct, including wall cotoneaster (*Cotoneaster horizontalis*) which is listed as a Schedule 9 Invasive Species on the Wildlife and Countryside Act (1981). Therefore, Condition Criterion C has been failed.



Photograph 10 – Sparsely vegetated section of viaduct



Photograph 11 – Sparsely vegetated section of viaduct