

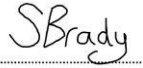
HABITAT MANAGEMENT AND MONITORING PLAN

JANUARY 2025

Castlefield Viaduct Urban Park
Duke Street
Manchester
M3 4PU

U R B A N
G R E E N

QUALITY MANAGEMENT

Project Title:		Habitat Management and Monitoring Plan			
Document Type:		HMMP	Issue No.:	01 (DRAFT)	
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Prepared By:		Sarah Pendle	Signature:		Qualifications: Senior Biodiversity Net Gain Consultant, MSc
Checked By:		Shannon Brady	Signature:		Qualifications: Senior Biodiversity Net Gain Consultant, MSc
Rev	Date	Comment		Prepared	Checked
02	15/01/2025	Amending to align with updated landscapes, following LPA feedback		SP	SB

Project Details

Project Type:	Public Realm
Project:	Castlefield Viaduct Urban Park
Location:	Duke Street, Manchester, M3 4PU
Author Organisation:	Urban Green
Landowner:	TBC
Land Manager:	TBC
Responsible Person:	TBC
Planning Authority:	Manchester City Council
Planning Reference (if applicable)	140876/LO/2024
BNG Register Reference (if applicable)	N/A
Metric Revision/Title	Statutory Biodiversity Metric from July 2024
Are any Irreplaceable Habitats presents onsite	Yes: ☐ No: ☒
Phasing Strategy	No phasing strategy

Roles and responsibilities

NOTE: This document is currently in draft format. The following section is to be completed by the relevant parties once the document becomes live.

Ecologist or Other Professional Responsible for HMMP				
Name or Initials		Sarah Pendle		
Organisation		Urban Green		
Responsibility	Start Date:	TBC	End Date:	TBC
The author of the report is Sarah Pendle, Senior Biodiversity Net Gain Consultant. The person who will be responsible for the implementation of the HMMP and the continued monitoring is still TBC.				
Statement of Competency				
Sarah has experience providing consulting services in Biodiversity Net Gain for a range of development schemes across the UK, including residential and commercial schemes. Sarah is a technically competent and experienced person, as defined in British Standard BS8683 - Suitably qualified person – definition in BS8683:2020.				

Landowner or Land Manager				
Name or Initials		TBC		
Organisation		TBC		
Responsibility	Start Date:	TBC	End Date:	TBC
Summarise the relevant responsibilities of the landowner (or land manager if appropriate) in the production and, or, implementation of this HMMP				
Statement of Competency				
Demonstrate management and monitoring competency and, or, relevant site knowledge and skills through relevant training, qualifications or experience, or a combination of these.				
Management Organisation(s) Responsible for Implementing the HMMP				
Name or Initials		Add N/A if works being completed by the landowner or land manager		
Organisation		TBC		
Responsibility	Start Date:	TBC	End Date:	TBC
Summarise the relevant responsibilities of the Management Organisation(s) in the production and, or, implementation of this HMMP.				
Statement of Competency				
Demonstrate the knowledge, skills and, or, experience to manage the habitats to achieve the BNG requirements, through relevant training, qualifications, experience, or combination of these.				

LPA or Responsible Body for Reviewing HMMP				
Name or Initials		TBC		
Organisation		TBC		
Responsibility	Start Date:	TBC	End Date:	TBC
Summarise the agreed relevant responsibilities of the LPA or Responsible Body in the review, auditing and, or, long-term involvement in the implementation of this HMMP (if applicable)				

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1 Introduction

1.1 Scope

- 1.1.1.1 Urban Green has been instructed by The National Trust to complete a Habitat Management and Monitoring Plan (HMMP) for Castlefield viaduct in Manchester (hereafter referred to as 'the site').
- 1.1.1.2 The site is currently split into two sections; the Phase 1 Pilot Scheme, which has been landscaped with ornamental planting, access routes for public access and an information building, and the Phase 2 section which is an abandoned and unmanaged section of viaduct.
- 1.1.1.3 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.
- 1.1.1.4 While this proposal will not be phased, overall, the Vision Scheme for Castlefield Viaduct involves developing different phases along the viaduct and onto Pomona Island. However, the subsequent phases will be covered by separate planning applications.

1.2 Site Context

- 1.2.1.1 The site is located at National Grid Reference SJ 83013 97624 and comprises a total area of approximately 0.56ha (see Figure 1).
- 1.2.1.2 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.
- 1.2.1.3 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.
- 1.2.1.4 The Phase 1 Pilot section is predominantly comprised of ornamental planting and hardstanding access routes, with areas of grassland that have colonised the retained viaduct ballast. The Phase 2 section currently comprises original railway ballast which has been sparsely colonised by vegetation and leads onto an unvegetated area of ballast which is directly adjacent to an active tramline.

1.3 Purpose of Report

- 1.3.1.1 The purpose of this management plan is to provide a schedule for the management of habitats on site for a 30-year period, ensure that existing and proposed habitats are suitably maintained and ensure good establishment and continued improvement of habitat condition.

2 Baseline Environmental Data

2.1 Desk Study

- 2.1.1.1 A desk study for relevant environmental data was completed for the site and has been summarised in Table 1.

Table 1 – Desk Study Sources of Information

Environmental Information	Data Source	Results
National Character Area	National Character Area Profiles – https://nationalcharacterareas.co.uk/	The site falls within National Character Area 55: Manchester Conurbation Area, which is characterised by dense urban and industrial development.
Agricultural Land Status	Natural England (https://publications.naturalengland.org.uk/category/5954148537204736)	According to Natural England's Agricultural Land Classification map for the north-west region, the site is currently classified as land predominantly in urban use.
Soils and Substrates	Soilscapes Viewer, LandIS (https://www.landis.org.uk/soilscapes/)	The soil on site is likely to be naturally wet and acidic, with a sandy and loamy texture and very low fertility. The existing soil and ballast present on the viaduct is likely to be tested and removed if contaminated, and replaced with new subsoil.
Flood Risk Information	Flood Map for Planning (https://flood-map-for-planning.service.gov.uk/)	The area surrounding the site is within Flood Zone 3, which has a high probability of flooding due to the presence of the canal. However, due to the elevation of the site, it is highly unlikely to be flooded from the canal.
Landscape Character and Designations	MAGIC maps and Preliminary Ecological Appraisal (Urban Green, 2024a)	There are no statutory or non-statutory designated sites present onsite or within 1km of the site.
Historic Environment and Earth Heritage	Manchester City Council website (https://www.manchester.gov.uk/info/511/conservation_areas/972/castlefield_conservation_area)	The site falls within the Castlefield Conservation Area, designated for its heritage value due to the presence of a Roman fort. The viaduct was used as a railway line until 1969, when it was closed, and rail transport ceased.

2.2 Preliminary Ecological Appraisal Summary

- 2.2.1.1 A preliminary ecological appraisal (PEA) was conducted on the site in May 2024 by Urban Green. This constituted a desk-based study and a field survey.
- 2.2.1.2 Key information obtained in the PEA is summarised in Table 2; full details can be found within the PEA (Urban Green, 2024a).

Table 2 – Summary of the PEA (Urban Green, 2024a)

Site Aspect	Summary
Current Site Use and Adjacent Site Use	The site is located within Manchester city centre, next to an active tram line. Commercial and high-density residential buildings are present in the surrounding area. The River Irwell is present approximately 260m west of the site and the Bridgewater Canal is present directly beneath the viaduct, with limited areas of dense vegetation present along the banks.
Potential Impacts on Designated Sites	No potential impacts on designated sites nearby to the site are anticipated to occur due to the proposed development. The site is located at a sufficient distance from nearby designated sites, and the proposed development activities have been considered.
Habitats	Habitats on site comprised introduced shrub and ornamental planting along Phase 1, and ruderal/ephemeral vegetation growth within existing railway grown along Phase 2.
Ecological Constraints	The following potential ecological constraints were identified during the assessment: • Structure is confirmed to host roosting bats. • The site provides moderate value to commuting and foraging bats. • Nesting birds were observed using the Viaduct structure and ground nesting species may also use the loose substrate present on site.
Recommended Ecological Mitigation	A check for nesting birds is to be carried out before any vegetation or substrate is cleared from site to minimise potential impacts to nesting birds due to the proposed development.
Recommended Further Surveys and Reports	Nocturnal bat activity and emergence surveys on are ongoing.
Recommended Ecological Enhancements	The National Planning Policy Framework (NPPF) (2023) highlights the requirement for planning policies and decisions to conserve and enhance the natural environment. The proposed development provides the opportunity to enhance the site and ecological enhancements have been recommended.

2.3 Ecological Surveys

2.3.1.1 Bat Surveys

2.3.1.2 The PEA (Urban Green, 2024a) recommended further nocturnal bat activity surveys to be carried out on the viaduct, and emergence surveys be carried out under the viaduct structure.

2.3.1.3 Bat activity surveys have been carried out in 2021, 2023 and 2024 and all found that the viaduct is frequently used by common pipistrelle (*Pipistrellus pipistrellus*) for foraging purposes. Emergence surveys in 2023 and 2024 identified a non-breeding summer roost within the underside of the viaduct structure (Urban Green, 2024b).

2.3.1.4 Biodiversity Monitoring

2.3.1.5 In addition, as a Planning Condition for the Phase 1 Pilot Scheme application, regular biodiversity monitoring has been carried out throughout 2023 and 2024 (Urban Green, 2024c). The monitoring compared the presence of bird, invertebrate and plant species across the Phase 1 Pilot Scheme and the undeveloped section of the viaduct (now known as Phase 2).

- 2.3.1.6 Overall, there was found to be a greater species diversity on the Phase 1 Pilot Scheme, compared to the undeveloped section of viaduct.

2.4 Biodiversity Net Gain Assessment

2.4.1 Methodology

- 2.4.1.1 The Biodiversity Net Gain Assessment and Report follows the user guidance produced by Department for Environment, Food & Rural Affairs (2024) and the good practice methodology as detailed within the *Biodiversity Net Gain: Good Practice Principles for Development* (Baker, et al., 2019).
- 2.4.1.2 The BNG calculation was undertaken utilising The Statutory Biodiversity Metric from Department for Environment, Food & Rural Affairs, using data obtained from the field surveys and the proposed landscape plans, which were provided by BDP (BDP, 2025).
- 2.4.1.3 The calculation was performed by a technically competent and experienced person as detailed in British Standard BS8683 - Suitably qualified person – definition in BS8683:2020.

2.4.2 Baseline Habitat Assessment

- 2.4.2.1 The habitats present onsite prior to development have been summarised in the tables below, as well as the habitat units lost as part of the development. Full details are available within the Biodiversity Net Gain Design Stage report (Urban Green, 2025).
- 2.4.2.2 Maps showing the pre-development habitats and definitions for primary and secondary codes can be found in Appendices 2 and 3.
- 2.4.2.3 The baseline habitats present are summarised in the tables below.

Table 3 – Baseline Area Habitats

Habitat Parcel Reference	Total Area (ha)	Condition	Total Units
1) Developed land; sealed surface	0.13	N/A	0
2) Developed land; sealed surface	0.001	N/A	0
3) Developed land; sealed surface	0.001	N/A	0
4) Developed land; sealed surface	0.001	N/A	0
5) Introduced shrub	0.01	N/A	0.02
6) Other neutral grassland	0.05	Poor	0.23
7) Introduced shrub	0.03	N/A	0.06
8) Developed land; sealed surface	0.01	N/A	0
9) Sparsely vegetated land – Ruderal/ephemeral	0.21	Poor	0.48
10) Sparsely vegetated land – Ruderal/ephemeral	0.08	Poor	0.18

11) Artificial unvegetated, unsealed surface	0.04	N/A	0
Total	0.56	-	0.97

2.4.3 Post-Development Habitat Assessment

2.4.3.1 Post-development habitats are subject to the same condition assessments as baseline habitats, with the addition of temporal and difficulty multipliers within the Statutory Biodiversity Metric.

2.4.3.2 The proposed landscape plans were provided by BDP (BDP, 2025a - 2025c) (Appendices 4 to 5). The landscape plan has also been converted into a UKHab map using UKHab symbology and habitat classification (Appendix 6). Using this, the existing habitats that will be retained, lost and enhanced have been identified (Appendix 7).

Table 4 - Post Development Biodiversity Net Gain Calculation

	On-site baseline	Habitat Unit Change				On-site post development	Net change in Biodiversity	
		Retained	Lost	Enhanced	Created		Habitat units	%
Area Habitat Units	0.97	0.44	0.54	-	0.65	1.09	+0.12	+11.83%

2.4.3.3 As illustrated in Table 4, the current landscape proposals for the development of the site produce a 0.12 unit (11.83%) net gain in biodiversity for area habitats, and the trading rules have been satisfied for all habitats. Consequently, the development meets all local and national planning policy and off-site mitigation will not be necessary.

3 Habitat Management

3.1 Management Responsibilities

- 3.1.1.1 The detailed maintenance requirements outlined in this section must be followed at all times. Any deviations from the management plan must be highlighted to the site owners or management company.
- 3.1.1.2 The organisation implementing this plan will be a management company with the necessary certificates of competence to implement landscape management operation on site.
- 3.1.1.3 The managing organisation will ensure that all site management complies with good practice standards and all relevant health and safety procedures.
- 3.1.1.4 The managing organisation will also ensure that measures outlined to avoid pollution incidents, comply with protected species and habitats legislation, and ensure overall environmental protection are enforced.
- 3.1.1.5 Any transference of responsibility of this plan should be undertaken with the appropriate appointment of a competent organisation capable of delivering the management detailed within the document.

3.2 Habitats Covered

- 3.2.1.1 This management plan covers all proposed habitats which provide significant onsite enhancements, as assessed within the Statutory Biodiversity Metric. These include:
- habitats of medium or higher distinctiveness in the biodiversity metric;
 - habitats of low distinctiveness which create a large number of biodiversity units relative to the biodiversity value of the site before development;
 - habitat creation or enhancement where distinctiveness or condition is increased relative to that of the habitat before development;
 - areas of habitat creation or enhancement which are significant in area relative to the size of the development.
- 3.2.1.2 Habitats that do not provide significant on-site enhancements do not require detailed management regimes. However, many of these habitats still perform important functions and should receive some ecologically driven management.
- 3.2.1.3 Habitats that will not provide significant onsite enhancements, and basic management measures are summarised in Table 5.

Table 5 – Habitats that do not provide significant onsite enhancements

Habitat Type	Justification	Management Measures
Introduced Shrub (Retained)	Introduced shrub is a low distinctiveness habitat, and only	• Pruning and cutting may be necessary, but should aim to maintain shape and vigour,

	contributes 0.08 units (7%) of the overall post-development unit value. In addition, it is automatically allocated a condition score of N/A within the BNG metric.	promote flowering/fruitletting, and create variation and diversity in height and structure. • Avoid cutting all specimens across the plot in a single period, particularly where this is likely to remove all flower/fruit interest for wildlife. • Avoid herbicide use, instead prioritise organic mulches.
Developed Land; Sealed Surface (Hardstanding and Buildings)	Developed land; sealed surface is a very low distinctiveness habitat and contributes no units to the overall post-development unit value of the site.	• Regularly monitor tarmacked areas and resurface/fill holes where necessary. • Replace any loose paving stones. • Clear any vegetation that begins to colonise these areas. • Monitor buildings for signs of damage and carry out necessary repair works where required.
Ground Level Planters	Ground level planters are a low distinctiveness habitat with an automatic condition score of N/A. They also only contribute <0.01 units (<1%) of the overall post-development unit value.	• Planting within these beds is likely to change regularly – management techniques will vary depending on the species present. • Where appropriate, avoid herbicide use and prioritise organic mulches.
Artificial Unvegetated, Unsealed Surface	Artificial unvegetated, unsealed surface is a very low distinctiveness habitat and contributes no units to the overall post-development unit value of the site.	• Regularly monitor gravel areas, and even out or supplement where necessary • Remove weeds and other vegetation growing within these areas regularly by hand

3.3 Retained Habitats

- 3.3.1.1 All habitats along the Phase 1 section of the viaduct will be retained in their current condition. No specific protection measures are deemed necessary for the habitats along this section as disturbance will be kept to a minimum.
- 3.3.1.2 The existing sparsely vegetated land to the far west of the Phase 2 section will be retained in its current condition and should be protected during the development works. Appropriate protection measures have been detailed in Table 6.

Table 6 – Retained Habitats and Protection Measures

Habitat Type	Condition	Protection Measures
Sparsely Vegetated Land – Ruderal/Ephemeral	Poor	• Install fencing where possible and avoid driving machinery into these areas. • Use protection mats or ground protection meshes where necessary.

- 3.3.1.3 Management techniques for the retained other neutral grassland and sparsely vegetated land are included within Section 3.6 to ensure they retain their current condition.

3.4 Created Habitats

3.4.1.1 This section sets out the specific measures that will ensure that all proposed habitats that provide significant onsite enhancements are successfully created and can achieve their target condition within the targeted time period.

3.4.1.2 Habitats to be created are summarised in Table 7.

Table 7 – Proposed Habitat Creation

Habitat Type	Proposed Condition	Time to Target Condition (years)
Created Habitats		
Sparsely Vegetated Land – Ruderal/Ephemeral	Good	5

3.5 General Measures

3.5.1.1 Habitat creation on site will follow details set out in the landscape designs (BDP, 2025). The following general measures shall be met to ensure successful habitat creation and succession on site.

- All planting is to follow guidance set out in the relevant British Standard or Horticultural Trades Association documents and carried out by a competent person.
- Planting is to remain undamaged, with healthy and vigorous growth, and is to be planted upright and well balanced. Trees and shrubs are to be of good shape and without elongated shoots, grown in a suitable environment and hardened off before being delivered to the site.
- All planting is to be true to name and free from pests, diseases, discoloration, weeds, fungus, and physiological disorders upon planting.
- If plants/trees are unobtainable alternatives are to be agreed with the Ecologist/Landscape Architect in writing prior to ordering.
- After planting ensure that the full depth of topsoil is wetted. Apply water evenly and without damaging or displacing plants or soil. Continue to water as necessary to ensure the successful establishment and continued thriving of planting.
- No tree/shrub/hedgerow works shall be completed during nesting bird season (March to September inclusive). If works are required within the nesting bird season, a check must be undertaken of all affected trees by a suitably qualified ecologist.

	Optimal timing for habitat creation
	Unsuitable for habitat creation

3.6 Habitat Creation Measures

3.6.1 Sparsely Vegetated Land – Ruderal/Ephemeral (Across Zones 1 to 3)

3.6.1.1 The Phase 2 proposals are split into three Zoned areas, with different substrates and planting mixes:

- Zone 1 – Experimental Gardens will comprise mosaic of different substrate materials, such as retained ballast, brick and stone, and will be planted with a mix of native and non-native plug plants, including perennials, grasses and ferns, and will be overseeded with a native wildflower mix. Some existing plants will also be retained and translocated into this area.
- Zone 2 – Wateraid Garden by Tom Massey Studio will also comprise mosaic of different substrate materials such as compost, brick and stone, and will be planted with a mix of predominantly non-native, ornamental species.
- Zone 3 – Retained Viaduct Garden will comprise retained viaduct ballast and existing vegetation, with the addition of existing plants translocated from other areas of the viaduct.

3.6.1.2 General creation activities have been provided in Table 8, though it is recommended that the manufacturer's/suppliers instructions are also followed.

Table 8 – Habitat Creation Activities for Sparsely Vegetated Land

Habitat Creation Activity	Further Details	Indicative Timing of Operation											
		J	F	M	A	M	J	J	A	S	O	N	D
Ground Preparation	• Spread gravel evenly over surface of soil, to approximately 4-5 inches in depth.												
	• Remove weeds by hand, through repeated cultivation, or use herbicides where necessary (e.g. non-glyphosphate).												
Planting	• Plant plugs and translocated plants by hand, ideally using plants with a rootball depth of around 4 inches. Ideally complete during spring; however, early autumn is also appropriate.												
	• Avoid spilling potting mix into gravel as this can create a potential weed seed bed.												

Establishment	Regularly monitor plants for stress or wilting and water, or use a temporary irrigation system (particularly during the summer months)	
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- Optimal timing for habitat creation
- Unsuitable for habitat creation

3.7 Management Prescriptions

3.7.1.1 This section includes detailed management techniques and annual schedule of works for each habitat that will be present within the proposed development, including retained, enhanced and created habitats. These management prescriptions should be followed for the next 30 years to ensure all habitats achieve their existing/proposed condition.

3.7.2 Grassland - Other Neutral Grassland (Retained)

3.7.2.1 The other neutral grassland within the Phase 1 Pilot Scheme section of the site will be fully retained. This habitat is currently in **poor condition**, and currently passes Condition Criteria A, B and D.

3.7.2.2 Table 9 contains detailed management techniques to ensure that the sparsely vegetated land will continue to pass Condition Criteria A, B and D, and remain in **poor condition**.

Table 9 - Management Objectives for Other Neutral Grassland

Condition Criteria	Management Action	Timing of Management Action (Year)	Indicative Timing of Operation											
			J	F	M	A	M	J	J	A	S	O	N	D
A. The grassland is a good representation of the habitat type it is identified as based on its UKHab description	- Continue to allow established grasses to grow and maintain the current species mix – use supplementary planting or translocation where required. - Remove any aggressive, non-native species which establish by hand.	As required												
B. Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20 per cent is more than 7 cm)	Grass is not currently mown – continue to manage by hand and avoid mowing.	As required												
C. Cover of bare ground between 1% and 5%, including localised	This criterion fails as the grass is growing on ballast, which limits the density of vegetation that can grow.	N/A												

Condition Criteria	Management Action	Timing of Management Action (Year)	Indicative Timing of Operation											
			J	F	M	A	M	J	J	A	S	O	N	D
areas, for example, rabbit warrens.														
D. Cover of bracken less than 20% and cover of scrub (including bramble) less than 5%.	Manual removal of bracken and scrub regeneration upon discovery.	As required												
E. Combined cover of species indicative of sub-optimal condition and physical damage account for less than 5% of total area.	This criterion fails due to the presence of species indicative of sub-optimal condition, such as spear thistle (<i>Cirsium vulgare</i>). - However, the habitat should be regularly monitored for Schedule 9 Invasive Species, particularly cotoneaster which is present elsewhere on the site (Appendix 8) - Where safe and appropriate to do so, remove by hand immediately. If necessary, application of herbicide should be carried out by an experienced contractor	As required												
F. There are 10 or more vascular plant species per m ² present, including forbs that are characteristic of the habitat type	This criterion fails due to a low species richness and diversity in this habitat.	N/A												

3.7.3 Sparsely Vegetated Land – Ruderal/Ephemeral (Retained)

3.7.3.1 The sparsely vegetated land to the west of the site will be partially retained. This habitat is currently in **poor condition** and currently passes Condition Criterion B only.

3.7.3.2 Table 10 contains detailed management techniques to ensure that the sparsely vegetated land will continue to pass Condition Criterion B and remain in **poor condition**.

Table 10 - Management Objectives for Sparsely Vegetated Land

Condition Criteria	Management Action	Timing of Management Action (Year)	Indicative Timing of Operation											
			J	F	M	A	M	J	J	A	S	O	N	D
A. Vegetation structure is varied, providing opportunities for vertebrates and invertebrates to live, eat and breed. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area.	This criterion fails as the habitat is comprised of >80% grassland species.	N/A												
B. The habitat parcel contains different plant species that are beneficial for wildlife, for example flowering species providing nectar sources for a range of invertebrates at different times of year.	Monitoring for, and removal of invasive, non-native species, particularly cotoneaster (Appendix 8)	As required, from Year 1												
	Replacement planting if any existing plants fail, using the same species where possible.	As required, from Year 1												
	- Hand removal of any weeds or vigorous species that establish, ensuring vegetation coverage is kept between 10-50% of total area. - Thinning of dense young growth of any shrubs.	As required, from Year 1												
C. Invasive non-native plant species (listed on Schedule 9 of WCA)	This criterion fails as invasive cotoneaster and buddleia are present.	N/A												

Condition Criteria	Management Action	Timing of Management Action (Year)	Indicative Timing of Operation											
			J	F	M	A	M	J	J	A	S	O	N	D
and others which are to the detriment of native wildlife (using professional judgement) cover less than 5% of the total vegetated area														

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3.7.4 Sparsely Vegetated Land – Ruderal/Ephemeral (Created)

3.7.4.1 All created areas of sparsely vegetated land across Zones 1 – 3 are expected to achieve **good condition**, passing all three condition criteria. Detailed management techniques are described within Table 11 along with the corresponding condition criteria.

Table 11 - Management Objectives for Sparsely Vegetated Land

Condition Criteria	Management Action	Timing of Management Action (Year)	Indicative Timing of Operation											
			J	F	M	A	M	J	J	A	S	O	N	D
A. Vegetation structure is varied, providing opportunities for vertebrates and invertebrates to live, eat and breed. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area.	Hand removal of any weeds or vigorous species that establish, ensuring vegetation coverage is kept between 10-50% of total area.	Annually												
	Replacement planting if any existing plants fail, using the same species where possible.	As required, from Year 1												
B. The habitat parcel contains different plant species that are beneficial for wildlife, for example flowering species providing nectar sources for a range of invertebrates at different times of year.	- Monitoring for, and removal of, aggressive, non-native species, particularly cherry laurel and rhododendron (<i>Rhododendron</i> spp.). - Thinning of dense young growth of any shrubs. - Retain non-diseased pruned material following management into brash piles and hibernacula.	As required, from Year 1												
C. Invasive non-native plant species (listed on Schedule 9 of WCA) and others which are to the detriment of native wildlife (using professional judgement) cover less than 5% of the total vegetated area	- Continuously monitor for invasive, non-native species, in particular cotoneaster (see Appendix 8). - Where safe and appropriate to do so, remove by hand immediately. If necessary, application of herbicide should be carried out by an experienced contractor.	As required, from Year 1												

4 Habitat Monitoring

4.1 Monitoring Schedule

- 4.1.1.1 Following completion of habitat creation and initial enhancement works, habitats should be monitored to ensure that they are on track to achieve their predicted condition.
- 4.1.1.2 Monitoring should be carried out on Years 1, 2, 3, 4, 5, 10, 15, 20, 25 and 30.
- 4.1.1.3 All monitoring should be completed within the optimal botanical survey period (May to October) by a suitably qualified ecologist, using appropriate measures to assess the habitat against the Statutory Biodiversity Metric Condition Assessments (DEFRA 2024b) (e.g., photography, quadrat sampling, etc).

4.2 Monitoring Reports

- 4.2.1.1 Following completion of habitat creation and initial enhancement works, a monitoring report should be prepared and submitted to the Local Planning Authority or Responsible Body on the years detailed in Section 4.1.
- 4.2.1.2 Monitoring results inform necessary management changes to promote achieving BNG targets stated in the Statutory Biodiversity Metric and HMMP, allowing an adaptive management system to be followed.
- 4.2.1.3 For any habitats which aren't achieving their proposed condition within the target time period, reasons for failure and proposed remediation measures should also be recorded.

4.2.2 Grassland – Other Neutral Grassland (Retained)

4.2.2.1 The other neutral grassland within the Phase 1 Pilot Scheme will be retained in its current condition (poor); therefore, the existing condition scores for each criterion detailed within Table 12 should continue to be achieved over the 30-year period covered by this management plan.

Table 12 – Monitoring Results for Retained Other Neutral Grassland

Condition Criteria	Target Condition Score	Year											Comments / Remediation Measures
		0	1	2	3	4	5	10	15	20	25	30	
A. The grassland is a good representation based on its UKHab description.	Pass												
B. Sward height is varied	Pass												
C. Cover of bare ground is between 1% and 5%	Fail												This criterion fails as the grass is growing on ballast, which limits the density of vegetation that can grow.
D. Cover of bracken >20% and cover of scrub >5%	Pass												
E. Species indicative of sub-optimal condition and physical damage accounts for > 5% of total area	Fail												This criterion fails due to the presence of species indicative of sub-optimal condition, such as spear thistle (<i>Cirsium vulgare</i>).
F. There are 10 or more vascular plant species per m2 including forbs that are characteristic of the habitat type	Fail												This criterion fails due to a low species richness and diversity in this habitat.
Overall Condition	Poor												

4.2.3 Sparsely Vegetated Land – Ruderal/Ephemeral (Retained)

4.2.3.1 The sparsely vegetated land to the west of the site will be partially retained in its current condition (poor); therefore, the existing condition scores for each criterion detailed within Table 13 should continue to be achieved over the 30-year period covered by this management plan.

Table 13 – Monitoring Results for Retained Sparsely Vegetated Land

Condition Criteria	Target Condition Score	Year											Comments / Remediation Measures
		0	1	2	3	4	5	10	15	20	25	30	
A. Vegetation structure is varied. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area.	Fail												This criterion fails as the habitat is comprised of >80% grassland species.
B. The habitat parcel contains different plant species that are beneficial for wildlife.	Pass												
C. Invasive non-native plant species (listed on Schedule 9 of WCA) and others which are to the detriment of native wildlife cover less than 5% of the total vegetated area	Fail												This criterion fails due to the presence of non-native species.
Overall Condition	Poor												

4.2.4 Sparsely Vegetated Land – Ruderal/Ephemeral (Retained)

4.2.4.1 Table 14 details the habitat condition criteria for the elected habitat type and the target condition score for each criterion after 30 years. The proposed overall condition score for this habitat is **good**, with a final time to target condition of **5 years**.

Table 14 – Monitoring Results for Created Sparsely Vegetated Land

Condition Criteria	Target Condition Score	Year											Comments / Remediation Measures
		0	1	2	3	4	5	10	15	20	25	30	
A. Vegetation structure is varied. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area.	Pass												
B. The habitat parcel contains different plant species that are beneficial for wildlife.	Pass												
C. Invasive non-native plant species (listed on Schedule 9 of WCA) and others which are to the detriment of native wildlife cover less than 5% of the total vegetated area	Pass												
Overall Condition	Good												

5 Ecological Enhancements

5.1 Bat Boxes

- 5.1.1.1 Bats are known to be roosting under the viaduct and have been observed commuting and foraging on the viaduct (Urban Green, 2023). Installing bat boxes will further encourage bats to continue using and roosting on the viaduct.
- 5.1.1.2 Therefore, it is recommended that bat boxes are installed where appropriate along the viaduct. The bat boxes selected will provide a range of suitable conditions and target pipistrelle species that were confirmed present within the area during the data search for the PEA (Urban Green, 2024a).
- 5.1.1.3 Externally mounted bat boxes should be positioned on the viaduct itself, or onto the existing sides of the Engagement Building, positioned away from the adjacent tram and any direct light.
- 5.1.1.4 Please refer to Table 15 for the bat box specifications examples. A bat box design of similar specification can be selected for the site.

Table 15 - Bat box specification

Bat Box Type	Image		
Greenwoods Ecohabitats Two Crevice Bat Box Dimensions: External: 43 high x 21.5 wide x6.8 deep Internal: 41 x 16.5 x1.8 Weight: 6.75 kg			
Greenwoods Ecohabitats Medium Hollow Bat Box Dimensions: External: 43 x 21.5 x 13.5 Internal: 41 x 16.5 x 8.5 Weight: 6.75			

5.2 Bird Boxes

- 5.2.1.1 Multiple bird species use the viaduct for foraging, and some have been observed using existing nesting boxes that are currently installed along the Phase 1 Pilot Scheme section (Urban Green, 2023). Installing additional bird boxes will further encourage birds to use the viaduct.
- 5.2.1.2 Therefore, it is recommended that bird boxes are installed where appropriate along the viaduct. The bird boxes selected will provide a range of suitable conditions and target pipistrelle species that were confirmed present within the area during the data search for the PEA (Urban Green, 2024b).
- 5.2.1.3 Table 16 provides details of bird nest box types and the likely species they attract. Bird species that are known to inhabit the local area and readily utilise artificial nest boxes have been selected. Boxes of similar specifications as those detailed in Table 16 can be selected, in the case the example boxes are not available.
- 5.2.1.4 Bird boxes positioned on the viaduct itself, or onto the existing sides of the Engagement Building, away from the adjacent tram and any direct light.
- 5.2.1.5 In addition to bird boxes, bird feeding stations could also be set up, providing a variety of seeds and nuts.

Table 16 – Bird nest boxes that can be bought from websites such as nhbs.com, habitat.co.uk or other online retailers

Bird box type	Image	Target Species
BilBao Woodstone Nest Box <u>Specification</u> Height: 210mm Width: 305mm Depth: 120mm Entrance Hole Diameter: 28mm Weight: 6kg Material: Woodstone		Coal tit, blue tit, great tit
BilBao Woodstone Nest Box <u>Specification</u> Height: 210mm Width: 305mm Depth: 120mm Entrance Hole diameter: Oval 32mm Weight: 6kg Material: Woodstone		House sparrow, tree sparrow, great tit, blue tit, nuthatch

Bird box type	Image	Target Species
Vivara Pro Woodstone Starling Nest Box Specification Height: 385mm Width: 220mm Depth: 215mm Entrance hole diameter: 45mm Weight 7.4kg Material: Woodstone		Starling

5.3 Work Schedule

Key

	Recommended times when works can be conducted
	Times to avoid work

5.3.1 During Construction

Works	J	F	M	A	M	J	J	A	S	O	N	D
Erect boxes / Deploy hedgehog houses	Any time of year. All bird/bat/hedgehog boxes to be erected prior to the completion of the scheme.											

5.3.2 Post-Construction

Works	J	F	M	A	M	J	J	A	S	O	N	D
Bird box check and cleaning			Avoid bird nesting season									
Bat box checks												

Bird and bat box checks should be conducted in October of every other year to ensure that there is sufficient time for any repairs or replacements to be conducted.

5.4 Additional Provisions for Wildlife

- 5.4.1.1 Common invertebrate species have been identified using the viaduct, including butterflies and bees (Urban Green, 2023).
- 5.4.1.2 Bug hotels and log piles could be created within planted areas to provide additional habitat for invertebrates.

6 References

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- BDP (2024a). Castlefield Viaduct Phase 2 – Planting Schedule – Rev Po1. Ref: CVI-BDP-ZZ-ZZ-SH-L-0001_Po1 - Planting Schedule.
- BDP (2024b). Soft Landscaping Zoning Plan. Ref: CVI-BDP-ZZ-ZZ-DR-L-1001_Po3 - Landscape Zonal Plan.
- BDP (2025). Landscape Site Wide Plan. Ref: CVI-BDP-ZZ-ZZ-DR-L-0002_Po1.
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- CIEEM (2019). Advice Note on the Lifespan of Ecological Reports and Surveys. CIEEM.
- Department for Environment, Food & Rural Affairs (2024a). Statutory Biodiversity Metric: User Guide.
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- Scott, R (2008). Wildflower Landscapes in the Urban Environment. In Hitchmough, J & Fieldhouse, K (ed.) *Plant User Handbook: A Guide to Effective Specifying*. John Wiley & Sons, pp. 258–266.
- Stace, C. (2010). *New Flora of the British Isles*. 3rd ed. Cambridge: Cambridge University Press.
- Urban Green (2024a). Preliminary Ecological Appraisal (PEA). Ref: UG_922_ECO_PEA_02.
- Urban Green (2024b). Bat Survey Report. Ref: UG_922_ECO_BSR_2024_01.
- Urban Green (2024c). Biological Monitoring Report. Ref: UG_922_ECO_BMR_02.
- Urban Green (2025). Biodiversity Net Gain Design Stage Assessment. Ref: UG_922_ECO_BNG_02.
- Wildlife and Countryside Act (1981).

APPENDIX 1 - SITE CONTEXT MAP

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G R E E N

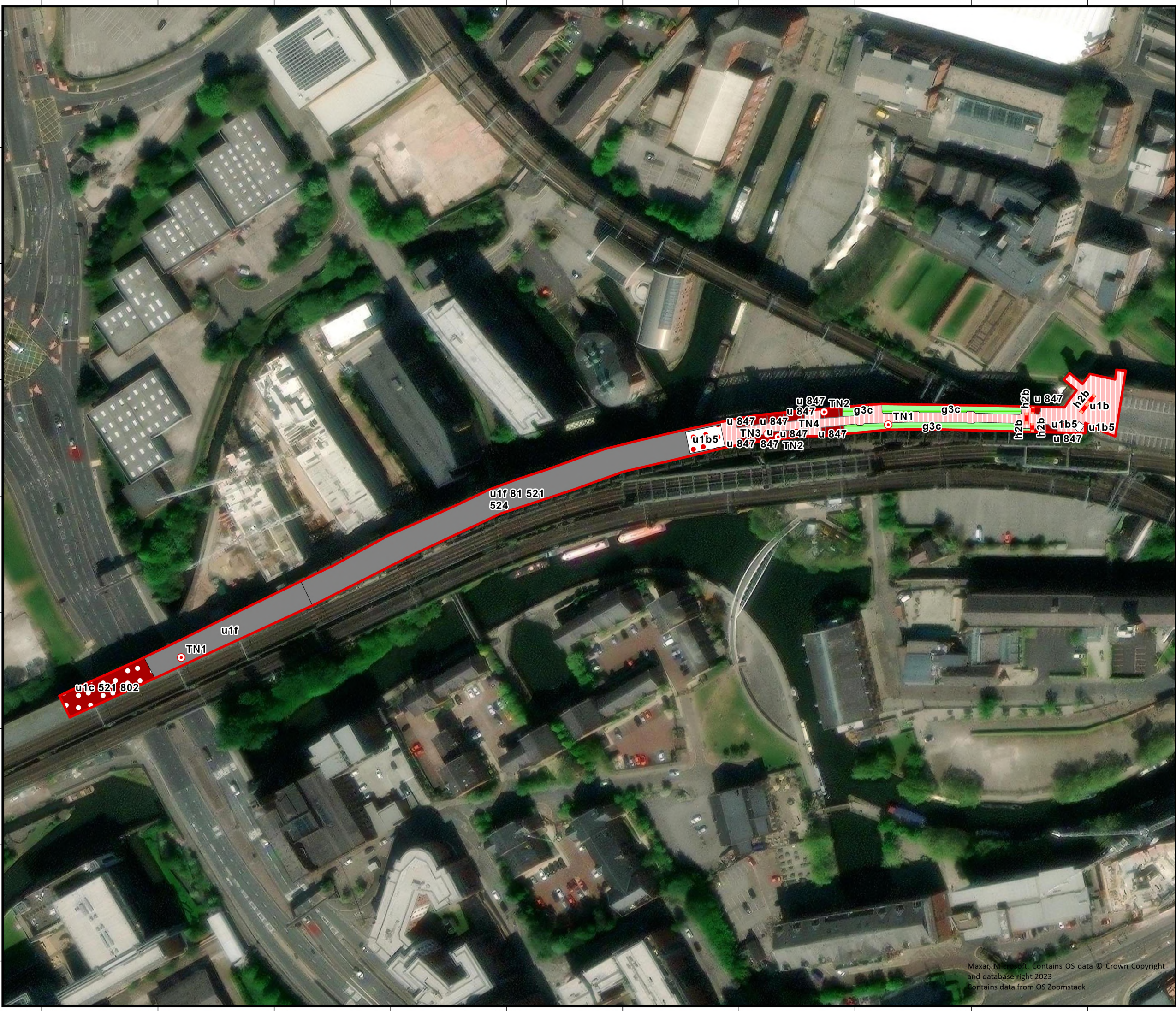


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Legend: Red Line Boundary		0.4 Kilometers		N
Client: National Trust		Issue: 01	Figure: 01	URBANGREEN A: Ground Floor, The Tower, Deva City Office Park, Trinity Way, Manchester M3 7BF T: +44 (0) 161 312 3131 weareurbangreen.co.uk
Project: Castlefield 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	

APPENDIX 2 - BASELINE UKHAB HABITAT MAP

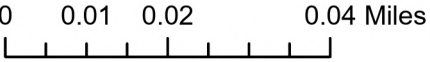
U R B A N
G R E E N



U R B A N
G R E E N

Legend

- Red Line Boundary
- Ornamental hedgerow
- Building
- Developed land sealed surface
- Modified grassland
- Other neutral grassland
- Sparsely vegetated land
- Urban
- Artificial unvegetated unsealed surface
- Target Note
 - TN1 - Cotoneaster sp.
 - TN2 - Bird box
 - TN3 - Insect hibernacula
 - TN4 - Pond



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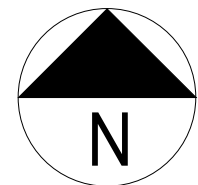
Client: National Trust		
Project: Castlefield Viaduct		
Title: UKHAB Habitat Map		
Issue: 01		
Drawn: CL	Checked: SB	Approved: BG
Project: UG922	Scale @ A3: 1:1,500	Date: 22/05/2024
Dwg No: UG_922_ECO_HM_01		Revision: 01

APPENDIX 3 – PRIMARY AND SECONDARY CODES

Primary Code	Definition
g3c	Other Neutral Grassland
g4	Modified Grassland
u	Urban
u1b	Developed Land; Sealed Surface
u1b5	Building
u1c	Artificial Unvegetated, Unsealed Surface
u1f	Sparsely Vegetated Urban Land
Secondary code	Definition
81	Ruderal or Ephemeral
521	Unmanaged
524	Invasive Non-Native Species
802	Railway
847	Introduced Shrub

APPENDIX 4 - LANDSCAPE SITE WIDE PLAN

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NOTES

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- CVI-BDP-ZZ-ZZ-DR-L-0001 - LANDSCAPE MASTERPLAN
- CVI-BDP-ZZ-ZZ-DR-L-1001 - SOFT LANDSCAPE ZONAL PLAN
- CVI-BDP-ZZ-ZZ-DR-L-1003 - SUBSTRATES PLAN
- CVI-BDP-ZZ-ZZ-DR-L-2001 - PLANTING PLAN ZONE 1
- CVI-BDP-ZZ-ZZ-DR-L-2002 - PLANTING PLAN ZONE 2
- CVI-BDP-ZZ-ZZ-DR-L-2003 - PLANTING PLAN ZONE 3
- CVI-BDP-ZZ-ZZ-DR-L-6001 - SOFT LANDSCAPE TYPICAL DETAILS
- CVI-BDP-ZZ-ZZ-SP-L-0001 - SOFT LANDSCAPE SPECIFICATION
- CVI-BDP-ZZ-ZZ-SH-L-0001 - CDM RISK REGISTER
- CVI-BDP-ZZ-ZZ-SH-L-0002 - PLANTING SCHEDULE
- CVI-BDP-ZZ-ZZ-RP-L-0001 - PLANTING SKETCHBOOK

Phase 2 proposals - Phase 2 proposed Landscape. Refer to BDP Detailed drawings for proposals.

Existing Phase 1 section retained as current

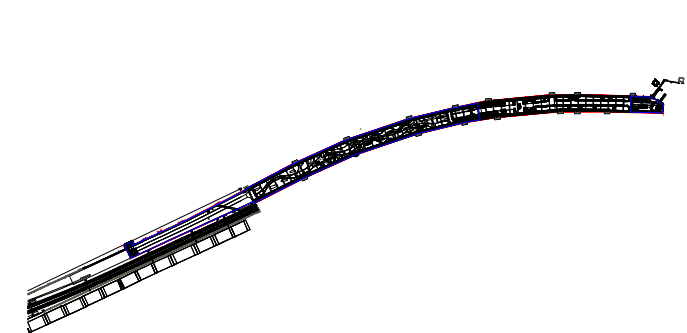
New Staff Welfare Building Location

Phase 2 proposals - Footpath connection to vertical access. Existing ballast and planting retained. No additional or translocated planting proposed.

P01 FOR PLANNING RN JF 14.01.2025

FIRST ISSUE

REVISION / DESCRIPTION	DRAWN	CHECKED	DATE
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CLIENT

BDP.

11 Ducie Street
P.O. Box 85, Piccadilly Basin
Manchester M60 3JA
United Kingdom
T +44 (0)161 828 2200
F +44 (0)161 828 2235
www.bdp.com

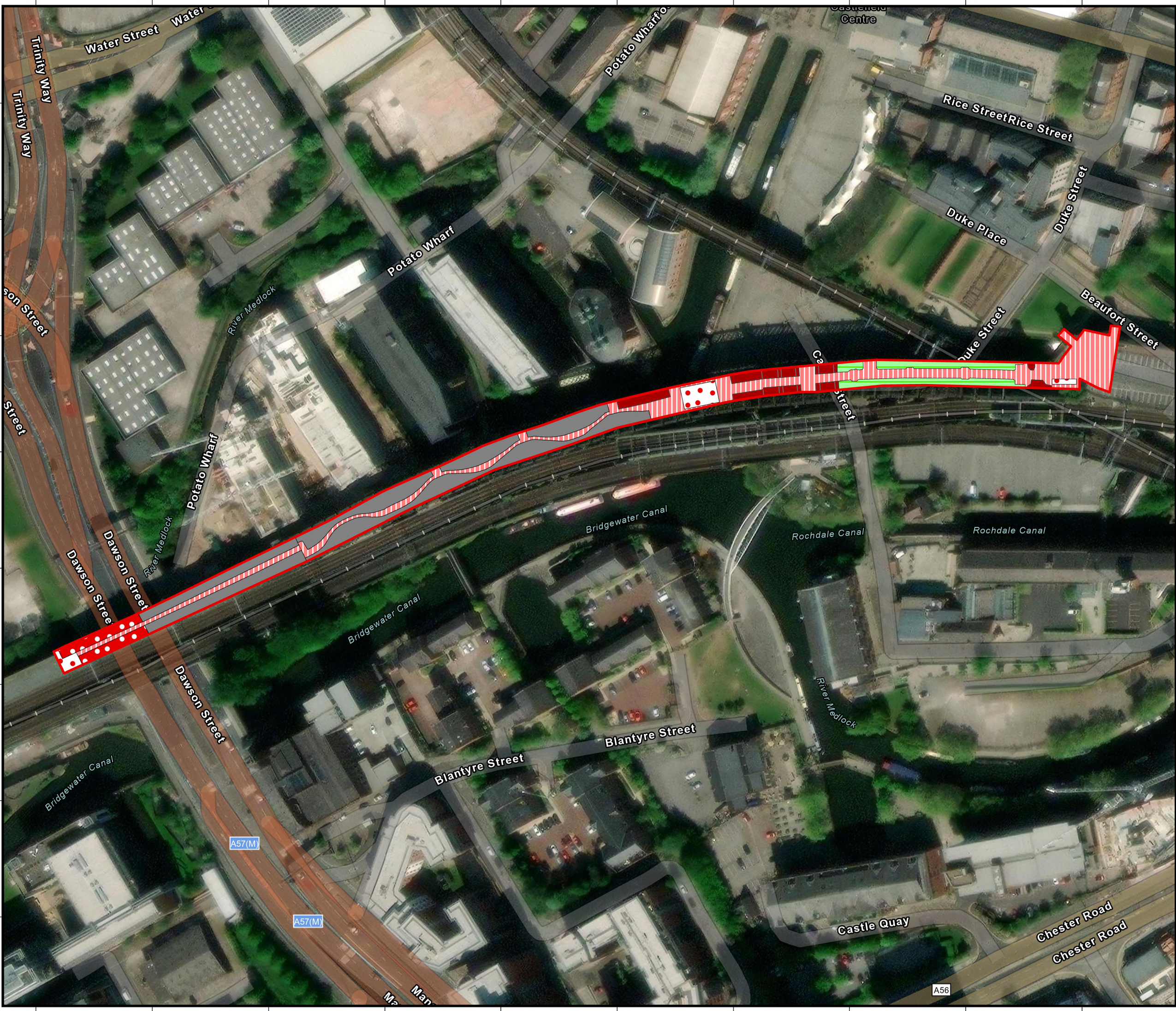
PROJECT TITLE CASTLEFIELD VIADUCT PHASE 2	
PROJECT NUMBER P3003987	
DRAWING TITLE LANDSCAPE SITE WIDE PLAN	SCALE @ A1 1:750
DRAWING NO. CVI-BDP-ZZ-ZZ-DR-L-0002	DATE JAN '25
	REVISION P01

APPENDIX 5 - SOFT LANDSCAPE ZONING PLAN

U R B A N
G R E E N

APPENDIX 6 - POST- DEVELOPMENT UKHAB HABITAT MAP

U R B A N
G R E E N



U R B A N
G R E E N

Legend

- Red Line Boundary
- Building
- Urban
- Other neutral grassland
- Developed land sealed surface
- Sparsley vegetated land
- Artificial unvegetated unsealed surface

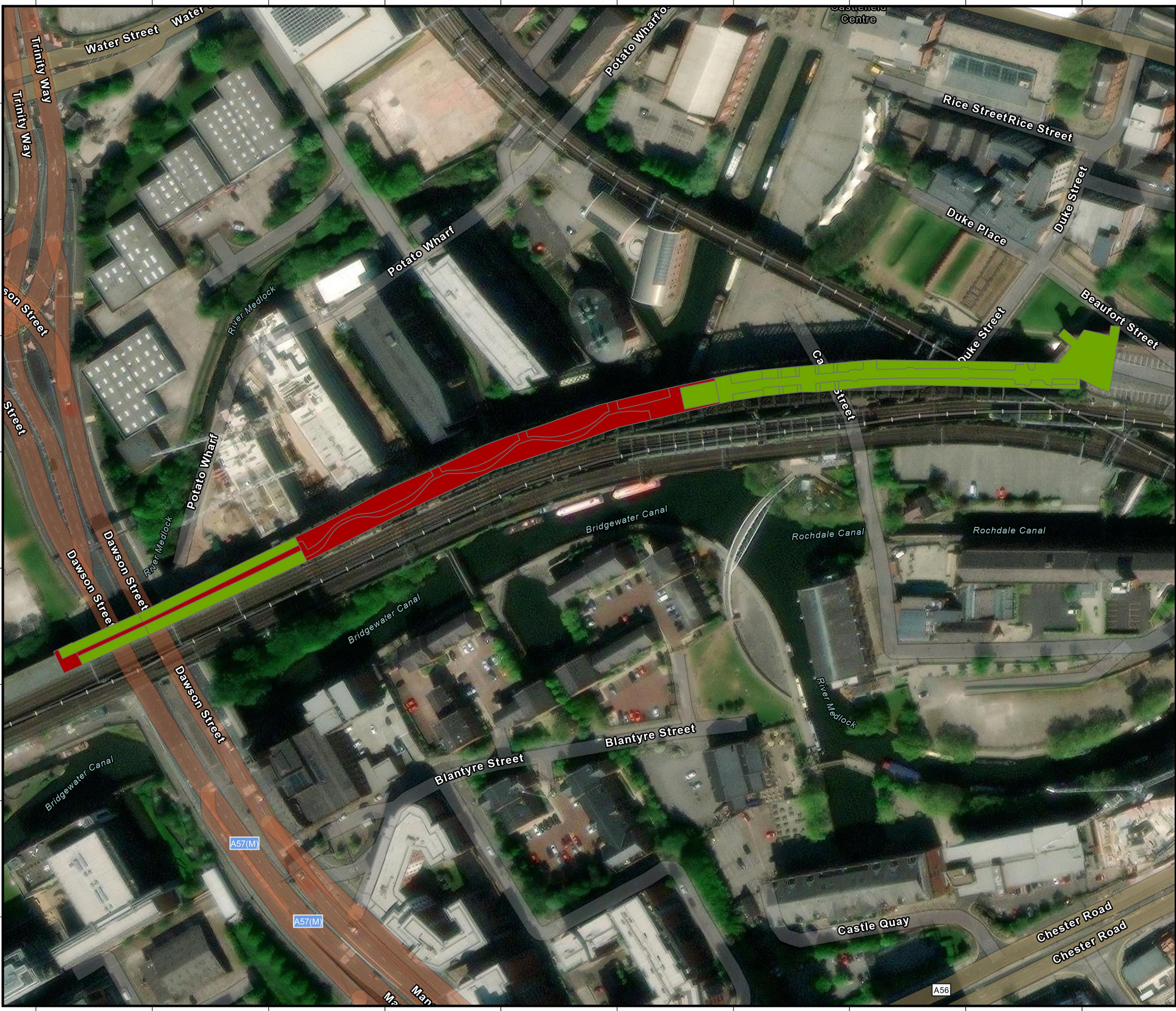


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Client: National Trust		
Project: Castlefield Viaduct		
Title: Post Development UKHAB Habitat Map		
Issue: 01	Figure: 00	
Drawn: CL	Checked: SP	Approved: SP
Project: UG922	Scale @ A3: 1:1500	Date: 14/01/2025
Dwg No: UG_922_BNG_PDHM_01	Revision: 01	

APPENDIX 7 - HABITAT RETENTION PLAN

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Legend

- Lost
- Retained



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Project: Castlefield Viaduct		
Title: Habitat Retention		
Issue: 01	Figure: 00	
Drawn: CL	Checked: SP	Approved: SP
Project: UG922	Scale @ A3: 1:1500	Date: 14/01/2025
Dwg No: UG_922_BNG_HR_01	Revision: 01	

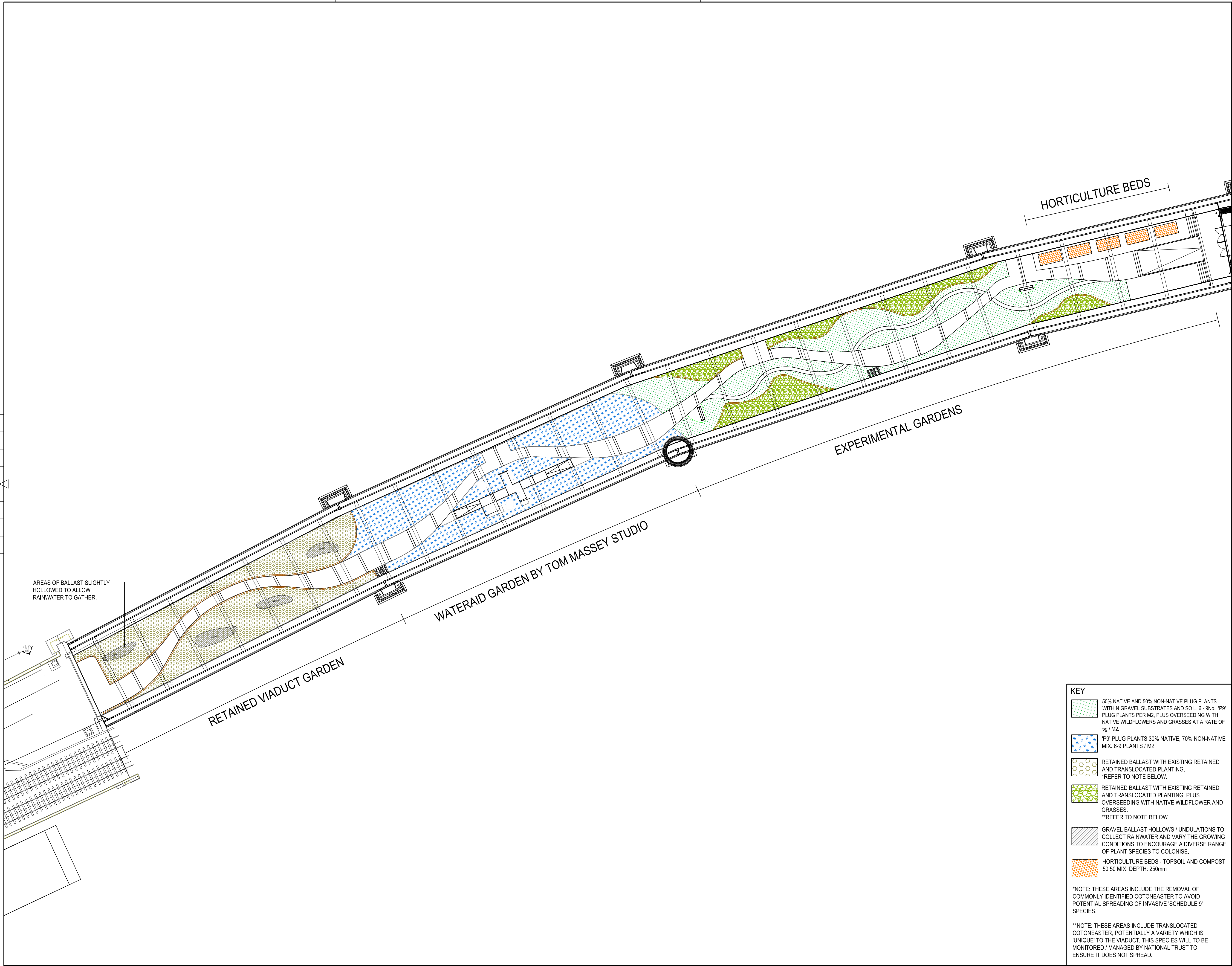
APPENDIX 8 – INVASIVE, NON-NATIVE SPECIES

- An invasive, non-native species is a species that is present outside of its native range but has established populations after accidental or intentional introduction to a geographical region. These species have negative ecological impacts on the environments in which they are present by outcompeting native flora and fauna for resources, facilitating the spread of disease, and interrupting natural food webs.
- Schedule 9 of the Wildlife and Countryside Act 1981 and the Invasive Alien Species (Enforcement and Permitting) Order 2019 list the species within the UK which are considered invasive and are damaging to biodiversity. It is the legal responsibility of the landowner to control populations of invasive species and prevent their growth and spread.
- Rockspray cotoneaster (*Cotoneaster horizontalis*) is extensively present along the Phase 2 section of the viaduct. It is expected to be removed and controlled as part of the development.
- The table below details common invasive, non-native species listed on Schedule 9 and the Invasive Alien Species Order 2019 and how to identify them. If any are identified onsite, a professional management company that specialises in invasive species should be contacted immediately.

Common name (scientific name)	Identification	
Himalayan balsam (<i>Impatiens glandulifera</i>)	• Green or red stems • Serrated oval leaves growing in a whorl round the stem • Bright pink flowers	

Giant Hogweed	• Up to 4m in height • Large white flower clusters • Green stem with purple blotches • Large compound leaves with serrated edges, up to 1.5m across			
Japanese knotweed (<i>Fallopia japonica</i>)	• Bamboo like stems with purple flecks • Large, shovel shaped leaved • Cream/white clustered flowers			
Rhododendron (<i>Rhododendron</i> spp.)	• Woody stems • Oval, dark green, glossy leaves • Dense clusters of flowers of various colours			

Montbretia (<i>Crocasmia x crocosmiiflora</i>)	• Low growing plant • Long, thin, light green leaves • Bright orange flowers		
Cotoneaster (<i>Cotoneaster</i> spp.)	• Genus of flowering plants • Dense, shrubby growth • Small, shiny, dark green leaves • Small white or pink berries with red berries in autumn		
Variegated yellow archangel (<i>Lamium galeobdolon</i> subsp. <i>Argentatum</i>)	• Low growth which forms carpets on the ground • Opposite, variegated leaves • Small, round, yellow flowers		

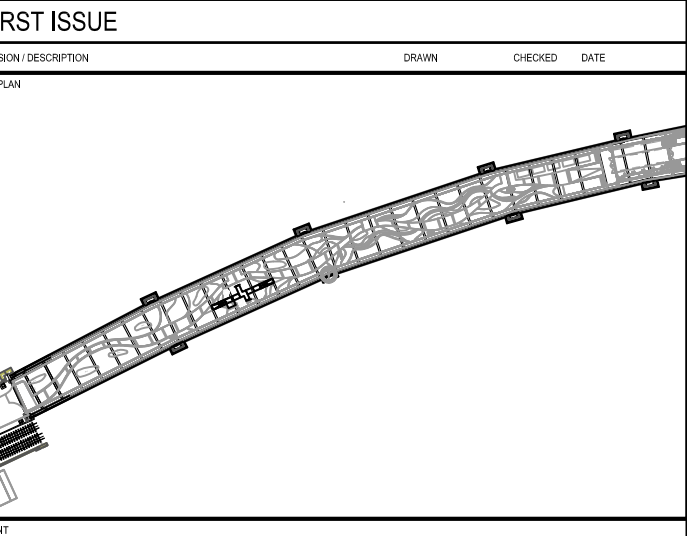


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CVI-BDP-ZZ-ZZ-DR-L-2001 - PLANTING PLAN 1 OF 1
CVI-BDP-ZZ-ZZ-DR-L-2002 - PLANTING PLAN 2 OF 2
CVI-BDP-ZZ-ZZ-DR-L-6001 - SOFT LANDSCAPE TYPICAL DETAILS
CVI-BDP-ZZ-ZZ-SP-L-0001 - SOFT LANDSCAPE SPECIFICATION
CVI-BDP-ZZ-ZZ-SH-L-0001 - CDM RISK REGISTER
CVI-BDP-ZZ-ZZ-SH-L-0002 - PLANTING SCHEDULE
CVI-BDP-ZZ-ZZ-RP-L-0001 - PLANTING SKETCHBOOK

P03	RN	JF	18.12.24
NOTE: PLANTING TYPOLOGY AMENDED IN LINE WITH NATIONAL TRUST DESIGN DIRECTION. UPDATES TO KEY.			
P02	RN	JF	05.12.24
NOTE: PLANTING TYPOLOGY AMENDED IN LINE WITH NATIONAL TRUST DESIGN DIRECTION.			
P01	RN	JF	24.10.24



KEY

50% NATIVE AND 50% NON-NATIVE PLUG PLANTS WITHIN GRAVEL SUBSTRATES AND SOIL. 6 - 9No. 'P9' PLUG PLANTS PER M2, PLUS OVERSEEDING WITH NATIVE WILDFLOWERS AND GRASSES AT A RATE OF 5g / M2.

'P9' PLUG PLANTS 30% NATIVE, 70% NON-NATIVE MIX. 6-9 PLANTS / M2.

RETAINED BALLAST WITH EXISTING RETAINED AND TRANSLOCATED PLANTING. *REFER TO NOTE BELOW.

RETAINED BALLAST WITH EXISTING RETAINED AND TRANSLOCATED PLANTING, PLUS OVERSEEDING WITH NATIVE WILDFLOWER AND GRASSES. **REFER TO NOTE BELOW.

GRAVEL BALLAST HOLLOWES / UNDULATIONS TO COLLECT RAINWATER AND VARY THE GROWING CONDITIONS TO ENCOURAGE A DIVERSE RANGE OF PLANT SPECIES TO COLONISE.

HORTICULTURE BEDS - TOPSOIL AND COMPOST 50:50 MIX. DEPTH: 250mm

*NOTE: THESE AREAS INCLUDE THE REMOVAL OF COMMONLY IDENTIFIED COTONEASTER TO AVOID POTENTIAL SPREADING OF INVASIVE 'SCHEDULE 9' SPECIES.

**NOTE: THESE AREAS INCLUDE TRANSLOCATED COTONEASTER, POTENTIALLY A VARIETY WHICH IS 'UNIQUE' TO THE VIADUCT. THIS SPECIES WILL TO BE MONITORED / MANAGED BY NATIONAL TRUST TO ENSURE IT DOES NOT SPREAD.

11 Ducie Street
P.O. Box 85, Piccadilly Basin
Manchester M60 3JA
United Kingdom
T +44 (0)161 828 2200
F +44 (0)161 828 2235
www.bdp.com

11 Ducie Street
P.O. Box 85, Piccadilly Basin
Manchester M60 3JA
United Kingdom
T +44 (0)161 828 2200
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P.O. Box 85, Piccadilly Basin
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PROJECT TITLE
**CASTLEFIELD VIADUCT
PHASE 2**

PROJECT NUMBER
P3003987

DRAWN BY
**SOFT LANDSCAPE
ZONING PLAN**

PROJECT NUMBER
CVI-BDP-ZZ-ZZ-DR-L-1001

SCALE
**@ A1
1:250**

DATE
OCT '24

REVISION
P03