

Castlefield Viaduct: Landscape and Planting Strategy

Ref: CVI-BDP-ZZ-RP-0001_P02

BDP.

Summary of Updates

The revised Planting Strategy for Phase 2 considers planting in the context of post-urban conditions, cultural references and ecological function. The strategy considers how plants grow in the wild, and how designed planting schemes can look and function when choosing compatible plant community species, along with selective root growing medium to achieve a robust and diverse environment, which ultimately lead to less maintenance and less watering on difficult urban sites such as this.

This design philosophy aligns with the 'Vision' character area termed 'Cottonopolis', a zone inspired by water use and by Manchester's industrial heritage. A zone that encourages us to think about what lies beneath our feet and that imagines the strata of historic and geological elements. The different character areas remind us of moments in nature, whether it be dry grassland, a shaded glade or the re-colonisation of urban nature.

Castlefield Viaduct is steeped in Manchester's DNA, and so this philosophy sits at the forefront of this new landscape. The DNA, to be found in the proposed substrates, locally sourced reclaimed building materials, crushed Castlefield brick, and in locally sourced or naturally colonised plant seeds, including species of local provenance to Manchester, and historic merit.

The planting is arranged to enable visitors to see the viaduct landscape from a new and pioneering perspective. Challenging pre-conceived ideas of what a 'garden' is, challenging the horticultural 'norm', and inviting the visitor to experience a landscape that will grow, change and mature with every visit.

On day one, a mosaic of different substrates, textures and colour will fill views toward the flutes of the WaterAid garden. As the seed begins to germinate and plant communities cover the ground, the geological elements will make way for green shoots, and by the end of year one, a new visual aesthetic will have emerged. This everchanging landscape dynamic mimics the natural processes in plant colonisation and evolves, not only over a linear timespan, but throughout the seasons creating visual and ecological diversity.

A summary of change is described below:

- Wild flower matting to naturalised seeding and planting
- Mounding and growing medium to experimental substrates
- Low water demand/ arid planting
- Protected areas of ballast with naturalised colonised plants

Experimental Substrate



Texture/ Colour/ Size

Seeding and planting



Seeding / small plantings

Existing and translocated planting in retained ballast



Protecting / Retaining

Planting Strategy

The Planting Strategy for Phase 2 proposes to create a range of soft landscape palettes which celebrate sustainability, seasonality, biodiversity, and bringing sensory excitement and wildlife to the Viaduct.

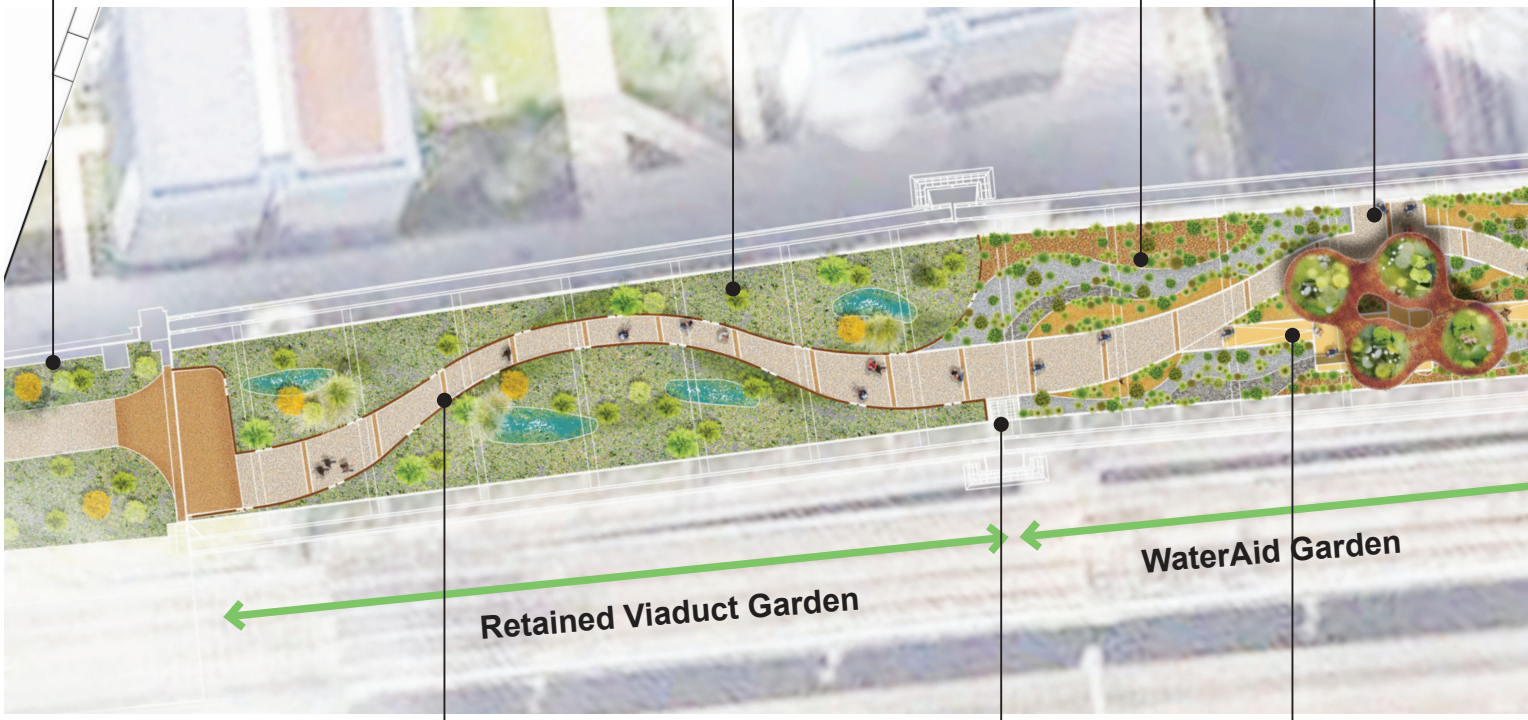
The 150m length of viaduct will provide a test bed that transitions planting themes for Phase 2, taking elements of the character areas proposed within the Masterplan Vision, using a central winding path to form the spine of the Gardens, and then applying 3 key themed Gardens around this. This includes the 'Experimental gardens', 'WaterAid Garden' and 'Retained Viaduct garden'.

The proposals will create a range of experiences with planting and will help National Trust gauge their success, for both visitor experience, community engagement and to test how maintenance regimes can flex according to the planting themes.

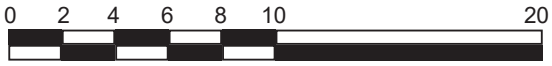
There will be 3 x (approx. 50m) zones, plus the spill out space from the central building, that encapsulate a sense of immersion through the WaterAid Garden, openness and natural feel of retained and translocated planting, whilst overlapping with the sensory and vibrant approach of the Gravel Mosaic planting.

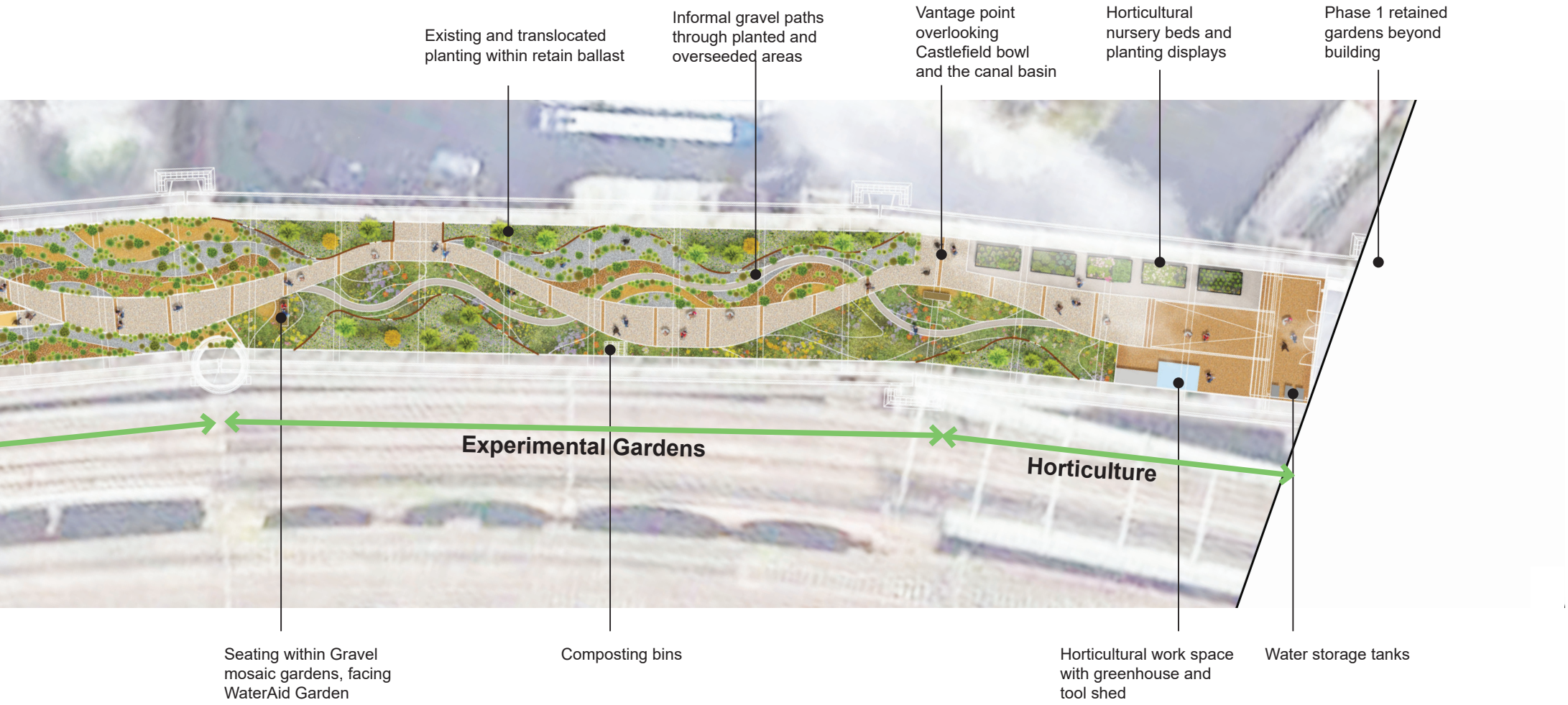
Each character zone will have distinction in terms of species, and with it, a unique experience and micro-climate. A key component of each zone will be to:

- Bringing a sense of seasonality and maximum interest from Spring to Winter;
- Use plants in a variety of substrate, undulations and hollows to encourage variety in plant species, and to enable different interactions with the planting;
- To create intrigue, frame views and encourage dwell time by creating a green oasis and refuge;
- Use plants with purpose to create meaning for people and add value for wildlife;
- Include species which appeal to the senses;
- Respond to the limited availability of water, soils, and anticipated maintenance operations.
- Improve the quality of the existing ballast areas



Landscape Plan




Existing and translocated planting within retain ballast
Informal gravel paths through planted and overseeded areas
Vantage point overlooking Castlefield bowl and the canal basin
Horticultural nursery beds and planting displays
Phase 1 retained gardens beyond building
Experimental Gardens
Horticulture
Seating within Gravel mosaic gardens, facing WaterAid Garden
Composting bins
Horticultural work space with greenhouse and tool shed
Water storage tanks

Planting Zones

The proposed strategy is to create a planting design with synergy along its length, with the overarching theme of sustainability and water management at the core. Planting will transition between 3 key zones, with some species repeated throughout each zone for visual continuity. Focal points such as small multi-stemmed shrubs / trees and the sculpture within the WaterAid garden create points of intrigue and focus, encouraging people to explore.

Each zone represents a different strategy for dealing with shallow substrates, low water availability, and species adaption for climate change. Substrates will vary, using recycled / reclaimed aggregates, low-nutrient topsoils, and demonstrate innovative methods of shading and passive irrigation.

The strategy explores planting palettes in both natives and non-native species that can work with limitations on water usage and making use of sustainable attenuation methods.

The aim for Phase 2 is to create a water-smart sustainable planting solution, that can also continue to capture the imagination and align with the Viaduct 'Vision' and aspiration of the community stakeholders and future users of the Viaduct.

Within the Retained Viaduct Garden, existing and translocated planting are contained within retained gravel ballast, protected from public access via a woven willow low fence (or similar approved natural edge).

The experimental planting zone to the east explores the use of different types of substrate, and the plug planting is to be over-seeded to ultimately create a dry grassland community adapted to drought conditions. This area will also protect zones of colonised planting above retained ballast. Both areas sit alongside the philosophy of the WaterAid Garden and align with National Trust's policy and sustainability ambitions.

The detailed selection of plant species for overseeding will be further shaped alongside National Trust and community stakeholders and Ecologist input, based on the collection of seeds available on the viaduct and within the local area during the late summer / autumn of 2025.

Experimental Gardens — WaterAid Garden — Retained Viaduct Garden



Seeded / Substrates / seasonal



Sustainable/ educational



Retained / Naturalised / Open

Zone 01

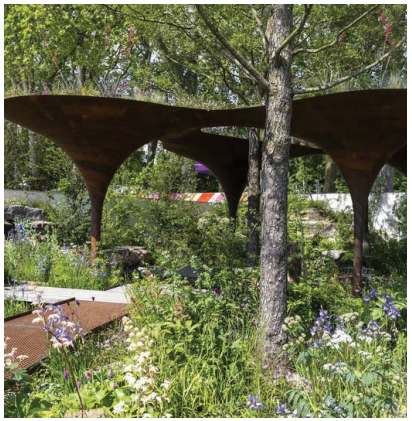
Horticulture and Experimental planting





Zone 02

WaterAid Garden



Zone 03

Retained Viaduct Garden



Zone 1

Horticulture

A ‘live’ working space for growing plants / composting / tool storage, water storage will be created next to the central exhibition building.This is where the National Trust can engage with the community in horticultural activities, and to have an operational area to help maintain the gardens as they grow, with a greenhouse and tool shed.

Experimental Gardens

The Experimental Gardens are positioned east of the Wateraid Garden, and hence act as the formal entry point for Phase 2 of the viaduct. These experimental gardens emphasise the use of locally reclaimed/recycled aggregates, crushed brick of various colour tones and textured substrates.

On day one, a mosaic of different substrates, textures and colour will create the foreground to the longer views toward the WaterAid garden structural flutes. Areas of retained planting above existing ballast will help to frame views and contrast with the earthy tones of the mosaic substrate patterns. As the gardens mature, swaying grasses create soft textures and a natural feel, with native wildflower plug plants interspersed alongside nectar-rich non-native planting to evoke the character of a flowing meadow with enhanced biodiversity, ecological value, and catching the light and breeze. Secondary informal, narrow gravel paths wind through in between the substrate beds, to create a choice of routes, and exploration to the Viaduct experience.

The combination of planting with crushed brick and gravel substrates will be designed to add ecological value to the viaduct, supporting a variety of beneficial insects and butterflies. The overseeding of retained ballast areas can help with bioremediation of the contaminated gravel. A carefully selected wildflower landscape seed mix will be used, with potential to include seed collected from areas of the existing viaduct to create a mix which is local and meaningful to the viaduct.

Through the use of drought tolerant plug plants of perennials and grasses, the season of interest and colour will extend, and structure and rhythm will be created, providing a sensory experience for people to enjoy.



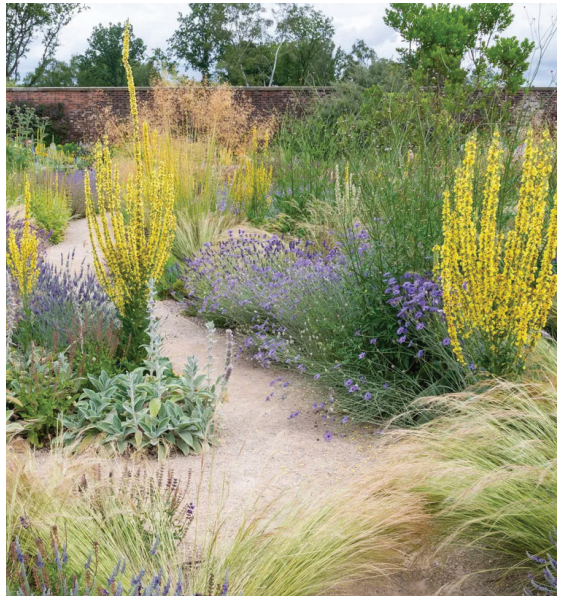






Celebrating Seasonality

Spring / Summer (established planting)









Winter (emerging landscape)



Winter (mature landscape)



Experimental Planting

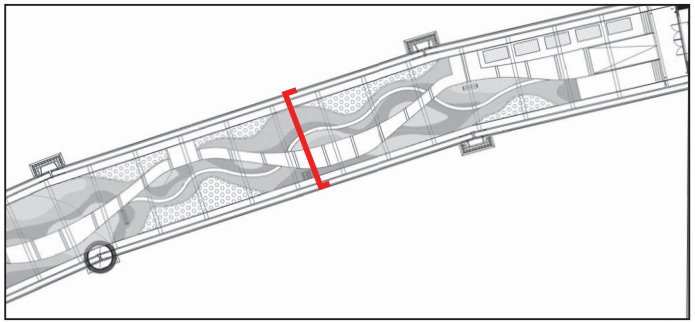
The typical cross sections in the adjacent images shows the intent to create the conditions for different plant communities to establish over time. The mix of positioned planting interwoven with overseeded areas will create interest, as plants slowly mature into a dry grassland, adding to the ever-changing aesthetic of the viaduct.

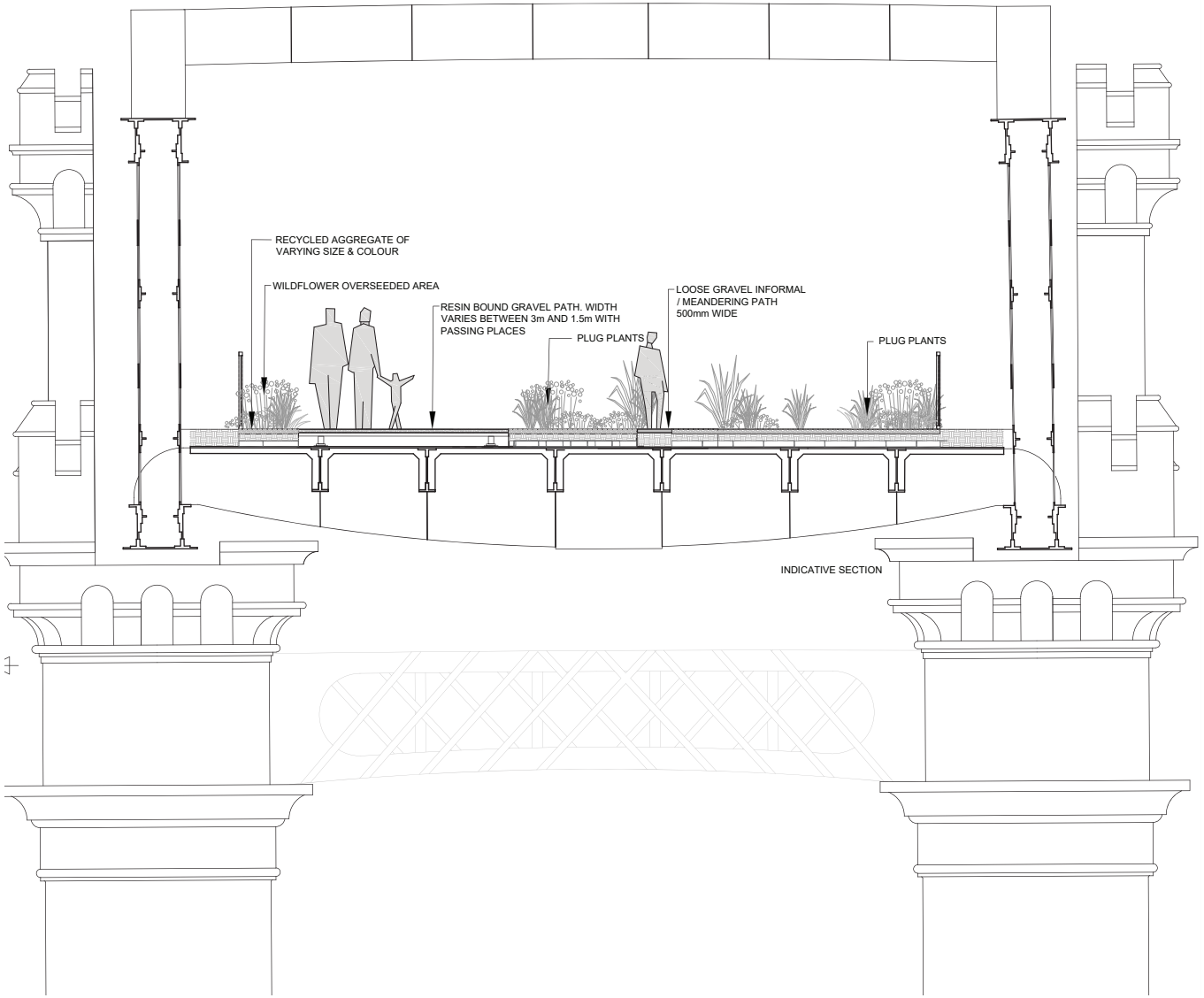
Areas of existing and translocated planting above retained gravel will provide framing and instant maturity for this experimental zone. Within these protected areas, currently unidentified species of Cotoneaster exist, that could be exclusive to the Viaduct and will be retained and contained within this part of the viaduct.

Over time, the choice of plant species will visually and ecologically evolve, and as the plants mature, the flowers and seed heads will grow up toward eye level to enable visitors to encounter flowers, butterflies and nature at a closer level of detail, which will in turn impart a sense of wellbeing and relaxation as people slow down their pace to engage with their environment.

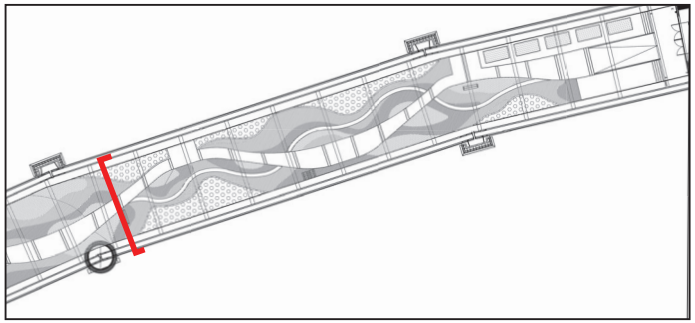
The removal of some areas of the existing gravel ballast and replacing with a mosaic of different substrates will create an instant visual aesthetic and provide an experimental growing medium for proposed over-seeding. This provides a test bed to explore which types of seed establish better in different types of substrates, and to see which species adapt well to the unique urban environment on the viaduct.

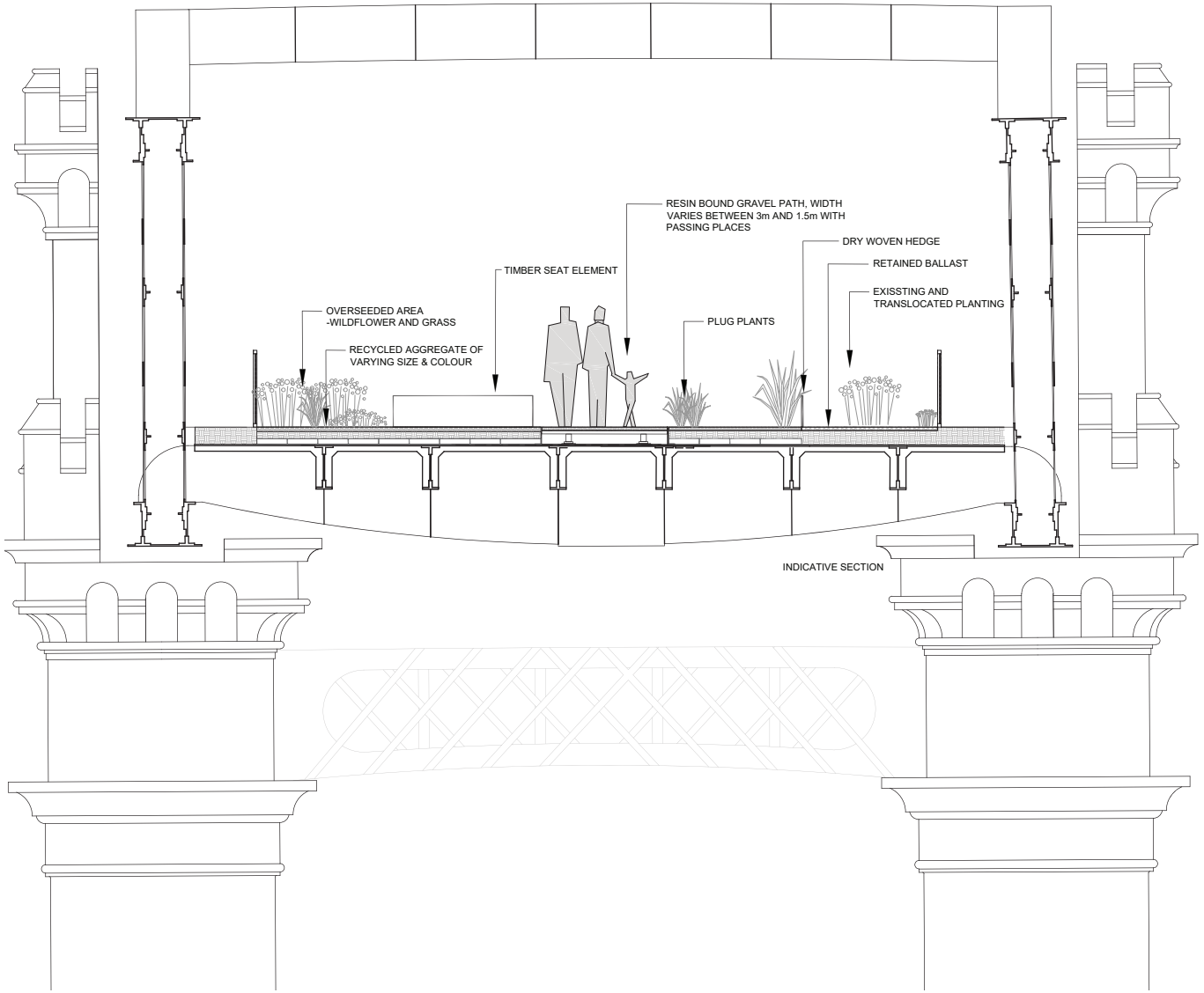
The primary path width varies to reinforce a sense of discovery and create a more interesting experience for people. The path width varies from 3m wide to 1.5m wide with passing places, located where key views have been identified within the ‘Viaduct Vision’ scheme.





Typical Section through Experimental Gardens
(main path width 3.0m)





Typical Section of Experimental Garden through overseeded area, plug plants, retained translocated planting

(main path width reduced to 1.5m)

Zone 2

WaterAid Garden

The WaterAid garden appeared at the RHS Chelsea Flower Show in 2024, and was designed by Tom Massey and Je Ahn to harness the power of rainwater and highlight the importance of sustainable water management to combat the effects of climate change.

The garden will be re-located to the Castlefield Viaduct where the focus will be on sustainable water management. The centrepiece of the thought-provoking design is the rainwater-harvesting pavilion inspired by WaterAid's work with communities around the world to develop sustainable water solutions. The structure efficiently harvests rainfall, filtering and storing this precious resource for later use such as irrigating planting whilst also slowing flow and providing shade.

The roof of the structure will be planted with species tolerant of harsh dry and exposed conditions. The landscape below will be contoured to create low and high points. In the higher, dryer areas of the garden the planting will be tolerant of these conditions whilst in the lower depressions species that prefer wetter conditions will be selected.

Beneath the garden an innovative passive irrigation system will collect rainfall that lands on the funnel structure and surrounding path, and stores it for later use. The system works by implementing a series of wicks in the water storage tank, when the soil above is dry moisture is wicked from the tank up into the soil, providing a passive low input way of keeping the garden thriving.

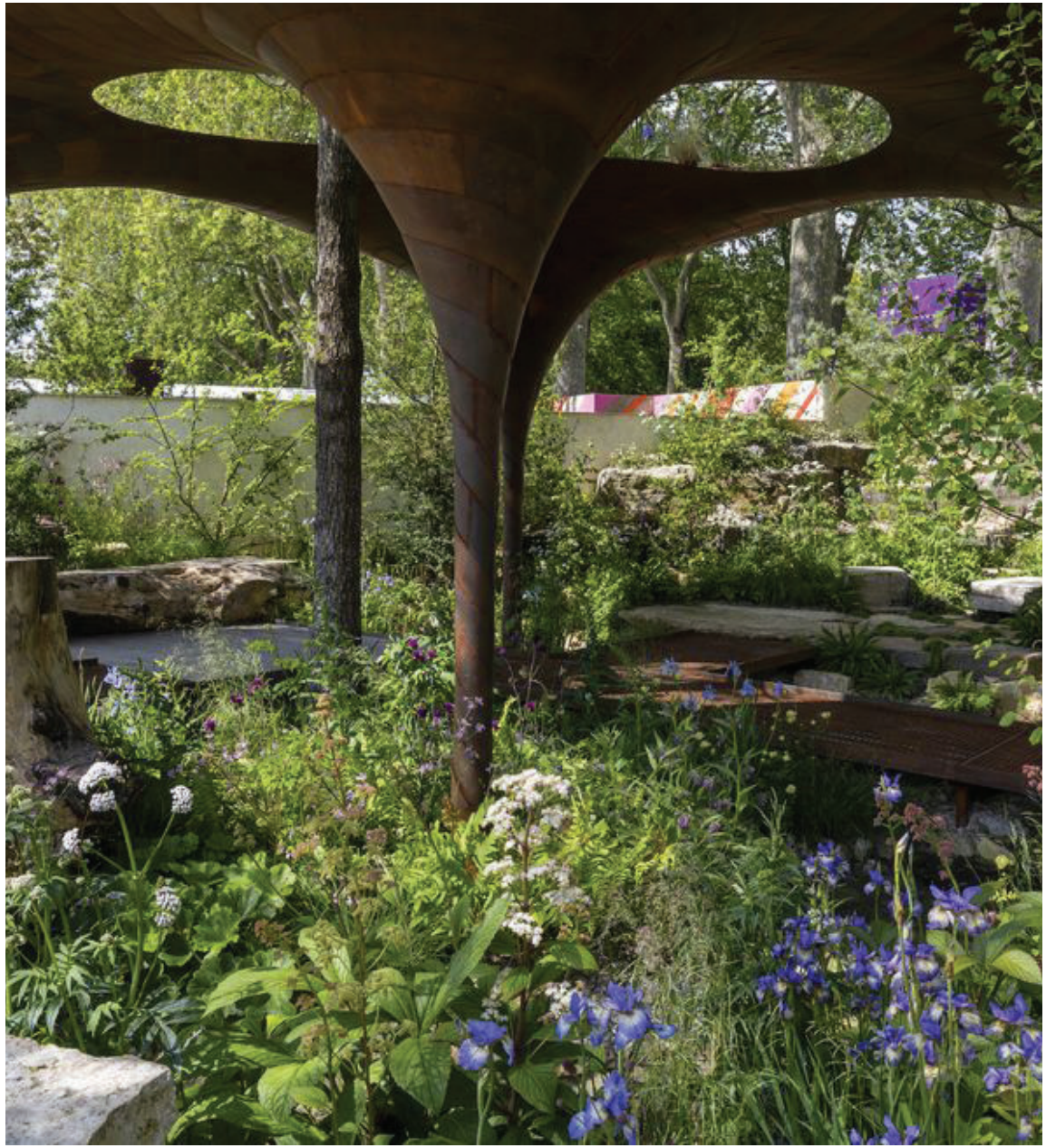








WaterAid Garden - RHS Chelsea 2024



Texture



Water resilience



https://www.tommassey.co.uk/#/wateraid-garden/

Zone 3

Retained Viaduct Garden

The Existing planting area is located to the west of the WaterAid Garden on approach to the Open Viaduct. The philosophy behind existing and translocated planting area is to preserve much of the existing urban / open landscape typology, and the plants that have self-seeded naturally. The existing ballast zone will be moulded into a growing medium into which particular species will colonise. The aspiration is to create a space which is rich with wildlife and has a diverse plant community.

Through translocation, a number of plants, shrubs and small trees from the existing viaduct will be lifted and re-planted, to create a richly biodiverse and sustainable environment which can evolve over time, through self-seeding. Existing Cotoneaster plants will be removed as they are named as invasive and non-native in Schedule 9 of the Wildlife and Countryside Act 2010. These will replaced with biodiverse species which are not invasive. It is noted however, that an unidentified species of Cotoneaster, that could be exclusive to the Viaduct occurs and as such it will be translocated into the Zone 1 area, contained and monitored as part of the proposed scheme.

Working alongside Urban Green Ecologists and National Trust, the matrix of planting includes both native and non-native biodiverse species which have been identified within gravel areas on the Phase 1 Pilot Scheme ‘naked viaduct’, and on the Phase 2 existing viaduct.

Undulations and hollows will enable species to populate according to their water demands, as can be seen on the current Phase 2 viaduct, with lichens and ferns growing in micro-colonies where small variations in water levels and soil / gravel depths make a difference to where the plants prefer to grow, creating a ‘patchwork’ arrangement of foliage amongst the gravel.

Self-seeding of wildflower species will be encouraged, to create a landscape which will evolve naturally over time according to which species thrive in the unusual environment created by the disused rail track, and with it, the sheltered undisturbed habitat will benefit insects and other local wildlife.









Existing and translocated Planting

Planting impressions











Planting Details

Due to the loading limitations of the viaduct structure, the importing of soils and materials is limited without strengthening the deck plates. By constraining the contaminated ballast to non-accessible parts of the garden separating them from other zones using a woven willow edge or dead woven hedge (type depending on local plant material available) provides a zone to grow the existing and translocated native plant species within the viaduct. We propose to import different types of clean recycled brick, gravel, sandy aggregates and soil up to a depth of 250mm. These will form the substrates and growing medium for the planting and will create visual interest in the ground-plain. The strategy is to use light-weight fill in layers and create sinuous patterns of various gravel typologies, to create an instant aesthetic as the new seeding and planting take time to establish.

By using a variety of substrate mediums such as a range of soils and gravels, the planting design is able to vary within each zone, and accomodate a wide range of species.

Using membranes and shallow permavoid tanks in key locations where water demand is likely to be higher, such as the WaterAid garden, a passive irrigation method of 'wicking' water creates a more sustainable re-use of rain water.

Ecology and Biodiversity

Urban Green have carried out a Preliminary Ecological Assessment and BNG Assessment based on the existing site condition, and the proposed landscape interventions. Notable species include bats and birds, and recommendations for nest and roosting boxes to be fitted onto the side of the building, or the viaduct structure. The scheme achieves over 10% net gain, therefore offsite mitigation is not required.

A Habitat Management and Monitoring Plan will be implemented to ensure the long term success and monitoring of planting communities, habitats and wildlife.

A degree of flexibility is proposed in the Phase 2 planting strategy, to enable species to self-seed and colonise. National Trust also have a desire to involve the local community in the development of the planting as funds and projects become available. Any future developments to the planting proposals will follow the key principles of sustainability and supporting wildlife.

Zone 1 Horticulture

This zone will provide National Trust a flexible space for nursery bed stock and growing plants, and carrying out horticulural workshops with community groups. The beds may include a range of plants. It is proposed that some of the beds would be raised to facilitate access by wheelchair users. Potenial species include Madder and Indigo, which were historically used in Manchester's cotton mills as dye extracts for fabrics.



Horticulture Area

Zone 1 Experimental Gardens

Typical species Plug Plants include:

- Angelica archangelica
- Baptisa 'Dutch Chocolate'
- Cichorium intybus (Wild Chicory)
- Cirsium rivulare
- Linaria vulgaris - Toadflax
- Echium vulgare - Vipers bugloss
- Erigeron karvinskianus
- Festuca glauca 'Elijah Blue'
- Sanguisorba officinalis 'Crimson Queen'
- Silver ragwort
- Pennisetum 'Fairy Tails'
- Maidenhair Spleenwort

Typical species for Overseeding include:

- Achillea millefolium
- Armeria maritima - Thrift
- Centaurea nigra - common knapweed
- Daucus carota- Wild Carrot
- Scorzoneroides autumnalis - Autumn Hawkbit

For full Planting Schedule please refer to:
CVI-BDP-ZZ-ZZ-SH-L-0001



Experimental Substrates and overseeding

Zone 2 WaterAid Garden

Typical species Plug Plants and 2-3L Pot Plants include:

- Pinus mugo
- Salvia fruticosa
- Teucrium fruticans ‘Azureum’
- Agastache foeniculum
- Angelica archangelica
- Baptisia ‘Purple Smoke’
- Calamintha nepeta ‘Blue Cloud’
- Dipsacus fullonum (teasel)
- Echium vulgare
- Sisyrinchium striatum
- Erigeron karvinskianus
- Verbascum olympicum

For full Planting Schedule please refer to:
CVI-BDP-ZZ-ZZ-SH-L-0001



Water Aid Garden

Zone 3 Retained Viaduct Garden

Typical species include:

- Betula pendula (small / transplanted)
- Pinus sylvestris (small / transplanted)
- Maidenhair spleenwort
- Fragaria vesca (wild strawberry)
- Yellow Toadflax
- Thymus serpyllum

For full list of existing species please refer to Urban Green Ecology Baseline Assessment Report / Ecology Survey.



Existing and translocated planting

Maintenance

The approach to creating a ‘water-smart’ garden, reduces the need for high-maintenance associated with irrigation. Rainwater harvesting from the resin bound gravel footpath enables water to be stored in tanks for use in the higher demand spaces such as the horticulture area and nursery beds.

Within the WaterAid Garden the pavilion funnels help capture rainwater and slowly filter it through planting and substrates. The funnels also create cooler growing conditions to the planting beneath. The variety of water attenuation features along with a variety of substrates and species will make the Gardens resiliant and self-reliant, using sustainable passive irrigation methods, thus removing the need to use mains water other than potentially in the establishment period in hot weather.

Compost bins are strategically positioned along the viaduct, to provide extra capacity for plant waste to be re-cycled into compost, which can in turn be used in the horticultural area for propagating new plants.

Seed heads and spent flowers are to be retained on the plants for winter interest and food sources, and will be trimmed back in early spring once new growth begins to emerge. A combination of National Trust staff and community volunteers will undertake general maintenance of soft landscape spaces.

A Habitat Management and Monitoring Plan will be developed and agreed with the Local Authority as part of the Biodiversity Net Gain Assessment.