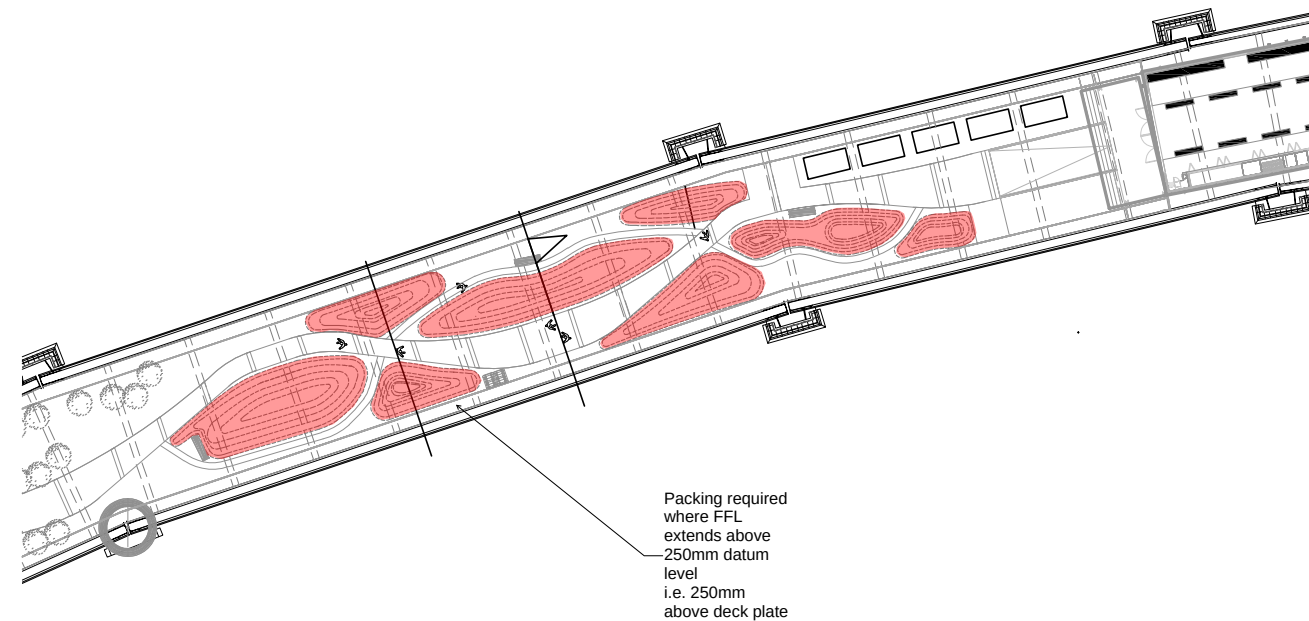


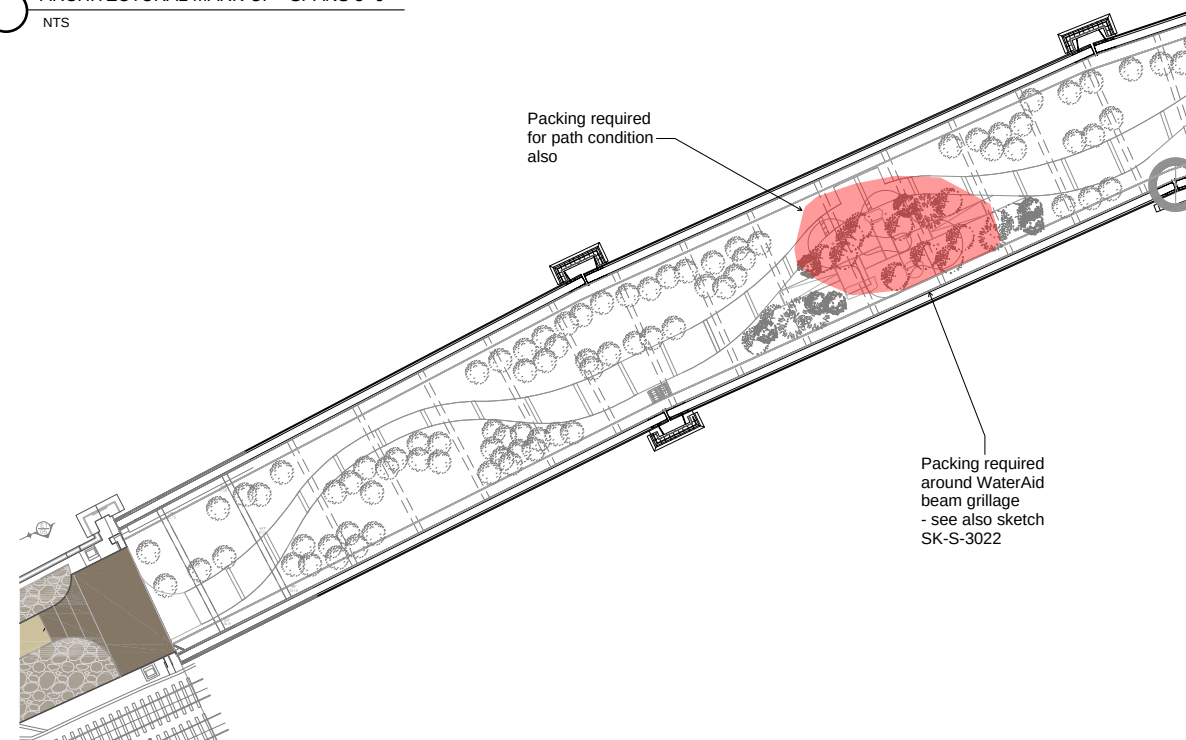
06 SERVICES AND STRATEGIES

Structural strategy | Meadow Mound reinforcement

See ARUP's Structural report for further information



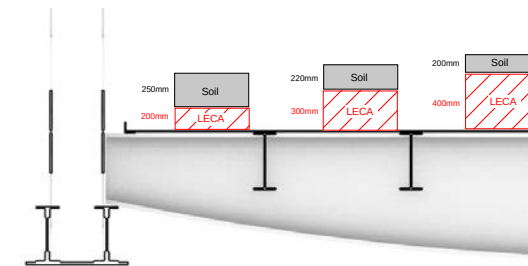
ARCHITECTURAL MARK-UP - SPANS 5+6
NTS



ARCHITECTURAL MARK-UP - SPANS 7+8
NTS



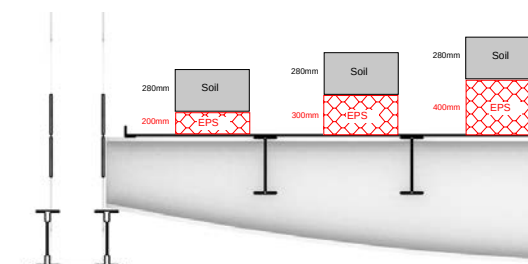
Lightweight expanded clay aggregate (LECA)
- assumed @ 350kg/m3



PACKING OPTIONS 1 - GARDEN - LECA
NTS



Expanded polystyrene (EPS) e.g. Filcor by Cordek
- assumed @ 50kg/m3



PACKING OPTIONS 2 - GARDEN - EPS
NTS

LEGEND:

Plan extent of structural packing required
- see options sketches for potential build-ups

NOTES:

1. Based on Twelve GA layouts 23/07/24, BDP cross sections + contours 25/07/24
2. Assumes no change to existing loads, assumed:
- ballast @ 18.5kN/m3 x 250mm = 4.6kPa
- pedestrian LL = 3kPa
3. Assumes no strengthening of existing deck plate

Structural Build-up Zones + Details

Castlefield Viaduct (282210)

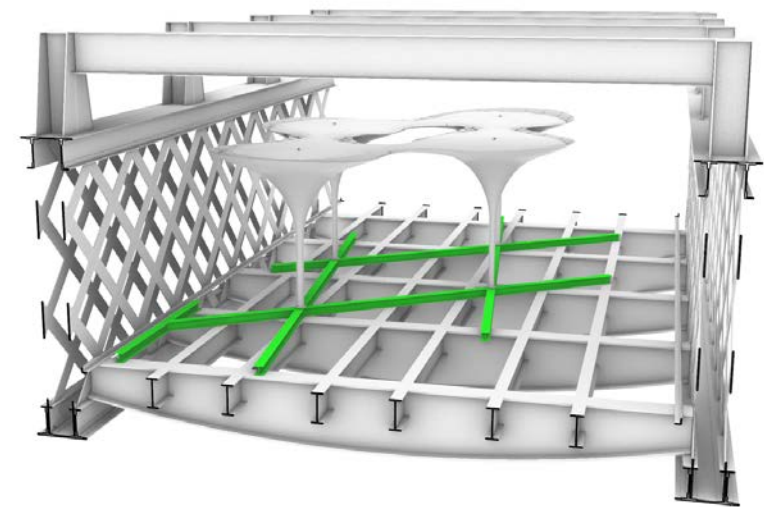
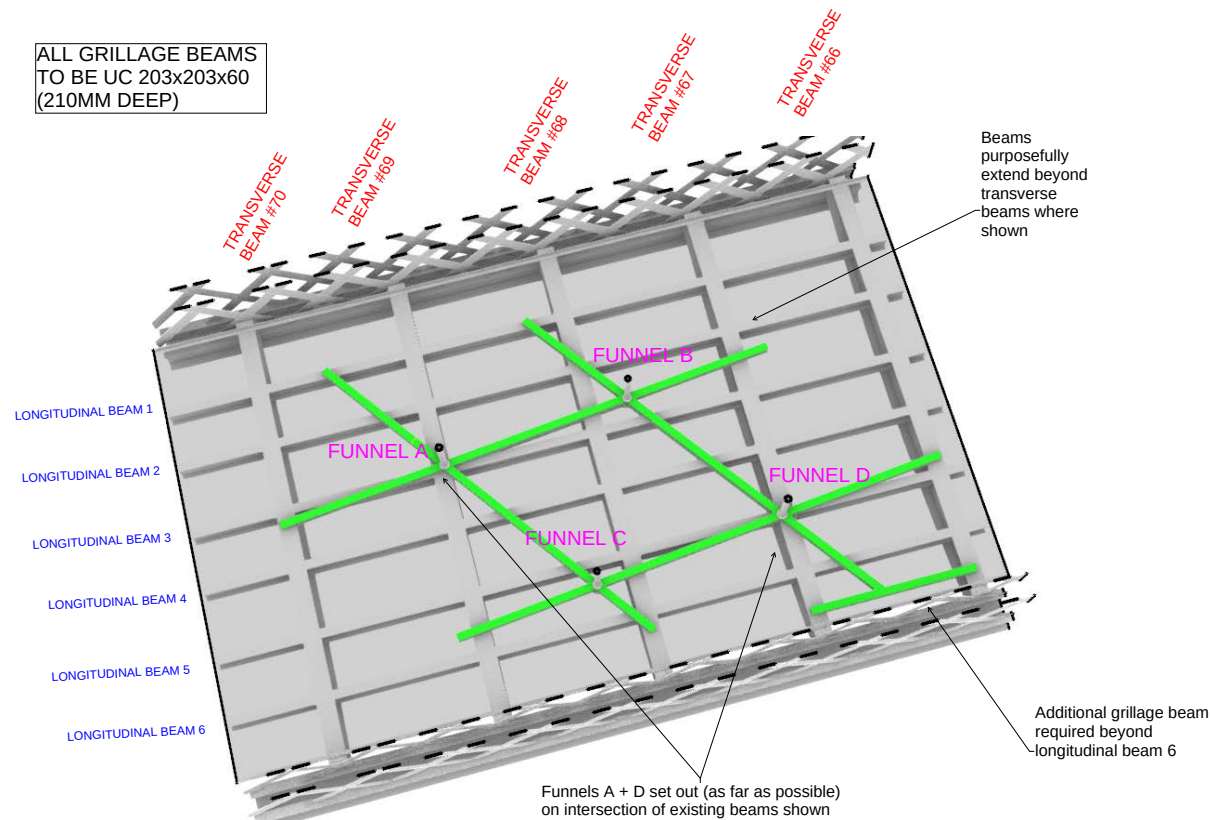
01/08/24 | Issued for Information | RR
CVI-ARP-ZZ-ZZ-SK-S-3023

ARUP

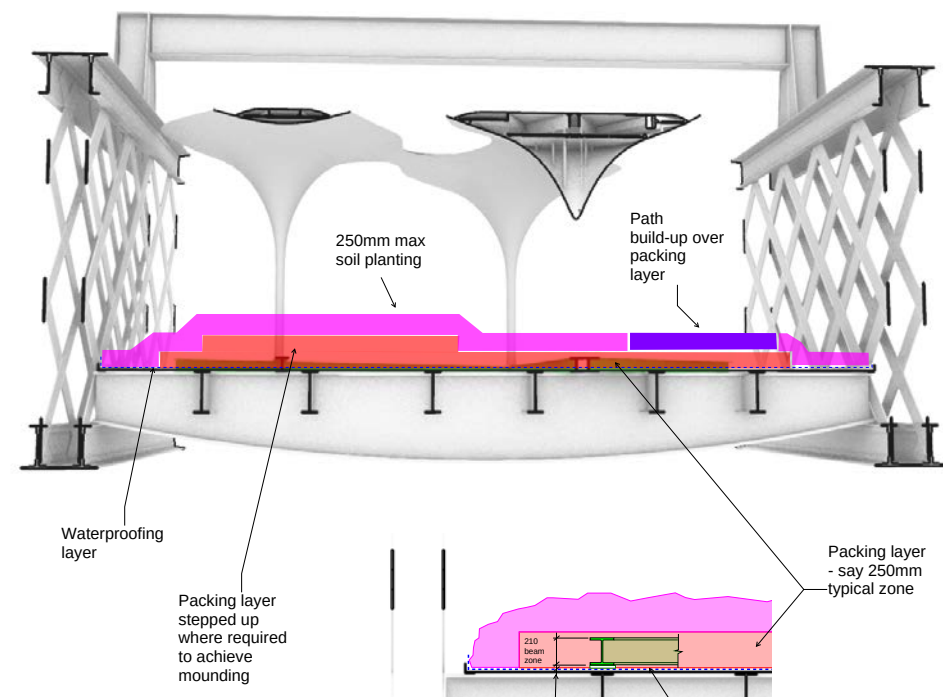
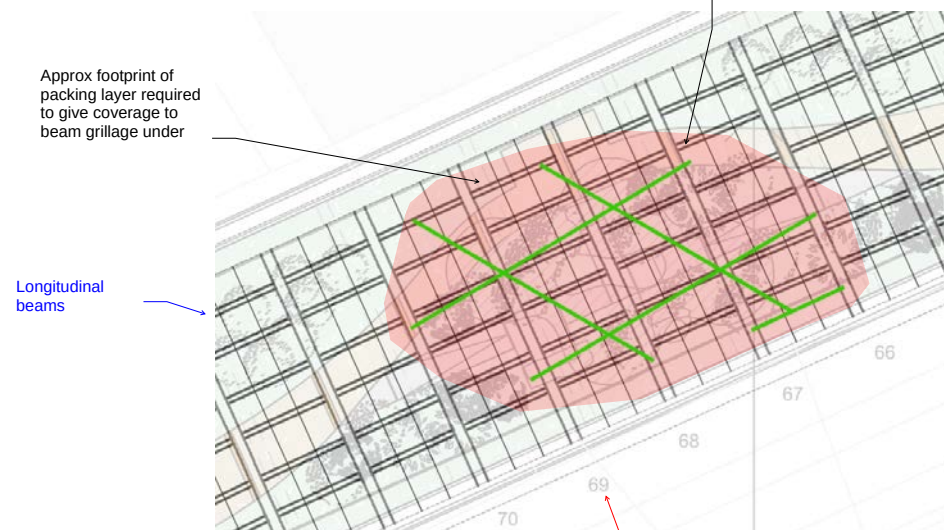
06 SERVICES AND STRATEGIES

Structural strategy | WaterAid Garden installation

See ARUP's Structural report for further information



WATERAID GARDEN - BEAM GRILLAGE
NTS

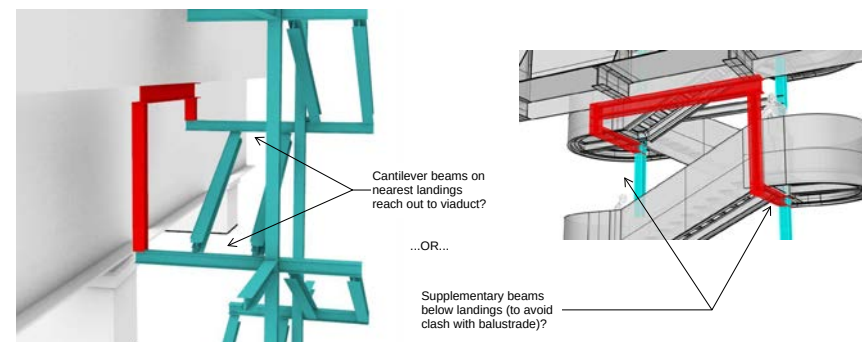
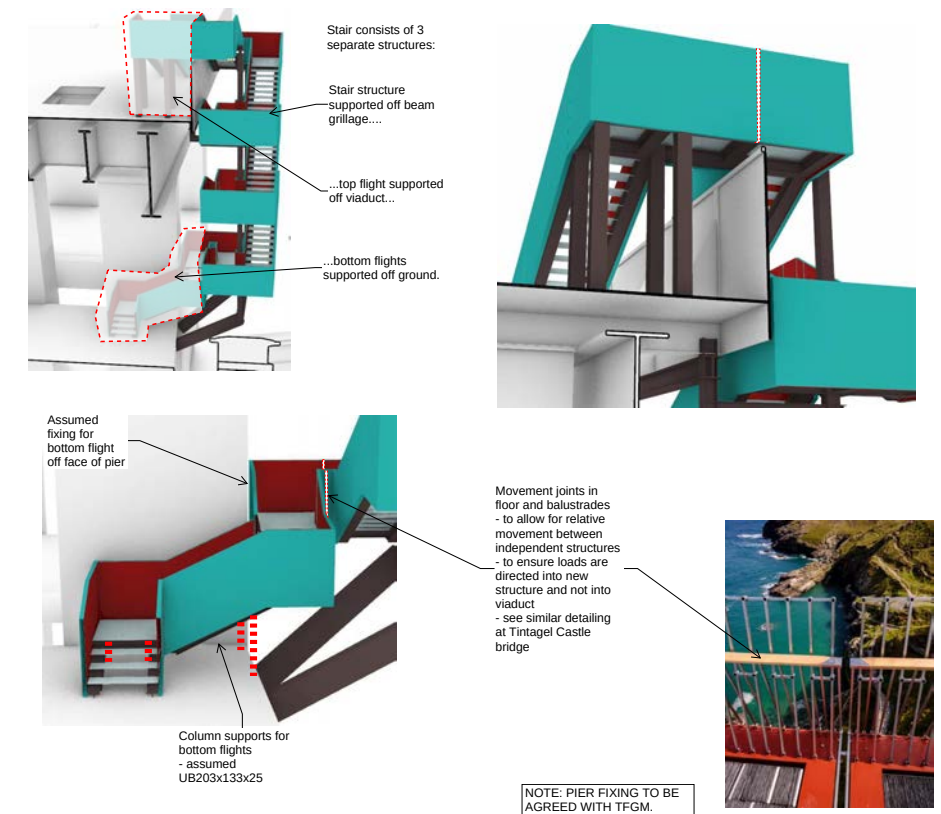
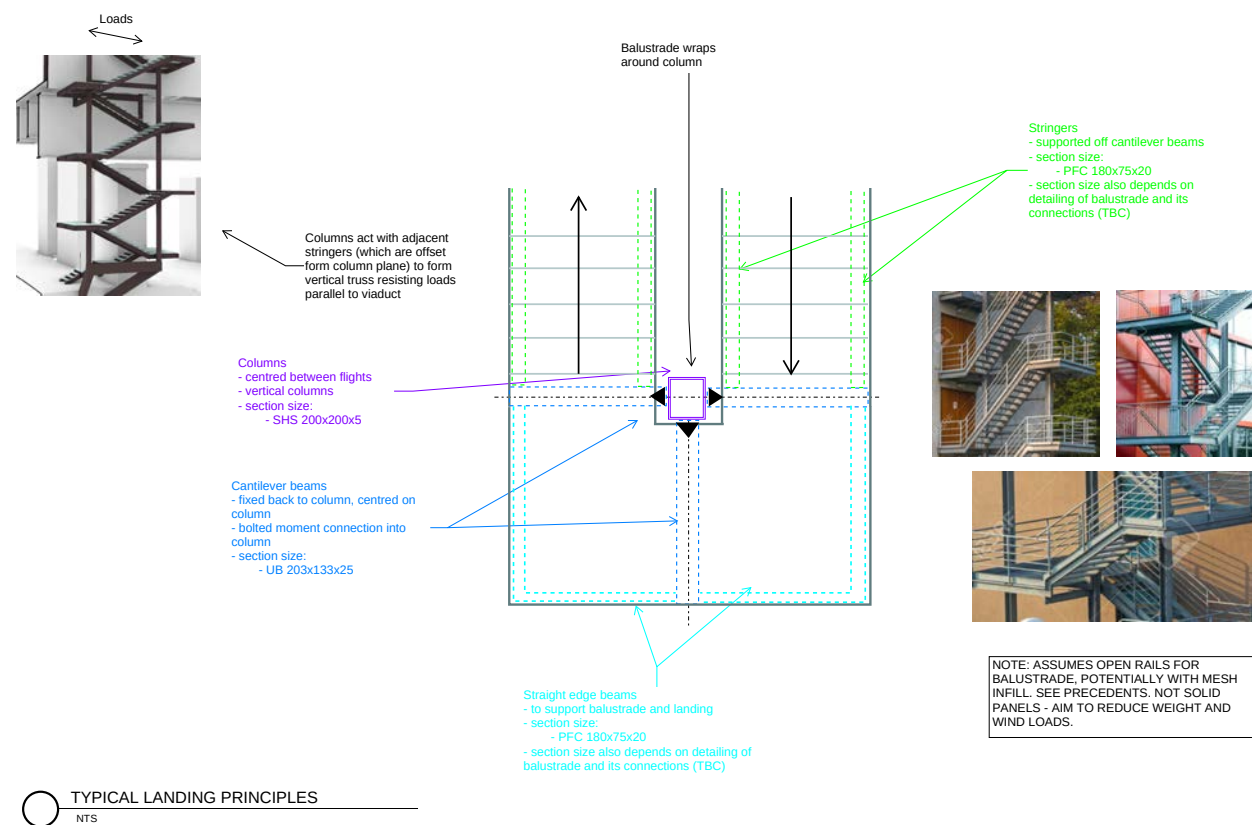


NOTES:
1. Based on Twelve GA layouts 23/07/24, BDP cross sections + contours 25/07/24
2. For transverse and longitudinal beam numbering and

06 SERVICES AND STRATEGIES

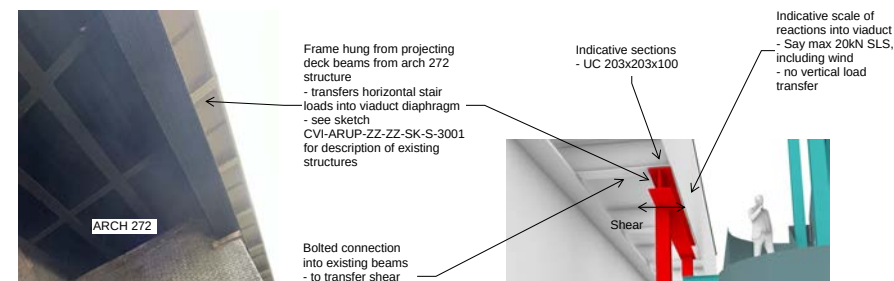
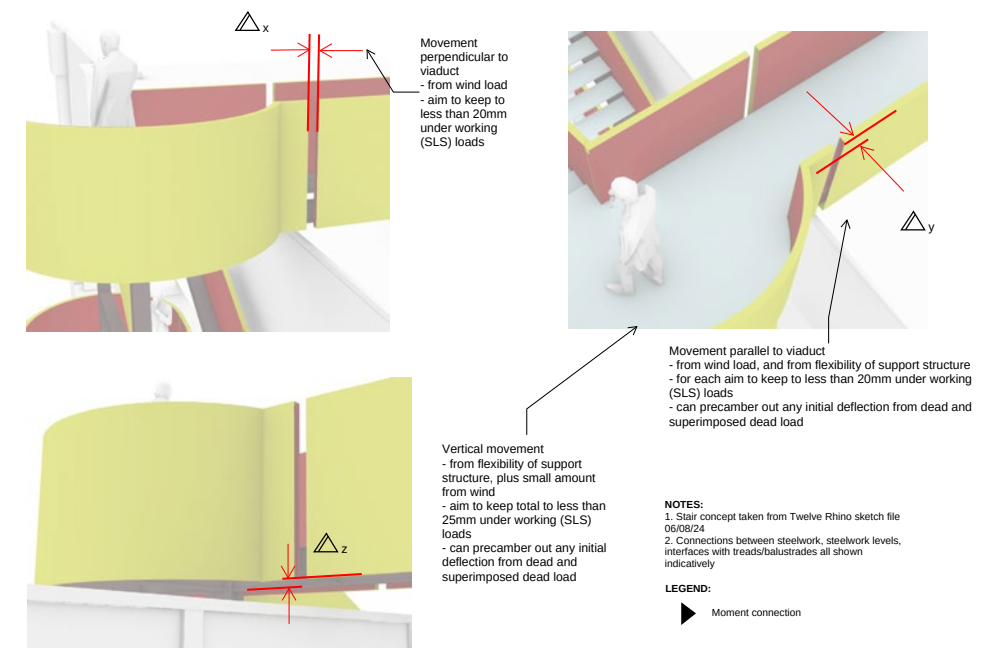
Structural strategy | Indicative Egerton Egress stair construction

See ARUP's Structural report for further information



NOTE: TYING RESTRAINTS TAKE HORIZONTAL LOADS ONLY

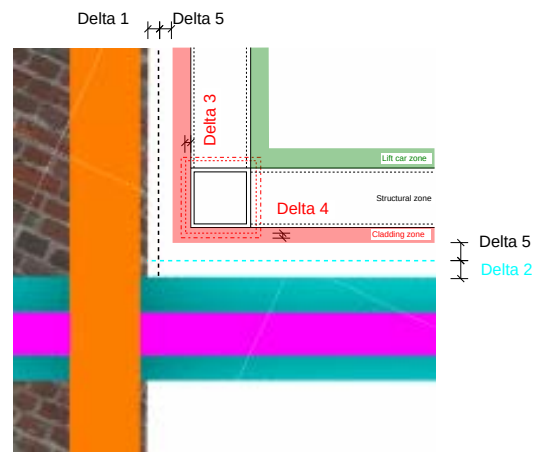
NOTE: TYING PRINCIPLES AND LOADS TO BE AGREED WITH TFGM.



06 SERVICES AND STRATEGIES

Structural strategy | Indicative Egerton Egress lift construction

See ARUP's Structural report for further information



Construction tolerances, access, movement etc

- what structural zones are really available?
- what is the lift car zone and cladding zone?
- sketch above shows further items to consider as the design develops
- Delta 1 - tolerance on masonry wall
 - can't be expected to be truly plumb
 - will need measured survey up full height
- Delta 2 - tolerance on steel beams
 - blue beams might not be truly vertical
 - orange and pink beams are obscured
 - will need opening up at deck level and/or high level measured survey
- Delta 3 - construction tolerance on new lift construction
 - won't be truly vertical! Say +/-20mm?
 - to be reviewed with Contractor
- Delta 4 - lateral movement on new lift construction
 - can be minimised through design decisions
 - say +/-15mm in each direction?
- Delta 5 - construction tolerance (access) for installing cladding through bridge
 - to be reviewed with Contractor

Construction

- aim to reduce time spent at proximity to Metrolink
- lift could be jacked up from below?
- or single lift of larger prefabricated elements above deck?

Connection to bridge
- assumed no connection to existing viaduct
- lift is assumed to be self-stabilised

Access

~2500 c/c

~1800 c/c

Columns + beams

- assumed CL to CL structural dimensions as shown
- aim to keep structural sections as narrow as possible to work within constraints of existing viaduct
- section sizes as below
- moment connections (welded or bolted) between beams and columns to allow additional stiffness alongside bracing

Horizontal beams
- RHS 300x150x14.2

Vertical columns
- SHS 150x150x16

Bracing

- allow 4No. vertical modules of ~3750mm c/c
- aim for 1No. complete module rising above deck?
- assume bracing on 3 sides (missing bracing on northern short side)
- X-bracing assumed as follows:
 - proprietary rods with fork ends and connectors
 - 24mm solid rods using Ancon 500 system
 - carbon steel or stainless steel TBC

Foundations
- refer to notes on sketch SK-S-3019 Rev 3

Note: sketch considers structural elements of lift superstructure; refer to sketch SK-S-3019 Rev 3 for shared base with stair

Note: sketch not to scale!

NOTES:
1. Existing structure taken from survey file and dims from J23417_03.dwg
2. Refer to sketch CVI-ARUP-ZZ-ZZ-SK-S-3001 for survey & mark-up of existing structure
3. Refer to sketch CVI-ARUP-ZZ-ZZ-SK-S-3002 for modifications to existing bridge structure to accommodate lift opening
4. Intent based on Twelve models/drawings from 25/07/24

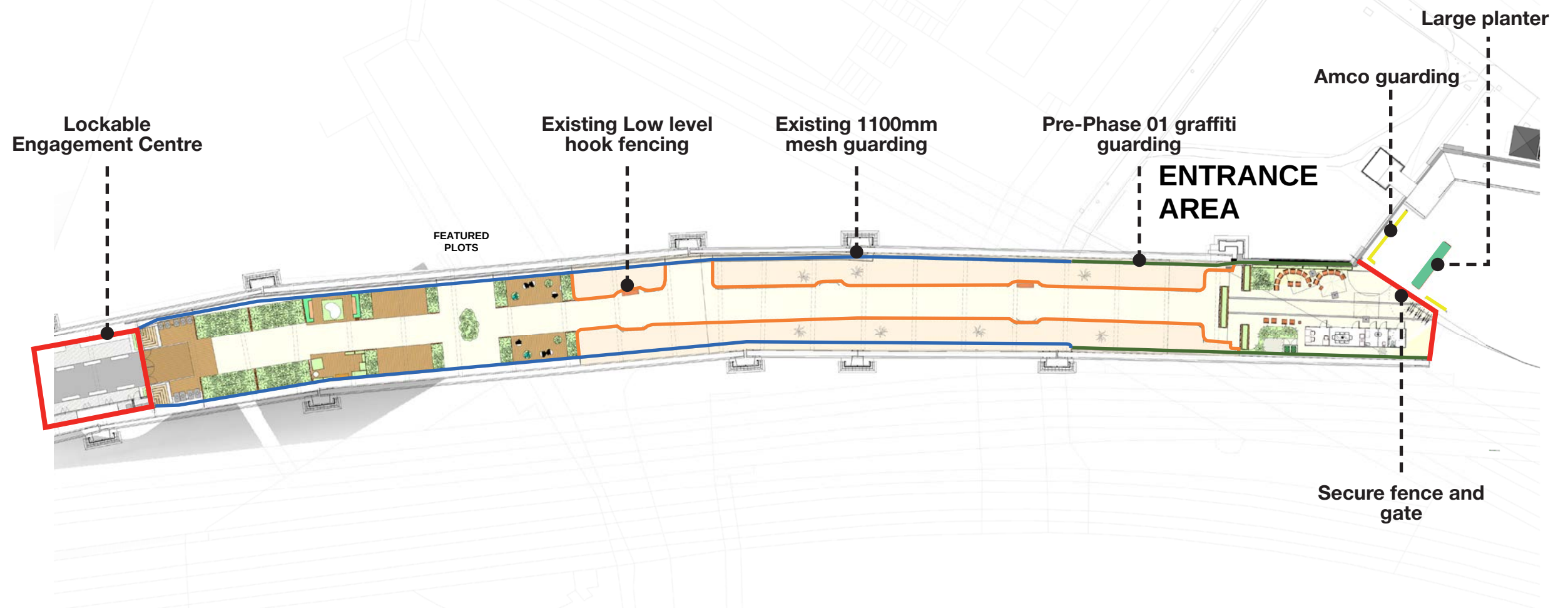
06 SERVICES AND STRATEGIES

Secure by Design | Phase 01 Appraisal

Phase 01 appraisal

"The main entrance to the site is gated and locked when the park is closed. There are anti climb measures to prevent climbing over the gate and adjacent boundary, into the development. There is a large planter adjacent the entrance which will prevent vehicles from being driven towards the entrance, or into the park. Amco barriers have been installed to protect the adjacent boundary fence and the parapet adjacent the staircase. Access into the viaduct is restricted to those who have booked in advanced and there is a limited number of visitors allowed into the park at one time. There is a monitored CCTV system that covers the existing development."

Except from Crime Impact Statement by the Greater Manchester Police. 27th June 2024



06 SERVICES AND STRATEGIES

Secure by Design | Phase 02 Design proposal

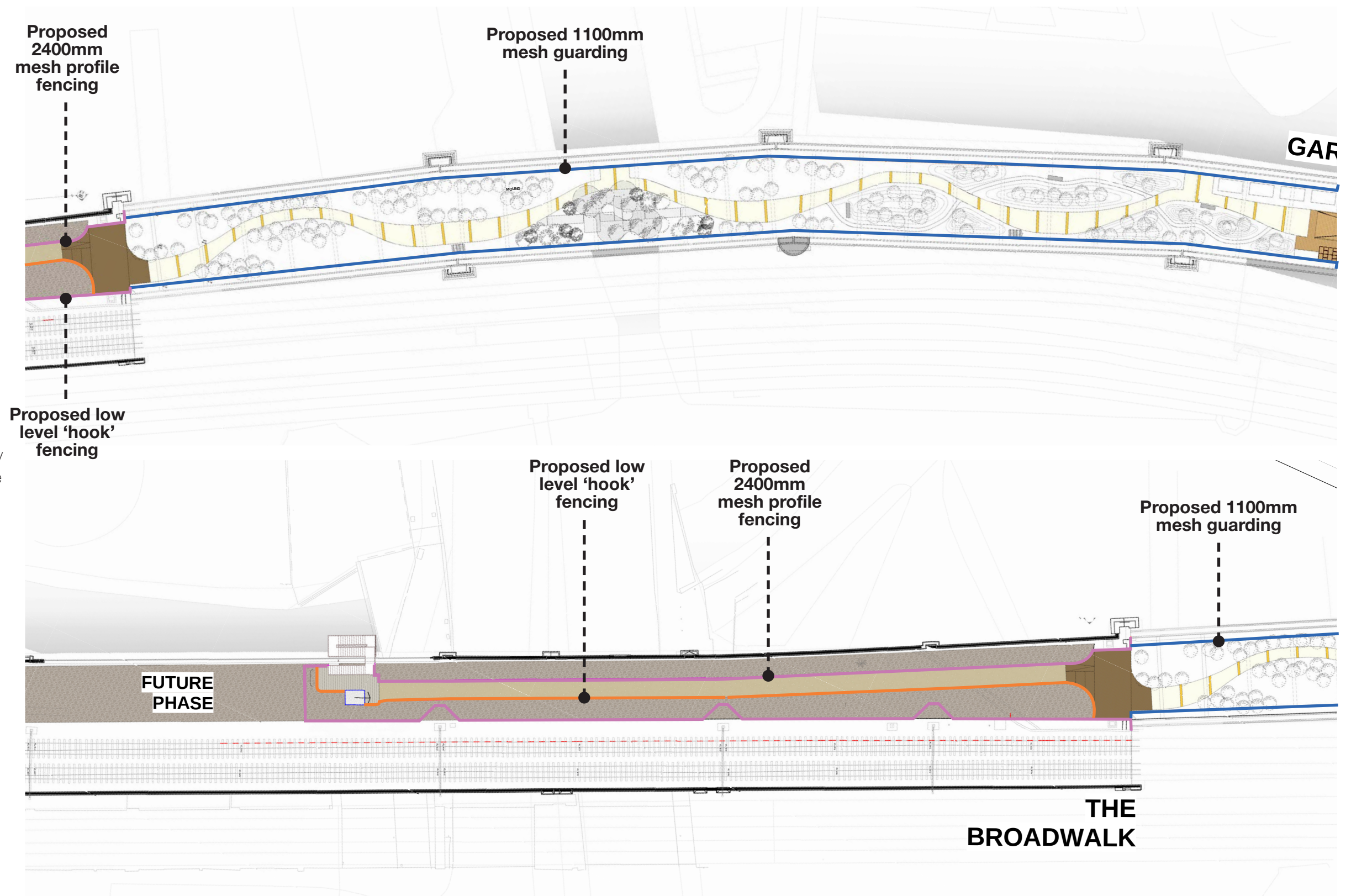
Phase 02 Design Proposal

1100mm high mesh guarding is provided through out the Garden area to prevent visitors to come in constant with and climbing on to existing lattice girder. On The Broad Walk (the masonry viaduct section) 2.4m high mesh profile fencing is provided to create an exclusion zone on Metrolink land to ensure day to day operation. As the Broadwalk is left as existing condition, existing ballast will be exposed thus low level hook fencing is provided to fence off these intended areas.

The curtain wall within the Engagement Centre (Central Visitor Building) facing Phase 2 will be replaced by two double doors, similar to those in Phase 01, to provide access to the horticultural zone and garden. All replaced doors will comply with Secured by Design standards and be certified to a burglary-resistant standard (PAS 24). The existing intruder alarm system will be inspected and updated as necessary. The new entrance opening to Phase 02 will be illuminated.

The CCTV system will be extended to cover the entire length of the Phase 02 development. It will be designed in conjunction with the lighting strategy to ensure sufficient illumination for monitoring while considering the well-being of plants and the natural biodiversity on site.

The planting strategy in Phase 02 will primarily consist of wildflowers on moderate mounds (maximum 500mm) to maintain sight lines down the entire length of the viaduct.

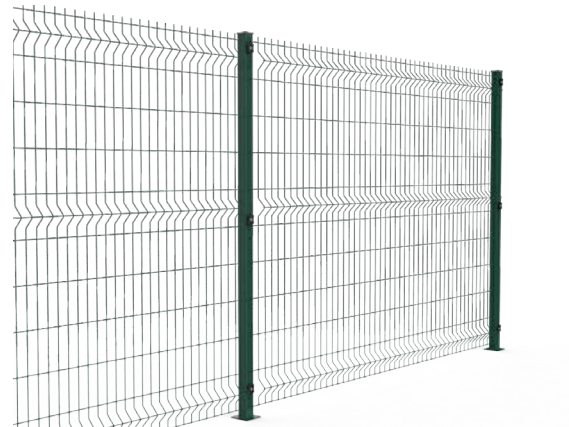


06 SERVICES AND STRATEGIES

Secure by Design | Phase 02 Design proposal

Phase 02 Design Proposal

With the extension of the site, a secondary access via staircase and lift is provided to Egerton Street to facilitate an escape route in the event of an emergency. Mesh profile fencing and a lockable gate are installed at the Egerton Street level to restrict access and prevent potential misuse outside of Viaduct opening times. Additional lightings and CCTV are provided to ensure sufficient illumination and security of the compound (Refer to ARUP lighting report for more information)



Mesh profile fencing



Mesh profile gate



Indicative view of vertical access on Egerton Street

06 SERVICES AND STRATEGIES

Waste management strategy

General

The design phase 02 has been designed with sustainability in mind. Materials aim to be demountable and reused, either in future phase or elsewhere in the National Trust. WaterAid Garden relocation to the side is a prime example of how Castlefield Viaduct provides a permanent home for good quality design. Many plants and vegetation from phase 01 are to be propagated or transferred to Phase 02 for continuity. The project also encourages local involvement, further improving social sustainability and well being of the area. Materials will be sourced to meet National Trust criteria for responsible procurement and commissioned as accurately as possible to avoid wastage.

Construction

There will be very little construction on site and as much of the build as possible will be preassembled, to improve accuracy and efficiency of operations. No demolition to take place in Phase 02. What is surplus to requirement on site will be recycled wherever possible as detailed in the construction management plan. Existing ballast on historic steel viaduct is intended to be removed, cleaned and recycled on another site as well as crushed to be used as hardcore for pathways.

Operational

Sustainable waste management is integral at all of our National Trust sites and recyclable materials are used wherever possible. There will be very few public consumable available on site without a permanent Food & Beverage or retail offer, and our ticketing, feedback and surveys will all prioritise digital options to minimise use of paper and printing. Where the public may have waste materials brought onto site, such as coffee cups or plastic food waste, we will offer small-scale public recycling bins and litter bins.

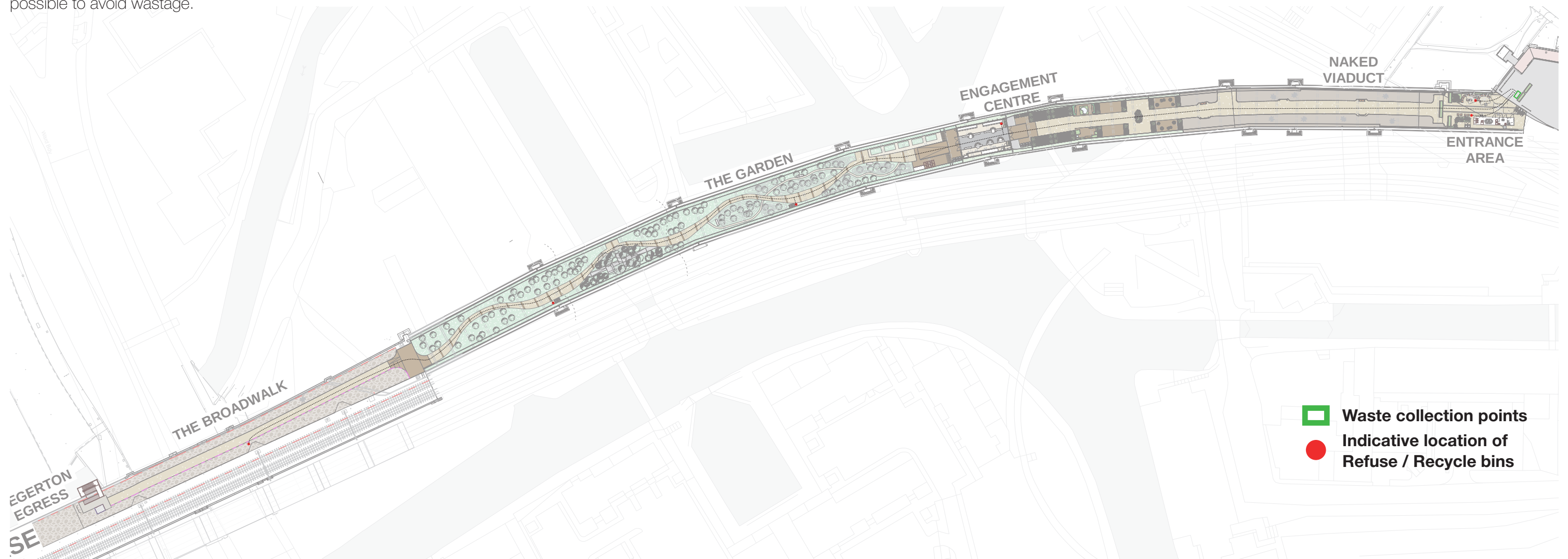
Landscape/ planting

Garden waste in Phase Two will be minimal and where possible we will compost and reuse on site. Additional 4no. compost bins have been located throughout Phase 02 garden to cater for the increasing planting in relation to Phase 0. Any green waste we cannot use on site will be collected in a garden waste bin and taken off site via a service contract from the front entrance.

Refuse storage on site

Placement and distribution of the refuse points have been closely considered based on the programme for each zone. Currently there are two mixed recycling / refuse bins in the welcome area, and one recycling / refuse bin in the events space. 3 more mixed recycling/ refused bins are to be provided with 2 in the Garden near compost bins and 1 in the Broadwalk.

A member of staff is to collect the recycling and refuse waste from all bins at the end of each day into the collection point staff facility



07 PUBLIC CONSULTATION

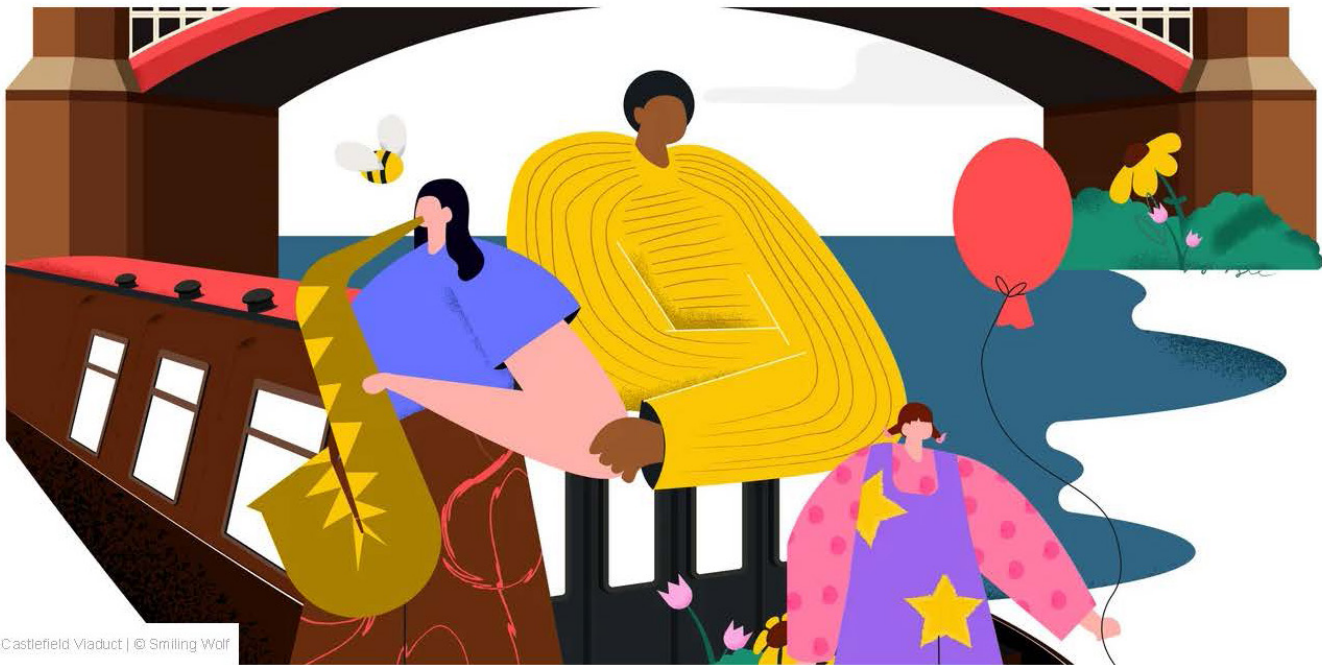


07 PUBLIC CONSULTATION

Next step for the Viaduct

Next steps for Castlefield Viaduct

Published: 29 May 2024



The vision for Castlefield Viaduct | © Smiling Wolf

In Autumn 2023, we asked the local community to help us imagine a future for Castlefield Viaduct. Now we would like to share the designs which have been developed with those ideas and update you on what's next for the viaduct. Whether you've visited the viaduct or not, this is your chance to take a look at the future of this iconic Mancunian landmark.

Over the last 2 years, we've been working with partners in Manchester to transform the disused Castlefield Viaduct into a green space for people and nature. Since opening in July 2022 the viaduct has welcomed over 100,000 visitors.

From the beginning we have asked visitors and the community to imagine what the future of the Viaduct could look like. A few months ago we commissioned BDP architects, Smiling Wolf, Deco Publique and Mott MacDonald to work with the local community to develop a future vision for the site. We listened to what the local community wanted and we're now excited to share the designs which have been developed. Watch the fly-through video [here](#) of what the future Viaduct could look like and view our vision document [here](#).

In other exciting news, we're taking the next step towards delivering the vision - Phase Two. We're hoping to design and submit for planning this year with public opening from 2025. We continue to seek donations and investment to keep the viaduct open to the public.

If you would like to know more about our work at Castlefield Viaduct and the vision please visit the [Our Work page](#).

Find out what's next for Castlefield Viaduct

Join one of our events in-person or online to see the plans, experience a virtual walkthrough of the 'vision' for the viaduct, hear about the next steps for the project and share your views.

Please note: The previous events have been reshuffled. The dates, times and locations below are the newly confirmed details as of 4 July 2024.

Close all	
Thursday 18 July, 18:00 -19:30, online via Microsoft Teams	▼
Monday 22 July, 16:00 - 20:00, drop-in event at The Castlefield Hotel	▼
Wednesday 24 July, 16:30 - 18:00, Castlefield Viaduct	▼
Wednesday 24 July, 18:00 - 19:30, Castlefield Viaduct	▼

07 PUBLIC CONSULTATION

Consultation Events Feedback

Comment cards from viaduct event 24th July

- Castlefield Viaduct is great, and the plans will make it even better. You'll need to consider how to balance it as a transport route vs a destination – risk it is overrun by electric bikes to the detriment of other visitors. In general, I support the plans completely in my view this is exactly the sort of thing the NT should be involved with- much more reflective of UK history and people's experiences than stately houses (yawn). I like the work in partnership with other bodies, such as the RHS, MCC and GMCA.
- A well thought out proposal for phases 2 and 3, we fully support it! Castlefield Viaduct is one of the few reasons we have for visiting Manchester and when here we shop, lunch and try and take in a show. If Castlefield Viaduct wasn't here, we'd do none of that.
- Just the type of thing that the National Trust is for! More places like Castlefield Viaduct please!
- The new phase 2 and 3 plans look brilliant- very supportive! It would be good to see later opening hours e.g. till 10pm. More events too in evenings please!
- I love the viaduct garden! Today was really interesting to talk to one of the architects and NT staff about plans for extending the viaduct garden further. It is a lovely calming oasis in the city centre, and it feels special to be amongst nature, but also up high so you feel surrounded by sky. Keep up the good work!

Feedback via email from an attendee of the consultation event on 24th July

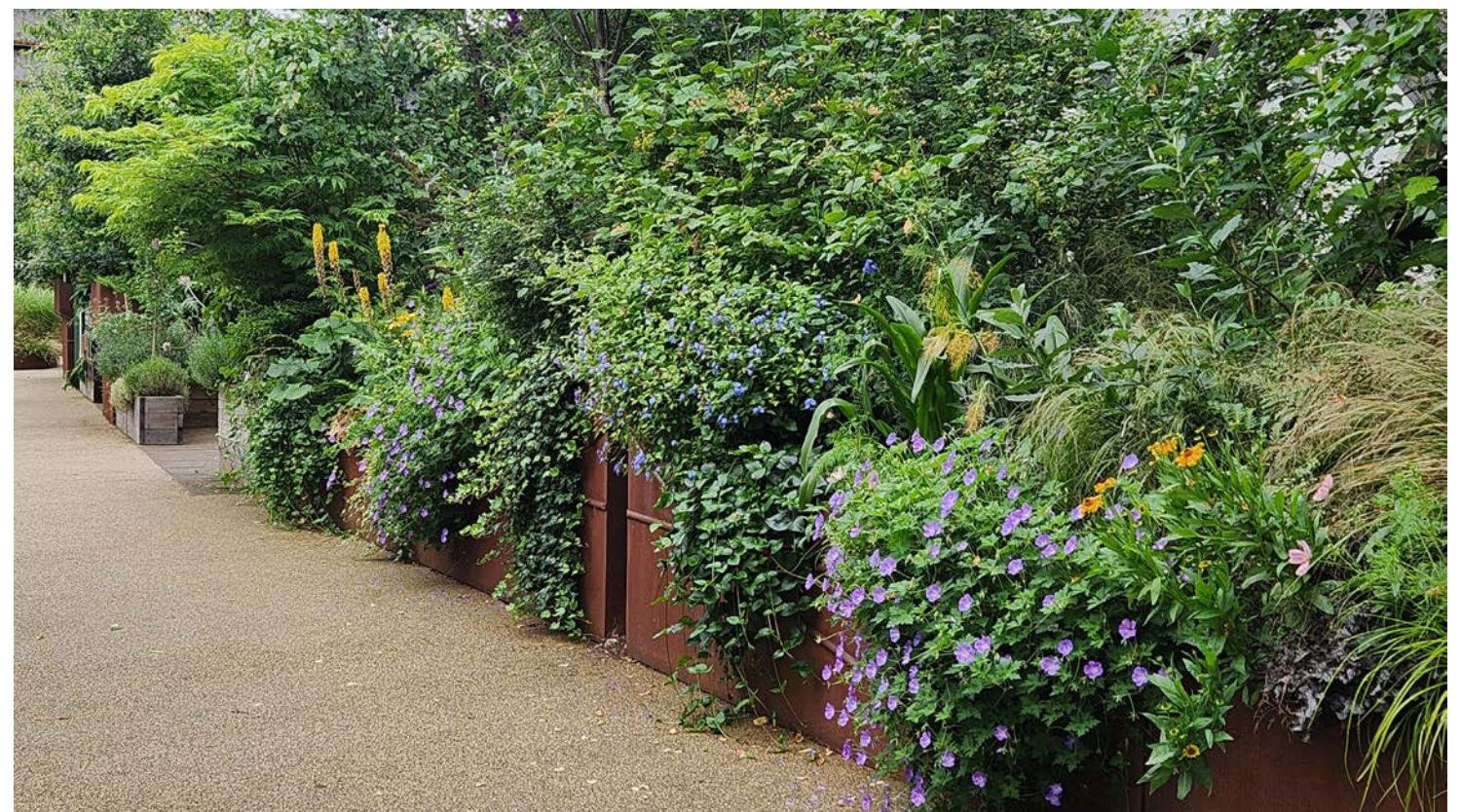
- I was very pleased to have attended the "next steps" event recently along with my work colleague/friend. I wanted to offer the following feedback/ thoughts.
- I note that on every visit, upon walking in, the energy is immediately calming, I note that my friend and I focussed our conversation not on work/ other issues but instead on naming herbs/ plants/ talking about the ambience/ other havens in the city centre
- It is always good to experience a space that allows you to release tension and breathe, this is an outlet both physically and mentally
- I clocked about myself that when walking to and from work/ nights out I am always rushing, sometimes when there is actually no danger of me being late, it's like I was programmed to rush but at the viaduct, I found myself taking things slowly
- If I have friends visiting from outside of Manchester, I will always have the viaduct as an option to visit- to showcase as it is unique and it is unlikely they have something like this where they live
- I love that you are in the heart of the city, but it feels rural
- It is a nice quiet space and would lend itself well to people eating their lunch/ tea
- I love the plans for extension and the extra entry and exit points
- I discussed how it would be good to take in the Viaduct on my way to work (instead of a straight walk from the big roundabout along Chester road/ Deansgate. I would consider walking along regent road (see attached image of Phase 1), but my concern would be re safety due to it being a very busy road traffic wise and also personal safety if the area is not well lit/ well signed.
- I discussed with a lovely lady there about Mayfield park, myself and some friends visited a fair while ago and whilst it is a great space, the signage was terrible, it was a bit out of the centre- more than we anticipated and at the time we visited there were no staff/ rangers. It felt eerie and we did not feel safe. All of us said we would not feel safe visiting again alone- I believe there may be rangers now but it is worth taking these concerns into account when you extend the viaduct
- My friend and I loved the look of the RHS water aid garden- aesthetically and design wise; it is tall and so it does not take up the walkway- meaning that accessibility is not compromised
- My biggest concern is that you start charging visitors to view the viaduct; this would only attract those that can afford it and would create a divide and marginalise groups in society

Castlefield Forum

- My only opinion is that the viaduct should be a full pathway- is pointless have the length of the bridge not in full use- if they can make a safety path to get out at Cornbrook station- that is the best solution. Also opening and encouraging people to have a walk back down the canals or getting the trams back from the station.

07 PUBLIC CONSULTATION

Event photos





08 DESIGN PROGRAMME

08 DESIGN PROGRAMME

Project Time line

