

COMMON GROUND

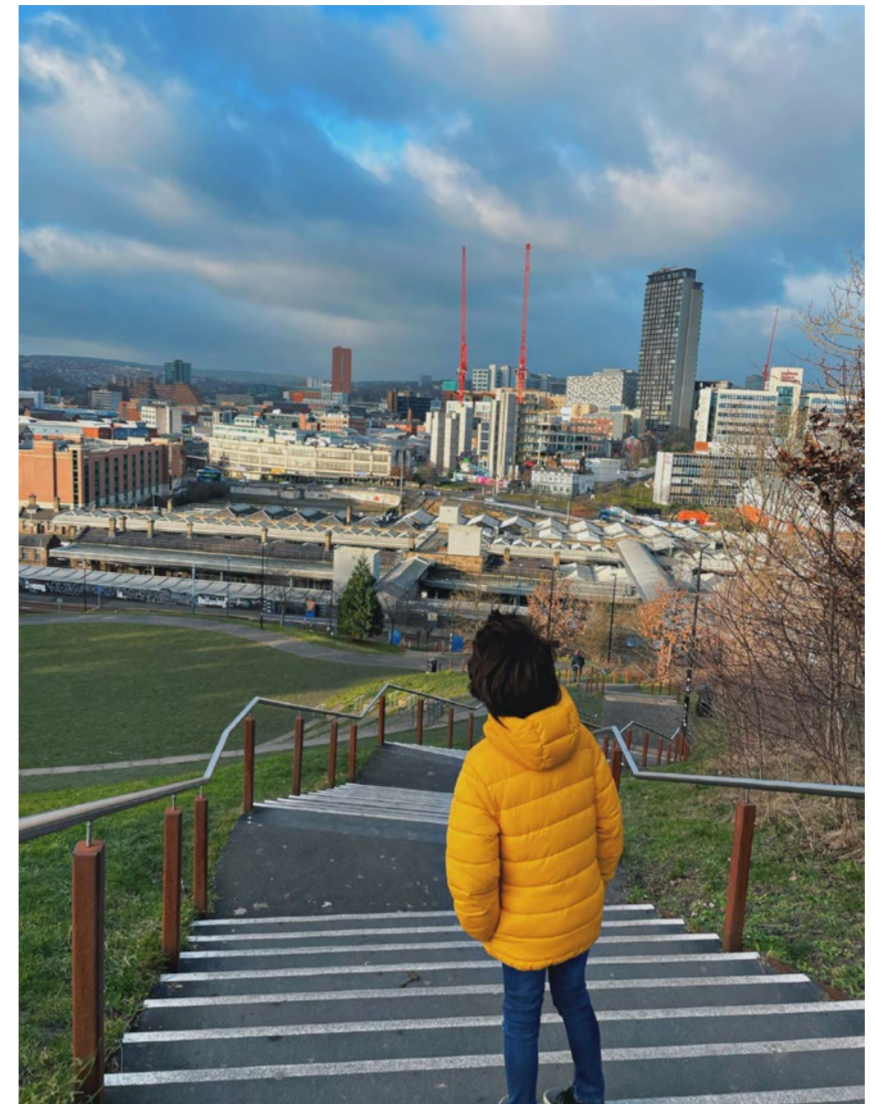
A sunken park capable of capturing 9692 m³ of excess flood water.

The expansion of our urban environment has altered the ecological balance, to such an extent that there are species which do not exist in our cities anymore, many of our rivers are polluted and in Sheffield city centre, they are hidden beneath roads and railways. Our cities aren't only hostile places for nature, they are inaccessible to some people too. My research focused on young people and found that like nature our children are retreating from their natural environment.

The disconnect between humans and nature harms both, as nature is pushed out, humans become more disconnected from its benefits to our health and wellbeing. The positive impact nature has on our environment is also lost, the air we breathe becomes more toxic, affecting our health and the weather becomes more volatile, causing more destructive flash floods. We can have a beneficial impact on each other if we make the space.

If we take a no dominance approach to designing, can we create places which allow both users to be at home, without making noticeable concessions?

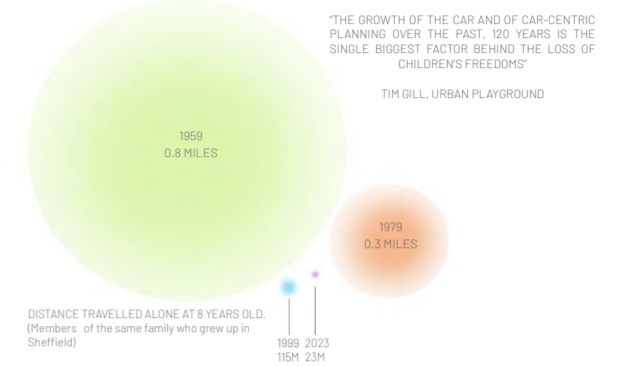
Common ground is a sunken park which can be used by people to immerse themselves in nature, play and socialise. It is a place to observe and study the condition of our rivers and native species, and through education, reconnect young people to their environment. However, when it rains and humans retreat, the space can be completely consumed, holding **9692m³** of excess rain/flood water. Designed to slow the flow of the river and increase retention in the city centre, providing an early warning to communities down river, and potentially reducing the impact on them.



YOUNG PEOPLE + THE URBAN ENVIRONMENT

I visited the site at different times over several days and it was notable that I didn't see children using the space, either alone or with their parents. I began to research how children interact with the urban centres of our cities. I found that the location of the site may be a reason for the lack of children present. It is positioned alongside the A61 (Sheaf Street) Sheffield's inner ring road which is four lanes wide at this point, the traffic level surrounding the site could be deterrent for children (Lambert, 2019) and their parents (PQS, 2019).

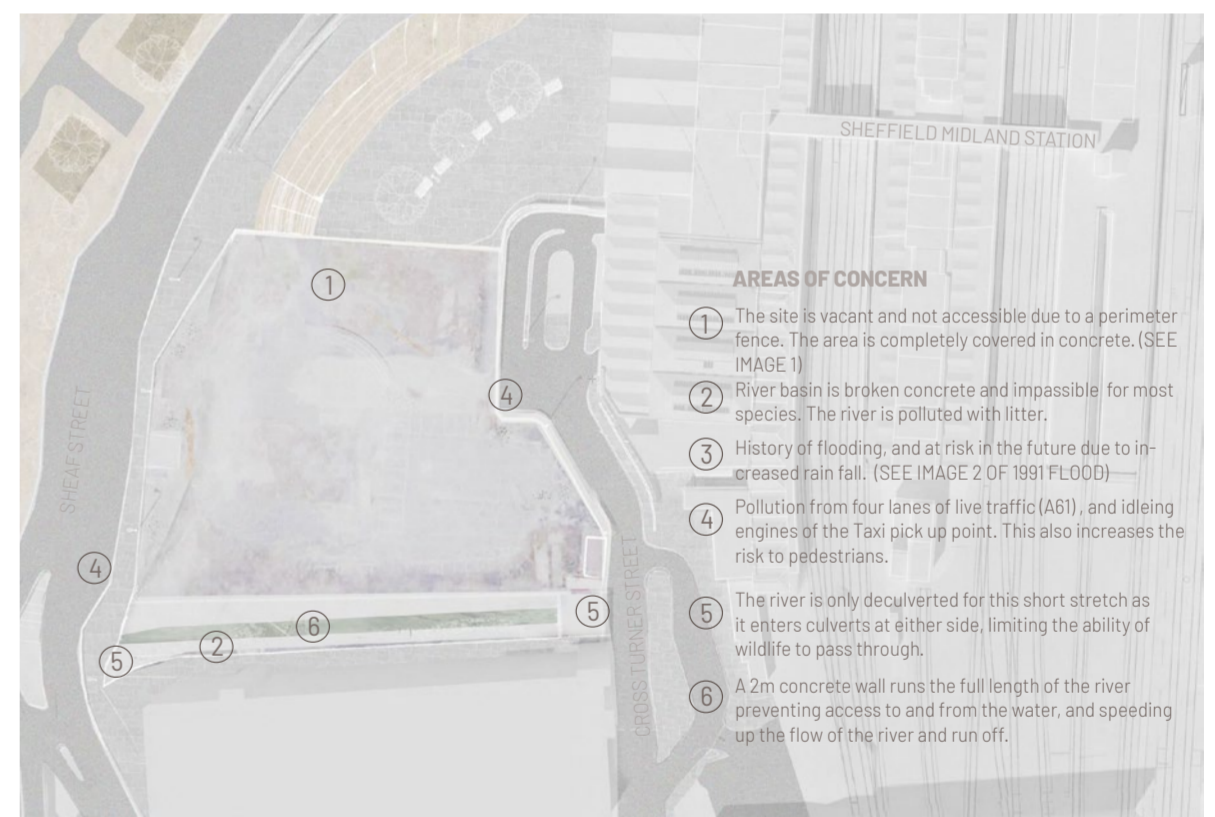
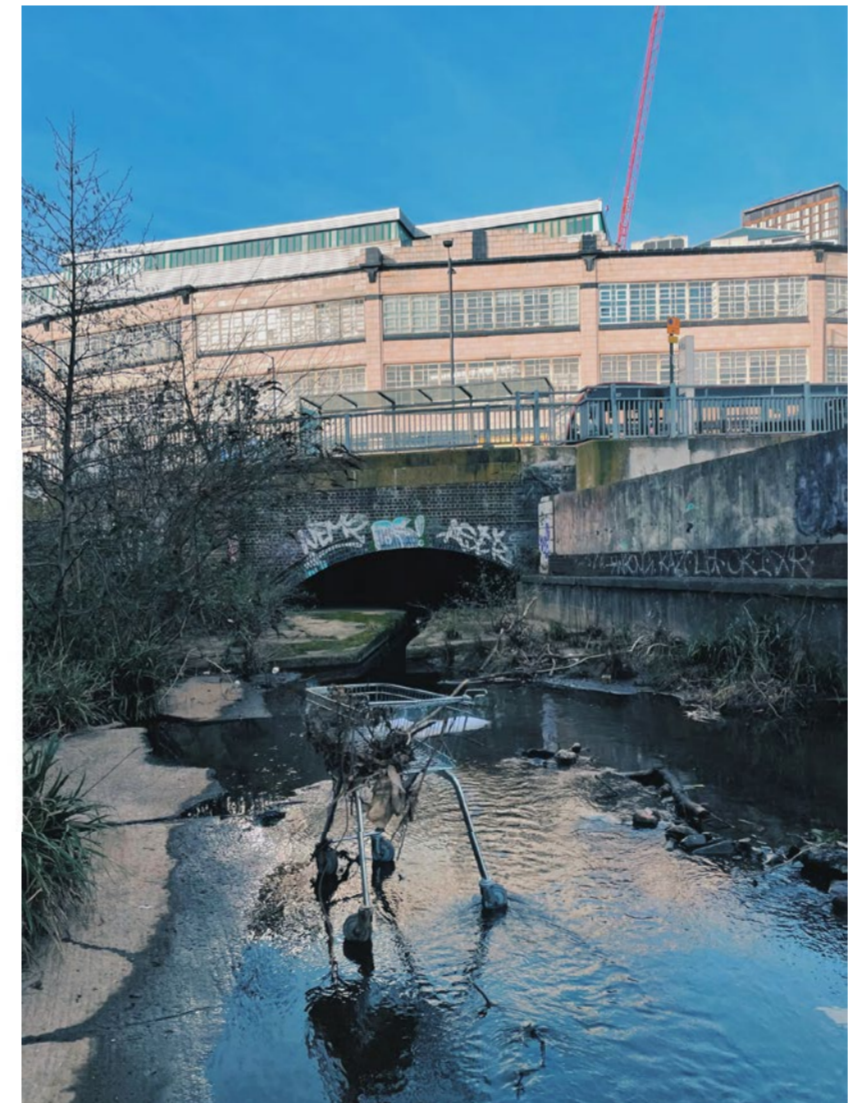
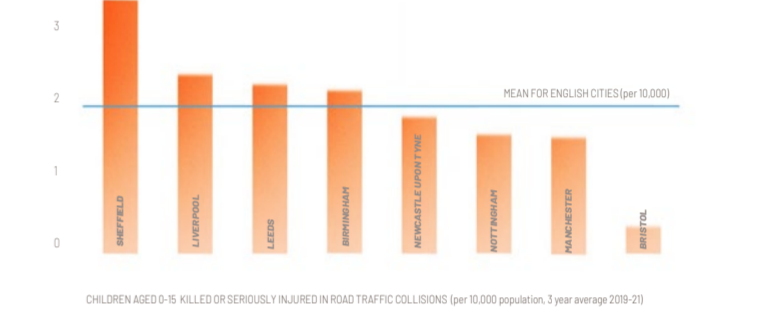
By 2030 it is predicted that 80% of people living in urban environments will be aged under 18 (UN, 2014) so the need to create space for them in our urban centres is urgent. If we want to ensure that young people are able to enjoy a good quality of life. Currently that is not the case, the World Health Organisation claims that urbanisation is one of the leading reasons why 80% of the world's adolescent population is insufficiently physically active.



Play is not only responsible for positive physical health outcomes, it also improves children's mental health, cognitive ability, coping strategies, independence and self-esteem (Blindburg, 2021). When considering using the site as a space to benefit young people I researched which types of play are declining fastest, and according to the British Children's Play Survey 2020, adventurous, outdoor play was the most impacted. Experiencing age appropriate risk and uncertainty whilst playing is found to reduce fear and anxiety in later life (Dodd, 2021). A key element of my design will be making the Porter Brook river accessible.

My proposal is to design indoor and outdoor spaces which provide opportunities for young people to experience adventurous play, encourage them to engage with their environment, educate them on the urban and natural environment of their city, and how they don't always exist in harmony.

The goal is for them to feel connected to their city and empowered to shape the future. Experiencing age appropriate risk and uncertainty whilst playing is found to reduce fear and anxiety in later life (Dodd, 2021). A key element of my design will be making the Porter Brook river accessible.



PROPOSED SITE INTENTIONS FOR THE PROJECT

Addressing the areas of concern listed below, the intention of this project is to reconnect people with their environment for the benefit of both. The existing concrete wall (6) will be removed, and pushed back, giving the river space to swell flood if needed, the new flood defense is two sets of stairs up to Midland station which maintain the same height as the existing flood defense, but can be used as an amphitheatre and provide seating for events.

The river is currently straight which encourages the river to flow fast, this will be naturalised with a series of bends to slow the flow and increase habitat for wildlife. There will be a central channel introduced which is a minimum of 0.3m deep, so that during times the river level is low, it doesn't completely dry up and become impassible for wildlife.

The concrete basin will be removed and replaced with gravel, and cobble banks planted with native marginals to encourage pollinators.

The river will be accessible, for analysis by organisations such as the Sheaf and Porter Rivers Trust, as well as curiosity by residents. The River Trust carry out guided walks of the culverts, so I have proposed a handrail be installed inside the culverts to open up the possibility of exploring to more people. The amphitheatre seating is suited to educational/safety talks for these group excursions.

To address the air quality of the area, two greened areas will be introduced on Cross Turner street and Sheaf street, these will be planted with pollution tolerant trees and plants to help capture some of the vehicle pollution. In place of the concrete surface, a permeable concrete will be used and SUDS planting beds to encourage run off water toward the river, ensuring it is filtered through the planting beds which help stop harmful pollutants entering the waterways. See a detailed drawing of this on page 21.



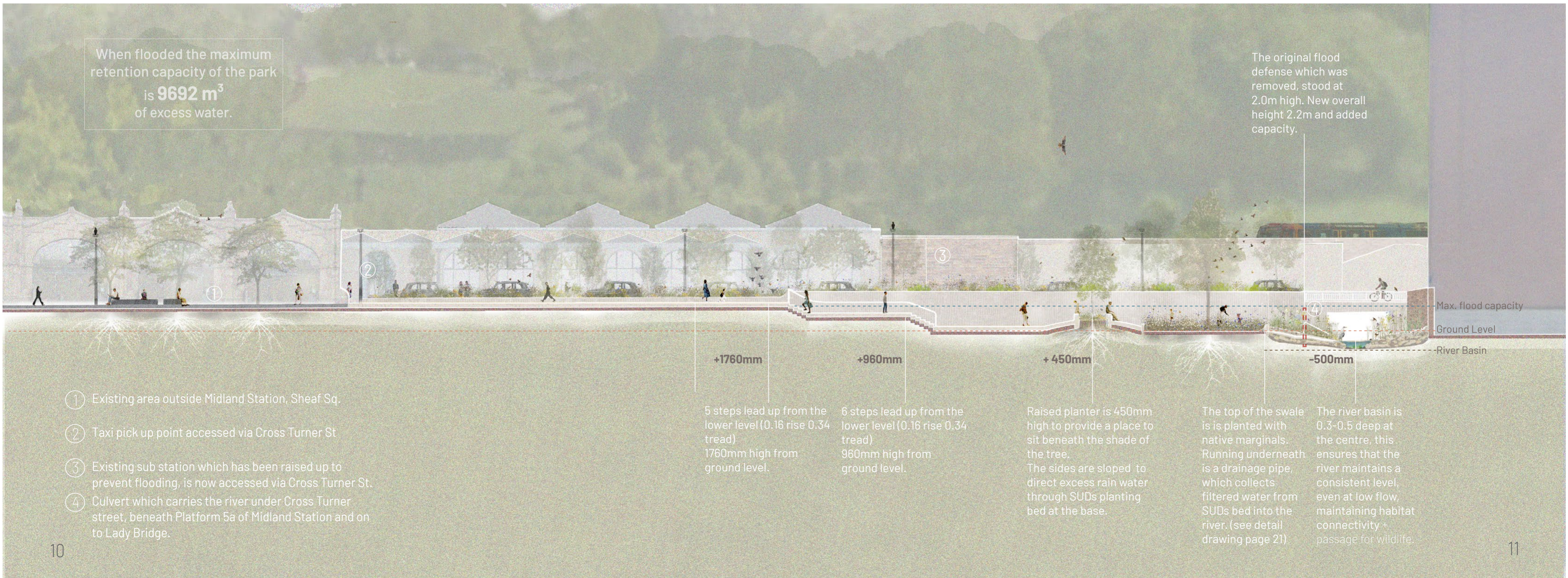
BEFORE THE RAIN

View from Sheaf Street, when the river is at its average level.

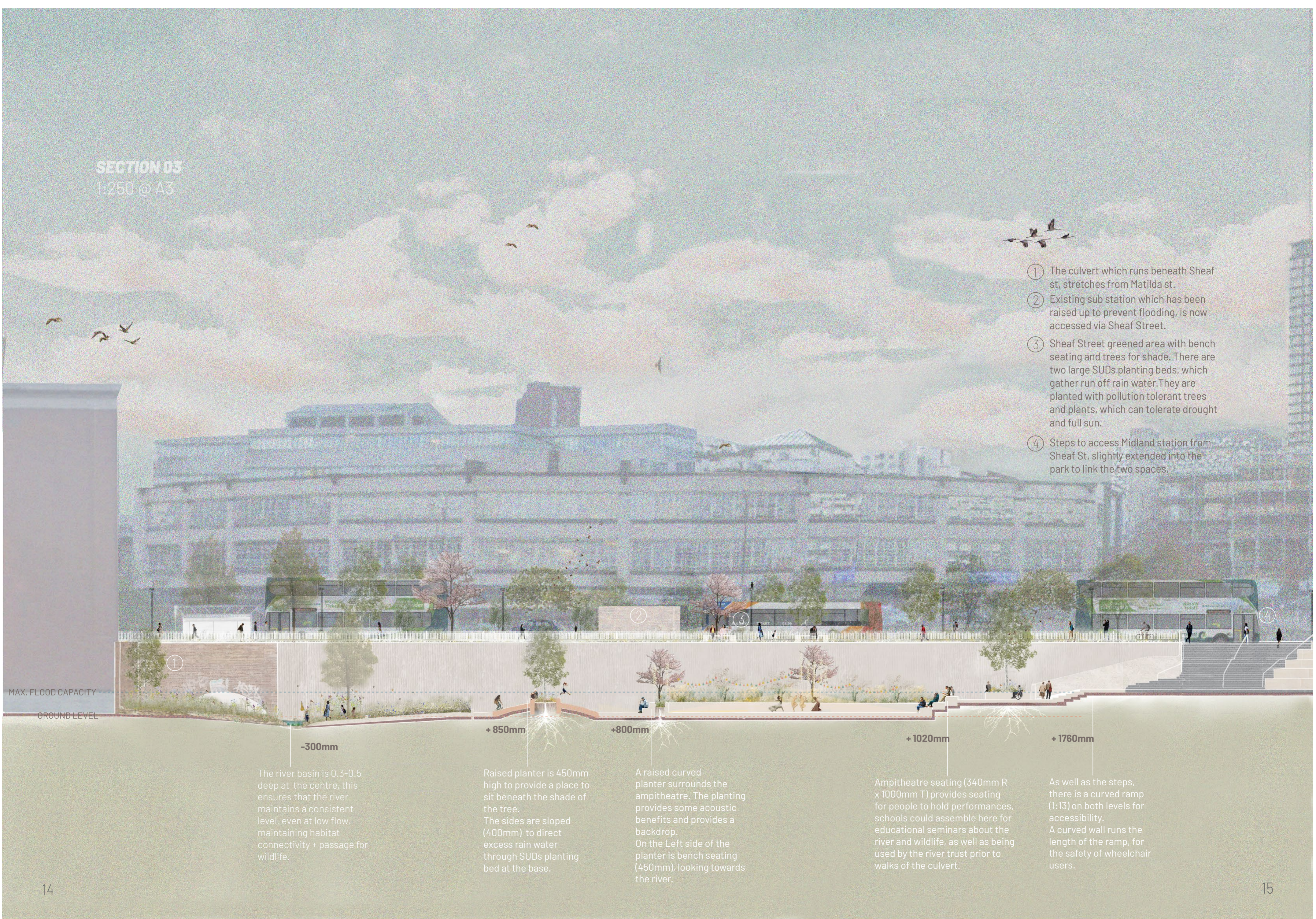


When flooded the maximum retention capacity of the park is **9692 m³** of excess water.

The original flood defense which was removed, stood at 2.0m high. New overall height 2.2m and added capacity.



SECTION 03
1:250 @ A3



- ① The culvert which runs beneath Sheaf st, stretches from Matilda st.
- ② Existing sub station which has been raised up to prevent flooding, is now accessed via Sheaf Street.
- ③ Sheaf Street greened area with bench seating and trees for shade. There are two large SUDs planting beds, which gather run off rain water. They are planted with pollution tolerant trees and plants, which can tolerate drought and full sun.
- ④ Steps to access Midland station from Sheaf St, slightly extended into the park to link the two spaces.

MAX. FLOOD CAPACITY
GROUND LEVEL

-300mm
The river basin is 0.3-0.5 deep at the centre, this ensures that the river maintains a consistent level, even at low flow, maintaining habitat connectivity + passage for wildlife.

+850mm
Raised planter is 450mm high to provide a place to sit beneath the shade of the tree. The sides are sloped (400mm) to direct excess rain water through SUDs planting bed at the base.

+800mm
A raised curved planter surrounds the amphitheatre. The planting provides some acoustic benefits and provides a backdrop. On the Left side of the planter is bench seating (450mm), looking towards the river.

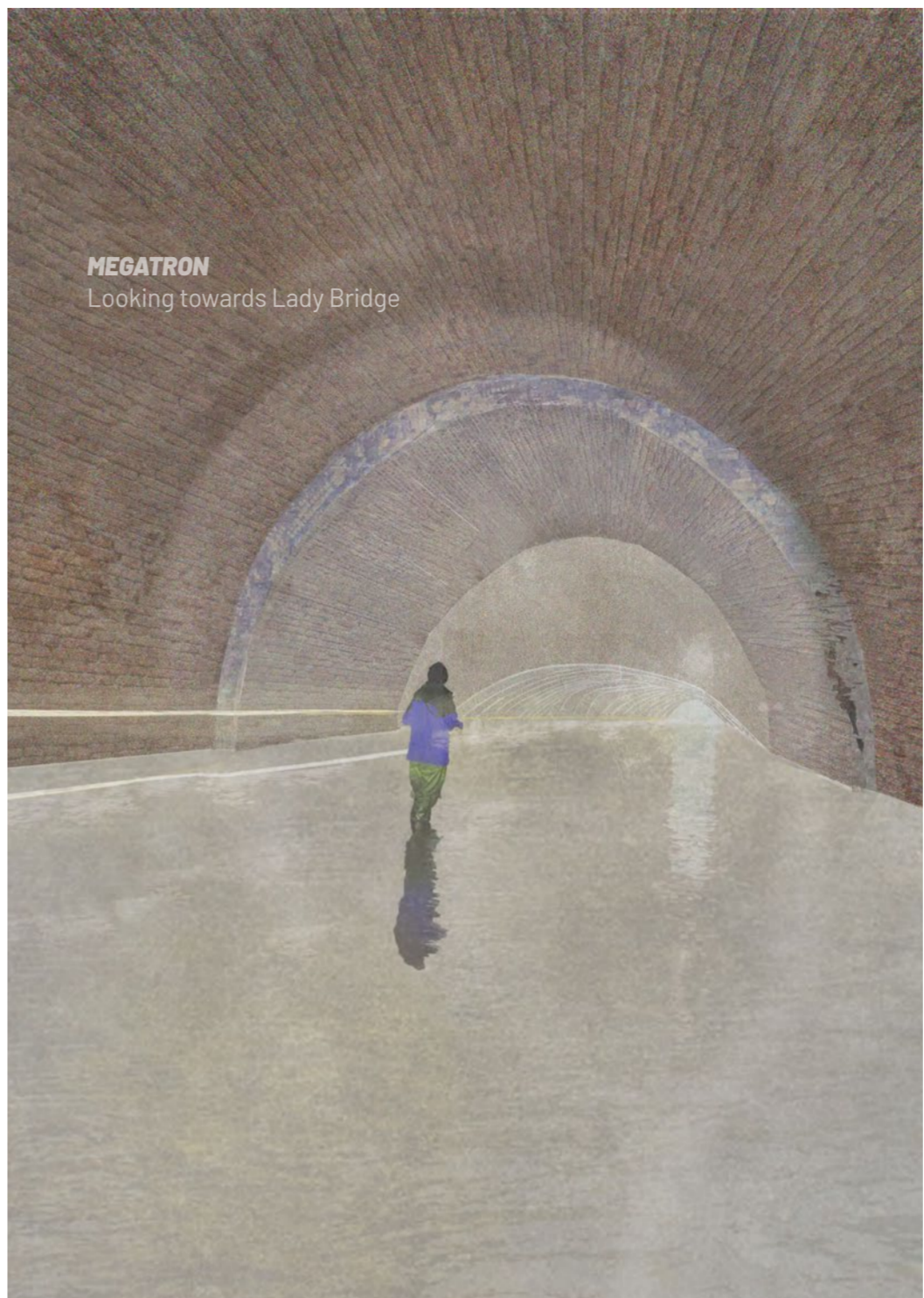
+1020mm
Amphitheatre seating (340mm R x 1000mm T) provides seating for people to hold performances, schools could assemble here for educational seminars about the river and wildlife, as well as being used by the river trust prior to walks of the culvert.

+1760mm
As well as the steps, there is a curved ramp (1:13) on both levels for accessibility. A curved wall runs the length of the ramp, for the safety of wheelchair users.



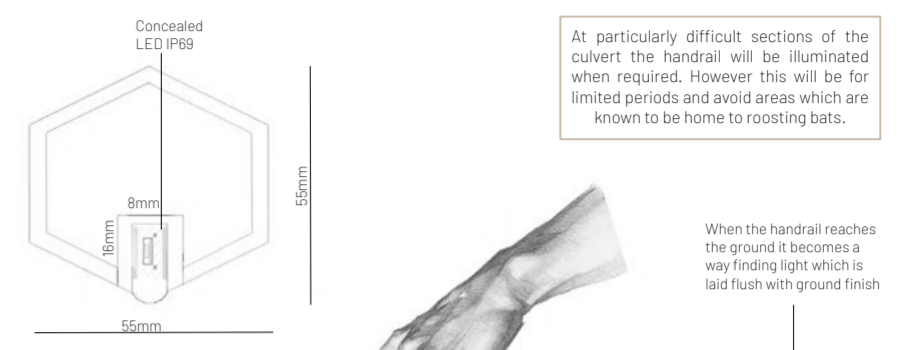
SECTION A2
1:250

DETAIL SECTION B1

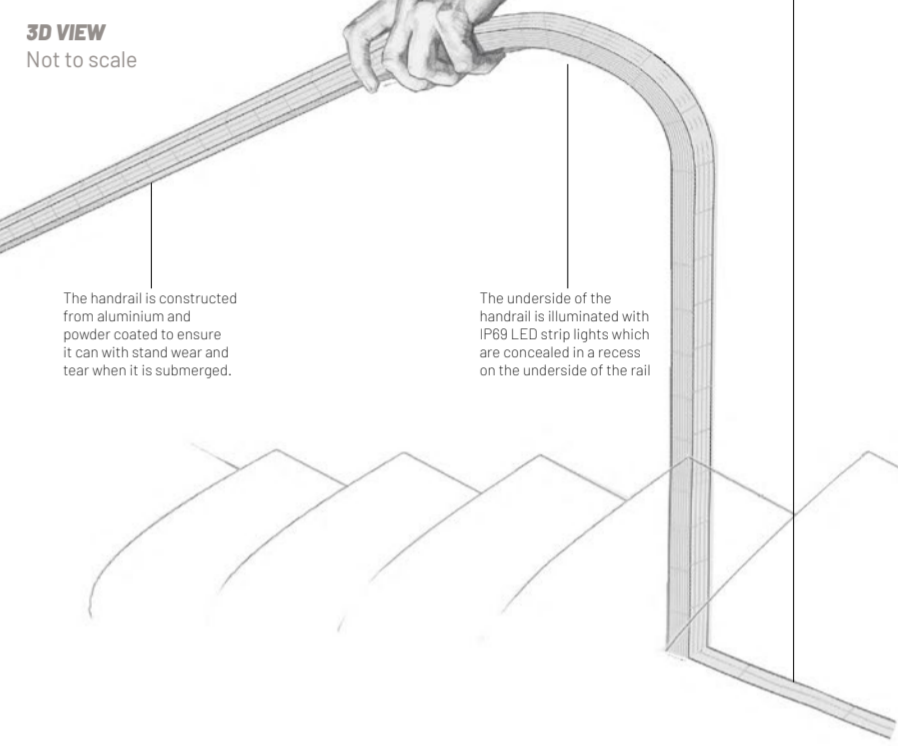


MEGATRON
Looking towards Lady Bridge

HAND RAIL
Detail 1:1
The hand rail runs from Midland station to Lady Bridge via the hidden culverts which carry the Porter Brook + River Sheaf beneath Sheffield Midland Station.



At particularly difficult sections of the culvert the handrail will be illuminated when required. However this will be for limited periods and avoid areas which are known to be home to roosting bats.



3D VIEW
Not to scale

The handrail is constructed from aluminum and powder coated to ensure it can stand wear and tear when it is submerged.

The underside of the handrail is illuminated with IP69 LED strip lights which are concealed in a recess on the underside of the rail

When the handrail reaches the ground it becomes a way finding light which is laid flush with ground finish

SWALE
DETAIL SECTION B1 1:50

Ulmus Rebona, is a American hybrid cultivar of the Elm tree, it is disease resistant so should prove to be a good alternative to our native Elm, which has been impacted by Dutch Elm disease.

It is introduced here in the hope that it can provide habitat for our endangered White Hair Streak Butterfly, who's population has been hit by the loss of Elm trees, which it depends on for it's whole life cycle.
Benefits: Flood Tolerant, wind resistant, habitat

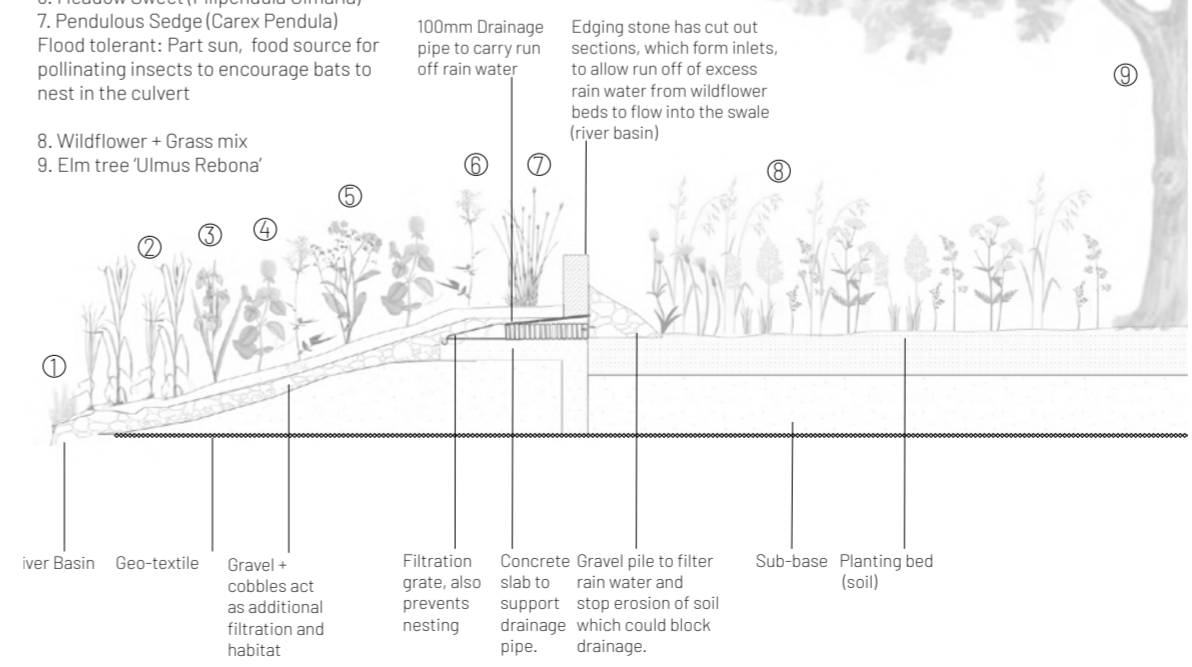
PLANTING

Native submerged: oxygenating
1. Willow Moss (*Fontinalis Antipyretica*)

Native Marginals: chosen to provide food source for pollinators

- 2. Bulrush (*Typha Angustifolia*)
 - 3. Yellow Iris (*Iris Pseudacorus*)
 - 4. Water Mint (*Mentha Aquatica*)
 - 5. Water Forget Me Not (*Myosotis Scorpioides*)
 - 6. Meadow Sweet (*Filipendula Ulmaria*)
 - 7. Pendulous Sedge (*Carex Pendula*)
- Flood tolerant: Part sun, food source for pollinating insects to encourage bats to nest in the culvert

- 8. Wildflower + Grass mix
- 9. Elm tree 'Ulmus Rebona'



AFTER THE RAIN

In the event of a flood, the space has a retention capacity of 9692 m³ of flood/rain water.

