



FINAL PLAN
BOMEN NEDERLAND
STUDENTEN CHALLENGE 2021
THE GREEN SPINE

By DREAM GREEN team

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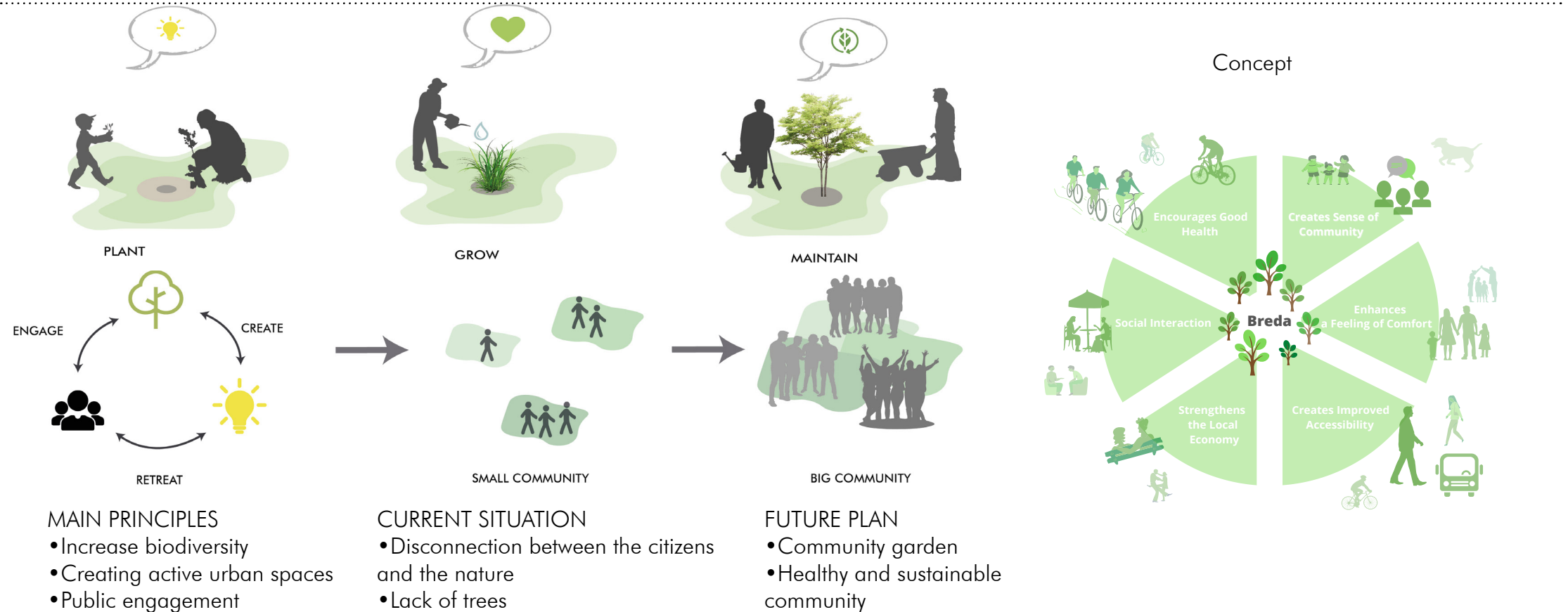
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1. DESCRIPTION OF THE PLAN



The “Green community” vision for the city of Breda located in the Netherlands aims to collaborate with the city to improve biodiversity and public engagement. As a team we were inspired by the neighborhood gardening movement that is aiming to improve the access to locally grown food in the city. Therefore, we will implement community garden and along the street planter boxes and trees. The street that we will redevelop is called Oude Vest in Breda and the area that will become a garden is next to the Chasse park. Both elements will be connected so people can enjoy both areas.

The goal of this project is to work with the citizens of Breda in the built-up process which will engage the community more. The community garden will be built based on the volunteer strategy. Therefore, the area will be cost efficient and will seek to promote more vegetables and tree planting.

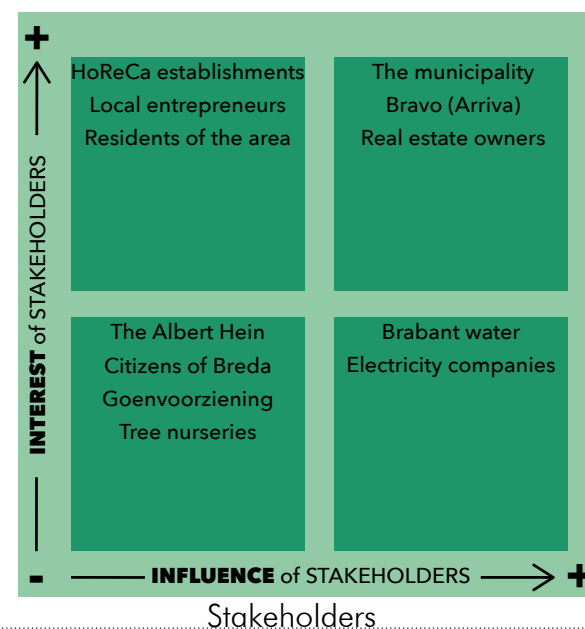


2.LOCATION OF THE PLAN



3. STAKEHOLDERS & SWOT

The most important stakeholder is the municipality, as it is not only in charge of redevelopment plans for the city, it is also paying for the project. Besides the municipality, business - and a real estate owner could invest in the project as well as they will benefit from a more pleasant atmosphere in front of their building, which will raise the value of the property. Real estate owners could ask for more rent and business owners are more likely to increase sales if more people enjoy walking through the area. Forestry businesses and tree nurseries also have an interest, they will be in charge of planting the trees and taking care of them. The stakeholders who will benefit from the project the most are residents and citizens which can enjoy the new and green neighborhood. Further on, Bravo is a big stakeholder since the road is part of an important bus route.

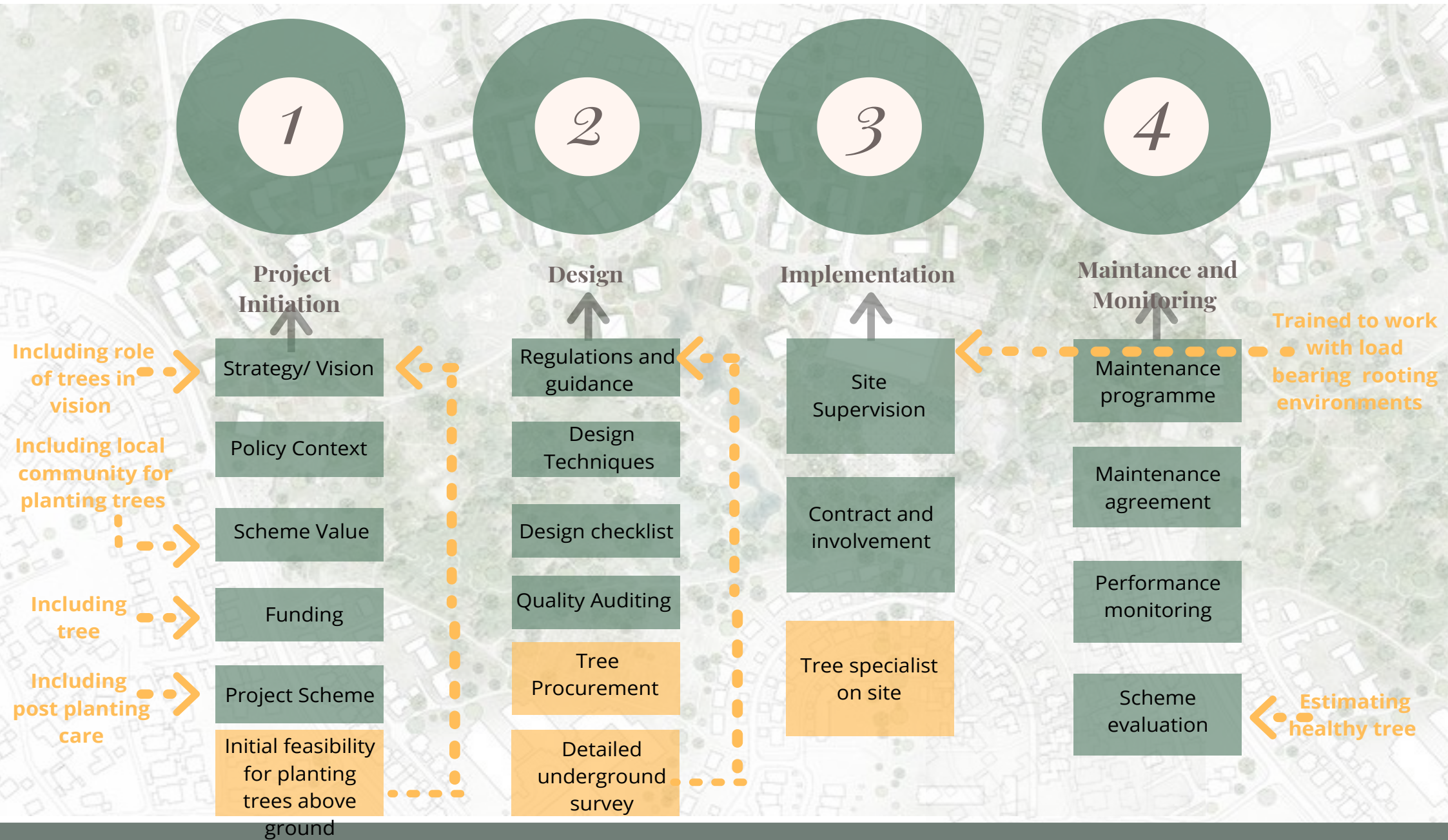


SWOT

This project has many strengths and opportunities. Besides the fact that the project would improve people's quality of life, adding more biodiversity to cities, and improving the street scene, the project has some weaknesses and threats as well. The trees which will be planted need to be taken care of and someone has to clean up the leaves from the streets. There is also the risk of residents who feel disturbed by the newly planted trees or that the trees become sick and die. However, this threat can be easily be taken care of by asking for the help of tree nurses, they might also be able to select the perfect trees for this site. Unfortunately, we had not enough time to do so. In general, it is difficult to plant trees next to streets, because of the dense soil which makes the growing of roots difficult. But also the lack of water that infiltrates the ground because of the asphalt and the dirty run-off water of streets make it hard for a tree to grow and be healthy. The street surface can also be damaged by roots breaking through the surface. Probably the biggest threat is climate change which will lead to different weather and temperatures than now. This threat can be minimized by planting trees that are robust and which adapt easily to new weather conditions. This is not only dangerous for trees, but also for the roads. Roads are built for certain types of weather, if those are changing extremely though, the safety and conservation of the roads are at risk. Climate change will also affect residents which might be exposed to extreme weather like high temperatures or flooding.

<h3>Strengths</h3> <ul style="list-style-type: none"> + Sustainable + Improves biodiversity + Improves living conditions + Positive influence on people's health + Street gets more attractive + Stimulates a community feeling + Increases the value of properties adjacent to the area 	<h3>Weaknesses</h3> <ul style="list-style-type: none"> - Needs to be cleaned - Needs to be taken care of by someone - The roots of the trees need loose soil and space to grow - Trees need a sufficient water supply - Run off water of streets is polluted
<h3>Opportunities</h3> <ul style="list-style-type: none"> + Involving residents + Space for innovations + Makes district more attractive + Businesses benefit if more people are passing by + Gives more room to nature + Teaches the youth about the local eco-system + Creates a new place for gatherings and activities + Opens an opportunity for organisms 	<h3>Treats</h3> <ul style="list-style-type: none"> - Residents could feel disturbed by new trees - Plants and trees can get ill - Tree species might not get along with each other - Climate change -> Temperatures changes (heavy weather changes affect road safety and conservation) - People might not participate in the garden - Vandalism will take place

4. INTEGRATING TREES INTO THE DESIGN PROCESS



5. PROJECT PHASES

Phasing

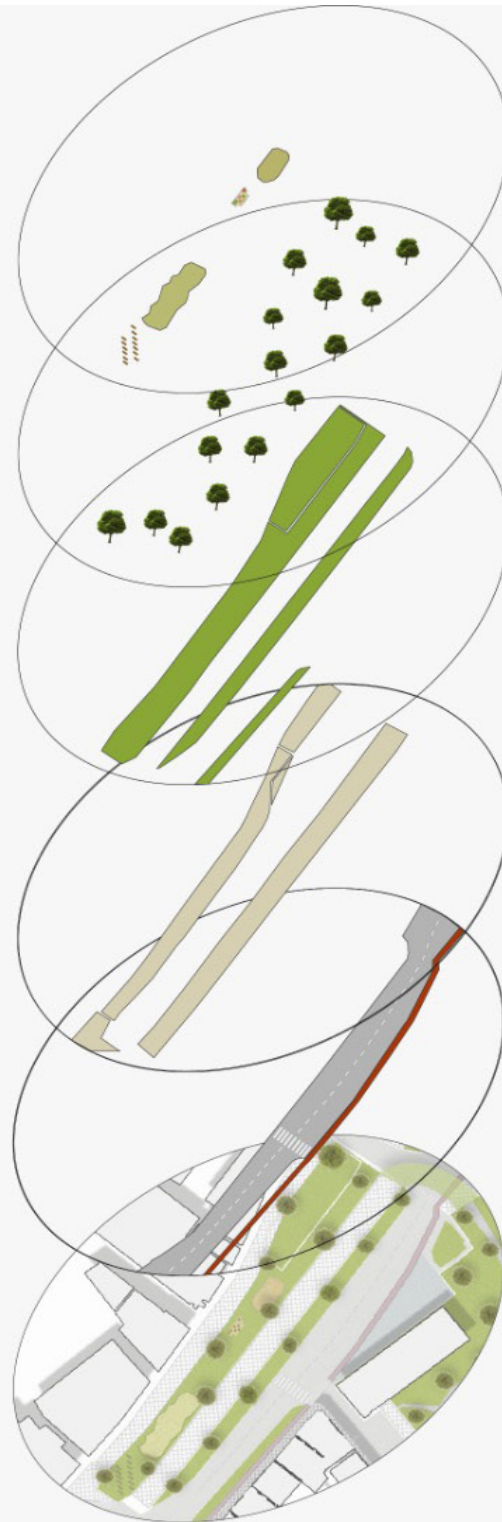
1.5 In order to finish the redevelopment of Oude Vest Street, amenities like street furniture and a playground will be added.

1.4 Right after adding the greenery, the trees will start to be added as well.

1.3 The next step is to add greenery to side paths. This will lead to a relaxing and healthier atmosphere.

1.2 The second step is to add the walking paths. Those paveways consist out of pave tiles which have space inbetween for grass to grow. This makes the design not only more interesting but offers animals a place to use and rain can infiltrate the ground.

1.1 The first step is to rearrange the street and bicycle path. The first section of the street will be reduced as the space is not needed and can be used as green strip which separates the bicycle path from the street and thus makes cycling safer.



2.5 Finally, vegetable beds will be added to create a community garden.

2.4 Again, after adding the greenery the trees will be added as well.

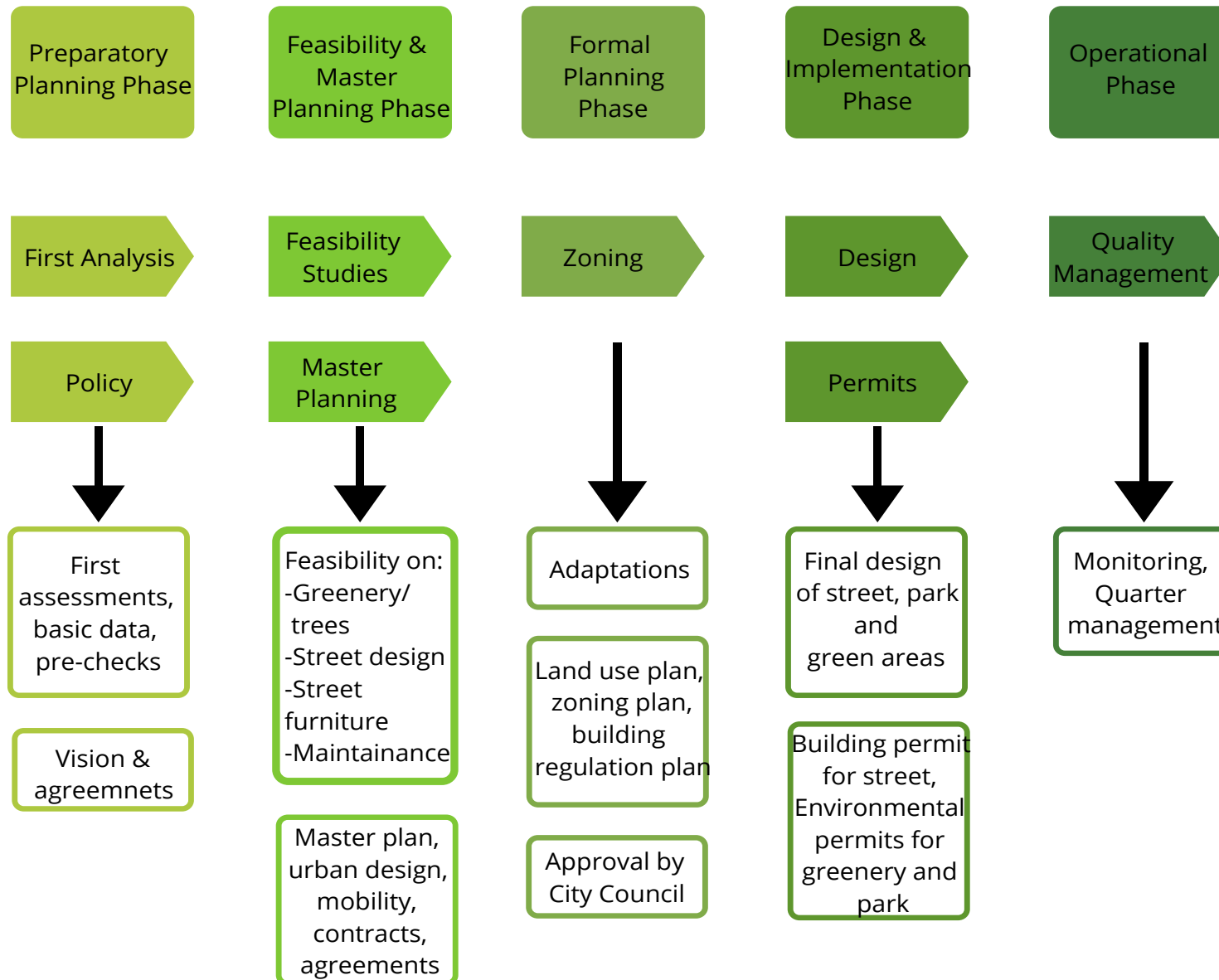
2.3 The next step now is to add greenery in the surrounding area and in the middle of the park.

2.2 The first step of recreating the old parking lot is to replace the old surface with new soil which used in parks.

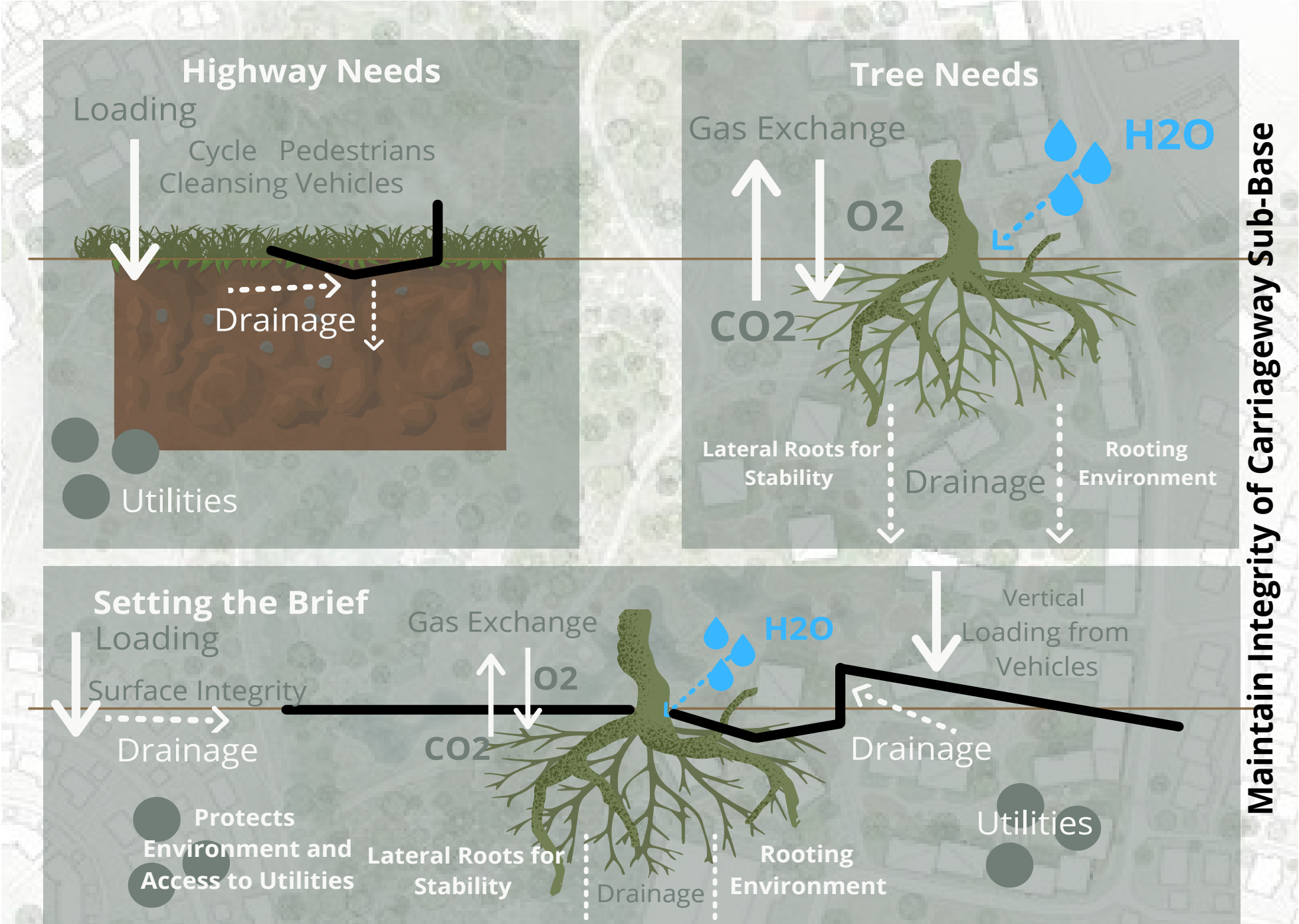
2.1 In order to connect both areas a green tree tunnel will act as crossing path.



5. PROJECT PHASES



6.TREES



7.MASTERPLAN

OUDE VEST STREET

COMMUNITY GARDEN

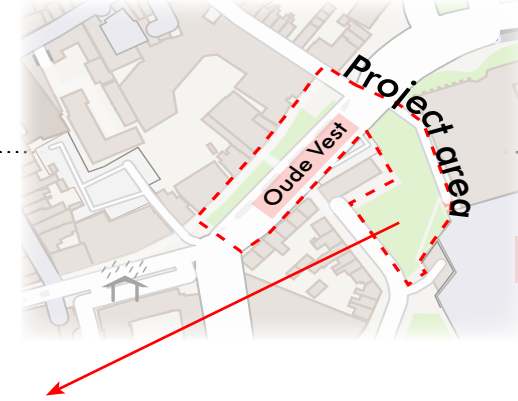


8.COMMUNITY GARDEN

The garden aims for social interaction that will create a healthy and sustainable community where people will plant trees, vegetables and fruits. Within the new community garden outdoor pavilion will act as relaxation zone with benches and during the weekend as food market.

Priority is planting trees, second planting vegetables and fruits and finally creating area for benches and food market during the weekend.

The area can plant around 30 trees.
Dimensions of the area: 3.013m²



Example for the garden



Example for the pavilion

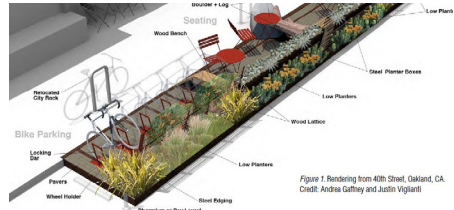
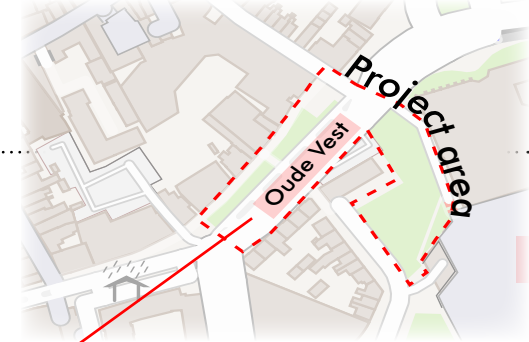


9. OUDE VEST STREET

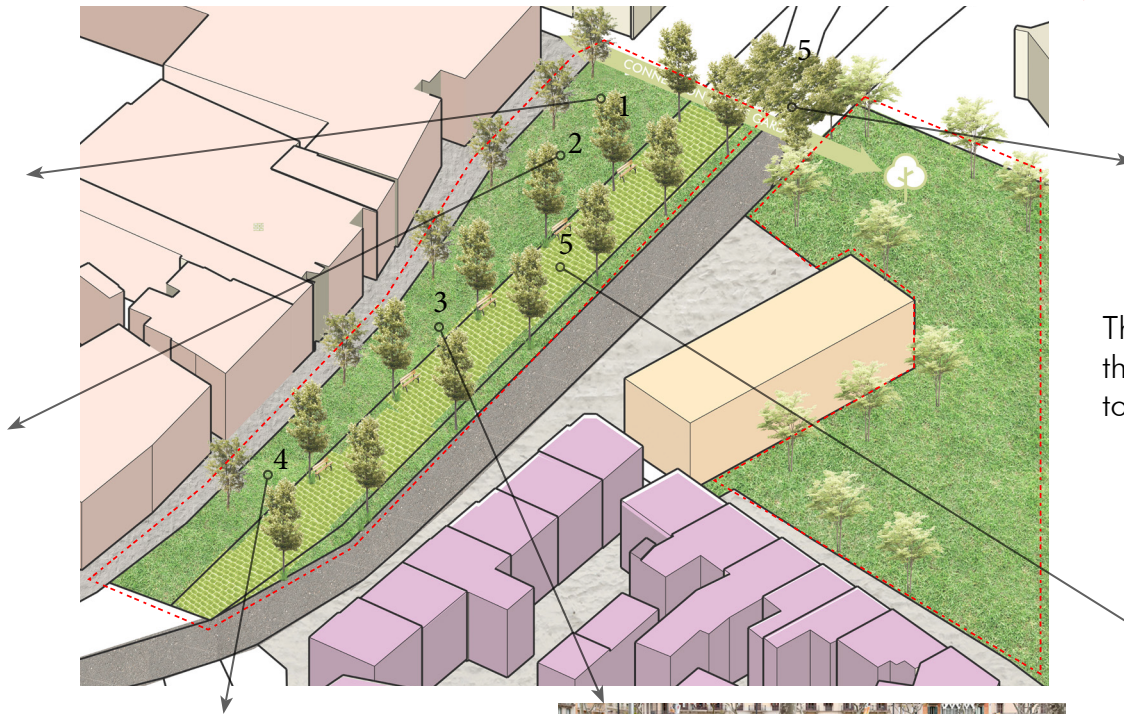
The project aim is to give priority to the pedestrian use of the street and turn it into a new urban green zone extending right up to Community park/garden.

In order to achieve this, two new rows of trees will be planted on the side of the street to create an area of natural shade that will accommodate the new recreational zones, children's playgrounds and bar terraces.

In order to guarantee the sustainability of this new layout we need to ensure proper drainage of the subsoil and take on the challenge of incorporating a mixed pavement system in the tree-lined zone. The treatment of the soil with mixed pavements and the automatic watering system that uses phreatic water are key to ensuring substrata drainage that will guarantee the survival of the vegetation.



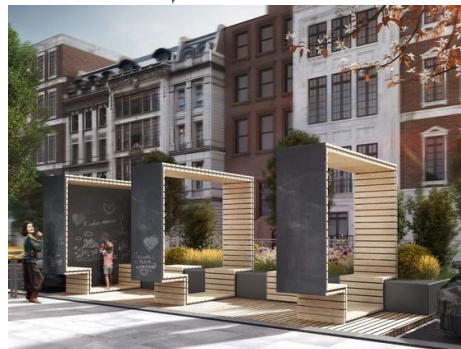
Space for the bicycle paths



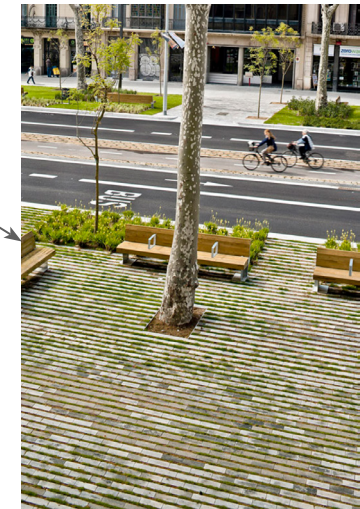
The tree tunnel will act as crossing path, so the little park and the community garden to be connected.



The pavement of the drawing benches/place for sitting in front of the cafe/restaurant will be with prefabricated pavements.

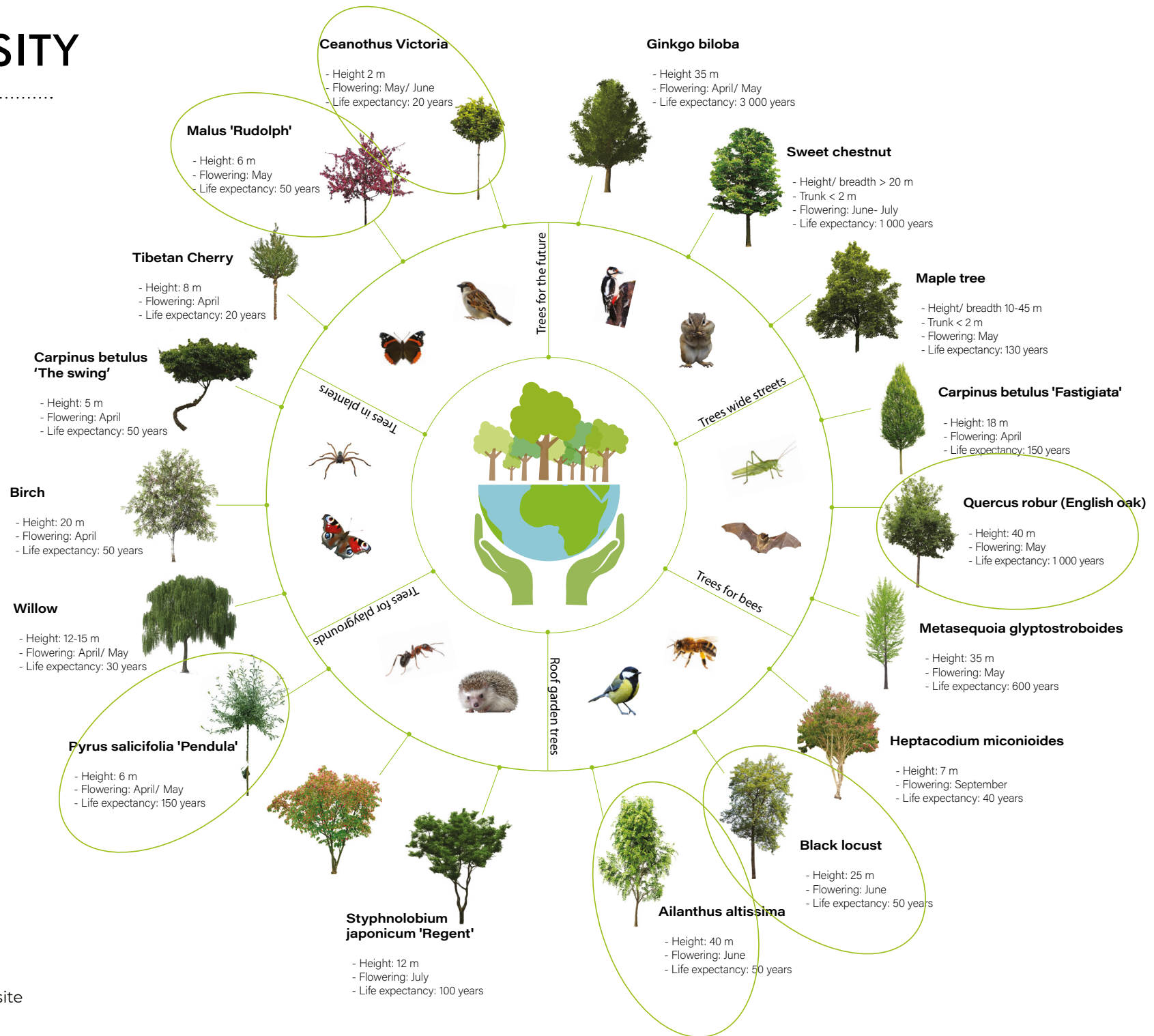


The playground will be with prefabricated pavement with draining joints which are going to be laid down.



The pavement will be mixed with grass for better drainage. The pavement is made of "panot" paving slabs (typical ensanche paving).

10. BIODIVERSITY



11.FINANCE

A tree grows for free as long as it has a suitable growing location. If we give a tree a large open (green) space with healthy soil and do not enter it, we will be able to get a very large tree there at no significant cost. However the space in cities is limited, that's why both above- and underground many things have to be done to let the tree grow. To create a suitable growing environment, some investments need to be made by the municipality of Breda, in addition, there are other costs for improving the street scene.

The acquisition of the land is normally one of the most expensive costs in a project, in the redevelopment of this site, there is no need to purchase the land because it is already owned by the municipality of Breda. This results in significant cost savings. In this case, we do however have to consider the costs of excavating and removing the soil from the existing situation; the costs for the complete construction of the new growing site, in this we have to keep in mind the difference of the trees that are immediately next to the road and those further away; the acquisition and planting costs of the trees; watering the trees in the first 15 years; the accompanying pruning in the first 15 years; the clearing of the dead tree; and protective measures. Besides the costs for the trees, there are also other costs such as the acquisition and assembling of the street furniture, community garden, and playground.

There are all kinds of factors that influence the cost of construction of the growing sites and the acquisition of the trees. In this financial scenario, we assume that 41 'sustainable' trees will be planted, 7 of which will be facing heavy traffic roads. Therefore these seven trees need a different growing site, a more expensive growing site. The cost for this growing site is approximately euro40.000, for the other growing sites that are located further away from the road there is a cost of approximately euro18.000. The purchase price of these 41 trees is on average euro1.500 per tree, the costs of the maintenance of the trees are for the first 15 years on average approximately euro3.535. This brings the total cost for the acquisition, planting, and maintenance for the first 15 years to euro1.098.435.

Further on, we have the costs such as the acquisition and assembling of the street furniture, community garden, and playground. In this scenario we go out of acquisition and assembling price of euro20.000 for the playground and the pavilion unlike the trees, both of these must be replaced after 12 years. Therefore we estimate a cost of euro24.000 for 15 years per construction. We also estimate euro35.000 for street furniture such as benches and waste bins. Then the community garden, which perhaps brings this plan together. It is quite difficult to make a price estimate for this garden, precisely because the idea is that it is maintained by the residents. Despite this, the estimated price for this garden will be around euro60.000. This amount is for the construction and possible maintenance of the garden.

The total costs of both parts come together to an amount of euro1.241.435, this might seem like a big amount. However, this project gives a lot more in return.

DOES THE PLAN PROVIDE ECONOMIC VALUE?

The Green Spine will unfortunately not provide a direct economic value. There will not come (new) locations available where entrepreneurs can start their enterprise. However, indirect it will provide an economic value. It does that by purchasing the necessary products from (local) entrepreneurs and by creating employment opportunities during the build and maintenance process. Besides, the Green Spine will attract tourists and spatial practitioners.



HAVE A TREE DAY!

THINK GREEN,
KEEP IT ON YOUR SCREEN!

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