Workbook 2

Context

Content

During Context, the research focus in international projects that enhance biodiversity. Architecture, Urbanism or Landscape projects that concentrate in promote ways to preserve and create awareness of nature in urban or peripheral areas of the city. New analysis notions are introduces: diversity, connectivity, modularity and stewardship. The presence of these conditions would make a project development stronger and, in consequence, this would contribute to generate a more stable ecosystem (everything around us, including human relationships).

The key is to understand that is not possible to control nature. Only from design and planning it is possible to create better conditions for nature to keep occupying the city spaces. This phenomenon takes a longer time that humans are used to, that's why it is necessary to spread the word and make citizens aware that daily efforts make a difference on long terms; and that our own existence relay on biodiversity.

Diversity: Variety of elements within an area
Connectivity: the state or quality of being connected or connective
Modularity: A set of physical conditions which can be repeated
Redundancy: Ecological Stability
Stewardship: The careful and responsible management of something one values

National Projects

Context

Passport

Project Name	Poelgeest, Oegstgeest
Urbanity	Suburban
Dates	1997
Clients	Municipality Oegstgeest
Project	Create a multifunctional ecological and recreational wetland zone in a new urban development
Former land use	Farmland
Size	220.000m²
Designer	DS Landscape Architects and Kuiper Compagnons Architects
Costs	–

Plan

Image

Building for BIODIVERSITY

The Poelgeest project started in 1997 by DS Landscape Architects, led by Fred Booy. The main goal was to create a multifunctional ecological and recreational wetland zone in a new urban development in Poelgeest. It contains aspects like living, sustainability, biodiversity, and recreation. Kuiper Compagnons architects designed the housing and DS Landscape Architects did the design of the nature area.

The idea was to restore the farmland to the former polders. This idea originates from a report formed by the Centre for Environmental Studies in Leiden. They state that nature that is being replaced by building houses in that area can be compensated by appointing the northern area of the new neighbourhood to nature. Therefor in the beginning of the project money was reserved for this plan. The idea was to use mainly reed to make ecological connections along the Haarlemmertrekvaart and the Warmonderleede. Also around the houses and transmission towers in the area reed was planted to make it an integrated whole. Also trees are planted around each of the three polders to make the distinctions clear. Also with these adjustments the area became more similar to the wetlands close by; the Kaagse Plassen. The restoration of the former polders and thus the historical value of the area is visible by the pattern of ditches.

Also the old windmill is restored and someone recently built a historical shipyard that is accessible for public as well.

Diversity

Context Passport

Analysis

Besides the similarity in landscape elements the project is connected to the surrounding area mainly by water like the Haarlemmertrekvaart. For the residents it is also connected by roads but poorly. For example there is only one road leading out of the new neighbourhood with many speed bumps and a 30-km/h speed limit. Though there is a bus but that one only drives once a hour.

All because the area is intended as a car poor area to make it more sustainable and green but also to make it a more child friendly space. Also cars are mainly parked on central parking lots instead of in front of people their doors to promote the view on nature. Though there is only one way out of the area in the following years the walking trails will be more connected to the surrounding areas as well. They will become more integrated in the province its network.

Connectivity

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Dykes, fields of reed, rows of trees, reed along the houses and reed hedges.

Modularity

Context Passport

Analysis

There is a good robustness of species plus the back-ups because the area is attractive for breeding, migrating and species that stay in the winter. This means that biodiversity continuous all year round.

There are three bird species that might arrive in the area in the future according to a bird spotter; ‘European goldfinch’, ‘reed-bunting’ and ‘spotted redshank’.

In total 117 different species have been counted in the ‘Veerpolder’ and 99 in the Hennepoelpolder between 2008 and 2014. The polders are going to look more and more alike concerning the different species present. Factors limiting redundancy is that the area is quite dynamic. Until recently the area was attractive to species that like the low water level. But the water level is higher than expected nowadays. The water level is not something that can be controlled by the ones who maintain the area. That is under control of the water board in the region.

Redundancy

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Reflection

Priorities

When it comes to enhancing biodiversity in this project the priorities dealt with are making the area attractive for different bird species that are more unique for the area. They also want to make the area more connected to areas nearby by making walking paths through tunnels under the railway.

For the ‘Zuid-Hollands Landschap’ the area is a good example of how to integrate both nature and recreation.

Results

They achieved their main goal; to integrate nature into an urban context. Although it seems like two separated parts in the area they are still connected by for example the water purification system and reed connections. Also residents are involved with the help of the local Environmental Education Centre. They organise several activities a year for both children and adults to make them aware of the environment they live in/nearby. An increase in biodiversity is still possible with help of the ‘Zuid-hollands landschap’ who will change the maintenance of the northern part of the Veerpolder. Though their plans should be communicated better to the residents.

Activities

Walks through the area are organised by the MEC but also information meetings, bird spotting sessions and much more.

Partners

The polders are part of municipality Teylingen but the foundation ‘Zuid-Hollands Landschap’ are the owners and maintain the area. In 2014 they bought the last part of the northern Veerpolder. This part is located near Warmond. There is a plan to make a pathway under the railroad. To keep the main goal increasing biodiversity the foundation ‘Zuid-Hollands Landschap’ is definitely needed. Only since the buy of the last part in the Veerpolder nothing has been done with that area. One bird spotter suggested that it might be nice to make it a more attractive area for insects like butterflies. This also the plan the foundation has for this area.

Context Passport

Reflection

Costs

Costs for buying the third polder; the Veerpolder were 100.000 euros. This amount of money was raised July 2014 with help of residents in the area, the ‘Dinamo Fund’, the Prins Bernhard Culturefund’, ‘Progressive Oegstgeest’ and protectors of the South-Holland Landscape.

Risks

Possible downside of increasing biodiversity is for example the negative effects it can have on the water purification system. For many species that part of the area is also attractive to forage and/or breed but their excretions might have a negative impact on the filtration process.

Measuring results

With the help of volunteers and people from the Foundation ‘Zuid-Hollands Landschap’. Also it is an interesting area for Biology Students for example to do research like the presence of geese and the impact of their excrements on the water quality and marine biodiversity.

Planning

They started work in 1997 and finished the project in 2007. In 2012 ‘Zuid-Hollands landschap’ obtained the most northern part: ‘the Veerpolder’. They are planning to let sheeps graze instead of fertilizing. This might increase the biodiversity (flowering plants and insects in particular).

Building for BIODIVERSITY

Context

Passport

Project Name — The Ceuvel, Amsterdam

Urbanity — Urban

Dates — 2012

Clients — Projectbureau Noordwaarts en Bureau Broedplaatsen

Project — Development and design of a creative incubator on a polluted brown-field. By using low-tech techniques such as recycling houseboats and cleaning the soil by vegetation, the former shipyard is an innovative sustainability experiment.

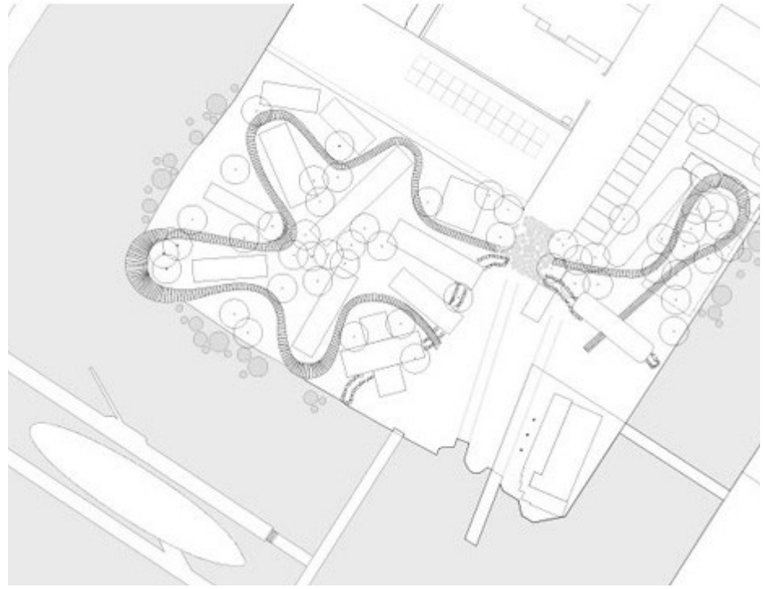
Former land use — Industrial

Size — 5.500m²

Designer — Space&matter

Costs — $500.000

Plan



Image

Building for BIODIVERSITY

The Ceuvel is a small terrain, which is heavily polluted. Therefore specific plants were planted for a Phytoremediation garden, a garden with plants that clean the soil. Hence the biodiversity is not high but will increase over the years. A great deal of projects are utilised to increase self-sufficiency.

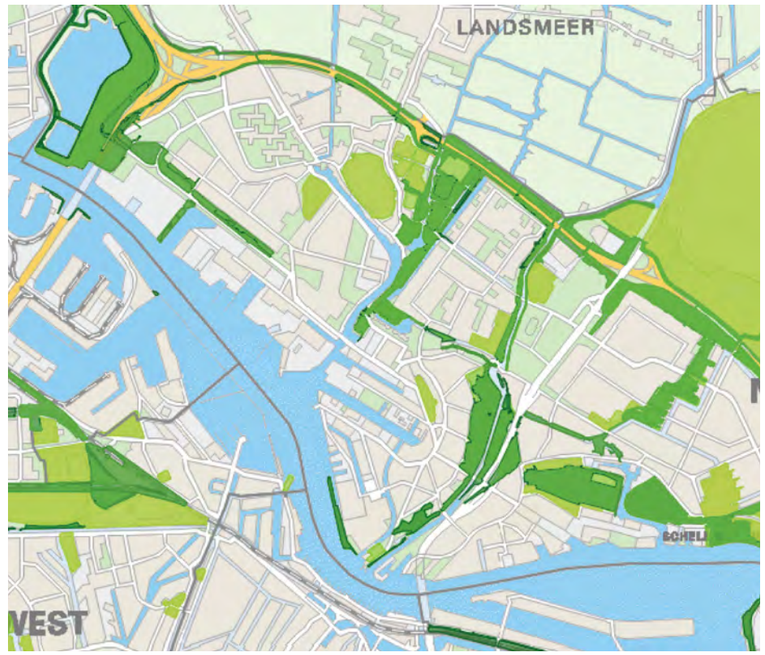
There are two different kinds of houseboats on the property that serve as offices for companies mostly working on ecology and environmental topics. There is an elevated path that runs throughout the site. Furthermore there are still unrealized plans to implement green roofs and islands. De Ceuvel consists of open spaces, shaded places and tree covered spaces.

Diversity

Building for BIODIVERSITY

Context Passport

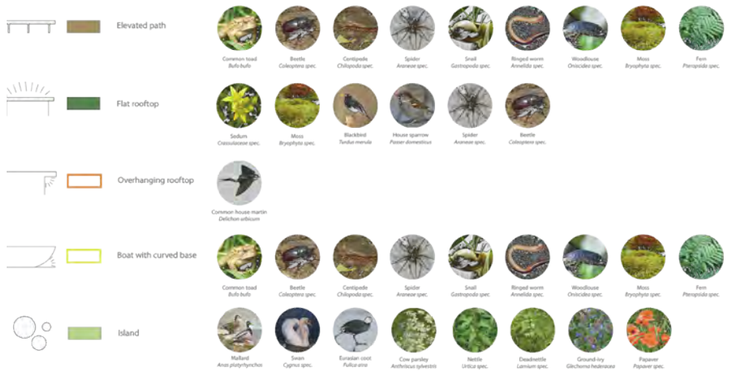
Analysis



This area is not well connected by land because it is surrounded by water. The water serves as a good corridor for animals and seeds to travel by. The area is surrounded by relatively low buildings, so seeds can also disperse by wind.

Connectivity

Building for BIODIVERSITY



The elevated path and the boats with a curved base provide shade, a moist micro habitat and shelter. The overhanging rooftops can be used by house martins to nest. Furthermore there is the Phytoremediation garden with trees and low vegetation that can be used for shelter, nesting places and foraging. The water is an imported module, because it is very biodiverse. The islands will increase the diversity of the area even more.

Modularity

Building for BIODIVERSITY

Context Passport

Analysis

Redundancy

Building for BIODIVERSITY

Reflection

Priorities

- Sustainability is a key objective. Therefore a Cleantech Playground is designed. It combines urban agriculture, small scale renewable energy technologies, biological water purification systems, urban food production,and several other components of healthy urban metabolism to produce food,purify water, generate energy, treat organic waste, provide education and inspiration for those wishing to adapt decentralized and renewable technologies
- The Ceuvel has a regenerative approach: leaving behind cleaner soils and water, producing rather than consuming resources. A phytoremediation garden is used to clean the polluted soil
- High on-site biological diversity
- Preservation of existing species habitats and migration corridors
- Consider animal welfare a top priority within all agricultural production systems

Results

In November 2014 De Ceuvel won the Arie Keppler award in the category 'Ruimtelijke ordening'. The jury about this project:

'A genius trick has been pulled to breath new live into this heavily polluted terrain. De Ceuvel is more than a bottom-up-project, the designer took control to realize a refined, urban strategy.'

Activities

- Paths and boats are not directly on the ground, this provides shady and moist micro climates and hiding places for lots of animals and plants
- To make the system measurable and transparent a network of sensors is installed throughout the sites to monitor the system's performance. Many areas are open for public visits where these technologies will be on display for all to see and understand
- The green roofs and islands still have to be realised

Partners

- Initiated by space&matter and Smeelearchitectuur
- The concept and the architectural plan for the site is developed by space&matter
- The phytoremediation plan is developed by Delva landscape architects in collaboration with the University of Ghent in Belgium
- Financial support from InnovatieNetwerk, a program of the Dutch ministry of economic affairs, to help translate the project's high sustainability ambitions into concrete, implementable technical design with a workable business case
- Metabolic Lab is overseeing the project.

Context Passport

Reflection

Costs

- Much of the funding for de Ceuvel project is coming directly from the Broedplaats (breeding ground: a special category of urban development in Amsterdam) subsidy, which amounts to a total of 25.000 euro's.
- Total phase 1: boats retrofitted off-site and the site prepared for the phytoremediation garden and infrastructure installation: material costs not over 5000 euro
- Phase 2: boats placed on the site and essential site infrastructure constructed including communal sanitation and wastewater treatment facilities as well as the walkways and phytoremediation garden: total costs around 10.000 euro's
- The total costs projected for the eco-upgrading of the houseboats and the construction of communal infrastructure on the Ceuvel site range from an estimated 15.000 euro to approximately 30.000 euro per boat

'A surprisingly fast return on investment of 2-3 years is possible in the best case scenarios we have calculated'

Risks

A risk is that the phytoremediation is not a success. Furthermore the plants have to be maintained because the area is so small. The paths and boats could be overgrown easily.

Measuring results

Only a select group of plants are suitable for growing on polluted soil and for phytoremediation. This limited amount of plant species will lead to a limited amount of animal species. There were plans of monitoring biodiversity, but results are not yet published.

Planning

Within a year all the plants were planted. The project will stay for 10 years, the biodiversity will change in that time and after that it will probably be decrease because of rebuilding. Green roofs and green islands are planned to be realised but it is uncertain when this will happen.

Building for BIODIVERSITY

Context

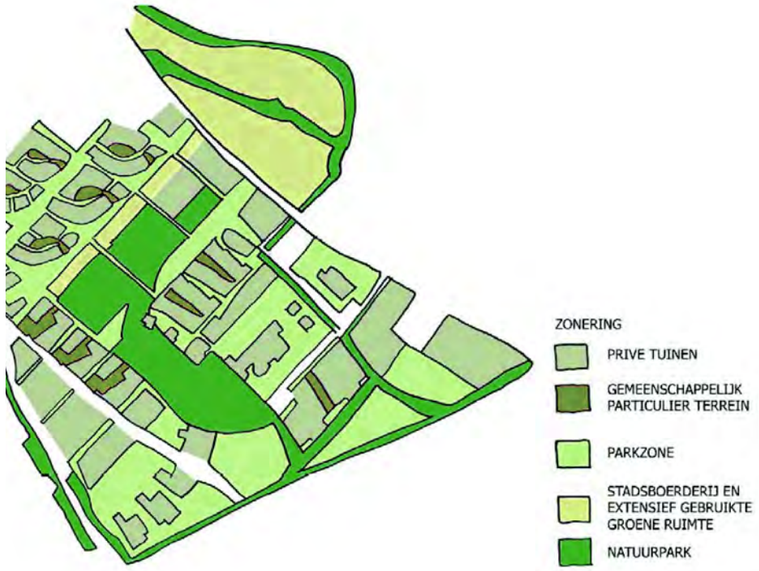
Passport

Project Name	E.V.A. Lanxmeer, Culemborg
Urbanity	Suburban
Dates	1999 – 2005
Clients	Culemborg Municipality
Project	Develop a housing area conform sustainable and biodiversity based values
Former land use	Farmland
Size	33 Ha
Designer	Joachim Eble, Hyco Verhaagen (Copijn)
Costs	–

Plan

Image

Building for BIODIVERSITY



Within the area of Lanxmeer 5 different zones have been appointment that define the typologies of the green areas.

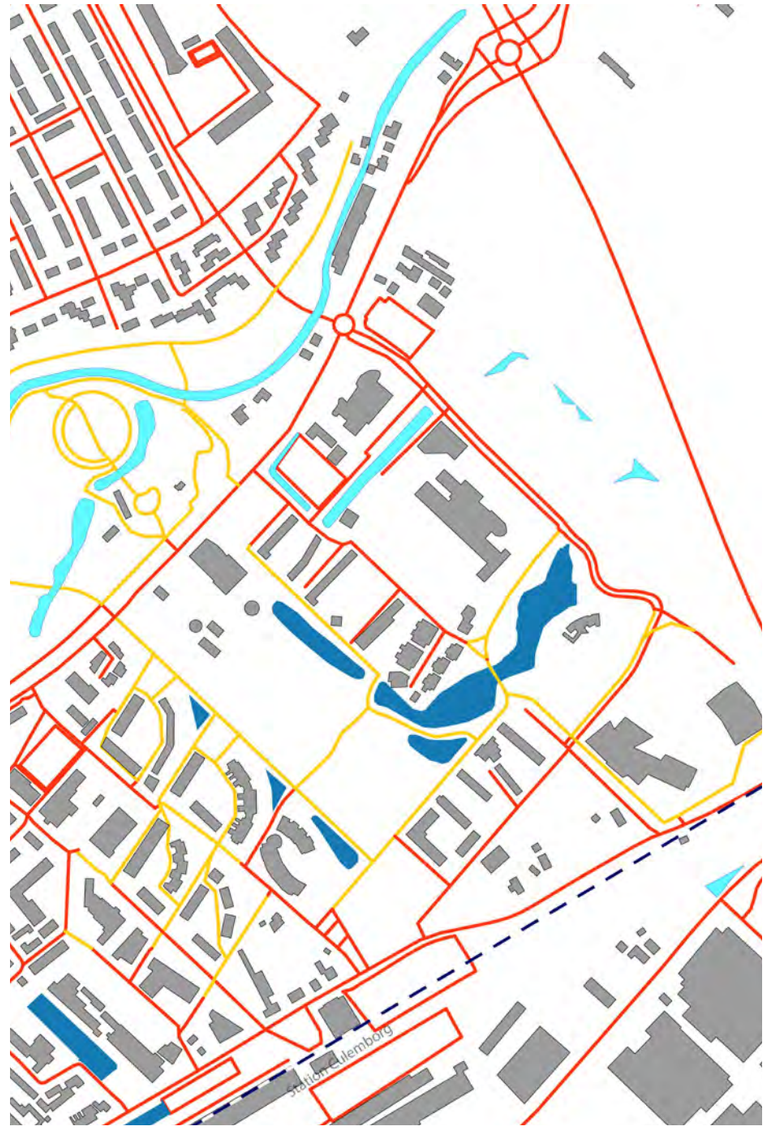
The zones consist of private gardens, communal courts, public spaces (park zone) and natural zones. To enhance the biodiversity in this area the mowing-schedule is deliberately planned to be different in each zone. Each zone therefore is always in a different state of succession in terms of plant biodiversity.

Diversity

Building for BIODIVERSITY

Context Passport

Analysis



The project area of EVA Lanxmeer knows a particular road-connection system. A network of small bike and pedestrian paths is connecting the houses, parks and gardens and keeping car traffic to a minimum.

Connectivity

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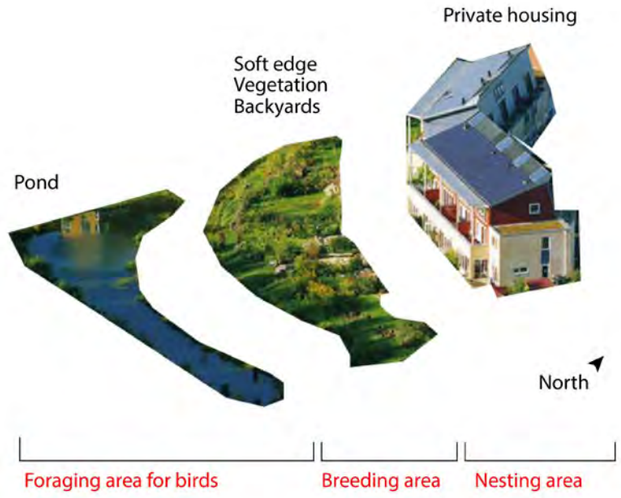
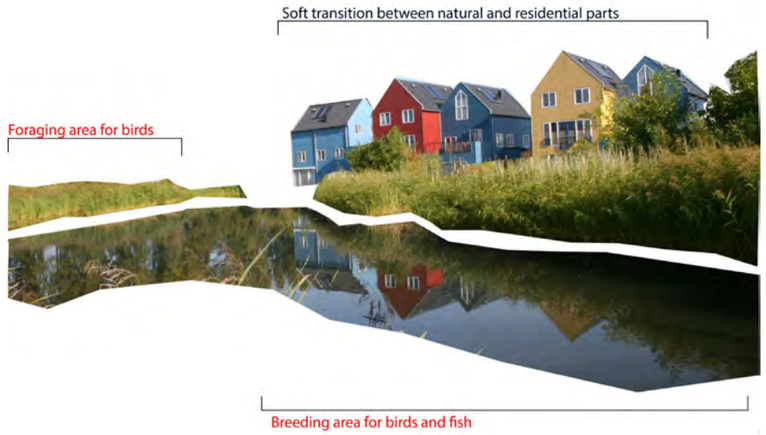


In Lanxmeer there are several situations that comply with the promotion of biodiversity. These modules are explained autonomously but are of course dependent on the area's context.

Most of the private housing is connected to backyards that are gradually connected to the natural parts of the area. In this case a soft connection between the land and the pond offers foraging and breeding opportunities for birds. The south orientated façade is therefore suitable for bird's nesting.

Where water meets land it is one of the most interesting connections for biodiversity. Soft edges in these situations are beneficial for waterbirds. In this case the reed also gives great foraging opportunities for birds as well as fish. The fact that the residential area is part of the situation makes this unique.



Modularity

Context Passport

Analysis

The areas has been constructed to have in the future some new species present in the area. The waterways have a vegetation that is growing, which means that in the future the spined loach and the European bitterling can occur there. The natterjack toad could also be present in the area as a pioneer species, but it can only survive in temporary pool where there are no fish present.

There are some opportunities for birds in the area, however they cannot be present on the sites where still construction needs to take place. Ground-mammals are not yet seen in the area, but species like weasels and stoats could eventually be present at the farm of Caetshage. Also some mouse species are expected to be there. Bat species have a high potential to come to the area, because it is a good foraging place. An inventarisation of the species has also been conducted from 1999-2009.

Redundancy

Building for BIODIVERSITY

Context Passport

Reflection

Priorities The area focuses on implementing native nature in the area, before it became a place for people to live. The different natural elements like the forest and ponds are therefore good enhancers for biodiversity

Results The results are mostly new birds that come into the area in the forest, but also around the houses where they have lots of opportunities to get food and shelter. Individuals can hang bird houses and help feeding animals.

Activities It is already a very biodiverse area, but to increase the diversity people can plant some seeds of different plants which can also attract new insects and bird species

Partners The stewards of community of the living area are mostly the ones who take care of this area. In the future they can implement companies who can give something to the area as supplies and also keep it biodiverse.

Building for BIODIVERSITY

Context Passport

Reflection

Costs Depends on which activities you do, but those individual initiatives are not that expensive and are easily to be done.

Risks You get an area that is very green and needs careful maintenance, because if you let it out of control, people can get hindered by it.

Measuring results By bird counting and inventorisations of all the species in the area.

Planning The process takes about a few decades to get the wished result.

Building for BIODIVERSITY

Context

Passport

Project Name — Groningen, Lewenborg

Urbanity — Sub-urban

Dates — 1924-2012

Clients — Municipality Groningen

Project — Create a multifunctional ecological and recreational wetland zone in a new urban development

Former land use — _

Size — 6 ha

Designer — Louis G. Le Roy

Costs — _

Plan

Image

Building for BIODIVERSITY

Le Roy was convinced that residents should be actively involved in the development of urban green and be allowed to change the landscape. It would bring people back into contact with nature. Only cooperation between the residents and nature would allow for a diverse, complex and rich environment. According to Le Roy nature was too complex to fully understand. This led him to a laissez-faire approach; both nature and residents were free to do whatever they wanted.

Le Roy plead for a mentality change; controlling nature had to be replaced by respecting nature. The spontaneity of natural selection and accident and the participation of the community were central to his theory and practice. In Lewenborg the diversity of nature is increased by creating as much micro climates as possible. Up till now residents have been very active in Lewenborg. They created a mosaic of small projects within the larger development.

Diversity

Building for BIODIVERSITY

Context Passport

Analysis

Le Roy proposed to create artificial ecosystems within cities and connect these with nature reserves outside the city. In this way nature could penetrate into the city centre and wildlife in urban areas would be encouraged. In Lewenborg this idea of creating green structures to increase biodiversity within cities is clearly visible.

The green public space on the level of the neighbourhood and the street is connected to the public parks and these parks are connected to the green structure around Lewenborg (a district park, a recreation park and a forest), which are all linked with the landscape outside the city.

Connectivity

Building for BIODIVERSITY

Analysis

Specific for Lewenborg are six ponds that comprise a large area of the public space. These ponds attract specific flora and fauna, like green frogs, common kingfishers and loosestrife. Another feature in Lewenborg is the great amount of houses with roof tiles. It gives the opportunity for common house martins to nest.

Across the area of Lewenborg a lot of small hills are created to increase biodiversity by means of different micro climates. Groups of trees spread over the neighbourhood give several birds and squirrels the opportunity to flock around the area. The trees also provide a lot of shadow, hiding places and food, so they are an imported element for biodiversity.

Modularity

Context Passport

Analysis

The ponds and the bigger parks are of course big sources of biodiversity so they get score 5. There is a lot of green public space throughout the neighbourhood. The green spaces in between the houses, near the park and far away from busy roads, get a level 4 redundancy because they are much smaller than the parks, but still good micro habitats. The green spaces near the park but a little less sheltered get a level 3 redundancy. The green space next to the roads get a redundancy of 2; they are good corridors but not very suitable for habitation.

The inhabitant initiatives are ranked as followed: the willow forest has a redundancy of 5 because it is situated in a big park and there is almost no human interference. The bee and butterfly garden, the penetum, and the orchard are level 3, because most plants are planted and not all of them are native but they provide shelter, food and nesting places for animals. The vegetable gardens have redundancy 2, because plants that were not planted will be seen as weeds and will be removed. Also the foraging of animals will be prevented as much as possible.

Lewenborg has two types of houses: with roof tiles and with flat roofs. Although flat roofs could be used to increase biodiversity, by turning them into green roofs, in Lewenborg this has not been done, so they don't have any redundancy score. Roof tiles offer nesting places for birds, which gives them a redundancy score of 1. Roofs and walls of houses surrounded by park and green space have a higher redundancy because there is a potential for more biodiversity.

Redundancy

Building for BIODIVERSITY

Reflection

Priorities

The priority of this neighbourhood is to let nature take its course and to motivate residents to participate and make adjustments and additions to the environment.

Results

A complex and diverse environment that is taken care of by the residents themselves. A landscape with lots of differences in relief, which led to a high diversity of plants and animals. In this area there are 60 people/hectare and 40 trees/hectare, so there is a relatively large amount of trees in this neighbourhood.

Activities

Create as many micro habitats as possible, suited to the wishes of the inhabitants and realised and maintained by the inhabitants. Keep the intervention in the development of nature as little as possible after the realisation of the projects. Organize workshops: beekeeping, ecological gardening etc. Provide residents with information about the area.

Partners

Louis le Roy initiated the project. He was appointed by the city of Groningen. Since the beginning in 1973 the initiatives of residents have played a big role in the development of Lewenborg. From 1978 till 1983 Martin Duisterwinkel has been the coordinator of Lewenborg. He was present on the site to help the resident realize their plans. Le Roys contract ended in 1983. From this time on the city of Groningen was responsible for the development in Groningen. Daily coordination and organization was taken care of by a Beheergroep, which later became the Foundation Le Roy areas.

Besides this foundation and the residents a lot of volunteers are involved. The bee garden was designed by Joke Bloksma and realized together with Geerle Wijma and with the help of volunteers. Volunteers are very actively involved in maintaining the bee garden. In the Le Roy house there is a course on urban beekeeping, organized by beekeepers. Also there are programs for the education of children, like the program on bees organized by beekeeper Sieni Pijper.

Context Passport

Reflection

Costs

–

Risks

The integration of wild nature in a residential area can lead to inaccessible and dangerous areas.

Measuring results

There are no exact measurements of biodiversity or success. People can think of projects they want to undertake and the Le Roy Stichting votes on them. If the inhabitants don't want to continue the work, another project can be proposed.

Planning

The involvement of Le Roy in the development of Lewenborg took 10 years (1973-1983). After that the residents continued to maintain and develop the area.

Building for BIODIVERSITY

International Projects

Context

Passport

Project Name — Renaissance Park, Tenessee

Urbanity — Urban

Dates — 2001 - 2006

Clients — River City Company for Chattanooga Downtown Redevelopment Corporation

Project — A riverfront project that transformed a post-industrial site known to be leaching contaminants into surface and groundwater resources into a celebrated public park that has been a catalyst for reinvestment in the city.

Former land use — Industrial Site

Size — 22-acre (Park) 129-acre (Total Waterfront)

Designer — Hargreaves Associates

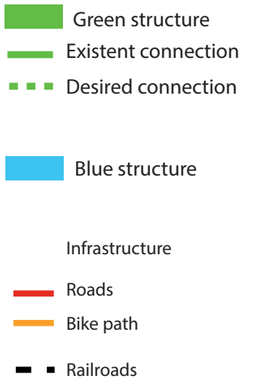
Costs — $8 million ($350,000 per acre)

Plan

Image

Building for BIODIVERSITY

Analysis



Renaissance Park provides a canvas for social engagement, healthy lifestyles, and environmental education, leveraging ecosystem services of preserved floodplain forest, meadow plantings and a constructed wetland that treats site storm water and increases floodplain storage capacity. The different landscape types present in the project turns the once industrial zone into a niche for biodiversity in the city.

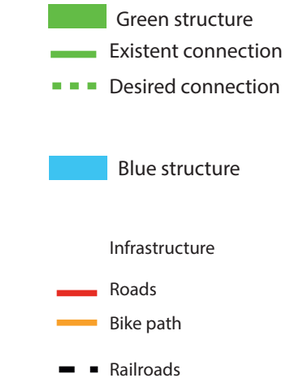
The Park hills can be climbed to get a scenic viewpoint of the city and walkways mimic historic features of the area. Other park amenities include a small amphitheatre, outdoor pavilion, seating along the wetland, historic markers and several public art installations.

Diversity

Building for BIODIVERSITY

Context Passport

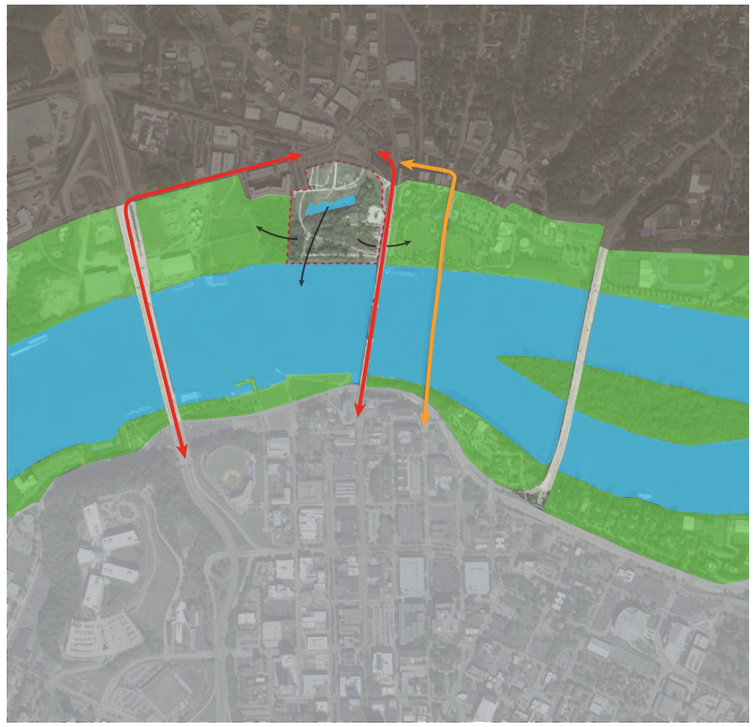
Analysis



The park is part of the 129-acre master plan development of waterfront on both the north and south sides of the Tennessee River. The walkways connect to the Tennessee Riverpark, a paved, 8-mile greenway that connects to the south shore. The east part of the Renaissance Park is annexed to the Coolidge Park, a wide open recreational area for the city, while in the south, both are connected to the Tennessee River, providing a large space for wildlife.

The area, once an industrial site, is now know by its sustainability approach, as well as its recreational and educational activities provided to the inhabitants. It is located to the North of the Tennessee River and downtown Chattanooga, accessible by two bridges: one for cars and another for pedestrians and cyclists.

Connectivity

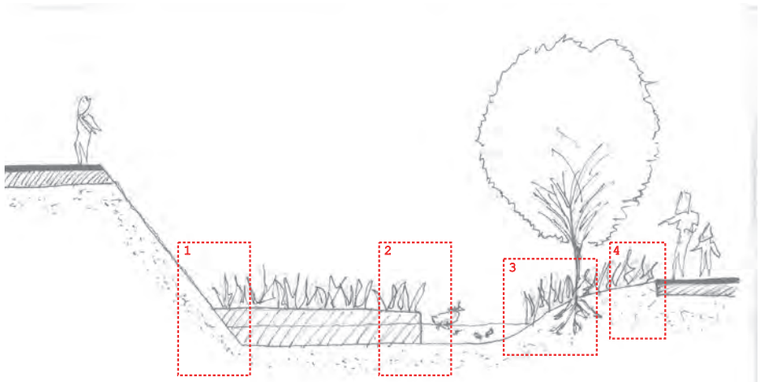


Building for BIODIVERSITY

The decontamination of the soil was the main issue for the design of the park. Its modules were created in order to make this process happens faster. 34,000 cubic yards of contaminated soils were excavated and redistributed to areas of the site that required fill. A vast analysis allowed the team to properly size the site's iconic landforms under which these contaminated soils were to be encapsulated, with an under drain system that keep it away from the sanitary sewer system.

This excavation and the creation of a wetland led to an increase of floodplain storage in the site. Runoff from within the park is directed to the constructed wetland that provides both storm water quantity and quality management benefits. Off-site storm water is periodically retained and treated by the wetland.

Grass hills, constructed wetland, flood forest, meadows and river plants are some of the project's modules that can increase the biodiversity in the area substantially.



Modularity

Context Passport

Analysis

An extensive stream restoration was not a design intent, but measures taken to stabilize the stream bank were implemented, which contributed to the improvement in the habitat score.

Native riparian species such as Switchcane (Arundinaria gigantean), Indian Woodoats (Chasmanthium latifolium), Winterberry Holly (Ilex verticillata), Virginia Sweetspire (Itea virginica) and Smooth Solomon's Seal (Polygonatum biflorum) were planted along the stream bank help to improve stream ecology.

With the diversity of landscape types and vast connectivity with the surrounding green and water structures shown in the maps above, the biodiversity levels of the site can be very high.

Redundancy

Building for BIODIVERSITY

Reflection

Priorities The main problem that has been dealt with was the heavily polluted soil, which was encapsulated. Now that the groundwater is clean and the soil isolated, they have created a possibility for biodiversity to increase.

Results One of the activities that could be done is to make sure there are good, safe corridors to other parks within the city so that the increase of biodiversity isn't local on one spot but throughout the whole city. Especially for a newly constructed area this could improve the biodiversity a lot.

Also, shop or restaurant owners nearby and of course also residents living nearby can be encouraged to keep the park tidy since it also benefits their business or increases their property value.

Activities See Results

Partners Shop owners, residents, restaurant owners. Really everybody that benefits from the park can be involved in actions to increase biodiversity.

Context Passport

Reflection

Costs The budget for the whole project was 8 million dollars. However, they saved over 1 million dollars in construction costs already by reusing something that was already there. Also, the maintenance labour cost decreased by 73% and the land value of the park increased by 821%.

Risks Eventually the park will not support the large variety of species, and they could die, which isn't a nice view for people visiting the park.

Measuring results Look at the diversity before and after the activities and you can get an indication how much it increased. Since the site was a industrial location, the biodiversity increased extensively.

Planning The project was finished in 2006, so since then the biodiversity had its chance to increase.

Building for BIODIVERSITY

Context

Passport

Project Name — Postdammer Platz, Berlin

Urbanity — Urban

Dates — 1993 - 2000

Clients — Daimler-Chrysler AG

Project — Renovation of the dormant wasteland of Postdamer Platz with a mixed-use development reconnecting areas of the city separated by the Berlin Wall. A series of urban pools were created to store rainwater and improve the urban climate.

Former land use — Historic Square / Touristic Spot

Size — 68,000m² (Site) / 350,000m² (Architecture)

Designer — Renzo Piano & Christoph Kohlbecker

Costs — _

Plan

Image

Building for BIODIVERSITY

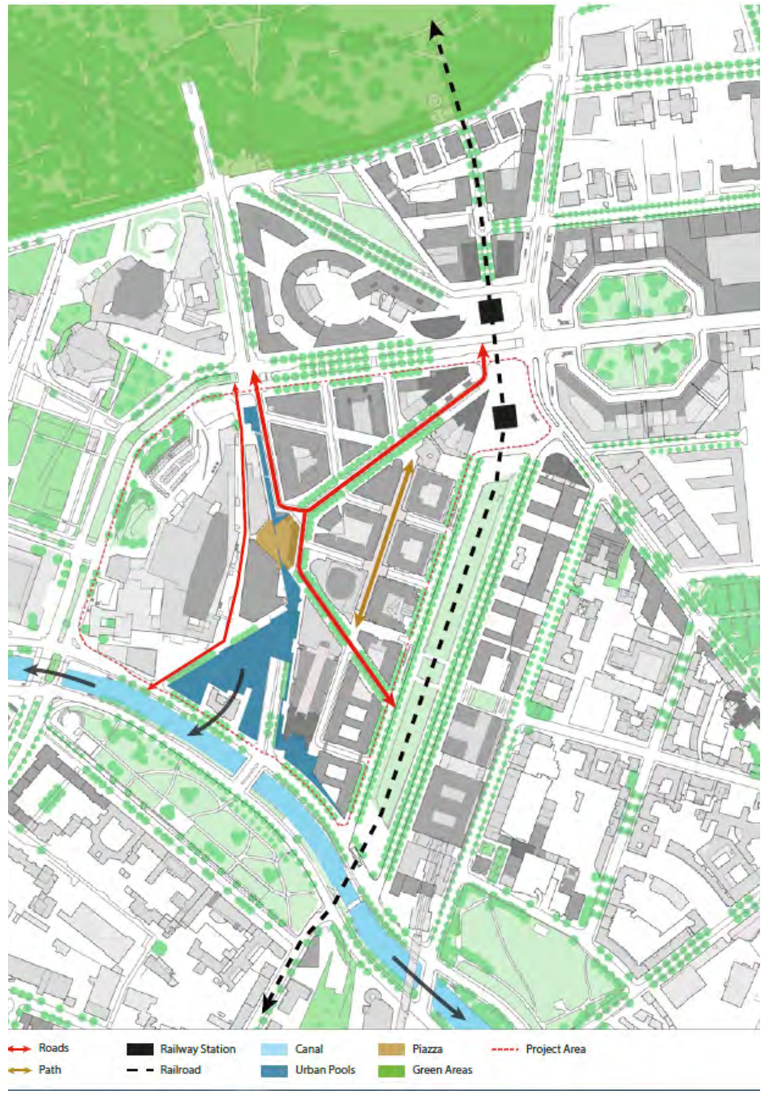
The project comprises a diversity of functions such as: the National Library, the Theatre & Casino, as well as shops, residences, offices, hotel and restaurants.

As of the landscape, the site was traversed by two rows of trees extending towards the south-west. The water system, fed entirely by rainwater, is composed of a narrow channel in the north, water features near the Piazza, the large main water feature and another small water feature in the south.

The water areas at Potsdamer Platz have developed into a dynamic system, a new home right in the heart of the capital for a variety of animals and plants. The setting up of natural purification biotopes has played a major role in promoting this resettlement.

Context Passport

Analysis

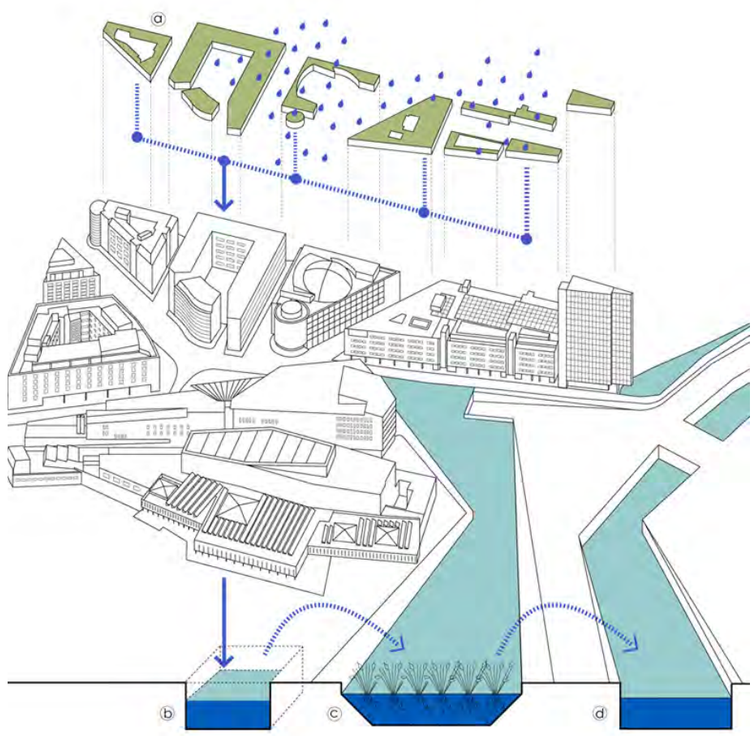


The project reconstructs a destroyed place, reconnecting areas of the city separated by the Berlin Wall. There is a large railway station that connects the place to the region. There is also bus and metro stations for the public transport throughout the city. The piazza is the gathering place of the project, that also contains an arcade that serves as a passage for the pedestrians.

The surrounding nature, greenery and bodies of water were exploited as connecting elements. The urban pools created are attached to one of the Canals that runs through the city, while the planted trees creates a virtual connection with the Tiergarten, the urban park at North of the area.

Connectivity

Building for BIODIVERSITY



The water system is the project's main module. It reuses water after its purification through infrastructures of natural purification. The rainwater that falls in the green roofs are stored in underground cisterns and filtered by vegetation to then be used in the bathrooms of the buildings and in the public space irrigation and water bodies. After that, the overflow of the water is discharged to the Landwehrkanal.

Different habitats are created by this system, such as the green roofs on tall buildings for birds and plants, the pond area with its peripheral greenery suitable for ducks and other waterfowl and also the various trees planted in the are that serves as a connection to the major green areas that surrounds the project.

Modularity

Building for BIODIVERSITY

Context Passport

Analysis

This project is an example of what we can do to increase biodiversity in a really dense urban area. The sustainability is its strongest premise, and with it comes the creation of different habitats for fauna & flora.

As shown in the map, the biodiversity appears in the project in different levels: green roofs and planted trees helps the connectivity of the site to the other green areas of the city, while the ponds creates an once nonexisting habitat for different plants and animals, and also connects to the main water bodies of the entire city.

Redundancy

Building for BIODIVERSITY

Context Passport

Reflection

Priorities The priority to enhance biodiversity is mainly to take safety measures for eventually living species. Since the pools are connected with large buffer tanks underneath the buildings and the water is used to flush toilets, good filtration systems must be in place.

Results The finished project enhanced biodiversity because before there were no urban pools, thus no water to be found in that area and animals that live in water.

Activities The formation of big pools of water, in combination with the reedbeds and other flora is perfect way to attract other flora and also fauna, thus enhancing the biodiversity. Regulation on species could enhance biodiversity even more.

Partners The offices that make use of the drainage system should be obliged to at least donate or clean the pools once in a while. Also others that benefit from it from a close range or just individuals that want to help out can contribute to the developing of the area and enhancing the biodiversity.

Building for BIODIVERSITY

Context Passport

Reflection

Costs

Risks

Measuring results

Planning

Building for BIODIVERSITY

Context

Passport

Project Name

The Cheonggyecheon River Restoration Project, Seoul, South Korea

Urbanity — Urban

Dates — 2000-2005

Clients — Seoul Metropolitan Government

Project — Restore the River stream and create a new public space for the benefit of the neighbourhood

Former land use — Transportation

Size — 5.84 km long

Designer — SeoAhn Total Landscape

Costs — ~$380 million USD - Total project; ~$120 million USD - Landscape portion

Plan

Image

Building for BIODIVERSITY

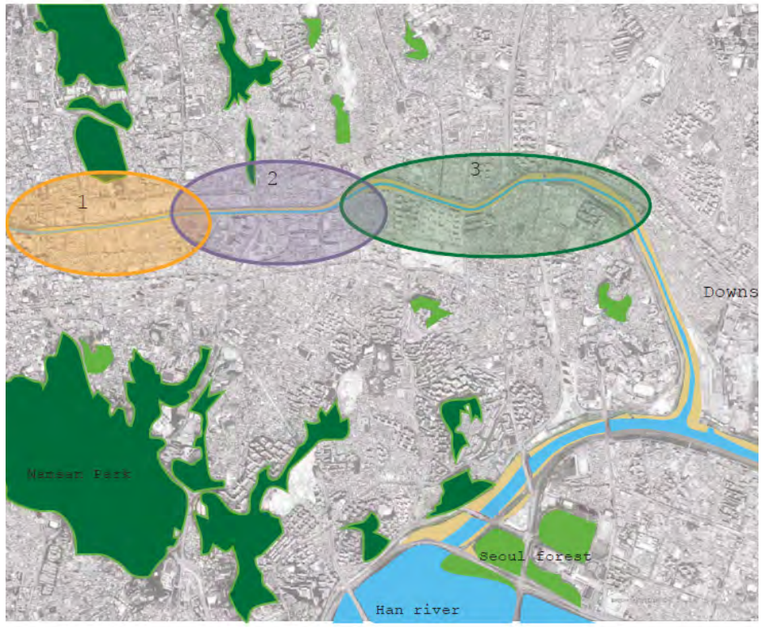
The project increased overall biodiversity by 639% between the pre-restoration work in 2003 and the end of 2008 with the number of plant species increasing from 62 to 308, fish species from 4 to 25, bird species from 6 to 36, aquatic invertebrate species from 5 to 53, insect species from 15 to 192, mammals from 2 to 4, and amphibians from 4 to 8.

Native willow swamps, shallows and marshes were constructed in 29 different locations along the restoration, creating habitat for fish, amphibians, insects, and birds. A fish spawning ground was created where the Cheonggyecheon and Jungnangcheon meet.

Section 1 : History
Start of the water cycle begins at the Cheong-Gye Plaza waterfall

Section 2 : Culture+Urban
Encourages people to use the site for special events, especially in the evening

Section 3 : Nature
Emphasizes the user experience from a closer perspective of nature



Diversity

Building for BIODIVERSITY

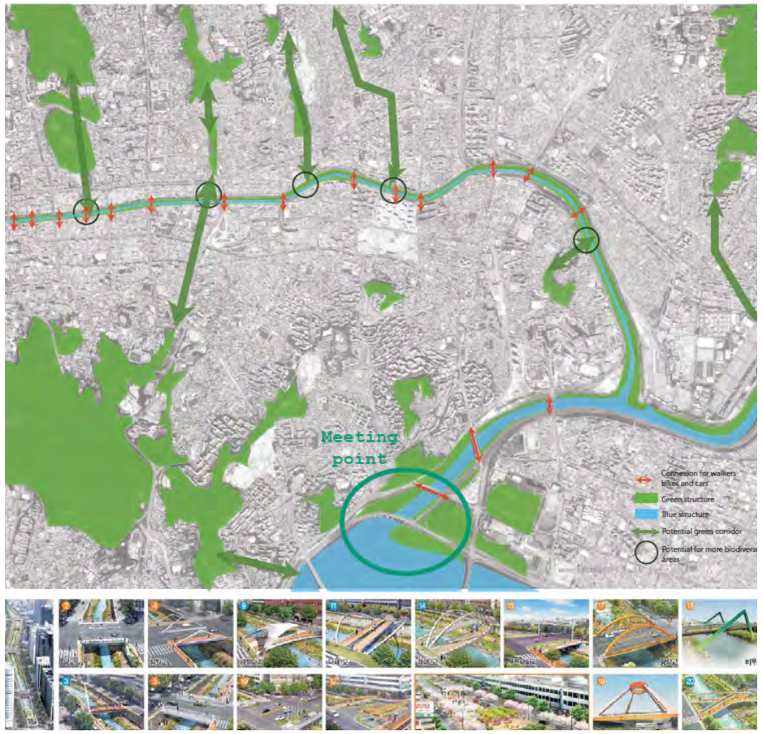
Context Passport

Analysis

The restoration created a 3.6-mile continuous east-west green corridor for pedestrians, bicyclists, and wildlife.

Connectivity within the greater transportation network was improved by adding 22 bridges (12 pedestrian, 10 for automobiles and pedestrians), connections with 5 nearby subway lines, and 18 bus lines serving the neighbourhood.

The restoration reestablished connections between waterways. The Cheonggyecheon eventually runs into Jungraechon stream, which leads out into the Han River. The wetlands at their meeting point are designated as an ecological conservation area.



Connectivity

Building for BIODIVERSITY

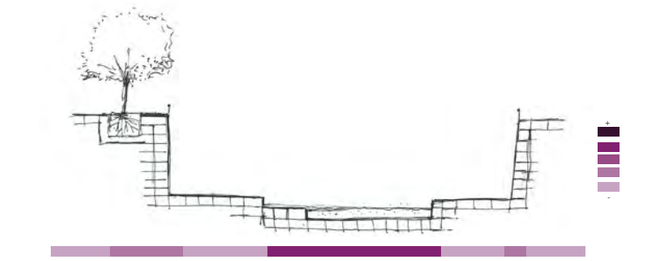
Analysis

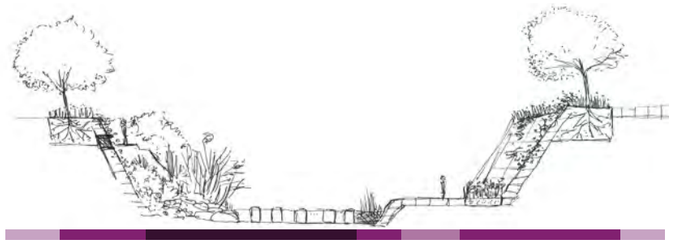
Important modules in the area that are present are the rocks along the quay between which vegetation can grow freely, both being a habitat for flora and being a refuge for fauna. The large amount of bridges present can give housing to bird species. Also the vegetation on the shore can give housing to insects, mammals and birds.

The most important modules however are mentioned as points of improvement by the Seoul Development Institute which consist of the re-placing of granite with vegetated low flow revetment to increase habitat area, the instalment of spur dykes to deepen water and decrease velocity to improve fish habitat, the creating of alternate detour channels for fish to encourage migration and the creation of vegetated filter strips to reduce contaminants entering the stream from motorway runoff.

Modularity

Analysis





Even though multiple sources mention an increase in overall species diversity of 639% between pre-restoration work in 2003 to the completion in 2008, literature about the species composition cannot be found. It is said however that the number of plant species increased from 62 to 308; fish species from 4 to 25; bird species from 6 to 36; insect species from 15 to 192; mammals from 2 to 4; and amphibians from 4 to 8.

The reliability of these numbers however can't be checked, but the created diversity in habitat and continuity in water flow make it likely to assume an increase in species has occurred. In the future, a factor that most likely will change the species composition will be the completion of the connection to the Han river above. Key factors having so called back-up species are connectivity and habitat diversity, both described in previous sub texts, and both in a good state in the area.

Redundancy

Reflection

Priorities The main prior activity that induced the increase in species has been the complete transformation of the landscape. On the other hand, the reduction of pollution has been necessary to reach a safe environment for the large amount of species. Connectivity and creation of micro habitats has been another priority.

Results See measuring results

Activities –

Partners It seems here that the top down regulation mentioned before didn't have any need for partners or stewardship to reach a appreciated result. This is most likely caused by the fact that before the restoration, the area was already very under appreciated.

Partners: Cheonggyecheon Restoration Centre, Seoul Development Institute, Cheonggyecheon Restoration Citizens Committee, Seoul Metropolitan Government

Context Passport

Reflection

Costs –

Risks In this case no downsides have been reported

Measuring results Had the Cheonggyecheon Expressway remained, it would have required 100 billion won ($90 million USD) and 3 years of repairs to secure the safety of the aging structure. While these costs would be approximately 289 billion won ($260 million USD) less than the cost of the Cheonggyecheon Stream Restoration, the restoration has served as a catalyst for an estimated 22 trillion won ($1.98 billion USD) worth of capital investment in Cheonggyecheon area redevelopment that would not have otherwise been invested.

Here we see a large increase in the number of species as mentioned before, which comes from a complete top down regulated plan. However, it brought such an increase in the appreciation of the area, that the fact that it was top down regulated doesn't seem to be a problem. Results benefit nature and people.

Planning The numbers mentioned before were achieved in a timespan of years

Building for BIODIVERSITY

Context

Passport

Project Name — Green Belt Victoria-Gasteiz, Spain

Urbanity — Suburban

Dates — 1992-2010

Clients — Vitoria-Gasteiz City

Project — Restoration plan and environmental recovery of the periphery of the city through the creation of a natural continuum around the city articulated by various enclaves of high ecological and landscape value. It is a set of peri-urban parks of high ecological value strategically linked by eco-recreational corridors.

Former land use — physical and social barrier between the urban environment and rural areas adjacent

Size — 42 Km long 751 Ha Area

Designer — Centro de Estudios Ambientales

Costs — _

Plan

Image

Building for BIODIVERSITY

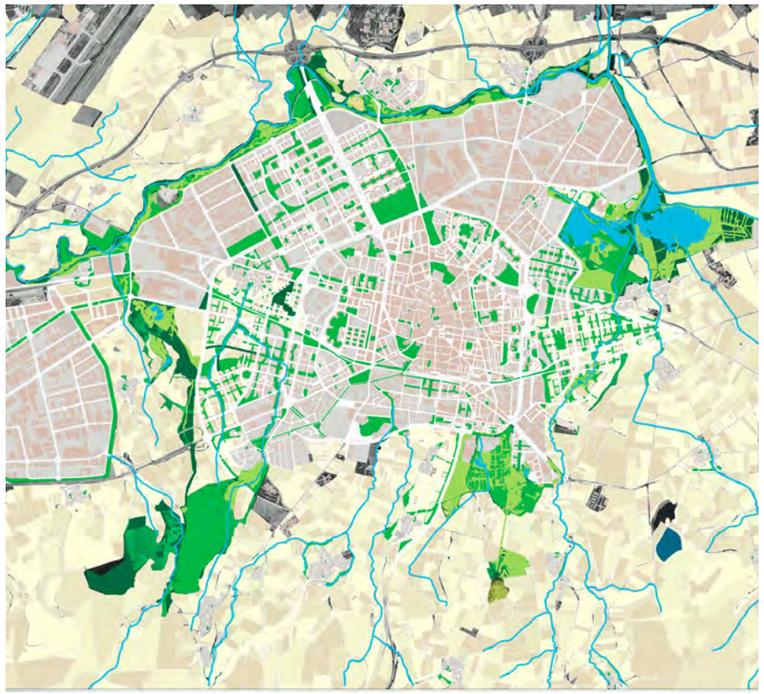
Analysis

-Species
The green belt is very rich in animals. About 300 breeding pairs of aquatic birds, 2000 specimens of wintering species and some animal species of extraordinary interest such as the European mink, the bittern and the agile frog are present in the area. Deer were artificially introduced to graze on the vegetation. Invasive or harmful species are removed.

-Social activities
The Environmental Studies Centre provides activities like workshops, trainings, photography exhibitions and education programs for different groups of people. They also work on ecological gardening and have a very complete library. There is a lot of tourism in this area, complete with walking routes and bird observatories.

-Historical diversity
Green belts are usually created in the space that remains when the medieval walls of a city are demolished. Their purpose is to separate the suburban areas and the central city, create recreation areas and prevent urban sprawl. This is also true for the green belt of Vitoria-Gasteiz. However, this green belt differs from most others, because it also has a function for the protection of biodiversity.

-Habitat diversity
The landscape around the city is very diverse. It is surrounded by the Zadorra river and the Vitoria mountains. Vitoria-Gasteiz is located where the Mediterranean and Atlantic biogeographical regions meet, resulting in lots of biodiversity. The many different habitat types include agricultural mosaics, riverside woodland, grassland areas, wetlands, isolated woods and extensive forest masses.



Diversity

Building for BIODIVERSITY

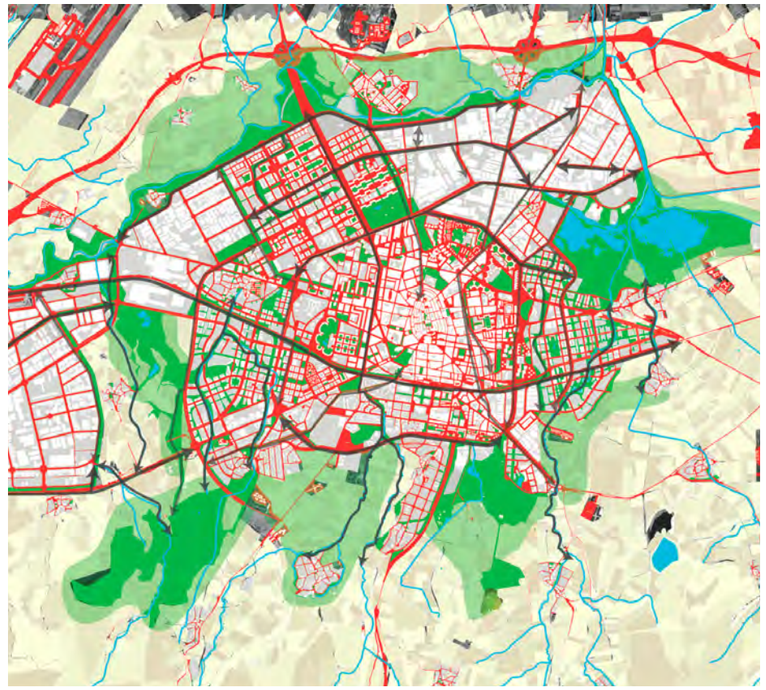
Context Passport

Analysis

Other Green Belts
This green belt is not unique in its design. There are more nature areas like it, for example the Greenbelt of Ontario, Ottawa, the Netherlands' Green Heart, and the Copenhagen Finger Plan.

-Connections in the belt itself
The areas in the green belt are not only connected to each other, forming a big circle, but also to the river Zadorra. These connections are made with larger parks and small corridors of semi-natural habitat.

-Socially
The green belt provides activities for people from the city itself and elsewhere. This connects people with each other, improving the social structure.



Connectivity

Building for BIODIVERSITY

Context Passport

Analysis

Urban Sphere

Peri-urban Sphere

Rural, Natural Sphere

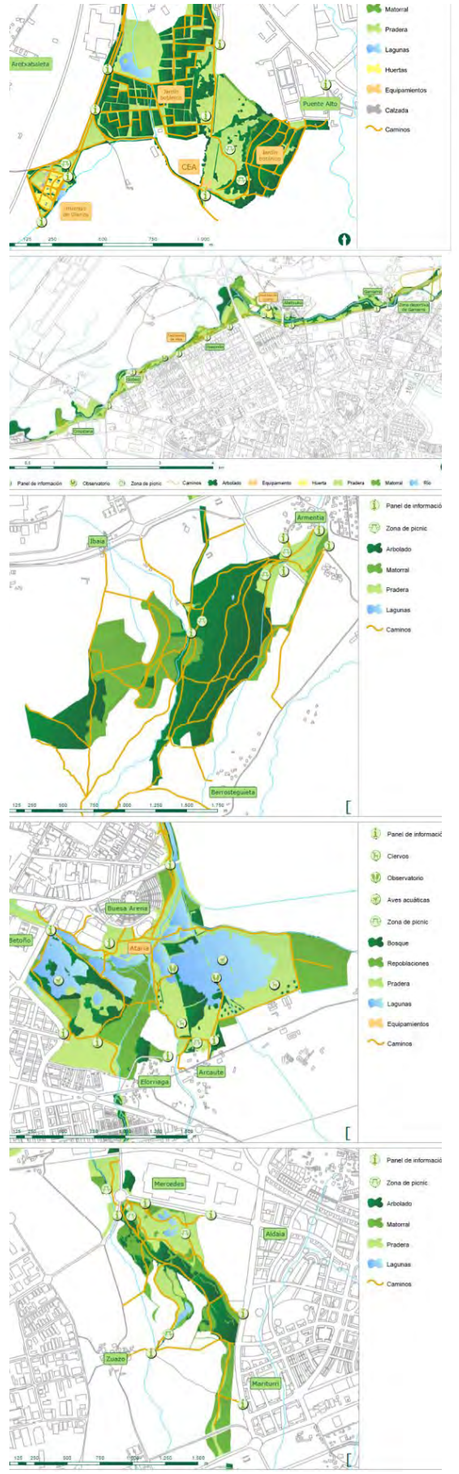
This project is based on a city level, both on the size and the stewardship. The belt is made up from smaller parks and corridors that interact. The belt is 35 km long at the moment, and will be 1000 ha when finished.

Modularity

Building for BIODIVERSITY

Context Passport

Analysis



Because of the connection, the population sizes of species can increase and they are allowed to migrate, making sure they will be there in the future.

Redundancy

Building for BIODIVERSITY

Reflection

Priorities The priorities of this project were not only creating a refuge for nature, but also a place where the residents have access to a green place where they can recreate.

Results The result of this project is a large refuge area for several vulnerable species, while it also serves as an attraction for tourists and a way of bringing the citizens together.

Activities The result of this project is a large refuge area for several vulnerable species, while it also serves as an attraction for tourists and a way of bringing the citizens together.

Partners The local government works together with the local tourist office and local initiatives of residents.

Context Passport

Reflection

Costs Costs were kept to a minimum by choosing low maintenance furniture. Most lands were cheap because they were either under public ownership or unsuitable to build on.

Risks The risks, for example nuisances by animals, are not very big.

Measuring results Results are measured by counting the amount of animals and species in the area.

Planning Planning started with the proposal in the eighties and continues today.

Building for BIODIVERSITY

Case Study

Introduction

Cruquius is a former industrial area in the east of the city of Amsterdam. Residences and offices, next to the industrial buildings that remain, occupy it today. It is a peninsula, surrounded by water with all kind of flows going in and outside the area.

The extensive surface of Cruquius is full of missing opportunities for new spaces and diverse relationships. Many unmaintained areas are today shelter for animals that come periodically or stay all year long, depending on the specie.

Context

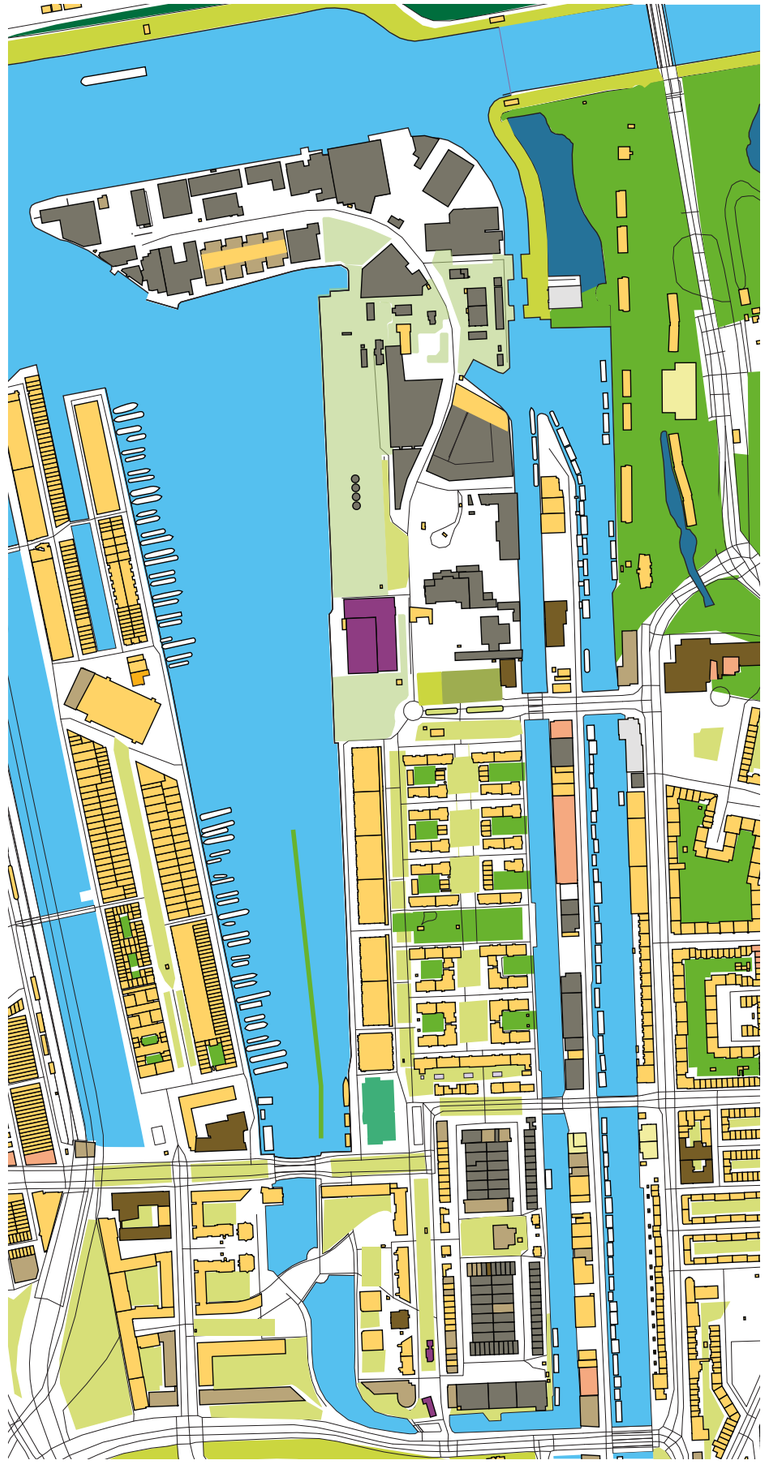
Passport

Analysis

- detailhandel
- horeca
- leisure
- Housing
- Business
- Offices
- Public buildings
- Education

Landscapes uses

- Typical urban planting
- Forest
- River canal
- Swamp
- Grassland
- Flower garden
- Communal agriculture
- Public park
- Pond
- Hardscape



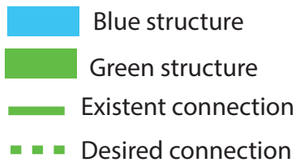
Cruquius area is full of diversity from different perspectives. The built and natural environments include many features that make it a rich and attractive area for developers and investors.
Even when today there is a bigger concentration of industrial buildings in the area, offices have been wining space among the years and, in the future, more residences will be constructed in several zones of the peninsula.

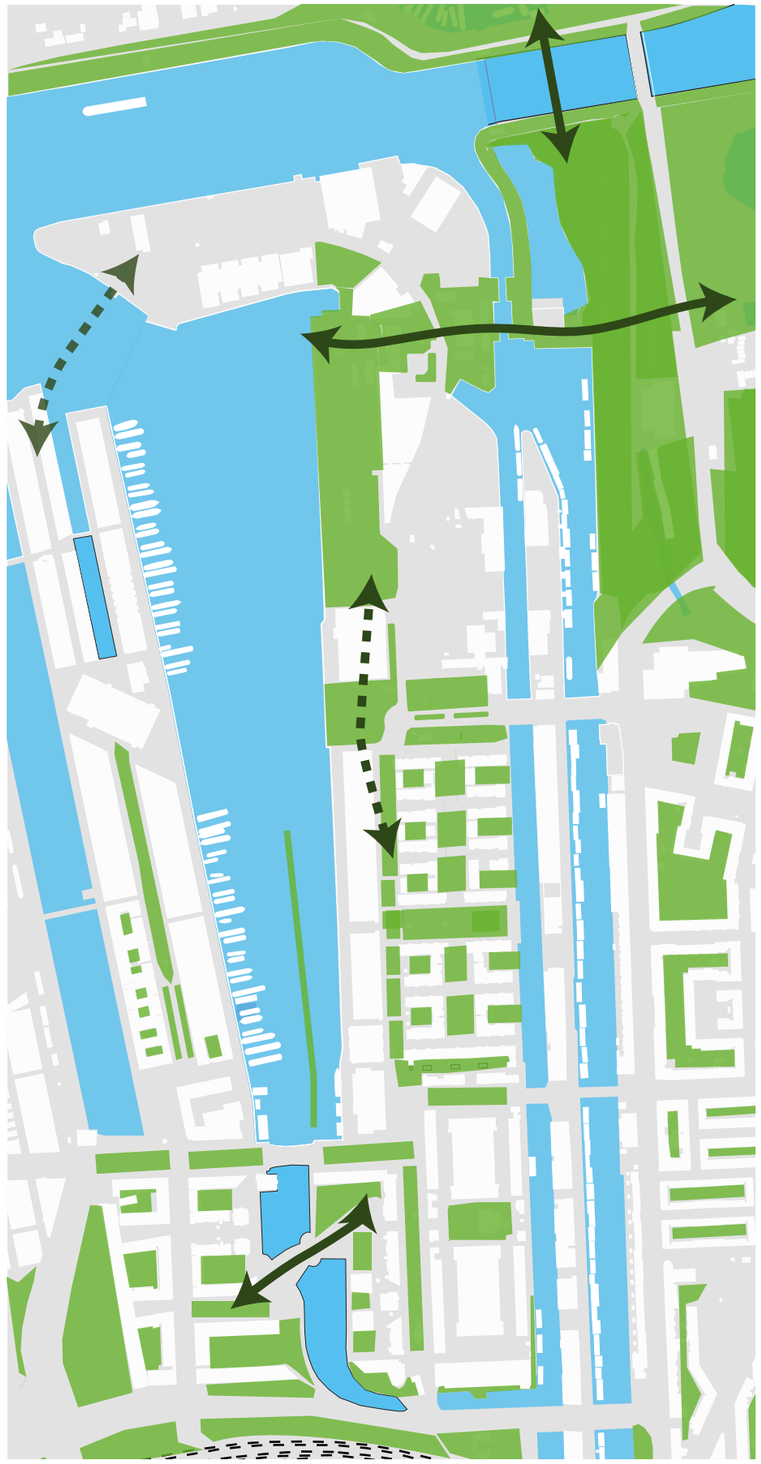
By the other hand, open and nature spaces are also present all over Cruquius. A communal agricultural garden invites residents to come together and share their interest in nature, but also a wasteland is creating opportunities for different species of animals and plants.

Diversity

Building for BIODIVERSITY

Analysis



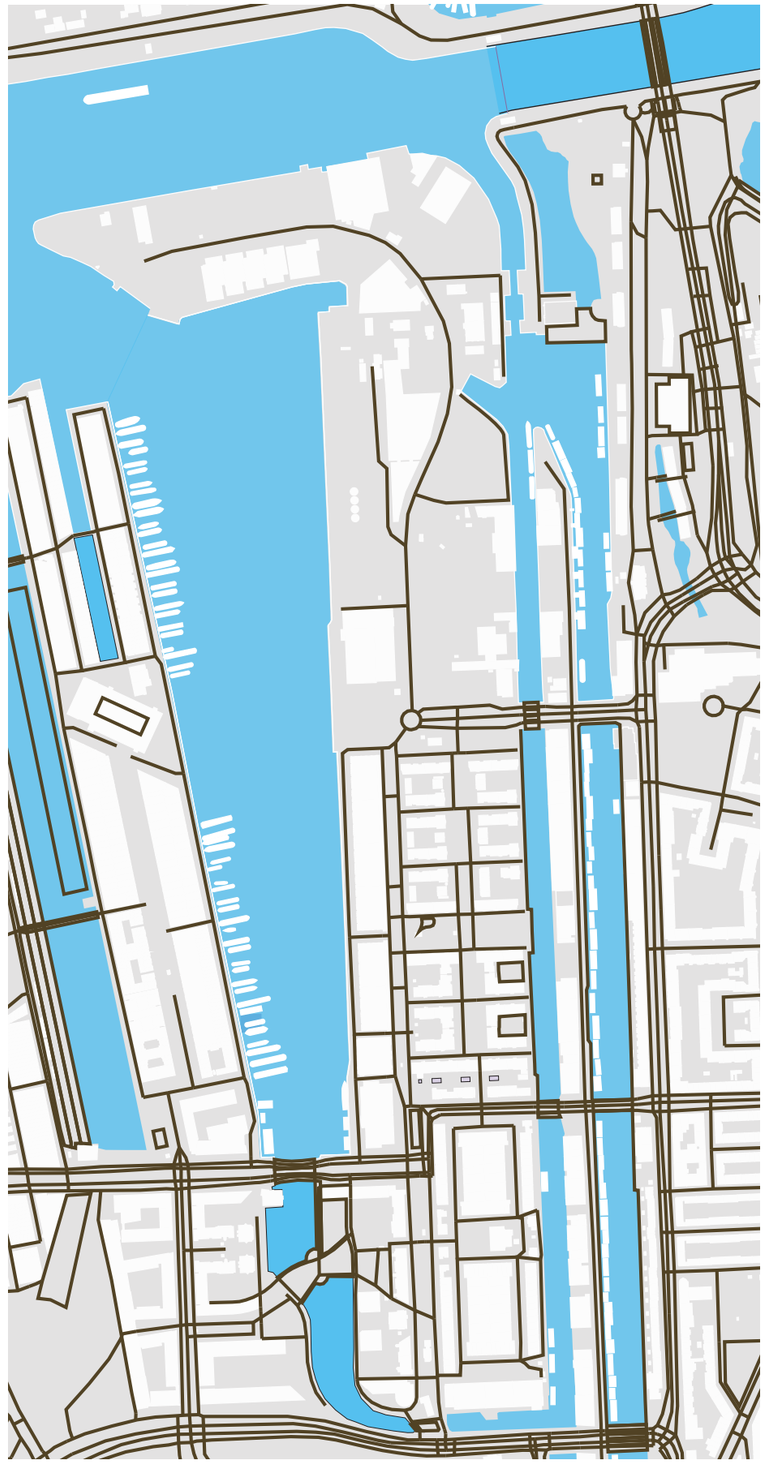


The notion of connectivity can be analysed in an urban or local scale. By example, Cruquius is particularly well connected with the blue and green structure of the city of Amsterdam. Its location allows different species to commute in the site and also include it in their daily movements. In a more local space, there are some connections between the existent open spaces, but also some potentially good that is still a promise.

By the other hand, traffic flows also commute in the area, bringing together visitors, residents, workers, etc. Even when vehicles can easily access Cruquius, it is not as easy for bikes and pedestrians. These users need a better and more secure way to connect on the site. It is also necessary to connect the existent functions with the surroundings, and especially important to bring the community together in common, comfortable spaces.

Context Passport

Analysis



Connectivity

Building for BIODIVERSITY

Analysis

Infrastructure

Roads

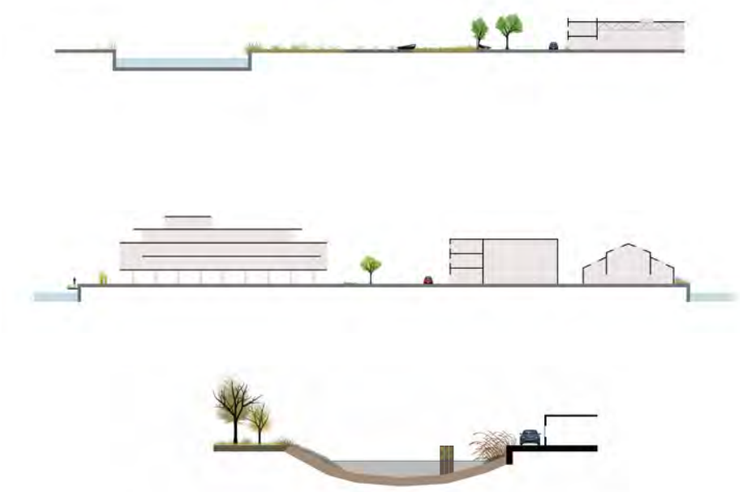
Bike path

Railroads

Connectivity

Context Passport

Analysis



Modularity in Cruquius is present in many scales and different approaches. The different ways of connecting with the water, even with hard quays or soft organic borders are modules present in the area. Contemporary and historic buildings also provide several levels of permeability for biodiversity that could be recognized as modules.

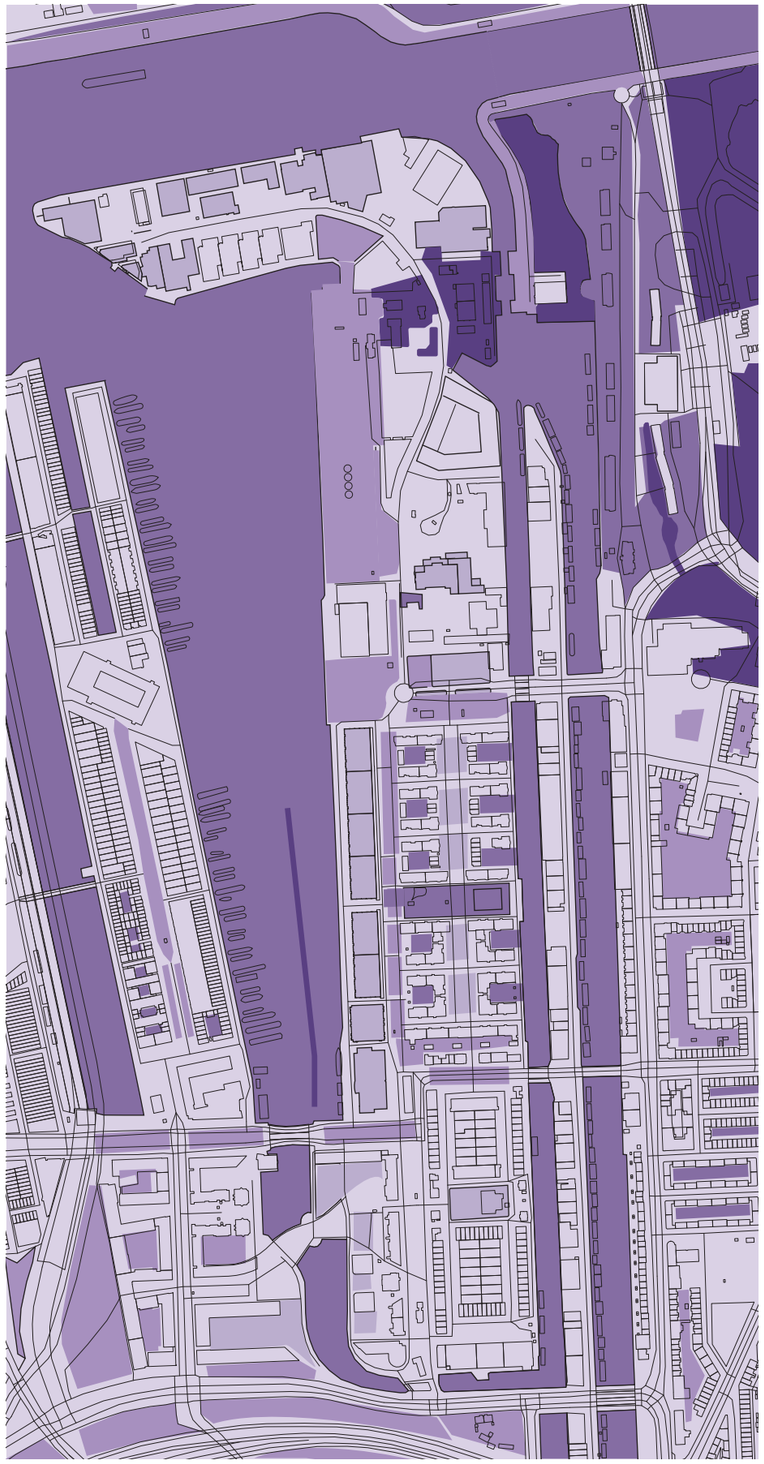
The communal vegetable garden is also a feature that deserves to be studied and repeated in several areas of the future development because is not only valuable for species and green areas, but also for making the community member come together and strengthens the sense belonging to the place.

Modularity

Building for BIODIVERSITY

Analysis

–



+

Even when the whole area of Cruquius can not be characterized as redundant, there are some spaces that are potentially relevant, and could be enhanced with some design decisions in future developments.

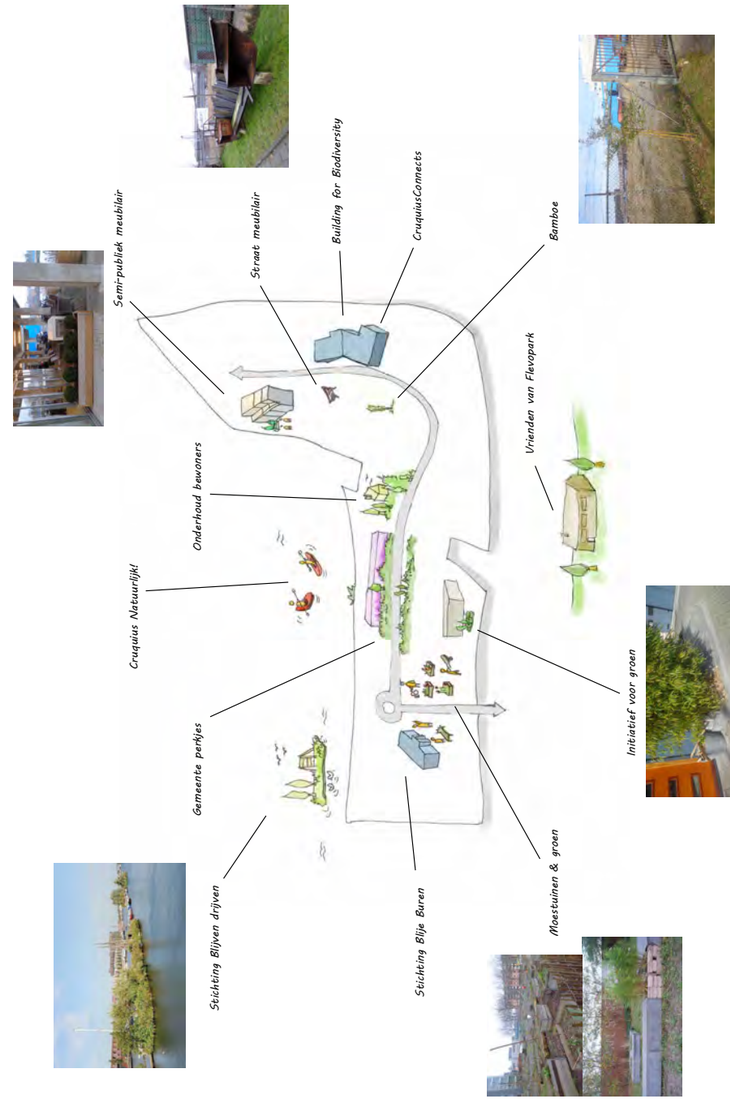
The centre of the peninsula presents a concentration of elements that promote biodiversity: historical buildings, next to unmaintained open areas and soft water borders can be considered as the biodiverse heart of today's Cruquius. Conveniently, this heart has a great proximity with the Flevopark, making it easier for nature to connect the richness of both spaces.

Redundancy

Building for BIODIVERSITY

Context Passport

Analysis



At the moment Cruquiuseiland is divided in two parts, the neighbourhood and the industrial part. Within the neighbourhood there are already many initiatives to bring people together on social level. This is a very strong base towards stewardship for biodiversity.

As the industrial area slowly develops into a mixed use urban environment it is important that all new inhabitants/ workers are aware of the importance of biodiversity.

Stewartship

Building for BIODIVERSITY

COLOPHON

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