



26 / 09 / 2021

Bygg architecture & design

What If Lab - Achtse baan - report

Achtse Baan

a concept to improve the mobility and liveability of a dutch suburban neighborhood

Bygg architecture and design was invited by the embassy of mobility to reflect the concept of a '15-minute city' on the Achtste Barrier, a suburban neighborhood in the north of Eindhoven.

The potential of the 15-min-city is to create a nucleus within a city that provides all essential services within reasonable range and therefore reduces the long travel that we make on a daily basis. 15min city creates a new scale within the city that not only provides housing but also services, a city within a city.

During the development of the project we find the 15-minute city idea resonates in very congested cities like Paris and Barcelona. For our projection on dutch suburban neighborhoods, we needed a wider scope and a more holistic approach to fit the cultural and urban landscape.

We introduce the Achtste baan, a project where we redefine and rethink the way we plan suburban neighborhoods, to improve livability, climate adaptivity and community resilience.

Defining a 'new' vision or proposing any radical

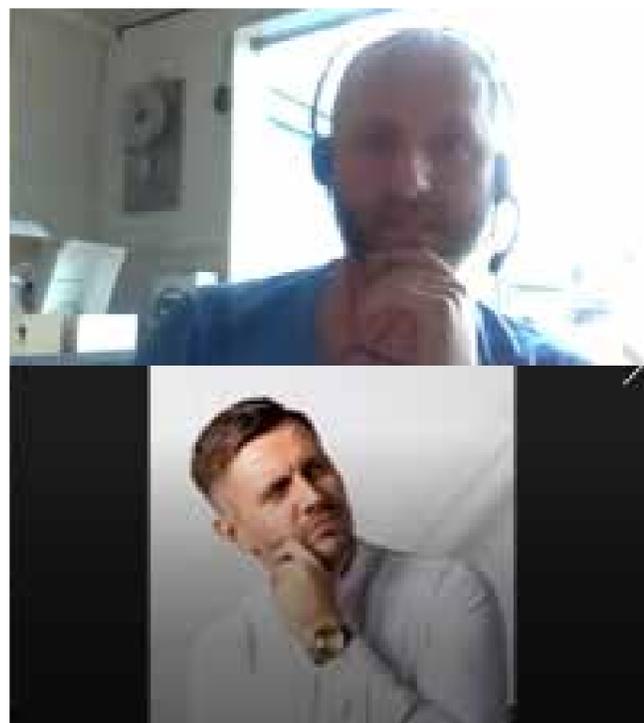
change in an existing neighborhood is a challenging idea and implementation, maybe even shear impossible thinking about all the actors involved. To keep people receptive to new ideas we choose an abstraction level for our project that balances between feasible and yet remote enough not to be imposing. This way we keep the discussion and imagination going with the recipients of the proposed new ideas.

We dubbed the project 'de Achtse Baan' which is a 'samenvoeging between the main ring shaped artery in the neighborhood the "Franse baan" and the name of the neighborhood or historical reference to the area "Acht"

"The idea of the future, pregnant with an infinity of possibilities, is thus more fruitful than the future itself, and this is why we find more charm in hope than in possession, in dreams than in reality."

Henri Bergson, Time and Free Will

Informative meetings



We have been meeting various experts during various sessions. Among the presentations we met Isabelle Putseys and Maarten van der Leek from Sweco, Europe's leading architecture and engineering consultancy, presenting several studies they have performed for Sweco Urban Insights, which are related to urban planning of the future and the underlying question of the 15-minute city that we address in this experiment.

Tim Daniëls from Brainport Development shared the goals and expectations of the Lab and implementation possibilities within Brainport region.

designer and art director of this Lab Marijn van der Poll. Talked us through the briefing and Mel Heiligers, founder and director of Meet4Research, informed us about his approach about experience research / evidence-based design

Meeting the neighbourhood

more informative meetings



To delve into the project we planned a meeting with the neighborhood representatives in the community center of the Achtse Barrier. We met with the board of the community center and the neighborhood watch. We interviewed them and informed ourselves about the dynamics in the neighborhood.

We found the neighborhood organisation was strong and well organised. Most remarkable was the demographics being a bit “gray” lots of young families moved in when the area was built in the 80’s. The children from those generations moved out of the house.



We planned an interview session with the inhabitants at the yearly FinFon market. A garage sale-like market that started as a small initiative long many years ago.

We interviewed inhabitants during the FinFon market and also introduced them with our ideas. We were particularly interested in what their travel routines were and let them map these out on a blank map of the area. We also questioned if they miss services or have other wishes for the neighborhood.



From the answers we received, remarkable was the amount of wishes for the old milk man or postman, that would have the time for a little chat. The anonymity of today, was multiple times brought as a negative aspect. When asking about their last trips and journeys we found the car was not the primary mode of transport, but we also found almost all had a car nevertheless. With a few interviewed we found the need for the car was negotiable.

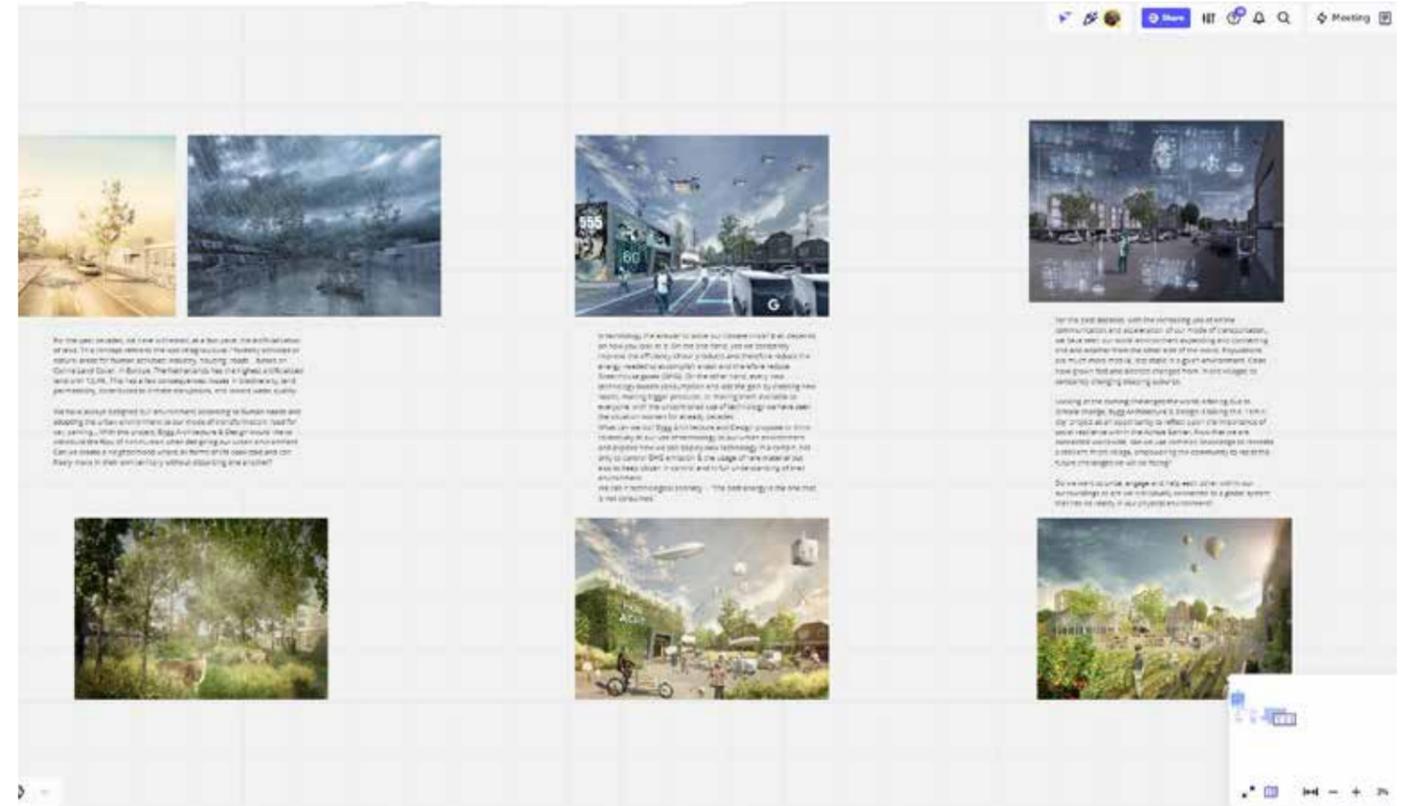
Research and strategy

miro link available on request

When looking at the future of living and reflecting on the way we as society organise our life at the moment, it's difficult to close our eyes for sustainable challenges. We would like to rethink mobility as a whole and not consider only the traffic related movements, but consider social movements, movements for nature and animals.

In the core of the -15min city project in Paris it's questioning and challenging the reason to move, rather than make the current movements more efficient. By analysing this and offering different services and relocating them, the movements are minimized by itself and this automatically leads to a different urban planning and design approach.

Within our project we wanted to stay through that concept and we connected this to the three main themes to explore. Wild nature, technological sobriety and social resilience. With Wild nature we look for the movements in nature and approach nature as integral part of our ecosystem rather than decoration. With technological sobriety we conceptually address the same concept in the 15-min idea. Instead of making more highway's let's look at what makes us want to move. Instead of solving congestion with self-driving cars, think about the destinations we are going to.

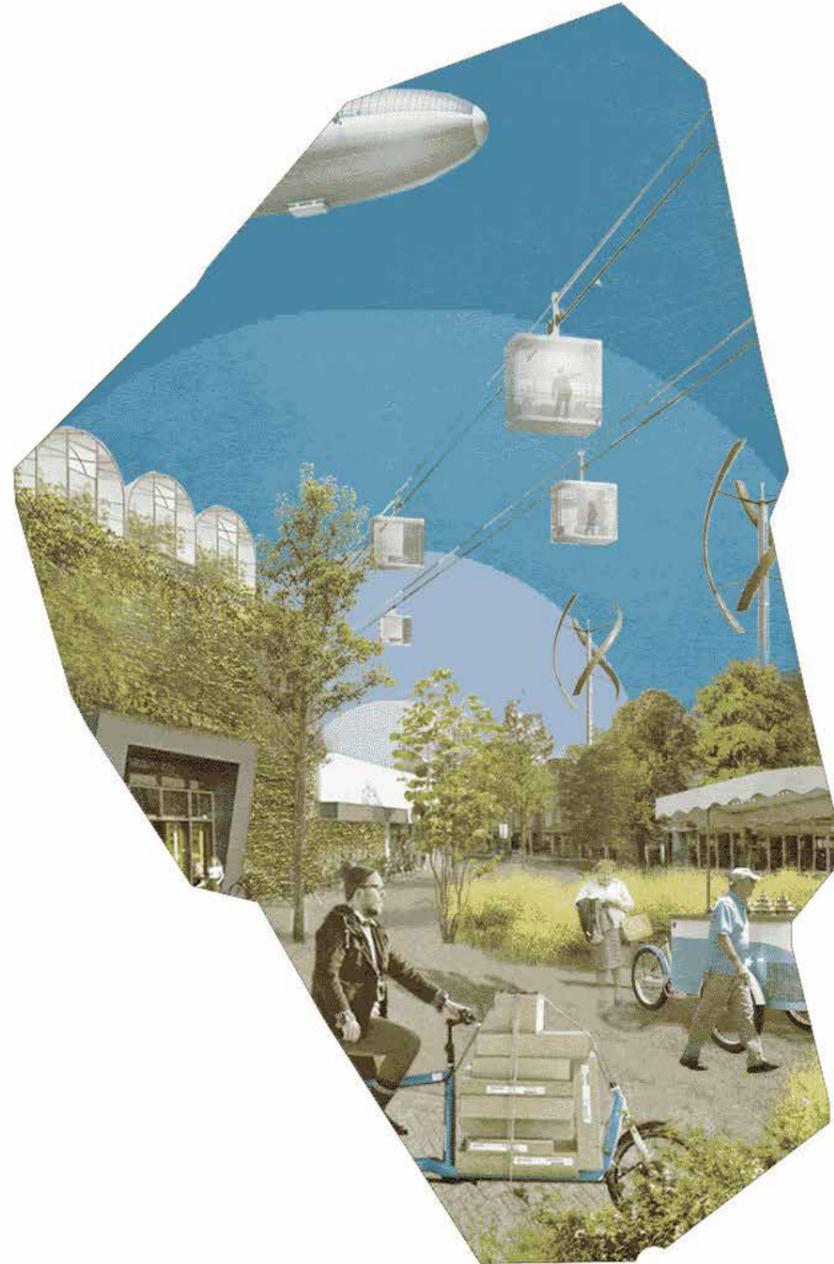


With social resilience we see a close connection with technical sobriety, we are in a society that has no need to make contact with each other's neighbor or direct environment, we stack individual social networks without them connecting. Can we design for more connected neighborhoods with a stronger social network? These parameters are based on our research and values as a company and propose to improve and rethink how we organise our society

Themes



Nature



Technology



Community

Nature

How to reintroduce wild nature into our urban environment? Can we create generative biodiversity.



Nature

For the past decades, we have witnessed, at a fast pace, the artificialization of land. This concept refers to the loss of agricultural / forestry activities or natural areas for human activities: industry, housing, roads...

Based on Corine Land Cover, in Europe, The Netherlands has the highest artificialized land with 13,4%. This has a few consequences: losses in biodiversity, land permeability, contributes to climate disruptions, and lowers water quality.

We have always designed our environment according to human needs and adapting the urban environment to our mode of transformation: road for car, parking... With this project, Bygg Architecture & Design would like to introduce the flow of non-human when designing our urban environment.

Can we create a neighborhood where all forms of life coexisted and can freely move in their own territory without disturbing one another?

The Netherlands has a very well defined 'wild' nature plan on macro scale, but what about a micronetwork to connect to the macronetwork? Can we introduce wild nature within our urban environment. Besides the environmental impact we know that introducing nature in our urban environment can have a lot of positive impact:

Wild Nature

How to reintroduce wild nature into our urban environment? Not controlled but auto-generating biodiversity.



> Human Health (Article 01)

Urban environment directly affects the health and quality of life of the urban population. According to the estimates of the World Health Organization (WHO) 63% of global mortality, about 36 million deaths per year, is due to chronic diseases. A large proportion of these deaths are associated with risks related to the urban built environment, such as physical inactivity and obesity, cardiovascular and respiratory diseases due to transport-generated urban air pollution, and heat-related strokes and illnesses. Globally, household and outdoor air pollution is responsible for 7 million premature deaths each year, out of which outdoor air pollution is causing 2.8 million deaths attributed to chronic diseases. The urban heat island effect aggravates heat stress during heat waves that can lead to fatal heat stroke. As the effects of climate change accelerate, and related heat waves become more frequent, the heat island effect will become even more pronounced. Physical inactivity, that is likely to be more common among urban populations (due to poor walkability and lack of access to recreational areas) is responsible globally for 3.2 million deaths annually.

> Wild life - (Wild animals or plants live or grow in natural surroundings and are not looked after by people.)

They are different ways of introducing nature in our urban environment, different density and height. Nature requires a part of freedom to

grow as needed. We would like to investigate how we could design in such a way that the city responds to both human needs and animal needs.

We have always designed cities for humans, centered around a square or a church leading to the housing through roads. First designed for pedestrians, for horses and then for cars, making the whole infrastructure based on human transportation and centered around the car. By doing so we have imposed our territory to non-human life, disrupting migration routes or hunting areas, taking away forestry and green areas to biodiversity. "A study published recently in the journal Biological Conservation made headlines for suggesting that 40 percent of all insect species are in decline and could die out in the coming decades." (Article 02 & 03)

It's our responsibility to design our urban environment wildlife friendly and to reserve pathway unaccessible for human, as much as we have created pathway inaccessible to animals

Tools (Article 04):

creating plants communities
respect layer plantation trees-mid height plants-lower layers
Creating a dynamic topography not all flat.

> Cooling down the Urban environment.

Every year we witness drought and unbearable heat somewhere in the globe. Last July a heat dome due to the change in the global jet stream raised the temperature in west Canada to nearly 50c for a week (Article 05) The use of Air conditioning create

a vicious loop (heating outside to freshen inside)

Furthermore our modern architecture relies on the use of air conditioning or just create heat shell, we can see the last example here in Eindhoven with Haasje Over (Article 06)

One solution would be, of course, to create an overhaul urban plan for the city, with a strong guide line on how to design. A great example is the city of Tel Aviv. When the Nazi closed the Bauhaus school in 1933 in Germany 3 student exile to Tel Aviv and influenced greatly the design of Tel Aviv. Situated in a warm climate but along the sea the wish was to create a green fresh city. For that all houses were built on stilts, leaving the ground floor free for vegetation and more important to leave the wind from the sea circulating in the whole city.

The second solution would be to change the mineral surface with vegetation.

natural

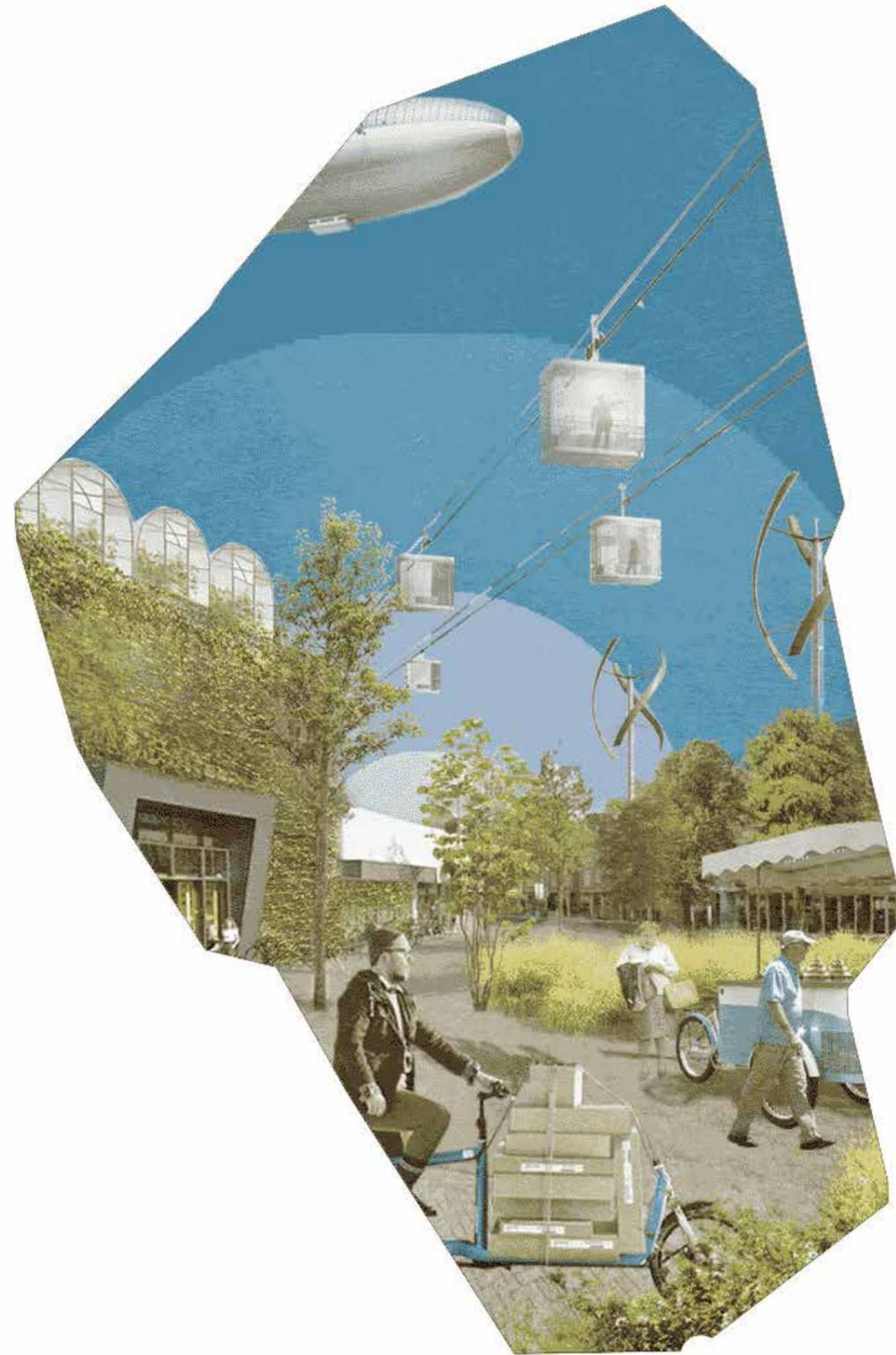
resilience



Technology

Any new technology deployed creates a boost of consumption, thus an increase of GHG (Greenhouse gases), emissions and raw materials.

Can we be smarter with the way we deploy technology?



Technology

While a lot of visions of the future are based on an exponential use of (sometimes unknown) technology, we would like to start with what we have and the data we know in order to project a more accurate use of technology, to understanding the side effects of it as well. For that, as we explained earlier in the introduction we take a lot of our data and information from the think tank The Shift Project.

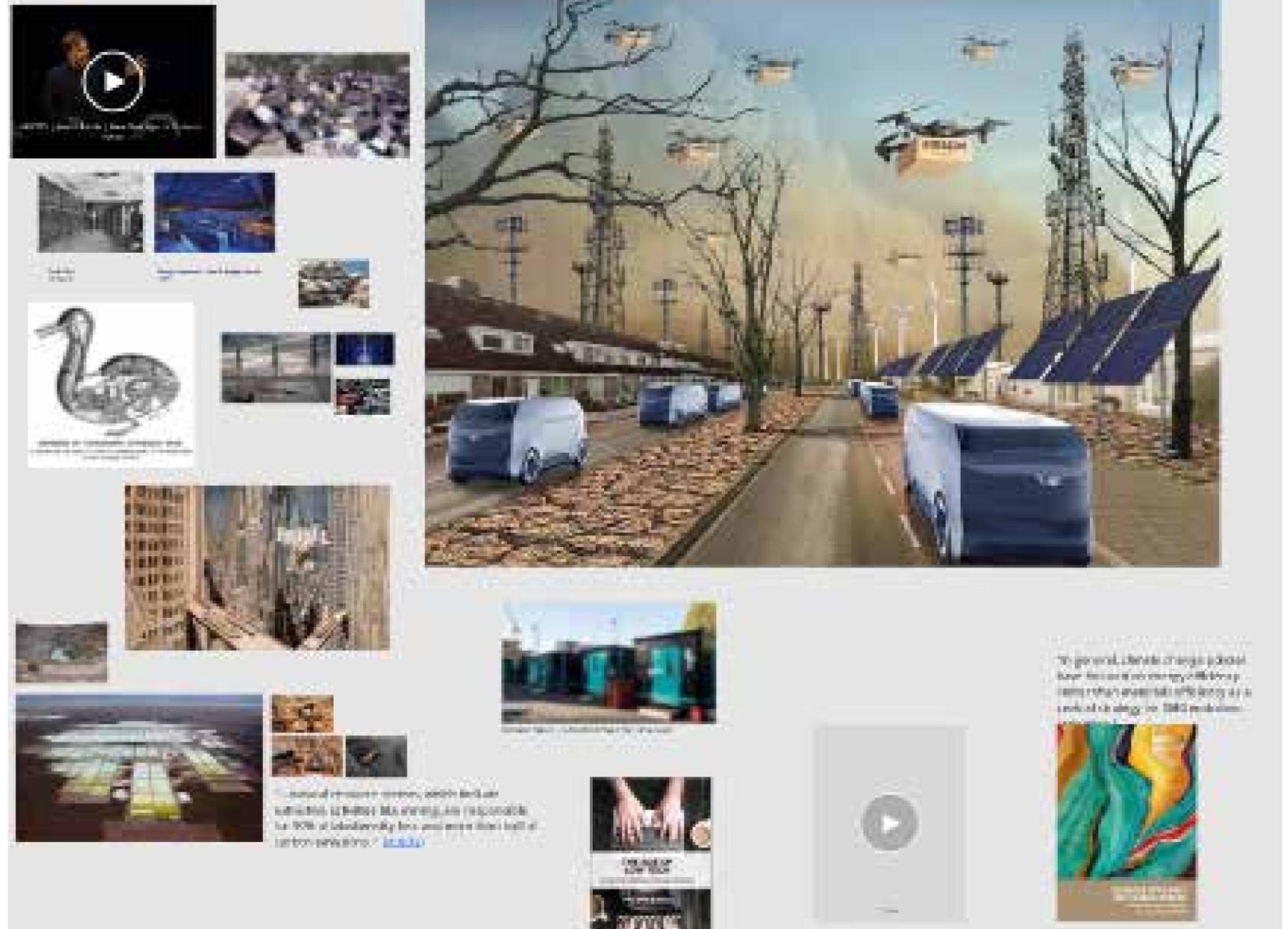
This think Tank (site) is a large community of experts, engineers, scientists but it also uses information and develops conclusions with entrepreneurs of each specific field making their remark not only evident base but anchor in an industrial reality.

Our cities will be facing numerous challenges in the near future, not only will they have to provide more housing but they will have to do so in a world facing climate change. A great number of studies show a direct correlation with the production of CO2 and the energy we consume for living. More we consume, the more we reject Co2 into the atmosphere. The think tank The shift project suggests that to respect the Paris climate accord all sectors of activities must reduce by 7% the emission they produce every year.

Unfortunately we see no curves heading down and the prospects are not very encouraging. Technology can play an important role in shifting our mode of production and gaining efficiency

Technological Sobriety

New technologies require great responsibility. How to be smarter in the way we use technology to counter act the fact that any new technology deployed create a boost of consumption thus increase GHG (Greenhouse gases) emission and usage of rare metal.



between energy production and Co2 emitted, but history has also shown that every new technology also creates a larger demand and therefore boosts production and increases CO2 emission. An Empirical studies published in 2018 (article 08):

“The results show that in the short run, technological innovation leads to an increase in energy consumption, while energy consumption has no significant effect on technological innovation. In the long run, however, energy consumption is positively and bilaterally related to technological innovation. These findings suggest that although technological innovation does not directly lead to a reduction in energy consumption as mentioned in the extant literature, it could help achieve sustainability through improving energy efficiency and developing energy structure for developing countries.”

Furthermore, The Shift Project produced an analysis on the environmental impact of the 5G and suggests that only a reasonable and regulated deployment of this technology (more efficient in terms of energy) can lead to a positive impact for the environment, otherwise we go toward a minimum of 7% increase in consumption in the next 10 years.

So to say ‘The best energy is the one that is not consumed.’

“After all techno-sobriety is the only path that leads these technologies into the hands of our costumers. I don’t need a robot that can make my coffee, program a website and cook me dinner – I need tools that operate more closely to the way I think. Tools of hyper contextualization, tools that understand my ever-changing intelligence rather than trying to mimic it.”

Nitzan Hermon

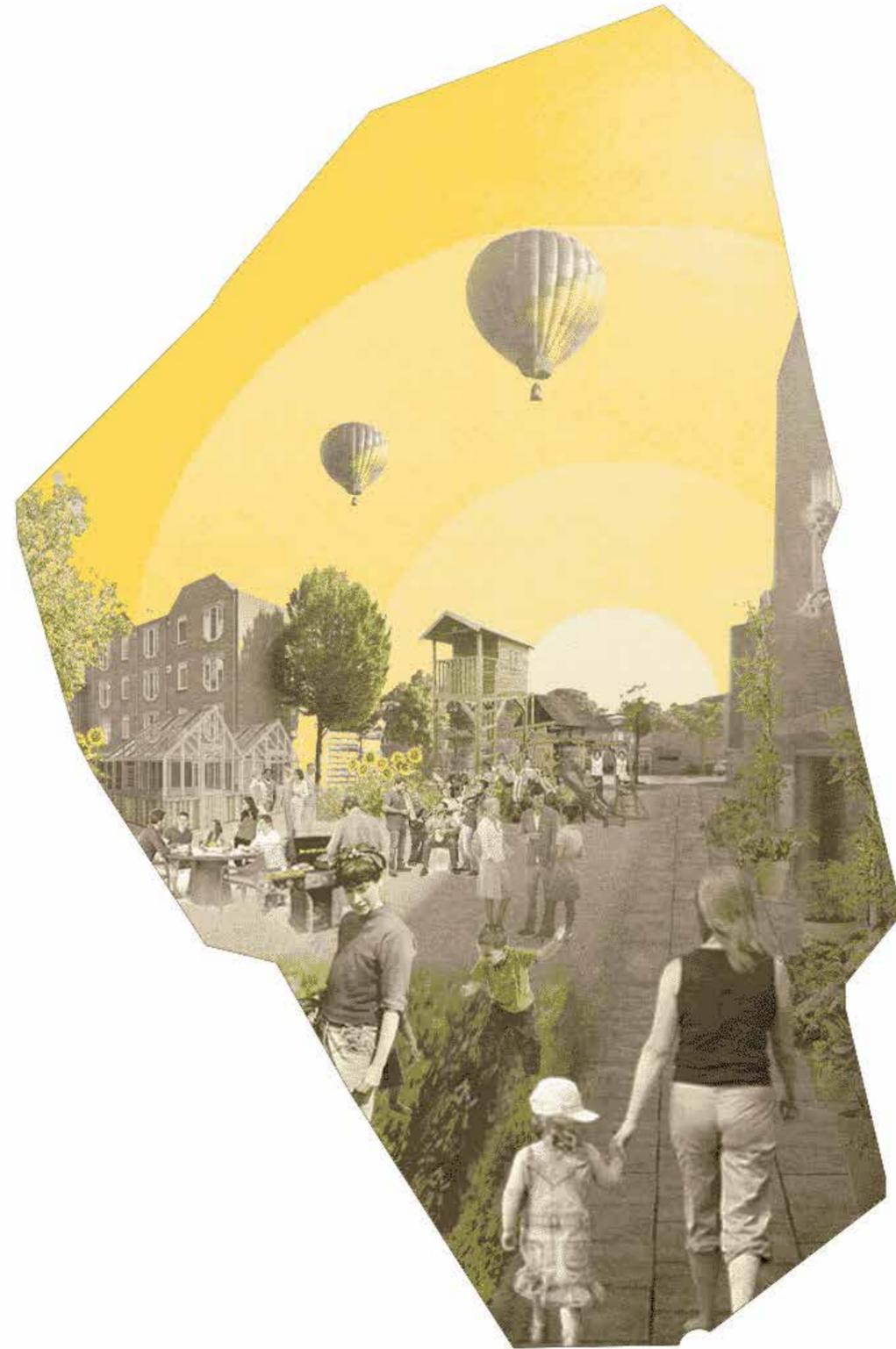
techno

sobriety



Community

We believe that the design of our urban environment can have a strong impact on small communities and can create a climate of daily based mutual aid.



Community

For the past decades with the acceleration of the use of the internet and long distance communication we have seen our social environment growing exponentially and connecting one and another from the other side of the world. Populations are much more mobile, less static in a given environment. Cities have grown fast and neighbourhoods have changed from a small environment (micro-village) to a constantly changing suburb.

Furthermore, we see our world entering a phase of instability, due to climate changes, rise of disease (as we see with the current pandemic), scarcity of materials.. so we need to rethink our built environment and the behavior that it induces. As the French researchers Pablo Servigne & Raphael Stevens explain in their books, it is essential that we become more resilient as a small community in order to handle certain shocks. In 'Mutual Aid: The Other Law of the Jungle' they draw an interesting parallel between human and plant / animal kingdom. We see, in nature, species in competition (Darwin evolution theory) but if we look closer we also see that species that collaborate as a group have much higher chances of survival. In situations of scarcity we see a strong collaboration, helping each other.

Social resilience

How to reintroduce a social fabric within a neighborhood. What elements used to create social bond, Milk man, Library, ice cream truck...?



A study published in Nature in 2002 suggest that interactions between interspecies plants change according to their environment (article 9).

“In an experiment conducted in subalpine and alpine plant communities with 115 species in 11 different mountain ranges, we find that competition generally, but not exclusively, dominates interactions at lower elevations where conditions are less physically stressful. In contrast, at high elevations where abiotic stress is high the interactions among plants are predominantly positive. Furthermore, across all high and low sites positive interactions are more important at sites with low temperatures in the early summer, but competition prevails at warmer sites.”

This study suggests that not only species are connected to one another (as a food chain) but that they respond collectively to their environment and change their behavior according to the physical stress they are exposed to.

What about Human?

The American writer Rebecca Solnit has exposed the mutual aid present during catastrophe, after the 2005 Hurricane for example. On the contrary of what we imagine during a shock we don't witness so much act of violence but we see a collaboration taking shape. (Article 10)

“...filmic representations of chaos, of catastrophe, of disaster is the idea of the mob

run amok, and the looting hordes, and order falling away, and violence spiking, and everyone's sort of out for themselves. But it's not clear that's a realistic portrayal of what happens in the midst of disaster, catastrophe, and crisis. In fact, there's a whole lot of evidence that the main reaction of human beings in those situations is kind of the opposite.”

This has been theorized by Edward O. Wilson with the concept of Sociobiology (article 11). *“(..) according to Darwin, (..) groups containing mostly altruists have a decisive advantage over groups containing mostly selfish individuals, even if selfish individuals have the advantage over altruists within each group.”*

So numerous data have shown spontaneous mutual aid during difficult moments but is it enough to see solidarity during difficult times to create a more resilient community?

We should also not forget that we are losing, with neoliberal capitalism a sense of community in a greater sense, we are all responsible only for ourselves and we see that it can create a self centered - egocentric society. With digitalization we have created large international communities that on one hand unifies us for great causes but at the same time loses its grip on a small physical environment and local community. We believe that the way we design our urban environment can have a strong impact on small communities and create this climate of mutual aid on a daily basis.

We took some inspiration from our experience at Plug-in-City ([link 12](#)), where a community of residents found the need to create and build a public place to bond with one another and respond to each other's needs.

Furthermore, we looked at small villages in France or Poland, to analyze what creates links in remote places. The latest example is during the pandemic, in some villages, the postman was the only social interaction for some people. In some villages in Poland the food store is a van with fresh fruit and vegetables driving through these places.

We would like to investigate in this particular district what element could be of an added value socially and ecologically.



cloud

FACE RECOGNITION

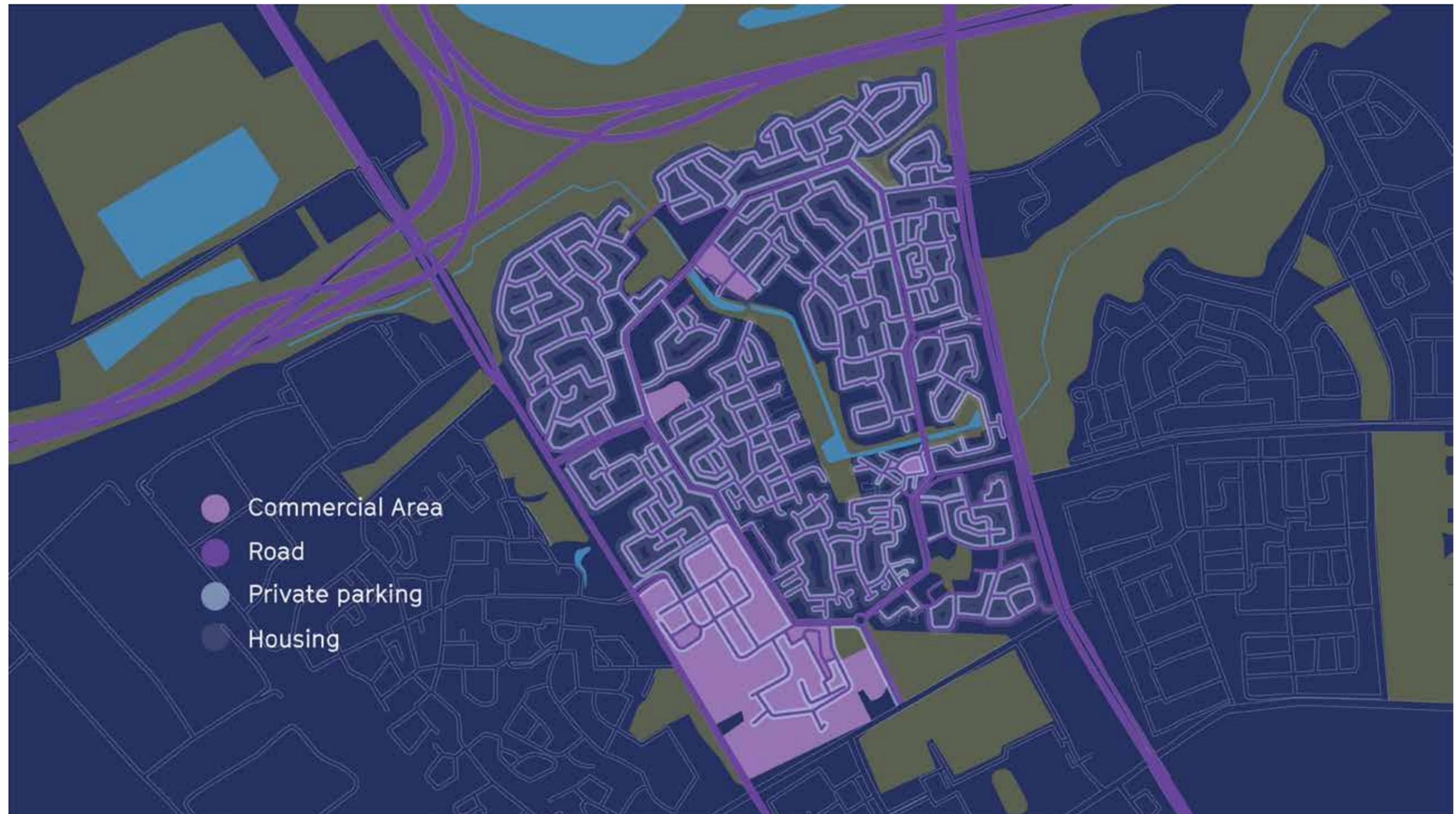
community



Area analysis

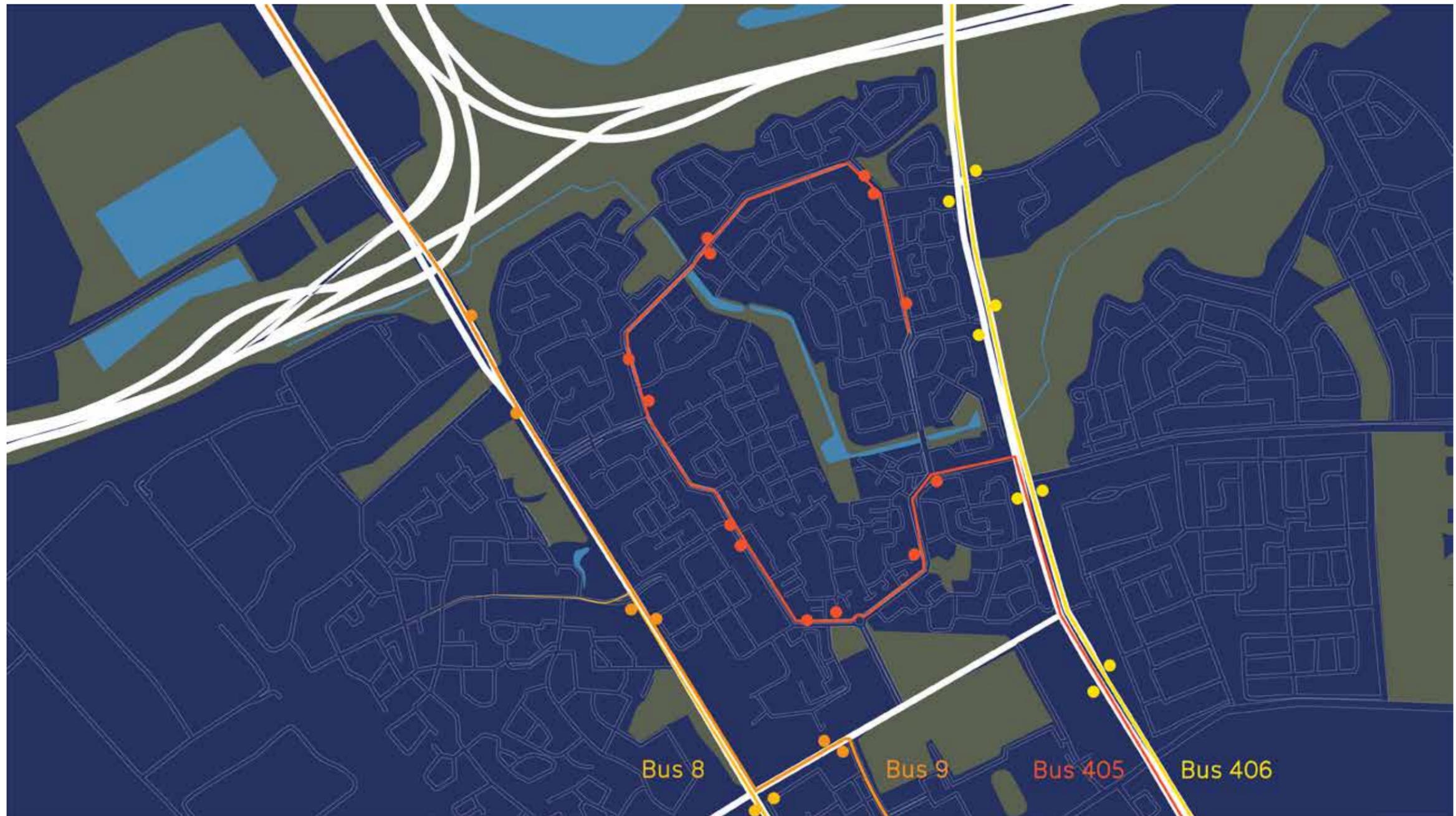
We made some analysis of the area the Achtste barrier, to understand the area and it's possibilities.

We are looking at the general division and we see a mainly residential area, with some commercial area's north and south. In the center there are some shops. An extensive amount space is allocated to private parking and the road network.



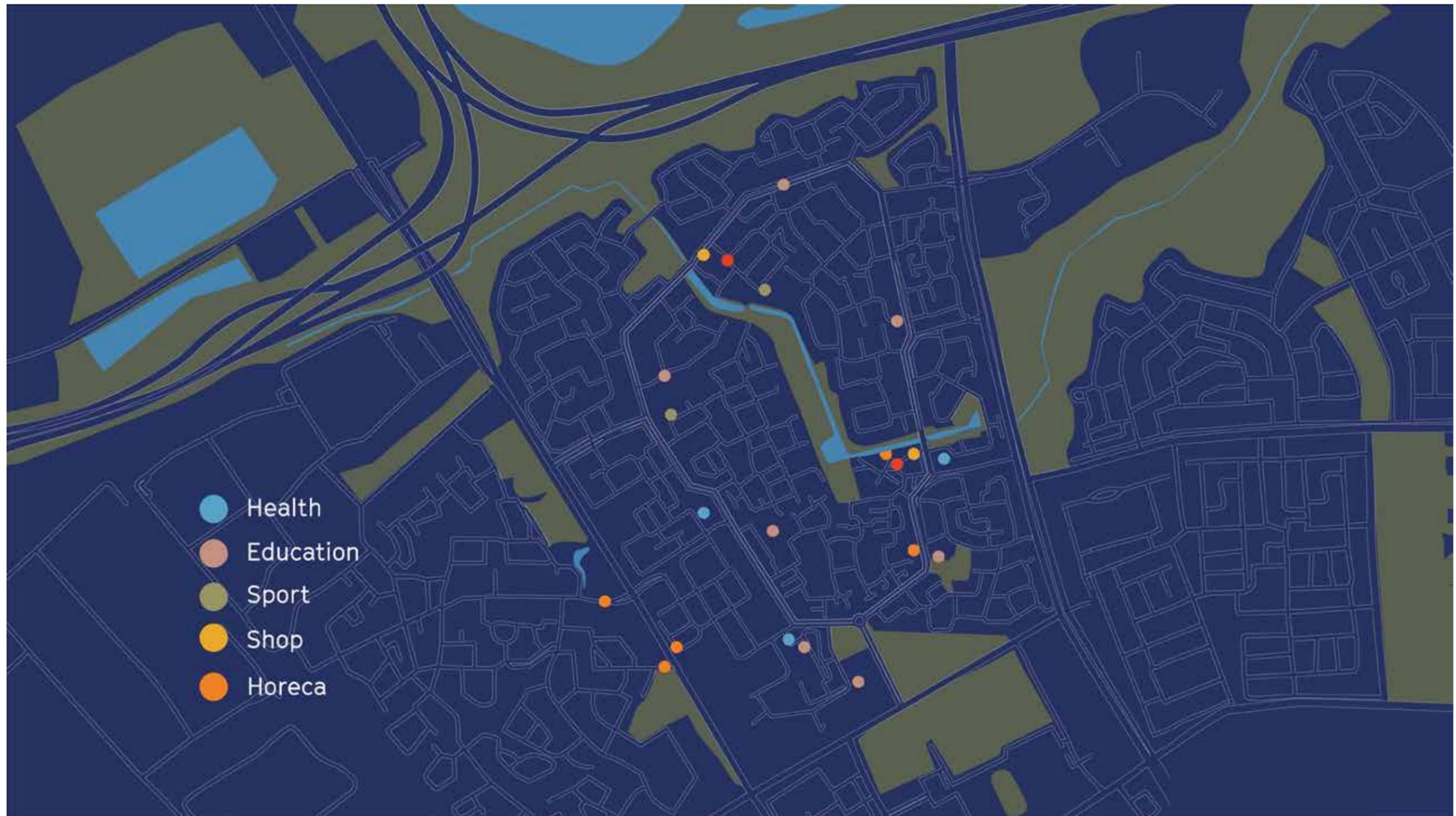
Area analysis

Public transport connections. There is a main bus-line that runs on the Franse baan and connects the area. Outside the area on the main road's there is more busses connecting the neighborhood.



Area analysis

Public functions are situated mainly around the Franse Baan and some find their way in the commercial area. The area is equipped with schools, shopping a bike store, community center and sporting facilities. The Horeca offerings are minimal.



Design proposal

Let's look at the transformations we could imagine for the neighborhood adhering to the three main themes we distilled. We want to think about copyable solutions, for neighborhoods alike. We therefore see much advantage in creating new kinds of street profiles that can assimilate with the Dutch street structure.

We keep a close eye on our proposed main themes to redefine the urban landscape of this neighborhood, making it climate adaptive and socially resilient.

We will add as many green corridors as possible, create green patches for water storage and drainage. We take the opportunity to design the neighborhoods to be friendly for walking and biking.

Converting the neighborhood to a bike and walking friendly neighborhood, we see the proposed speed fits a more detailed and green environment, with less hard technical materials. The expression is more friendly.

By eliminating much of the infrastructure involving the car, an extremely large amount of space becomes available to repurpose. Not only can a lot of the streets and parkings be re-appropriated for green, also garages become less needed and could be repurposed to shared working spaces, or maybe even living studios to attract a younger crowd to the area.

The introduction of the micro-connected green will make it pleasant to walk and bike as a human, but it will also lead the way to a generative biodiversity, with space for hedgehogs and eventually even the Stork should make its way back. This in all will provide a higher quality of life for the residents.

To keep a non-compromised feeling of mobility, we propose to keep a connection to the main road network but park all cars centrally at the commercial area's south. For everyone in the area that is reachable in about 5 minutes of bike ride, or 15 minutes of walking. This way we keep the opportunity to keep visiting family and friends at larger distances from our home. And maybe it puts public transport at a more equal challenge with the car since it now requires a little bike ride to the car and, why not ride a bit further and just take the train.

How about the commuter? Well the commuter is the best to adapt to a changing situation, because they can organise their rhythm, and as Covid has shown, there are possibilities of working remotely about for a few days a week. Maybe the obsolete garages can provide a solution for this.

Design proposal

By itself the green corridors and calm pace of this new neighborhood is not enough to satisfy the mobility needs. We do not only work or visit friends, we also need to go to see a doctor, do grocery's, spend a nice night out, or get your bike repaired or just want to meet someone etc...

The idea is that all these less regular or smaller transportational needs should be accommodated in your own neighborhood, within a short travel distance. If this is within walking or small bike ride distance this should feel pleasant, that there is less need to travel far away to different places for it.

In our research we also talked about social resilience. We should illustrate with a little time travel. Remember the concept of the milkman? or the postal guy that would not only bring the post but would also have a small talk, bring a bit of neighborhood news and check in on you. Is that not way more social, than what we refer to as social at the moment? No matter how many followers you have online, in the real world they are strangers to you. We need offline connections to produce a resilient community.

For the latter two ideas, the offline connections and the services close by, we propose the Achtse Trein! A place for meeting and fulfilling services in the widest possible sense.

The Achtse trein is the shoppingcenter, community center, gym, dokterspost and anything else you could think of. The train is a train as in that it moves around the neighborhood to bring the city to your doorstep, on a closed loop on the Franse Baan. The train makes a full circle around the neighborhood in a week's time, and moves from point to point during the night..

The whole idea of the train is that in contrast to real estate, it is designed for flexibility and reprogramming. No 5 year fixed contract for a hairdresser, but the train allows for the hairdresser to plug itself in the train on a few fixed days a week, while the other day they operate in a different neighborhood.

In the city the density is the workhorse for facilities, a fixed place in a good location will yield the right amount of turnover and subsequently the right amount of high rent.

These concepts do not work for neighborhoods like the Achtste-barrier, the density allows maybe one hairdresser, not twenty. What if your liking is not there? Naturally you move to the city to get your kick.

For all services that are subject to a certain fashion, the city will always cater better, but if we organise a flexible program, we can actually offer a different quality fitting the suburban areas in creating diversity.

Design proposal

The most important part of the Achtse Trein is that it's a non-commercial and commercial place, a place to go and meet each other, a place that is dynamic yet stable, a place that caters for everyone. A nice central meeting place, a community center where you can book some space for an event and simple things like returning your recycling and garbage.

Making the train travel around seems like a large effort, but it creates the dynamicness and it proposes to free the idea and market that belongs to the central space. Besides that, it makes sure that elderly or less able people can also make use of the platform when it's close to their homes. The temporality also means any disturbance is only close to your house once a week and well hey maybe that is actually rather nice to have a bit of something happening on front of your door every now and then

For now we also introduce this concept as a platform for dreaming about what facilities we can accommodate, what would my train look like, what services would I need and what possibilities can I see for my own neighborhood?

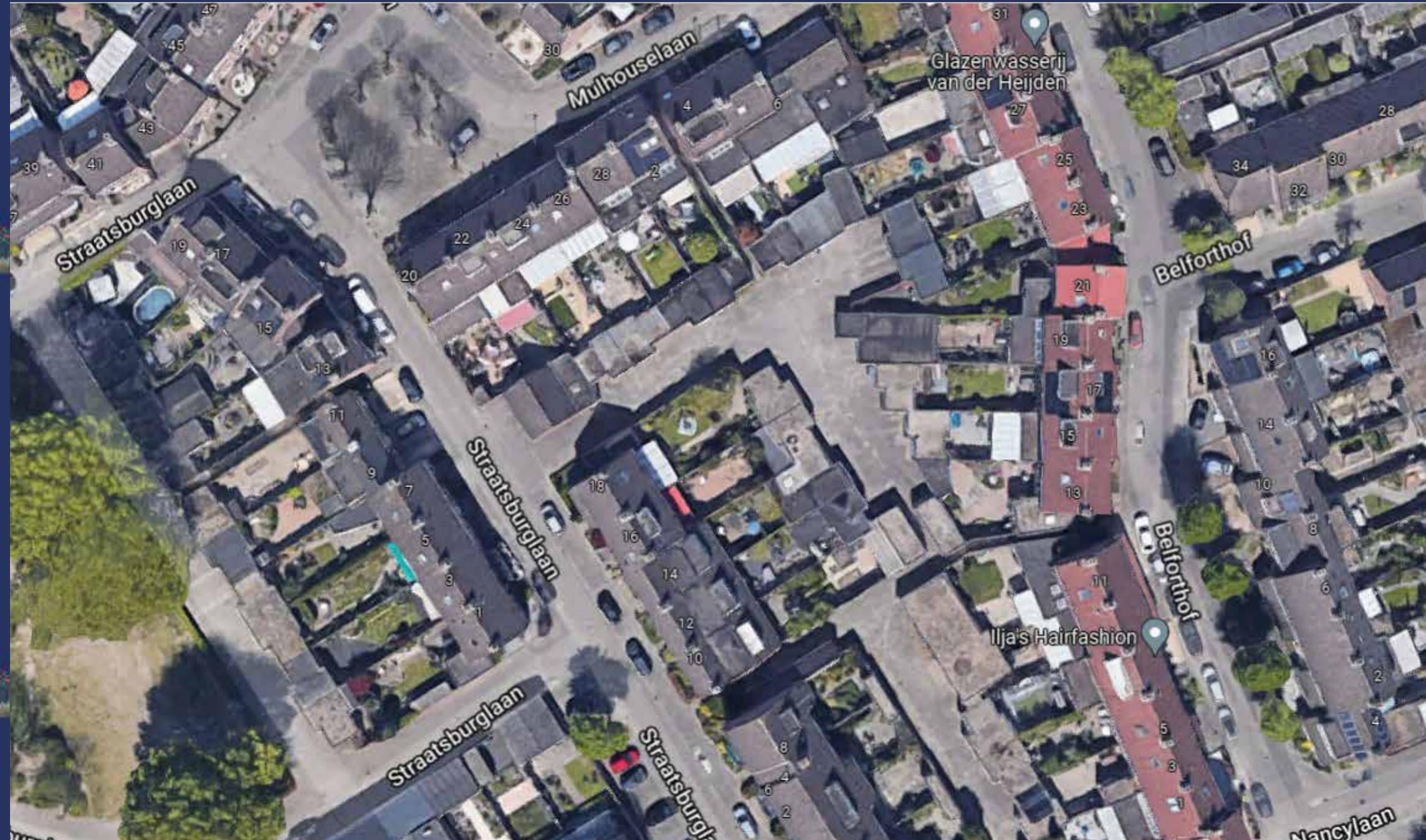
Sections and impressions

We illustrate our design interventions through sections and impressions of the different type streets available in the area. We identify the innercourts (hofjes), lanes (lanen), the backstreet (achterpad) and the main artery the Franse baan. In the following pages you will see the sections.

In the below image, we schematically point out the amount of green re-appropriation that is viable with our proposed solutions.

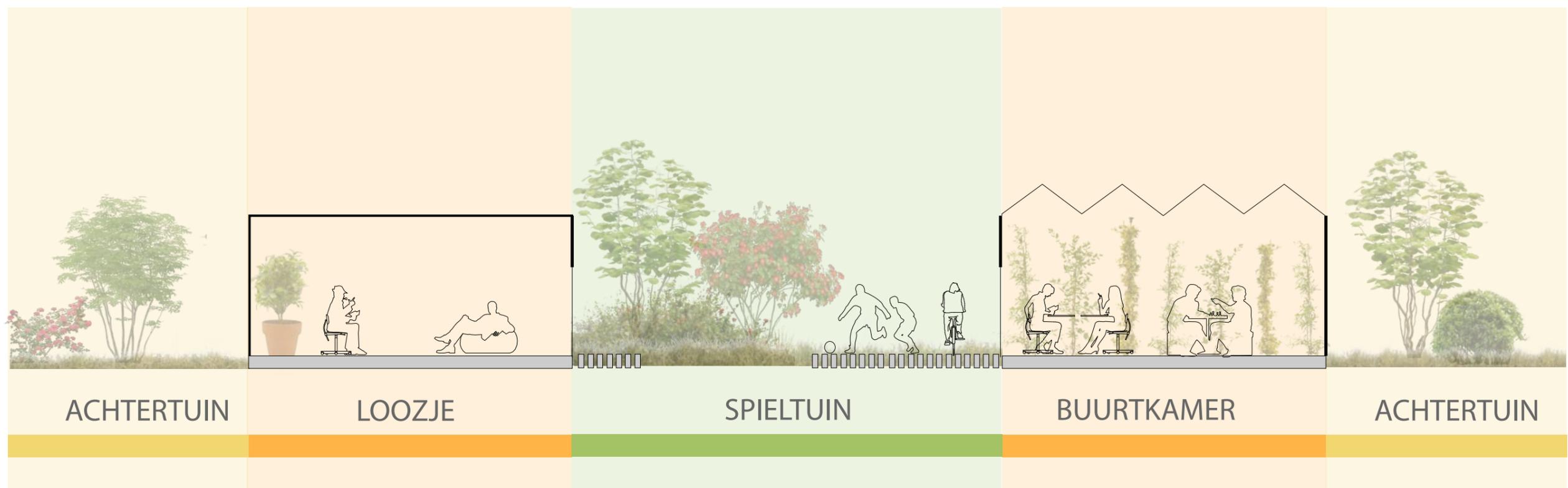
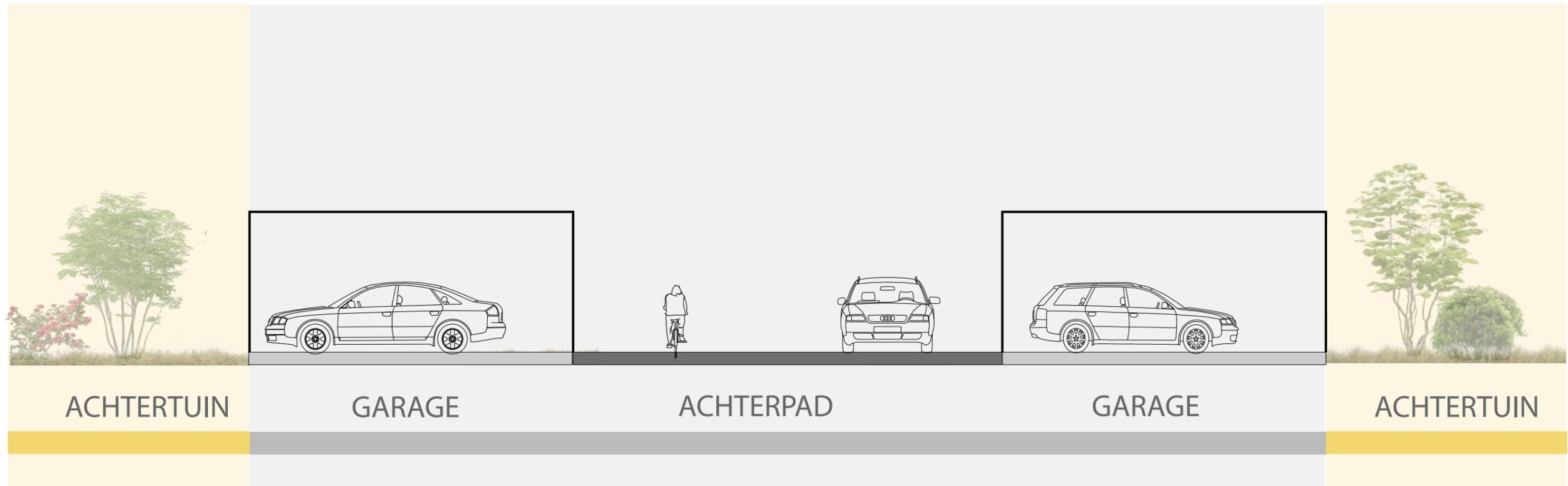


Backstreet / achterpad

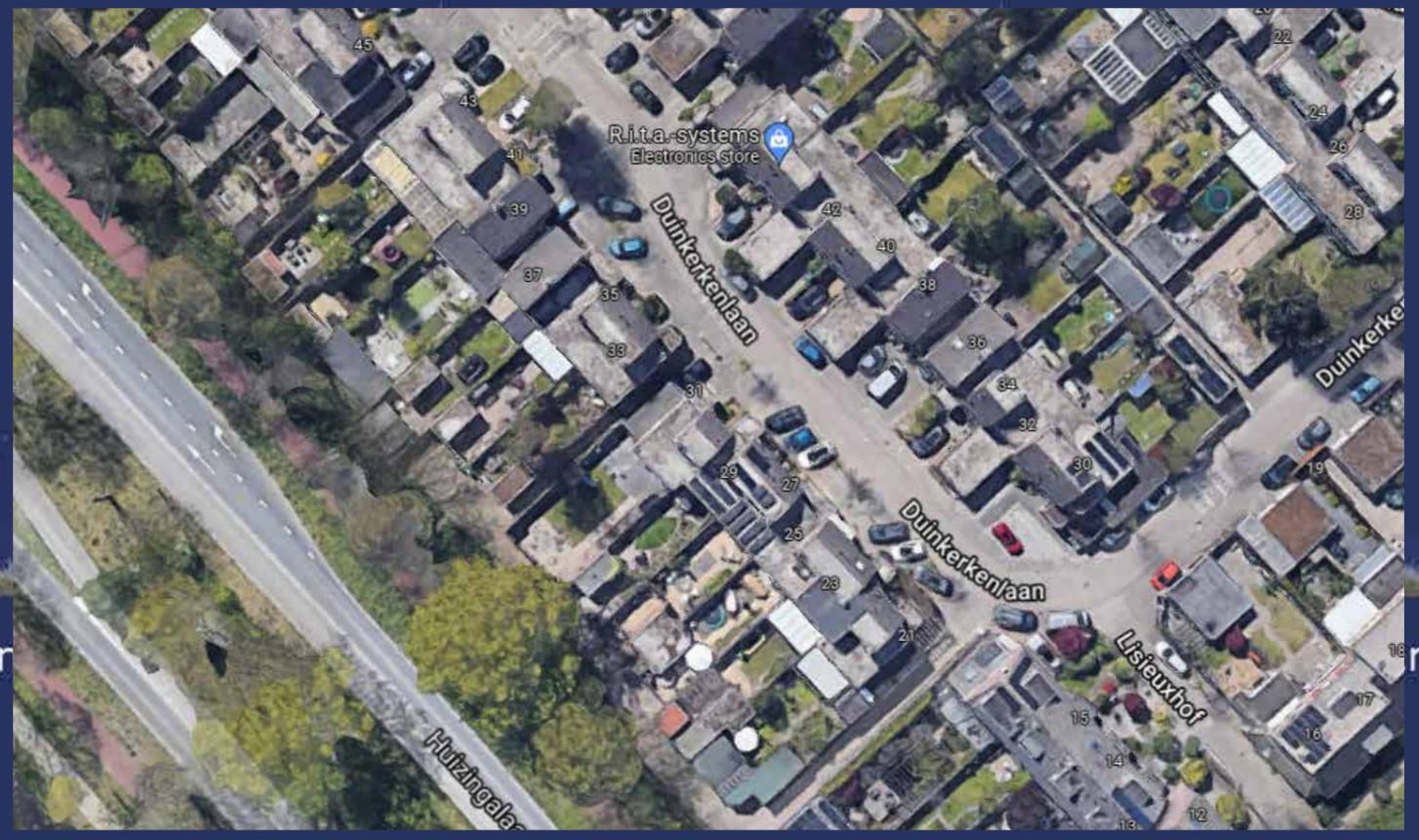


Backstreet / achterpad

from 0% to 67% green + new functionalities in garageboxes



Lanes

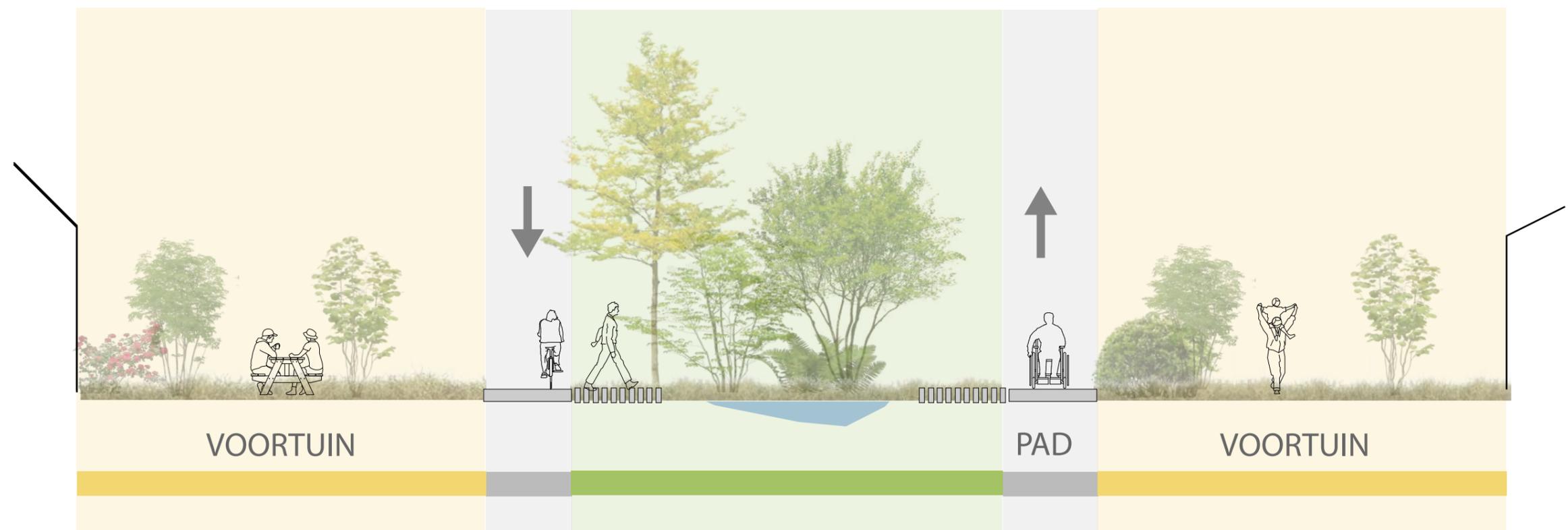
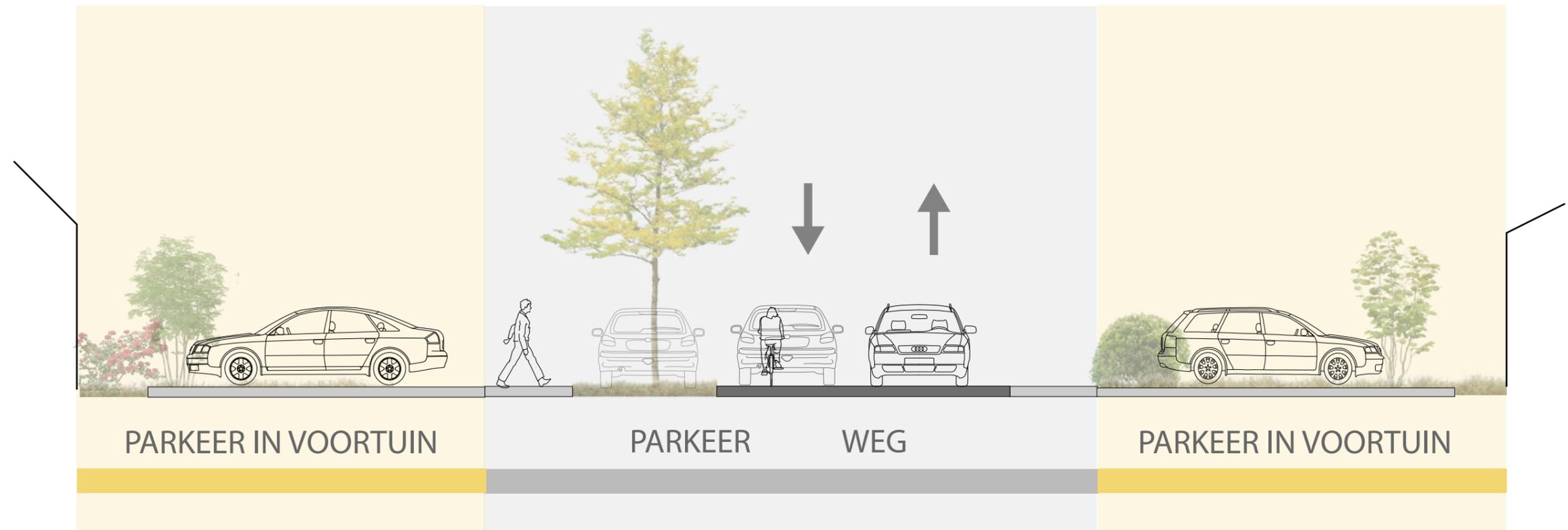


Front

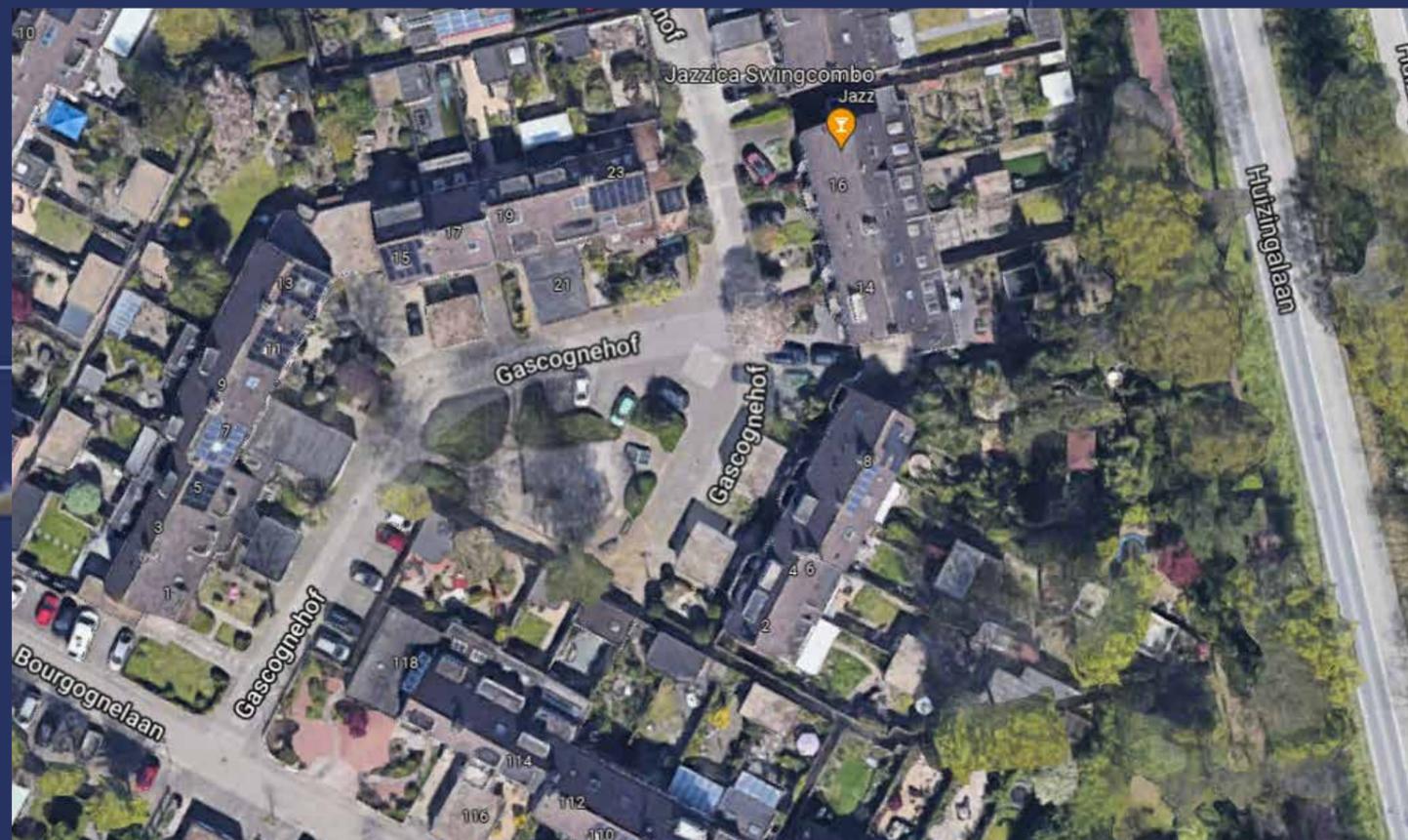
Back

Lanes

from 13% to 57% green + wadi's and larger private gardens



courtyard's / hofjes



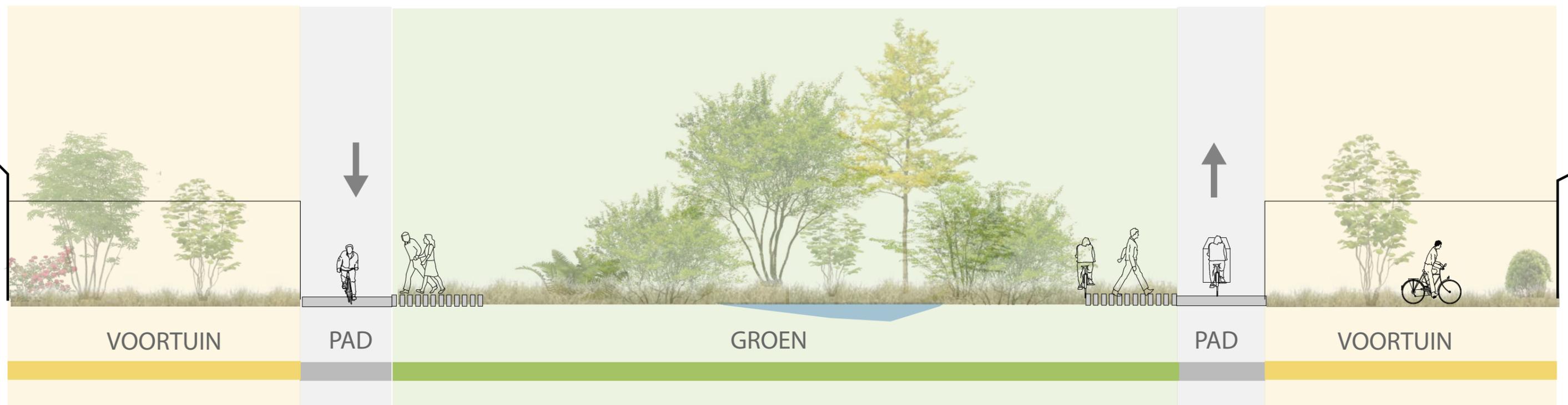
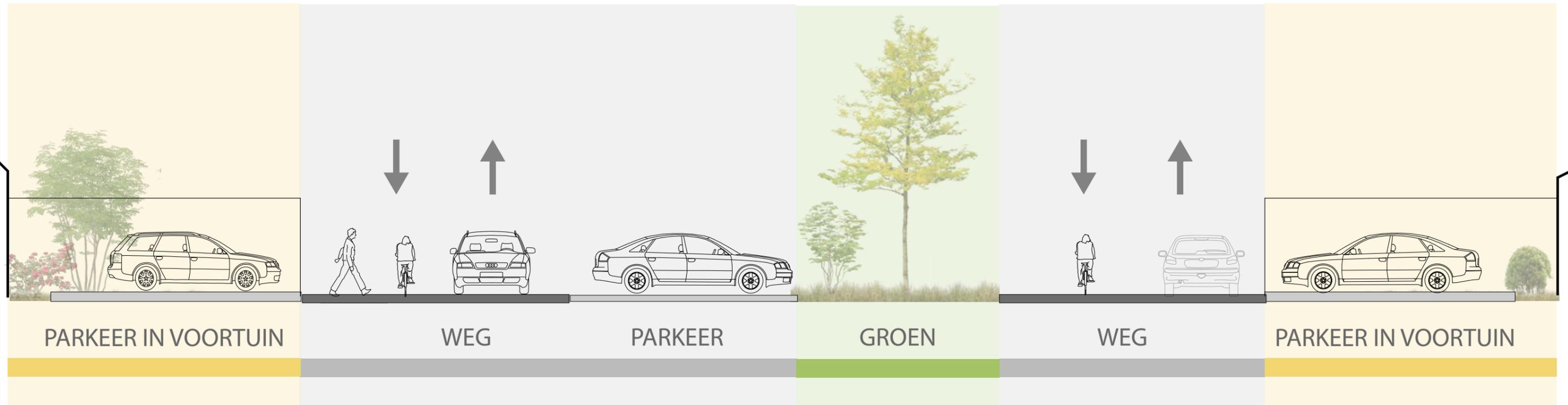
Front garden



Frontyard

courtyard's / hofjes

from 13% to 53% green + wadi's and larger private gardens



courtyard's / hofjes

current



courtyard's / hofjes

impression

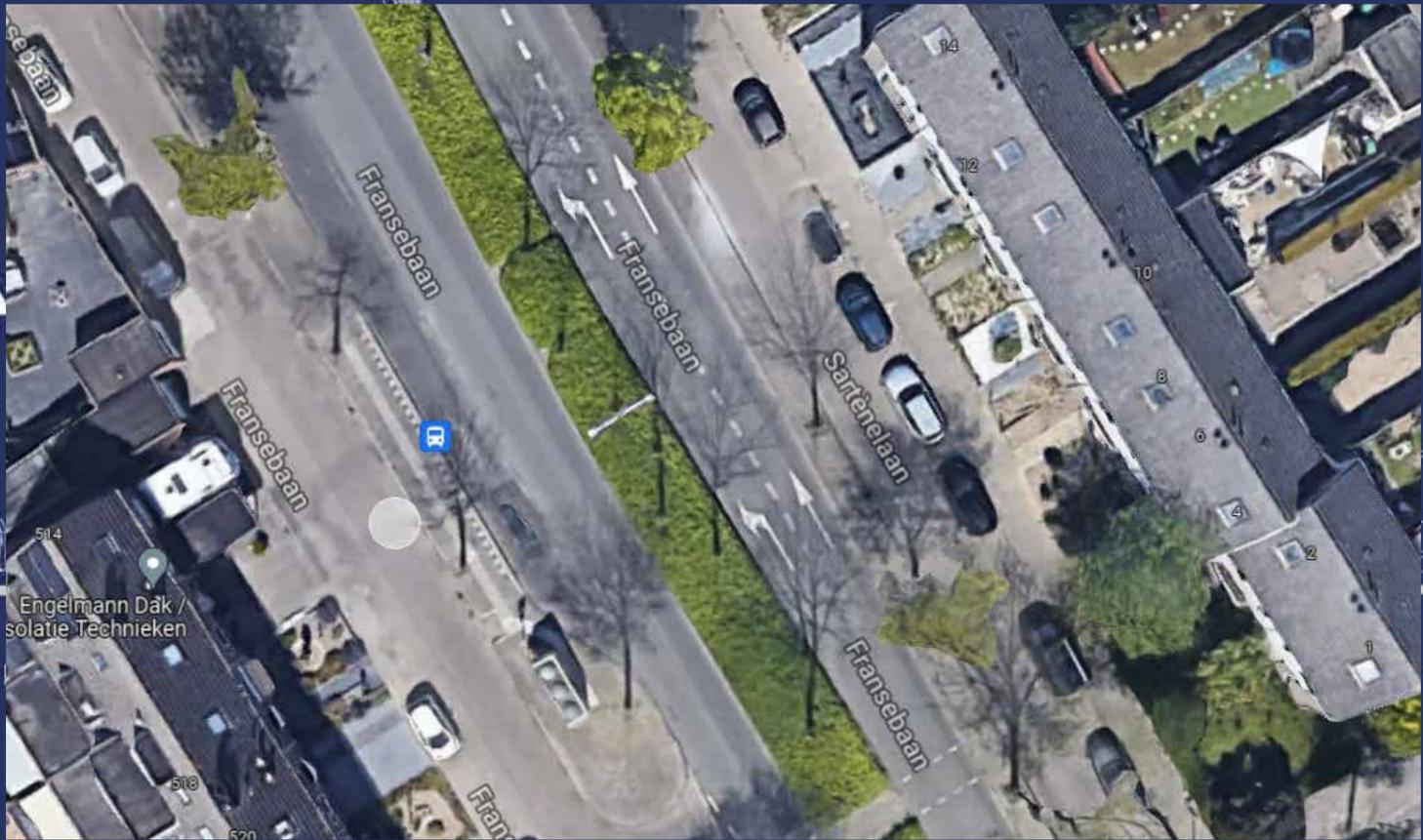


Franse Baan



Front Garden

Front garden

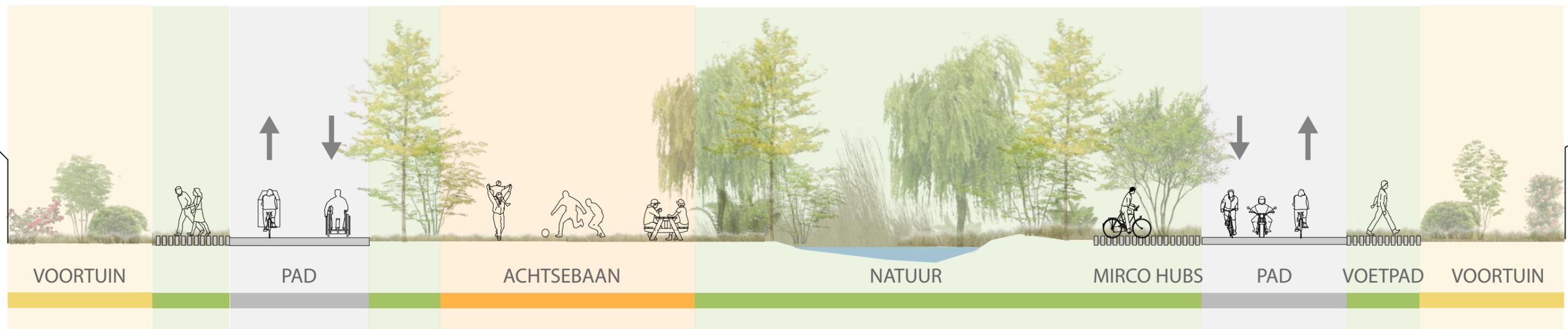
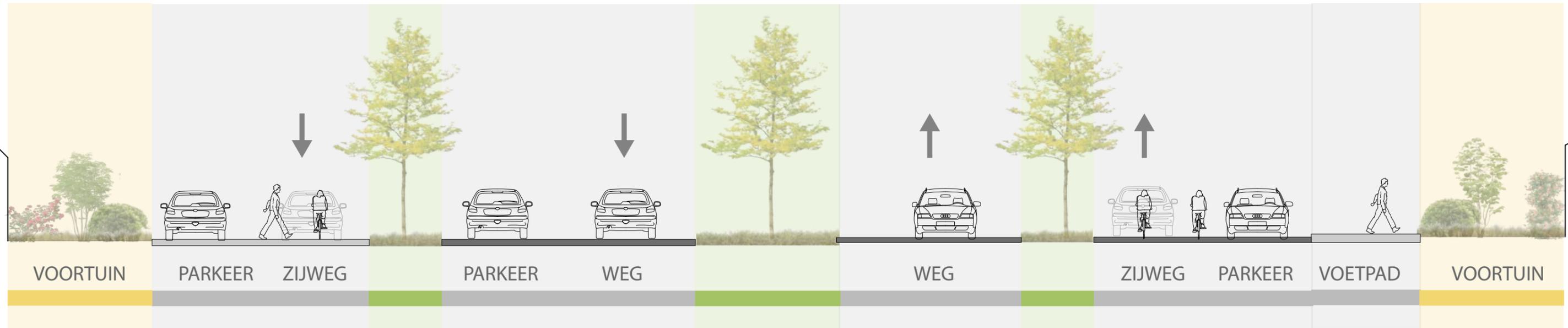


Front Garden

Front garden

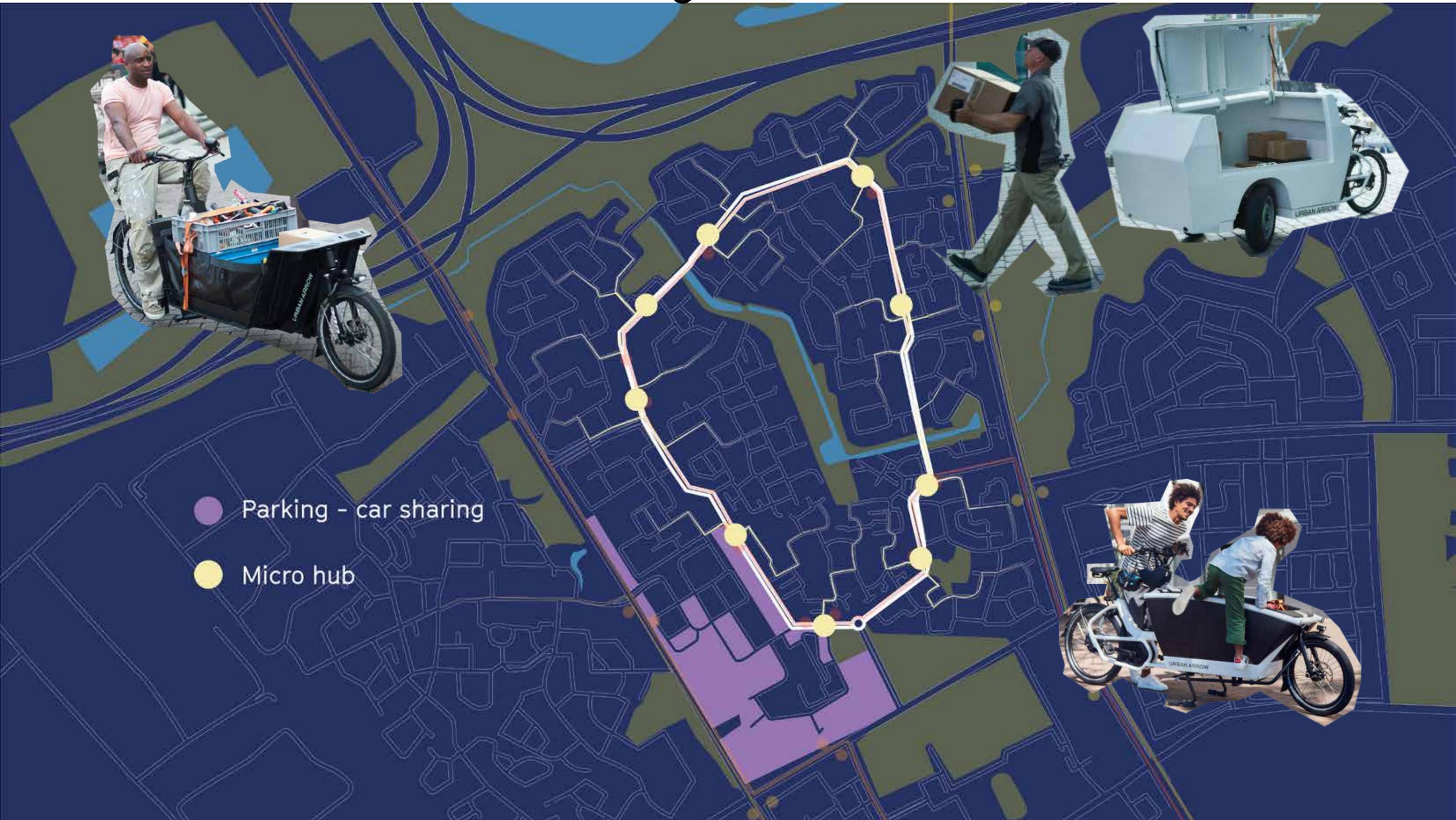
Franse Baan

from 21% to 70% green + mini-hubs, playgrounds and wadi's



Franse Baan

Micro Hubs are for shared cargobikes.



Franse Baan

current

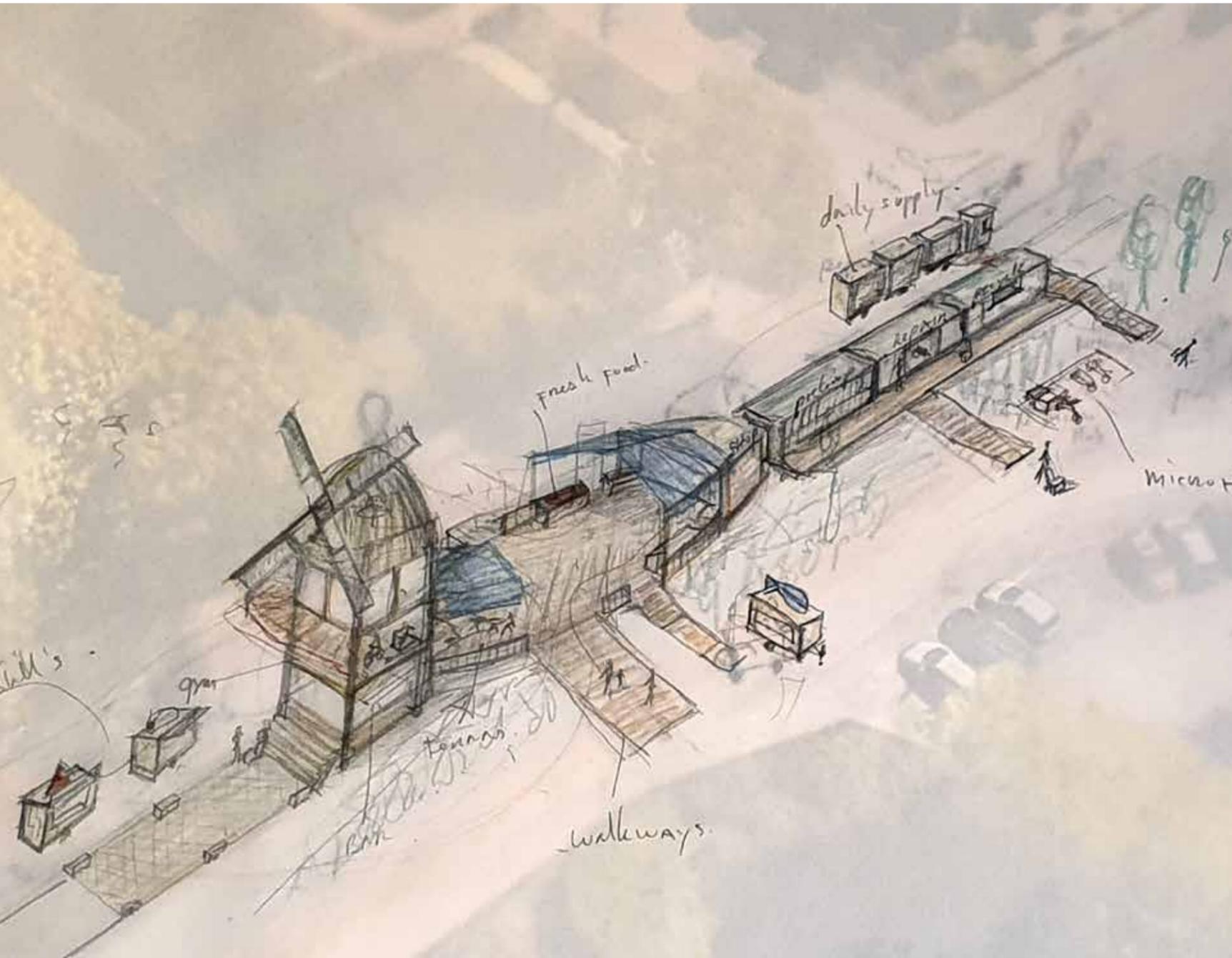


Franse Baan

impression



Achtse Trein



We propose to use the Fransebaan as a new path for De Achtse Trein.

De Achtse trein a very slow train going around and around, bringing all essential services to each and everyone: market place, bar, community house, pick up point, recycling center, repair shop, gym, hotel room for guests... we can imagine much more ad hoc service. If you can't go to the city center, the city comes to you.

In a slow rhythm, Achtse trein introduces a new heartbeat for the Achtse Barrier.

Achtse Trein

dawn



Achtse Trein

day

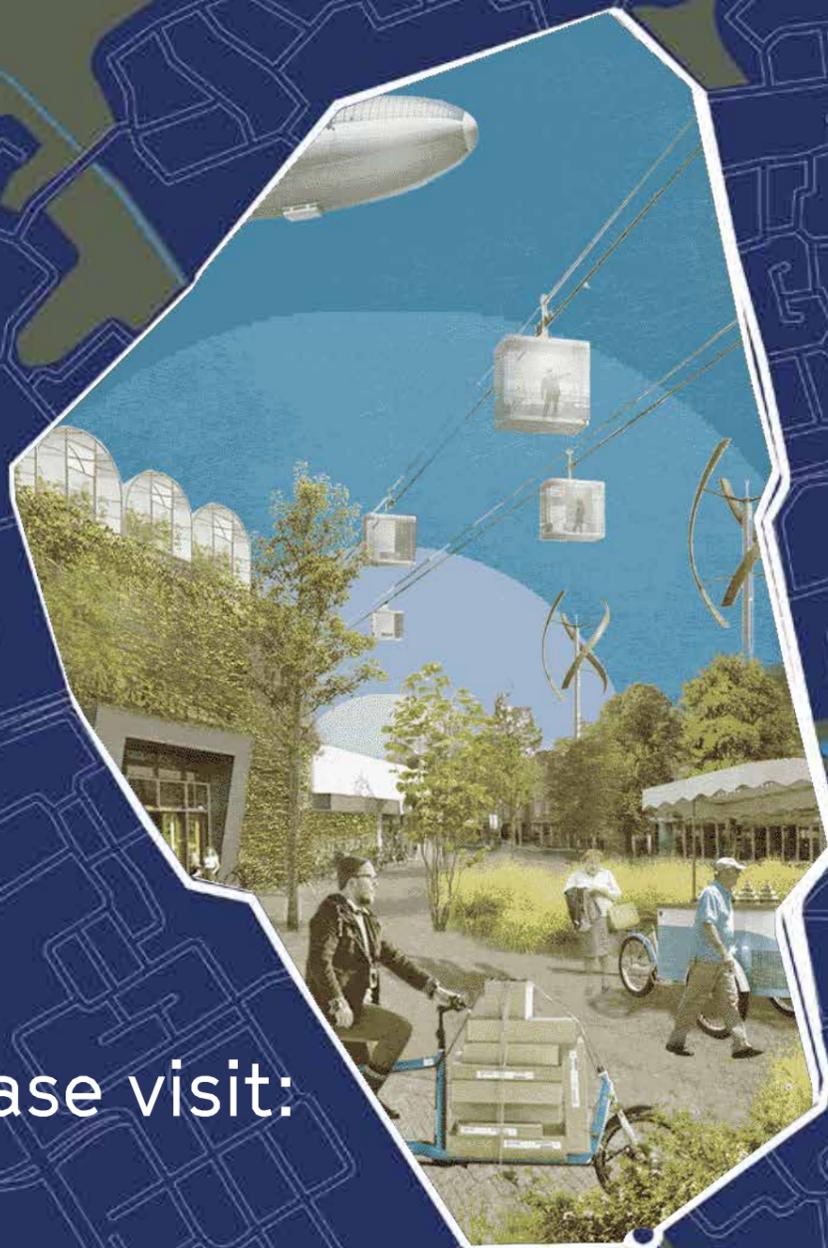


Achtse Trein

evening



For a full project animation please visit:
<https://vimeo.com/636125998>



Links

01 - <https://www.sciencedaily.com/releases/2011/04/110419151438.htm>

Green environments essential for human health, research shows

University of Illinois College of Agricultural, Consumer and Environmental Sciences

26-04-2011

02 - <https://www.nationalgeographic.com/animals/article/why-insect-populations-are-plummeting-and-why-it-matters>

Why insect populations are plummeting—and why it matters

Douglas Main

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