# REVITALIZING THE RIBBON

Enhancing the community of a ribbon development in Flanders through a green corridor and densification.

Camille Lambreth
Master thesis in Sustainable Urban Design
School of Architecture · Faculty of Engineering · LTH · Lund University
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# REVITALIZING THE RIBBON

Enhancing the community through a green corridor
and densification in a ribbon development in Flanders

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**Author:** Camille Lambreth
**Supervisor:** Teresa Arana Aristi
**Examiner:** Per-Johan Dahl
**Jury:** Peter Siöström, Jonna Ekholm

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# GUIDING QUESTIONS

Does urban sprawl affect community life?

How can greenery enhance qualities of life?

Is densification in the future necessary in a ribbon development?

# ABSTRACT

As we know our population keeps growing and our cities are getting denser, urban sprawl is a phenomenon that affects a big part of our society. Research has shown that urban sprawl lacks consideration for human interactions and has an absence of proper urban planning. Multiple types of barriers have made it more and more difficult to create a sense of community within this environment. Moreover, due to the lack of densification, urban sprawl also directly impacts air pollution and therefore is a big contributor to climate change. However, is there a perfect solution to address this 21st century phenomenon? Is proper urban design the answer?

This master's thesis will be analyzing the urban development of the Belgian, more specifically in the Flanders region. Due to certain regulations and norms Belgium has become one of Europe's most sprawled countries. It is the notion of 'Ribbon Development', an urban sprawl pattern specific to Flanders that will be redesigned.

Through past research and case studies, a toolbox that focuses on three regional strategies created the base of this project. each individual local design tool enhances these strategies. The Green, The Social and The Infrastructure are the focal points on how to improve the community lifestyle of towns that are placed in Ribbon Development condition.

Through a green corridor belt and the future's predicted densification, this project aims to create a model for the rest of Flanders and guidelines for the rest of Europe on how to deal with the future of urban sprawl. A 'one-size-fits-all' solution is not the answer, but human scale interactions are necessary to help enhance the community's lifestyle within this present-day dilemma.

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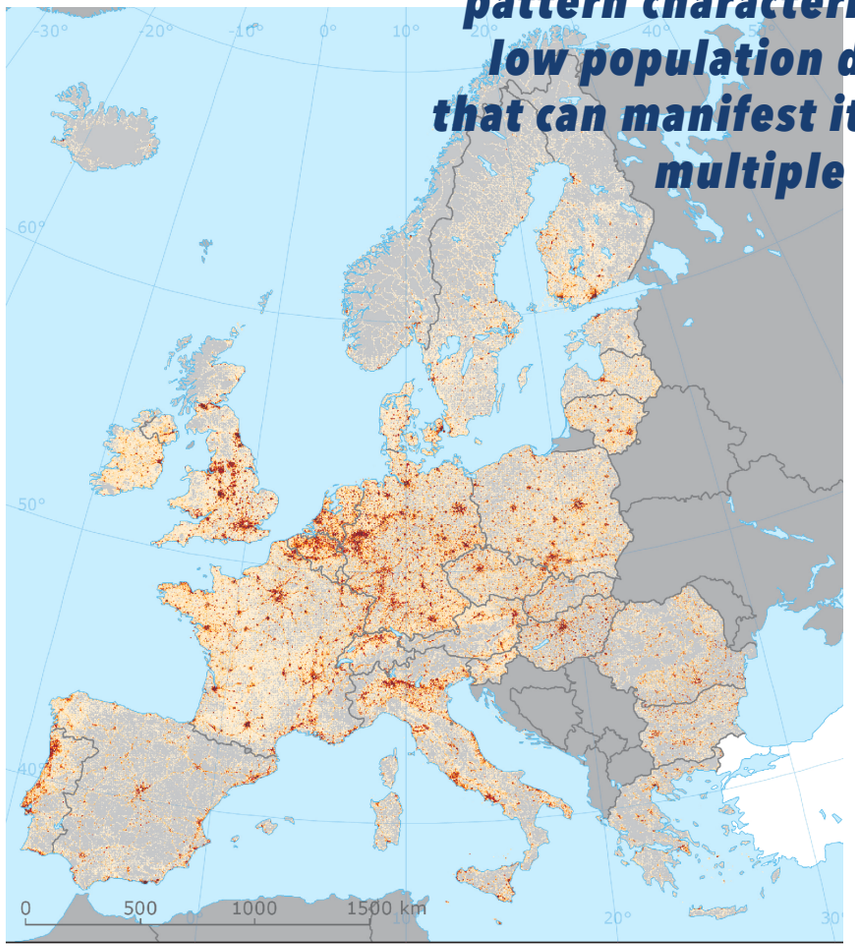
# URBAN SPRAWL

*WHAT IS URBAN SPRAWL?*
*DRIVERS*
*CONSEQUENCES*
*RESPONSES TO URBAN SPRAWL*
*THE REGIONAL CITY*

01

***"An urban development pattern characterised by low population density that can manifest itself in multiple ways." - OECD***




**Weighted urban proliferation ($WUP_p$)*, 2009**

Urban permeation units per m²

≤1 | 1–3 | 3–5 | 5–8 | 8–13 | 13–18 | 18–25 | 25–32 | 32–41 | > 41 | No data | No built-up area | Outside coverage

*SOURCE: European Environment Agency, 2017*



## WHAT IS URBAN SPRAWL?

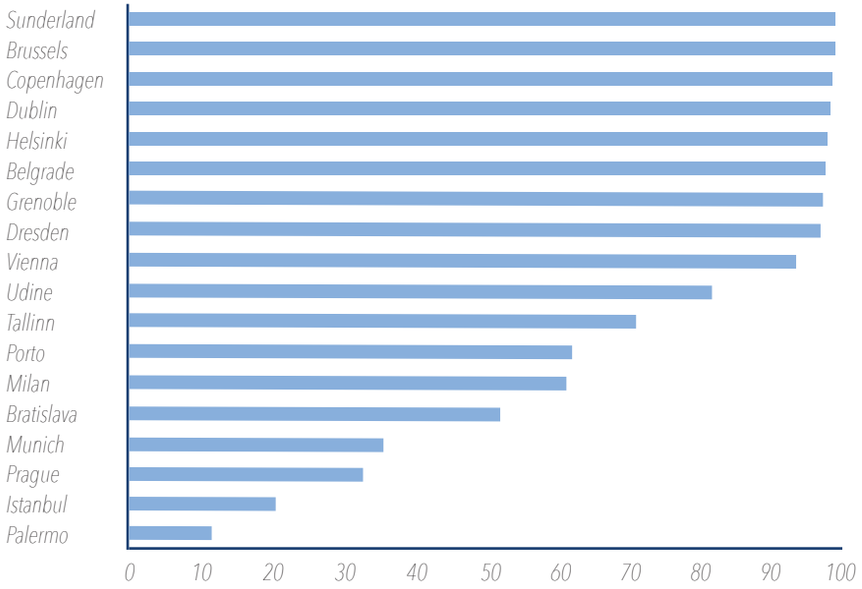
While the world's population keeps growing and our cities keep getting more and more dense, urban sprawl is a phenomenon that affects a big part of our society. In this chapter the notion of urban sprawl will be explained. Furthermore, the different drivers for urban sprawl will be discussed as well as the environmental, economic, and social consequences it brings. Finally, changes in land use and transport policies will suggest ways to handle and reduce urban sprawl as continues to grow and is one of Europe's major challenges.

Historically, Sprawl was a phenomenon typically associated with the Unites States. The rapid growth of private car ownership and a personal preference for a detached houses with gardens led to a rapid low-density expansion of cities towards the outskirts. (EEA, 2006)

In more recent years, sprawl has made its way to Europe and become very common. Although it is typically characterized by a denser urban fabric and higher population. Traditionally, a clear distinction was made between the historical core and the countryside in the urban fabric. However, the desire to move to more suburban environments to create a different kind of lifestyle, outside the inner city becomes more attractive. (EEA, 2006) This way, urban expansion is occurring in a scattered way all throughout Europe in different manners. These different types of Urban sprawl will be discussed further in this thesis.

Today, reports have shown that 80% of Europeans will be living in urban areas, which means the surrounding land and area will be increasingly important. (EEA, 2006)

## Low density residential areas as a proportion of all residential areas built after the mid 1950s




*SOURCE: European Environment Agency, 2006, Page 12*



## DRIVERS

To come up with the best solutions to combat urban sprawl it is necessary to look at why this phenomenon has become so popular. This way sustainable urban planning strategies can be implemented correctly. These are some of the reasons that drive people to live in lower density areas.

Preferences for living in low density areas:

- Proximity to open spaces
- Lower noise levels
- Better air quality
- Longer exposure to light
- Better local visibility

Despite the social and cultural trend for lower density areas, governmental entities and regulations have also contributed to the emergence of urban sprawl. The restrictions put on building heights have provided a considerable barrier in the emergence of a compact city. Furthermore, other policies like lower motor fuel taxes outside cities, as well as other policies that encourage the car usage. This overall failure to adopt policies on a European level that include the social cost of air pollution, climate change and congestion is enabling urban sprawl even more. (OECD, 2018)

# CONSEQUENCES

'Four out of five European citizens live in urban areas and their quality of life is directly influenced by the state of the urban environment' (European Commission, 2006).

Once the drivers have been assessed, it is crucial to know the impacts these have in the associated functioning of the city and its surrounding areas. All these consequences are in some ways interconnected, which makes it very challenging to create effective design and policy solutions to fight urban sprawl. However, active urban renewal and redevelopment policies in many urban areas are successfully reversing the deconcentration of urban centres and the decay of central city districts (Working group, 2004)

## Environmental

The suburbs and outside towns are usually poorly served by public transport. This means cars must travel further away and houses have a higher air pollution. These lead to higher gas emissions. The graphic on the right shows us the impact that sprawl has on agricultural land and natural areas. Istanbul being the highest, followed by Brussels.

## Economic

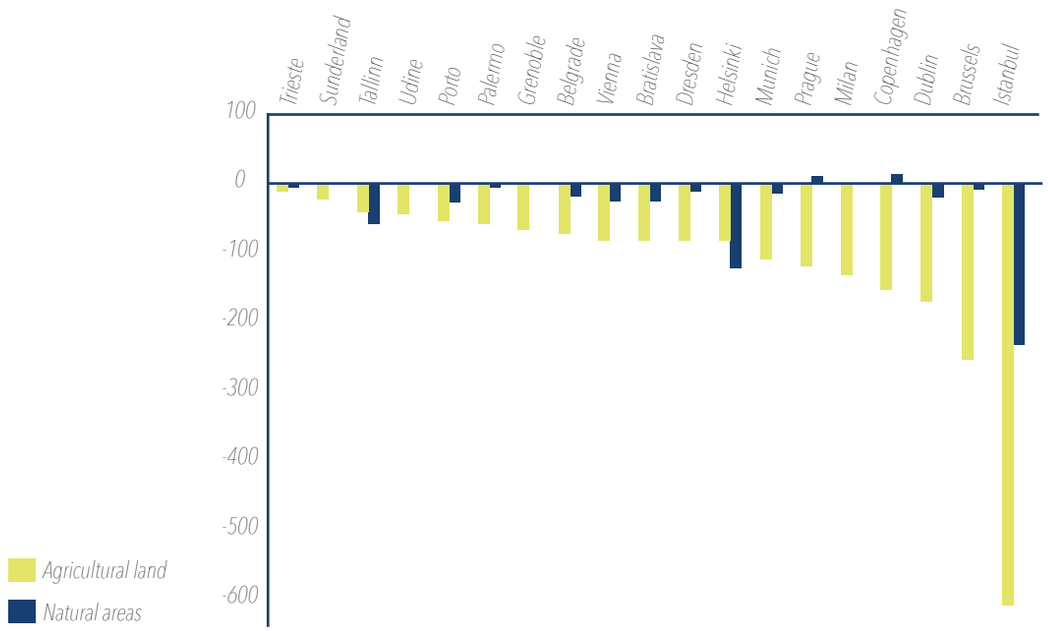
Economically, the per-user costs also increase due to sprawl in public services like, water supply and sanitation, electricity, public transport, waste management and policing.

## Social

Urban sprawl affects the inclusiveness of cities by reducing the housing supply in a suburban context and therefore making the housing less affordable.

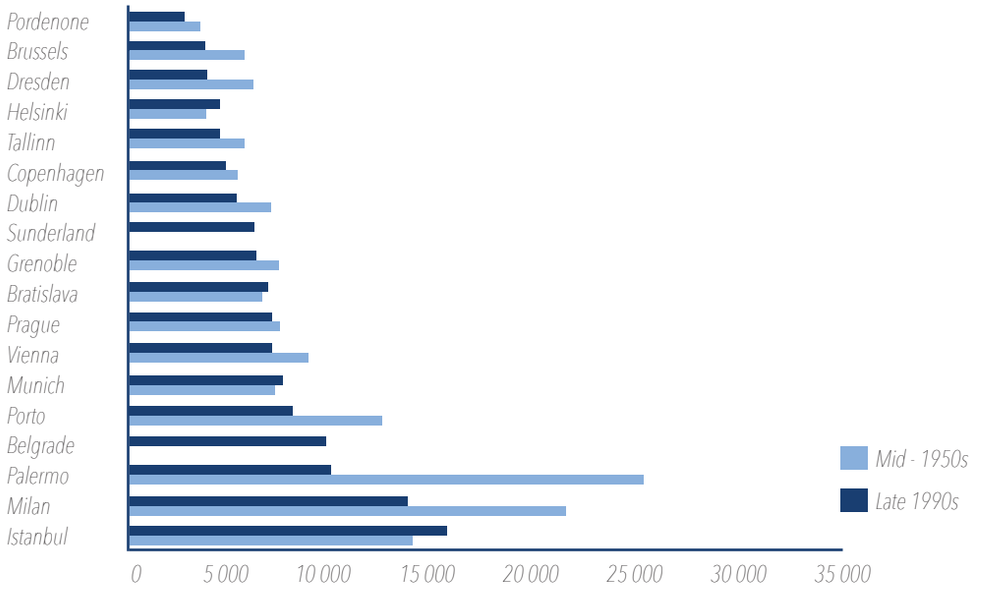


## Sprawl impacts on agricultural land and natural areas




*SOURCE: European Environment Agency, 2006, Page 34*

## Residential density in mid 1950s and late 1990s (measured by in inhabitants/ residential km2)




SOURCE: European Environment Agency, 2006, Page 14



## RESPONSES TO URBAN SPRAWL

The EEA report of 2006 has showed us that it is crucial to pave the way in developing the best framework for action. Showing local leaders that they can always do more. (European Commission, 2005; 2006). This framework is to be applied on all levels, local, regional, and national governance, as they are all somewhat interconnected. A close coordination is what will put the best strategies and instruments forward to control urban sprawl as well as create high quality urban areas. Therefore, it is a must that there is a clear distinction between what is locally driven and what should be taken up by the EU.

Currently, the solutions for our planning policies have a strong incline towards economic gain and development rather than a sustainable vision for urban Europe, this is the case on all levels of governance. A communication from the European Commission to the Council and the European parliament on the thematic strategy on the urban environment advises Member States to help regional and local authorities to improve the environmental performance of the cities in their country through better cooperation between different levels of administration.

## Land use policies

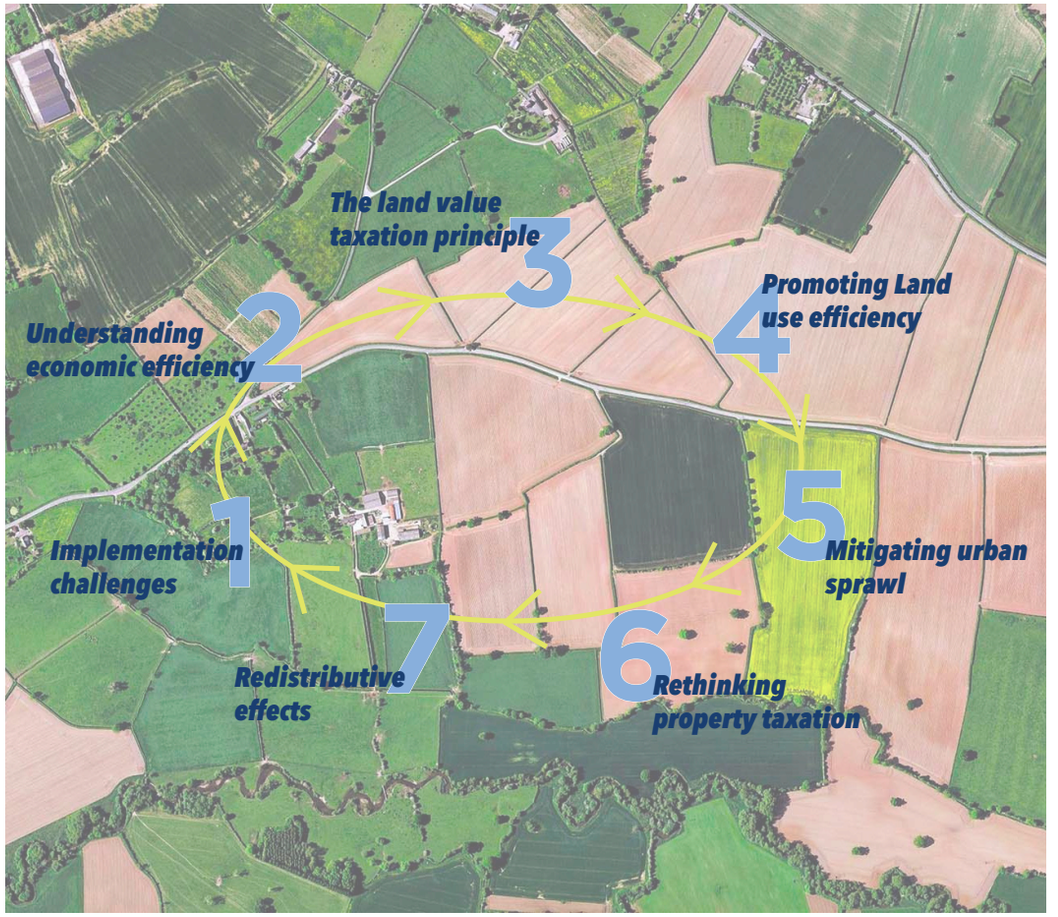
Having a reform in urban containment policies. The existing urban growth boundaries must be reviewed by looking at the current buffer zones and greenbelts.

This reform can be done through a streamline land-use taxation for the development of land on the outskirts of cities. This can prevent conversion of farmland and forests into urban land. Rather than taxing the income or the property, the land value is being taxed. This has the potential to create a revenue solution that could address a multitude of economic and societal challenges.

The first and biggest argument for land value tax is the promotion of economic efficiency. According to Faster Capita, this system encourages landowners to productive usage of their property, which will lead to a more equitable land distribution. Overall leading to a more stable and dynamic economy.

Secondly, this reform will bring a more fair and equitable system through the taxation of unearned wealth generated by land. The incentive will be more progressive through a contribution to the cost of public goods from landowners who benefit from location and infrastructure improvement.

Lastly, the land value taxation approach could potentially generate a significant source of revenue who can be allocated to public services such as education, infrastructure, public spaces etc.




*SOURCE: The Alan Turing Institution, 2018; Learning tools for analyzing land use*

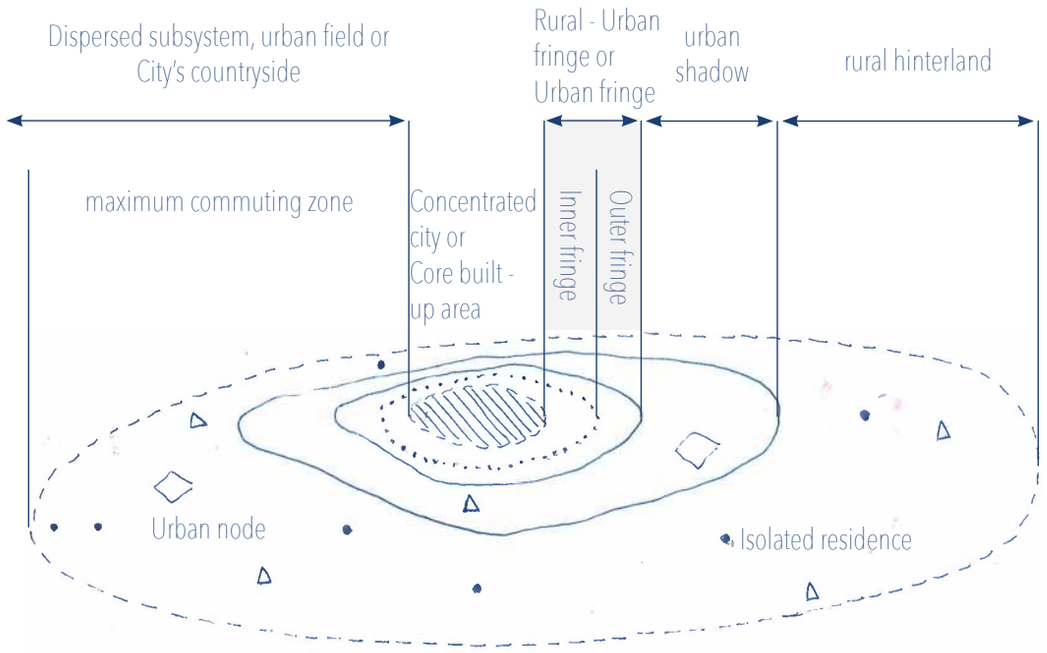
Consequently, having a reform property taxation in a split rate, whereby higher tax rates are set on the value of land rather than the value of buildings. This shift in taxation should therefore also shift the cost of infrastructure provision to developers. By incentivizing developers to cover the costs of providing roads, public transport, water, and sanitation the infrastructure will instantly be thought through in urban sprawl as well.
A great example of this is Singapore who provides great spatial public services while keeping the income taxes low.  More research and implementation will be done on this topic further in this thesis.

## Transport policies

By introducing road pricing mechanisms, the environmental and economic consequences will be mitigated and make compact development more attractive. This will also be able to generate income to invest in better and more sustainable public transportation services and infrastructure. This will make them more attractive and make people use their car less to go to places. Another way of reducing car usage is by reforming parking policies or  aligning taxing motor with the external costs of fuel consumption.

*SOURCE: © Thinkstock Images–Stockbyte/Getty Images*

## The rural - urban fringe scheme




*SOURCE: Bryant et al., 1985, page 12*





To understand how urban sprawl will look like in the future and position Belgium's development patterns we need to analyse the current structure of the city's countryside in relation to the urban core. The city's countryside: Land and its management in the rural-urban fringe' by Bryant et al. (1985) uses different terms such as 'fringe', 'inner fringe', 'rural-urban' fringe, 'urban shadow' or 'rurban fringe', sometimes to identify quite separate areas, but usually overlapping to some degree (Martin, 1975). A consensus exists, however, over the broad conceptual notion underlying the immediate countryside of our cities. As Pryor (1968) noted: "it is the zone of transitions in land use, social demographic characteristics, lying between (a) the continuously built-up urban and suburban areas of the central city, and (b) the rural hinterland, characterised by the almost complete absence of non-farm dwellings, occupations and land-use, …" The real problem lies in defining the exact interpretation of this notion of transition, and in the choice of indicators with which to measure the extent of the 'fringe'. It is this fringe called the rural-urban fringe that will be the research area for this pilot project.

### The future of the rural-urban settlement

Further in the book Bryant analyses the future directions of urban sprawl and the evolving settlement system. He analyses the future directions of urban sprawl and the evolving settlement system.

He predicts that it will grow outwards, depending on population growth and/or redistribution, people have the desire to move into a countryside or rural environment, and transportation development.

(a) The two urban centres attract flows of population from the smaller towns and villages surrounding them due to further urbanization patterns. Then due to congestion, and transportation developments even more dispersion of urban functions is possible. This is how the early stage of the regional city is formed. (b)

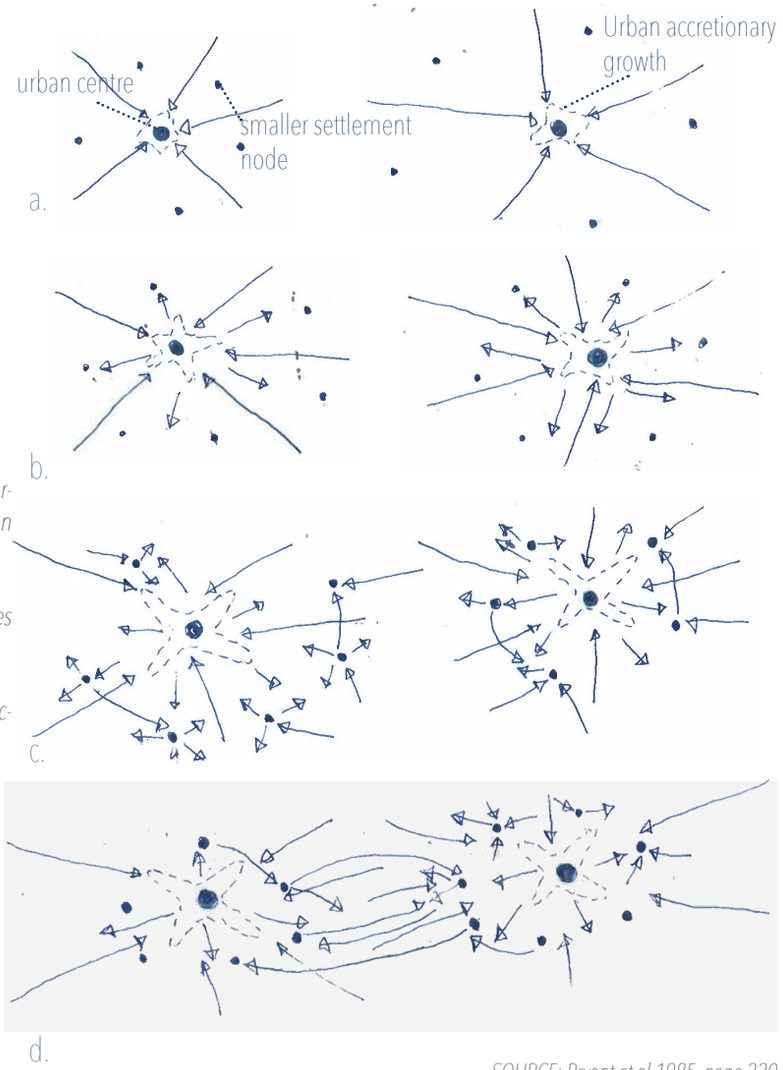
Continued growth of the suburban, dispersed nodal and dispersed. Other processes develop that feed the dispersal or urban functions throughout the city's countryside. Manufacturing tends to develop in suburban nodes and the nodes embedded within the city's countryside's like cheaper space and greater accessibility. (c)

This way, activity nodes are strengthened, which then act as centres of smaller scale explosions of residential functions, spreading the web of interactions of the regional city over a broader segment of countryside. Any simple zonation of land use patterns and conflicts will begin to break down. As this continues, the settlements begin to lose more and more the perspective of orientation to a central core. Activity nodes in the city's countryside become more self-sufficient as they grow larger although they still exist in an interacting settlement system with the initial core settlements for some types of functions. Lastly, the web of interactions developing from one regional city loses its clearly separate identity and merges into the broader urban industrial region, the megalopolitan structure. (d) This stage will happen very gradually. It is this last phenomenon that will be analysed and designed further in this thesis.





## Stages of growth of the regional city




*a. polarization dominant*

*b. Residential dispersal with urban growth and transportation developments*

*c. Dispersal of economic activities - nodal, axial, suburban*

*d. Integrated megalopitan structure*

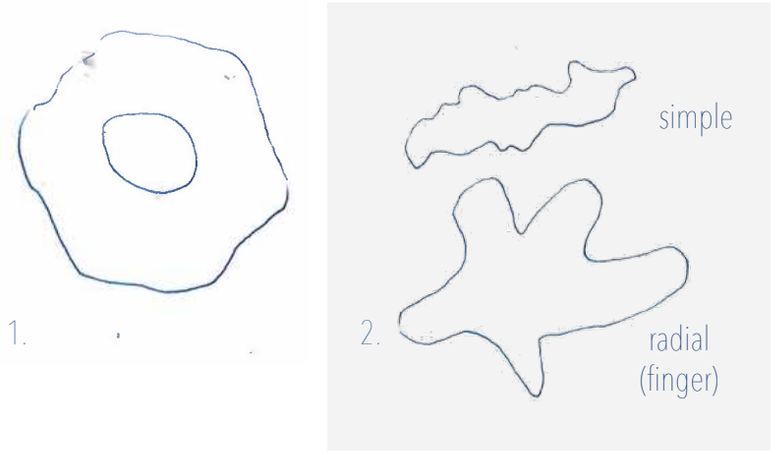
*SOURCE: Bryant et al.1985, page 220*

# RIBBON DEVELOPMENT

*TOWN CENTRES*
*HISTORY*
*POLICIES*
*BELGIUM*
*FLEMISH DIAMOND*
*TYPES OF DEVELOPMENT PATTERNS*

02

## The four basic external urban forms




*1. Concentric*

*2. Two linear forms*

*3. Dispersed*

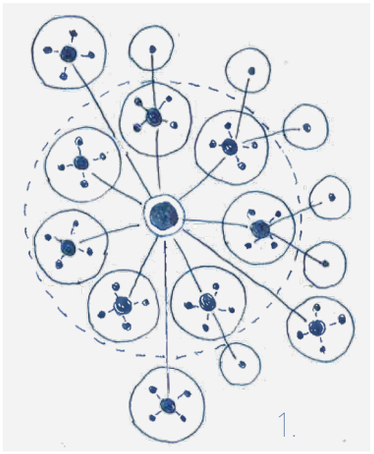
*4. Multinodal*

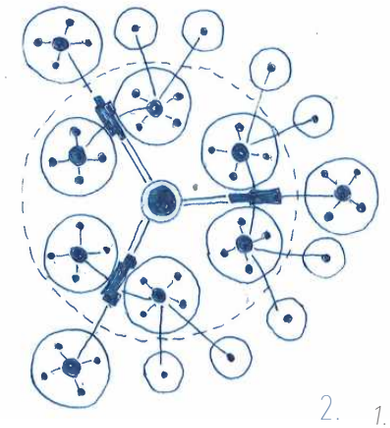
*SOURCE: Bryant et al. 1985, page 193*

Town centres have played a significant role in the creation of urban sprawl. By looking at the history and different types of town centres we can identify the place, as well as structure of the town centre.
The book by Imre Perenyi called "Town centres: Planning and renewal" has been focusing on this topic and through diagrams explaining the various forms and compositions of the town systems. Through the different scales he is able to discuss topics varying from the town centre and its relation with the neighbouring settlements to the various green areas depending on their town.

The diagram on the left by Bryant et al (1985) showcases the four basic external urban forms and how these further turn into indivial town centres. The urban form this thesis will focus on is the second one, a concentric form with radial fingers.

## Compositions for agglomeration centre systems




*SOURCE: Perenyi Imre , 1973*

*1. Agglomeration with a hierarchic, multistage centre system. Main centre solution with the principal town centre of the central settlement acting as agglomeration centre.*

*2. Agglomeration main centre system is divided in space.*

---

*1. Two-stage centre system.*

*2. Three-stage centre system.*

*3. Two-stage centre system with parallelly divided principal centre.*

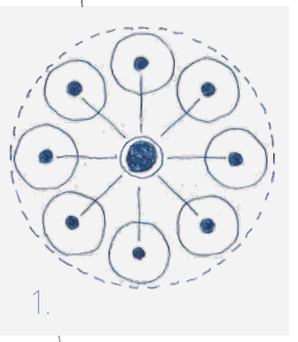
### Place of the town centre

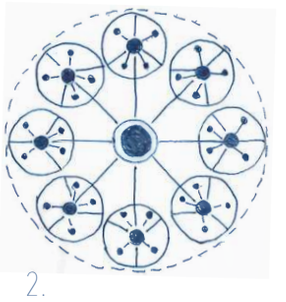
National structure is based on the region as the principal organizational unit of an area that can be defined by factors.
These can be physical geography, economic geography, population and unit: whose production and labour conditions ensure fulfilments or 1 or more economic functions?
**The communication between living and working is very important as it shows the use of mass transportation.** Perenyi emphasize the need to analyse this.

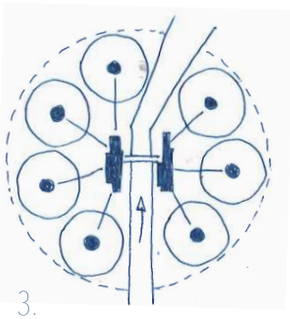




## Varieties of the centre system of a city




*SOURCE: Perenyi Imre , 1973*

### Structure of the town centre

For him, it goes without saying that the town centre should be easily accessible. It should include certain facilities to accommodate for the people living in the area. This can be: Administrative, Socio-political, Cultural, Educational or Commercial.

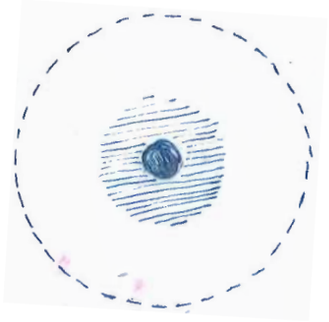
The town centre should include various types of living buildings.

**The apartment houses should be in parts of the centre that count as the traditional area to the residential area. As the centre is usually home to single people or couples without kids.**

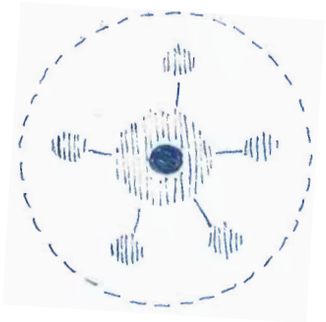
The traffic could be separated not only by type of vehicle but also through time. This can be done by restricting centre bound transport to the hours of the night.

## Interrelation of town centre and neighbouring settlements

1.



2.



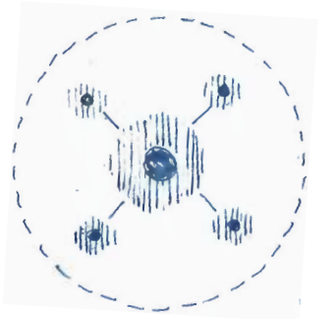
*1. No relation happens between town centre and neighbouring settlements.*

*2. Town centre or centre system of the settlement is concerned with central functions.*

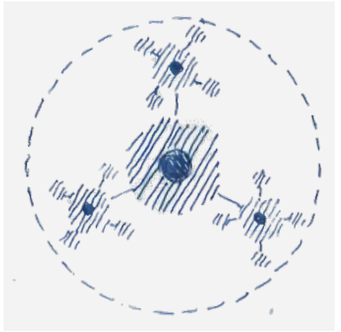
*3. Town centre offers surrounding settlements only high grade functions.*

*4. Environmental settlements also constitute hierarchic system.*

3.



4.



*SOURCE: Perenyi Imre , 1973*





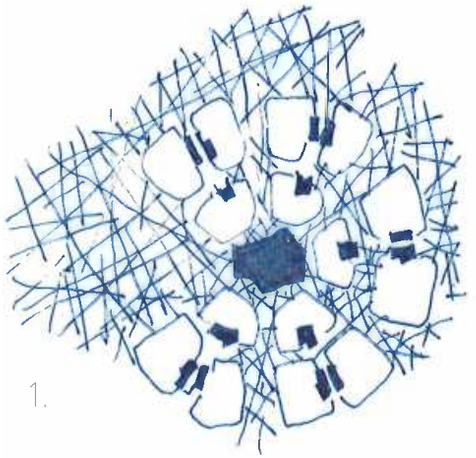
### Pedestrian towns

According to the book Pedestrian towns don't need a transport system. What is more important is the development of a uniform network of towns.

We need to encourage towns who have around 20.000 inhabitants. Because these types of towns have a healthy climate as well as are economically viable.

In the instance of less than 20.000 inhabitants, Perenyi argues the town needs to be large enough to ensure an economical supply of primary, everyday services. Towns with this population in Belgium are Machelen, Kraainem, Haacht, Kampenhout, Erps- Kwerps
These towns should be placed near each other. **The centre should be made accessible through public transportation as it carries a very leading role in shaping town structures**. Town centres can naturally be made accessible through a road network as it defines the towns health, this can be done through wider gaps between public spaces.

## Schematic diagrams of the relationship between the systems of town centres green area



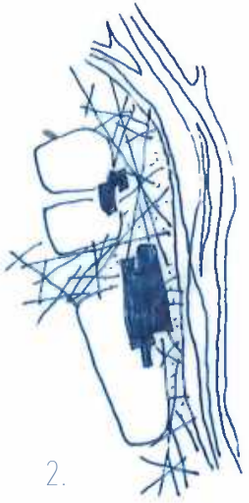
1.

*1. City*

*2. Waterside town*

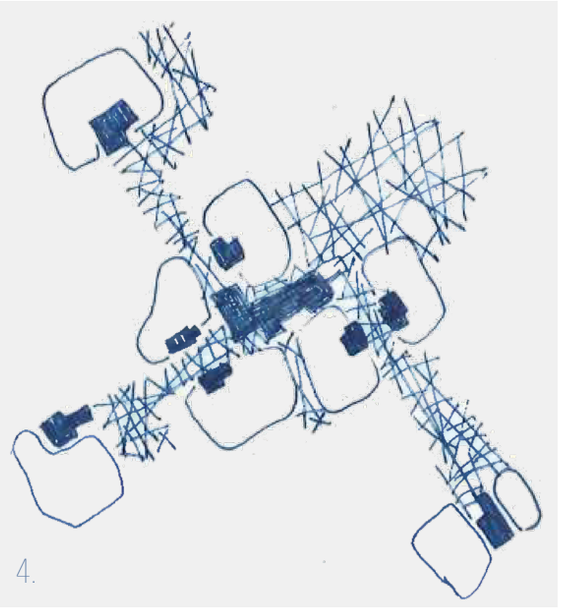
*3. Small town*

*4. Conurbation with extensive suburb*



2.

3.



4.

*SOURCE: Perenyi Imre , 1973*

### Green areas

Having a green belt system is a must not only in cities but also smaller towns, as it is a big reason why people move outside the city centre (Perenyi, 1973). Unbroken green areas should be wedged close to the middle of the town centre, or part of it. This can be done in various ways. Through, green areas, gardens, groves and afforested riverbanks.

The town centre should connect in some way to the most important green area, perhaps through the square.

### Conclusions

By researching and analysing the different typologies and scales of town centres I am able to position the topic of urban sprawl within the european context and more specifically Belgium.

Although the book is dated from the 70's, valuable information and knowledge can be used to frame my further research.

# HISTORY

*SOURCE: University of Antwerp, Privatizing Urban Planning*

Now that the general information around town centers and villages has been explored, a more in-depth research around urban sprawl in the context of Belgium will be studied.

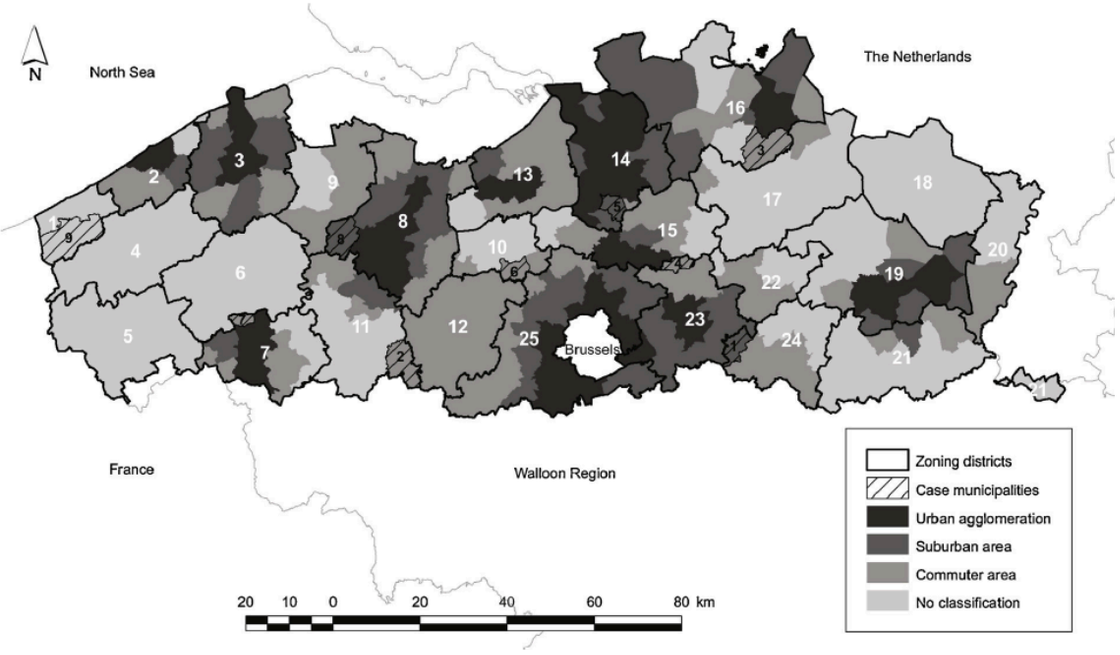
Through the work of Boussauw K. et al. who investigated the presence and trends of linear sprawl in the North of Belgium, a clear history of how ribbon development surfaced in Flanders as well as the policies that led to this phenomenon were explored.



They have defined Sprawl as "A relatively wasteful method of urbanization, characterized by uniform low densities. It is a process, not a state." Generally, after the Industrial revolution, ribbon development was directly linked to the development of transport networks. Therefore, people started settling predominantly along railway lines. In the 1930's they become more dominant, expanding from town centers along the roads towards the bigger cities. Later, canals and coastlines also became accustomed to this type of development.

During this period in the North of Flanders, the authorities permitted many allotments not in line with draft plans. In the 1970's the 'regional zoning plans' got introduced. Although not mentioned in the name, this is a zoning system that works on a national level. After this, the country allowed some zoning exceptions. New houses were constructed along roads and on agricultural land and created more ribbon development due to its attractiveness. In the following decade the zoning plans became regional instead of national. The RSV (= spatial structure plan Flanders) got introduced. Although the development was made more stringent it was not very successful. Only in the 1990's it was assessed that

*SOURCE: Google maps*




*SOURCE: Verbeek et al., 2014, page 52*

these regulations were a cause of increased risks of accidents due to ribbon development. Although no new regulations were made after this assessment.

*SOURCE: Winckelmans, W. (2019) Verspreid Wonen Kost Vlaanderen Fortuin*

One of the shortcomings of the spatial planning policy in Flanders, however, is the lack of realistic scenarios of future urban development. Various attempts have been made to develop spatial models that simulate (sub)urbanisation processes. Most of them make use of non-urban–urban transition probabilities and planning restrictions to predict urban sprawl patterns.

It is, however, not known whether these modeling approaches can produce meaningful results in 'rurban' landscapes where the alternation of built-up and non-built area has resulted in a fine scaled fragmented landscape.(Poelmans & Van Rompaey, 2009).

# BELGIUM

Percentages built-up land and average distance of the open space to built-up land in the EU and the US.

| | % Built-up land | Average distance to built-up land (m) |
|---|---|---|
| Flanders–Brussels | 26 | 539 |
| European union | 4.8 | – |
| Belgium | 20 | 721 |
| The Netherlands | 11.5 | 1579 |
| France | 5 | 2385 |
| United Kingdom | 7.5 | 5636 |
| Spain | 1.5 | 6545 |
| Germany | 8 | 1496 |
| United States | 4.8 | – |

*SOURCE: Poelmans & Van Rompaey, 2009*

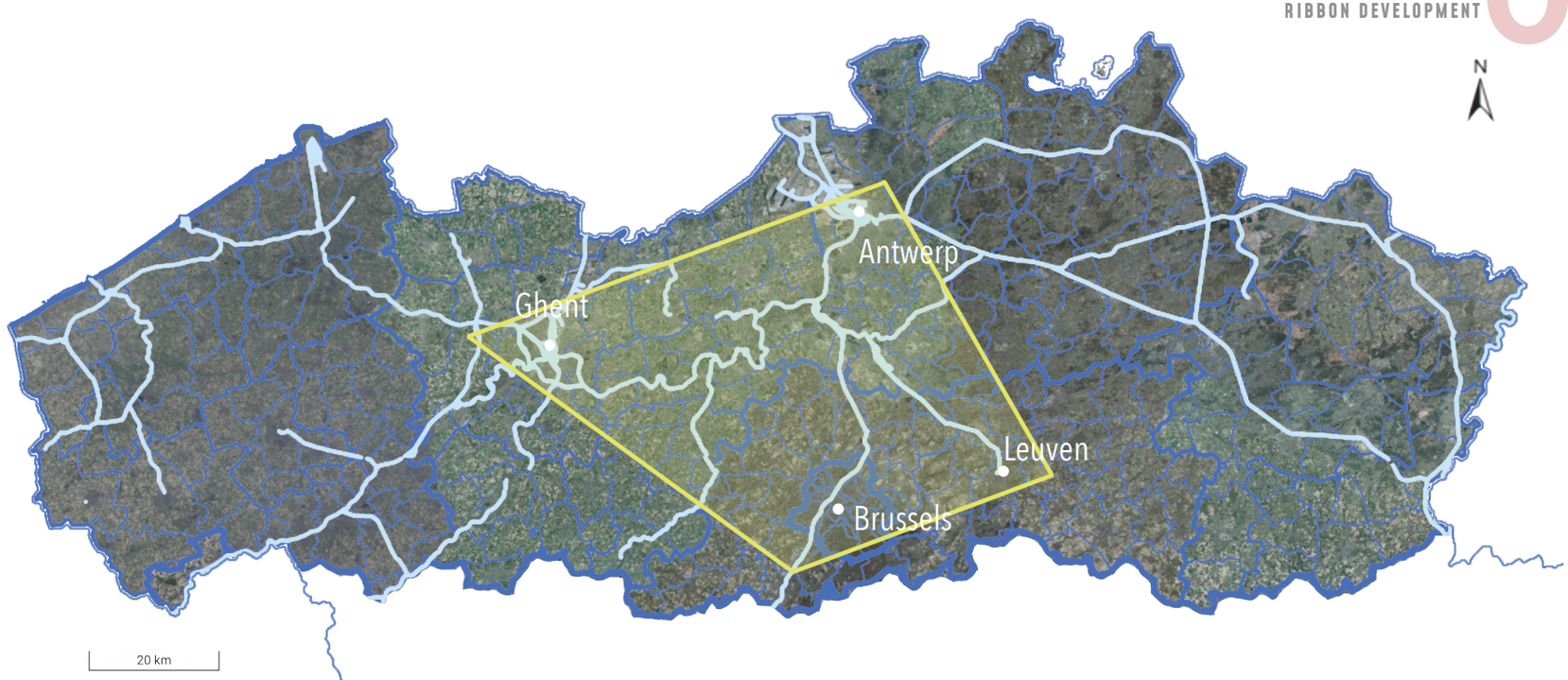
The Flanders–Brussels region (Belgium) is one of the most urbanised regions in Europe. This was shown by the study done by Poelmans I and Van Rompaey A. On the table to the right is shown how Flanders and Brussels have the highest percentage of built-up land.

The densely populated area (515 inhabitant/km2) shows a very scattered urbanization pattern, which originates from the medieval settlement structure. This 'rurban' landscape, characterized by a highly fragmented complex mosaic of different forms of land use, appeared since the 1960s, when the population numbers of the historical city centres decreased in favor of the population numbers in the outer urban fringe (Antrop, 2000, 2004).

# FLEMISH DIAMOND

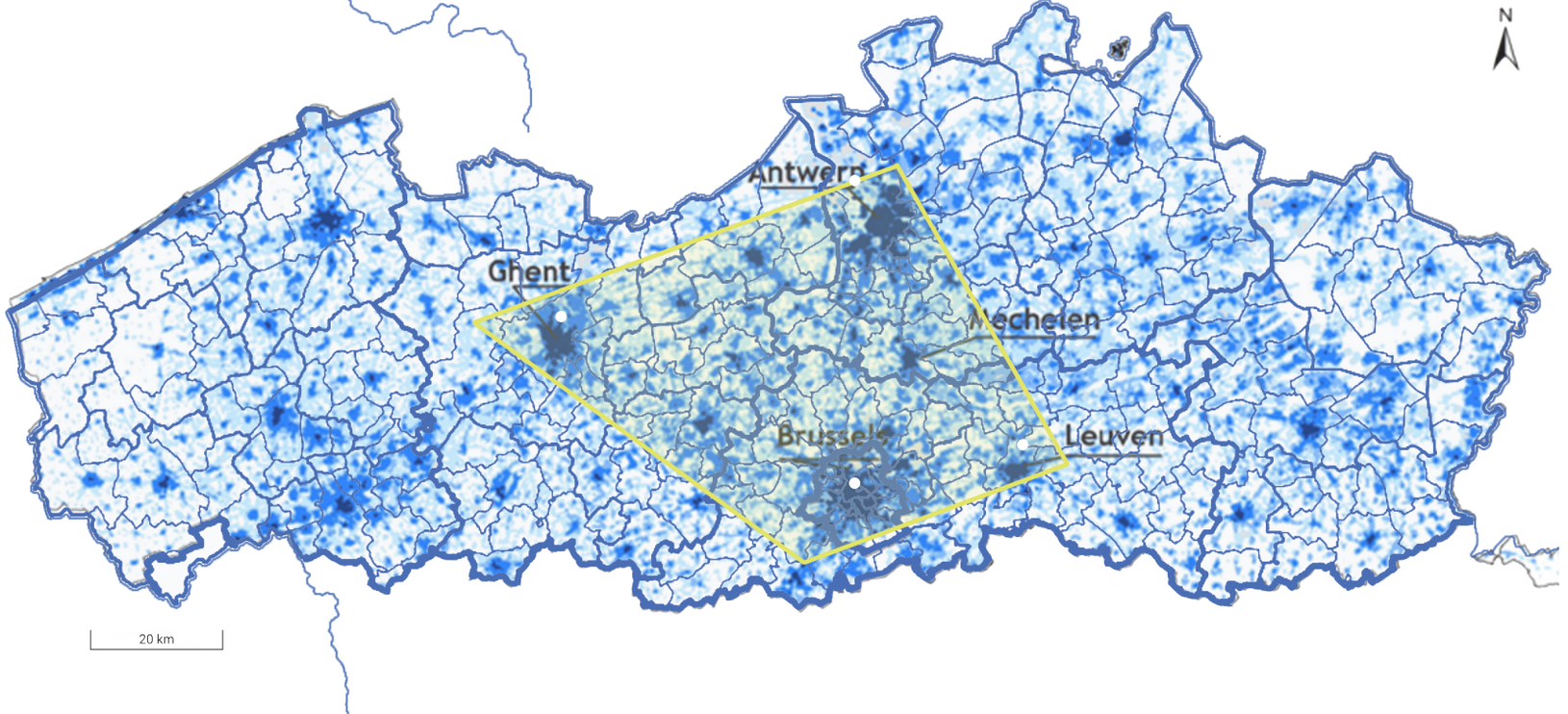
## Topography and waterways

When it comes to greenery and topography in Flanders it looks like a quite green area from an aerial view.
Because the architecture of ribbon development is characterized with large streets and large hedges, from the street perspective or aerial view this area can be perceived as green. However it is usually a privatized green area. (Vermeiren et al., 2021)
The waterways are usually an indication of where ribbon development is most prominent.




## Roads

The road system of Flanders has been well developed since centuries. When looking at average passenger - km/ person per day when it comes to car usage, people living in an urban are travel 21 km/ day on average, while for ribbon development that number is 32,6 km/ day. The cost of daily transportation also affects people who live in dispersed land (€ 8,6/day) as for people who live in ribbon development its costs them €8 compared to € 4,6 for the people who live in dense urban areas. (Vermeiren et al., 2022)



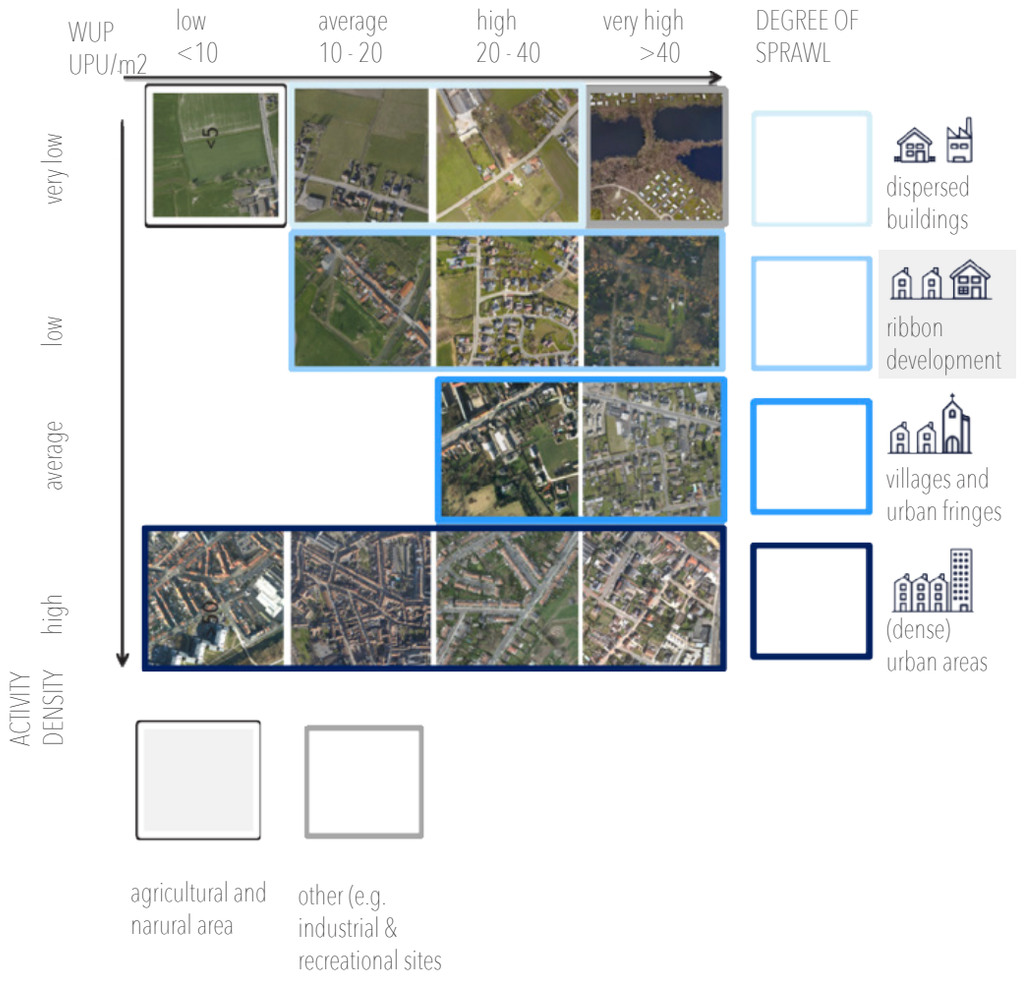

## FLEMISH DIAMOND

### Railways

The average kilometers traveled per day per person when it comes to public transportation are much higher for people in the urban areas (3,7 km) compared to 2,8 km traveled per day for people living in ribbon development.
Although Flanders is an overall well connector area with its very developed railway system. Mobility affects people living in dispersed areas. They travel about 43,7km/day. In ribbon development it would be 41,6km/day. (Vermeiren et al., 2022)

### Density

The densely populated area (515 inhabitant/km2) shows a very scattered urbanization pattern, which originates from the medieval settlement structure. This 'rurban' landscape, characterized by a highly fragmented complex mosaic of different forms of land use, appeared since the 1960s, when the population numbers of the historical city centres decreased in favor of the population numbers in the outer urban fringe (Antrop, 2000, 2004).




*SOURCE: Vermeiren et al., 2021, page 5*

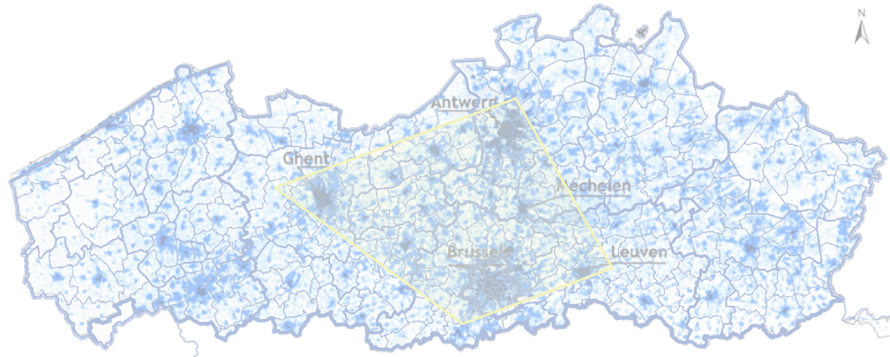


## TYPE OF DEVELOPMENT DENSITIES

A study done by Vermeiren et al. in 2021 'modeling urban sprawl and assessing it costs in the planning process: a case study in Flanders' defined four different sprawl patterns in Flanders they assessed this by looking at the activity density (should be 5-15 persons/ha = low) but can sometimes score low on the WUP scale, while according to Flemish perceptions that is the most prominent characteristic of urban sprawl in Flanders. They divised the region in 4 different types of development densities. For this thesis, the type that is going to be used as a test project falls under the type of ribbon development. .

The reason why Ribbon development is so popular in Flanders is:
- Institutionalized anti-urban attitude of Belgians and the government. The access to urban facilities is disconnected from living in the city.
- The tradition of homeownership. The social norms and expectations are strongly determined by their individual property.

With this mapping they concluded that 50% of Flanders is made up of ribbon developments. Meanwhile only 31% of the population lives in this condition. Therefore, it is crucial that these areas move towards a more sustainable approach

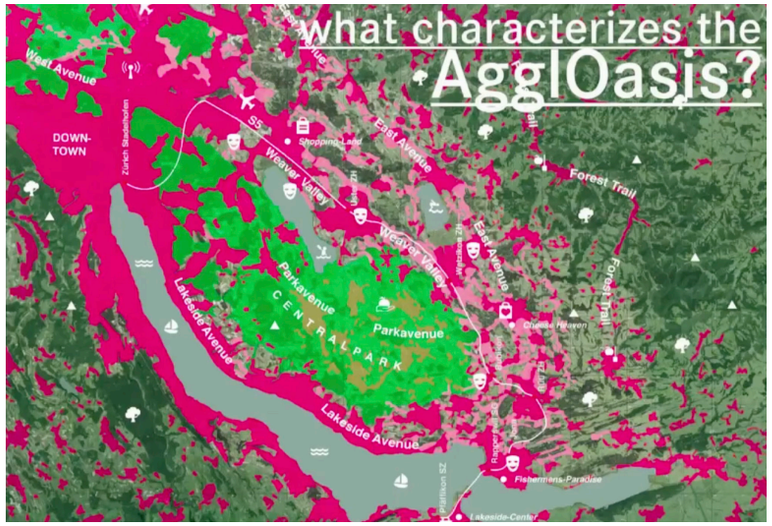


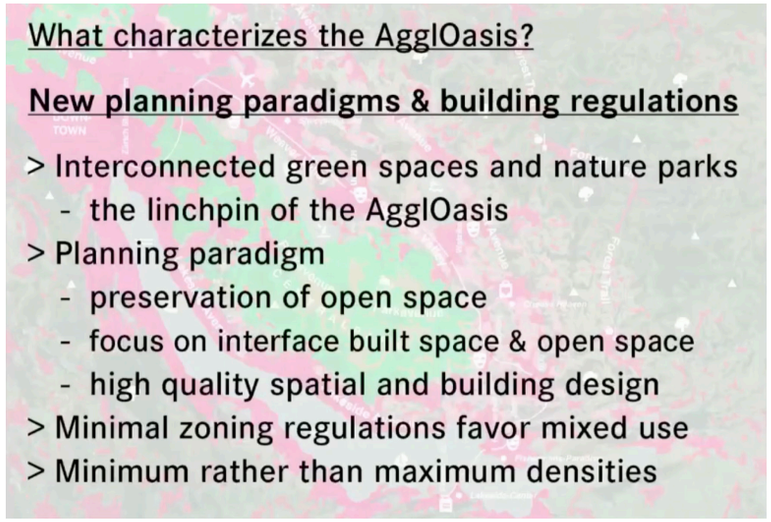
# CASE STUDIES

*THE "AGGLOASIS" - ZURICH*
*THE NETHERLANDS*

03

# Suburb?
# Agglomeration?
# Aggloasis?




*SOURCE: TEDxZurich, Margrit Hugentobler, 2010*





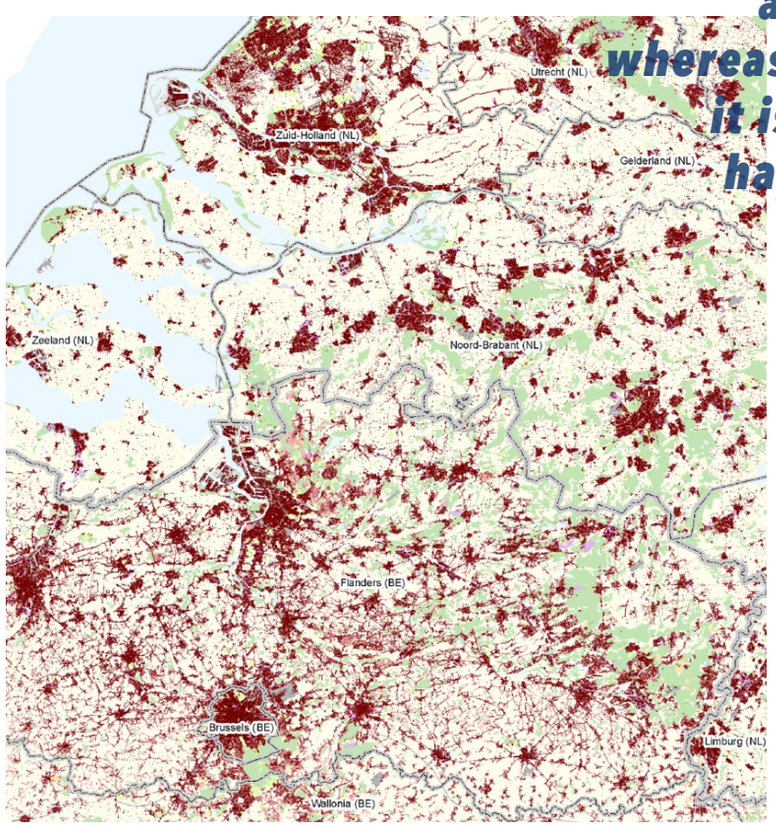
Margrit is a sociologist and is the director at the department of Research for architecture. She has written two books on this matter. In 2011 she participated in the publication of the book 'S5- city. How to turn urban sprawl into an "Aggloasis"'. The vision for this was to "cultivate oases in the desert of the agglomeration." This is supported by the results of the research project "S5-stadt- Agglomeration im Zentrum." .

The S5-city is situated at the border of Zurich with about 300 000 inhabitants. The term stands for a metaphor as it follows the S5 train line through different towns around Zurich. The appearance of the train line has changed who lives there and the appearance of the area. The communities constituting this agglomeration are often neither cities nor villages. She defines them as urban landscapes marked by the advantages and disadvantages of both the city and the countryside.

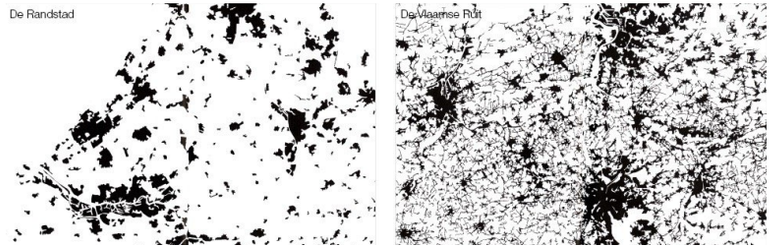
Because this condition will appear more and more in the future, she has created the so called 'aggloasis'. She says the current issue is that most cities have some sort of center but this not the case in rural areas. The need for centers in the aggloasis is the biggest challenge. Margrit wonders "How we can preserve and combine the lovely and beautiful natural areas with the built-up space. How can we smartly build and try to contain the edges of the built environment while preserving the unique local qualities of different places."

A few specific planning paradigms and new regulations can be seen on the picture on the left to showcase what characterizes the Aggloasis. This will form part the basis for the toolbox of this project.

***Urban development in the Netherlands is considered orderly and compact, whereas in Flanders it is considered haphazard and sprawled.***




*SOURCE: Buitelaar E., Leifelder H., 2020, page 50*



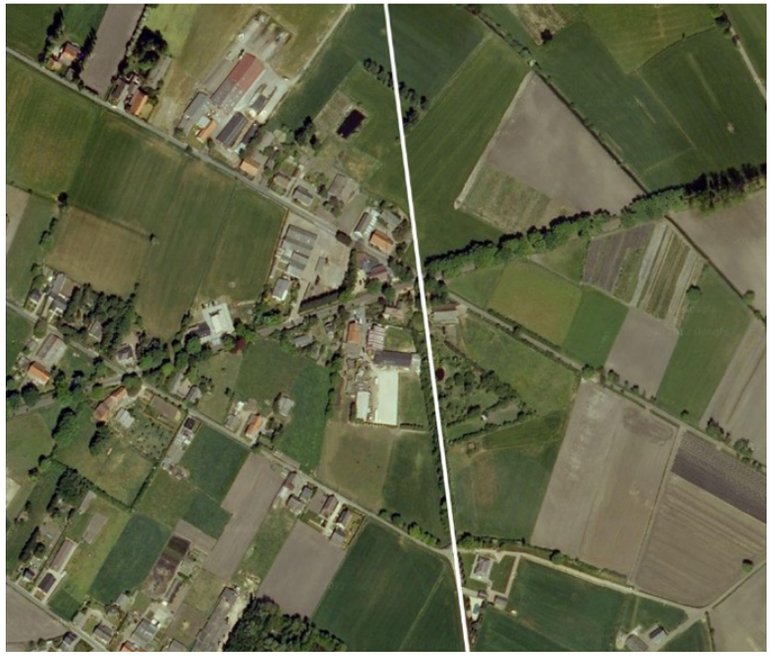

*SOURCE: Bekaert G., De Geyter X., 2002*





For this case study a country in its entirety will be analyzed. The Netherlands is a neighboring country bordering the North-East of Belgium that deals with a lot of the same characteristics. Not only is the size of the country like Belgium but they also deal with a very high population density and are both similar in modernity, trading and are democratic monarchies. However, both differ plenty in departments such as spatial planning, land use and infrastructure. Through a study done by Buitelaar and Leinfelder in 2020 called "Urban design of Urban Sprawl: Governments and the Extension of the urban fabric in Flanders and the Netherlands" these contrasting urban fabrics will be compared. This way some lessons will be learned and certain design strategies from the government in the Netherlands will be applied on this thesis project.

On the left side (p.52) aerial pic-



*Belgian (left) versus Dutch (right) rural landscape*

*SOURCE: Verbeek et al., 2020, page 50*





tures can be seen of a map of Belgium and the Netherlands together. Underneath, a black and white map of the built environment on both the same scale. In the next section a deeper look will be taken into why these ended looking so different over time and which regulations led to this.

Buitelaar and Leifelder argue that urban sprawl is created by people, but these people do not act within a vacuum; they act within–and interact with–an institutional framework that guides the spatial development of a territory. Institutions are the rules of the game, whether formal and written down or unwritten and informal, that shape human interaction.

The planning policy in the Netherlands can be qualified as more pro-concentration, albeit in a polycentric rather than a monocentric way, while the Flemish policy seems to be based on a rather ambiguous discourse of pro-concentration recently (since the mid-1990s) and a more pro-dispersion slightly longer ago. This reflects (and is reflected by) the urban morphology in both countries.
They state that it is very particular government institutions in both countries that (help) create and reproduce the various degrees of urban sprawl.

The study mentions three subsequent policies that have taken this view and (re)produced a polycentric discourse and a ditto urban structure, namely; national buffer zones, new towns and compact cities.

## National buffer zones

The first policy is that of national buffer zones (Rijksbufferzones), a concept first coined in 1958 and incorporated into the first national plan, which was adopted in

1960. **Those were zones between the major cities in the west of the Netherlands (Amsterdam, Rotterdam, The Hague and Utrecht) that were to remain green and agricultural in order for the cities to remain separate entities and not be swallowed by post-war urban expansion. A clear green area is still distinguishable in the rural landscape to this day**. On page 54 an aerial view and comparison can be seen of this between a Flanders and Dutch rural landscape.

## Bundled deconcentration

In 2012, the buffer zone policy was abolished (at least at the national level) by the national spatial strategy (the SVIR) that was then adopted. Another national policy that reproduced the polycentric discourse is the new-town policy (groeikernenbeleid). This policy aim was referred to as "bundled deconcentration," which was the key of the second national plan of 1966: In other words, sprawl, but in a consolidated and coordinated way. They were deliberately planned as satellite towns, at some distance from the major cities, in an attempt to distribute the population and relieve the cities (Reijndorp, Bijlsma, Nio, & van der Wouden, 2012).

## Compact city

In 1998, the fourth national plan (Vino) came in, with an addendum in 1990 (Vinex). The aim of bundled deconcentration was replaced by the compact city concept. The central government focused on strengthening the bigger cities by stimulating housing development in or attached to the existing urban fabric, on which it agreed with regions in covenants (in return for subsidies). This can be seen on the picture on the bottom right of page 54.

## Comparison

The Flemish region is characterised by extensive urban sprawl: 33% of its territory is now "settlement area" (Pisman, 2018) that is used for housing, industrial and commercial purposes, health care, education, nursing infrastructure, roads and rail networks, recreation, etc. Important historical reasons for Flanders's extensive sprawl are the favorable physical (soil and water) conditions and the anti-urban housing policy in the first half of the 20th century by the Catholic and Socialist Parties promoting residential development in rural areas through subsidies and the layout of an intricate public transport system (de Block, 2011; Dehaene, 2013; Smets, 1986).
Moreover, inspired by an overarching modernist pro-growth discourse, land was allocated very generously for residential, industrial, and commercial purposes in cities as well as in smaller villages, settlements and in linear narrow zones (lintbebouwing) along many roads.

## Conclusion

In both countries, there are many local generic rules that stimulate sprawl, such as parking ordinances with high parking norms, general and restrictive height standards, high minimal widths between buildings, etc. However, there were and are some additional general spatially focused rules in Flanders that increase sprawl which are absent in the Netherlands.

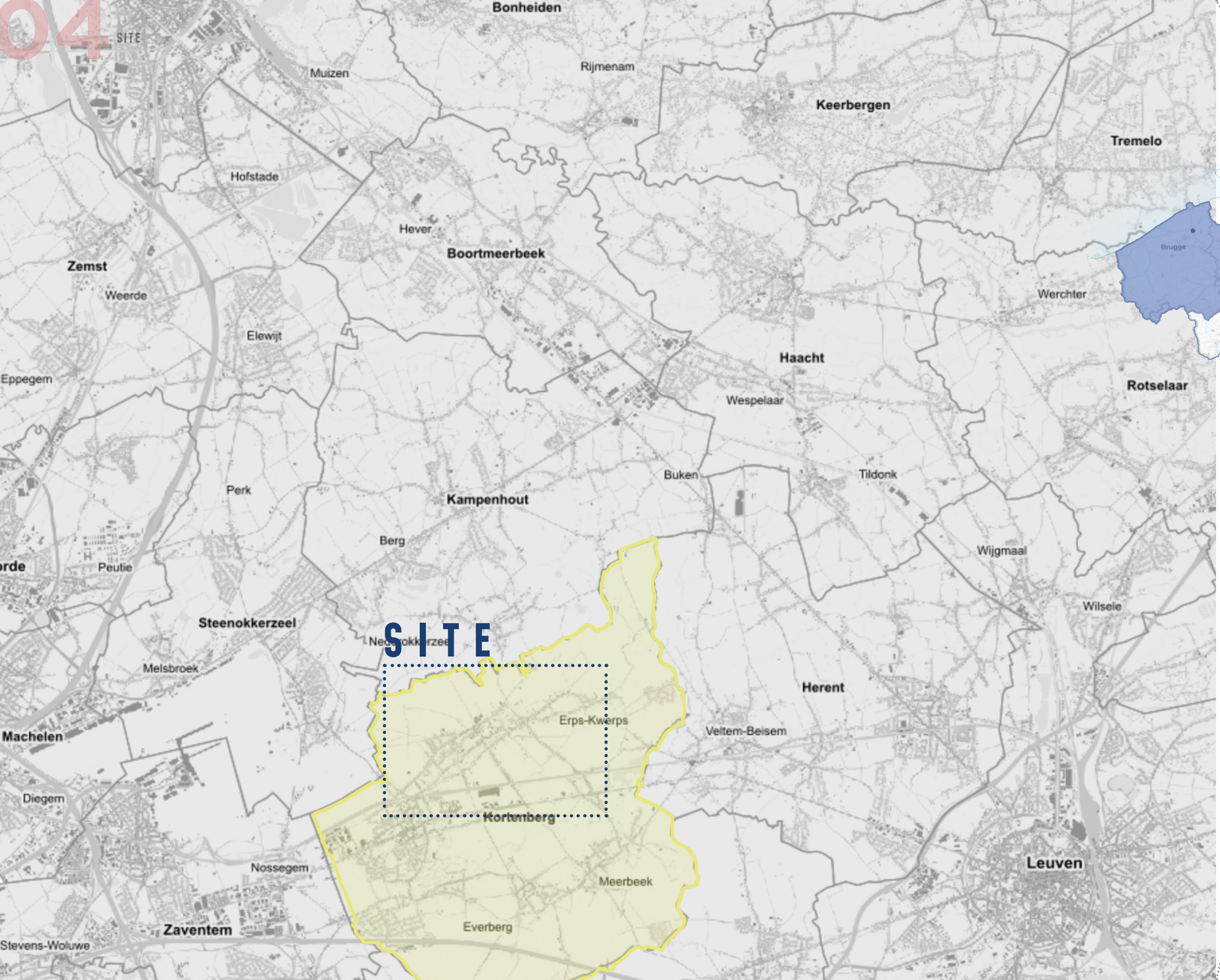
It is arguably most effective and efficient to retrofit that structure and make it more sustainable than to try to replace it with a new structure altogether.

# SITE

*CHOICE OF SITE*
*HISTORY*
*REGIONAL/SITE ANALYSIS*
*SWOT*

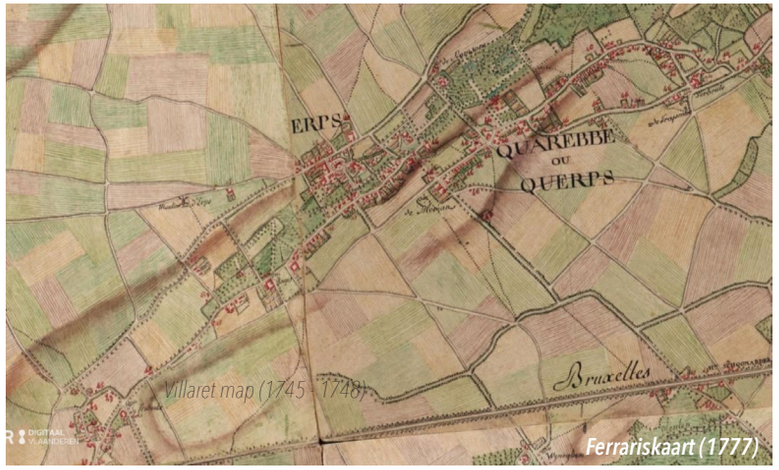
04

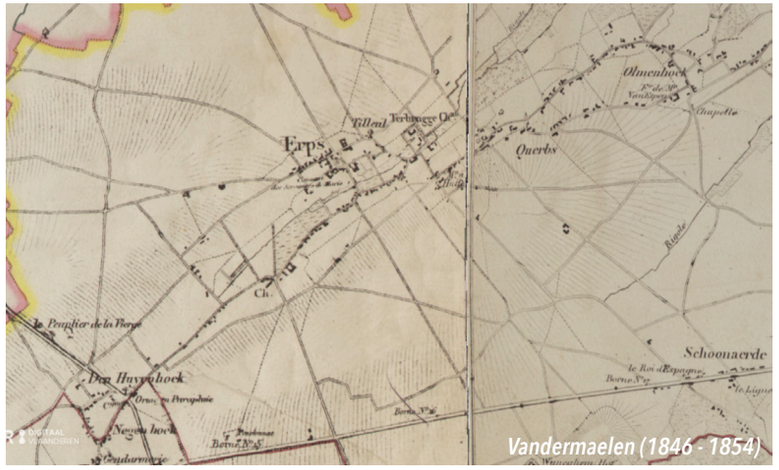
# CHOICE OF SITE



The site chosen for this thesis project is the one of 'Erps - Kwerps'. This town is part of the Flemish Diamond that has been discussed in the previous chapter. It is part of the Province of Flemish-brabant and is a sub-municipality of Kortenberg who has a population of 17,774 people.

*SOURCE: GeoPunt*




SOURCE: GeoPunt

SOURCE: Google Maps

As mentioned previously, Erps- Kwerps is part of the municipality of Kortenberg. This was not always the case. Up until 1977 Erps-Kwerps was an independent municipality. Historically, Erps-Kwerps consisted of two different villages with each their own centre, Erps and Kwerps (formerly Querps), governed as both seperate municipalities. This can be seen on the Villaret and Ferraris maps on page 62.
Both villages are indicated as two different parishes with their own centres. Through time and expansion we can see how both centers have slowly started growing together and have made up the current village of Erps-Kwerps.

## Chapels

Something that is very typical for this region of Flanders are Chapels. Erps-Kwerps is very known for his various Chapels all throughout the site. Chapels belong to the Belgian heritage and often also the culture. They can be studied through various lenses; an historical, folklore, sociological or christian standpoint (Vannoppen, 2002). Through

*Train station of Erps-Kwerps*

*SOURCE: Japplemedia., 2021*





looking a the history of Chapels in Erps-Kwerps, perhaps a deeper understanding of the towns beliefs and customs can be understood.

Underneath, three different chapels who are located in the town of Erps-Kwerps are pictured. Chapels were built in the 17th to 19th century by the notables of a villages community to showcase their wealth. Thomas de Plaines, who was the chairman at the council of Mechelen bought his wife Jeanne Gros the 'Hof te Brugge' in Erps-Kwerps. It is in 1655 that Joanna de Plaines built the 'O.L.Vrouw van Bijstand' chapel in the baroque style. The family stayed there until the 19th century when the family became extinct. Although the de Plaines family was not noble, they were still accepted as noblemen by those around them (Vannoppen, 2002).

Throughout time, chapels remained status symbols for the nobility, the bourgeoisie and the gentlemen farmers.

# GREENERY

From an aerial view the area surrounding the site looks very green. Those are mainly fields. Erps - Kwerps is located in what is called the 'Brabant Vegetable region', here mainly chicory is grown. The area is also known for a majority of its smaller local forests. On the northeast of the town the Silsombos nature reserve is located.

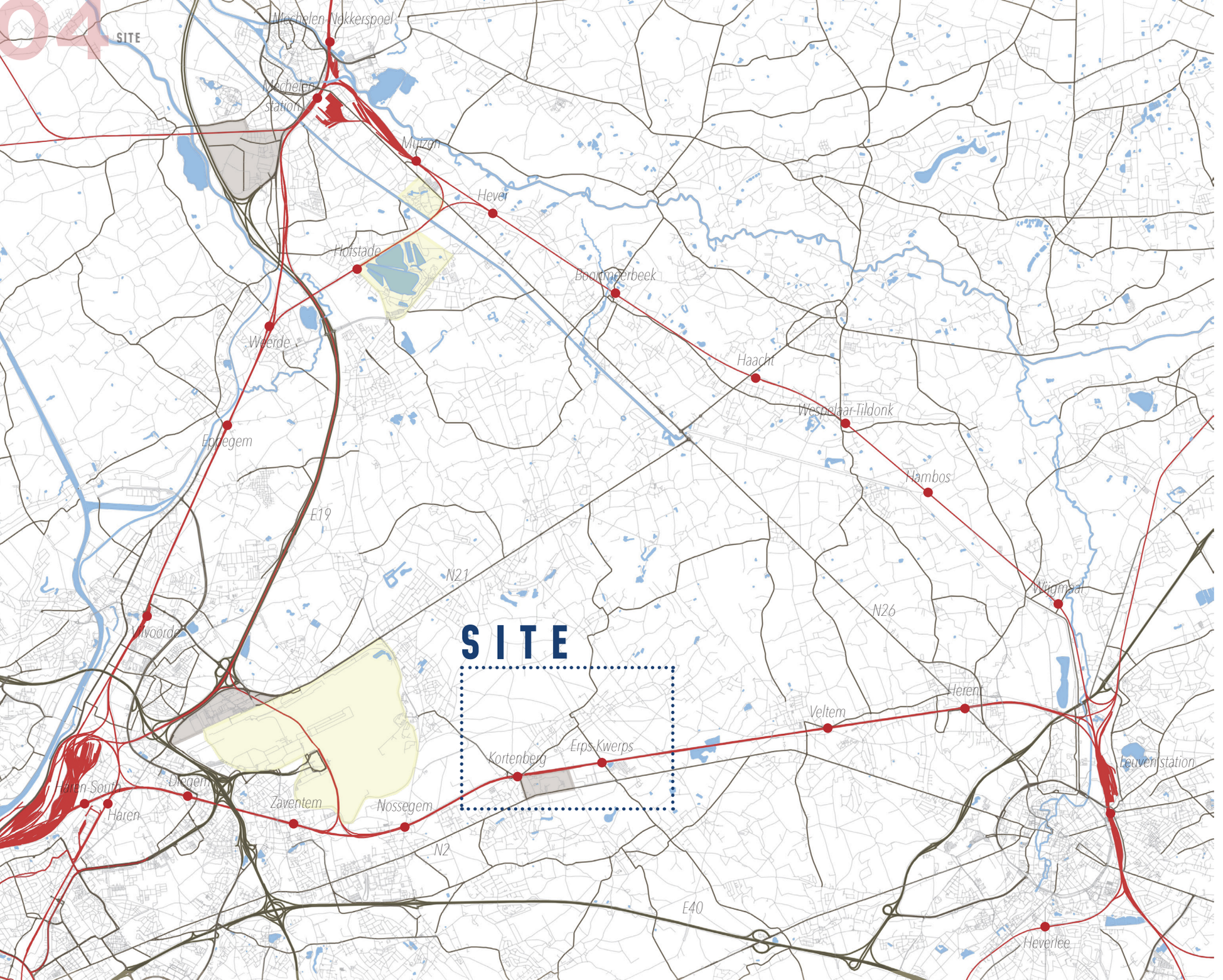
*'High Green'*

*'Low Green'*

*forested*

*SOURCE: GeoPunt*

# TRANSPORTATION




The area is overall very well connected, as is the rest of Flanders in general. Erps Kwerps is connected through the Brussels - Liège line. With only a 15 - 20 min train ride away from bigger cities like Brussels or Leuven. Two different train stations make the site accessible by train; either Kortenberg or Erps - Kwerps. The village is an extension of runway 07R/25L of Brussels Airport (Zaventemn).

SOURCE: GeoPunt

## CHOICE OF SITE

Showcased on the left, is the site of Erps-Kwerps where all the previous analysis comes together on a smaller scale. On the northern east part we can see the end of the Silsombos as well as the greenery around the town. The bus and bike paths go through the town and both train stations are situated on each lower end of the site.

*Greenery*

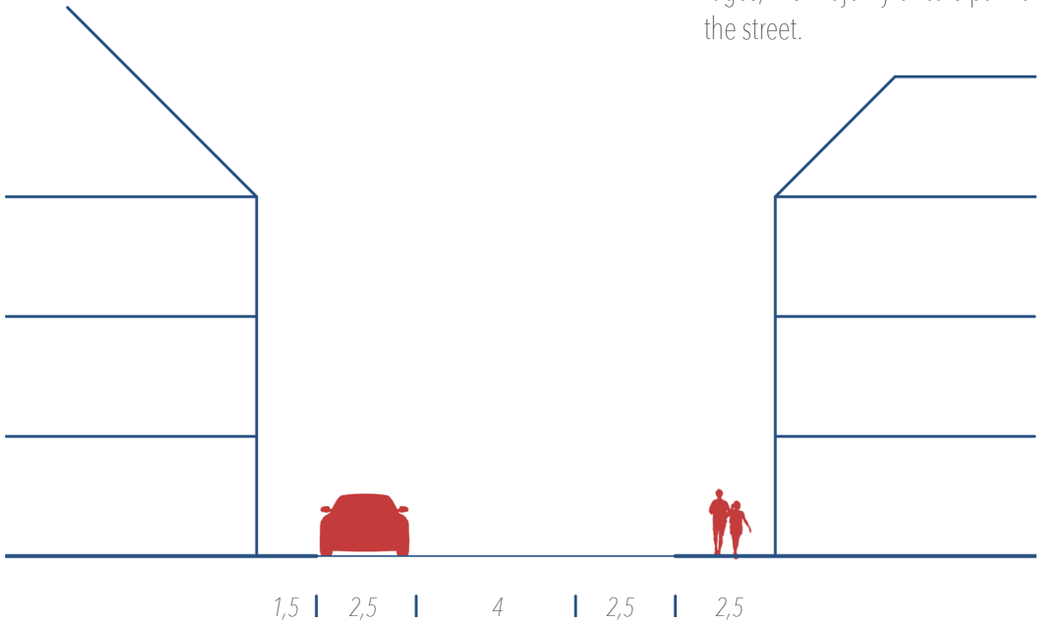
*Public buildings*

*Bike paths*

*Bus route*

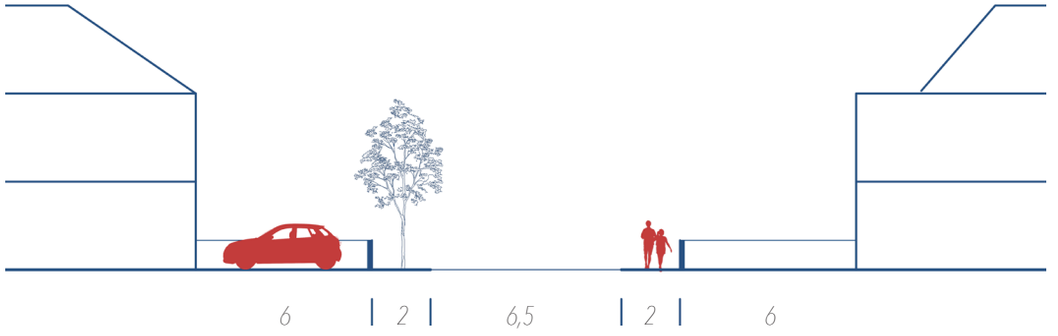
# ROWHOUSE & ROWHOUSE

Close to the train station there are a lot of rowhouses that are three to four stories high. This is the most dense area of the site. It consists majorly of single family units. The street and sidewalk is more narrow compared to the other typologies. Although some houses have garages, the majority of cars park on the street.



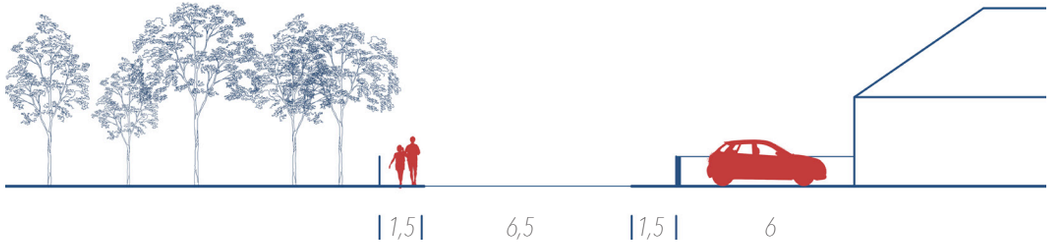
# HOUSE & HOUSE

The houses of this typology are usually two to three stories high. A lot of space is given to parking garages. The street is very car oriented as there is more space for the cars and less space for the pedestrians. There is not a lot of greenery and if there is, they are mostly private with the front yards of single housing.



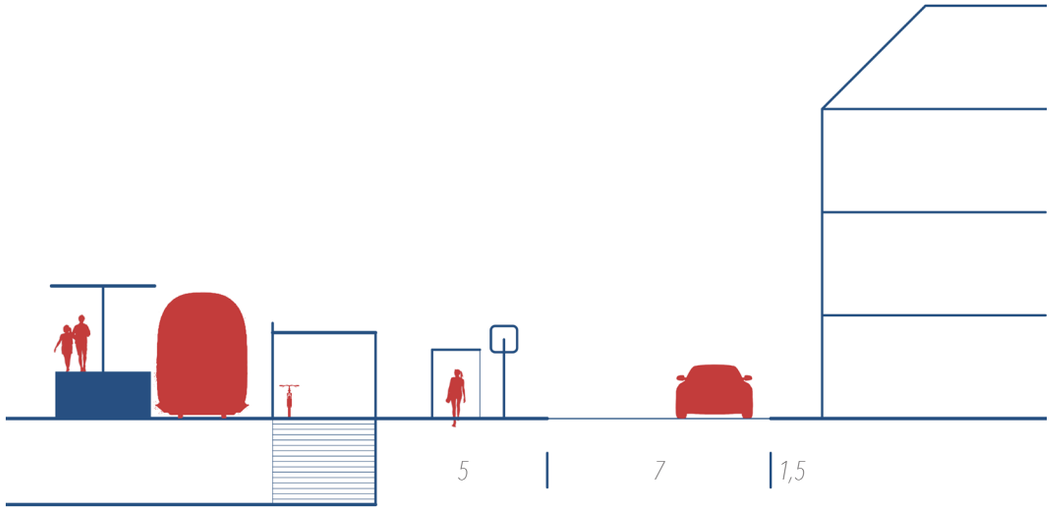
# HOUSE & LANDSCAPE

In this typology the family houses are even more low density and around two stories high.
The street is characterized by front porches for the cars as well with on the other side of the street, either an open field or a wild patch of greenery that is closed off by a fence or hedge.



# STATION

The station is located a little bit outside the typical centre of the town. Here, the street is wide enough for a car and bus to ride. The sidewalk is much wider than anywhere else in Erps-Kwerps. The houses near the station are comparable to the rowhouses typology, a few apartment complexes can also be seen here.

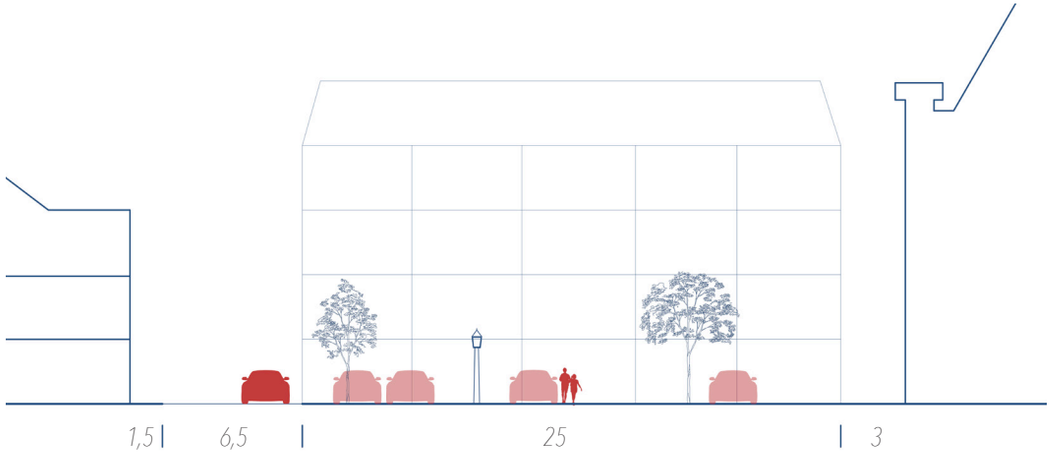





## CURRENT STREET SECTIONS

# SQUARE

The square of Erps-Kwerps is very car oriented. It provides a lot of parking spaces for the ground floor shops. It has a patch of grass in the middle that is surrounded by wide streets. In this part of the site are the only buildings that have a historical value. These are one of the tallest in the area, together with the church.



## STREET TYPOLOGIES

This map helps situate the different housing typologies on site through marking of different street typologies. The house and house street typology is most present, with rowhouses located towards the station and centre of Erps - Kwerps. Lastly is the house and landscape typology that is not as present but appears on the outer parts of the town.

*Rowouse & rowhouse*

*House & house*

*House & landscape*

# PLANTS

*Urtica*
or Nettle

*Phragmites australis*
or Reed

*Holcus lanatus*
or Velvet grass

*Achilla millefolium*
or Yarrow

*Jacobaea vulgaris*
or Ragwort

*Plantago major*
or Broadleaf plantain

*Erigeron Canadensis*
or Horseweed

*Sambucus*
or Elderberry

*Glechoma Hederacea*
or Ground-Ivy

*Field thistle*
*or Cirsium arvense*

*Hydrangea*
or hortensia

*Trifolium*
or Clover

# TREES

*Salix alba*
or White willow

*Salix Caprea*
or Goat willow

*Prunus avium*
or Cherry tree

*Ulmus laevis*
or White elm

*Pinus sylvestris*
or Scots pine

*Fagus sylvatica*
or European beech

*Populus Tremula*
or Aspen

*Quercus petraea*
or Cornish oak

*Tilia x europaea*
or Parklind

*Malus sylvestris*
or Apple tree

*Fraxinus excelsior*
or Common ash

*Betula Pubescens*
or Downy birch

# STRENGTHS

Well connected train network

Untouched biodiversity

Multi-use country fields

Value of property

# OPPORTUNITIES

Stream of water

Interest in gardening

Existing pedestrian paths

Cultural history

# WEAKNESSES

Car focused

No community

Industry

Fences

# THREATS

Loss of biodiversity

Noise pollution from airport

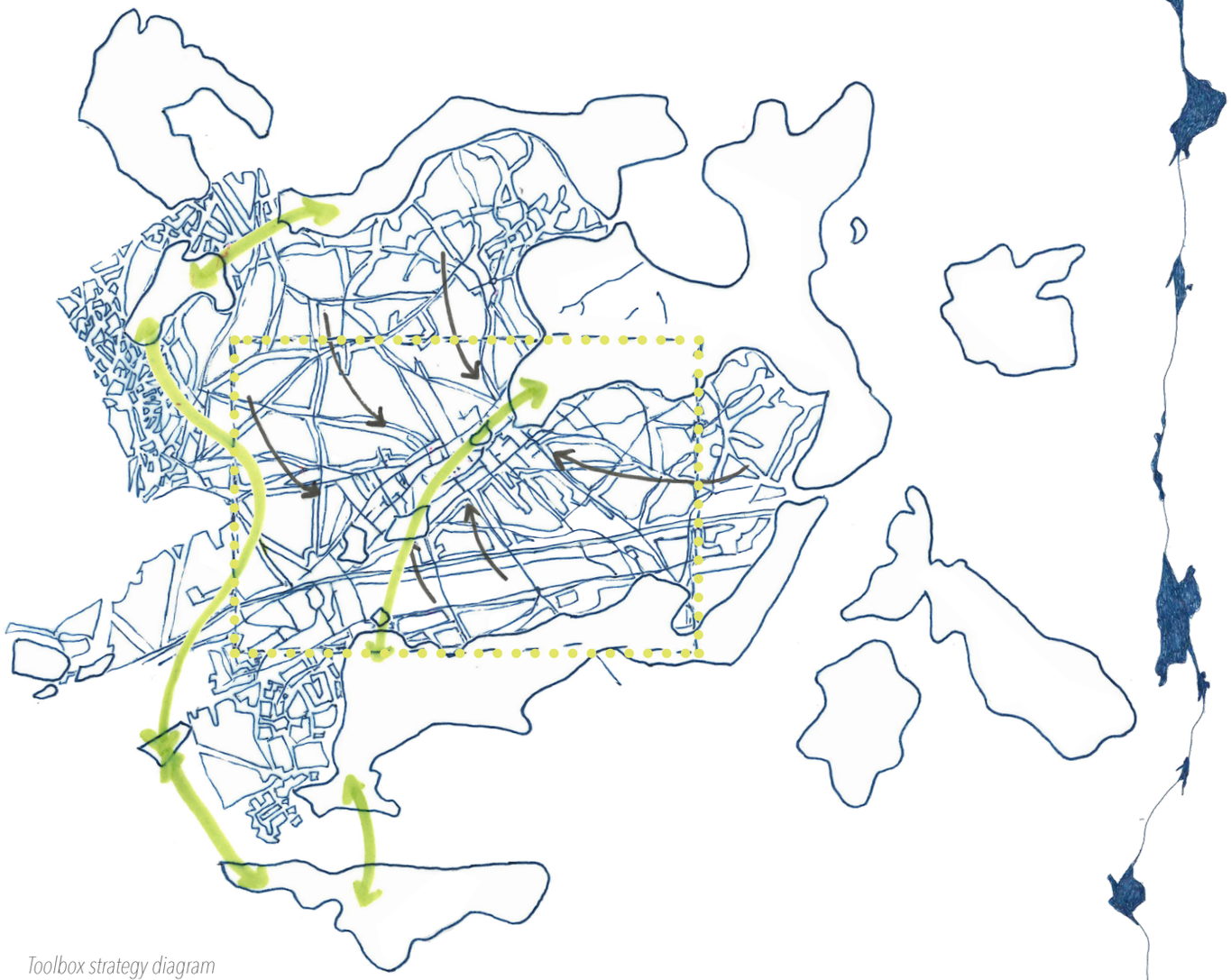
Carbon emission

Loss of landscape

# TOOL BOX

*WHY?*
*STRATEGIC APPROACH*
*LOCAL DESIGN TOOLS*

05



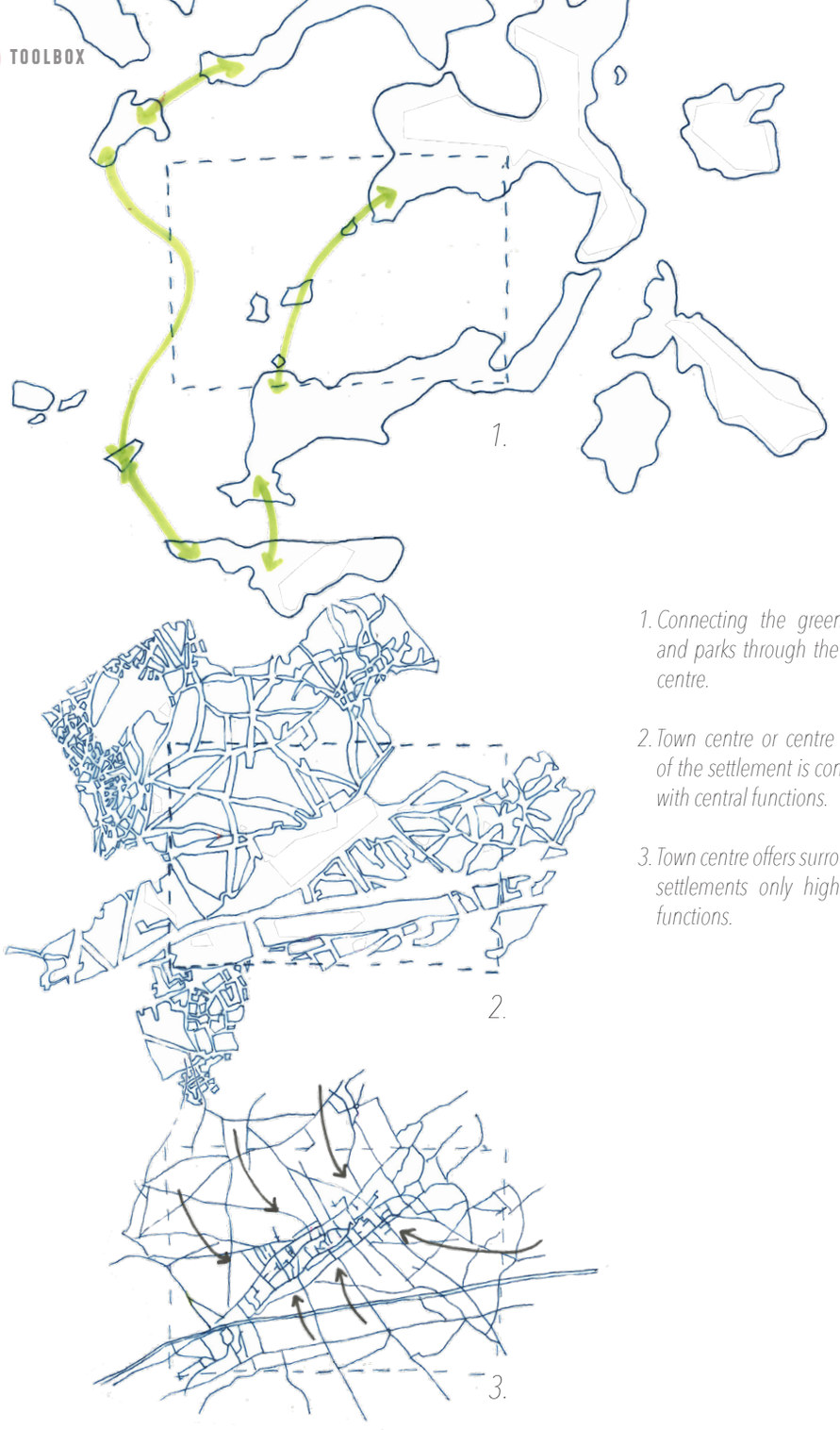
*Toolbox strategy diagram*

## WHY?

To be able to frame the project into a specific strategic approach and individual guidelines, on a macro as well as on a micro scale a toolbox is made. This toolbox will be the base for any further design implementations. It is through the information gathered within the previous chapters such as the site analysis and case studies that these tools took form.

Firstly, three different strategic approaches for the project have been set up; the green, the social and the infrastructure. These are the main targets for the overall project. On the left a diagram can be seen of these three strategies together.

Secondly, diagrams that showcase how these three strategies can be applied on a micro  scale or local design level will be explained.




1. *Connecting the green areas and parks through the village centre.*

2. *Town centre or centre system of the settlement is concerned with central functions.*

3. *Town centre offers surrounding settlements only high grade functions.*





## 1 GREEN

Instead of looking at the built area first we need to first look at the green areas and ask ourselves what it would look like if it were a natural park.

## 2 SOCIAL

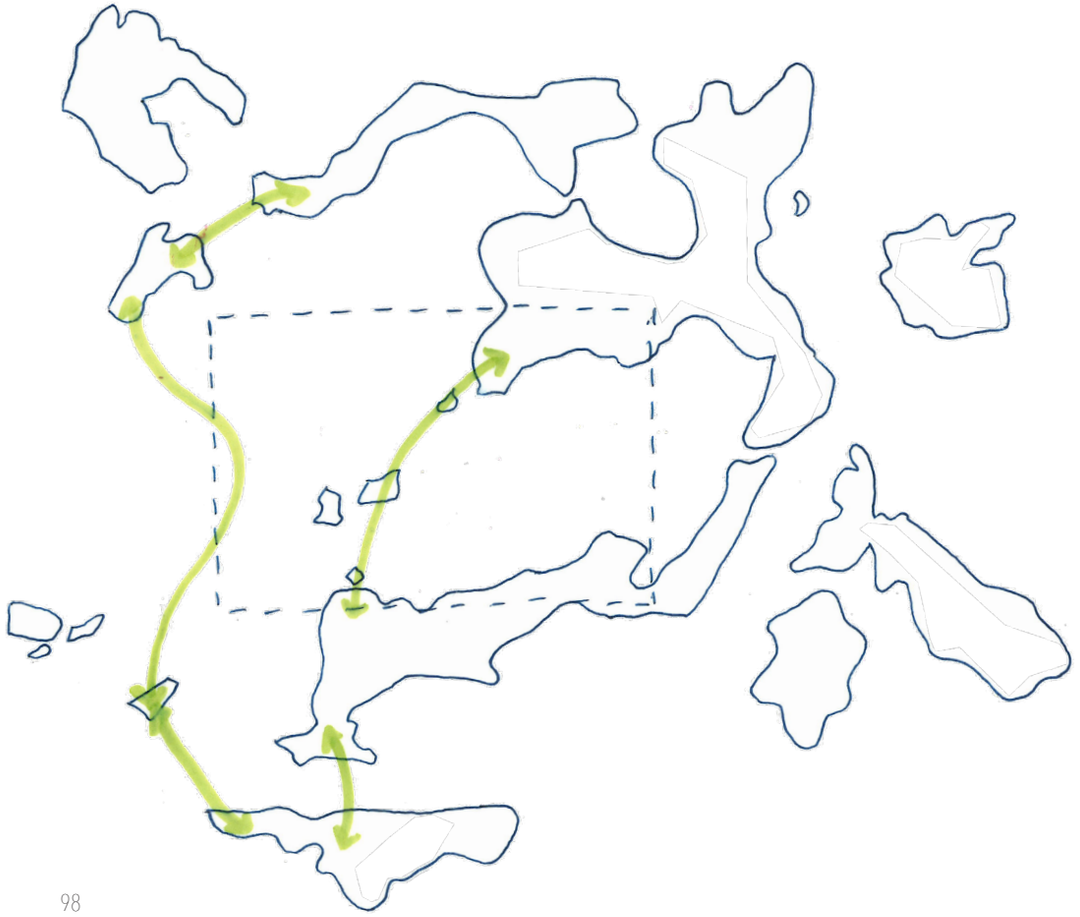
The focus should be on the interface between the built space and open space to create attractive fringes to the community, these should include high quality spatial and building design.

## 3 INFRASTRUCTURE

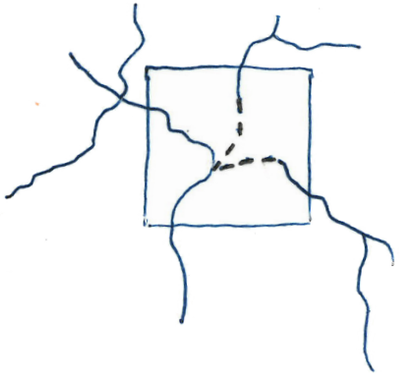
The densification should grow in accordance with the public transportation system and concentrate on a sustainable approach for the future.

# 1 GREEN

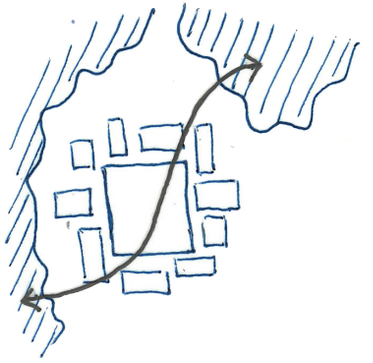
***Instead of looking at the built area first we need to first look at the green areas and ask ourselves what it would look like if it were a natural park.***



connect outside green areas through ecological corridors



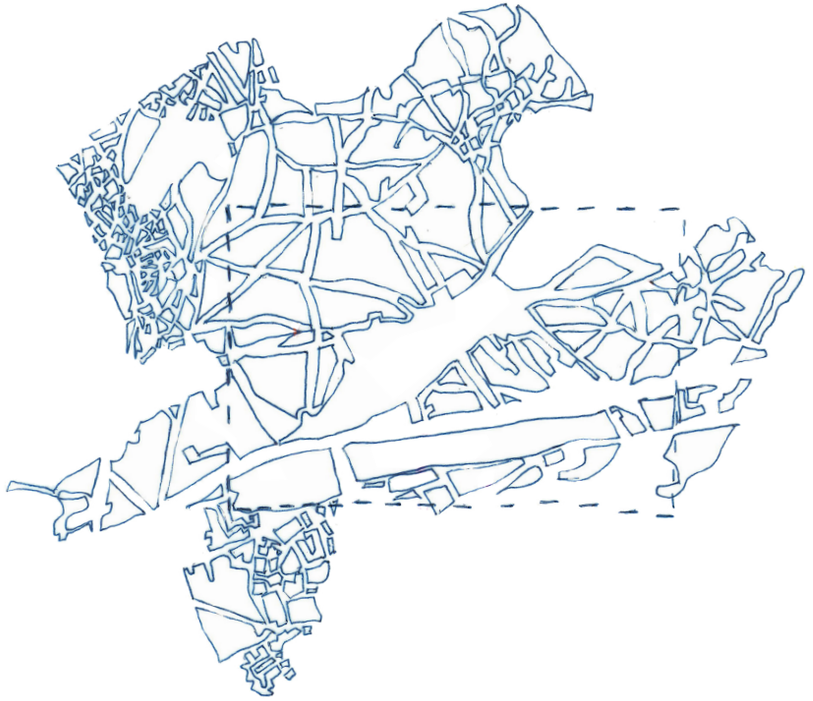
Restore or preserve natural lakes/ bodies of water



The town centre should connect to important green areas, perhaps through the square.

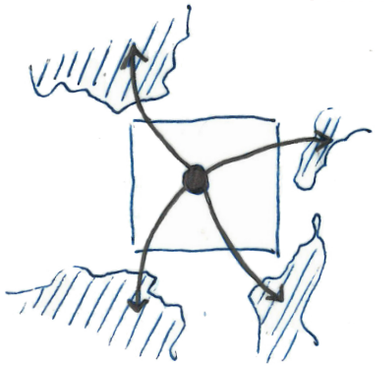
# 2 SOCIAL

***The focus should be on the interface between the built space and open space to create attractive fringes to the community, these should include high quality spatial and building design.***

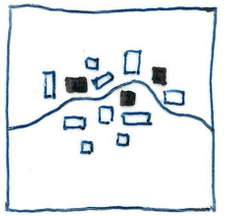




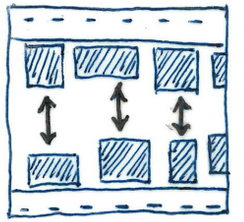




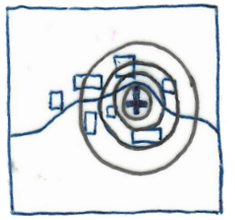
Make nature accessible from town



Linking housing with services



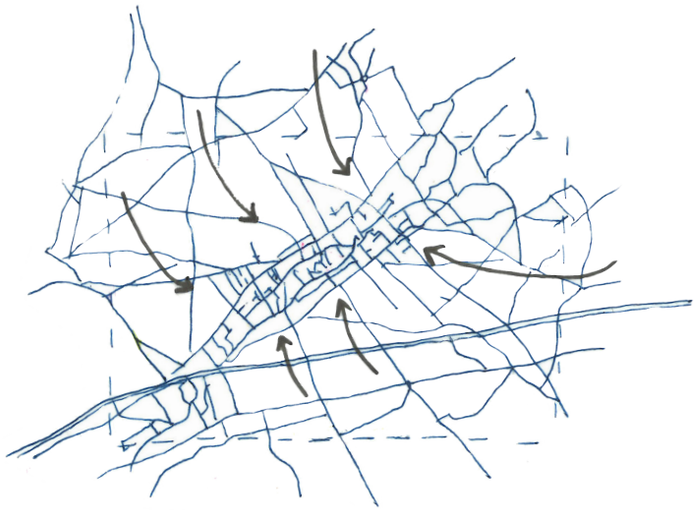
Re-think the privatization of gardens



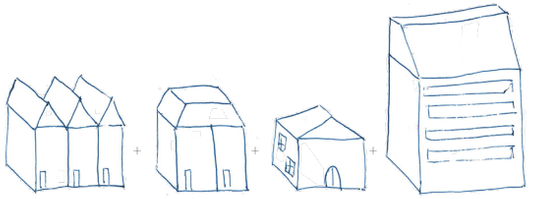
Promote any historical /cultural values the town has

# 3 INFRASTRUCTURE

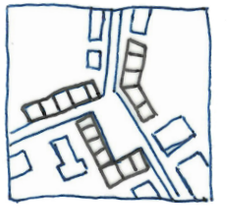
***The densification should grow in accordance with the public transportation system and concentrate on a sustainable approach for the future.***



Re-establish public functions



Mix of housing: Rowhouses, semi-detached, detached, apartments

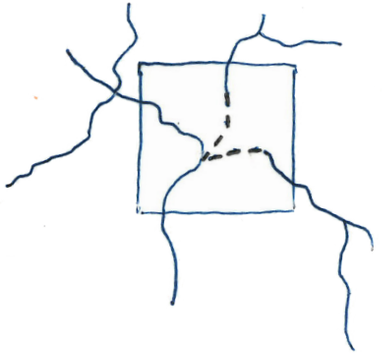


The apartment houses should be in parts of the centre that count as 'traditional'

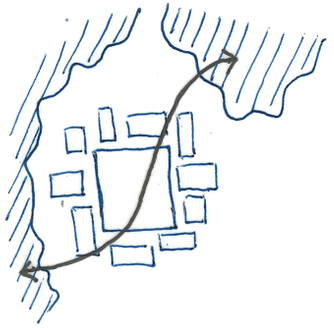
Rowhouses should be the main form of housing as it is more affordable and takes up less space.

# 1 GREEN

connect outside green areas through ecological corridors

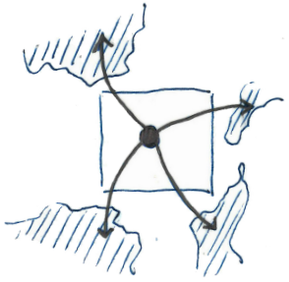


Restore or preserve natural lakes/ bodies of water

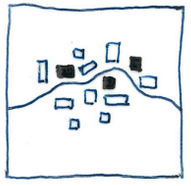


The town centre should connect to important green areas, perhaps through the square.

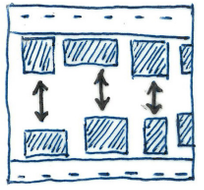
# 2 SOCIAL



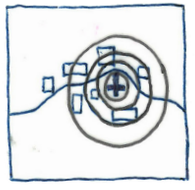
Make nature accessible from town



Linking housing with services

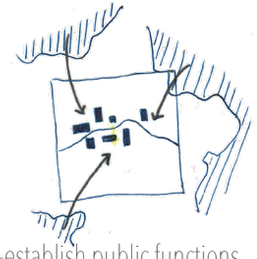


Re-think the privatization of gardens

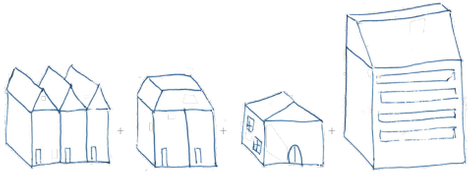


Promote any historical /cultural values the town has

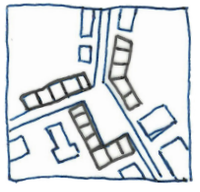
# 3 INFRASTRUCTURE



Re-establish public functions



Mix of housing: Rowhouses, semi-detached, detached, apartments



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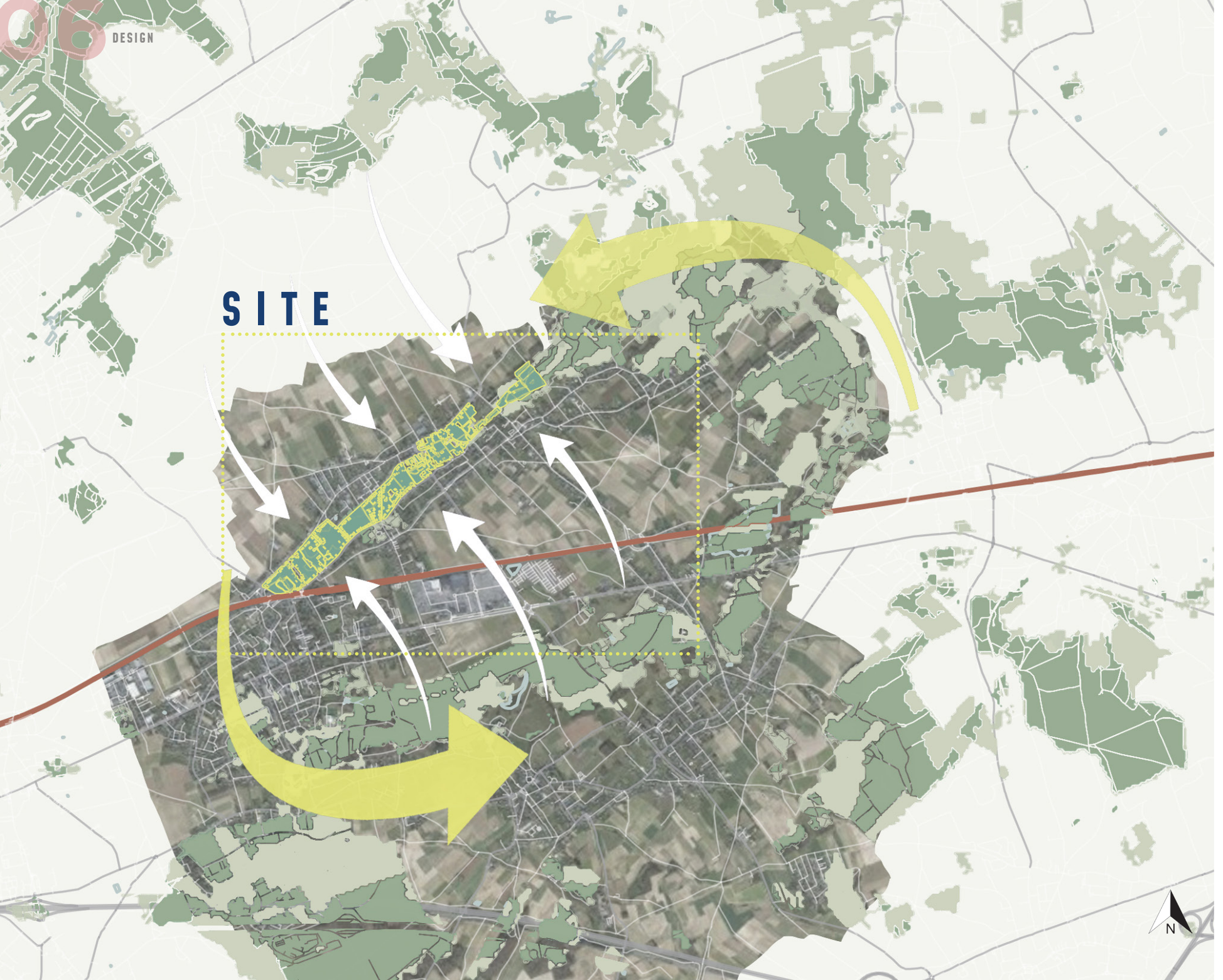
# DESIGN

*VISION*
*REGIONAL STRATEGY*
*LANDSCAPE AND MOBILITY STRATEGY*
*RECREATION AREAS*
*MASTERPLAN*
*SECTIONS*
*DETAIL PLAN*
*REFLECTIONS*

06

# VISION

The vision is to create a village in the countryside that focuses on the three design strategies through specific interventions to enhance the community's lifestyle. Through a green belt passing within the ribbon development, different parts of the village offer a different kind of purpose or activity to bring people together.




## REGIONAL STRATEGY

This vision comes to life on a regional scale through a green belt strategy. On a larger scale this method frames the current forested areas and connects them to current and future growing villages, making sure as well that future development growth is restricted through these new green belts.

Moreover, by bringing together the surrounding existing forested areas with a green corridor within the town, it ensures that the community always has an easy access to nearby flora and fauna.

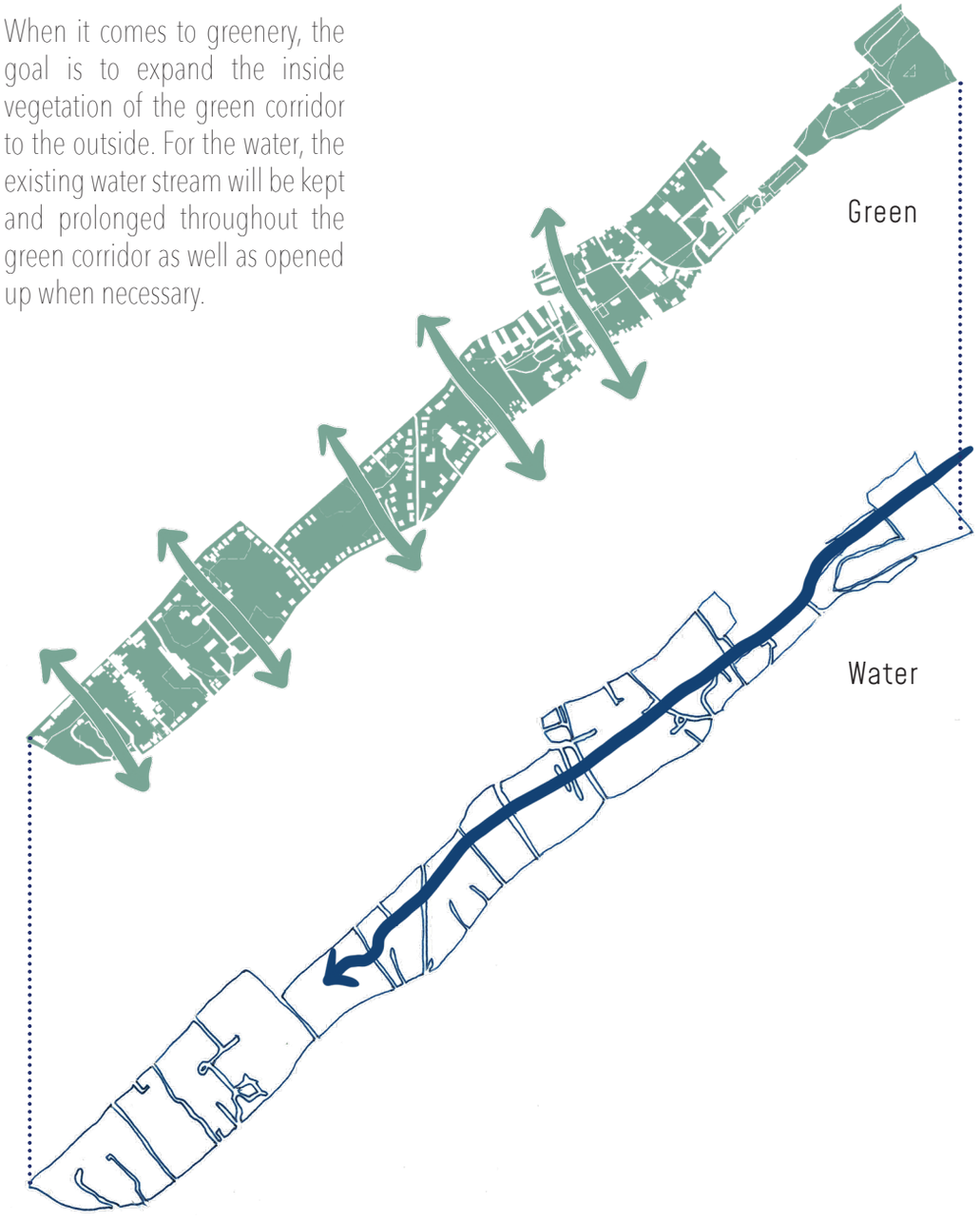
## EXISTING GREENERY

On this zoomed-in map of the site. The existing greenery of the site, it is clear that most of the vegetation inside the area are either private forested patches or private gardens. The central square and Silsomwood are one of the only public greenery areas that Erps-Kwerps has. It is apparent that this is a mostly residential area where all the open spaces are private and closed off.

- *public buildings*
- *residential*
- *public greenery*
- *private forested patch*
- *private gardens*

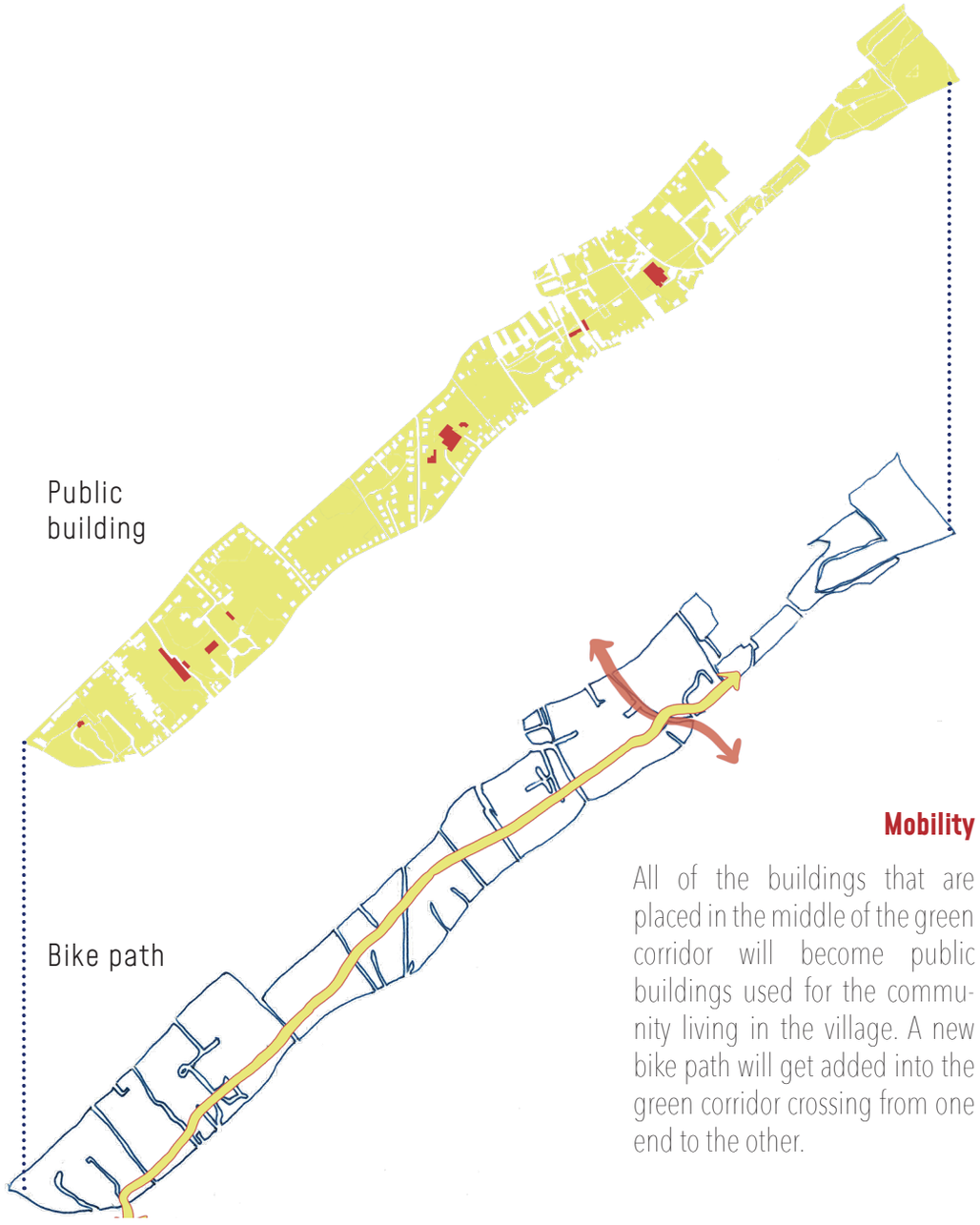
## Landscape

When it comes to greenery, the goal is to expand the inside vegetation of the green corridor to the outside. For the water, the existing water stream will be kept and prolonged throughout the green corridor as well as opened up when necessary.








## Mobility

All of the buildings that are placed in the middle of the green corridor will become public buildings used for the community living in the village. A new bike path will get added into the green corridor crossing from one end to the other.

## CULTURE HUB

Closer to the central square is an area that attracts many people and becomes a cultural hub.

## OPEN-FIELDS

The open fields will be the perfect area for and extension of the current sports hall.

## GENERATIONAL PARK

This place is where the older generation from the elderly home and younger generation from the school are able to meet and interact.

## WILD GARDENS

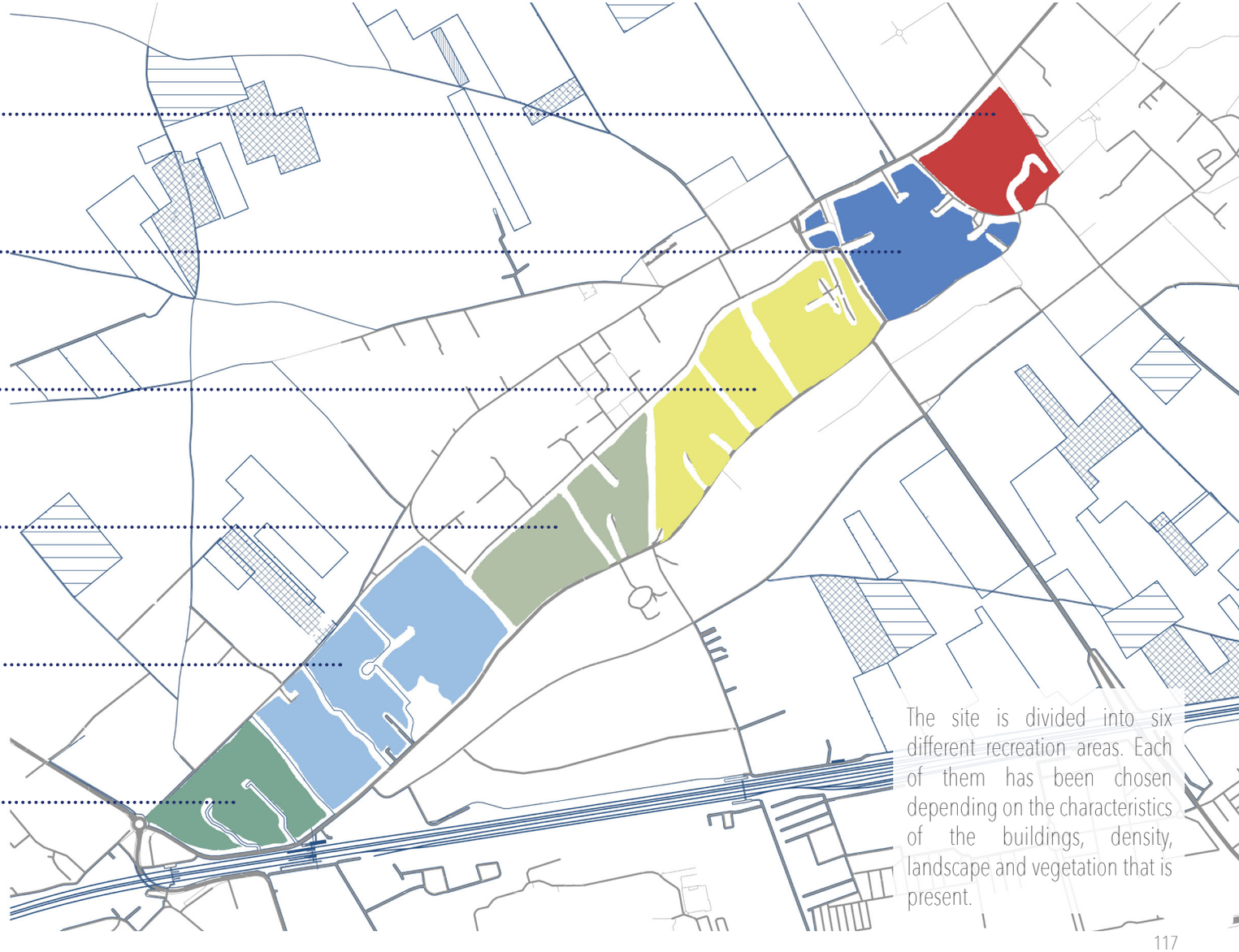
In these wild gardens, the existing water stream is able to come to live and provide a relaxing zone.

## PRODUCTIVE GARDENS

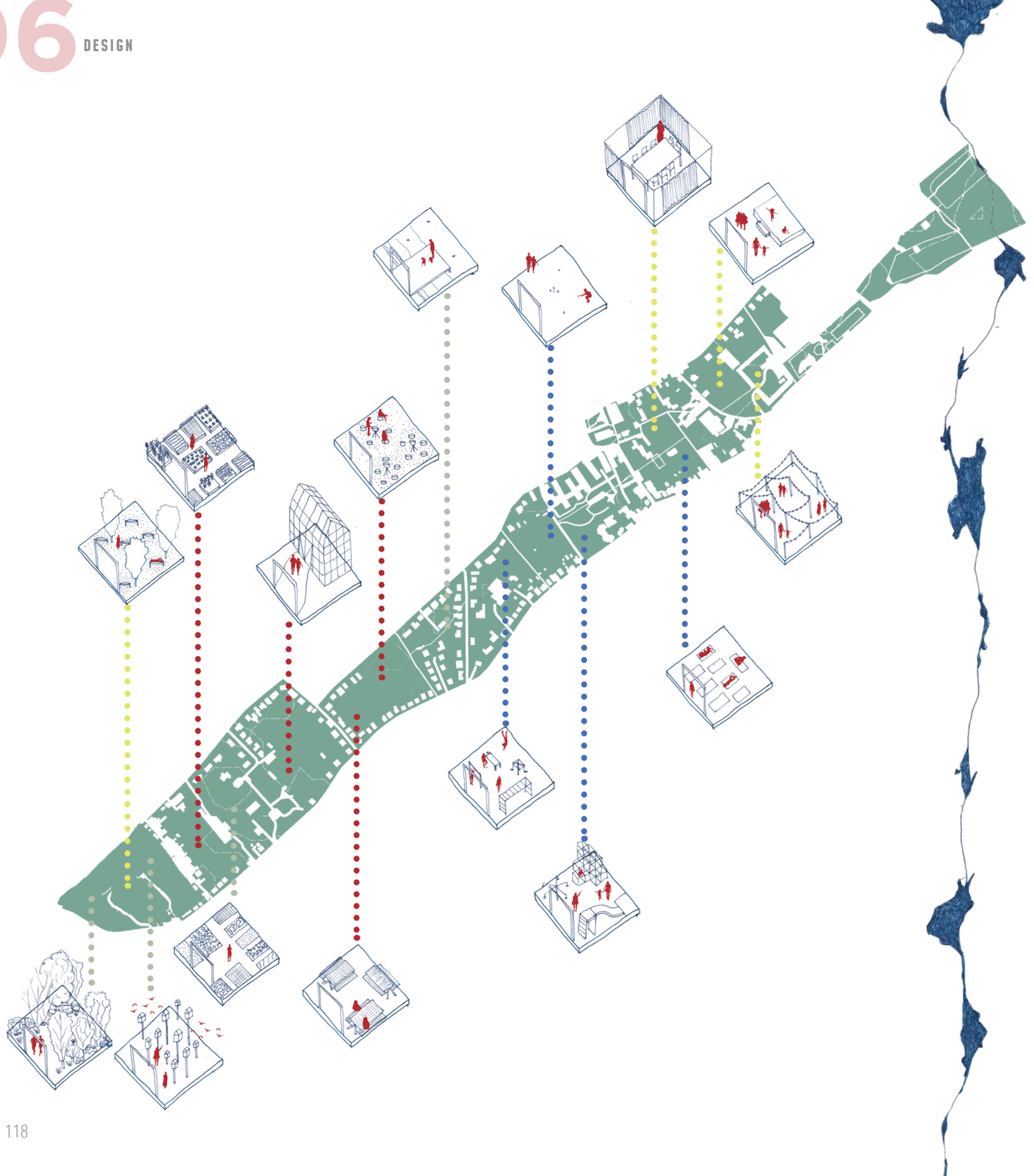
The more residential part of the site will provide productive gardens that are able to be a gardening and cultivation space for everyone.

## TINY FOREST

A higher, more dense foliage ensures this area is protected from the noise pollution created by the nearby train station.



The site is divided into six different recreation areas. Each of them has been chosen depending on the characteristics of the buildings, density, landscape and vegetation that is present.



# CONNECTORS

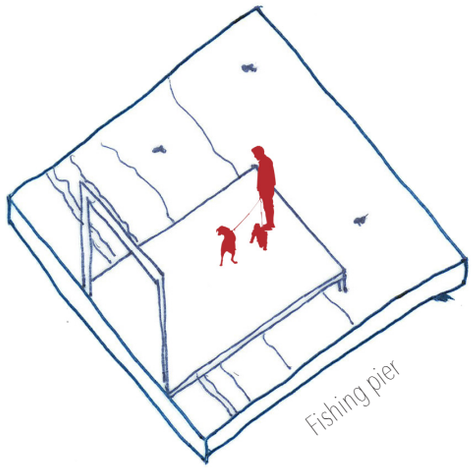
These recreation areas become the basis for the toolbox of a more spatial intervention on or along the center of the town to strengthen the recognizability of the route and the attractiveness and identity of the village.

The connector, as a building block for growth and development, is the source of inspiration for this proposal. A series of spatial 'connectors' will be located in the green area, close to the green belt. All have the same basis: an entrance gate and associated base. The gate act as beacon that mark the green corridor from end to end. Each basic element can then develop further, creating a varied series of stamp parks with 5 different themes.

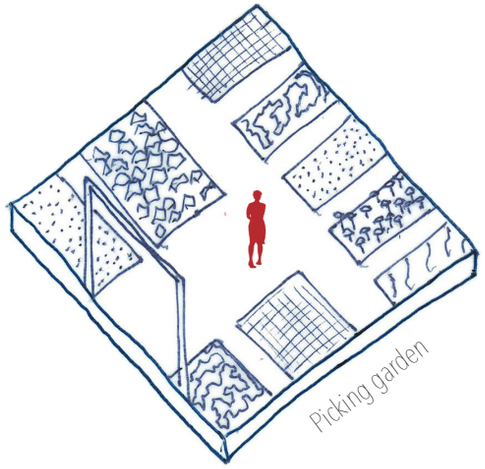
The involvement of the users in each connector strengthens the areas identity of the green corridor and helps to activate the public space.

This creates a route that continues to develop, which can respond to the needs of users and can change as the area itself changes. From information gathered on site, these are the current needs of Erps-Kwerps.

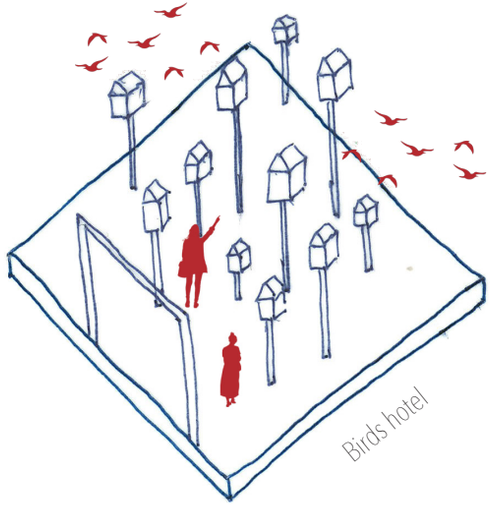
## 1 NATURE & SUSTAINABILITY



Fishing pier



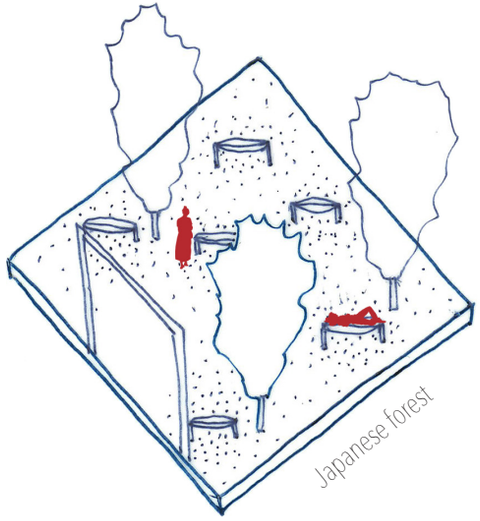
Picking garden



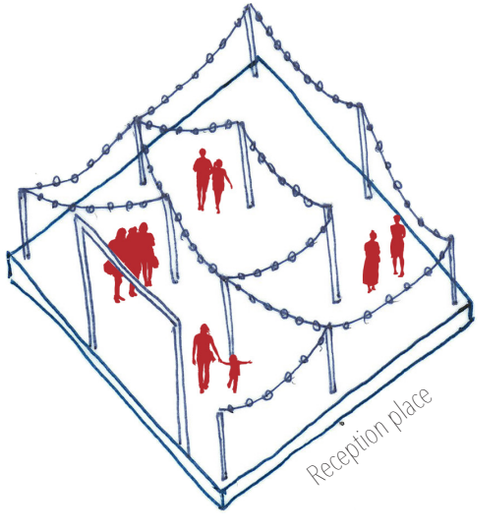
Birds hotel

Wild corner

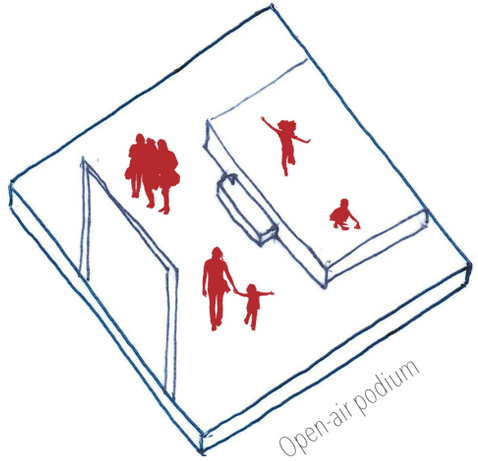
## 2 CULTURE & GATHERINGS



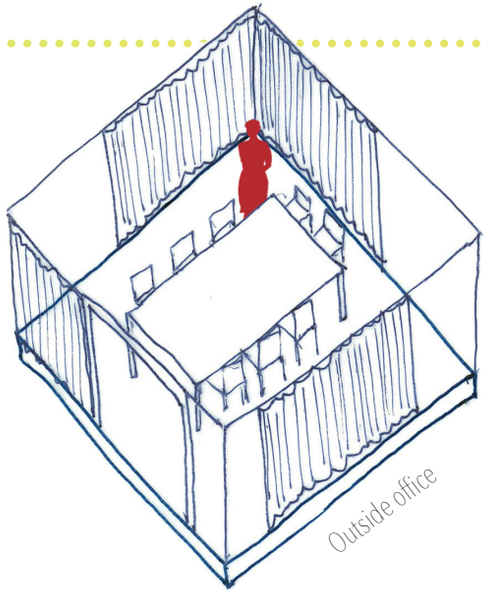
Japanese forest



Reception place

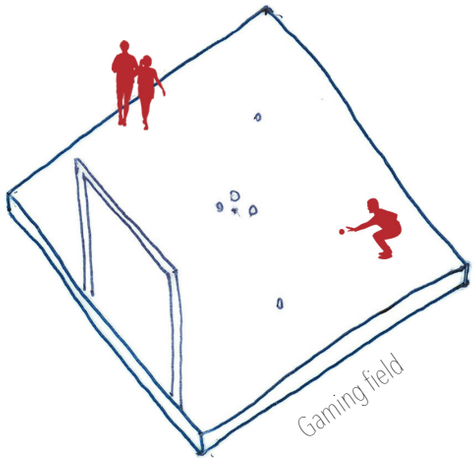


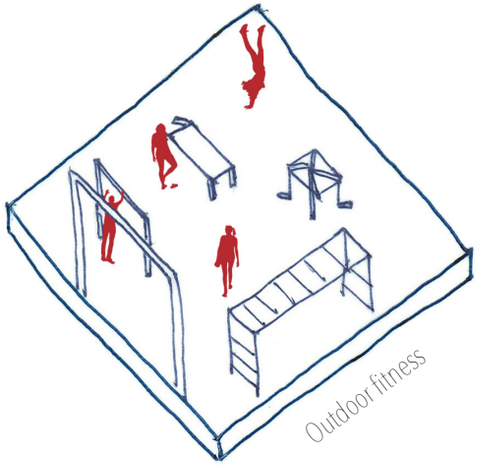
Open-air podium

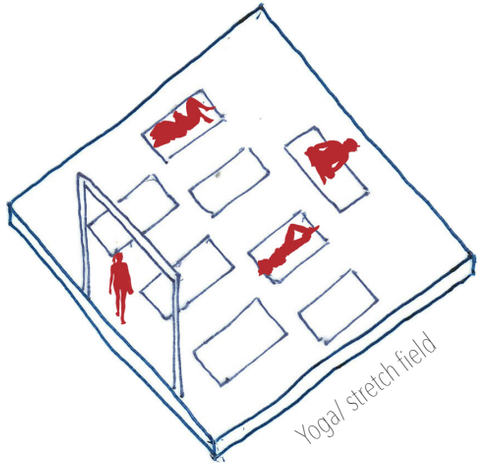


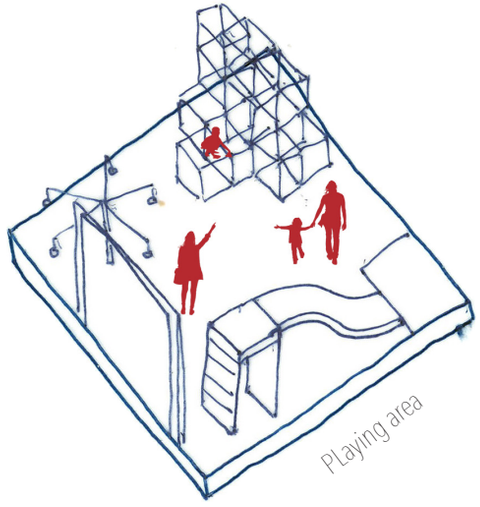
Outside office

## 3 SPORTS & GAMES

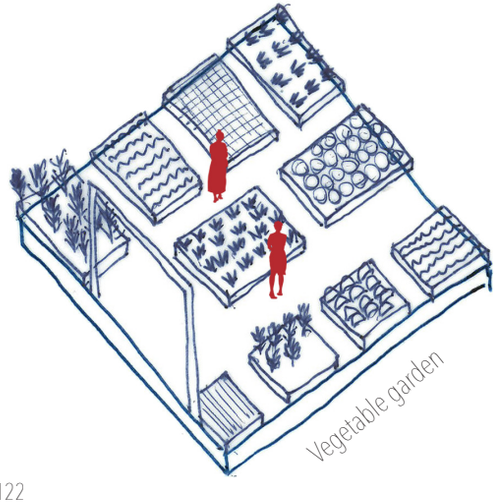

Gaming field

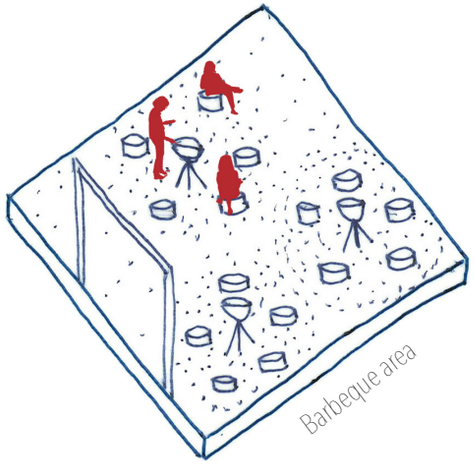

Outdoor fitness

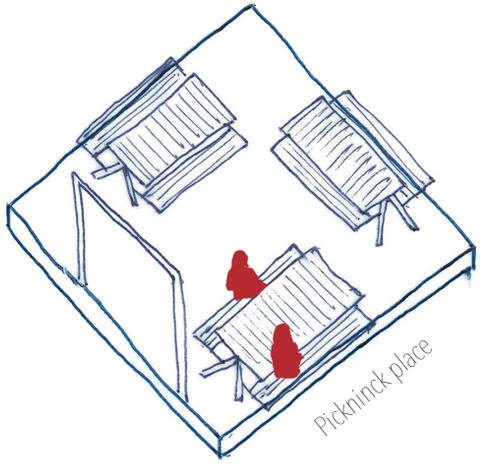

Yoga/ stretch field

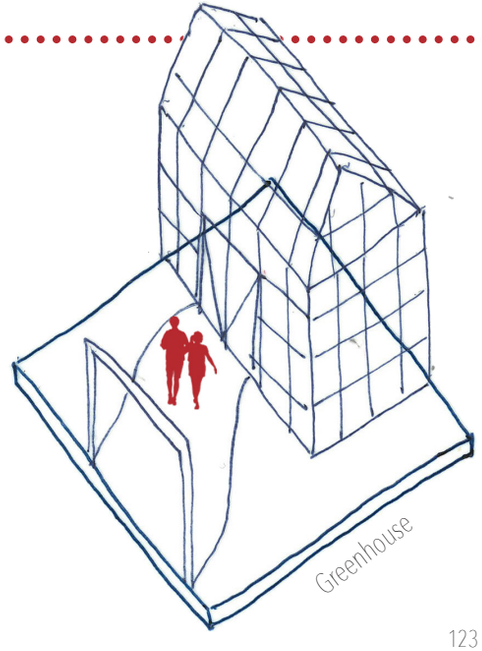

PLaying area

## 4 EATING & MEETING


Vegetable garden


Barbeque area


Picknick place


Greenhouse

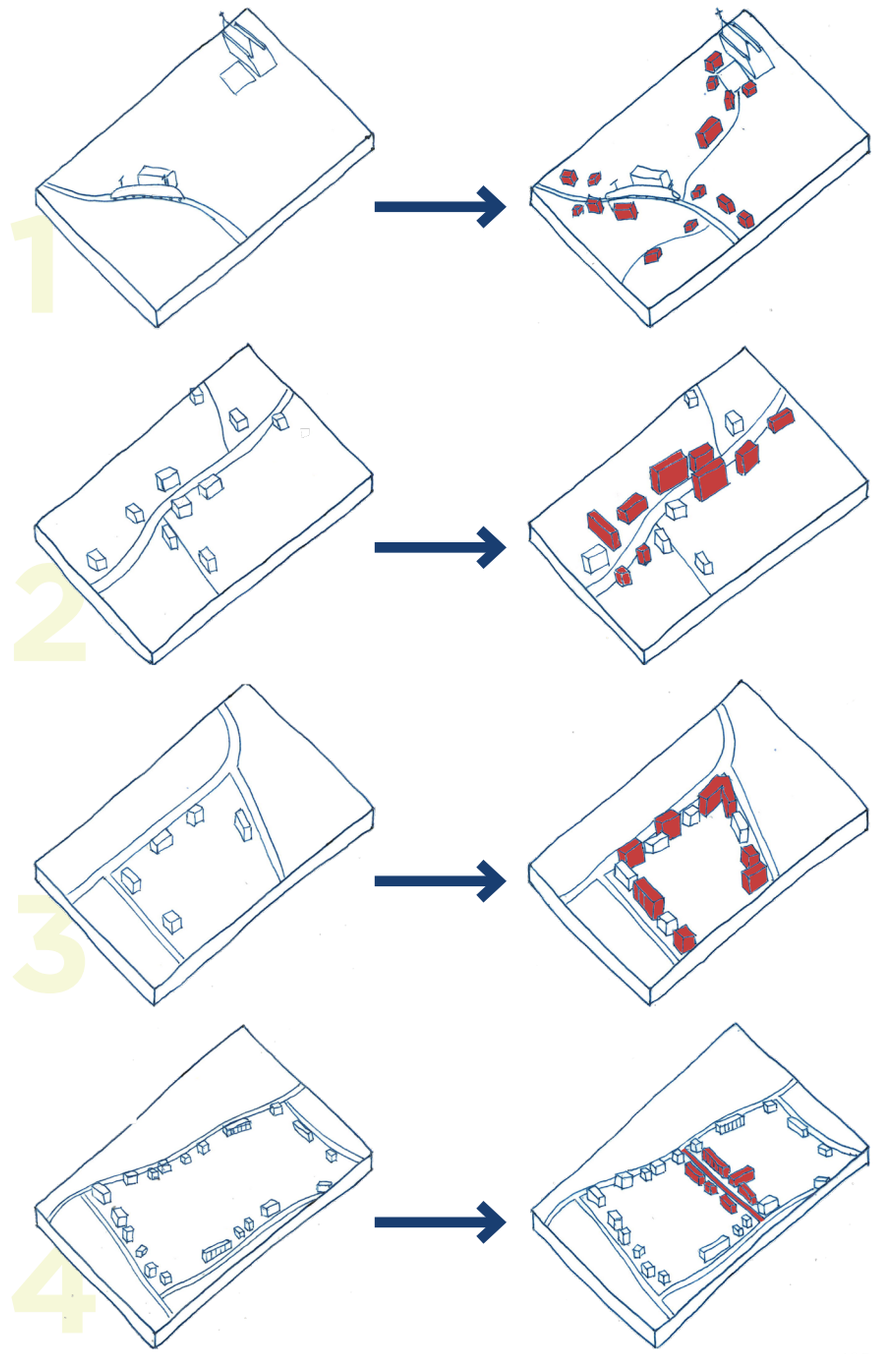
## BLOCK GUIDELINES

1 The new buildings should make the areas around the station and the centers square more dense first and the buildings should be higher rise.

2 The bigger and wider streets of the site should be more dense and contain higher rise buildings.

3 When building around already existing roads, the existing block should be filled up first when building new housing.

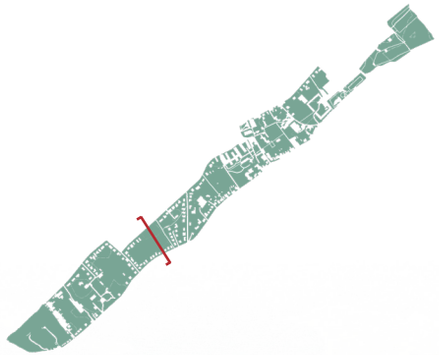
4 When the inside green area in the block is too large, the block should be split into to new building blocks.

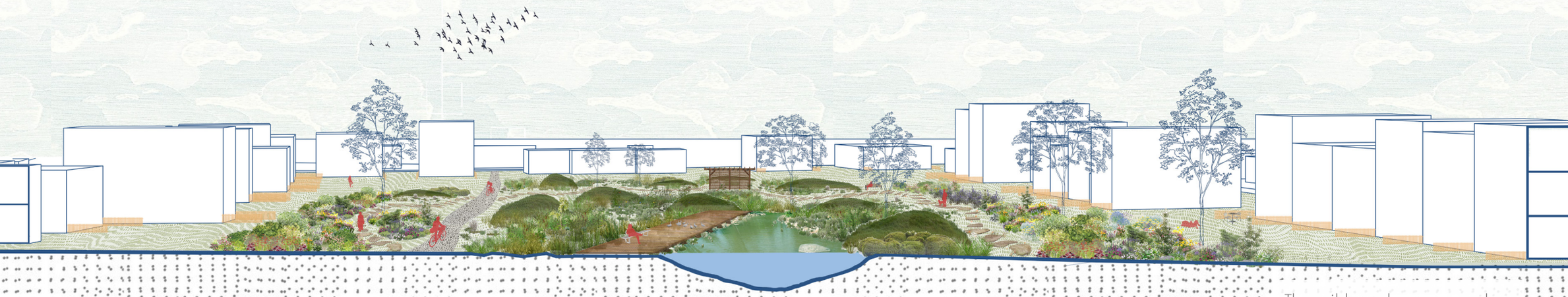


# MASTERPLAN

This masterplan of the new densified area of Erps-Kwerps shows us the allocation plan for the new buildings (blue) as well as the addition of new roads. The densification happens mainly towards the station and the town centre. The diversity of newer and older buildings within the town centre is crucial to make it more vibrant. Multiple public buildings are placed within the green corridor to cater to different social activities and needs.

# SECTION WILD GARDENS



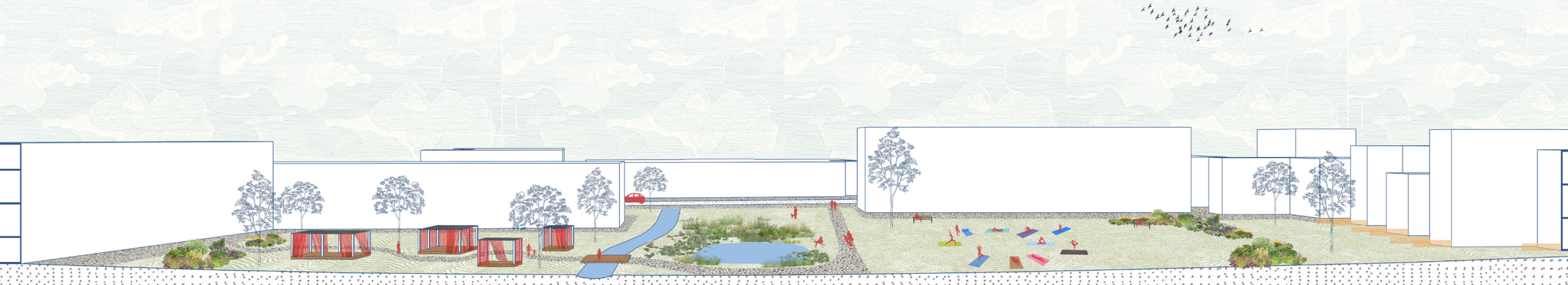


The wild gardens are a place where a multitude of flora and fauna come together to create a space possible for growth. A place where the water stream is at the center and a peaceful and relaxing zone where habitants can unwind and enjoy the various biodiversity.

# SECTION SQUARE

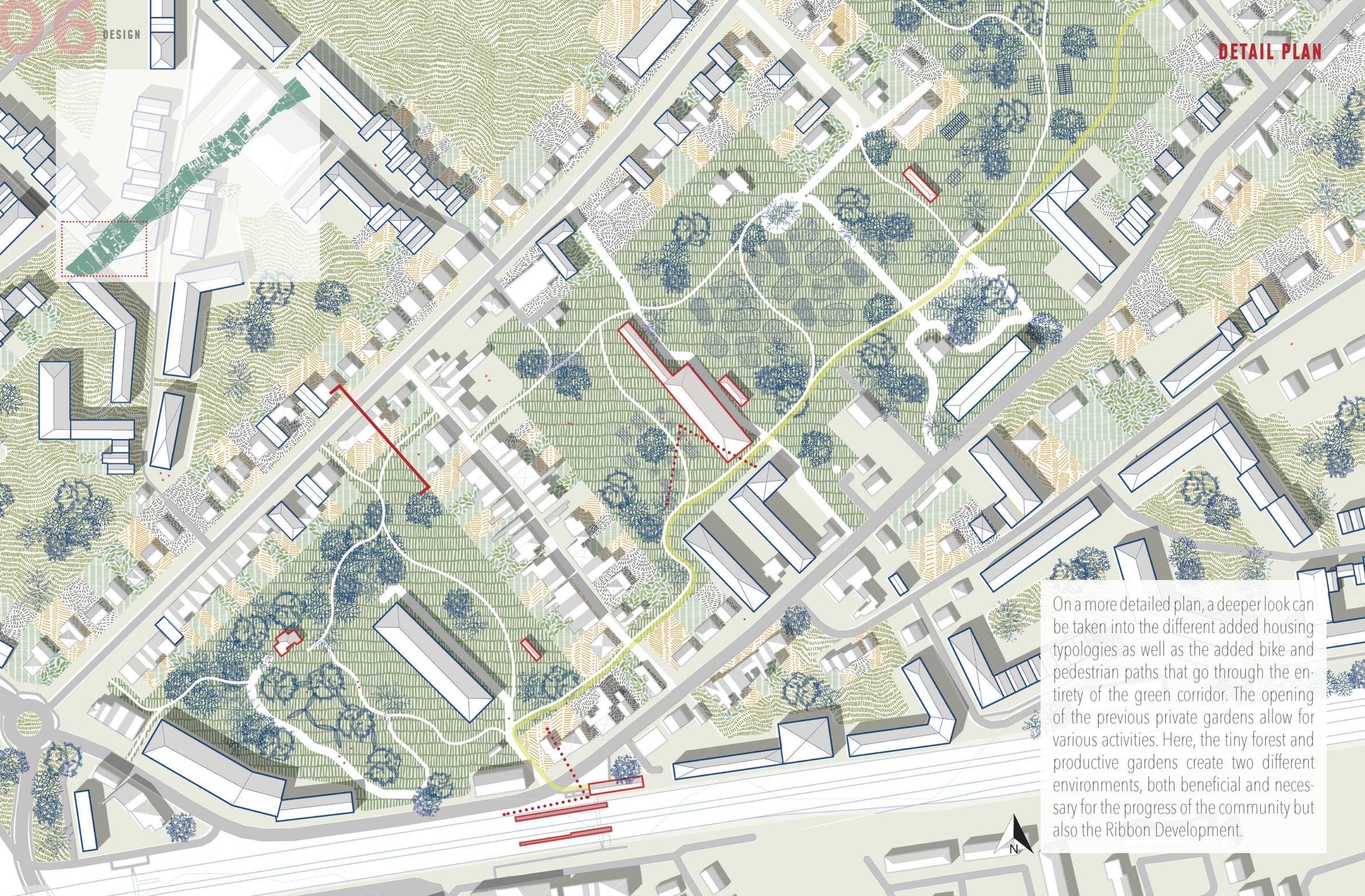
The centers square is an important place where activities can vary depending on the day. Therefore it is crucial that this area can be flexible and creates a space of recreation through greenery.

# SECTION OPEN FIELDS



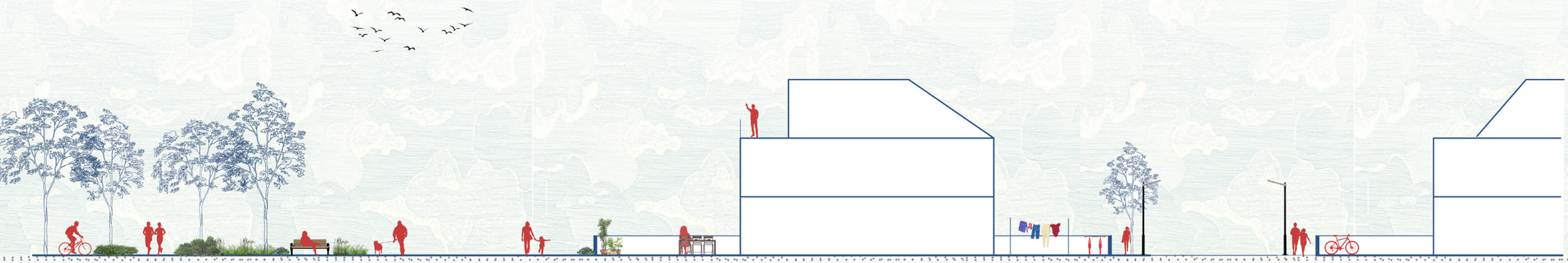
Here, public gardens in the middle of the green belt have the outside office spaces that can be used by the nearby school or residents who work remotely as this has become more and more the case in recent years. Next to it a flexible yoga and stretch field.

# DETAIL PLAN



On a more detailed plan, a deeper look can be taken into the different added housing typologies as well as the added bike and pedestrian paths that go through the entirety of the green corridor. The opening of the previous private gardens allow for various activities. Here, the tiny forest and productive gardens create two different environments, both beneficial and necessary for the progress of the community but also the Ribbon Development.

# STREET SECTION



This section showcases the transition space between the street and the inner green belt. Here, the private gardens are smaller than originally and flow into the green corridor. Each private garden is then used to each housings personal preference. The front yard can be used as a multi purpose garden as well.

# PERSPECTIVE STATION

# PERSPECTIVE PRODUCTIVE GARDEN

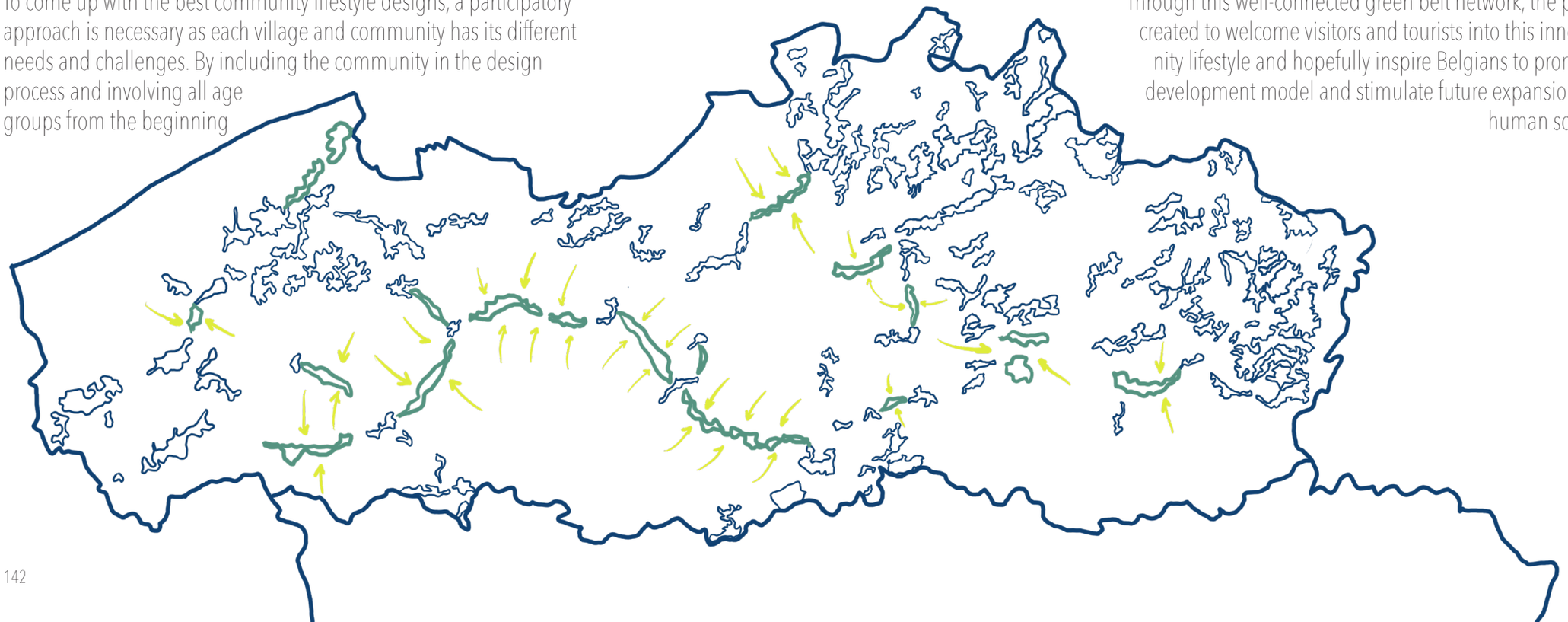
To conclude this design proposal, I would like to reflect on the future growth and development of this project. Through research I have learned the current dilemma of urban sprawl and how this phenomenon affects our daily life.

As the future growth of development is not precisely defined yet, finding the perfect solution for this problem was not the objective. But rather to create certain design guidelines that need to be considered when designing new projects in the future.

To come up with the best community lifestyle designs, a participatory approach is necessary as each village and community has its different needs and challenges. By including the community in the design process and involving all age groups from the beginning of the design phase all the way to the end, it enables the people to participate in this ongoing process.

When looking at future development on the regional scale, a bigger network of green belts would connect to each other throughout the region, making the whole Flanders region a natural park again. This way, villages would have access to nature and greenery within their built environment whilst containing the ribbon development from spreading more outwards.

Through this well-connected green belt network, the public corridor is created to welcome visitors and tourists into this innovative community lifestyle and hopefully inspire Belgians to promote this ribbon development model and stimulate future expansion through these human scale interactions.



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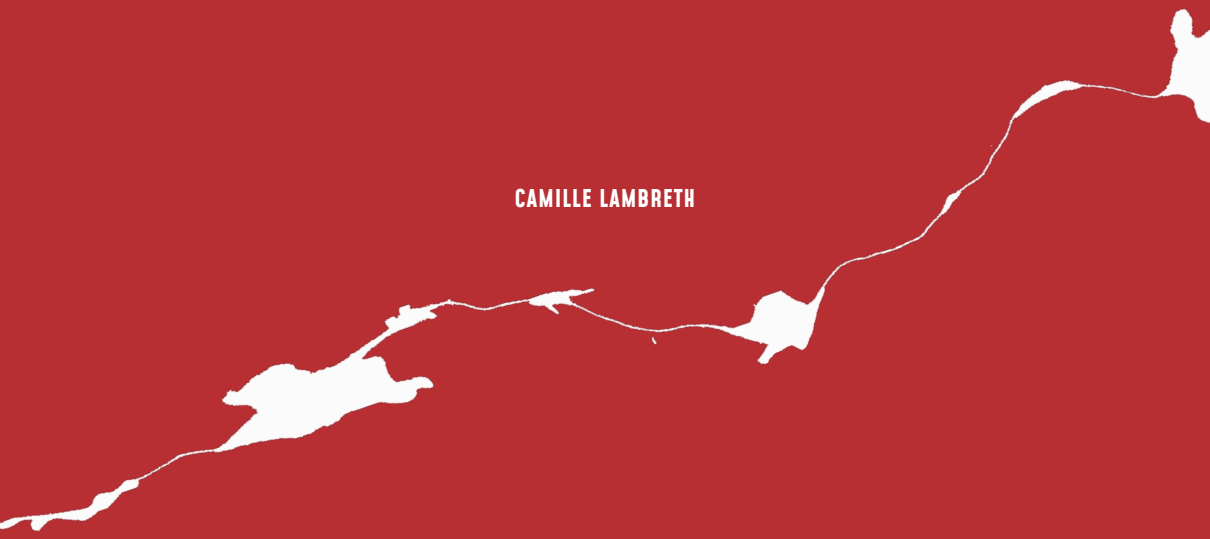

CAMILLE LAMBRETH

# REVITALIZING THE RIBBON