

SUSTAINABLE HEALTHY CORRIDOR

**Eindhoven
Aalst
Valkenswaard**

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3. AALST

3.1. INTRODUCTION AREA

Aalst is a village with approximately 10.000 inhabitants, located South of Eindhoven. The village is part of the municipality of Waalre.

In this chapter, the research and design process of three urban design students at Eindhoven University of Technology is presented. This process started with a location visit and a quick research and design assignment. Then a more elaborate research was done, divided in two parts. And finally, the final design for improvement of the area was made.

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Fig 3.1.1. - Location of Aalst in surroundings

3.2. First observations

The first step in this project was visiting the location. The goal of this visit was getting a first impression of atmosphere and current situation of Aalst, Valkenswaard, Gennep Parken and traveling over the Eindhovensche weg. Pictures were taken, sketches were made and we held short conversations with several passers-by. After the location visit, the impressions were discussed among the students.

We only had time to visit the current village center of Aalst. When we arrived by bus, the first thing we noticed was the busy road, the Eindhovenseweg, that cut through the village. The church was isolated and its location seemed desolate. A long one-story-high building was blocking the view from the road to the village center and when we asked some passers-by we were

told that this building was called “de muur van Aalst”, blocking the sound from the Eindhovenseweg. The village center, Den Hof, was quite empty and its surface was fully hardened. At the end of the visit, we took a small detour to the other side of the Eindhovenseweg, where we found a peaceful neighborhood.

The most important conclusion was that the N69 forms an unattractive, noisy barrier in the middle of Aalst, which is not beneficial for the livability of the village and the attractiveness of the village center. The problem of the noisy road was ‘solved’ by introducing a new problem: “the wall of Aalst”, an unattractively looking building that turns its back to the N69 and thereby blocks all connection between the road and the village center.



Fig 3.2.1. - The Eindhoveneweg crossing Aalst



Fig 3.2.2. - The main square of Aalst, Den Hof

3.3. Quick Research and Design Assignment

The second step was the quick analysis and design assignment. The aim was to quickly come up with conclusions, the first concepts and a first design proposal based on limited information. We got familiar with the problems and the area and created a first design to reflect on afterwards and gather feedback from stakeholders and professionals.

The historical development of Aalst as a ribbon village, grown along the N69, was further examined. The insight was found that Aalst is ignoring its past by turning away from the road. Additionally, according to the new plans of the municipality, designed by LOS Stad om Land B.V., the center of Aalst will be transformed to a condensed urban looking square with a new tower, which makes Aalst's appearance deviate even more from Aalst's former image of a wealthy rural village along the road. As an alternative, the concept 'Ribbon Village Aalst' was chosen, in which the possibility of going back to the core principles of a ribbon village were explored. Important concepts were the road, linearity and connectivity (relating to 'ribbon') as well as greenery, rural, calm and 'gezellig' (relating to 'village'). References of other villages were found, new ideas for traffic regulation were examined and a first design was made.

In the first design, the road becomes the linear heart of the village again, greenery will be introduced and the meeting spaces are located along the road. The church is included in the village center again and the road gets a rural character. The connectivity to Eindhoven and Valkenswaard is improved and the noise from the Eindhovenseweg is reduced by slowing down the traffic and implementing other noise-reducing solutions. The village center of Aalst will have the atmosphere of a wealthy, rural ribbon village, just like, for example, Laren.

References

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- Geschiedenis Waalre. (n.d.). Retrieved from: <http://www.geschiedeniswaalre.nl/artikel/1179/Stof-tot-nadenken>
- Laren. (n.d.). Google Maps.
- Beekman, J. & Smulders, G. (2017). Gebiedsvisie | Centrum Aalst en Eindhovenseweg. LOS stadomland B.V.

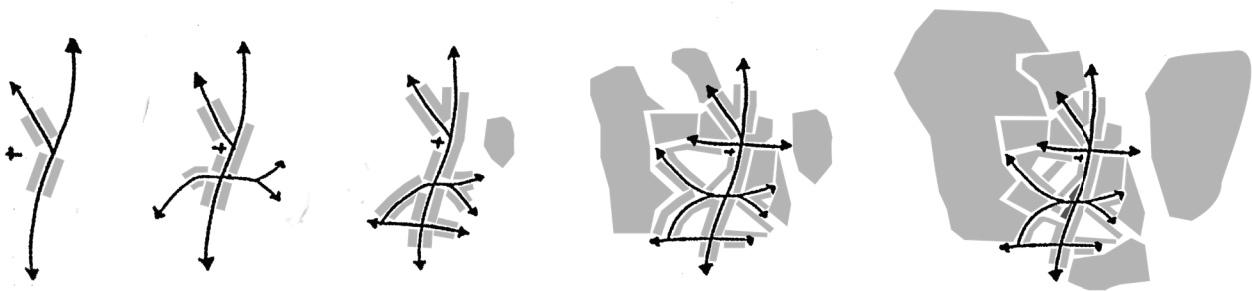


Fig 3.3.1. - Development of Aalst in Plan : 1900, 1930, 1960, 1980, 2019 (based on: Topotijdreis, n.d.)



Fig 3.3.2. - Aalst around 1960 (Geschiedenis Waalre, n.d.)

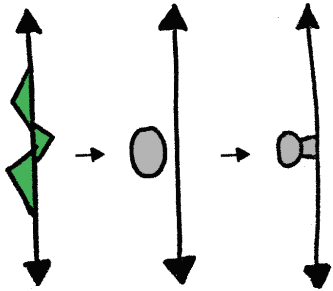


Fig 3.3.3. - Concept before, now, after of the design of LOS



Fig 3.3.4. - Rendering of the design of LOS (Beekman & Smulders, 2017)



Fig 3.3.5. - Reference: Laren (Google Maps, n.d.)

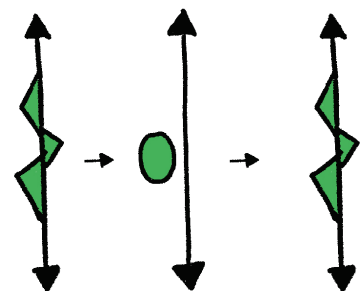


Fig 3.3.6. - Concept before, now, after of the design Ribbon Village Aalst

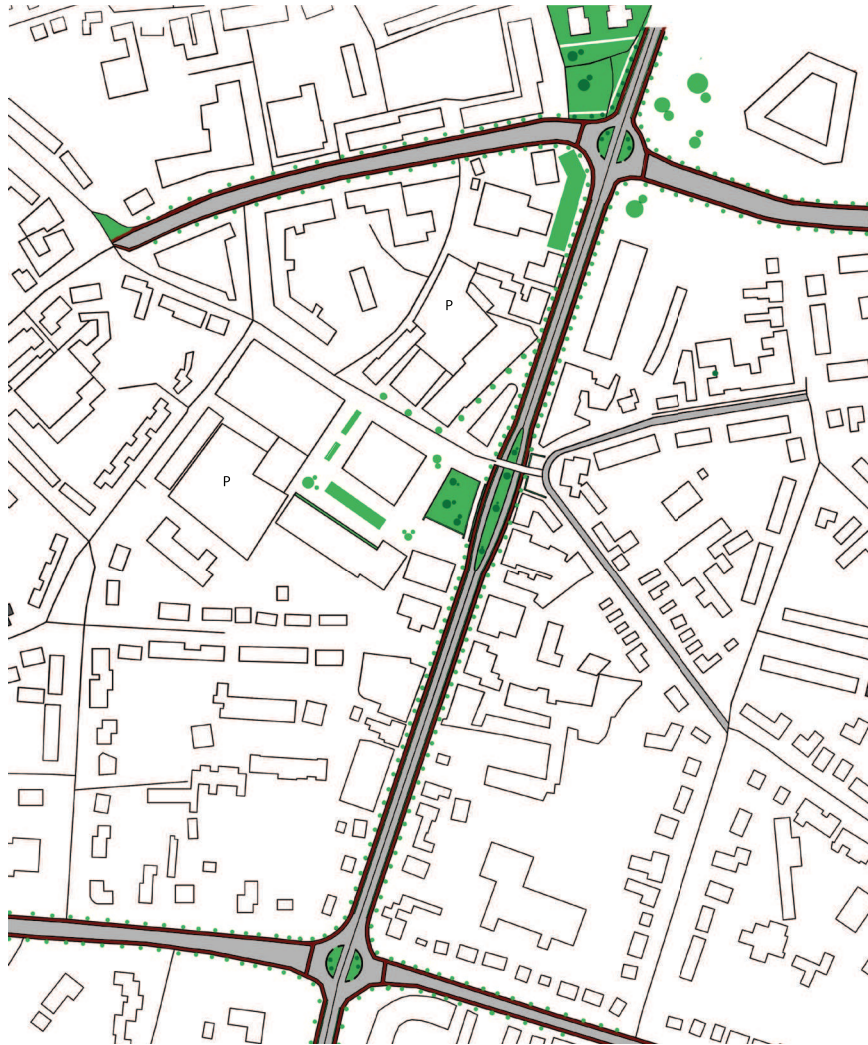


Fig 3.3.7. - Plan design Ribbon Village Aalst



Fig 3.3.8. - 3D Image Ribbon Village Aalst



Fig 3.3.9. - 3D Image Ribbon Village Aalst

AALST

3.4.

RESEARCH I

Based on a reflection and the gathered feedback on this first design attempt, new questions arose. Therefore, in the third step of this research and design project, the goal was to deepen the knowledge and insights about the situation of Aalst to be able to come up with better substantiated design solutions to improve the livability of Aalst and the attractiveness of the village center. This was done by researching three main topics: health, mobility and social structure. These topics were translated into research questions, which were answered individually and then combined and discussed.

The main question of research part 1 was:

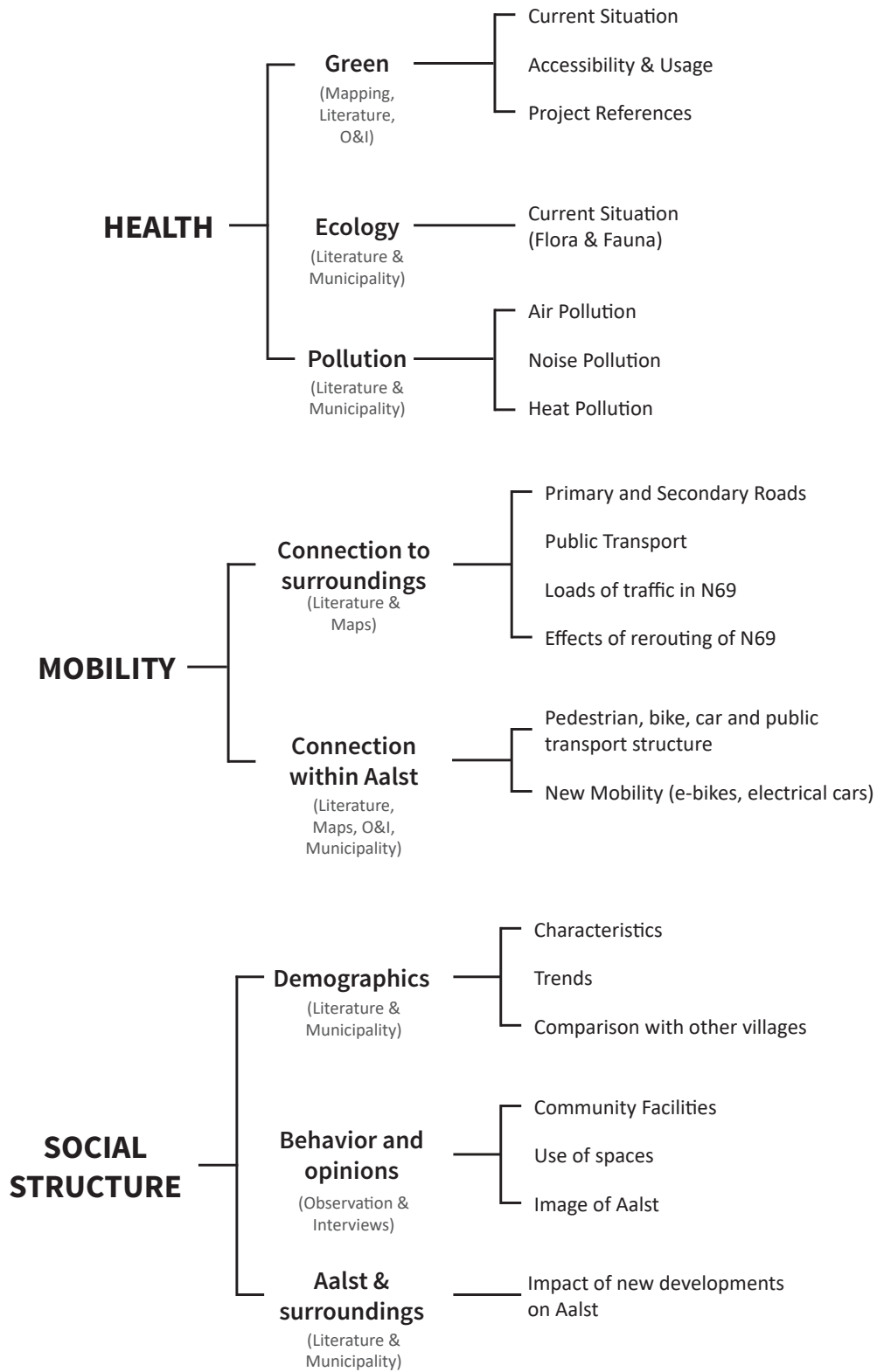
How can the livability of Aalst and the attractiveness of the current village center and the area along the N69 be improved by implementing interventions regarding the topics health, mobility and social structure?

Several methods were used in the first part of this research:

- Literature, case studies and references
- Observations
- Map studies
- Interviews municipality

The first findings are presented in this section, in the next section (Research 2), some of the topics are elaborated on further.

3.4.1. Research matrix



3.4.2. Results: health

For this research, the main focus is to study the current situation of the green structure in Aalst. What types of greenery does Aalst have? How are the green areas used and how can this areas be improved?

In order to address this topic, a literature study, maps analysis and interviews will be conducted in order to gather information of the current situation in Aalst and regarding the development and renovation of green areas as well.

Greenery & Ecology

From the map analysis, as shown in Figure 3.4.2.1., most of the green areas surrounding Aalst are coniferous and deciduous forests and land use specifically for agriculture. Along the green stripe that divides Aalst in two, some sport facilities can be found which are semi-public, which means, in order to use this facilities, you have to be a member. And lastly, of all the green areas observed in the map, there are two large public parks with some open sport facilities like football field for children, skating park.

From the conducted interviews, the main findings regarding greenery were

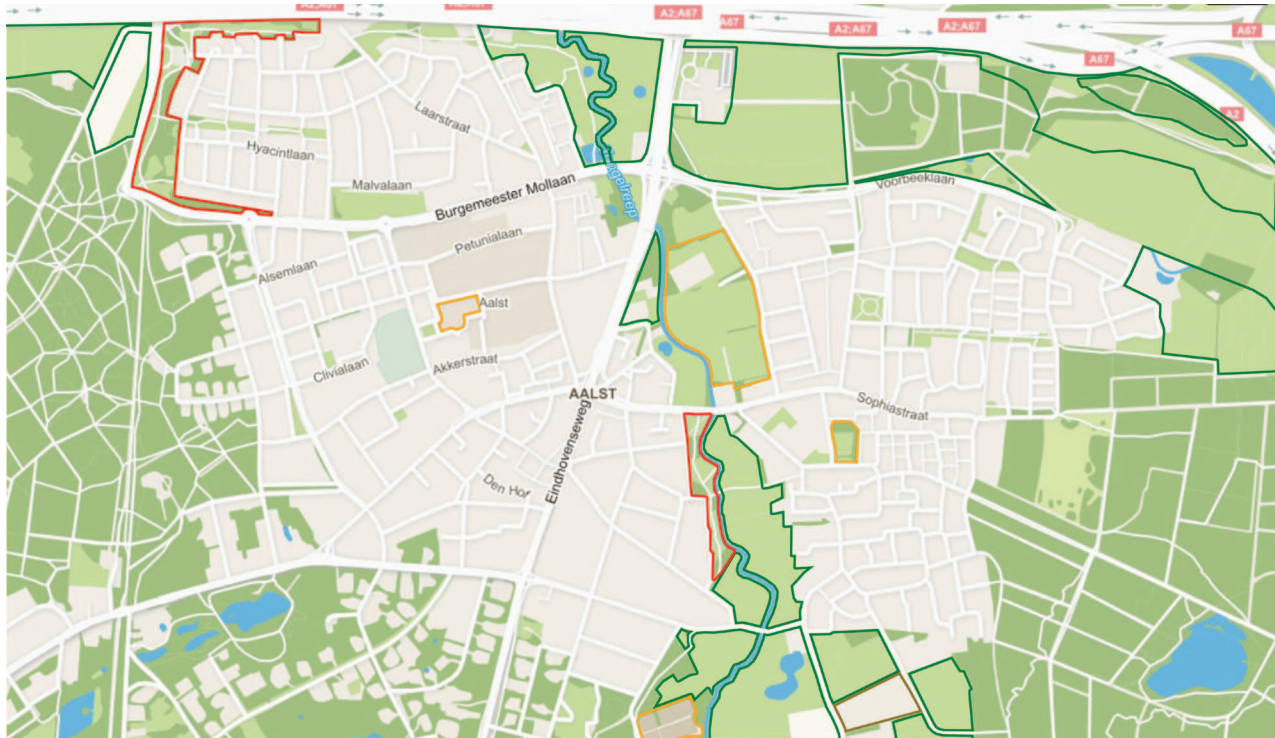


Fig 3.4.2.1. - Uses of Green Plan (based on: Maps, n.d.)

 Parks and gardens  Sports Facilities  Agricultural Use  Forest  Grass

that firstly, the center of Aalst is mostly paved and has barely greenery. Besides that, there are but a few sitting places, which discourages social interaction and moreover, the uses of the central area are unclear, which generates confusion for the residents on what to do in the center. For this reason, most of the residents go to the center to go grocery shopping in the Albert Heijn and back. From this findings it can be concluded that, even though the central area of Aalst is not highly used by its residents and it lacks on greenery, at the same time the area has a lot of potential. By intergrating more green areas in the center, not only the image of Aalst can be improved, and the pollution in the village can be reduced, but it can generate more

recreational and leisure areas for the inhabitants of Aalst to meet and relax.

As shown in Figure 3.4.2.2., there are two parks on opposite sides of Aalst. By introducing greenery in the center, not only along the N69 but along this new East - West connexion as well, the center of Aalst can become a middle point between this two parks and further into the woods. Moreover, by introducing this new connexion, Ekenrooi, which is now divided from the center of Aalst and from Voldijn, not only by the N69, but by the green stripe crossing Aalst as well, can be better connected with the rest of the village.



Fig 3.4.2.2. - Analysis of Green Areas (based on: Maps, n.d.)

Pollution

Air pollution

Everyone knows that air pollution is bad for people's health. The most dangerous form of air pollution is particulate matter, microscopic solid or liquid particles, present in the air due to natural or anthropogenic sources. The types of particulate matter are classified according to the size of the particles:

- PM10: particles with a diameter $\leq 10 \mu\text{m}$
 - PM2.5: particles with a diameter $\leq 2.5 \mu\text{m}$
 - PM1: particles with a diameter $\leq 1 \mu\text{m}$
- (Blocken, 2018, pp. 3 week 5)

The smaller the particle, the more harmful it is for people's health (Blocken, 2018, pp. 8 week 5). If there are no policies being made, air pollution will become the world's top environmental cause of premature mortality. Particulate matter is strongly correlated with human morbidity and mortality, it is linked to "lung cancer, respiratory, cardiovascular and cardiopulmonary diseases, stroke incidences, Alzheimer's and Parkinson's disease" (Blocken, 2018, pp. 6 week 5). Adverse health effects can already occur at concentrations of 3-5 $25 \mu\text{g}/\text{m}^3$. Therefore, limits are set by the WHO 2005:

- PM10: 20 $\mu\text{g}/\text{m}^3$ annual mean and 50 $\mu\text{g}/\text{m}^3$ 24-hour mean;
- PM2.5: 10 $\mu\text{g}/\text{m}^3$ annual mean and 25 $\mu\text{g}/\text{m}^3$ 24-hour mean.

However, mean concentrations in many urban areas are much larger and local concentrations can be even larger than these limits (Blocken, 2018, pp. 11 week 5).

Traffic is one of the main sources of particulate matter these days. It contributes to background concentrations in larger areas and high local concentrations. It is caused by tailpipe emissions, brake dust and tire wear. Parking structures are often places with high concentrations of particulate matter in the air. (Slide 13, wk 5, BB) Several measures can be taken against air pollution. The sources can be decreased/eliminated and/or the air can be filtered mechanically. According to a case study in Eindhoven by Bert Blocken et al. the outdoor particulate matter concentration can be reduced up to 50% by adding electrostatic precipitation machines in semi enclosed parking garages (Blocken, 2018, week 5)

In Eindhoven, for example, the road the Vestdijk is being redesigned to reduce the amount of car traffic which will decrease air pollution and make the city center a more healthy place to be (Theeuwens, 2019).



Fig 3.4.2.3. - Air pollution in Aalst (EduGIS, 2016)

From the maps, one can immediately see that there is a correlation between the locations with much air pollution and the locations of roads. An interesting finding is that the amount of particulate matter along the N69 in Aalst is between 20 and 22 $\mu\text{g pm}_{10}/\text{m}^3$. This exceeds the limit of PM10: 20 $\mu\text{g}/\text{m}^3$ set by the WHO in 2005 and it greatly exceeds the threshold from which adverse health effects can occur (3-5 25 $\mu\text{g}/\text{m}^3$). If compared to the image of Eindhoven, this is approximately the same value as is present on the Vestdijk, so if actions are necessary for the Vestdijk, there are also actions necessary along the N69 in Aalst (EduGIS, 2016). Since the air pollution in Aalst is to a great extent caused by cars, the reduction of car traffic due to the re-routing of the N69 will already help. However, there will still be a considerable amount of cars passing through Aalst, so it is probably the case that more (mechanical) measures need to be taken.

Urban heat island effect (heat pollution)

More and more recognized problem related to sustainability and global warming. An Urban Heat Island “Indicates an urban area which is significantly warmer than its surrounding rural areas.” (Blocken, 2018, pp. 5 week 7) It is a relevant topic to

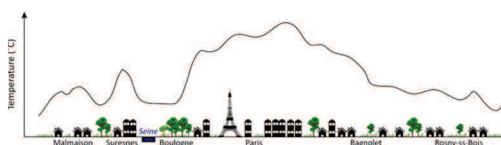


Fig 3.4.2.4. - Urban heat island effect (Blocken, 2018)

include, because it relates to the extent in which the center of Aalst can be designed in a future-proof and more healthy way. High temperatures in cities can increase the morbidity and mortality of people and it increases the energy consumption in cities. It is expected that the additional cooling costs in the year 2100 will be around 130 billion dollars per year for EU countries. (Blocken, 2018, pp. 6 week 7)

In figure 3.4.2.5., one can see the seven causes of the Urban Heat Island Effect. The causes are:

- Long and short heat waves cannot escape to the above air due to reflections via buildings and polluted air. (1, 2, 3)
- Heat is caused by people, cars and industry in the city. (4)
- Heat is stored in the construction materials of buildings/streets. (5)
- Less room for evapotranspiration (the evaporation of water, which cools the air), which is related to the amount of vegetation and water in the area. (6)
- Little turbulent heat transport, which means that there is little wind that can take the hot air and remove it from the city. (7) (Blocken, 2018, pp. 31 week 7)

Problems relating to water drainage also relate to the problem of urban heat island effect in the sense that a high percentage of hardened surface – which results in more

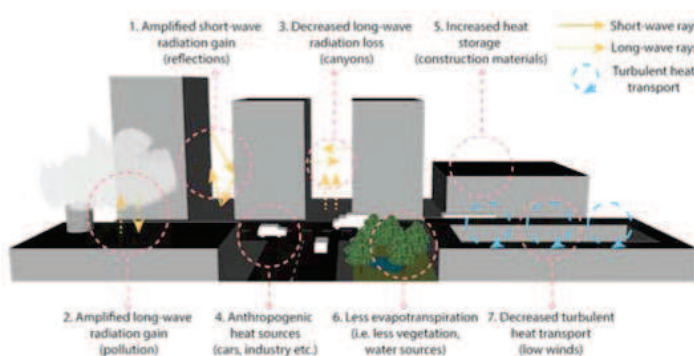


Fig 3.4.2.5. - Urban heat island effect (Blocken, 2018)

heat storage (5) and less evapotranspiration (6) - can have the effect of water not being able to drain into the ground fast enough during heavy rainfall. This can block traffic and therefore have consequences for the mobility and livability in Aalst.

The center of Aalst shows a 1.2-1.4 degrees Celsius rise in comparison to the situation in the open field. This means that there is an urban heat island effect present, but the problem is way smaller than in, for example, Eindhoven and Valkenswaard. This has something to do with the size of Aalst, but also with the percentage of hardened surface in Aalst. The urban heat island effect is the largest in the current center of Aalst, along the Gestelsestraat and along the N69. This probably has something to do with the presence of more hardened surface, less vegetation/water, more cars and a higher building density than in the rest of Aalst.

Noise pollution

Noise pollution can have a very negative impact on people's health. For example, it can cause sleep disturbance, hypertension (high blood pressure), Increased cardiovascular risk (if the sound pressure level is above 60 dB(A)), Cognitive

impairment in children and tinnitus. The WHO guideline that corresponds to serious annoyance is 55 dB(A) (Hornikx, 2018, pp. 23-29 week 1). To achieve a situation in which only 2.77 percent of the people is seriously annoyed, the sound pressure level should be reduced to 48 dB(A). (Hermans & Tax, 2018, pp. 6) Road traffic noise is the most dominant source of environmental noise (Hornikx, 2018, pp. 7 week 3). To improve the urban acoustics and thereby reduce the noise pollution coming from a busy road like the N69, several actions can be taken:

Source:

- Legislation to reduce the source (most effective)
- Low noise tyres
- More passive and less aggressive driving style (5-7 dB reduction possible)
- Reducing traffic volume, speed and heavy vehicles

Urban environment:

- Increase the distance from the road (3 dB decrease per distance doubling)
- Make the road surface smooth and porous (reduction up to 6 dB possible)
- Screening via barriers or buildings
- Diffusion (scattering) via ground (rough surfaces) and buildings with rough facades
- Increase the absorption capabilities

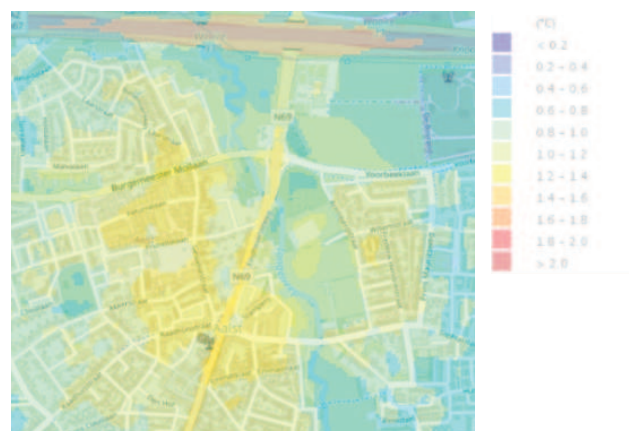
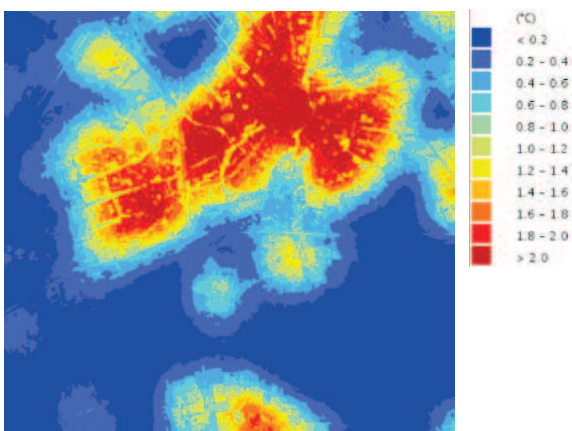


Fig 3.4.2.6. - Urban heat island Aalst (EduGIS, 2016)

by adding ground and/or green treatments (a low green barrier can already decrease the noise by 3 to 12 dB(A). Trees, however are not very effective noise blockers (Hornikx, 2018, week 5).

surface in the center is greenery) and a sound barrier of 1m high along the road. The exact calculations and results can be found in a separate document.

To estimate the current sound pressure levels in Aalst and to test design proposals, the noise mapping software ‘noise tools’ was used. The variables that can be changed in the urban environment which have an impact of the acoustic performance of the area are:

- The ground factor (0 for hard surfaces such as stone, 1 for soft surfaces such as grass, vegetation etc.);
- The sound power of the road (depends on the type and amount of traffic on the N69);
- The placement of the buildings;
- The speed of the vehicles.

The sound pressure level was measured in six different locations and ten different situations were examined. The results can be seen in the table. The worst situation was number 2, the current situation but then without the wall. The best situation was number 10, with traffic reduction (resulting from rerouting of the N69), traffic speed of 30 km/h, without the wall, with a ground factor of 0.5 (half of the ground

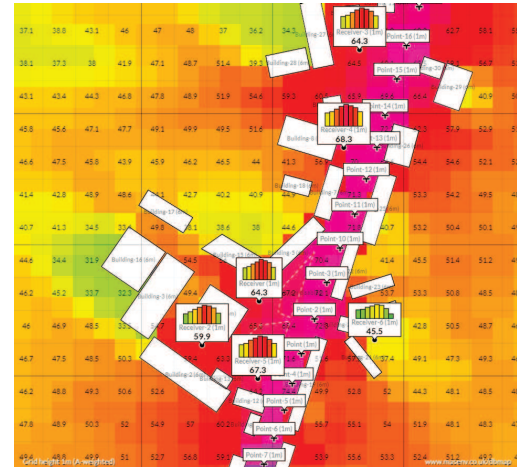


Fig 3.4.2.8. - Noise map situation 2

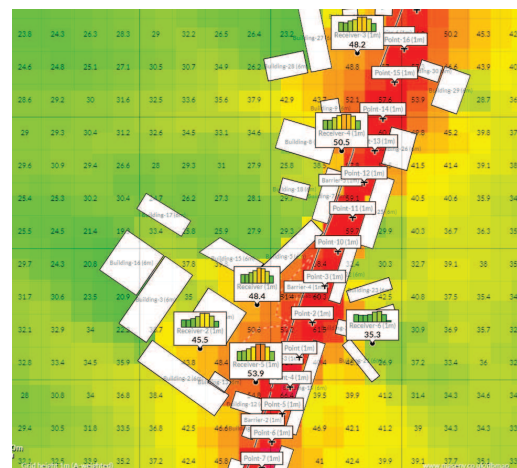


Fig 3.4.2.9. - Noise map situation 10

Receiver	situation 1 (dB(A))	situation 2 (dB(A))	situation 3 (dB(A))	situation 4 (dB(A))	situation 5 (dB(A))	situation 6 (dB(A))	situation 7 (dB(A))	Situation 8 (dB(A))	Situation 9 (dB(A))	Situation 10 (dB(A))
	Current situation	Without building	GF 0.5	Reduced traffic 50 km/h	Reduced traffic 50 km/h, without building	Reduced traffic 50 km/h, GF 0.5	Reduced traffic 50 km/h, without building, GF 0.5	Reduced traffic 50 km/h, without building, GF 0.5, barrier	Reduced traffic 30 km/h, without building, GF 0.5	Reduced traffic 30 km/h, without building, GF 0.5, barrier
1	51.3	64.3	47.9	46.4	59.4	43.2	56.8	52.3	52.8	48.4
2	56.8	59.9	53.5	51.9	55	48.9	51.8	47.6	49.6	45.5
3	64.3	64.3	61.5	59.5	59.5	56.8	56.8	53.3	51.7	48.2
4	68.3	68.3	65.6	63.4	63.4	60.9	60.9	55.6	55.8	50.5
5	66.9	67.3	64.3	62	62.4	59.5	59.9	55.8	57.7	53.9
6	44.8	45.5	41.8	39.5	40.4	36.8	37.7	37.7	35.3	35.3

Fig 3.4.2.7. - Table noise mapping. (green=below 48 dB, yellow = below 55dB)

3.4.3. Results: mobility

Firstly, in order to have a better image of where Aalst is and how the mobility system with its surroundings, an examination on a larger scale was necessary. (fig 3.4.3.1).

Second step was to focus more on the Aalst itself. Site visits and google maps were used to indicate the type of street, parking places, bike path, orientation of streets and pedestrian areas.

Furthermore, important data retrieved from the book “Waalre Future Connections: improving liveability and mobility” (Musch,Reijnders &Logt,2018). All the data gave us an insightful view on how mobility system works in Aalst and users habits and needs.

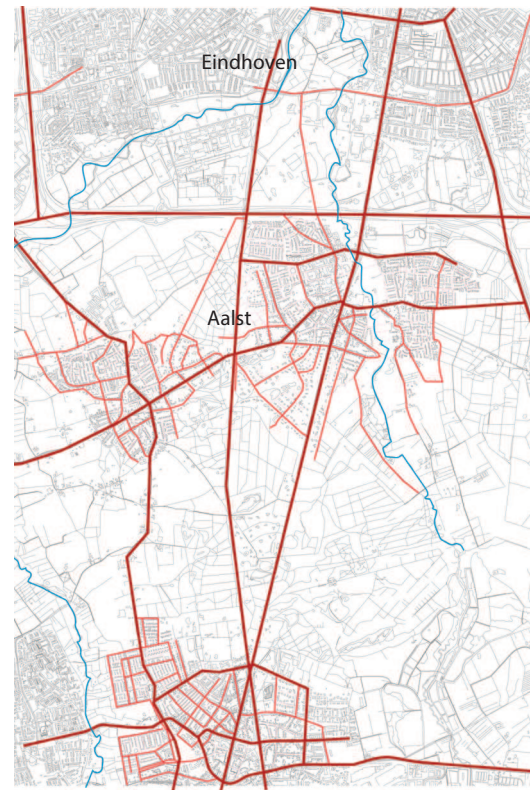


Fig 3.4.3.1. - Aalst and surroundings infrastructure



Fig 3.4.3.2.- Primary,secondary,tertiary roads and bus stations-Aalst

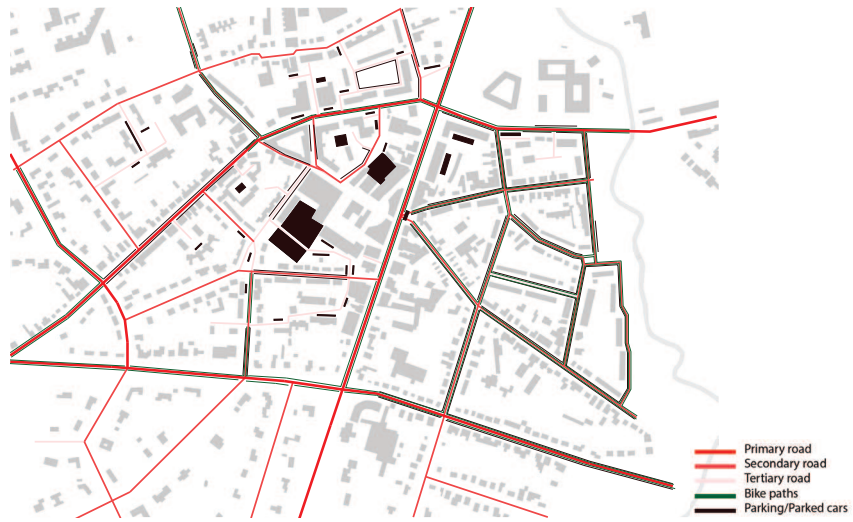


Fig 3.4.3.3. - Mobility structure Aalst

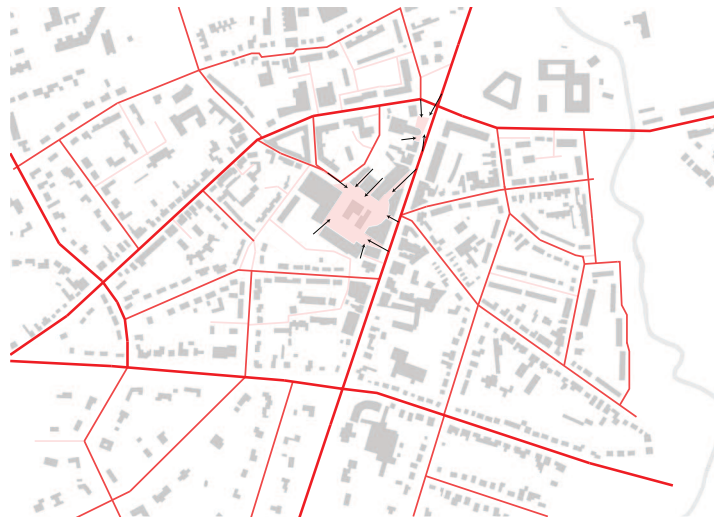


Fig 3.4.3.4. - Pedestrian areas and accessibility to them

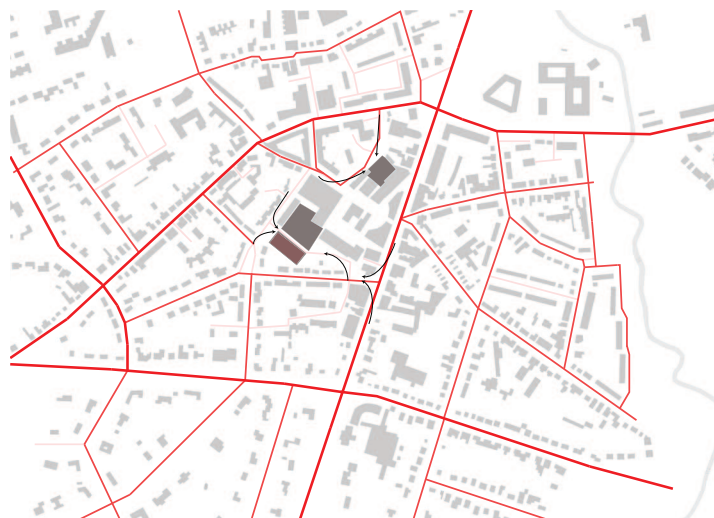
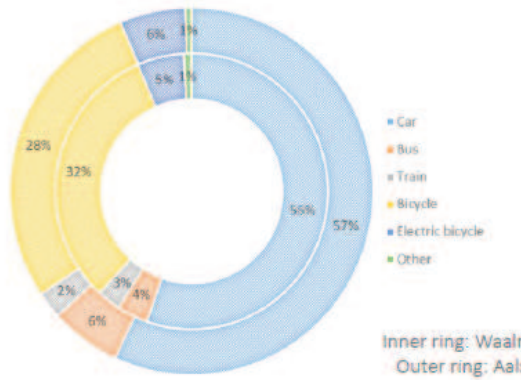
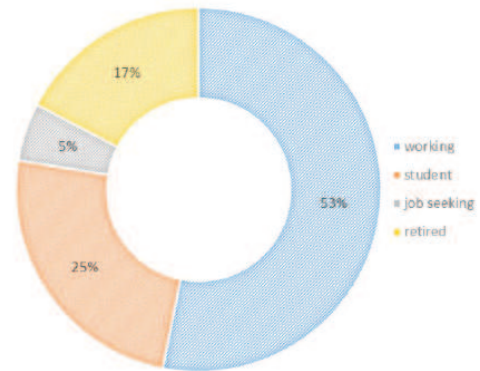


Fig 3.4.3.4. - Accessibility to parking lots



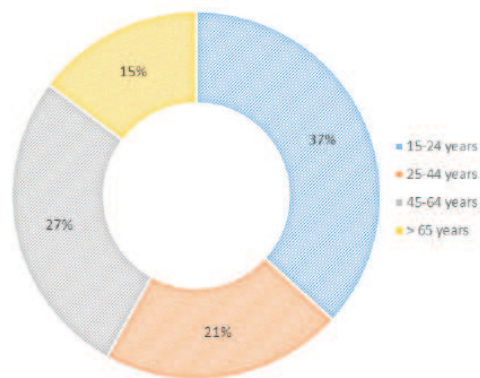
Most used mode of transport per residence (all respondents)

Fig 3.4.3.5.1 (Musch, Reijnders & Logt, 2018)



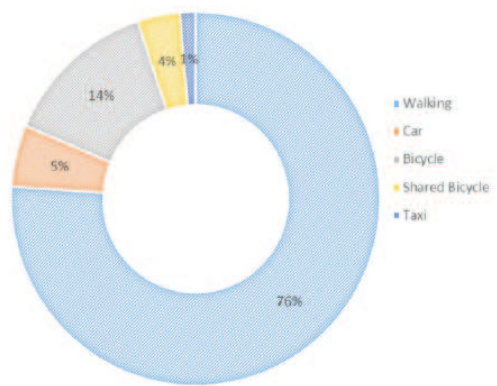
Distribution of groups based on employment status using public transport during a regular week (1125 respondents)

Fig 3.4.3.6. (Musch, Reijnders & Logt, 2018)



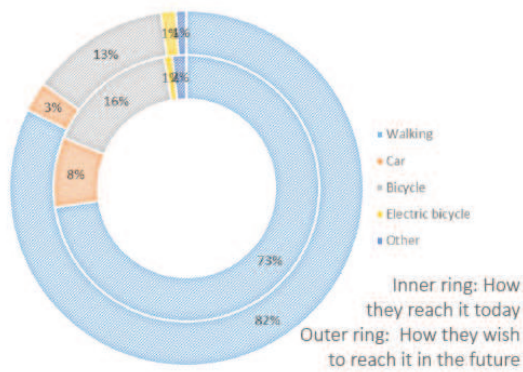
Distribution of age groups using public transport during a regular week (1125 respondents)

Fig 3.4.3.7. (Musch, Reijnders & Logt, 2018)



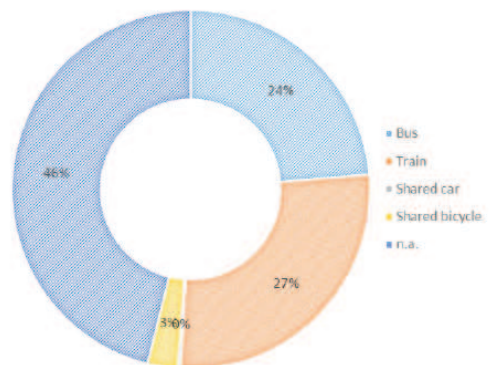
Distribution of how respondents desire to travel further from their last public transport stop to the final destination (1182 respondents)

Fig 3.4.3.8. (Musch, Reijnders & Logt, 2018)



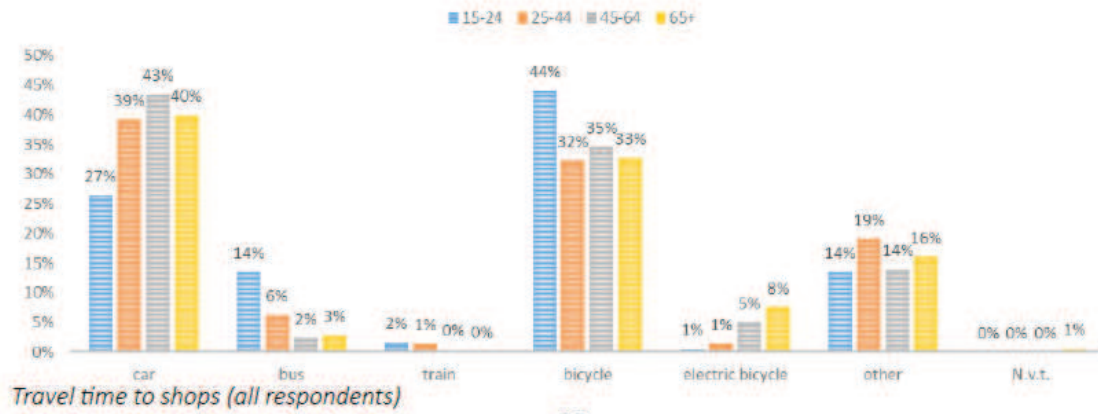
Distribution of how respondents (want to) reach a public transport stop. (987 respondents)

Fig 3.4.3.9. (Musch, Reijnders & Logt, 2018)



Subscription on mode of transport (all respondents)

Fig 3.4.3.10. (Musch, Reijnders & Logt, 2018)



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Fig 3.4.3.11. (Musch, Reijnders & Logt, 2018)

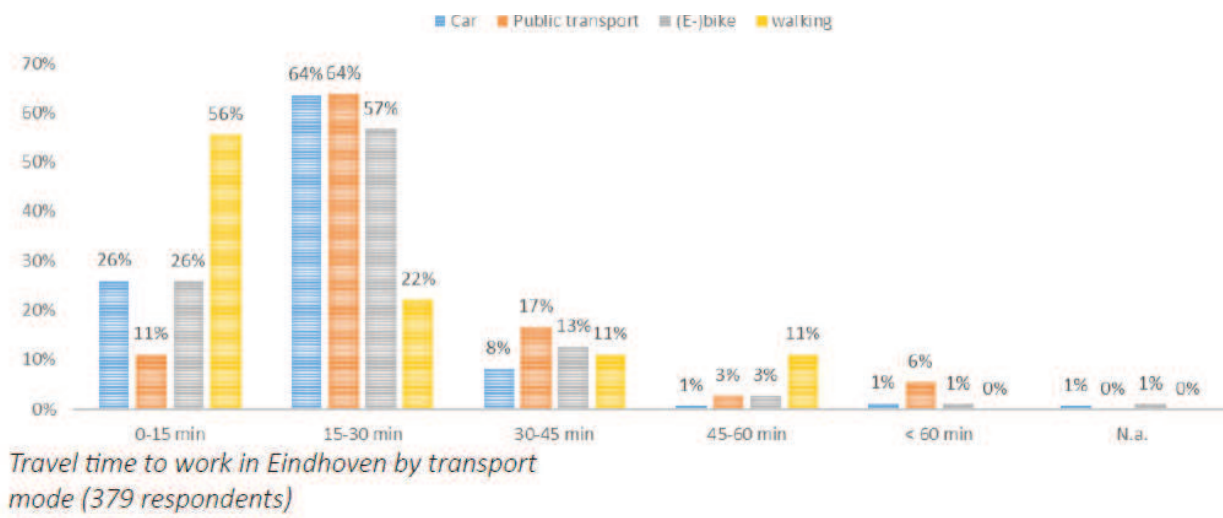


Fig 3.4.3.12. (Musch, Reijnders & Logt, 2018)

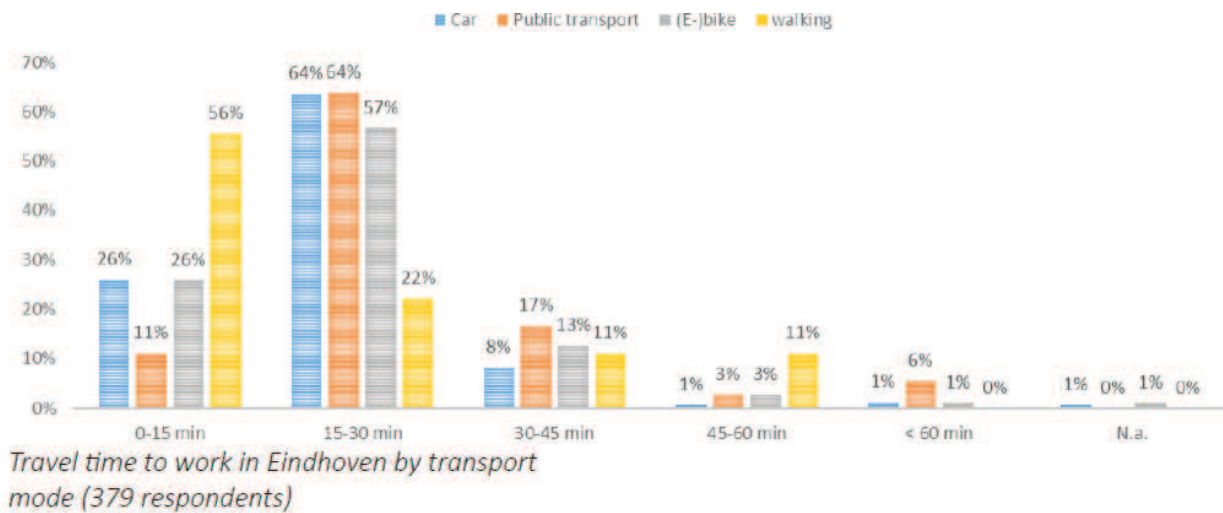
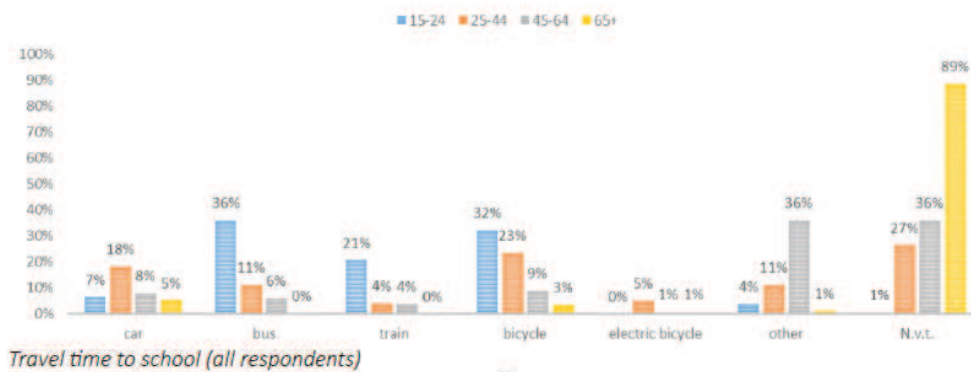


Fig 3.4.3.13. (Musch, Reijnders & Logt, 2018)



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Fig 3.4.3.14 (Musch, Reijnders & Logt, 2018)

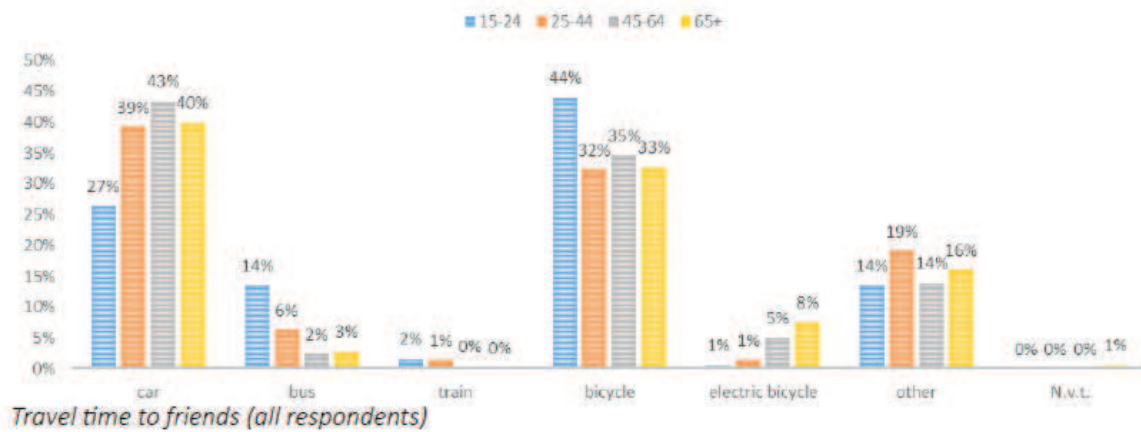


Fig 3.4.3.15 (Musch, Reijnders & Logt, 2018)

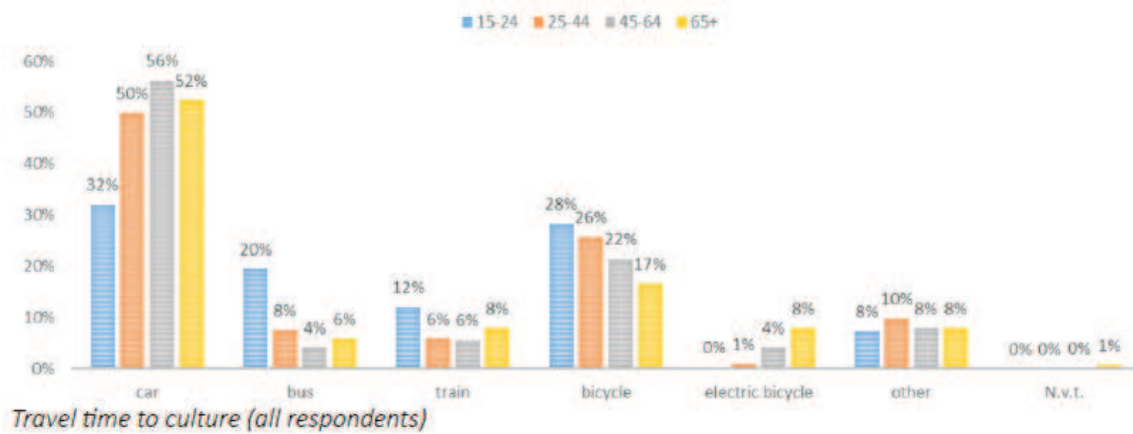


Fig 3.4.3.16 (Musch, Reijnders & Logt, 2018)

3.4.4. Results: social structure

Demographics

The density of the neighborhoods in Aalst is less than most of the neighborhoods in Eindhoven. It is comparable to Valkenswaard and other villages in Brabant. The density in Aalst stayed approximately the same during the last years, the density in Waalre grew. The number of inhabitants in the municipality Waalre in total grew 8% since 1995 (Informatie Gemeente Waalre, 2019).

The majority of the population in Waalre is Autochthone. However, the amount of non-western migrants increased during the last few years. Most of the allochthone people live in the current center of Aalst

In terms of age and household composition, the following things can be concluded:

- There are little people between 15 and 25;
- Most people are between 45 and 65;
- There are many people over 65 (elderly);
- Most elderly live in Voldijn;
- Most families with children live in Ekenrooi;
- Most singles live in Aalst-buurt (Informatie Gemeente Waalre, 2019).

In terms of income, Waalre is the most wealthy municipality in Noord-Brabant with an average income of 29.800 EUR/year. The average income NL = 26,6 EUR/year (Inkomen, 2016), so even the least wealthy part of Waalre is above average. The richest people live in the villas around Aalst, with an average income of 32.200 EUR/year (Informatie Gemeente Waalre, 2019).

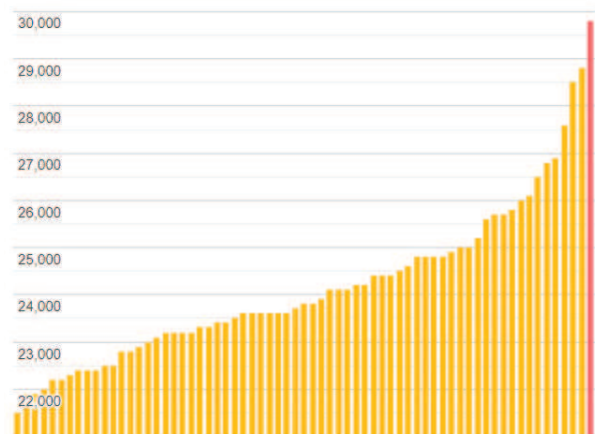


Fig 3.4.4.2. - Average income compared to other Brabant villages (Informatie Gemeente Waalre, 2019)

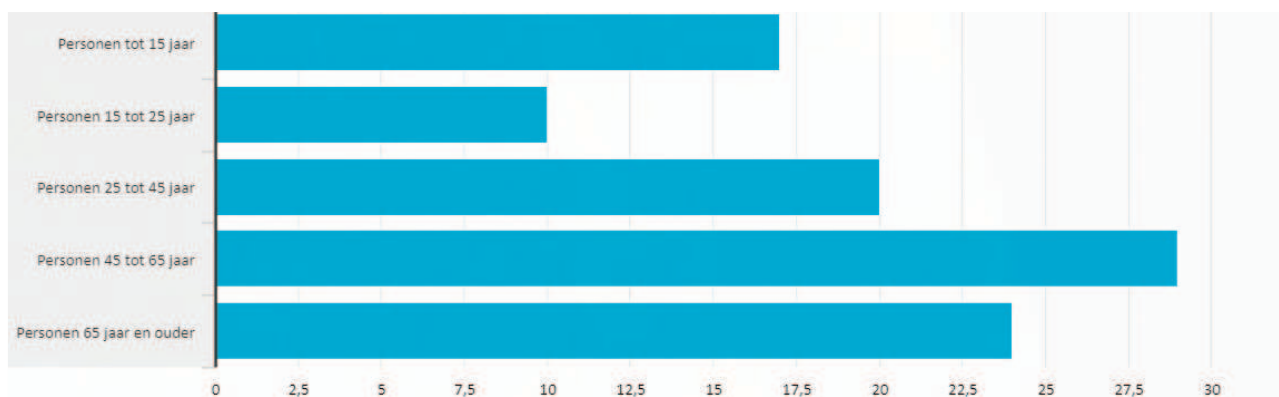


Fig 3.4.3.1. - Age distribution Waalre (Informatie Gemeente Waalre, 2019)

3.4.5. References Research 1

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AALST

3.5.

RESEARCH 2

From the first part of the research, already many conclusions can be drawn. However, some important questions remain that could be relevant for the final design. The goal of the second part of the research is to select the most important and interesting remaining questions and research them more in-depth. These researches should form a strong base to build arguments for the final design. Three main topics of research are chosen, and each topic is elaborated on by one of the researchers. The three topics are:

Image of Aalst – by Simone Tax

What aspects are important in the image of Aalst according to inhabitants and how can the physical built environment strengthen improve this image?

Mobility – by Christina Papadaki

How could connectivity from/to and within Aalst be improved?

Greenery & healthy living – by Gisella Navas

What is the current situation regarding the accessibility, use, social and health function of green areas in Aalst and how can it be improved?

3.5.1. Individual research topics




The Image of Aalst

Simone Tax



Mobility

Christina Papadaki



Greenery

Gisella Navas

3.5.2. The Image of Aalst

By Simone Tax

Introduction

In the book “The Image of the City”, written in 1960, Kevin Lynch introduces the concept of the image of a place and describes why it is so important. According to Lynch the “legibility” of a city is crucial for people to be able to structure, identify and understand their environment. If inhabitants of the city are unable to recognize their surroundings, this could cause a lack of orientation and a feeling of being lost. “A good environmental image gives its possessor an important sense of emotional security. He can establish a harmonious relationship between himself and the outside world. This is the obverse of the fear that comes with disorientation; it means that the sweet sense of home is strongest when home is not only familiar but distinctive as well.” (Lynch, 1960, p 4).

In the concept we chose for the quick analysis and design assignment - Ribbon Village Aalst - several assumptions have been made about the image of Aalst, based on quick observations. In the extensive research, a more in-depth understanding of the village was acquired. However, it is still unclear how the inhabitants themselves feel about the topic. By asking people who live in Aalst about their opinions, the previously drawn assumptions can be checked and further specified.

Research questions

To find out what the Image of Aalst is according to Aalst’s inhabitants, several research questions were defined. The main question of this research is:

What aspects are important in the image of Aalst according to inhabitants and how can the physical built environment strengthen and improve this image?

This main question is divided into the following sub-questions:

- What paths, edges, districts, nodes and landmarks can be defined in the center of Aalst and the area along the N69 when a systematic field reconnaissance is done by an observer?
- What do the inhabitants of Aalst consider the most characterizing and/or important aspects of the village?
- What do the inhabitants of Aalst consider positive and negative aspects of the village and why?
- To what extent are the inhabitants of Aalst able to reconstruct the village in terms of descriptions and/or drawings?
- To what extent are the inhabitants of Aalst proud of their village?
- What would be possible improvements for the physical built environment of Aalst according to the inhabitants?

Hypothesis

The hypothesis is based on the results from the first observations, the quick analysis and design assignment and research part 1.

The most important aspects of the image of Aalst found in the area are:

- The Eindhovenseweg, which is one of the most important historical- and mobility aspects, it is very present nowadays and extremely important in terms of connectivity. However, it is also an unattractive border in the village at the moment.
- The church, which has a high architectural value and historical importance for the village.
- “De Muur”, which is assumed to be negatively assessed by the inhabitants of Aalst, due to its low architectural quality and ‘strange’ location in the middle of an old square. However, the inhabitants might speak positively about it, since it blocks sound from the Eindhovenseweg and makes the sound levels on the village square more pleasant.
- The greenery and parks in Aalst, which are assumed to be pleasant places according to the inhabitants of Aalst.
- The main crossing with the traffic lights, where cyclists and pedestrians have to wait to cross the busy street.

Based on the poor appearance when one enters the village and on the low architectural quality of the buildings and urban spaces in the village center (see first observations), it is expected that the inhabitants are not particularly proud of their village, at least not on the village center and the area along the N69. It is expected that the concept of Ribbon Village Aalst and the design made the quick analysis and design assignment of this report (probably with some changes) could provide a suitable solution to improve the

image of Aalst.

Methodology

“The Image of the City” is taken as a basis for the methodology in of this research. In the book, two types of research are used: observations and interviews. The observations were done by a trained observer who systematically moved through the area and mapped the most important paths, edges, districts, nodes and landmarks. (Lynch, 1960, p 46-90) In this research, approximately the same thing has been done. The researcher went to Aalst and discovered the area by foot and bicycle while mapping the most important paths, edges, districts, nodes and landmarks (divided in several levels of importance). These were marked on separate reduction maps and then put together into a concluding observation map.

After the observations, the interviews were held. This was done in three separate takes at different moments. During take 1 (5 interviews, 6 people) and 3 (5 interviews, 7 people), the researcher went to Aalst and approached people in the center of Aalst and the area along the N69 to hold short interviews of 5 to 20 minutes. Take 2 consisted of a lengthy in-depth interview of approximately an hour with one inhabitant of Aalst. The first question in all the interviews was to draw a plan of Aalst from memory, this did not need to be an accurate drawing, but a rough sketch was enough. During the drawing process, the researcher would take notes of the sequence in which the plan was drawn. This

type of question is directly derived from “The Image of the City”. Secondly, several other questions were asked. Questions like: how would you describe Aalst? Which words pop into your head when you think of Aalst and its inhabitants? Are you proud to be an inhabitant of Aalst? What are the most characterizing / important aspects of the village? And do you have any recommendations for possible improvements? The length of the interview and the exact questions asked depended on the time that the interviewee wanted to spend and the way the conversation evolved. These questions were based on the methodology of “The Image of the City”, but they were altered and shortened to make them suitable for short interviews. (Lynch, 1960, p 140-159) In case there was time left, a third type of question was asked. The interviewee was shown pictures

of the center of Aalst in three different scenarios: the current situation, a more urban situation (this included pictures of the design of LOS Stad om Land B.V.) and a more rural situation (this included pictures and drawings from the quick research and design assignment Ribbon Village Aalst). The interviewee was asked which scenarios they liked and why. Take 1 and 2 were done in collaboration with the researchers of the topics Mobility and Greenery in Aalst, which is why these interviews also included some specific questions about those two topics. The answers to all questions were written down in a table. The most important aspects of the village according to the interviewees were extracted from the table and put together in tables and a concluding interview map. Additionally the most relevant remarks and recommendations were extracted and listed.



Fig 3.5.2.1. - Pictures of the center of Aalst

Results

Observations

In figure 3.5.2.1. and 3.5.2.2. one can see pictures taken during the systematic observation. In figure 3.5.2.3. the concluding map of the systematic observation is visible. Most landmarks can be found in the area between the Eindhovenseweg and the Raadhuisstraat, which corresponds to the current village center of Aalst. The most important landmarks are the church, the Albert Heijn and “de muur”. The Eindhovenseweg is a main path and main edge at the same time. It is very important for movement, but it also splits the village in two. “De muur” is clearly an edge too and the main nodes are located along the Eindhovenseweg. The

most clearly recognizable districts were the green areas and some neighborhoods, mainly located in the outskirts of Aalst. The closer one gets to the center, the less clearly defined the districts become. The atmosphere becomes less green, more chaotic and less aesthetically pleasing.

Interviews

As mentioned before, eleven interviews with in total fourteen people have been held. The information from the interviews is extracted and presented in tables and figures. In table 3.5.2.1. one can see the results from the drawings made by the interviewees (see also figure 3.5.2.4.). The Eindhovenseweg is present in all drawings and has always been drawn as first or second element in the drawing process.



Fig 3.5.2.2. - Pictures of the neighborhoods of Aalst



Fig 3.5.2.3. - Concluding map of the systematic observation

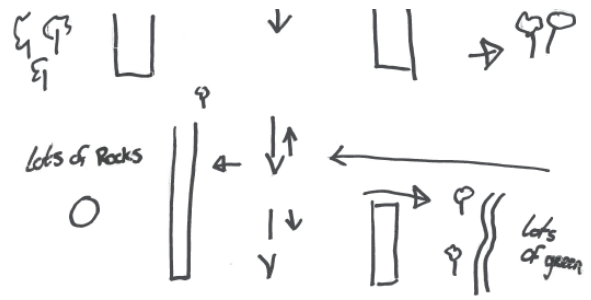
This implies a high level of importance of the Eindhovenseweg in the image of Aalst. Additionally, the current village center, Den Hof, and the forests were included in more than half of the drawings. The “de muur”, church, Albert Heijn, Ekenrooi and the East-West connections were also recognizable in many drawings.

In table 3.5.2.2., one can see the statements that were made by more than one of the interviewees. The most important opinion was that the village center was boring and had to become more lively. People found that there should be more greenery and more places to sit and/or play. The lack of coherence in architecture of the buildings and the abundance of empty

shops were seen as problematic. Some statements made by the interviewees about the current village center: In the center you see nothing of the green character, which is really there! (interview 6) I cannot think of anything nice about the center of Aalst. It must become more lively but how? (interview 4) We would like to drink something after work, but doesn't happen now, there is nothing to do. (interview 5) It is not lively at all, there are almost no people walking, there are only a few nice shops and much of the center is used as one big bicycle lane. (interview 6) However, there were also positive things said about Den Hof and some of the interviewees made suggestions for improvements to make the center that they liked even

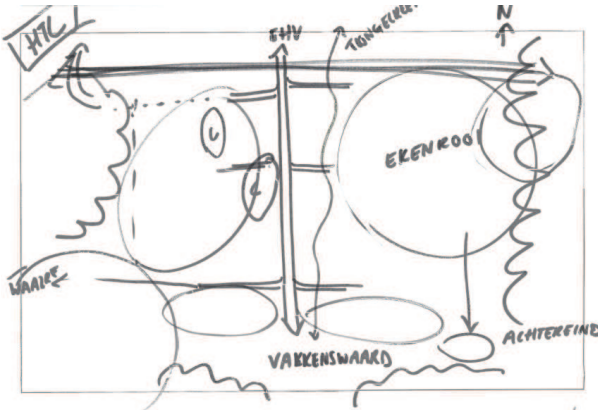


Interview 1

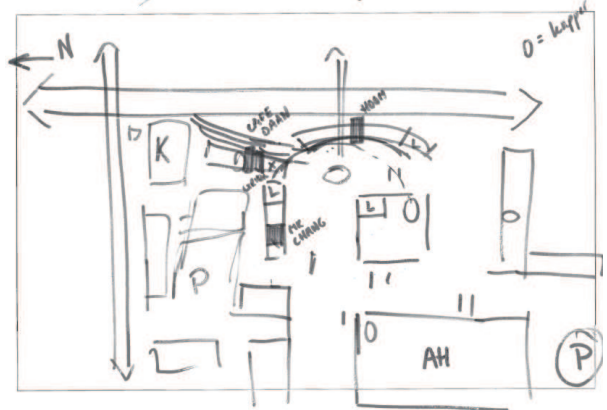


Conclusion: Very Divided

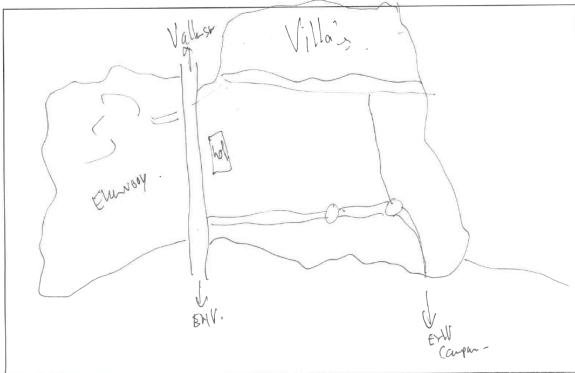
Interview 3



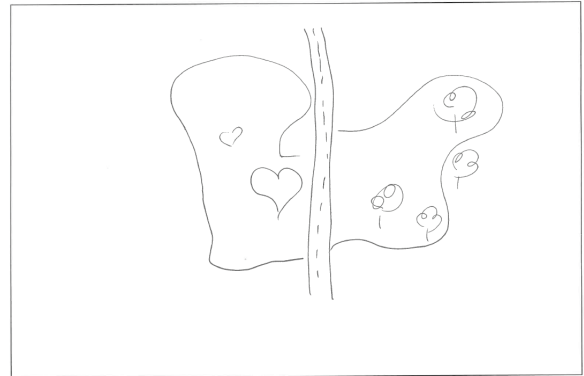
Interview 6 (a)



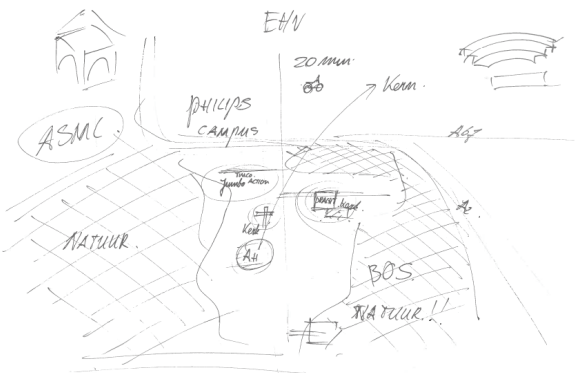
Interview 6 (b)



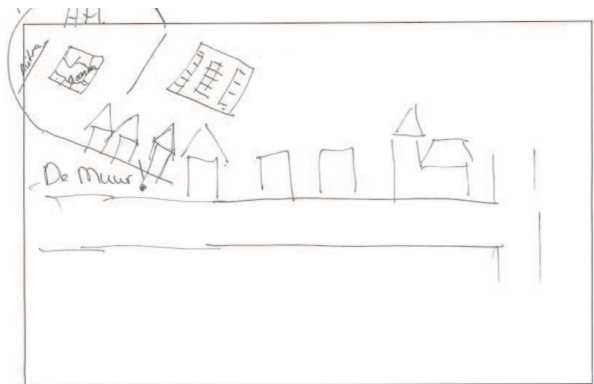
Interview 7



Interview 8



Interview 9



Interview 11

Fig 3.5.2.4. - Drawings of Aalst made by interviewees

better: Aalst is like two lungs with an aorta (Eindhovenseweg). Den Hof is the heart. It also really feels like the heart of Aalst. There is another smaller heart at the location of the Action. Maybe the location of Den Hof and the location of the Action could be united. The shops can come to Den Hof to fill the empty buildings. (interview 8) This square is very important. It would be nice if there could be an outside theatre, a kiosk, a coffee place and a play garden (the small hills in Den Hof now are dangerous). Also there could be more trees and streetlights to create a nice atmosphere. And there are quite many young people hanging around, it would be nice if they would have a place. (interview 9). The Albert Heijn happens to be an important location in the current village center. People from Aalst, Waalre, Eindhoven and Valkenswaard go to the Albert Heijn because of the large assortment. (interview 6) Also, elderly meet inside of the Albert Heijn to drink free coffee as a social activity. (interview 3) However, while the main entrance was previously located at the Den Hof side, it now turns its side to the square and the main entrance is at the parking lot.

In general, people found Aalst a nice village to live in. Especially the forests were evaluated positively, as well as the good connectivity to Eindhoven and Valkenswaard. Apparently there is a large dog community in Aalst and many people often go walking, cycling or horse-riding. However, interviewee 6 stated: the old city hall burned down and all community functions moved to the new one, which is located in-between Aalst and Waalre. This resulted in less activity in Aalst. Also, many elderly people go to Eindhoven for activities, instead of staying in Aalst. According to the interviewees, the inhabitants of Aalst are very diverse,

Interviewee #	1	3	6a	6b	7	8	9	11	Total mentioned
<i>Drawn in plan:</i>									
Eindhovenseweg	2	1	1	1	1	2	2	1	8
Den Hof	1	3			4	4	5		5
Forests	3	4	6			5	6		5
"De muur"		2		3				3	3
East-West road		6	3				7		3
Ekenrooi			4		2	3			3
Church				5			4	2	3
AH				4			5	5	3
A2			7				1		2
Villas	4				3				2
Eindhoven, Valkenswaard			2		6				2
Small shopping street				2				1	2
Parking				4				4	2
Tongelreep		5	9						2
Jumbo / action				10			3		2
High Tech Campus			8						1
Achtereind			5						1
Voldijn						1			1
Roundabouts					5				1
Waalre					7				1
ASML							8		1
Pracht							9		1

Table 3.5.2.1. - Drawings results

Interviewee #	1	2	3	4	5	6	7	8	9	10	11	Total mentioned
<i>Statement:</i>												
Boring center, should be more lively	1		1	1	1	1	1		1		1	8
Center should be more green			1	1	1	1	1		1		1	7
Center should be more places to sit and play			1	1	1				1	1		5
Important connections	1				1	1	1		1			5
Eindhoven Valkenswaard												
Nice village to live in	1					1	1		1	1		5
Forests are nice		1	1			1	1					4
"De muur" should go			1		1						1	3
Ugly & unstructured buildings in center				1		1	1					3
Combination of high and normal income people, and expats			1			1			1			3
"De muur" closes off the village center too much				1	1	1						3
Aalst is part of Waalre			1			1	1					3
Walking (the dog): there is a dog community		1					1					3
N69 is dangerous and/or too loud			1			1			1			3
Empty buildings	1					1						2
Clear division between village center and rest of Aalst			1			1						2
Bus takes long (longer than car)					1	1						2
Many hair dressers						1	1					2
Facilities are very spread over the village								1	1			2
Horse riding/ other sports are present			1			1						2
AH is much used						1			1			2

Table 3.5.2.2. - Interviews statements

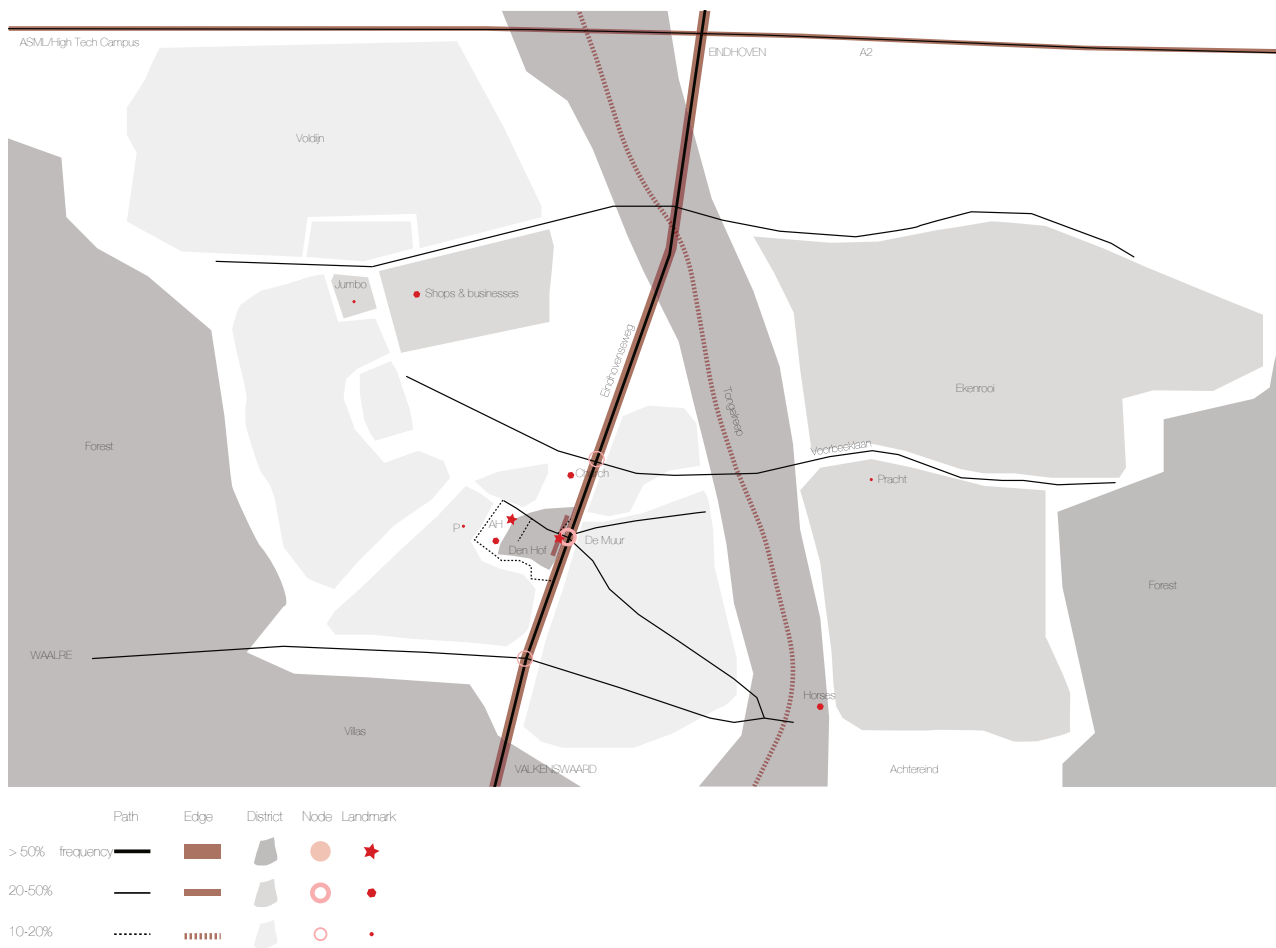


Fig 3.5.2.5. - Concluding map of the interviews

consisting of wealthy families, middle-income starters, elderly, expats and many more. The real “Aalstenaar” is nonexistent. It is quite city-like here, while everyone says they are from a village. (interview 6)

Five people especially mentioned “de muur”. Three people stated that the wall closed off the village center from the rest of Aalst and three (partly overlapping) people claimed that the wall should be fully broken down. However, at the same time the noise from the Eindhovenseweg was considered problematic by a significant part of the interviewees. Some remarkable statements were made about the wall and the Eindhovenseweg: Does the wall need to go? In terms of visibility yes, but on

the other hand it is one of the most neat buildings around. the rest of Aalst is “ouwe meuk” (old crap) (interview 4) The wall is horrible, it should go. “In Duitsland breken ze hem af, hier bouwen ze hem op”. The center is not visible and it is not clear where to park. The noise is also terrible. (interview 11) The crossing of the Eindhovenseweg is horrible, you have to wait for ages. (interview 6)

When showing the interviewees the three different scenarios: current, urban and rural, most people pointed out that they preferred an atmosphere in-between urban and rural for the village center of Aalst. It should be clear that Aalst is a village with much greenery, but this should be combined with

the liveliness of an urban center with shops and cafes. The central tower (a proposed new landmark) in the design of LOS was unanimously seen as weird and ridiculous.

In figure 3.5.2.5., one can see the concluding interview map, which shows the most important aspects of the image of Aalst according to the interviews.

Conclusion

If the results from the observations and the interviews are compared, it becomes clear which aspects of Aalst are most important in the Village. The Eindhovenseweg is clearly of main importance for the village, just as the surrounding forests. While the Eindhovenseweg is seen as a main border, the forests are the main quality of Aalst. In the village center “de muur” and the Albert Heijn are important reference points. The church is also important, but - probably due to its unappealing location – it is not seen as main feature of the village center by the interviewees. Re-introducing the church as

a main landmark could be an opportunity. An important aspect of Aalst is its location close to the surrounding villages/cities: Eindhoven, Valkenswaard and Waalre. This provides many facilities and job opportunities in the surroundings. The Tongelreep with its greenery and horses is also an important aspect of Aalst’s image. The facilities are very divided. Den Hof is the most important heart of the village, but lively places, such as the community center (Pracht) and business park (Action, Jumbo etc.) are quite far away. Reuniting or introducing these functions in the center could be a solution for the current lack of activity there.

It can be concluded that it is hard to describe the image of Aalst in one sentence. What can, however be concluded, is that the image of the village center of Aalst is totally incomparable to the image of the rest of the Village. The whole of Aalst can be considered a green, pretty village, close to the forests, where many people go walking or cycling and the large dog community is clearly visible. On the



Fig 3.5.2.6. - Conclusion scheme

other hand, the current village center can be described as a hardened, dull space with little activity, little greenery and many empty shops, separated by a large building (“de muur”) from the noisy, unattractive main road of the village. To improve the image of Aalst, the current village center should be redesigned to better fit the image of the rest of the village. A greener, more lively and more attractive village center could be a much-used meeting place for inhabitants of Aalst. Simultaneously it could attract visitors from the surroundings to visit Aalst for recreational or commercial purposes. It would provide the village with a more coherent and clear image, which could be described in one sentence by the (even more) proud inhabitants of Aalst.

In the movie “Welkom in Aalst” - especially made for this research - one is guided through Aalst by the researcher and the inhabitants themselves. It illustrates the research process and outcomes.

Discussion

This research was done in a timeframe of approximately five weeks as part of a course at Eindhoven University of Technology. This means that there was little time to really go in-depth. If there would have been more time, more people could have been interviewed on the streets and more lengthy in-depth interviews could have been organized. This would have improved the quality and reliability of the results. Additionally, more time could have been taken to prepare the interviews better. The book of Kevin Lynch was fully read by the researcher, but there was no time available for further study into interviewing techniques. However, the presented results from this research provide much relevant information for the final design.

By asking people to make a drawing of Aalst, the interviews quickly reached the main important aspects, making this a surprisingly effective method for constructing the image of a place based on a limited amount of interviews. Additionally, almost all of the people approached by the researchers were willing to collaborate. Clearly the inhabitants of Aalst see the need of making changes to their village center.

Additional media

- Movie “Welkom in Aalst”, made by the researcher. Attached to this document.

References

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3.5.3. Mobility

By Christina Papadaki

Introduction

After the primary research that conducted during the first weeks of the project (quantitative data) a more in depth research was necessary in order to explore the 3 main themes; Image of Aalst, greenery and mobility. This paper is focusing on the mobility. The research will focus on the quality of the connections and the traffic system between Eindhoven- Aalst and within Aalst. Additionally, the user experience will be examined. The research is very important in order to have an overall view about mobility. Mobility's strong and weak points will help to create a better planning for the area.

Research questions and sub-questions

As was mentioned before the main question is:

“How could connectivity from/to and within Aalst be improved?”

In order to answer this question the following sub-questions formed

- “What are the weaknesses and strengths of N69 at the moment?”
- “How inhabitants of Aalst experience the environment?”
- “What do the inhabitants of Aalst consider positive or negative regarding the connectivity from/to and within the area?”
- “What is the quality of infrastructure from/to and within Aalst?”

Hypothesis

The hypothesis draws from the previous research that was conducted in the first weeks of the studio, the preliminary design and the first site visit. The hypothesis is that N69 is pretty problematic all the way from Aalst to Eindhoven and also in the center of Aalst. It acts as a border between the east and west part and the connectivity between these two is insufficient for pedestrians and bikes. The center is not used by the inhabitants and the street profile of N69 does not refer to a village center road, in fact priority is given to the cars. “De muur” acts as a second barrier between West and East part and does not work in favor of the city center as it blocks the visual connections from West to East and from the N69 towards the center.

Methodology

As it was mentioned before most of the quantitative data about the area were collected during the first research at the beginning of the project. Therefore, the methodological approach for this individual research used mainly qualitative methods in order to collect the data needed. More specifically, the methods used are interviews, observations, literature and internet research. The 2 first methods were the optimal ones in order to get to know Aalst better and understand the needs and wishes of the residents. The literature and internet research used in order to have a broad view regarding the solutions that could be implemented to solve the issues that arose based after the interviews and the observations.

In order to gain a better insight into the possibilities for improvement of the area, semi-structured interviews were conducted in the area of Aalst and one fully structured that took place in the TU/e. The selection criteria for the interviewees were that they should be residents of Aalst and preferably living there for more than 2 years so they have a clear view and opinion about the area. The semi-structured interviews were conducted in the center of Aalst and lasted approximately 15 minutes each. The fully structured one took approximately 1.5 hours. The semi-structured ones were conducted on the spot with passerby. As we did not want them to be lengthy, so the participants would not be obliged to spend much time, only 2 questions for each theme (image of Aalst, greenery, mobility) were prepared. In cases that the participants were willing to discuss for longer, then more in-depth questions were asked during this discussion. Additionally, besides the questions, the participants were asked to draw a sketchy map of Aalst. The idea behind this was that data regarding how citizens experience the village, what is important or not for them, what are the landmarks and what comes first in their mind when they hear the word Aalst, would be extracted. Answers were noted down, and some interviews were also filmed with consent. The fully structured interview was fully structured and 10 questions were asked. The nature of the questions was intentionally generic so the interviewee could explicate more, resulting in covering more than one topic per question.

All the interviews were transcribed and open coded to categorize key themes and identify patterns. Each theme was

analyzed to gain a deeper understanding of participants' perceptions. The semi-structured interviews produced results that cannot be generalized beyond the sample group however they provided some new insights.

Furthermore, multiple site visits took place. The reasons behind that were not only to conduct the interviews but also to experience different routes from Eindhoven to Aalst and vice versa and to do observations on the site. Bike and bus used as a means of transport during these visits. The site visits helped the research to be able to understand and capture the context within which people interact. This firsthand experiences allowed me to open to the discovery than guessing what the area is like and how the road system work. The results had a huge impact on design decisions.

The literature and online research firstly were based on the data missing after the first research. Practical data such as bus times and locations, google views on places that I did not have access, etc.. Secondly, the same type of researches used in order to find optimal solutions for the site and its needs and to gain more knowledge in urban planning in general.

Results

The interviews gave interesting and insightful views of the area. All the participants agreed that the crossing along N69 on the center of the area is extremely problematic and dangerous for bikes and pedestrians (fig.3.5.3.1). The lack of road signs (stripes, signs) indicating the pedestrian-bike path and

the long waiting time for the traffic light to turn green is the main reasons why people do not like to use the crossing. The fact that is the only crossing point force people to often cross the street on various random locations along the N69 or crossing while the traffic lights are red. This situation could result in serious accidents. Furthermore, most of the people stated that they never use the bus or bike. All of them prefer the car as the main mean of transport. However, this decision is not because of the lack of buses but mainly of unwillingness to use it, as car is a more comfortable and convenient way to transport. Also, parking is never a problem in the area. The few people that use the bike to commute from/to Eindhoven and Valkenswaard stated that they find the road extremely dangerous in some points and they prefer alternative ways. A very interesting finding was how much people like to visit the forests around the area. All of them stated that they find the woods the most beautiful place of Aalst. Most of them visit them 2-3 times per week and they use the spaces for various activities such as walking, biking, walking their dogs, exercising or just relaxing (fig. 3.5.3.2). Regarding the pedestrian zones, which is basically only the center considered as one, all of the interviewees stated that they use the area just to go to AH or a few other shops. The area is lacking greenery, places to sit and many of them described it as boring and stony (fig. 3.5.3.3). Additionally, “de muur” (the wall) is also act as a barrier. When you pass the area via the N69 you do not understand that you actually cross the center of a village. Its closed façade that facing N69 does not allow visual connection with what is happening behind it (fig. 3.5.3.4).



Fig 3.5.3.1 - Central crossing in N69



Fig 3.5.3.2 - Green area in Aalst

The experience of different routes was another insightful experience. My first visit to the area was by bus. The duration of the trip was about 15 minutes starting from Eindhoven Central Station. After the ring the route was rather nice which much greenery however once started approaching Aalst the environment changed, they were no more trees along the way. Also, during the trip traffic jam was experienced.

The arrival bus station was very central just right next to the center, however, once you are out of the bus you can only see the back side of the shops located in the “de muur”. My first thought was that

the place is abandoned.

The trips to Aalst were all done using the bike as a mean of transport. I used all the possible ways to and from Aalst. Namely Eindhovensweg (N69) (route 1 see fig.3.5.3.6), Burgemeester Molaan (route 2) and Gestelestraat (route 3). In all the occasions the duration trip was 20 minutes. Route 2 and 3 are rather green and safe. The separation between bikes and cars exists everywhere, no many traffic lights for bikes exist and there is greenery along the way. Especially in route 3 which is the one that crosses through Genneper park the green is very present throughout the whole trip. Along the N69 my experience was the same as with the bus. The route until Genneper park is fast and easy and the greenery on both sides of the bike paths adds a lot to the experience and makes the biker feel safe as it has a fair distance from the cars. However, once you start approaching Aalst everything changes. In the intersections the cars have priority(fig. 3.5.3.5), additionally traffic lights for bikes do not exist which means that cyclists have to wait for all the cars to pass. The road is very busy and vehicles are coming from all the directions which means that it could take several minutes in order for the bikes to cross safely. The separation between car road and bike paths disappear and the trees along the road as well. My feeling was that I am in a place that bikes are not allowed and that I am approaching a big highway rather than a village center. In addition, the materiality of the bike paths throughout the whole N69 is confusing and uncomfortable. Different materials are used every 200 meters without a clear reason.

The materiality is not suitable for a comfort bike trip as in many places is

stony and only in few of them, proper asphalt is used. In the diagram below the experience is depicted (fig. 3.5.3.6)



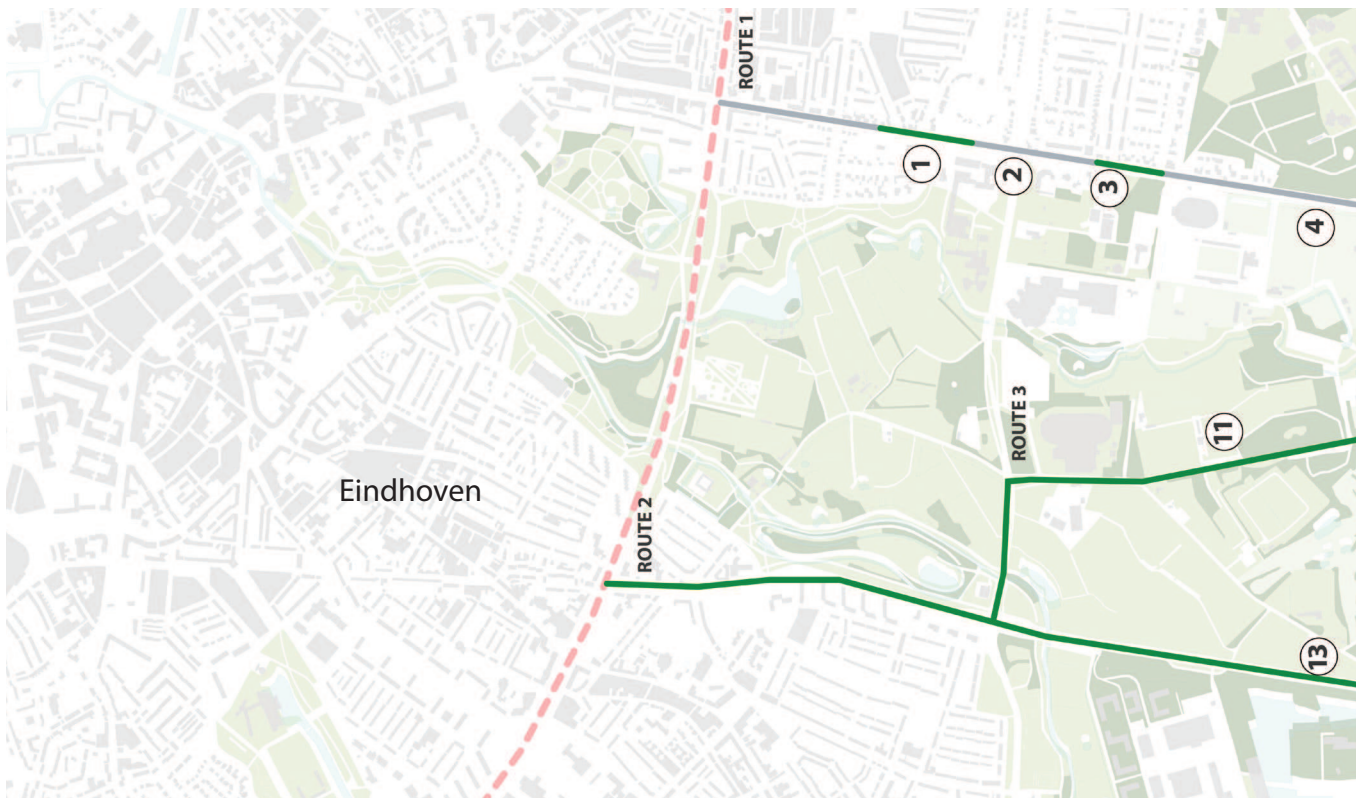
Fig 3.5.3.3 - Central square of Aalst



Fig 3.5.3.4 - "De muur" in the center of Aalst



Fig 3.5.3.5 - Intersection



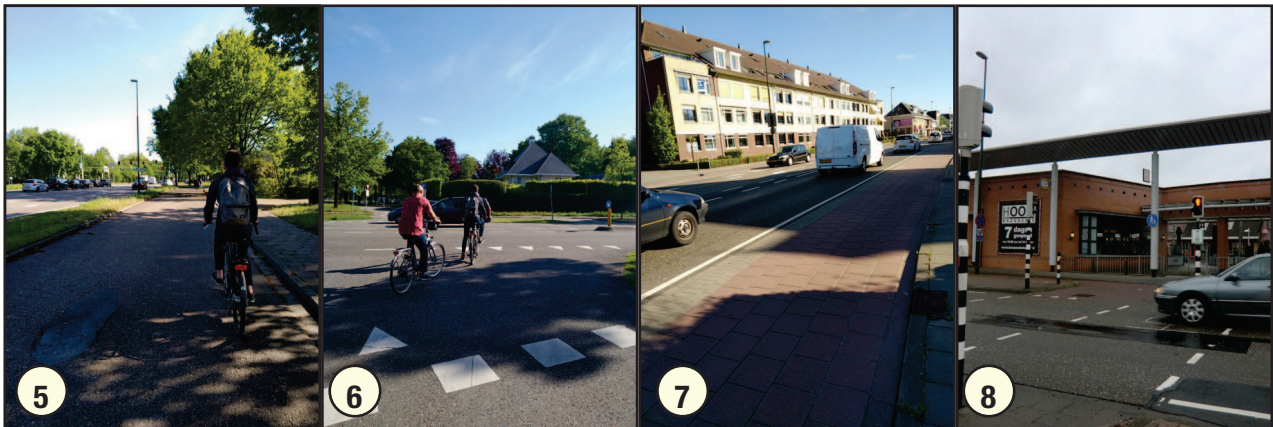
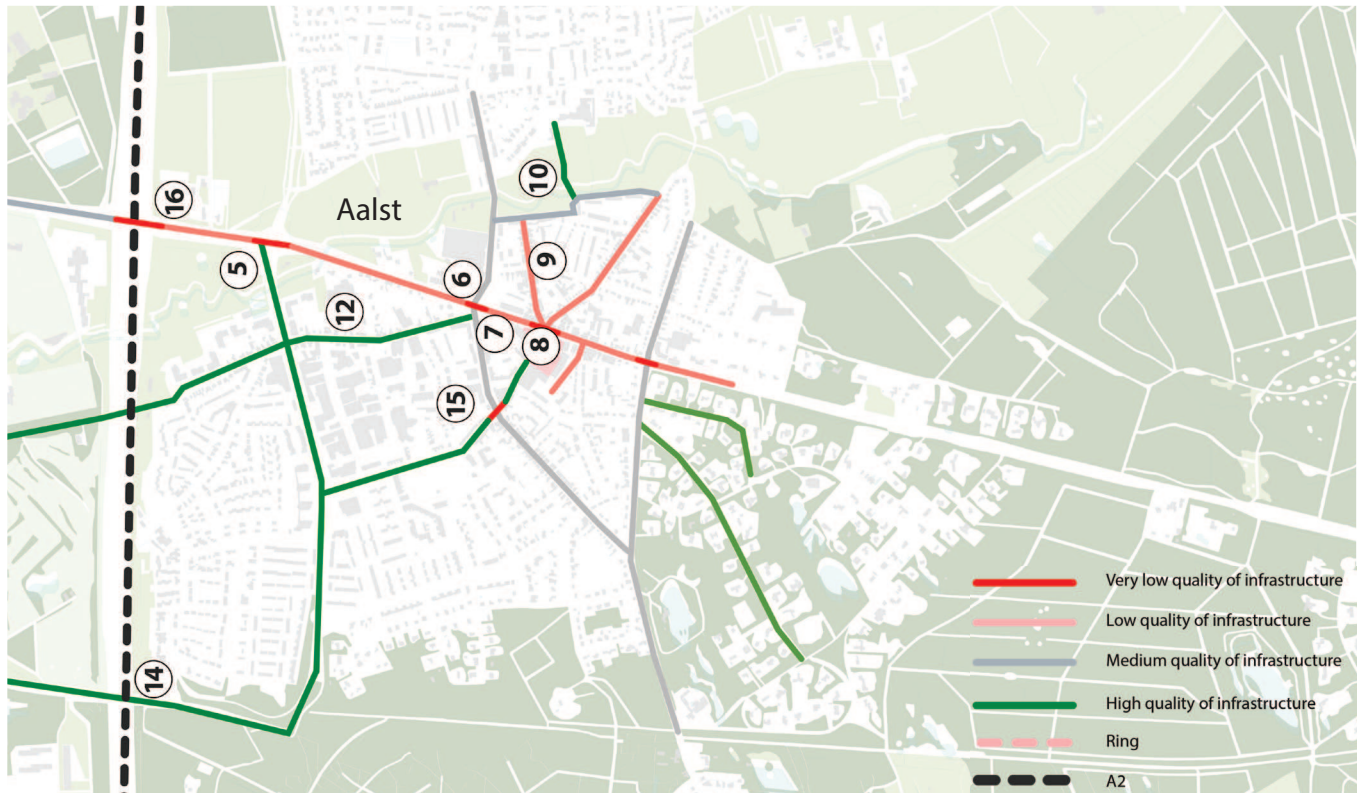


Fig 3.5.3.6 - Mobility diagram

While in Aalst I first visited the center. In most of my visits, the center was rather empty, people were using it as a passage from one shop to the other rather than a place to sit and spend some time. I spent 30 minutes observing the crossing and how cars, bikes, and pedestrians are acting. The traffic lights were working in favor of cars. Pedestrians and bikes had to wait very long waiting time (3-5 minutes) in order to be able to pass safely. That is why almost all of them were choosing to pass whenever no cars were approaching even though the traffic light was red. In my next visits, I chose to wander around Aalst both as a pedestrian and biker. In both cases the experience was nice. Outside the center, Aalst has a completely different atmosphere. Green places and little parks are scattered in the neighborhood. The forests are only 5-10 minutes away from the center. They are beautiful green places with a plethora of agriculture activity, sports spaces and paths along the park to walk in. The difference between the center and the rest of Aalst is enormous. However, the green spaces on the West and East side are not well connected as the N69 in combination with the insufficient crossing act as barriers so they demotivate people to walk from one side to the other.

Internet sources were used in order to get information about the bus and the duration of trips using car, bus or bike (fig.3.5.3.7). The time for a car is 15 minutes, 4 minutes and 6 minutes faster than bus and bike respectively (Google maps). The differences in trip durations are not big so it is assumed that if the new design achieves a better infrastructure system which gives priority to bus and bikes, can even compete in trip duration the car.

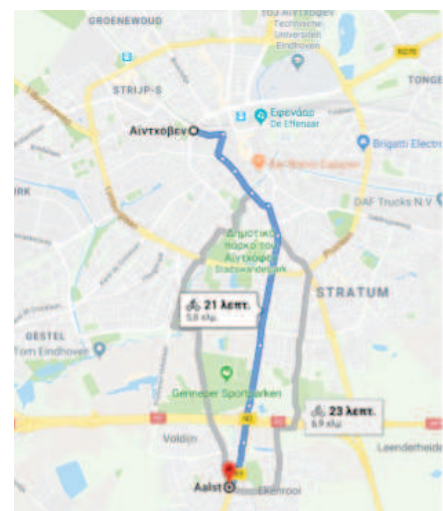
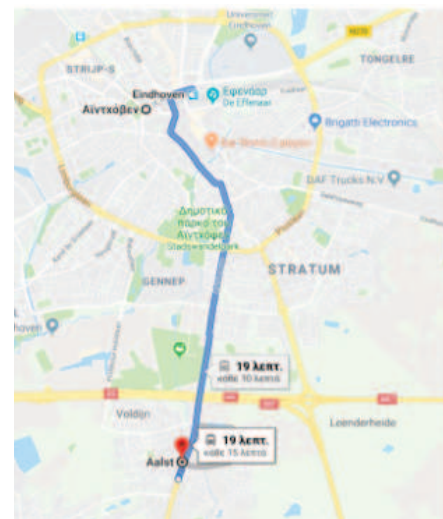
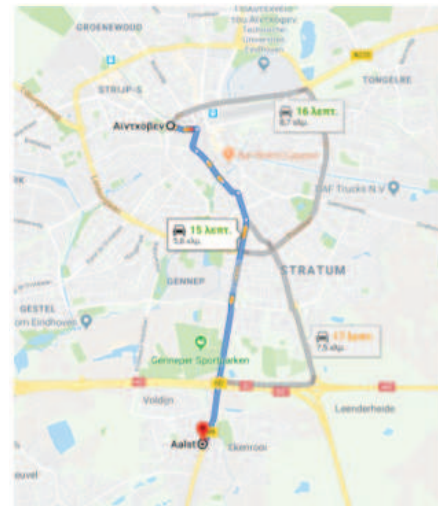


Fig 3.5.3.7 - Trip duration by car, bus and bike

The mentioned researches show that at present the center of Aalst is dominated by motor traffic. What needs to be done to benefit pedestrians and cyclists requires restraining traffic- not seeking to ban it, for cars and other vehicles have essential uses at times, but changing the terms of the relationship so the pedestrians and cyclist avoid long waiting times at the traffic lights and do not risk of injury. The relationship in terms of both risk and mobility is unfairly imbalanced in favor of the cars. Traffic calming measures which do not exclude traffic but are designed to moderate speeds, enrich the visual environment and encourage pedestrians and cyclists as the main users of the area need to be implemented. One of these measures could be raised pedestrian crosswalks. They are created by extending the sidewalk across the road and bringing motor vehicles to the pedestrian level. They make the pedestrian more visible to approaching motorists. They have a trapezoid-shaped cross-section to slow motorists at the pedestrian crossing where the slowing will be most effective. (Raised Pedestrian Crosswalks, n.d.). Additionally, speed warning signs could be added in key locations. However, it is proven that alone the signs are not effective and should always be combined with other traffic calming actions to increase the effectiveness of speed reduction (Orden,2016). Lane narrowing is another measure that helps with traffic and volume reduction. Results of this method showed that could have a positive impact on the speed reduction and on volume (Hadayeghi,2006). So by reducing the width of the road drivers will need to drive more carefully in order to keep their vehicles in the correct road position (Road Narrowing,n.d.). Speed cameras signs could also be used however study shows that they are working only as punctual

traffic calming measures.

So they also need to be combined with other traffic calming in order to contribute to traffic reduction (Orden,2016). Pedestrian pushbuttons in combination with zebra crossings could help in a better flow between the West and East side. Toucan crossing could be implemented in the main crossing point. This kind of crossing allows pedestrians and cyclists to cross. In combination with a traffic light that will give priority to pedestrians and bikes, it could potentially solve the long waiting times.

Giving priority to buses in another important issue. This could be achieved by creating a separate bus lane along the N69 and add traffic lights which will give priority to them. In that way, buses will not be part of potential traffic jams thus the amount of time spending to transfer from place A to B will decrease dramatically. Another measure that could be implemented in the problematic intersections of Aalst is the creation of smart nodes. The smart nodes can consist of two-way bus lanes; when a bus is crossing the cars need to stop and wait for the bus to pass. That way faster trip duration for the bus is achieved. Additionally, car flow will be interrupted which means a reduction of speed and discomfort of drivers (they potentially might not choose to use this street to commute).

Moreover, new coherent materiality will enhance the continuity of the paths. Additionally, comfortable, for cyclists, materiality in combination with the introduction of greenery could potentially increase the flow of people in the area (Hartig et al, 2014). Natural features may lead people to favor walking or cycling over other transport modes by making routes to destinations more attractive.

However, the availability of suitable infrastructure (e.g., sidewalks, bicycle paths), and safety are more important factors (Heinen et al., 2010).

Conclusion

From the research, it becomes clear which areas are the most problematic in the area regarding mobility. The heavy traffic load, the insufficient crossing in N69 and the unpleasant environment of the square are the main ones. However, people of Aalst love and appreciate the greenery around it and look like they spend most of their free time there. So measures to reduce the traffic volume and speed axes should be implemented in order to create a nice flow between West and East axis. Multiple measures could help and the best way is to use a combination of them. Aalst has the potential to become an anchor between the woods that surround it. A point where the walk from/to the woods starts or ends. The only thing needs to be done is to put its people on the center of planning.

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3.5.4. Greenery & Healthy Living

By Gisella Navas

Green structure

Urban green areas provide great benefits, not only for the human population, but for wildlife and the environment as well. Green spaces promote physical activity and reduce depression, improving the health and wellbeing of people.

Furthermore, they help reduce air and noise pollution, as well as counteract the effects of heatwaves, improving the air quality and reducing urban temperatures. Additionally, green areas store and reduce the rain water excess, and in this way lowering the risk of flooding.

Thus, the introduction of green spaces in the urban structure and its design, is crucial for the health and living environment of cities.

In the previous more general research done on green areas in Aalst and its surroundings, a lot of information was gathered regarding the current situation of greenery, pollution and social structure. From this research one thing was clear: The center of Aalst needs greenery, but not any type of greenery. The center needs a green structure that encourages social interaction and improves the health and lifestyle of the inhabitants of Aalst.

But what type of greenery should be introduced? What type of uses should it have? How can the introduction of green



Fig 3.5.4.1- Updated Uses of green areas Map

■ Sports ■ Parks ■ Agricultural Use ■ Forest



Fig 3.5.4.2 - Green Structure



Fig 3.5.4.3 - Green Structure Analysis

City centre (Gap)
 Forest
 Grass areas
 Structural Greenery

areas in the center of Aalst improve the health and well-being of its inhabitants and maybe as a consequence strengthen the ecological structure of the area?

In order to address this questions, a main research question was defined: What is the current situation regarding the accessibility, use, social and health function of green areas in Aalst and how can it be improved?

Methodology

The methodology structure is mainly based on observation. Since the previous research was based on maps and information found online (more quantitative research), this individual research will focus on testing the gathered information by personal observation (qualitative research). In this way, the goal is to study not only the present green areas in Aalst, but the behaviour and interaction of the inhabitants with the green structure as well.

Further methods like interviews to the municipality of Aalst and the inhabitants, literature review, maps and investigating project references will be used to gather information regarding the green and ecological structure of Aalst and the topic: water retention management.

Hypothesis

The main assumption about the greenery in Aalst was that Aalst was not green at all, since in the first site visit, I walked only around the center. But once I conducted the observation method, I discovered that Aalst, in fact, is really green, except

for the center. As shown in Fig. 3.5.4.2, Voldijn and Ekenrooi have a well connected green network. These networks consists on streets with structural greenery that connect the different green areas dispersed around the village between themselves and with the forest surrounding the village. But once you start walking from Voldijn or Ekenrooi towards the Center, the amount of green on the streets starts diminishing considerably. Hereby, the research gap: the center of Aalst.

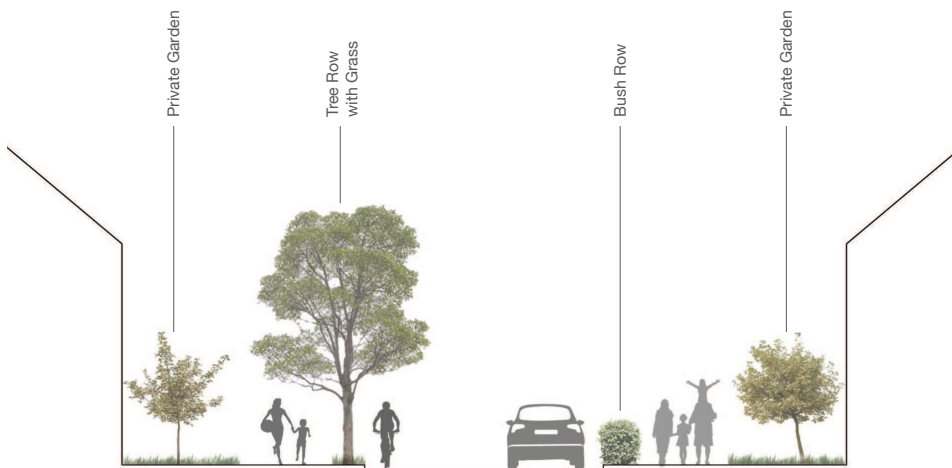
A second assumption was that the main connection in Aalst was from north (Eindhoven) to south (Valkensward) through the N69. But as shown in Fig. 3.5.4.3, if the same green network concept of Voldijn and Ekenrooi is further applied in the center, the East-West connexion becomes just as important. With this new network, not only the green areas in Aalst will be connected, but the center of Aalst will become the heart of the village again, welcoming the residents into the center and then further into the forest, which turns out to be the favourite place for the residents.

In order to determine what type of greenery will be introduced in the center and what type of uses will be provided, an analysis of the structural greenery in Voldijn and Ekenrooi was made (Fig. 3.5.4.4. - Fig. 3.5.4.9) The ecological structure was analysed as well in order to know how this can be strengthened by the introduction of greenery in the center, and lastly, a research was made on natural water retention measures, which is key for urban planning and landscape design, and in this way just as important for the final design of this project.

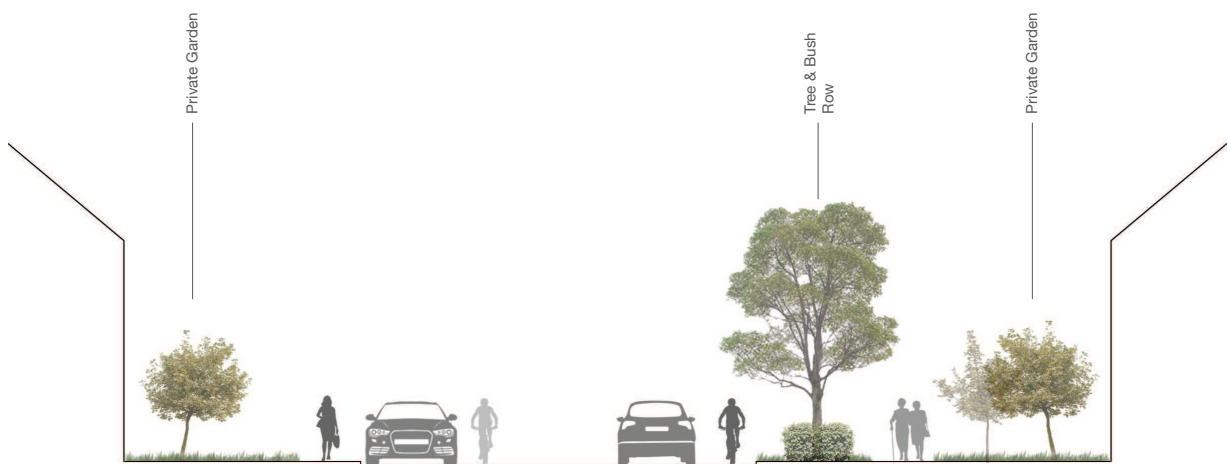
Structural greenery



Wood Road - Gorlooplaan, Ekenrooi
Fig 3.5.4.4



Residential Street - K.L.H. van der Puttlaan, Ekenrooi
Fig 3.5.4.5



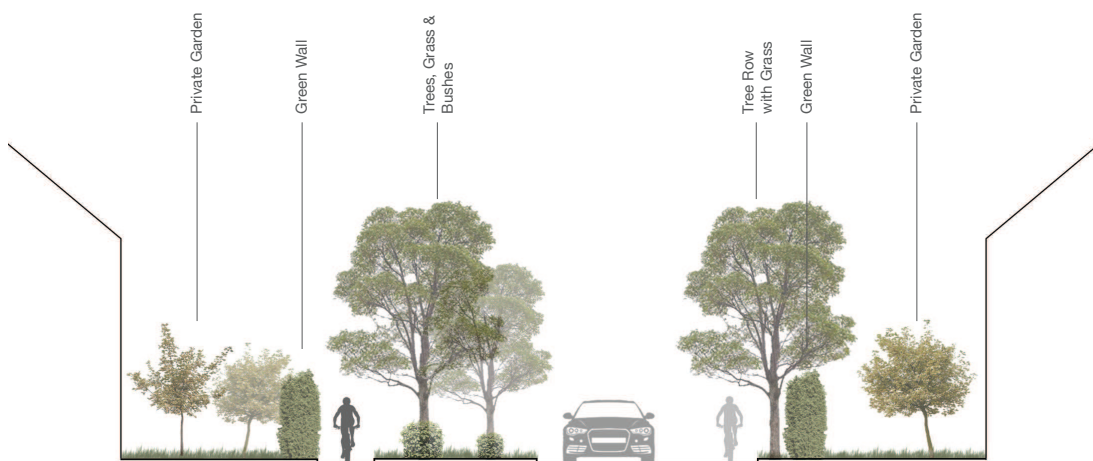
Residential Street - Prins Mauritsweg, Ekenrooi
Fig 3.5.4.6



Main Road - Burgemeester Mollaan, Voldijn
Fig 3.5.4.7



Residential Street - Kon. Wilhelminalaan, Voldijn
Fig 3.5.4.8



Residential Street - Julianna de Lannooylaan, Voldijn
Fig 3.5.4.9

Ecological structure

The EHS (Ecologische Hoofdstructuur) is a network of nature areas in which nature has priority and is protected. The protection prevents nature areas from becoming isolated and animals and plants becoming extinct. The EHS in this area Fig 3.5.4.10 is divided in three categories: wet main structure, bird areas and amphibian reptile areas.

Soil

The subsoil of the municipality of Waalre is mostly sandy soil which can be classified in podzol soils and vague soils. Besides sandy soil, the area also contains pastoral soils in the higher areas as well as converted grounds and choral soils by the

stream valley landscapes.

Fauna

The fauna in the region consists of a wide range of different types of animals which belong to the EHS and are under protection by both the Flora and Fauna Act and the Nature Conservation Act of the Netherlands. (Fig. 3.5.4.11)

Breeding birds as well as their nests specially during this season are strictly protected, which means, disturbing the birds and youngsters, destroying nests and eggs is prohibited and punished by law.

Bats, including their accommodation and also the connections between them (flight paths) and the foraging areas are strictly



Fig 3.5.4.10 - EHS Aalst

protected during the whole year. This is because bats are very vulnerable and over the past fifty years, some species of bats became very rare or disappeared completely.

Furthermore, nests of house sparrow, little owl, sparrow, long-eared owl, barn owl, common barn owl, tree falcon, buzzard, swift, common kingfisher, large yellow wagtail, hawk, stork, eagle owl, peregrine falcon, and black kite are protected throughout the year.

Other animals that can be observed in the area are:

- Amphibians like bastard frogs, brown frogs, toads and small water salamanders.
- Fish species like: perch, mulberry, small mud crawler, chub, eel, gudgeon, serpentine, pike, wind and tench.

- Reptiles like the viviparous lizard, as well as insects like dragonflies, butterflies, banded demoiselles and many others.

Flora

The main nature reserves of Waalre consists mainly of heatherlands, fens, deciduous and coniferous forests and the lowland brooks Dommel and Tongelreep (Fig. 3.5.4.12.)

Characteristic species of vascular plants of this area are: *Achillea ptarmica*, Great Water Dock, *Campanula rapunculus*, Garden speedwell, Marsh hawk's-beard, *Ranunculus fluitans*, and many others.

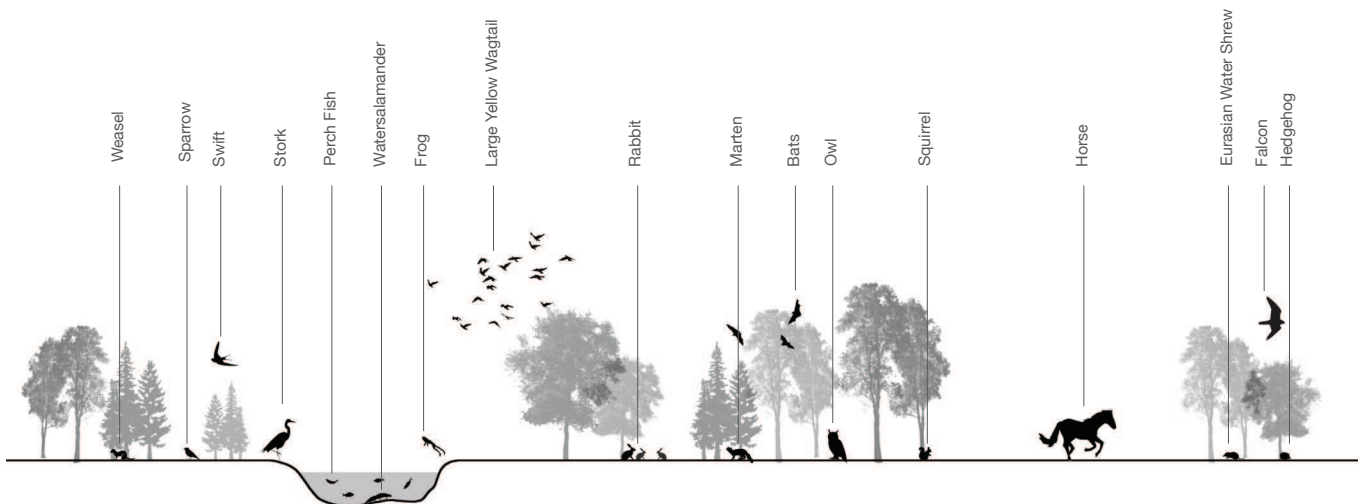


Fig 3.5.4.11 - Fauna Landscape

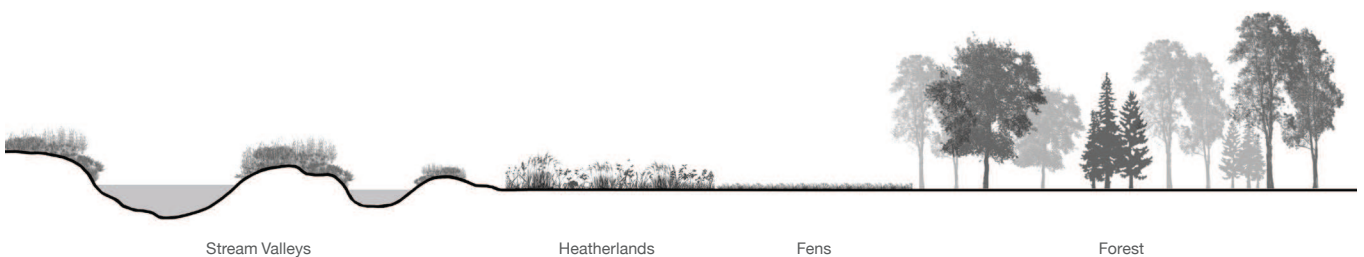


Fig 3.5.4.12 - Flora Landscape

Water retention management

Floods are the most common natural disaster worldwide and has the greatest damage potential. Effects of floods are , for instance, damage of buildings and infrastructure, causing not only great economical loss but they can highly affect the health of the inhabitants as well, due to chronically wet houses and growth of indoor mold. For this reason, is important to implement urban water retention measures in every city in order to prevent high damages in case of floods.

There are many types of natural water retention measures, like permeable surfaces, swales (wadi), rain gardens, green roofs, soakways, rainwater harvesting and many others. For this research, the main methods will be explained.

Permeable surfaces, like permeable paving (Fig. 3.5.4.13.) for parking places for example, or porous asphalt for road construction allow (rain)water to infiltrate through the surface. The water then can be either stored below ground and released at a controlled rate or can be absorbed by the soils or aquifers below. (Fig. 3.5.4.14.)

Swales (Wadi), and green areas in general are sustainable drainage systems that are very flexible to place in various types of open spaces. They can be either located next to roads or landscaped areas, parks, etc. An interesting example, is a swale playground (Fig. 3.5.4.15.). In this case, when it rains, the water is contained inbetween the small hills and slowly drained into the lower layers, and by addition of small bridges, these green areas can be transformed into playgrounds throughout the whole year.



Fig 3.5.4.13. - Permeable Paving

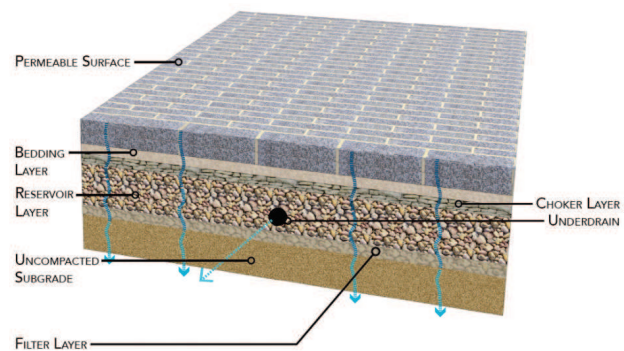


Fig 3.5.4.14. - Permeable surfaces Section



Fig 3.5.4.15. - Swale (Wadi) Playground

The last method consists of rain gardens. (Fig 3.5.4.16.) These are mostly used next to buildings in order to capture and infiltrate roof drainage. They have many forms and can be easily incorporated, like grass filter strips at the base of the roof drainage downspouts to slow and filter roof runoff; ponding areas as infiltration or water storage; planting soil for filtration and planting medium and woody and herbaceous plants to intercept rainfall. The natural water retention measures (NWRM) mentioned before are just a few of many different methods that can be easily

introduced in urban areas that aim not only to minimize the damages of floods but protect water resources as well, in order to reduce the risk of water scarcity and improve the quality of green surfaces.

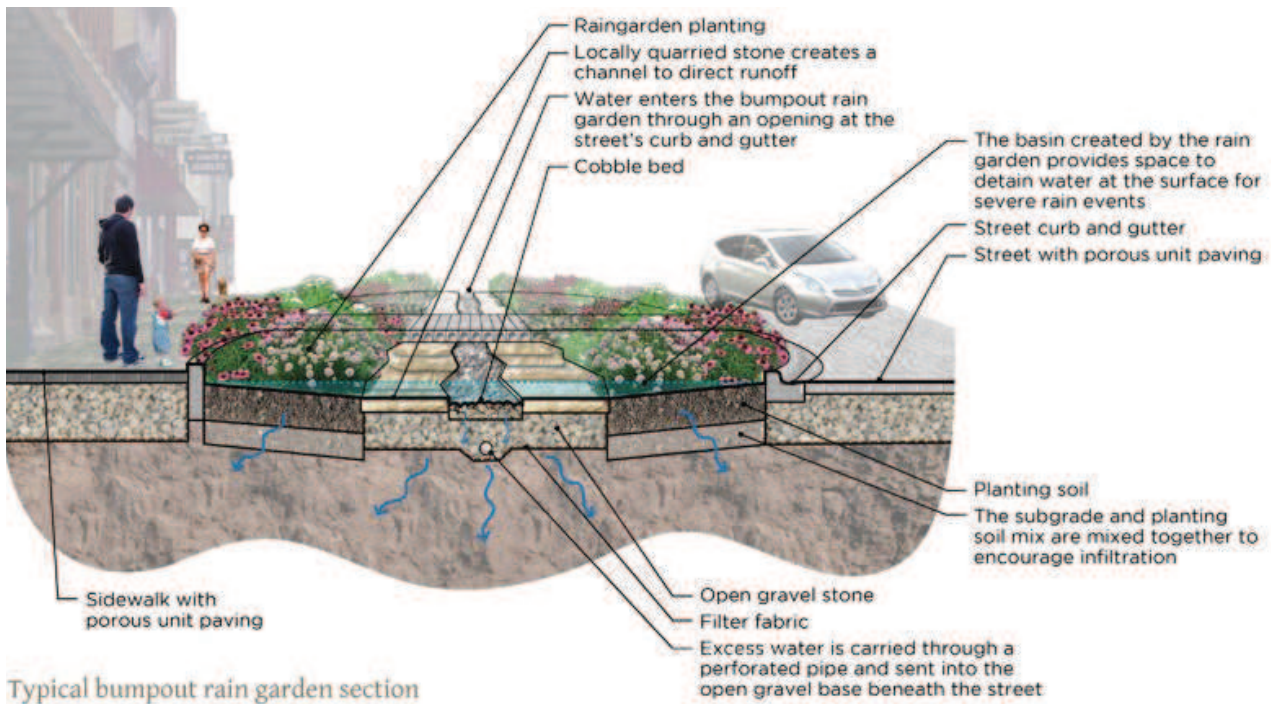


Fig 3.5.4.16. - Rain Water Section

Conclusions

The main findings and conclusions of this research can be summarized in the following points:

Green structure

- Aalst is a green village with a big gap in the central area.
- The concept of the village is based on a green network connection that joins together the different green areas with the woods.
- East-West connection is as important as the North-South connection.

Structural greenery

- As seen in the sections above (Fig. 3.5.4.4. - Fig. 3.5.4.9), the most used type of greenery next to the roads is the mix of trees and bushes.
- Trees as well as bushes help reduce noise and air pollution, improving the air quality, which is crucial to introduce along the N69.
- Structural greenery not only helps enhance the image of the center but is a natural method to reduce the speed of cars, since visually the driver realizes he just entered a village.

Ecological structure

- By introducing deciduous trees that are found in the forest into the green areas in the center, the ecological structure can be strengthened. The center can

become a transition spot from the east to the west forest of Aalst, specially for all bird types found in the area.

Natural water retention measures

The following measures can be introduced within the final design:

- Permeable Paving in parking places
- Porous asphalt in roads
- Rain gardens in the plazas along the center
- Wadi, which will provide not only a natural playground for children, but a place to rest, relax and meet for any type of user

Economic impact

- By introducing more greenery into the center, and in this way enhancing the image and the liveliness of the village, providing more meeting points for social interaction, as well as playgrounds and places to sit and relax, more people in Aalst will be encouraged to go to the city center and stay. Thus, increasing the use of commercial space and improving the local economy.

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AALST

3.6.

FINAL DESIGN

In this chapter, the final design of this project will be presented. It will start with the concept: Ribbon Village Aalst. Secondly, the design will be explained in three scale levels: macro, meso and micro scale. Finally, the relation between the design and some important contemporary topics will be described.

3.6.1. Concept: Ribbon Village Aalst

The concept is called “Ribbon Village Aalst”. This concept consists of two words: “ribbon” and “village”.

Ribbon

Instead of a center that turns its back to the road - the historical backbone of Aalst - the road will become the center of the village again. Through the Eindhovenseweg, Aalst will be better connected to Eindhoven and Valkenswaard. Additionally, it will stitch together both sides of the village.

Village

The center of Aalst will be included in the green, peaceful and beautiful image of the rest of the village. The (new) center will get a green and rural, village-like character.

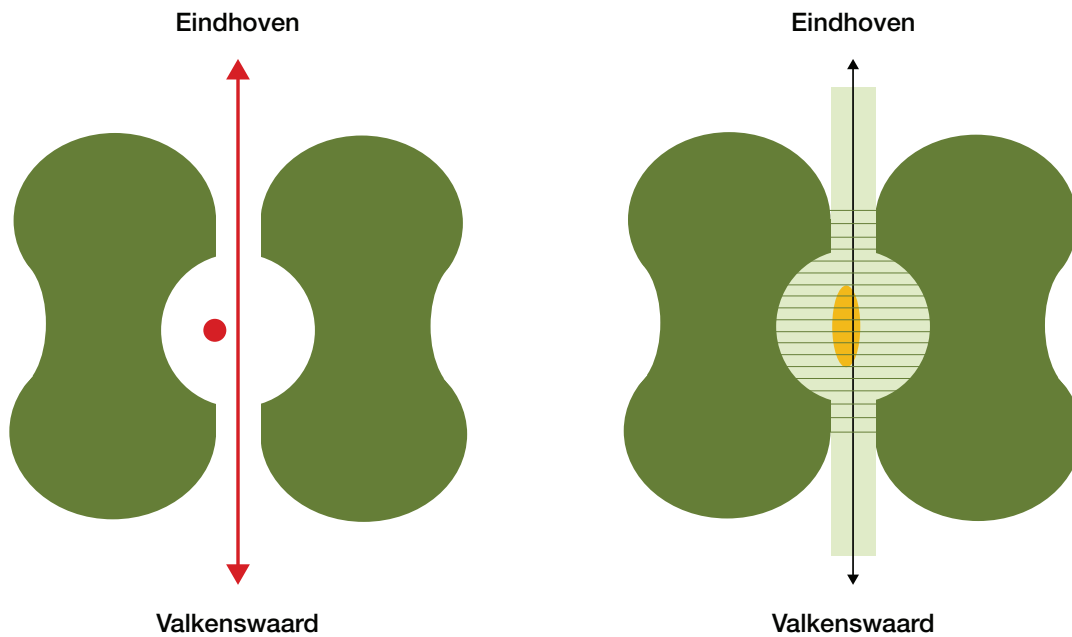


Fig 3.6.1.1. - Conceptual diagrams before and after

3.6.2. Design - Macro Scale

In the conceptual map, one can see the woods embracing the village. Additionally, the rural, pieciful and beautiful neighborhoods and the green and blue connection of the Tongelreep are visible. These are all strengths of the village.

In the new design, the Eindhovenseweg will be a safer, faster (for (e-)bikes and busses) and more attractive road. The greenery from the woods will be integrated into the village center, which is located along the Eindhovenseweg and will become the lively heart of Aalst.

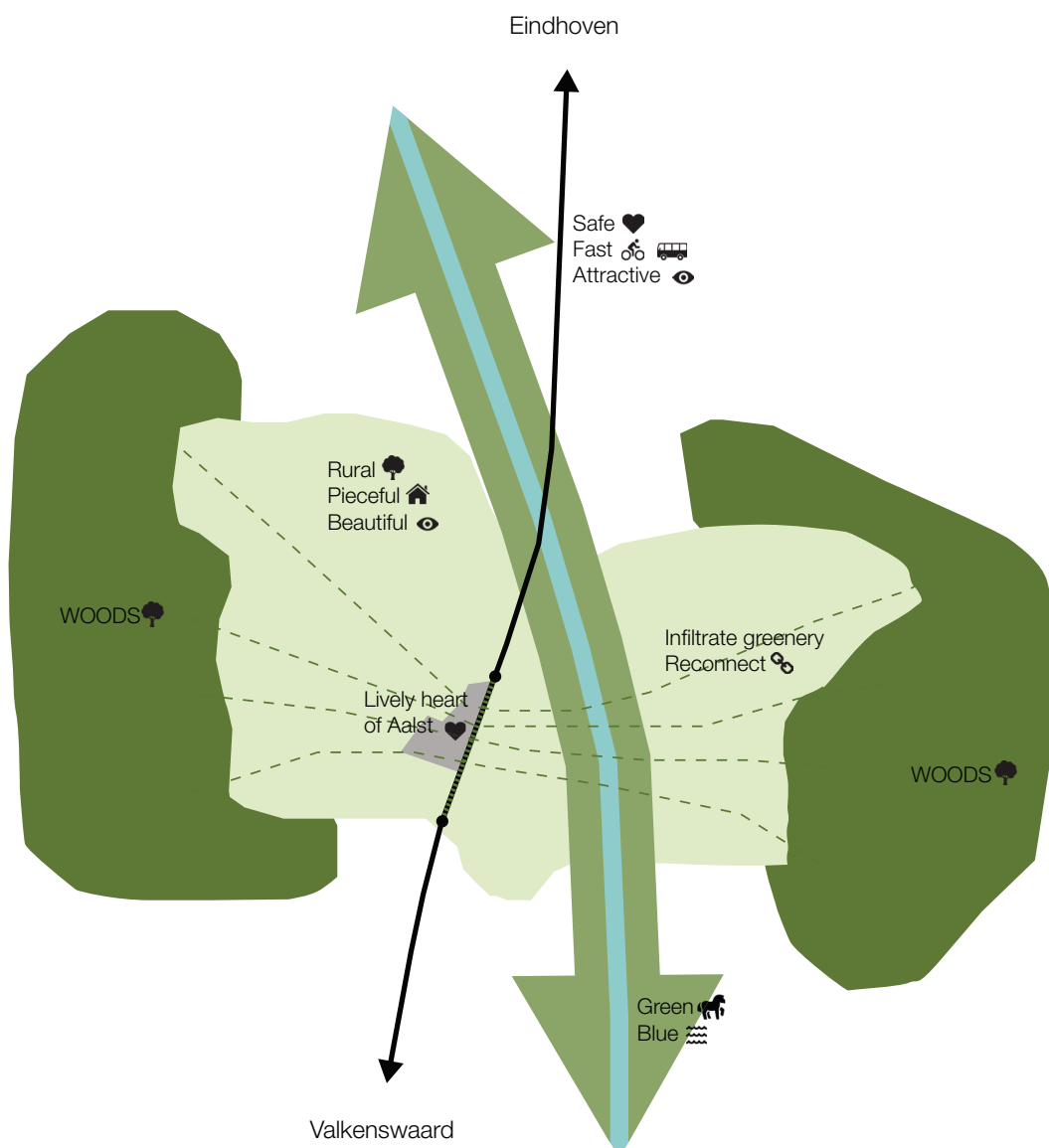


Fig 3.6.2.1. - Conceptual diagram macro scale



Fig 3.6.2.2. - Greenery situation macro scale before



Fig 3.6.2.3. - Greenery situation macro scale after



Fig 3.6.2.4. - Mobility interventions macro scale

In the greenery maps of the previous and new situation, one can see that the gap in the greenery network will be filled up. The center of Aalst will no longer be stony and unattractive, but it will have the same green character as the rest of the village.

The mobility map shows the main focus area of the design in red. However, the rest of the Eindhovenweg (yellow) will also be adapted to become more safe and suitable for busses and (e-bikes). The pedestrian areas are marked in light pink and a new axis will be introduced in the village center to better connect it to the neighborhoods and the woods.

3.6.3. Design - Meso Scale

Quality assessment of the location

In figure 3.6.3.1. a quality assessment of the area is shown. There are some buildings of high quality architecture located in the center. Additionally, there are many buildings of reasonable quality architecture. Only a few buildings are of poor architectural quality, these will be adapted/changed in the design.

There are quite some low quality urban spaces in the current center. This is mainly due to the stony character. These areas will be transformed to make them more welcoming and attractive.

Finally there are three empty buildings that offer much opportunity. The one along the

Eindhovenseweg is partly burned down, but if refurbished and provided with a new community function, it could provide an opportunity to also include the Eastern part of Aalst in the village center. The other two empty buildings are already sold to investors who are going to transform them into new restaurants. The buildings will be renovated and will get a nice appearance.

An important starting point for the design is that we only want to change what is essential. This is done for sustainability (less waste) and financial reasons. But most importantly, we see the added value of the different layers, added in different times by different people. In our opinion these “layers of the city” add character and quality to the place.



Fig 3.6.3.1. - Quality assessment location

Two important design decisions
- The road as the center

In our vision, the Eindhovenseweg should become the center of Aalst again. The village is historically grown along this axis and it has always been the most used entrance to the village. (Partly) blocking this “aorta” of Aalst for car traffic is not an option in our opinion. It could cause even more abandonment of the center, it will cause an increase of cars in the residential areas and it will prevent people from outside of Aalst from visiting. Although we recognize that in its current state, it is too noisy and unattractive, with smart and simple solutions it could definitely become a pleasant space, despite the cars passing by.

The center will stretch from the church, the point from where the village started growing, to the existing restaurant “de Meiboom” (see figure 3.6.3.2.). This part of the Eindhovenseweg will be transformed into the lively backbone of the village. Priority will be given to buses, (e-)bikes and pedestrians. The new connection

to the surrounding neighborhoods will be made for bikes and pedestrians.

The fact that the center of Aalst is a pedestrian zone is considered a great quality. While the Eindhovenseweg is a main connection line, the current center is not, so in that case, leaving it a pedestrian zone is the best option. Everywhere in the world they are transforming car space into pedestrian zones, but in Aalst it is already there. According to research, more pedestrian zones mean more liveliness, if only the spaces are designed in a good way.

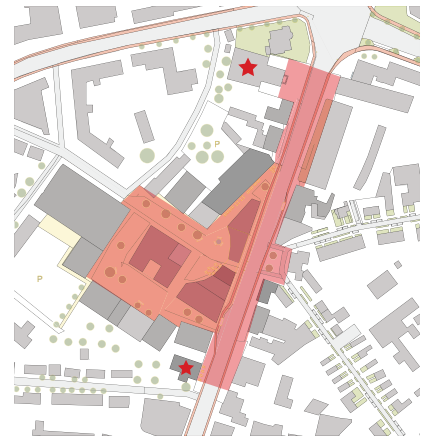
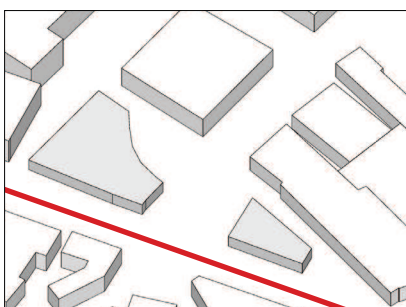


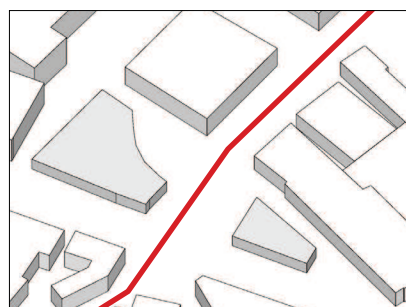
Fig 3.6.3.2. - The road as the center

Eindhovenseweg



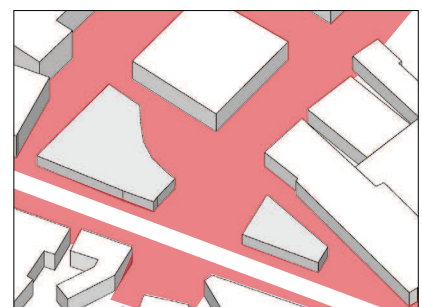
- Bus
- (e-)bike
- Pedestrians
- Cars

Crossing center



- Bikes
- Pedestrians

Center area



- Pedestrians
- Life Between Buildings - Jan Gehl
 - “Using outdoor space” (p 31-38)
 - More pedestrian area means more liveliness
 - Car presence decreases liveliness

Fig 3.6.3.3. - Priority traffic

Two important design decisions
- Keep part of the wall

In the quick analysis and design assignment, we thought removing the wall would be the best option. However, only demolishing it will already cost 2 million euros. Additionally, “de muur” is an important reference point in Aalst, everybody knows it, and it is of relatively high quality.

We looked at the different possibilities visible in figure 3.6.3.5. If the wall stays, the squares behind are too closed off. When the whole wall is removed, however, it will leave a huge space. This space exceeds the “social field of vision” of 70-100m and will therefore be experienced as too big to stimulate social contact (Gehl, 2011).

Therefore, we chose for an intermediate solution, cutting the wall at a strategic point, based on the sight lines to the two restaurants that will be renovated (see figure 3.6.3.4.). This will result in different urban spaces that relate to the human scale. It gives the opportunity to create

areas with different atmospheres. This will provide the center with an interesting sequence of spaces.

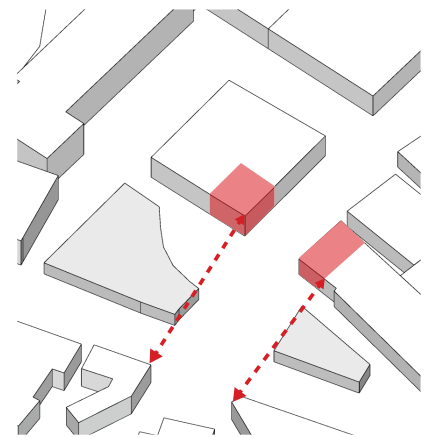
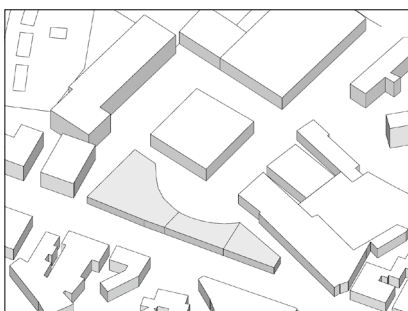


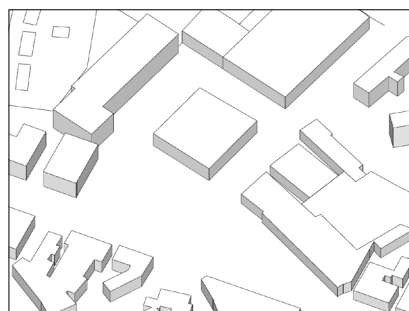
Fig 3.6.3.4. - Where to cut “de muur”

Totally keep



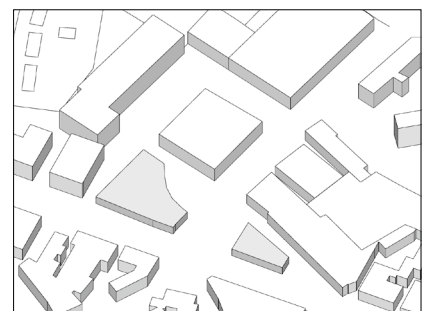
- Closed
- Lack of visibility center
- Barrier

Totally demolish



- Huge space
- Life Between Buildings - Jan Gehl
 - “The social field of vision” (p 67-68)
 - 70-100 m: person & activity
 - 20-25 m: feelings & mood
 - 1-3 m: conversation

Partly keep, partly demolish



- Best of both worlds
- Areas with different atmospheres

Fig 3.6.3.5. - “De Muur” scenarios

Before



- | | | |
|--------------------|-------------------------------------|---------------------|
| Community function | High speed cycling path | Water |
| Café / restaurant | Low speed cycling path | Pedestrian crossing |
| Shop / office | Center zone pedestrians | Urban furniture |
| Other buildings | Grass | Tree |
| Car road | Bushes (including 1m sound barrier) | Traffic light |

Fig 3.6.3.6. - Plan current situation

After



1. Community center with café on ground floor
2. New restaurant with community function (already planned)
3. Church: community events, with square and monument in front
4. New coffee bar
5. Existing restaurant The Meiboom
6. Covered bicycle storage
7. Albert Heijn
8. New restaurant (when space becomes free)
9. New restaurant (already planned)

10. Empty spaces along road filled up with active functions
11. Smart node (priority bus)
12. Lively square connecting both sides of Aalst
13. Greenery including wadi, natural playground, dogs field
14. Greenery including benches and bicycle storage
15. Pedestrian path over parking lot



Fig 3.6.3.7. - Plan new situation: more greenery and new functions introduced at strategic locations





Fig 3.6.3.8. - Isometric view new situation: areas with different atmospheres, for different types of activities

3.6.4. Design - Micro Scale

In the microscale the focus is around 3 themes. Namely, the liveability along the road, the green areas in the center and transportation solutions. These will be discussed in the same order.

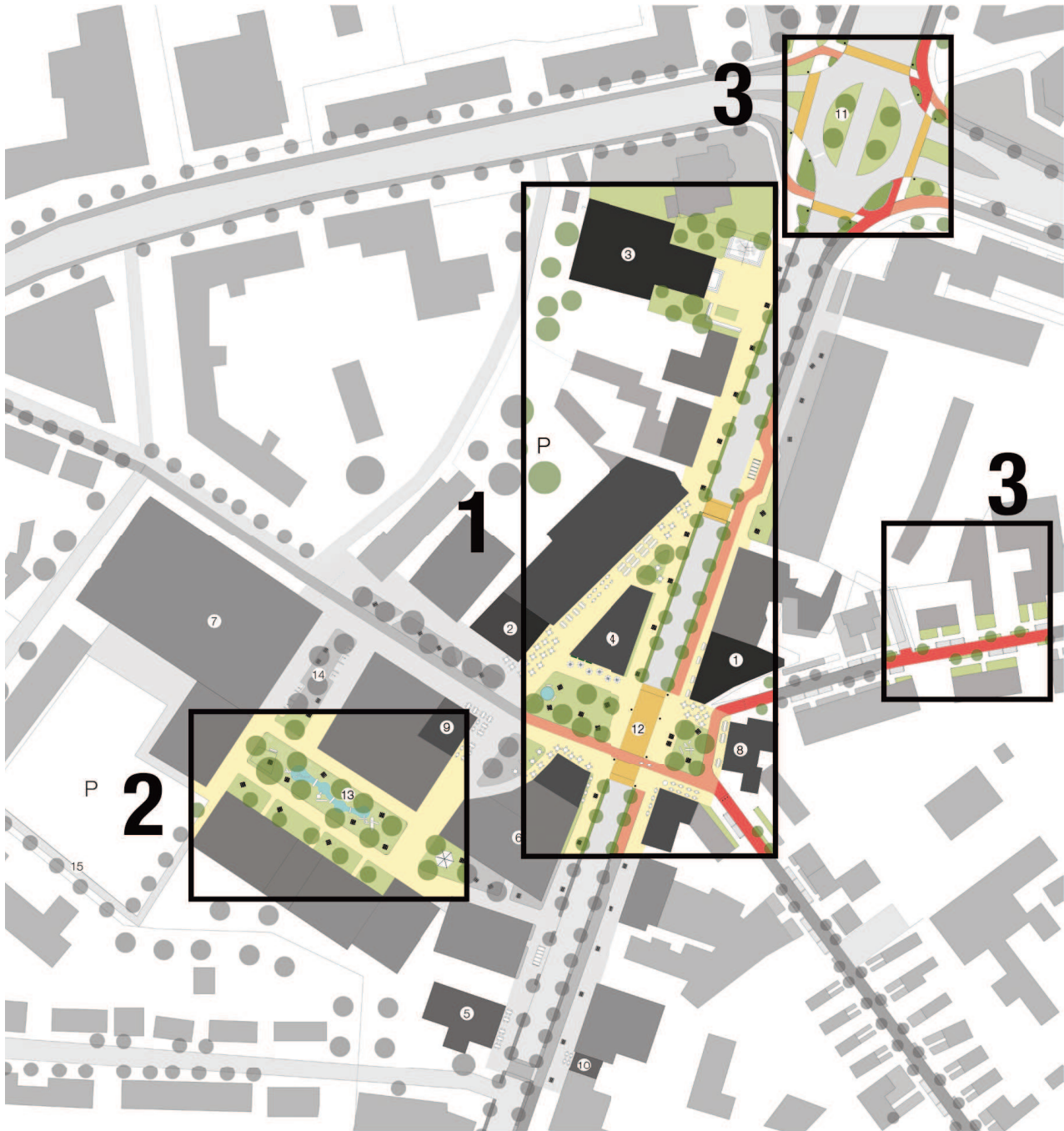


Fig. 3.6.4.1. - Main map with design priorities

1. Livability along the road - The main square

The central point in the center of Aalst will be the main square. This square crosses the Eindhovenseweg, enhancing the connection between both sides of Aalst. Lively functions will be placed around this square, such as a community center (1), cafeterias and restaurants - of which some are already existing and some are added (2,4,8,9). It is expected that the place

would work as an anchor between the woods and Aalst. People can start or end their walk here. Enough opportunities for sitting are provided, the existing fountain stays and at the East side of the square, a small natural playground is located for the kids. The playground will be constructed by natural materials that can be found in the surrounding woods. Furthermore, a reconstruction of the main crossing is proposed. More specific: a toucan crossing that gives priority to pedestrians and bikes



Fig. 3.6.4.2. - Center Area Plan

will be implemented. In combination with a raised crosswalk, it is expected to work sufficiently in favor of the pedestrians and bikes that are moving from East to West or vice versa. If compared to the current situation, the crossing looks way greener and more coherent.

Finally, in “de muur” a guarded bicycle shed is placed (6). People can take their (e-)bike to visit the center or to transfer to the bus, while their bike is in a safe place.

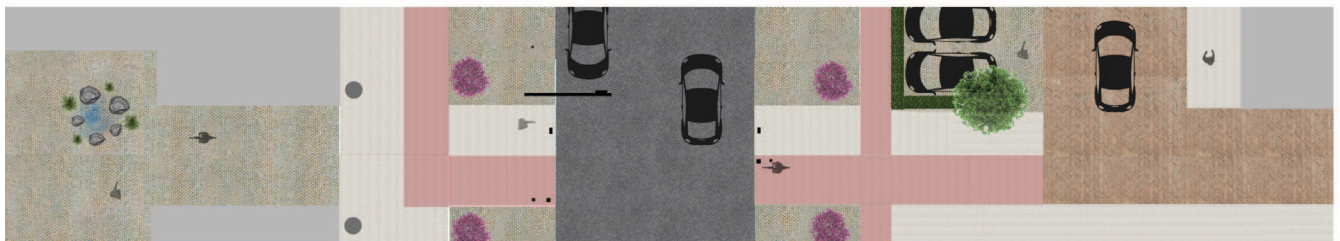
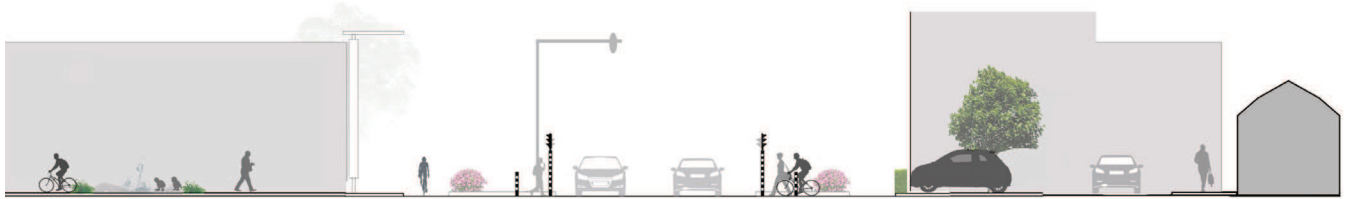


Fig. 3.6.4.3. - Center Area : Before

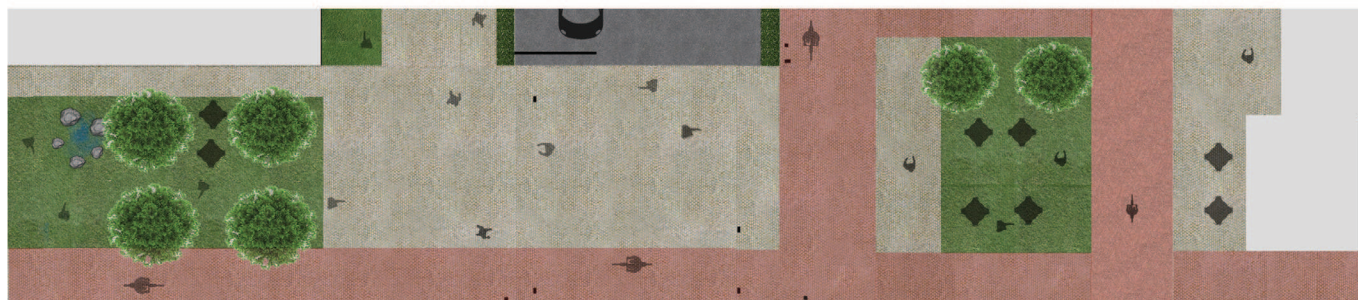


Fig. 3.6.4.4. - Center Area : After

1. Livability along the road - The church square

To include the church square in the center of Aalst, this place needs a make-over. At the moment it is very stony and used as a parking lot. In the new design, the square around the church will be used as a recreational point. The church itself gets a community functions, with community events being organized in the church at the moments when it is currently unused.

These will be organized by the new community center. In front of the church, a square will be created, for people to meet. Since this location marks the start of Aalst, a monument of Aalst's growth and identity will be added, which will at the same time function as a stage for (musical) performances, lectures or just for people to sit and relax on. Furthermore, the square will be more green and places to sit are added.



Fig. 3.6.4.6. - Church Area : After



Fig. 3.6.4.7. - Rendering Church Design

1. Livability along the road - The Eindhovenseweg

Regarding livability along the N69, a new street profile is proposed. The car traffic roads will be narrowed down to 3.3 meters in each way. By implementing that, drivers need to drive more carefully in order to keep their vehicles in the correct

road position. This will lead to speed and volume reduction. Additionally, it will make more clear to the car drivers that they are crossing a village area. Moreover, a double bike road will be placed on the East side of the road. This is expected to result in a bigger space for pedestrians on the West side. Additionally, the double road gives the opportunity to faster vehicles (scooters,

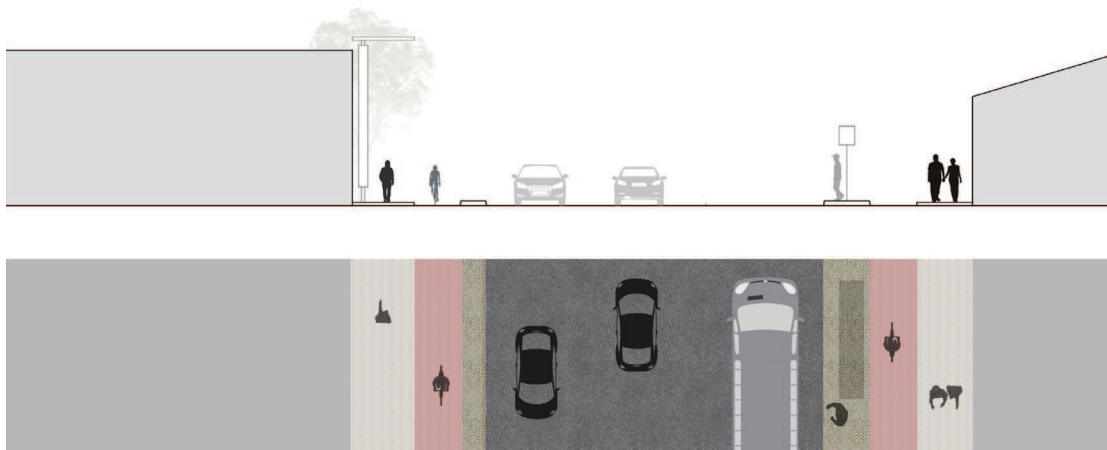


Fig. 3.6.4.8. - Eindhovenseweg: Before



Fig. 3.6.4.9. - Eindhovenseweg : After

e-bikes) to easily overpass slower bikes. Structural greenery and trees will be placed along the N69. That way, more greenery in the center and a safety barrier between cars, bikes, and pedestrians will be achieved. Additionally, porous asphalt will be used and a 1 meter high sound barrier will be placed along the road, integrated in the bushes, to reduce the noise levels.

Lightweight removable benches will be placed along the N69. Users can change the position of the benches as they please.

And lastly, over the years, the ugly buildings along the Eindhovenseweg can be replaced by buildings of a higher architectural quality. As the village center becomes more lively, more and more buildings along this road could transform into shops and restaurants.

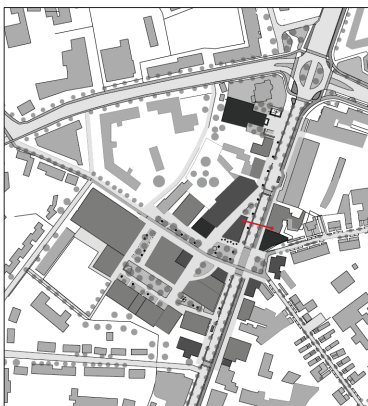


Fig. 3.6.4.10. - Rendering Eindhovenseweg

2. Green areas in the center - The wadi square

In the second main theme of the design, the green areas in the center, the wadi square is the most important element. The wadi plays an important role in the design. Firstly, it serves as a natural water retention measure, in which the excess of rain water is stored inbetween the small hills and slowly transferred into lower layers. Secondly, the wadi plays the role of a

natural playground for children, where they can play all year long, whether it rains, and the wadi fills in, they can cross from hill to hill through small bridges, or when it snows, they can slide down the hills. Lastly, the wadi promotes social interaction between any type of users, by providing areas to sit, relax and meet. In order to strenghten the social contact between users, a pavilion south of the wadi was introduced as meeting point.

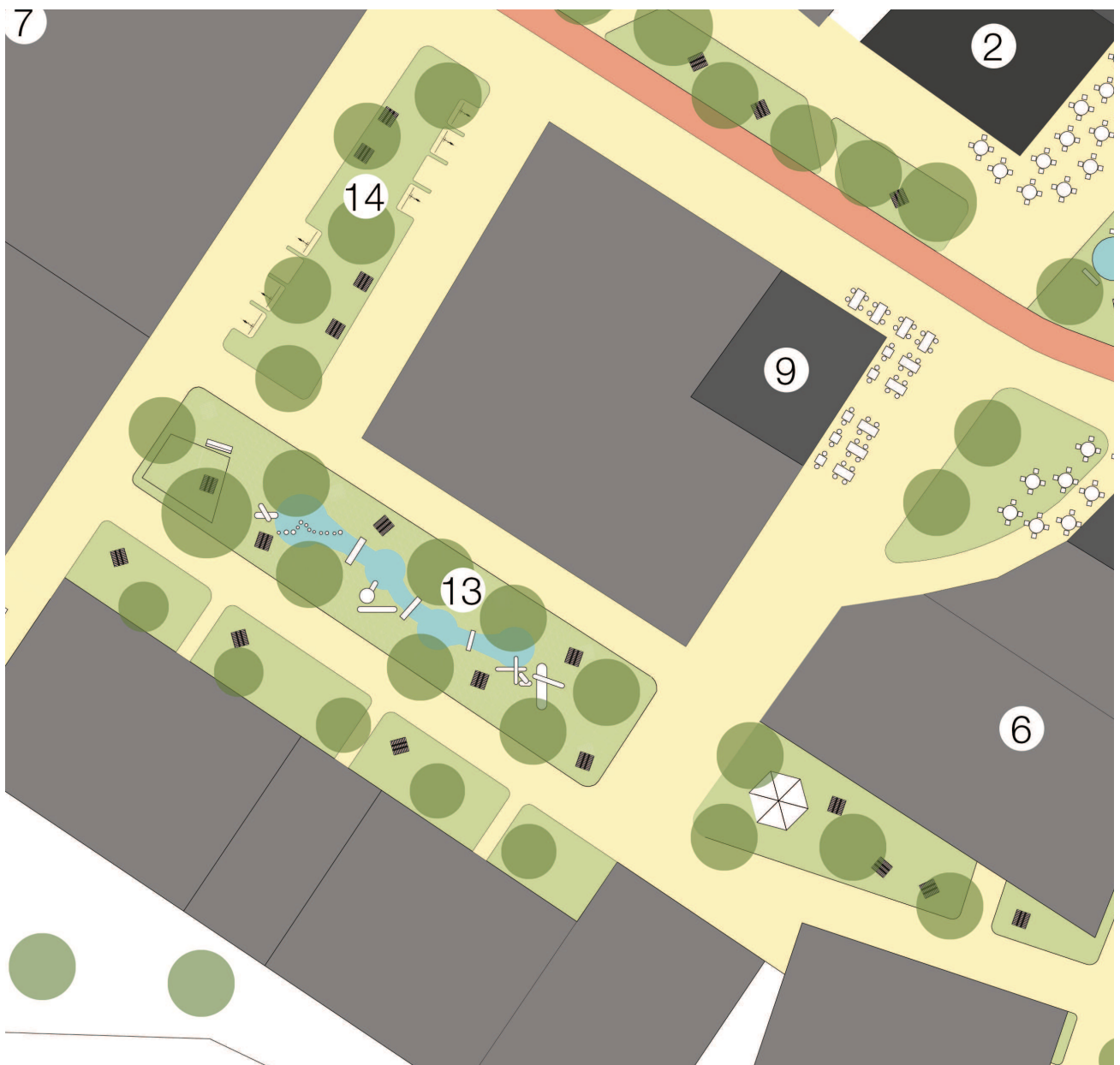


Fig. 3.6.4.11. - Wadi Area: After



Fig. 3.6.4.12. - Rendering Wadi

Additionally, a dog field is placed at the north part of the wadi and close to the entrance to the Albert Heijn. Giving that in Aalst most of the inhabitants have a dog, we found it important to introduce this area as a comfort zone, not only for the dogs, but it also allows the inhabitants to leave their dog safely in the dog field and feel free to walk around the center, go shopping,

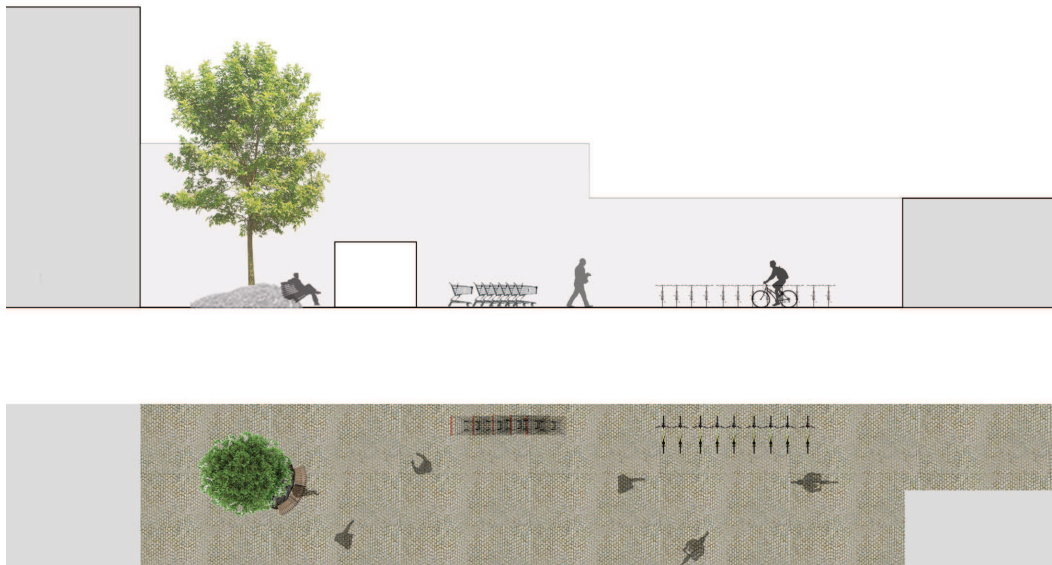
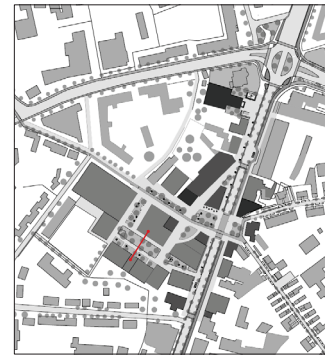


Fig. 3.6.4.13. - Wadi square: Before

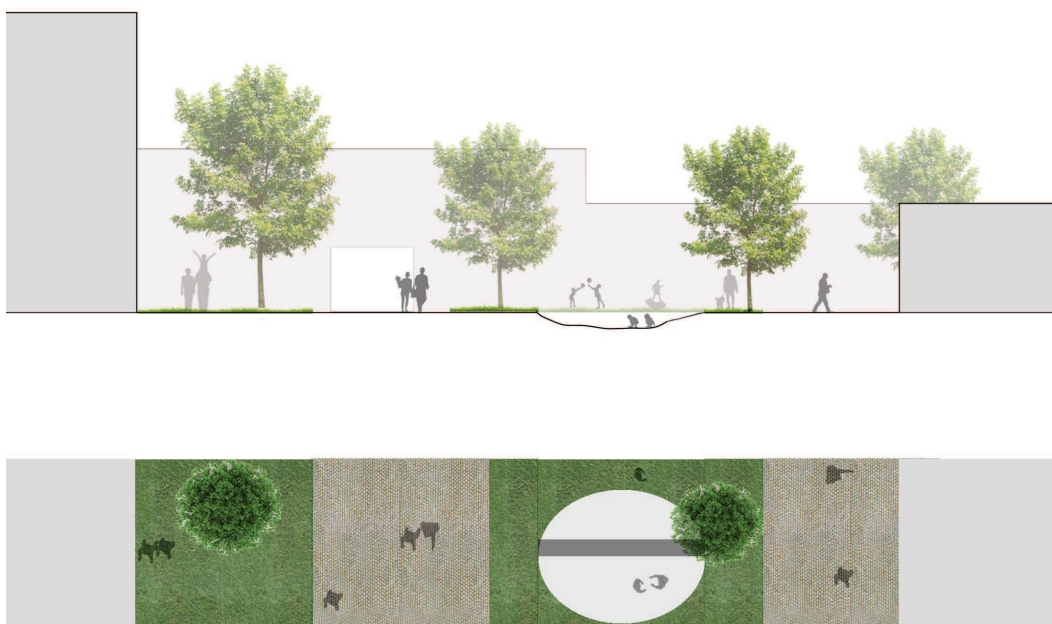


Fig. 3.6.4.14. - Wadi square : Before

meet friends or eat at the restaurants or cafeterias closeby.

Besides the wadi, green areas were introduced next to the Albert Heijn (Figure 3.6.4.16). In this area, more sitting places are placed as well as bike parking places made with permeable paving as additional water retention measure.

Lastly, along the new bike road, the structural greenery crosses through the centre to build the new East-West connection, providing places to sit, meet and relax along the way.

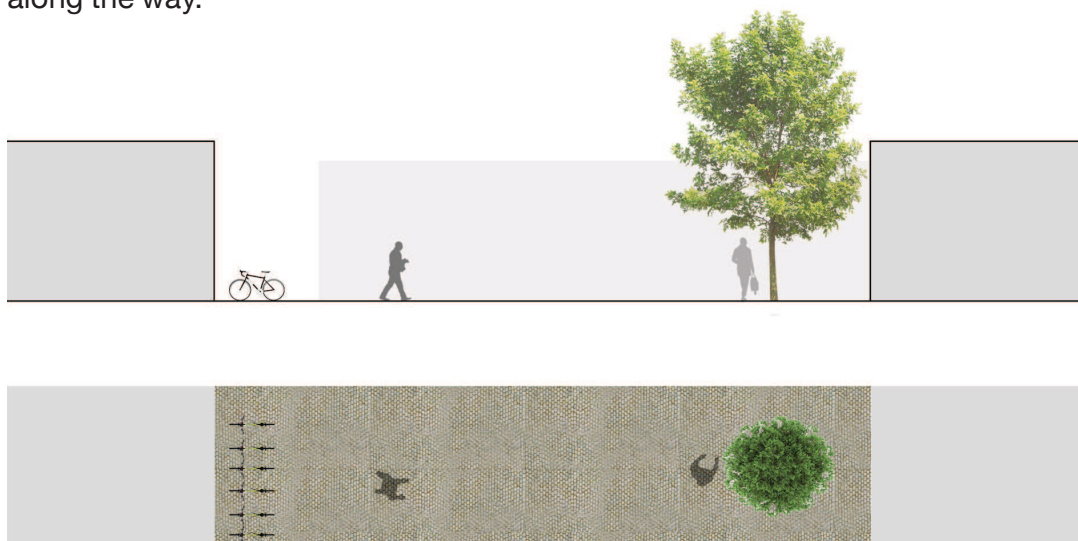


Fig. 3.6.4.15. - In front of Albert Heijn: Before



Fig. 3.6.4.16. - In front of Albert Heijn: After

2. Green areas in the center - Design details

Benches

To go further into detail, we inspired ourselves by the design of the existing benches and developed a new design based on the existing design for the new benches that are to be introduced all around the center of Aalst. The materials consists on wood and metal, like the



Fig. 3.6.4.17. - Existing benches

existing design, but the form varies. The form of the bench was designed with the intention that when the bench is placed along the N69, the users will be able to look towards the street and not turning their back to it. Most of the benches are movable to increase flexibility.

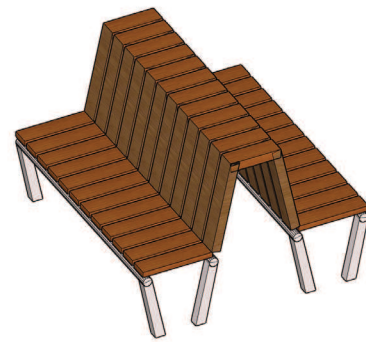


Fig 3.6.4.18. - New Bench Design

Pavement

The current situation regarding the materiality of the square does not help the image of Aalst. A monotonous colour tiles are placed throught out the whole area. This in combination with the lack of greenery

results in a stony and grey appearance. In order to change that the yellow tiles that will be removed from the N69 will be placed in combination with the grey ones in a random pattern along the square. The introduction of a bright colour is expected to enhance the livability and playfulness of the space.

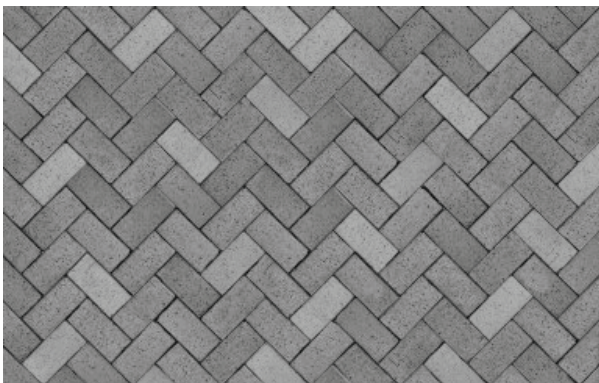


Fig 3.6.4.19. - Existing Pavement



Fig 3.6.4.20. -New Pavement Design

Local trees

Lastly, as mentioned before in the health individual research, based on the structural greenery analysis made in Ekenrooi and Voldijn, the same concept that consists of placing trees and bushes on both sides of the road (Figure 3.6.4.22.) will be applied along the main connections North-South

and East-West. And for the green areas in the center, in contrast with the structural greenery, deciduous trees, which consist of the main structure of the forest surrounding Aalst, will be introduced into the center. In this way the ecological structure will be strengthened, providing the animals of the area a transition point between the forests East and West of Aalst.



Fig 3.6.4.21. - Deciduous Trees



Fig 3.6.4.22. - Structural Greenery in Ekenrooi

3. Transportation solutions - Smart node & Emmastraat

In the intersections at the entrances of Aalst, smart nodes will be placed. In the smart node bus lanes will exist for both directions to and from Aalst. The aim is to give priority to the buses by forcing the cars to stop and wait for the bus to pass. Greenery is placed around to create a natural barrier between the bus lanes and the car roads.

In order for the new East-West axis to work sufficiently the profile of the small

streets that lead to the forests needs to be changed. At the moment, car parking is allowed on both sides, the pedestrian pavements are too narrow and cars have priority. In the proposed scenario the street changes to bike priority street. The cars are allowed to park on both sides, however, the greenery and the parking spaces are alternating along the road. This gives space to create wider pedestrian street and introduce more greenery to the streets. Lastly the materiality is changed into red asphalt in order to be comfortable for the cyclists to drive and to point out the priority of the bikes.



Fig 3.6.4.23. - Smart node: after

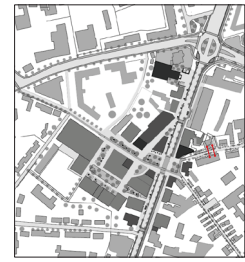


Fig 3.6.4.24. - Structural Greenery in Ekenrooi: After



Fig 3.6.4.25. - Structural Greenery in Ekenrooi: After



Fig 3.6.4.26. - Street to Ekenrooi: Before

3.6.5. Contemporary Topics

Smart mobility

With the introduction of a high-speed bus lane, smart nodes, suitability for e-bikes and pedestrian priority, the design fits the contemporary topic of smart mobility. Healthier and/or more collective ways of transportation are stimulated and connectivity is improved.



Fig 3.6.5.1. - Smart mobility in Aalst

Health - Greenery

Another important contemporary topic is health. This design has a positive influence on the health of the people in the village center of Aalst. Due to the addition of greenery, air quality is improved and the urban heat island effect is reduced.



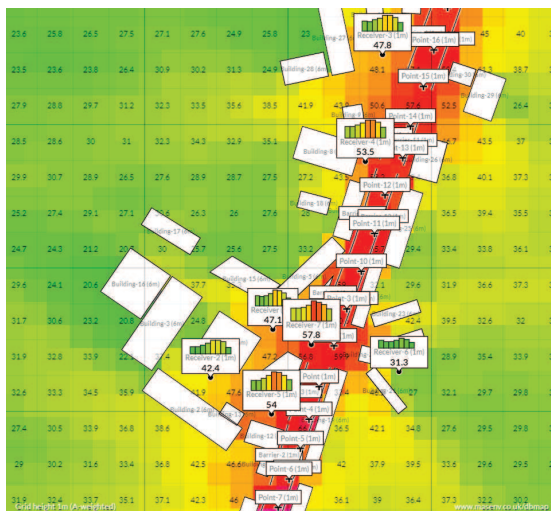
Fig 3.6.5.2. - Health: greenery in Aalst

Health - Noise pollution

For reducing noise pollution, several measures are taken:

1. Reduced traffic 30 km/h
2. Greenery
3. 1 m high barrier
4. “De Muur” stays partly
5. Porous asphalt

A noise simulation was run and the conclusion is that all values are below the 55 dB border of serious annoyance and almost all are below 48 dB. The situation has greatly improved in comparison to the current situation.



Location	Current situation	New situation
1	51.3	41.1
2	56.8	36.4
3	64.3	41.8
4	68.3	47.5
5	66.9	48
6	44.8	25.3
7	-	51.8

Fig 3.6.5.3. - Health: noise pollution in Aalst

Sustainability - Environmental

By keeping/reusing as many materials as possible, using natural materials, local trees and by collecting water (greenery, wadi, porous asphalt), the design contributes to the environmental sustainability of the place.

Sustainability - Economical

“Pedestrian traffic is good for business” (Sadik-Khan, 2013). The new design offers much opportunity for improving the economic sustainability of Aalst. People could visit the center after grocery shopping, they could stay for a drink after work or they could go to the playground with kids while they are shopping. Also, inhabitants of Aalst as well as tourists can visit the woods and then have a nice lunch in the center of Aalst.

Sustainability - Social

Many opportunities are given to improve the social sustainability of the village. Many different places are created where mixing of different people could happen. There is place for community building and activities. For example, the weekly Tuesday market could take place on the main square, there is plenty of space for the kermis and maybe once a year, on a quiet Sunday in summer, the whole street could be closed of for a “straatfeest” or festival.



Fig 3.6.5.4. - Economic sustainability: shopping



Fig 3.6.5.5. - Social sustainability: market



Fig 3.6.5.6. - Social sustainability: kermis



Fig 3.6.5.7. - Social sustainability: “straatfeest”

3.6.6. References Final Design

Text

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- Sadik-Khan, J. (2013). Retrieved from: <https://www.youtube.com/watch?v=Lu-jWrkYsl64>

Pictures

- Figure 3.6.4.21. Retrieved from: <https://www.avonadvocate.com.au/story/4722477/deciduous-trees-in-the-avon-valley/>
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