THE STATION OF KOOG-ZAANDIJK

“The connecting shackle”
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1. Introduction

This is my graduation report of my Hybrid Building graduation studio. The studio is part of the Building Typology Chair at the Faculty of Architecture of the Delft University of Technology. According to the chair of Building Typology, architectural interventions within existing urban environments require a conscious understanding of urban transformation processes and an adequate knowledge of changes in building typologies. Architectural interventions aiming to be ‘urban’ cannot be defined outside the context of the city and its realization. Consequently, research on cities and their history must be considered as an important component of this master program. The hybrid building is able to act as a catalyst within these transformations.

In this report I will explain the problem statement of the assignment, describe which research methods I will use and most importantly, formulate the design question and the kind of design I want to make for my graduation.

The Hybrid Building graduation studio focuses on multiple station areas in the municipality of Zaanstad. The Zaanlijn railway is an important artifact in the area. There are three main topics that the graduation studio deals with;

- The quality of the train stations along the Zaanlijn
- Densification of dwellings near the train stations
- Transformation of the industrial (heritage) buildings in Zaanstad

1.1 Zaanstad and the Zaanlijn

The municipality of Zaanstad is situated in the province Noord-Holland, just North of Amsterdam. The municipality was formed in 1974, when several villages in the region (Zaandam, Koog aan de Zaan, Zaandijk, Westzaan, Wormerveer, Krommenie and Assendelft) merged together. The municipality of Zaanstad has just under 150,000 inhabitants.

Within the municipality of Zaanstad there are 6 train stations, situated along two different railroads. The train station Zaandam Kogerveld is situated along the railroad Zaandam - Enkhuizen (via Purmerend and Hoorn).

The other five train stations (Zaandam, Koog-Bloemwijk, Koog-Zaandijk, Wormerveer, Krommenie-Assendelft) are situated along the railroad Amsterdam - Den Helder.

In the graduation studio the train station of Zaandam is excluded in the research because there has recently been a large scale transformation to improve the surrounding location (project called Inverdam). The five remaining stations are researched during the graduation studio, with an addition of two hypothetical station, one situated between Zaanndem and Koog-Bloemwijk, and the other situated between Wormerveer and Krommenie-Assendelft.
The Dutch government has started an initiative for a program to establish a high-frequency rail transport (Programma Hoogfrequent Spoorvervoer, PHS)\(^1\). The railroad between Amsterdam – Den Helder is part of this PHS program. The idea is that between 6:30 hours and 20:00 hours the line will be used by 6 intercity trains and 6 sprinter trains per hour. (Only the sprinter trains will stop at the train stations within the municipality of Zaanstad). In the current situation only 4 sprinters stop at the stations, and only 2 intercities go from Den Helder to Amsterdam. PHS is meant to stimulate travelers to take the train instead of taking the car. By increasing the train frequency, travelers can take the train without having to plan their journey in advance.

According to the Hybrid Building graduation studio, the railway stations and their surroundings should also be improved to upgrade the livability of the stations and to increase the amount of users.

### 1.2 Dwelling densification near stations

An area around a station, with a radius of 800 meters, is interesting for development. From the train station, any location within this 800 meter radius is reachable on foot within approximately 10 minutes, thereby establishing a good connection between the build development and other cities due to the railroad.

Between 1970 and 2010 a large number of dwellings was build outside these station areas in Zaanstad. In 2030 the housing stock of the Zaanstreek should be extended with 20,787 dwellings to keep the population of these municipalities constant. When only looking at the area around the stations (with a radius of 800m from the station) there is an available capacity of 8,099 dwellings\(^2\).

This densification is part of the ‘Program Densification around Public Transport nodes’ (Uitvoeringsprogramma Verdichting rond OV-knooppunten) set up by the Provincial States.

### 1.3 Industrial buildings

Industry has always been of importance for the entire Zaanstreek. Since the emergence of the villages, the industry has been the most important source of income. It all started with windmills for the agriculture in the 16\(^{th}\) Century. In the 19\(^{th}\) Century there was an important shift due to the industrialization, which introduced the big scaled industrial buildings.

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\(^1\) **Rijksoverheid ‘spoorboekloos reizen’**

\(^2\) **22 Stationslocaties in Hollands Noorderkwartier**
These big scaled industry is still a part of the current urban tissue. Big industrial building and small scaled dwelling are situated next to each other is a typical characteristic of Zaanstad, and is also known as ‘Zaanse Mosaic’.

The industry is slowly moving out of the urban areas due to spatial- or environmental issues. “Conservation and reuse of the industrial heritage is important because it is an important part of the identity of this area”\(^3\). The old industrial buildings should be made suitable to house other programs.

### 1.4 Reason for choosing the studio

The Hybrid Building studio focusses both on Architecture as well as Urbanism. These are both themes that interests me very much. I believe that the two cannot be seen separately. Architectural interventions aiming to be ‘urban’ cannot be defined outside the context of the existing urban development.

The question is how an architectural intervention in an existing urban fabric can activate the area for further developments and change the perception in a positive way. With my graduation design I want to show that I'm capable of solving such a problem in the Zaanstreek area. With an architectural intervention, I want to activate the area and solve problems on a bigger scale.

I also like the fact that we start with Urban analysis on a bigger scale, being the municipality of Zaanstad. This way you don't just look at a given location and its nearby surroundings.

Another thing that I like about this studio is the fact that the location is not within one of the large Dutch cities (for instance Den Haag, Rotterdam, Amsterdam). Up till now, all the studios that I participated in where in a larger city. But if you look at the Netherlands, the majority of the built environment is more comparable with villages than big cities. These different scales bring different parameters. So this is a good ‘test’ for the real deal after I graduate.

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\(^3\) 22 Stationslocaties in Hollands Noorderkwartier
2. Problem statement

2.1 Population

A total population growth is influenced by two components; migration growth and natural growth. During the past decade, there was an increase of inhabitants in the municipality of Zaanstad due to migration, with an average of nearly 500 people each year. In addition to migration, the total growth of the municipality is also influenced by natural growth. The balance of natural growth is births minus deaths. In the past decade the yearly average natural growth within Zaanstad was 450 people.\textsuperscript{4}

The prognosis is that the population will still increase the coming years due to birth and a migration surplus, but the birthrate will start to decrease the coming years. According to the prognosis, the number of deaths will exceed the number of births in 2028. The total growth within the municipality will still stay positive due to the migration surplus.\textsuperscript{5}

The aging population in Zaanstad is increasing. In 2010, 15% of the population is 65+; in 2040 this will be 23%.\textsuperscript{6} But the percentage of elderly of all inhabitants in the Zaanstreek is lower than the average percentage in the rest of the Netherlands. This has to do with the incoming migration.

Most of these incoming new inhabitants are young starting families.\textsuperscript{7} The ‘money makers’ of the family often already have a job, which they will want to keep. This means they become commuters (living in one location and working somewhere else).

2.2 Sport participation

Research has shown that both young children and elderly people should have more exercise. The Zaanse sports policy is defined in the nota ‘Zaankanters in beweging’. This sport memorandum was drawn up by the municipality in cooperation with the sport clubs and sport associations, and it contains the vision for sport in Zaanstad. The goals of the nota is that the number of sports memberships (42% of the inhabitants) should at least be maintained, and that the percentage of participating youngers and elderly should increase. Within the group of younger people (between 12 and 24 years) the participation in sports should grow from 81% to 85% within the

\textsuperscript{4} FACTSHEET Bevolkingsprognose Zaanstad 2010 – 2030
\textsuperscript{5} Idem
\textsuperscript{6} Staat van de stad
\textsuperscript{7} FACTSHEET Bevolkingsprognose Zaanstad 2010 – 2030
next 10 years. In the elderly group (between 65 and 74 years) the participation in sports should increase from 41% to 47%. More and more children and youngsters are overweight or even dealing with obesity. About one in seven boys and one in the six girls are overweight in The Netherlands. These children have a greater chance of having chronic diseases in later life. JOGG (Jongeren Op Gezond Gewicht) is a national organization that strives to improve the health of children. The municipality of Zaanstad recently joint JOGG. The JOGG approach is based on the successful French Epode (L’Ensemble Prevenons Obesite Des Enfants, or “together prevent childhood obesity”). In the two schools that joint this French Epode, the amount of toddlers who were overweight declined with 22% between 2008 and 2010.

The idea of JOGG is to make healthy food and exercise for young people aged 0-19 as easy and attractive as possible. This means that in the municipality JOGG-health professionals, education, healthcare, business, sport, exercise, housing, welfare and media work together to improve healthy living standards. The focus is not just on the young children, but also on the parents and their environment.

The JOGG-project manager of Zaanstad (Christine Eggenkamp-Vink) sees a clear role, and thus need, for sport and exercise in this project. “Exercise does not necessarily have to be sport. It’s also about playing outside in green environment”.

Between the age of 18 and 39 the percentage of the population that participates in sport is fairly consistent, but decreases rapidly as people get older. Yet, still one third of the over-65s still plays a sport.

The municipality of Zaanstad offers its older inhabitants, aged between 65-75, the opportunity to participate in a revitalization-project for seniors called GALM+ project. This project started mid May 2012. The inhabitants that were interested and wanted to join had to take a test, including endurance, balance, agility, dexterity, reaction rate and blood pressure measurements. After the test, a customized advice is given and the participants get the possibility to register for an introductory movement program of 10 weeks. During these 10 weeks various exercise activities are addressed under the guidance of an professional. The main goal of the GALM+ project is to (re)gain pleasure in physical activity.

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8 Zaankanters in beweging
9 Gemeente Zaanstad; interview JOGG
10 Idem
11 Zaankanters in beweging
2.3 Location of sports fields

One of the biggest problems for sport fields and sport facilities, is that sports & recreation have to compete with dwellings and offices. The building of dwellings and offices generate more income, with the result that sports fields often are moved to the outskirts of towns and cities.\(^{12}\)

Along the Zaanlijn railway there are two locations where sports fields are still located in the center of an urban area. One is situated next to the Wormerveer station and the other is next to the Koog-Zaandijk station. The Koog-Zaandijk station is situated in the middle of the Zaanstreek, which is why this is a desired location.

In 2030 the housing stock of the Zaanstreek should be extended with 20,787 dwellings to keep the population of these municipalities constant. When only looking at the area around the stations (with a radius of 800m from the station) there is an available capacity of 8,099 dwellings.\(^{13}\)

This means that the sport fields next to the Koog-Zaandijk station are in jeopardy in view of its location. The municipality of Zaanstad already made plan to redevelop this area. In this plan, half of the sport facilities are relocated, further to the outskirts, and replayed by dwellings.

2.4 Koog-Zaandijk train station

The first train station of the Koog-Zaandijk area was built in 1867. Since then, the station (and its position) changed two times. The social acceptance of the train as a way of public transport changed and the role of the station shifted from a building with stately appearance to an unnoted element. The station is nowadays more just a stop. During the two changes the platform type also changed twice, from a side platform to an island platform, isolating itself more from the context.

The provincial road adjacent to the station, became more crowded from the 1930s, which also played a role in the weakening of the relation between the station and the context. The provincial road now forms a border between the East side and the West side of both Zaandijk and Koog aan de Zaan.

\(^{12}\) Nederlandse Instituut voor Sport en Bewegen
\(^{13}\) 22 Stationslocaties in Hollands Noorderkwartier
Like stated in the introduction, there will be a higher frequency rail transport (Programma Hoogfrequent Spoorvervoer, PHS) in the near future. The railroad between Amsterdam – Den Helder is part of this PHS program. At the cross-connection of the Guisweg and the Provincial road, the track is situated on the same level. The tracks are regulated with barriers (slagbomen). By increasing the train frequency this will become a problem. The barrier is already closed 25 minutes per hour. This time will only increase if the amount of passing trains will increase.

As stated previously, there will be extra commuters in the near future, in addition to the existing commuters in the Koog-Zaandijk area. In order to make it more attractive for these inhabitants to go to their work with public transport instead of taking their own car, the station and its surrounding area will need a make-over.

The East side of the Koog-Zaandijk train station is mostly sports fields, but the area doesn’t have a clear identity. Directly next to the station there are some facilities for the station itself (car park, bicycle parking, ‘kiss and ride’). In the vicinity there is a small, polluting industry (Sonne Born), a motorcycle club, a mosque, a dentist, a fanfare band and an empty plot which is overgrown. The sports are most dominant, but these facilities are all in need of a makeover.

2.5 Goal

My main goal of this graduation studio is to apply the needed urban densification, but not in expense of the sport facilities. On the contrary, I am going to improve and strengthen the importance of the sport facilities. I will also integrate the station into the plan. I want to make an architectural design that solves the following problem statements;

1. How can I improve the existing sport facilities?

2. The station area of Koog-Zaandijk has to be densified with approximately 150 dwellings, according to the master plan. How can I densify the station area, without removing the present sport facilities?

3. The railroad track and the road cannot cross each other on the same level. How can I solve this problem, and at the same time establish a good connection between the Western and the Eastern part of the village?

4. The station of Koog-Zaandijk doesn’t serve as a representative entrance to the villages of Zaandijk and Koog aan de Zaan. Which interventions are necessary to improve the Koog-Zaandijk station?

5. New program needs to be added which supports the future densification. Which program?
3. **Research Methods**

During the first half of my graduation project I followed a course called ‘Lecture Series Research Methods’ which was related to the research within the design studio. According to Tom Avermaete, who is the coordinator of this course, there are four different episteme which cover all different kind of research methods. The episteme are large frames of thought. The four different episteme are: typology, phenomenology, semiology and praxeology.

During the entire design process, I used different methods and techniques of research and design. In this chapter I will explain which methods I used and why they are relevant for my design. By using these methods and techniques I am able to answer the research questions formulated in the previous chapter.

### 3.1 Methods and techniques Urban Analysis Zaanstreek.

In the beginning of the design studio, we made an Urban analysis of the entire Zaanstreek. In seven groups of 3 people, we made an urban analysis on each of the seven station areas of the Zaanstreek.

This Urban Analysis was based on given maps, data and observation of the area. Each group made a booklet of one station area and presented the information to each other. At the same time we made seven posters in A1 format, mapping the Zaanstreek area in seven different themes. (see appendix A)

**Posters:**
1. Station Typology: showing the existing station typologies
2. Historical Development: showing the relation between the railroad station and the village cores in 1868 (the introduction of the railroad stations in the area).
3. Cross connections railroad (Zaanlijn): showing the crossings of the railroad track.
4. Public spaces of the stations: showing how the public spaces of the stations are organized.
5. Main structuring elements: showing the landmarks, monuments, industrial area, railway, roads, water, green.
6. Functional character of the station areas: each railroad station area has a different functional character.
7. Formal aspect of the cross connections: showing the spatial organization of the cross connections.

These posters show the relation between the individual station areas and the whole Zaanstreek. We managed to get a clear idea about the historical development of the stations in relation to the surroundings, the existing typologies, the traffic problems, the industrial heritage, the structuring elements and the spatial borders of the area.

The purpose of the Urban Analysis was to find design questions in the station areas, which relate to the general problem statement of the studio.
3.2 Typology

The typological episteme is a study of types. A typological research that I carried out, was in different typologies of dwellings.

To get an idea about the special requirement of dwelling densification, I made an analysis, together with two other student. We investigated the different typologies using a densification of 40 dwellings per hectare as a parameter.

By doing so, we got an idea of how much space certain typologies need, including gardens, streets, etc.

Typological analyses can be made with different parameters. For this research I used a densification of 40 dwellings per hectare as a parameter.

By investigating historical maps and developments I explored the historical growth of the build environment of the area. The information was obtained from the rapport of ir H.j. Engel and ir. A. de Waaijer; 22 Stationslocaties in Hollands Noorderkwartier (TU Delft 2011) and a book ‘Portret van de Zaan’ by Con Monnich.
3.3 Frame, pattern, circuit – method

This method is also known as the 3 steps analysis. The method is developed by Peter de Bois and explained in the book ‘Stedelijke vitaliteit’. This method can be used to analyze the connectivity of a certain location and explains how people use the roads in a city, or in this case in the village. The idea is to start by selecting an anchor point.

The 1st, 2nd and 3rd order method is based on a three-step analysis that is derived from our capacity to explain someone the way in only three steps. You start in direction from the starting point, this is the first order. As soon as you come to a junction where you have to make a choice in which way you can continue, the second order starts. The same goes for the third order. With this method it becomes clear how good the starting point is connected with its urban frame and how far it extends. This is of course crucial for the accessibility of the station and its neighborhood it serves. Another outcome of this research can be the finding of a so-called ‘missing link’. This is a connection that can improve the accessibility of the anchor point you research on.

3.4 Phenomenology

In the entire Koog-Zaandijk station area I mapped and investigated landmarks and boarders. I did so by investigating maps and by sharp observation on site.

Also, In the current situation, the area on the West-side of the Koog-Zaandijk station hardly contains any public space, especially within the areas with sporting facilities. My intention was to create a sequence of public spaces.

Behavior in public space has to do with the fact that you have to deal with people you don’t know. Public space needs to be formulated clearly, otherwise people will become insecure. External space can also be defined by a building. But how do building define open space and what kind of public space is it?

I deal with these facts by applying the theory of Kevin Lynch. In his book called Image on the city. Lynch says:

Looking at cities can give a special pleasure, however commonplace the sight might be. Like a piece of architecture, the city is a construction in space, but of a vast scale....perceived only in the course of long spans of time... At every instant, there is more than the eye can see, more than the ear can hear, a setting or a view waiting to be explored. Nothing is experienced on itself, but always in relation to its surroundings.14

14 Kevin Lynch ‘image of the city’
Lynch has developed a method of analyzing legibility based on five elements:

1. **Paths, Familiar routes followed**: “Are the channels along which the observer customarily, occasionally, or potentially moves.” (streets, walkways, transit lines, canals, railroads).

2. **Edges, dividing lines between districts**: “are the linear elements not used or considered as paths by the observer. They are boundaries between two phases, linear breaks in continuity.” (shores, railroad cuts, edges of development, walls).

3. **Districts, areas with perceived internal homogeneity**: “are medium-to-large sections of the city, conceived of as having two-dimensional extent, which the observer mentally enters ‘inside of,’ and which are recognizable as having some common identifying character.” (center, midtown, its in-town residential areas, organized industrial areas, trainyards, suburbs, college campuses etc).

4. **Nodes, Center of attraction that you can enter**: “Are points, the strategic spots in a city into which an observer can enter. The nodes may be simply concentrations, which gain their importance from being the condensation of some use or physical character, as a street-corner hangout or an enclosed square”. (primary junctions, places of a break in transportation, a crossing or convergence of paths, moments of shift from one structure to another).

5. **Landmarks, point of reference**: “Are usually a rather simply defined physical object which makes one orient oneself. (building, sign, store).

My urban analysis has resemblances with Lynch’s method. The only difference is that Lynch gets this ‘public image’ of a city, by interviewing several local people according to the protocol that he has prepared, as well as by asking someone to draw a sketch map of an area or describe that area and asking a person to name as many places as possible in short period of time. With this information Lynch collects mental maps of people. I based my mental map on my own experience instead of interviewing people on the spot.

I tried to find paths, but I actually found the lack of clear paths. I found edges, created by the factory fences. The factory also functions as a district and a landmark within the urban fabric. The train station forms an important node. Lynch describes these elements as positive things. According to my analysis some of the elements are there at the moment, but they don’t work in a as good as they should.

His method can be very useful for my design process. I know now which elements are important for the design of a city and how people perceive these elements. I will use his five elements for my design in the station area of Koog-Zaandijk so that people can easily understand the lay-out of my design.
3.5 Praxeology

Praxeology is the study of human action and conduct. How do people move through a building? What are the practical measurements of a station and what requirements does a station have? I did a research on this by looking at precedence.

3.5 Precedence (case studies)

I did a thorough research on comparable design assignments. I did research on comparable sport complexes, sports halls, stations, and Palladio villa’s.
4. Analysis & argumentation

In this chapter, I clarify the analysis and argumentation of my design and the design site. The findings were made during the urban analysis, as well as during the explorations in the design studio.

The Zaanlijn railway is also an important artifact in the area and the design assignments of the Graduation Studio. That is why in this analysis the accessibility of the area plays an important role. The use of the train station is influenced by the accessibility of the train station that functions as a (public) transport hub.

4.1 Choice of location

After formulating the problem statement of the Zaanstreek, I made further studies on the Zaanstreek area in order to select a location. During the Urban Analysis I got a good impression on the general problem statement of the Zaanstreek area.

Like stated earlier, sport is an important topic in my personal criteria, but has always been important for the Zaanstreek. Sport is a positive identity and quality within the Zaanstreek.

I did research on all the active sport facilities in Zaanstad. Before contacting them, I made a short questionair/inquiry for them with the following questions:

- Amount of members
- Amount of fields / m²
- Busiest days?
- Main target group / age category?
- Future plans?
- What do you do during the winter?
- Do you have a need for indoor sports halls?

The following schemes the sports facilities are mapped.
Sport facilities in Zaanstad
Indoor sports halls in Zaanstad
I wanted to pick a station-area that is representative for the general problem statement of the Zaanstreek area. These are the following criteria:
- the problem of the barrier introduced by the railroad
- densification possibilities

Based on the conclusion on the sport facilities (explained in chapter 5.1) in combination with the fact that the station area of Koog-Zaandijk is representative for the general problem statement of the Zaanstreek area, I chose the station area of Koog-Zaandijk as the site for my design.

The following urban analysis is only focused on the station area of Koog-Zaandijk. The station is positioned in between the former villages of Oud Koog aan de Zaan and Oud-Zaandijk eastern of the rail track and Rooswijk western of the rail track.

4.2 Master plan

After the Urban Analysis we made three rough master plans, in three groups of seven. In the master plan we had to distribute the minimum amount of 7000 dwellings in the possible development areas (based on the findings in the report of Henk Engel). All the 7000 dwellings had to be situated within the 800 meter circles of the stations in the Zaanstreek. An indication was given for the density of the development areas, for the re-use of industrial heritage and for what to do with the sports-fields in the area.

The numbers of dwellings in the master plans were very rough; they were merely an indication on how to densify the station areas, based on estimation. During the design process the master plans can be sharpened. Each individual student had to pick one of the three master plans to work with, as a starting point for their design proposal.

The master plan I choose keeps the cocoa-factory. According to the master plan, the densification with dwellings needs to take place west side of the station, on the sport field area. About 150 dwellings have to be added on an area of 5.5 hectare. In the master plan, these sport fields have to move to a location outside the 800 meter circle. I believe that a solution can be found, where I keep the sports fields and at the same time have the densification of 150 dwellings. The sport fields are very important for the social coherence, so they cannot disappear.

I believe that the ADM Cocoa-factory should stay. The industry of the Zaanstreek is the oldest industry of Europe, and for a while it was the biggest. It is part of the historical development of the area. Of course, the Cocoa-factory has negative influences on the environment in terms of smell, noise, cocoa dust, polluted soil and fire hazard. Because of these reasons, many people would like to see the factory moved to a location outside the center.
Positive points about the factory are that the cocoa-factory offers approximately 450 jobs and has a positive economic influence for the area. Interesting is that most of the inhabitants of Koog-Zaandijk who live near the factory (the ones that I have spoken), have an emotional bond with the factory because it is part of their local history. They take the negative aspects for granted, because they are used to them.

What the ADM-factory has been doing in the past years, is buying ground/buildings directly next to the factory as soon as they get the chance. Houses around the factory have been demolished. The do this in order to have the possibility to expand when necessary. This results in big empty plots on the ADM site between the factory buildings, and empty buildings and fences along the Stationsstraat. This street use to be the most important street in the village with shops and dwelling along it, starting at the bank of the river the Zaan and ending at the train station.

If the ADM factory wants to be part of my master plan, they will have to decrease in size and give the boarder of their plot along the Stationsstraat back to the village to make place for dwellings and shops, restoring the Stationsstraat to the state it was in 1938.
4.3 Analysis & argumentation Koog-Zaandijk

I made an analysis in order to answer the question stated in the problem statement. I was looking for answers for the following questions:

1. How can I improve the existing sport facilities?

2. The station area of Koog-Zaandijk has to be densified with approximately 200 dwellings, according to the master plan. How can I densify the station area, without removing the present sport facilities?

3. The railroad track and the road cannot cross each other on the same level. How can I solve this problem, and at the same time establish a good connection between the Western and the Eastern part of the village?

4. The station of Koog-Zaandijk doesn’t serve as a representative entrance to the villages of Zaandijk and Koog aan de Zaan. Which interventions are necessary to improve the Koog-Zaandijk station?

5. New program needs to be added which supports the future densification. Which program?

4.3.1 Morphology and Typology

Through this analysis I explored the historical growth of the build environment of the area. The information is distilled from historical maps and a report of ir H. j. Engel and ir. A. de Waaijer; 22 Stationslocaties in Hollands Noorderkwartier (TU Delft 2011)
What becomes very clear in the map of the period before 1850, is the importance of the Lagedijk as a connector between Koog Zaandijk and Zaandijk. This historical lint runs parallel to the river the Zaan. The very first dwellings were positioned along this lint and grew from two separate villages towards each other. Also the typical ‘comb-structure’ is still recognizable in this map.

Between 1910 and 1940 it’s clearly visible that the empty areas are completed and the urban tissue is being healed with the typology of so called stroke buildings. Also the introduction of the industrialization is clearly visible, big industrial areas are being part of the urban tissue. This is one of the aspects what became typical for the region, big industries next to small-scale housing. The first expansions westwards developed as well in this period.

Between 1940 and 1970 the same approach of completing the urban tissue eastwards and expanding westwards is continuing.
Complete new living areas were developed between 1970 and 2000, namely Rooswijk (in the north) and Westerkoog (in the south). These two new living areas equalized the size of the villages between east and west. The right diagram shows the complete built environment as it is in the current situation.

4.3.2 Access of dwelling areas

Based on the historical comb-structure, the streets in the area nearby the Zaan river were orientated in East - West direction. First only connected to the Lagedijk, and later on when the Provincial road was made, also extended to this road.

During time the Provincial road became more crowded and the connections with the road became more problematic and even dangerous because of the high speed traffic.

The primary direction of the traffic system turned 90 degrees and is now connected to the Guisweg. The Guisweg forms to most important connection with the Provincial road these days, because it is the only connection for cars between East and West in Zaandijk.
Because of this transformation, the Provincial road now only functions as a connection on a larger scale from North to South, forming a border for Zaandijk and Koog aan de Zaan.

The cross-connection of the Guisweg and the Provincial road split the Koog-Zaandijk station area into 3 urban districts; Rooswijk, Oud-Zaandijk and Oud- Koog aan de Zaan.

4.3.3 Existing cross-connection

The Provincial road and railroad now form a boarder, forming a clear division between East and West. The cross-connection doesn’t only connect the urban areas with the provincial road, but also connects East and West. Because of the heavy traffic flows on the Guisweg, the junction with the Provincial road is extremely busy.
The inhabitants of Zaandijk and Koog aan de Zaan only have the opportunity to cross the ‘border’ at three places. Two smaller tunnels going underneath the railroad and provincial road for slow-traffic (photo 1 & 3), and one connection for motorized transport which is the Guisweg (photo 2).

Another problem at the cross-connection between the Guisweg and the Provincial road, is that the railroad track is situated on the same level. This connection is regulated with barriers (slagbomen). During rush hour, the barrier is already closed 25 minutes per hour, which will only become longer if the amount of passing trains will increase.
4.3.4 New cross-connection

Based on the conclusion of the existing cross-connection (explained in chapter 5) it would be best to introduce a second cross-connection preferably at the train station. In this chapter the different possibilities to achieve this are investigated.
4.4 Analysis & argumentation sport facilities

4.4.1 Inventory

The surface of the entire site plan is 243,000 m²

1. (Car) storage (3650 m²)

2. Street with 3 small buildings (4700 m²)
   contains: - fanfare band (750 m²)
   - motorcycle club (1100 m²)
   - mosque (1100 m²)

3. Wax industry; Sonne Born (7500 m²)
   contains: - factory (3600 m²)
   - office (1200 m²)
   - 2 dwellings (500 m²)

4. KZTV (tennis) (8750 m²)
   contains: - clubhouse, dressing rooms and storage (300 m²)
   - car parking (250 m²)
   - bicycle parking (100 m²)
5. Zaan Golf (swimming pool)
   contains: - building (3200 m² )
     - garden (1000 m² )
     - car parking (1800 m² )
     - bicycle parking (340 m² )

6. KZ (Korfball Zaandijk) (22750 m²)
   contains: - clubhouse (280 m² )
     - dressing rooms (150 m² )
     - storage (100 m² )
     - car parking (850 m² )
     - bicycle parking (150 m² )

7. KFC (Kooger Football club) (54750 m²)
   contains: - clubhouse (400 m² )
     - dressing rooms (450 m² )
     - storage (170 m² )
     - stand (700 m² )
     - (indoor) dribble hall (350 m² )
     - car parking (1500 m² )
     - bicycle parking (375 m² )

8. TV Westerzijderfeld (tennis) (6500 m²)
   contains: - clubhouse, dressing rooms and storage (300 m² )
     - car parking (250 m² )
     - bicycle parking (100 m² )
4.4.2 Public space

Sports fields are always private areas, and are always organised in a very functional way. All the associations have fences around their plots and the space within those fences is only meant for their own members. But the associations usually only use the fields for a few hours per week. This is also the case in Zoog-Zaandijk.

The public space is treated as left over space, but should provide more. The public space should not be residual space, but it should be the backbone of the sports park; sport and recreation is for everybody.15

The same is the case at Koog-Zaandijk sports fields. The only public space on the site is the road (connecting the sport facilities with the urban areas) and the adjacent parking places.

15 sportstadspark – ‘spannende’ openbare ruimte
4.4.3 Dealing with boarders

A public sports park requires more social control because of safety issues. The sports fields have big surfaces with long edges. There are different ways to deal with these boarders.

The most common and almost ‘traditional’ way to deal with these boarders is a green zone. This is also the way the boarders of the fields are dealt with in the current situation. Even if you want to have an intense social control, it is still possible to make use of this type of boarder, but then it is necessary to have the control on the other side of the field, for instance with dwellings.

Another common way to deal with the boarder of big surfaces is by applying a fence. But if the fences are not in clear site, savages tend to cut holes into them in order to get to the fields.
Amsterdam Olympiaplein is a nice example where a fence and dwellings are combined.

Another interesting way to deal with a boarder of a sports field is by placing building directly next to the field, whereby the façade becomes the boarder. This way there is an optimal form of social control. This is off course not desired with for instance a football field, where the ball reaches high speeds, but it is for instance possible for the boarder of a korfball field.

A nice example is a building designed by Antonio Monestiroli.
4.5 Analysis & argumentation Koog-Zaandijk train station

4.5.1 Historical development

The train track is a structural element in the urban context of Zaanstad. As an public function, the train station played an important role but it’s importance decreased through time. The position of the train station changed two times.

The first station was positioned in front of the Stationsstraat, which in the first period was called ‘Spoorstraat’. The location of the station was related to the Guisweg, in order to also serve the people living in the village Westzaan.

During the transformation of the train station, the platform type changed from side platform to island platform, isolating itself more from the context. The provincial road, which became more crowded from the 1930s, also played a role in the weakening of the relation from the station with the context.

The social acceptance of the train as a way of public transport changed the role of the station from building with authority to an unnoted element, hidden between the tracks. The station is nowadays more just a stop.
4.5.2 Current train station

Floorplans:

Sections:
Complicated crossing

Pedestrians and cyclists have to go down in order to cross the railway. These lowered crossings take an enormous amount of space to realise.

Existing parking for cars sufficient
Existing bicycle parking insufficient

1 entrance
According to the report ‘Goud appel II’, the amount of parking spaces for bicycles and cars are sufficient at the Koog-Zaandijk station.

There are 168 parking spots for cars, and around 200 parking places for bicycles. (20 along the provincial road next to the bus stop, 60 on the East side of the station and 120 on the West side of the station).
4.5.4 Train station in the urban tissue

For the analysis of the connectivity of the station with its surrounding, I used the 1st, 2nd and 3rd order. The anchor point is the location where the connectivity with its surrounding is tested on, in this case the station. By mapping the orders it become visible how good the station is connected with its urban frame and how far it extend. This is of course crucial for the accessibility of the station and its neighborhood it serves.

In the scheme below I took the station as an anchor line instead of anchor point, which suggests there is an connection between the two sides of the Provincial road. But this connection is only there for slow traffic and not for motorized traffic.
4.5.5 Island or side platform

There are a few advantages of having an island platform. One of the advantages is that the travelers in both directions can share the facilities that are present on the platform (kiosk, benches, information signs, etc). But the most important advantage is that travelers who have to transfer between trains, can do this quickly, which has the result that a transfer can proceed quicker.

Connection to island platform

The negative thing about having an island platform, in comparison with two side platforms, is that the platform is only reachable at the point where there is a perpendicular crossing passing the railroad track. This makes the accessibility of the platform less flexible.

The side platforms are more flexible when it comes down to accessibility. Because of this, it is easier to establish a connection between the platform and the urban tissue. Another advantage of a side platform, is that the entrance to the platforms can be accentuated.

Connection to side platforms
5 Conclusion

In this chapter I will substantiate the decisions I made based on the Urban Analysis and explain what I want to achieve with my design. By making the Urban Analysis on of the entire Zaanstreek, I was able to select a location and formulate design questions that are related to the studio.

5.1 Improving the urban tissue

One of my problem statements was that the railroad track and the road (Guisweg) cannot cross each other on the same level. By lifting the train station one level, I solved several problem at once.

5.1.1 The Stationsstraat

In 1938, the Stationsstraat was the most important street for the inhabitants of Koog aan de Zaan. The street connected 2 structural elements, being the river the Zaan and the train station. The shops for the daily needs of the inhabitants were situated along this street, as well as typical Zaanse dwellings.

If you look at the current situation, the street lost its glory. Almost all of the shops have disappeared, and all the dwelling along the North side of the Stationsstraat have been demolished and replaced by fences of the ADM factory.

When the ADM factory decreases in size and gives the boarder of the Stationsstraat back to the village to make place for dwellings and shops, restoring the Stationsstraat to the state it was in 1938.

5.1.2 Raising the station

As mentioned before, the cross connection of the train tracks and the Guisweg gave problems. By raising the station, this problem is automatically solved.

In the theory of Kevin Lynch\textsuperscript{16}, one of the five elements are ‘landmarks, point of reference’. By lifting the station, it becomes a visible urban element in the area. this way, even tourists will find it more easy to orientate their way around.

Through time the station itself has changed 3 times, both in typology and its location. Nowadays the Stationsstraat does not end at the station, but it is a dead end street. Pedestrians can go down a tunnel to go to the other side of the boarder (provincial road and train tracks). Cars have to turn around and find another way to get to the other side. By lifting the station, I am able to extend the Stationsstraat underneath the station, re-establishing the old connection between this street and the station itself.

\textsuperscript{16} Kevin Lynch ‘image of the city’
5.1.3 Restructuring the Sport fields & densification.

Sports fields are often private areas. All the different associations have fences and thick hedges around their plots and the space within those fences is only meant for their own members. But the associations usually only use the fields for a few hours per week.

This is also the case at the sport fields in the Koog-Zaandijk station area. The public space is treated as left over space, but it should provide more. The public space should not be residual space, but it should be the backbone of the sports park; sport and recreation is for everybody.¹⁷

I wanted to find a way to reorganize these sport fields, making them more public. I found the answer by using the typology of a French Barok garden. In a French Barok garden, there is a main axis, running through the middle of the garden. In my design the main axis runs through a public park. At the boarders of this public park you can find the sport fields. In the other side of the sport fields are dwellings.

The idea is to make the sport fields public at the time the association do not use the fields themselves. But a public sports park requires more social control because of safety issues. The sports fields have big surfaces with long edges. There are different ways of dealing with these boarders. I chose to have a public park on one side of the fields, and a public road with dwelling on the other side of the road. This way, there will always be a strong form of social control.

Just like the typology of French Barok gardens, the beginning and end of the garden is defined by 2 elements, connected by the main axis. I used the station and the sports hall to mark the beginning and the end of the park. By placing the main axis of the park in the extension of the Stationsstraat, the station becomes the connecting factor between the park and the village.

![Axis through park with 2 end points](image)

¹⁷ sportstadspark – ‘spannende’ openbare ruimte
5.2 Additional functions

Sports hall
From the research explained in chapter 4.1, I can conclude that there are no sports halls near the Koog-Zaandijk station area. There are 5 sports halls in all of Zaanstad, but the majority of the time they are fully booked. The closest sports hall is ‘de Sprong’, located in Westerkoog (number D in inquiry) but this hall is in poor condition. The korfball association Koog-Zaandijk (number 25) told me in the interview that they have to place buckets in several places during heavy rainfall.

Shops
Extra sport shops will support the sport facilities.

Fitness
Another thing that stands out from the inquiry, is that almost all of the fitness facilities would like to expand if they had the space (and money) for it. Also, the swimming pool on the site has a rehabilitation pool which is used daily. Rehabilitation is also a subject closely related to sports and often together with fitness. I would like to expand this function.

Children's daycare
Like stated in the problem statement, most of the incoming new inhabitants are young starting families, which means young children. One of the things parents have to take care of before going off to work, is dropping their children of at the children's daycare. By having a children’s daycare near the station, the commuters are more inclined to use the public transport instead of taking their own transport.

Cultural center
In the current situation, there are a few port cabins scattered around the sport fields. These port cabins are run down, but still used by different users; (fanfare)bands, singers, theater groups, homing pigeons club, etc. After my restructuring of the sport fields, these users need a new accommodation.

The definition of a cultural center is: ‘an organization, building of complex that promotes culture and art. A cultural center is an area/space where art-, music-, and cultural activities/manifestations may occur’ 18.

A cultural center will enrich a neighborhood with a new place of meeting and interaction. In the cultural center there will also be spaces which can be used for workshops and exposition spaces.

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18 www.dictionary.reference.com
5.3 The design

The station area now is an important node for the villages of Koog aan de Zaan and Zaandijk.

• The barrier between east and west is solved.
• The crossroad of the railroad track and the road is solved.
• An extra cross-connection between east and west is introduced on the ground level (Stationsstraat)
• The area (around the sports park) becomes very suitable for densification.
• The location becomes ideal for commuters.

5.3.1 The design as a whole

The infrastructure studies in combination with the densification and the railroad station helped me to make a decision on what to do with the station area. The best solution that I found with the traffic study is to raise the station and place the parking underground. Now that the station is raised one level, the barrier is dissolved and the space underneath the track can be used.

I used Andrea Palladio’s Barbaro villa as a precedence for several thing. The main connection between a Roman villa and its surrounding is made with the ‘heart’. This connection is usually made simple by a path; in my case being the Stationsstraat, continuing through the park. Hereby I enlarge the presence of the complex as it can be observed from a distance. The empty sport fields in the park also contribute to this. By placing the main axis of the park in the extension of the Stationsstraat, the station can be seen as the connecting factor between the park and the village. The main elevation points of the raised platform are also situated along the main axis, making the circulation and connectivity of the station immediately clear.
Barbaro Villa, by Andrea Palladio

There are two existing cross connection between the East- and the West side. The Guisweg still remains the same as it is now. This connection is mainly meant for fast traffic (cars), but is also used for slow traffic (pedestrians as well as bicycles). The other connection is the Stationsstraat, which I improved. I connected the Stationsstraat with the Guisweg to improve the connectivity of the old village Koog aan de Zaan for cars. The Stationsstraat continues after the station into the park, but this is only meant for slow traffic (pedestrians and bicycles).

Another important architectural tools Palladio uses is the colonnade. The design is made up out of different volumes. The colonnade consists of columns of the classical orders. My colonnade defines the border of the design and forms the main circulation and entrances. On the east-side the colonnade runs parallel to the platform of the station. On the west-side the colonnade runs parallel to the sports park adjacent to is.
Finally, 4 towers are introduced. Two of them are positioned along the outer edges of the track. The other two are positioned in between, creating 5 different courtyards. All of the towers are align with the surroundings. Because the building can be observed from a great distance, the relating of the closed facades vs the openness of the colonnade is clearly visible.

All the courtyards and entrances of the volumes are situated along the colonnade, emphasizing the importance of it in my design. At the end of the colonnade the circulation route solves into a staircase leading to the train platform.
The courtyards

In total there are five courtyards. Two of them are the same.

1: This courtyard is the most important and will function as a public square. The extending Stationsstraat passes through this courtyard. There is a quick access to the parking underground, to the station platforms. Some public functions are situated along it, such as a kiosk and a restaurant/cafè. This square can be used for any activity/manifestation from for instance the municipality.

2: These courtyards have two bounding facades. The dwellings are accessible from these courtyards. These two courtyard have a garden character with grass, flowerbeds, trees and benches along the water. The plint of the towers (2 layers) are public. There are cultural functions such as a cooking class and a theater adjacent to these courtyards, as well as a restaurant.

3: This courtyard has only two bounding facades. One of them is a closed façade of a bicycle storage. The other façade is that of a children’s daycare. This is why this courtyard is an ideal outside play area for the children.

4: This courtyard has three bounding facades. The long façade is that of the fitness center, the other two façades are that of a physiotherapist and a sports shop. This is why this courtyard is a ‘sportive courtyard’. With this I mean the space can be used for aerobics/spinning/yoga when it is nice weather. Apart from this there are two table tennis tables and two giant chess boards.
5.3.3 The facades

Throughout the entire design a ‘game has been played’ between open and closed facades. Because the building can be observed from a great distance, the relating of the closed facades vs the openness of the colonnade is clearly visible. This means that most of the facades will have a closed character, but not all of them.

In the diagram above the red lines show the facades that will have a closed character. The facades facing the courtyards will have an open character.
To enhance the closed character of the facades, they are made of horizontal concrete elements (polished). The glass elements of the facades facing the courtyards are vertical.

The colonnade and the roof of the station platforms is constructed in laminated wood, miranti. To enhance the relation between the station and the other volumes, the window frames and the blinds of the dwellings are also constructed in miranti.

Underneath the railroad tracks are the shops, the secure bicycle storage and the fitness center. The shops are orientated towards the provincial road, activating this side.
6 Discussion

6.1 Reflection

The theme of the studio is Urban Regeneration; dealing with densification, improving the public transport and dealing with industrial heritage. The studio focuses on the Zaanlijn, which currently functions as a barrier within the region.

Dealing with densification is a topic that can be applied in most of the Netherlands, especially in rural areas comparable with the Zaanstreek. Improving the public transport and the barrier it creates are generic that can be applied in most of the cities all over the world; a railroad track usually works as a barrier dividing a city into two parts. When the railroad track is raised, this physical barrier is dissolved. As a consequence a lot of space (under the railroad) is given back to the village.

In a design process it is very important to be aware of the topics you are dealing with. By doing so, you can carefully study material and theory that provides relevant information and helps you with the design.

What I see as a positive aspect of the studio is that I have learned to formulate my own kind of design. Normally when I started a new project, the program and the location for a design are given. I found it very difficult to formulate a project out of nothing in the beginning of the design studio. My urban intervention is very big. Because of the size, I didn’t know where to start. But an extensive urban analysis on the whole Zaanstreek area provided the necessary information to come up with a proposal. The urban analysis took up a lot of time, while this is not visible in the project anymore. I see this as a negative aspect.

Building Typology, the framework in which the studio Hybrid Building is operating, gave me the tools to come up with an urban/architectonical design. I searched for a typology that fits the location and the themes of the studio that I wanted to work with. For the park itself, I found the answer in the typology of a French barok garden, thereby using the station and the sports hall to mark the beginning and the end of the park. By placing the main axis of the park in the extension of the Stationsstraat, the station becomes the connecting factor between the park and the village.

For the station and the facilities around it, I found the answer by looking at a Roman villa designed by Andrea Palladio (villa Barbado). Especially the colonnade is an important aspect within my design. It defines the boarder of my plot and creates the circulation/access points. The main connection between a Roman villa and its surrounding is made with the ‘heart’, in my case the heart of my complex. This connection is usually made simple by a path; in my case being the Stationsstraat, continuing through the park. Hereby I enlarge the presence of the complex as it can be observed from a distance. The empty sport fields in the park also contribute to this.

From there on I developed my design with different tools: by looking at reference projects and ‘borrowed’ solutions from them to improve my own design. I did this by making sketches, in plans and sections. What also helped me was making physical
models and 3D models. When it comes down to making 3D models on the computer, I’m not very handy with the programs, which has the consequence that it takes up more time than expected. I believe that a dynamic design process can work quite successful, because you constantly change your perspective on the design. I have tried to keep a dynamic design process, by often changing the tools of design. The thing that I could improve is knowing when to use what tool of design. This can result in a more efficient design process. I sometimes made the mistake by testing a new finding on just a section of the design. Sometimes a new idea seemed to work in that particular section, but when I implemented it in the whole design later, I ran into problems.

Unfortunately, I didn’t have quite a linear design process. My initial plan at the P1 presentation was not well thought out. After my P1 presentation I started from scratch again. The weeks between the P1 and the P2 were very busy because I had to make up for some time. Also, for a fairly long period I only worked with sketches, even on a big scale. I stayed on the scale of 1:500 for too long. This made it difficult for me to get a grip on the design. Once I forced myself to zoom in on the project, thereby getting a better idea of the scale of the design, I was able to regain the grip and take steps forward.

One thing that has always been a problem in all of my design processes is that when I find an idea of concept that works, I tend to cling on to it too much. If I then come up with new ideas and they clash in any way with the former idea, I tend to stick to the first idea instead of combining them when necessary.

My design process/progress should have been faster. But apart from my own glitches, I think that the size of the project should be taken under consideration. It is an urban plan as well as an architectural design. In this studio we had to deal with complex topics.

The teachers helped me to understand what the studio is about and helped me to maintain the right direction. My final design gives an answer to all the themes of the graduation studio; densifying the station area, improving the station area, breaking the barrier between the East- and Westside.

Two other aspects also slowed down my design process. One being the fact that I still had to work part-time (one or two days in the week) in order to generate enough income. The other aspect is that my free OV was expired. This meant that it roughly cost me 10 euros a day to go to the faculty and back. Because of this, I hardly went to the faculty when I did not have any assistance from my teachers. The times that I did go to the faculty, I talked to the other student about their project and about mine. When you do this, you get new insights on your design, thereby improving the design process. When I got stuck on a design issue, I should have gone to the faculty to talk to my fellow students instead of mulling at home.
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