

ARCHITECTURAL HISTORY THESIS

# EMOTION IS TEMPORARY, URBANISM FOREVER?

**TU**Delft  
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# 13 Mei 2000

## Enschede huilt

Een buurt, die wel veel zorgen had,  
maar die ook vol verhalen zat,  
vol humor en gezelligheid,  
die buurt zijn we voor eeuwig kwijt.

Daar waar het vol van kinderen was,  
verschillend van geloof en ras,  
maar in hun spel gelijkgezind loopt  
nu geen enkel kind.

In de oorlog stond de stad in brand  
op Pathmos, Zwik en Hoogeland:  
meer dan een halve eeuw nadien  
kun je daarvan nog sporen zien.

Nu is, in de heerlijke maand mei,  
bij vogelzang, zo vrij en blij,  
de stad opnieuw iets aangedaan  
dat nooit en nooit voorbij zal gaan.

Arm Enschede, verberg je in  
de armen van je koningin  
en huil, want daar is reden voor  
en huil dan maar aan één stuk door.

Willem Wilmink  
17 mei 2000

## Enschede cries

A neighbourhood that had many worries  
but which was also full of stories,  
full of humour and sociability,  
we have lost that neighbourhood forever.

Where it was full of children,  
of different faiths and races,  
but like-minded in their play  
now not a single child.

In the Second World War the city was on fire  
on Pathmos, Zwik and Hoogeland:  
more than half a century later  
you can still see traces of it.

Now, in the glorious month of May,  
with birdsong, so free and happy,  
something has been done to the city again  
that will never, ever pass.

Poor Enschede, hide in  
the arms of your queen  
and cry, for there is reason to do so  
and cry all the way through.

Willem Wilmink  
May 17, 2000



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# 1 INTRODUCTION

The Netherlands is known for its flat and man-made landscape. As it is a small but densely populated country, our ancestors had to find a way to efficiently design the urban environment.

From the beginning of the 20th century, the Netherlands became a country full of rules, zoning plans and structural visions. A structural vision was also written for the Roombeek district in Enschede, the Netherlands. In 1998 Urban planner Riek Bakker presented a spatial plan for the old textile industry district called Groot Roombeek. It showed that 1100 houses would be built but the textile past would remain visible. She promised that it wouldn't be another Vinex district like many in the Netherlands at that time (Reformatorisch Dagblad, 1998)(VROM, 1998).

However, no one could imagine what happened a few years later. A firework company in the middle of the district exploded and hundreds of houses turned into ruins. The typical way of planning wasn't possible anymore after such a disaster. The catastrophic explosion occurred on a sunny spring day in 2000. At the depot of the company, S.E. Fireworks tons of stored fireworks exploded. The *vuurwerkamp* [firework disaster] killed 23 people and nearly 1,000 were injured. A total of 42 hectares were completely destroyed, and 650 homes had to be demolished. A study conducted by Grievink et al. (2007) showed that the residents 18 months after the firework disaster had two to three times more health problems (e.g. depression, anxiety, sleeping difficulties) than the respondents in the control group.

After the disaster, the original plan by Bakker had to be adjusted because the reconstruction area was bigger and monumental buildings that were to be kept had been destroyed. About a year after the explosion, the strategy for the new spatial plan by Pi de Bruijn was presented. The spatial plan paid likewise Bakker, attention to the historical aspects of the district, for example by creating a new street at the site of the old railway line (Architectuurcentrum Twente, 2004).

One of the basic principles underlying the process of reconstructing the district was that the opinions and preferences of the people affected should play a major role in the reconstruction. Therefore a participation plan was started, to make sure that residents, entrepreneurs, etc., could participate in the plans from the beginning (Architectuurcentrum Twente, 2004). The process of designing a new spatial plan after a traumatic disaster sparked my interest because the relationship between different stakeholders is more sensitive. This study aims to determine to what extent collective trauma played a role in the development of the new urban plan of Roodbreek and how this affected the district in the last 20 years. What were the consequences of these decisions for the residents of Roodbreek?

To answer the research question, theoretical research is conducted about the relation between mental health, spatial planning and post-traumatic urbanism. Furthermore, the historical context of Roodbreek and Enschede is analysed. In the last chapter, the spatial plans of Roodbreek and the policy decisions are researched. A comparison between policy and practice is an important aspect of this study to construct a narrative about what happened after the disaster.

The municipality was less involved as usual because society held them responsible for its acceptance of the storage of large quantities of fireworks in a neighbourhood. It was a strategic choice to organise the reconstruction autonomously, separate from municipal services. I expect that the situation is also used to upgrade the neighbourhood, where there is not always space for the original residents. This could lead to another setback for the people that lived in Roodbreek. It is also expected that the spatial plan was based on both analytical research and the emotional aspect of the situation (value for residents and trauma). This emotional aspect is for example reflected in a monument that was created after the disaster and the historical aspects that have been restored to the plan.

## 2 MENTAL HEALTH AND URBANISM

If a city is (partly) destroyed by an explosion, natural disaster, terrorist attack or any other disaster, residents experience a traumatic event. Victims of these events may develop mental health problems, which are manifested in several symptoms called Post-Traumatic Stress Disorder (PTSD) (Lahoud, Rice & Burke, 2010). The firework disaster in Enschede was a traumatic event that caused collective trauma and led to mental health problems for the residents of Roombeek (Grievink et al., 2007). Besides those who experienced it first-hand, others related like family members or fellow citizens of Enschede were affected as well (De Bruijn & Kuenzli, 2001).

Lahoud et al. (2010) described the meaning of trauma alongside urbanism. They said the following to explain the emergence of trauma. In our daily lives, we go through experiences that cause us to feel certain emotions. We take these experiences with us into the rest of our lives and use them to make assumptions for the future. We create our own psychic landscape. But “the sting in history’s tail is the profound unreliability of the past as a test for the future. The traumatic moment is unheralded and unprecedented” (p. 17).

Urban trauma not only damages the physical environment but also the social and cultural networks of a city. Trying to restore and recover a city like it was, is the first response, but it is much smarter to look at all the possibilities that became available to make the city a resilient space (Lahoud et al., 2010).

To find out the correlation between urban planning and PTSD Helou (2020) researched the city of Beirut in Lebanon. The Lebanese civil war destroyed the city and as a result, many inhabitants cope with PTSD. For this research, 40 people that were living in Beirut and experienced the war were interviewed. They defined themselves in the way they see their urban environment. The urban structures needed security and motivation, which can be achieved in several ways.

Besides having effective trauma therapy, the creation of dynamic spaces is as important. These spaces facilitate mobility and motivate people to explore the outside world, which helps mental restoration. Next to that, the creation of safe spaces and

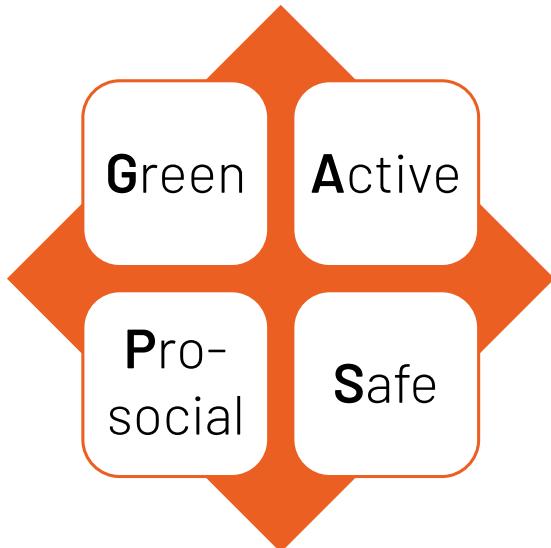
understanding of the rights and limitations of freedom is helpful for people suffering from PTSD after a war. Creating a pedestrian-friendly city with safe sidewalks surrounded by gardens and green spaces increases human-human and human-nature contact. This leads to a more positive, generous and friendlier mindset of the residents. In addition, small shops along the sidewalks are effective because it leads to more interaction and helps to prevent loneliness. Orienting the windows of buildings towards a green landscape motivates people to walk outside which leads to unexpected and spontaneous conversations. Last but not least, the more people are attached to a place, the more its identity is defined. Therefore, it is important to enhance familiarity which helps people to feel more secure (Helou, 2020).

The subject of mental health is not only relevant to cities that experienced traumatic events. Good mental health of residents leads to improved educational achievements and enhanced economic potential, decreased amount of suicides and reduced healthcare costs. Besides that, the amount of people living in cities is increasing and by 2050 at least two-thirds of the world population will live in cities. City dwellers will have an increased risk of mental health problems, for example, a 40 % increased risk of depression compared to rural areas (McCay, Bremer, Endale, Jannati & Yi, 2017).

McCay et al. (2017) showed how urban design can improve the public and personal mental health of city dwellers. These opportunities help to prevent mental illness as well as support people who have mental health issues. A thematic framework called GAPS (figure 2.1) is introduced to summarise the key opportunity themes for good mental health: Green places, Active places, Prosocial places, and Safe places.

Accessible green spaces improve the mental health and well-being of residents. Natural environments in neighbourhoods and people's everyday routines appear to aid in the improvement and maintenance of mental health. Active spaces, which can be combined with green spaces, stimulate residents to integrate physical activity into their daily life. Regular activity improves mood, wellbeing, and many mental health outcomes. Prosocial spaces should facilitate interactions among people. This should

Figure 2.1: GAPS framework  
(McCay et al., 2017)



also be accessible for potentially vulnerable groups like refugees, migrants, and young and older people. Lastly, urban designers should create a safe space. For example by placing appropriate street lighting, and distinct landmarks for way-finding and safe traffic situations (McCay et al., 2017).

The plans of Roombeek were developed for residents with an increased amount of mental health issues. Therefore it was important to create an environment that would contribute to reducing health issues. Chapter 5.4 describes how the findings above are (un)consciously integrated into the plans.



# 3 HISTORICAL CONTEXT ROOMBEEK

## 3.1 Textile industry in Twente

In the thirteenth century, Enschede consisted of a church surrounded by farms and wooden houses. Even though it was encircled by a canal, it was still vulnerable to outside threats. In 1319, Enschede received city rights and was thus legally separated from the surrounding land. The city was now able to improve its defences on the city's border. About two centuries later, the defences were no longer allowed as the city became part of the *gewest* (usually translated as region) Overijssel. In 1560 Jacob van Deventer drew a city map of Enschede (figure 3.1). It is clear that the church and the canal were the most important (Canon van Nederland, 2022).

Figure 3.1: Enschede in 1560  
(van Deventer, 2008)



Until the industrial revolution, Enschede was a small insignificant city. That changed from the mid-19th century when the textile industry developed in Twente. This development was a direct consequence of the Belgian Revolution in 1830. Before the revolution, most textile companies of the lowlands were in Flanders. The Netherlands had through its overseas colonies like the Dutch East Indies, access to a continuous supply of raw cotton and there was a stable market. When Flanders separated from the Netherlands, it was hard for the

Flemish textile manufacturers to continue their companies since they no longer could benefit from these advantages (Van Boom & Mommaas, 2009).

The advantages of the overseas colonies made it financially appealing for the Flemish textile manufacturers to move to the Netherlands but also Willem I wanted to keep the industry in the country. Willem I decided to develop the Twente region as the new textile industry centre of the Netherlands. He chose this particular region because of the already existing tradition of domestic industry (figure 3.2) and cheap labour. In farming regions, there were traditionally home weavers and farming families with many children who could work in the factory. Additionally, the living environment was better than in the cities in the Holland region (Van Boom & Mommaas, 2009) (de Ligt & Rijkeboer, 2003).

In 1833 the Flemish entrepreneur Charles de Maere moved to Enschede and opened a weaving mill with 30 looms at Schutterveld. Willem I supported this development out of the Netherlands Trading Society. In 1856 de Maere moved back to Belgium and sold his weaving mill to the Van Heek family. In 1833, this family already established a corporation called "De Enschedese Katoenspinnerij" [The cotton mill of Enschede] and they would become one of the most influential families of Enschede. They built the first modern-industrial factory of Twente, known as the "*n Grooten Stoom*" [the big steam]. In 1846 there were two steam spinning mills in Enschede and there were many more small companies in the surrounding region (Canon van Nederland, 2022).

The city had often experienced destruction. It experienced multiple city fires and it was bombed several times during the 2nd World War. The last city fire of 1862 (figure 3.3) destroyed everything within the canal. Completely inadequate fire extinguishing equipment and a strong wind caused the fire to spread very quickly over the entire city. Most of the textile factories were destroyed by the fire. After the fire, the factories could be rebuilt in a more modern way. In addition, the arrival of the railway in 1866 made the supply of coal easier and steam power cheaper. In 1885 another railway was

## WILLEM I

Willem I (1772 - 1843) was the first king of the Netherlands from the Oranje-Nassau family.



Figure 3.2: Domestic industry in Twente. Painting of L. J. Bruna in 1853  
(Oudheidkamer Twente, 2022).



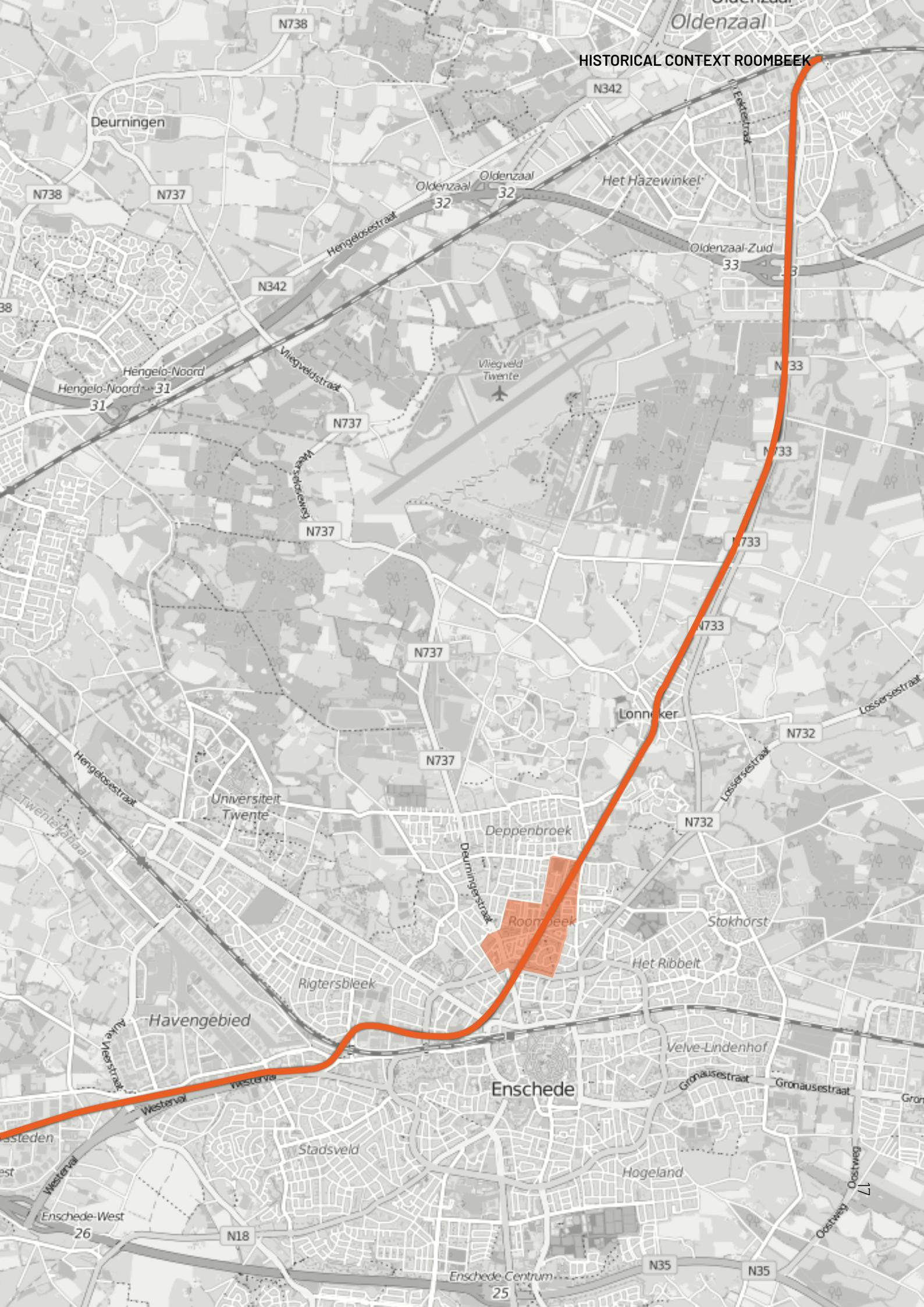
Figure 3.3: Stadsbrand Enschede 1862 (Broos, 1862)

opened called "Spoorlijn Boekelo - Oldenzaal EO" (figure 3.4). This railway was important for the supply of coal from the Ruhrgebiet, as well for passenger transport. The railway was demolished but at the same site is now a bus line through the Roombeek district (Canon van Nederland, 2022).

Figure 3.4: Spoorlijn [railway] Boekelo - Oldenzaal EO  
(Wikipedia, 2021)

Light orange = Roombeek district

## HISTORICAL CONTEXT ROOMBEEK



## 3.2 Working-class district Roombeek

The textile industry is an important part of the history of Twente, Enschede and Roombeek. It was a city with several (textile) factories, many small working-class houses and railway lines. As a preliminary remark, it is important to note that Roombeek as a district did not exist before the firework disaster. Roombeek received, for practical reasons, its name from the media after the disaster. Although it is not historically correct to use the name Roombeek to describe the situation before 2000, it will still be used because it is clear what area is meant with it (De Ligt & Rijkeboer, 2003).

As the Boekelo-Oldenzaal railway was finished, the Roombeek area became very popular among textile manufacturers and other companies. They had the opportunity to connect their factory to the railway which made the supply of coal easier. This resulted in the fact that at the beginning of the 20th century more than 15 companies settled in Roombeek and were connected to the railway (figure 3.5). At the same time, Roombeek was still mainly agricultural land with linear settlements. But quickly after the first factories had settled down, small neighbourhoods were built for the workers of the factories. These were built in between the linear settlements along with the already existing street pattern (De Ligt & Rijkeboer, 2003).



Figure 3.5: Factories in Enschede painted by H. Heijenbroek in 1921 (Janssen, 2022).

The neighbourhoods in Roombeek were called Roomveldje (figure 3.6), de Kroedhöfte (figure 3.7), het Talmapplein and de Schurinksweide. These were also the names people used to speak about the Roombeek district before 2000. There was also not a central community centre and residents could coincidentally encounter each other at the Chinese restaurant Tung-Ho or snack bar De Roombeek. The mid-20th-century Roombeek is described by its former residents as a pleasant working-class area (De Lught & Rijkeboer, 2003).

In Roombeek, four textile factories were established: Cotton mill de Bamshoeve (figure 3.8) of the family Blijdenstein, the weaving and dyeing mill and Roombeek spinning mill (figure 3.9) of the Menko family, Import & Export Company of the Rozendaal family and finally the textile company Tetem (figure 3.10) (see the map, figure 3.11). In the west of Roombeek, the Enschedesche Stoombierbrouwerij [Enschede steam beer brewery] was established (figure 3.12), this merged together with De Klok beer brewery from Groenlo in 1922. The beer brewery is now known as Grolsch beer brewery. The companies in Roombeek provided approximately 2000 jobs. Around 1960 the textile industry disappeared from Roombeek. The industry moved to low-wage countries and Dutch workers had to find new work that suited the "developed" Netherlands (De Lught & Rijkeboer, 2003).



Figure 3.6: Aerial photo of Roomveldje in the first half of the twentieth century. On the right textile company Rozendaal (De Lught & Rijkeboer, 2003).

Figure 3.7: Demolition of the houses of Kroedhöfte in the early 70s (De Ligt & Rijkeboer, 2003).



Figure 3.8: Cotton mill de Bamshoeve in 1946 (Janssen, 2022). The Oldenzaal-Boekelo railway is in the middle of the photo.



Figure 3.9: The gate of Spinnerij [spinning mill] Roombeek (De Ligt & Rijkeboer, 2003).



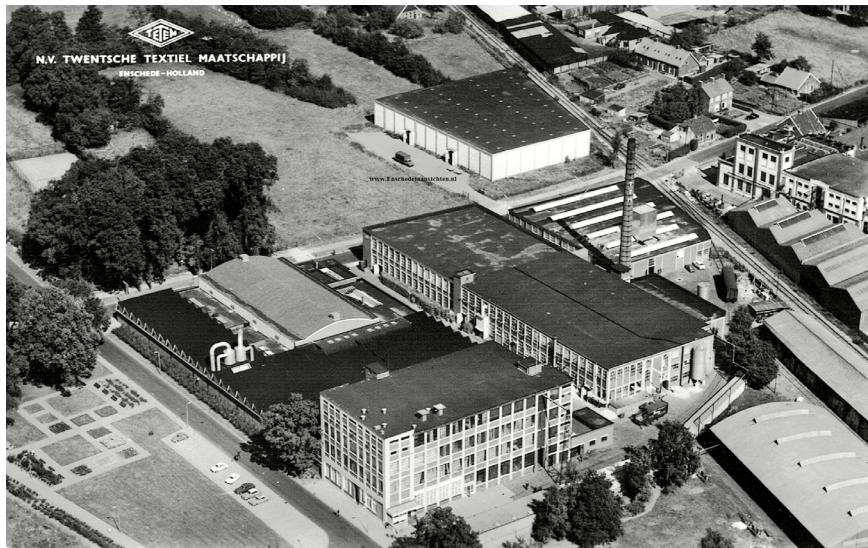


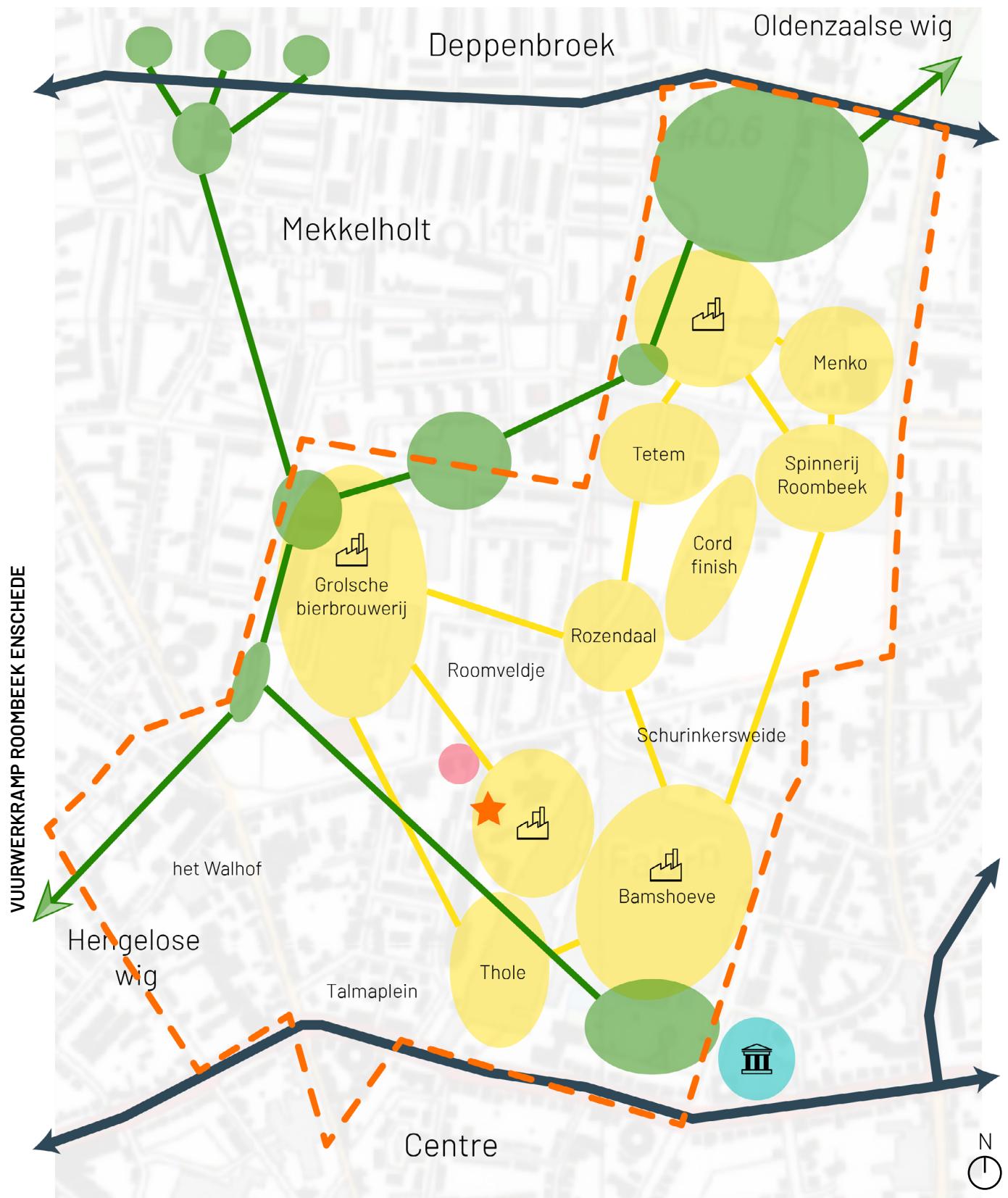
Figure 3.10: Textile factory Tatem and on the right the railway, photo from 1965 (Janssen, 2022).



Figure 3.12: The Enschedesche Bierbrouwerij was built by the Stroink family in 1895 after they bought the villa and the estate of the De Meare family (Janssen, 2022).



Figure 3.13: An expression of frustration by the residents because the demolition of the factories took years. This banner says: "We are annoyed by this antisocial slum!" (De Ligt & Rijkeboer, 2003).



Factories

Greenery

Main roads

"Border" of Roombeek

Rijksmuseum Twenthe

Chinese restaurant Tung-Ho

S.E. Fireworks

In one of the old factories at the Tollensstraat, the company S.E. Fireworks was founded in 1977. It was established at an industrial estate, but surrounded by the Roombeek district. Initially, it produced fireworks but later it focussed on firework shows and trading fireworks. The municipality of Enschede provided permission for the temporary storage of almost 160,000 kg of fireworks until the company wanted to move to another location in 2002. The owners of the company did store even more fireworks than allowed (Commissie Onderzoek Vuurwerkamp, 2001). Many residents did not know that there was a firework company in their neighbourhood. It is remarkable that the municipality allowed so many fireworks in a shed surrounded by houses, would this also be allowed in a rich district? This question was asked right after the disaster (Wolters, 2000).

After more than 20 years, the fireworks disaster is still regularly in the news (NOS, 2020). After all these years, it is still unknown who is guilty of the disaster and there are still lawsuits (Jansen, 2022). These are mainly between the owners of S.E. fireworks and the municipality. After years of investigation, there is still no clarity about this, and I suspect that there never will be. In March 2022, it was announced that a producer wanted to make a series about the disaster (van Norde, 2022).

After the decline of the flourishing textile industry, the district quickly became impoverished. The factories were poorly maintained and there were often fires. To the great frustration of the residents (figure 3.13). They would like to see the buildings demolished as soon as possible. Unfortunately, this does not seem to be at the top of the municipality's list of priorities, and the frustrations increase further. This results in an outdated district full of factories that turned into ruins. A district with high unemployment, few facilities and outdated houses (De Lught & Rijkeboer, 2003).

Figure 3.11: This map shows Roombeek as it was in the mid-1990s. When the disaster happened, the textile factories of Roombeek and Menko were already demolished (De Lught & Rijkeboer, 2003) Map by Laura Hogenkamp based on Topotijdreis, 2022.

### 3.3 Urban plan Groot Roombeek

At the end of the last century, Enschede-North was faced with several problems. After the decline of the textile industry, the district suffered from hidden poverty, it had the highest percentage of unemployed in Enschede and over 80% of its houses were social housing. There were also only a few facilities in the district (VROM, 1998).

In the same decade, in 1991, the Dutch government published the "Vierde Nota Ruimtelijke Ordening Extra" [Fourth Memorandum on Spatial Planning Extra]. The main goal of the policy was combining living, working and facilities at the borders of cities to release the pressure on the city centres. In the memorandum, locations were described that could be used to build new green and family-friendly neighbourhoods, now called Vinex districts. From 1995 till 2005 more than 418 thousand dwellings were built in these areas (Centraal Bureau voor de Statistiek, 2016).

Residents with medium and high incomes were underrepresented in the municipality of Enschede in the 1990s. It was desirable to create a place to attract and keep these groups in the city. By creating an attractive residential climate in Groot-Roombeek, two goals would be achieved: these groups will stay or move to Enschede and Enschede-Noord will be upgraded (VROM, 1998). Therefore, a new Vinex district was very attractive for Enschede.

In 1996, the office of urban planner Riek Bakker (BVR) was asked to create a spatial vision for Groot Roombeek within six weeks. The vision was elaborated into an urban design in 1997 (figure 3.14). Important features of the plan were that Groot Roombeek must remain recognisable as an urban district, but must also fit in well with the surrounding urban fabric. In addition, part of the industrial heritage was preserved to be used for redevelopment (VROM, 1998). For example, the Bamshoeve was chosen to be repurposed because of its great architectural value. There were also plans to demolish other old factories such as the Grolsch Bierbrouwerij, Thole and

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#### RIEK BAKKER

Riek Bakker is a well-known urban planner who has carried out various projects at a national and international level. She is best known for the Kop van Zuid project in Rotterdam and the Leidsche Rijn project in Utrecht. Bakker had a lot of experience designing Vinex neighbourhoods, which is probably why she was asked to design a neighbourhood in Enschede to give the city a boost.



### GROOT ROOMBEEK

Figure 3.14: Urban plan of Riek Bakker in 1997 (VROM, 1998)

Orange lines: Show the contours of the plan of Pi de Bruijn in 2001. The circle shows the location of S.E. Fireworks.

S.E. Fireworks, and in some cases to relocate them further away from the city (De Lugt & Rijkeboer, 2003).

Sustainability and the environment played an important role in the design of Bakker. A high-quality public transport line was to be built on the old railway line. The dwellings were to be constructed energy-efficiently. Additionally, the rainwater was to be prevented from draining away via the sewers. It was planned to build 1100 homes, 30% apartments and 70% houses in an attractive living environment. To achieve this, large public spaces were a significant aspect of the spatial plan (VROM, 1998).

Some of these original plans have been adopted in Pi de Bruijn's new plan for Roombeek. For example the various residential environments and the addition of facilities. Besides the preservation of historical heritage such as the railway line. A major difference with Bakker's plan is that in the new plan the residents have more influence on the design e.g. through the extensive freedom of design of their own homes. In 2001, during participation meetings, it became clear that Riek Bakker's monotonous design no longer met the needs of Roombeek's residents (Architectuurcentrum Twente, 2004).



# 4 THE FIREWORK DISASTER

## 4.1 What happened on 13 May 2000?

On a sunny afternoon in May 2000, a fire broke out on the site of the fireworks company S.E. Fireworks at the Tollenstraat in Enschede. At around 3 p.m., the first firefighters headed for Roombeek without knowing how dangerous the fire was. When the fireworks shot into the air, it became clear that it was probably worse than previously assumed. Half an hour later, two devastating explosions followed (Figure 4.1). The explosions were heard and felt in Twente for tens of kilometres (De Ligt & Bosman, 2000).



Figure 4.1: The smoke of the fire in Roombeek on 13 May 2000 (Decorte, 2020).

Due to chaos in the first days after the disaster, hundreds of people were missing. Thankfully, many of them were reunited with family and friends in the days that followed. Less than 24 hours after the disaster occurred, Queen Beatrix visited the disaster area with Prime Minister Wim Kok (figure 4.2). They were visibly moved by what they saw (De Ligt & Bosman, 2000).

Eventually, the fireworks disaster took the lives of 23 people including 4 firefighters. Around 950 people were injured and

the material damage was immense (Commissie Onderzoek Vuurwerkamp, 2001). After the explosion, a total of 42 hectares were completely destroyed, and 650 homes had to be demolished (figure 4.3 & 4.4) (Architectuurcentrum Twente, 2004). The following pages show photos taken right after the disaster and in the following days (figure 4.5, 4.6, 4.7, 4.8).



Figure 4.2: Queen Beatrix and Prime Minister Wim Kok in Roombeek (de Lugt & Bosman, 2000).



Figure 4.3: The ruins of houses in Roombeek (Berkhout, 2020).

The book *Roombeek, de verdwenen wijk: een levende herinnering* (De Ligt & Rijkeboer, 2003) describes from the perspective of the residents how they experienced Roombeek before the fireworks disaster. The explosion destroyed the district and also knocked away the hatstand for memories. Therefore, it is a great challenge to design a district where old residents can feel at home again.



Figure 4.4: Firefighters that tried to put out fires after the firework disaster. The neighbourhood looked like a war zone (Berkhout, 2020).



Figure 4.5: A family on the run, distraught with fear (de Ligt & Bosman, 2000).



Figure 4.6: Some people had some time to save their pets (de Lugt & Bosman, 2000).



Figure 4.7: Firefighter in the Boddenkampsingel (de Lugt & Bosman, 2000).



Figure 4.8: Protesting supporters of FC Twente because the KNVB [Royal Dutch Football Association] did not cancel the soccer match the day after the disaster.

## 4.2 Mental health consequences

Three weeks after the firework explosion, a study was carried out by Grievink et al. (2007) to measure the health problems among residents, rescue workers and passers-by who had experienced the disaster. The research aimed to collect data to inform health care and policymakers. Elements in the blood and urine were also measured but no harmful levels related to the disaster were measured. Four neighbourhoods in Tilburg were chosen as the control group because the city had a similar population compared to Roombeek.

Three weeks after the disaster, the residents had more health problems than the control group. The results of three weeks after the disaster were compared to 18 months after the disaster. The mental health problems like anxiety, depression and physical limitations had reduced (table 4.1) but the residents of Roombeek had still two to three times more health problems than the respondents in the control group (table 4.2). 19% of the affected residents had symptoms of PTSD. Anxiety and severe sleeping problems were indicated as the most common symptoms (Grievink et al., 2007).

Health variables	3 weeks	18 months
Emotional role limitations	74.0	30.4 <sup>a</sup>
Physical role limitations	54.8	27.6 <sup>a</sup>
Severe sleeping problems	49.9	40.4 <sup>a</sup>
Anxiety symptoms	47.4	31.7 <sup>a</sup>
Depressive symptoms	51.2	35.2 <sup>a</sup>
Intrusion & avoidance	72.0	37.5 <sup>a</sup>

Table 4.1. Change in crude prevalence estimates between 3 weeks and 18 months after the disaster for the affected residents (n=891) (Grievink et al., 2007).

<sup>a</sup> P<0.0001 (McNemar test for paired data).

In the Roombeek, one-third of the inhabitants were first- and second-generation immigrants of which the majority were Turkish (Drogendijk et al., 2003). To make the questionnaires accessible to all affected residents, these were distributed in Turkish as well (Grievink et al., 2007). The study by Drogendijk et al. (2003) showed that Turkish respondents have significantly more mental health problems than the control group (affected "native" residents).

Health variables	Crude odds ratio	Adjusted odds ratio <sup>a</sup>
Emotional role limitations	2.19 (1.70-2.82)	2.12 (1.62-2.77)
Physical role limitations	1.66 (1.29-2.14)	1.54 (1.17-2.02)
Severe sleeping problems	2.20 (1.77-2.75)	2.19 (1.73-2.79)
Anxiety symptoms	2.95 (2.28-3.81)	3.14 (2.38-4.16)
Depressive symptoms	1.91 (1.52-2.39)	1.88 (1.47-2.39)

<sup>a</sup> Confounding factors: sex-age categories (four categories); educational level (four levels); immigrant (yes/no); employment status (full- or part-time vs. not employed); living alone; life events in past 12 months; chronic illness in past 12 months (% one or more).

Table 4.2. The associations (odds ratios and 95% confidence intervals between brackets) for affected residents (n=891) compared with the control group (n=700) for several health variables-crude and after adjustment for potential confounding factors<sup>a</sup> (Grievink et al, 2007).

# 5 SPATIAL PLAN ROOMBEEK

After the fireworks disaster had occurred, Riek Bakker's plan no longer met the desires of the Roombeek district. The to-be-preserved Bamshoeve was destroyed, and the plan area had become even larger (De Bruijn & Kuenzli, 2001). Besides practical matters, many residents suffered from health issues (Grievink et al., 2007). Their homes and businesses were destroyed, and their old lives were disrupted. This led to a new challenge in the reconstruction plan. According to the architects de Bruijn and Kuenzli, a good balance had to be found between designing a district as quickly as possible so that people could pick up their lives again and developing a sustainable plan that fits in with Enschede's future vision (De Bruijn & Kuenzli, 2001).

## 5.1 Plan development and participation

### PARTICULIER

### OPDRACHTGEVERSCHAP

Type of housing development in which the residents buy the plot and choose an architect. This results in a big influence on how their house looks. In the Netherlands, it is more usual that a real estate developer develops an entire neighbourhood. Which results in houses looking very similar.

After the fires after the explosion were put out, the municipality of Enschede took a, at first glance, remarkable decision. They decided that the district should be designed in close cooperation with the original and future residents. Nearly fifty per cent of the dwellings had to be developed by particulier opdrachtgeverschap [private commissioning] (figure 5.1). Applying this principle on such a big scale was unique in the Netherlands, according to Architectuurcentrum Twente (2004).

Even though it looked like a remarkable decision, it was also a strategic decision. The disaster damaged not only the physical environment but also the trust in the municipality among the inhabitants of Roombeek. The residents held the municipality partly guilty for what happened (Klok et al, 2004). Unlike many residents (Wolters, 2000), the municipality knew that there was a firework company in the middle of a residential district. Nevertheless, they allowed the company to store large quantities of fireworks. Moreover, the company did not follow all the rules closely either. To this day, the question of blame remains (NOS, 2020) (Commissie Onderzoek Vuurwerkraamp, 2001).



Figure 5.1: Sketch for particulier opdrachtgeverschap (Architectuurcentrum, 2004).

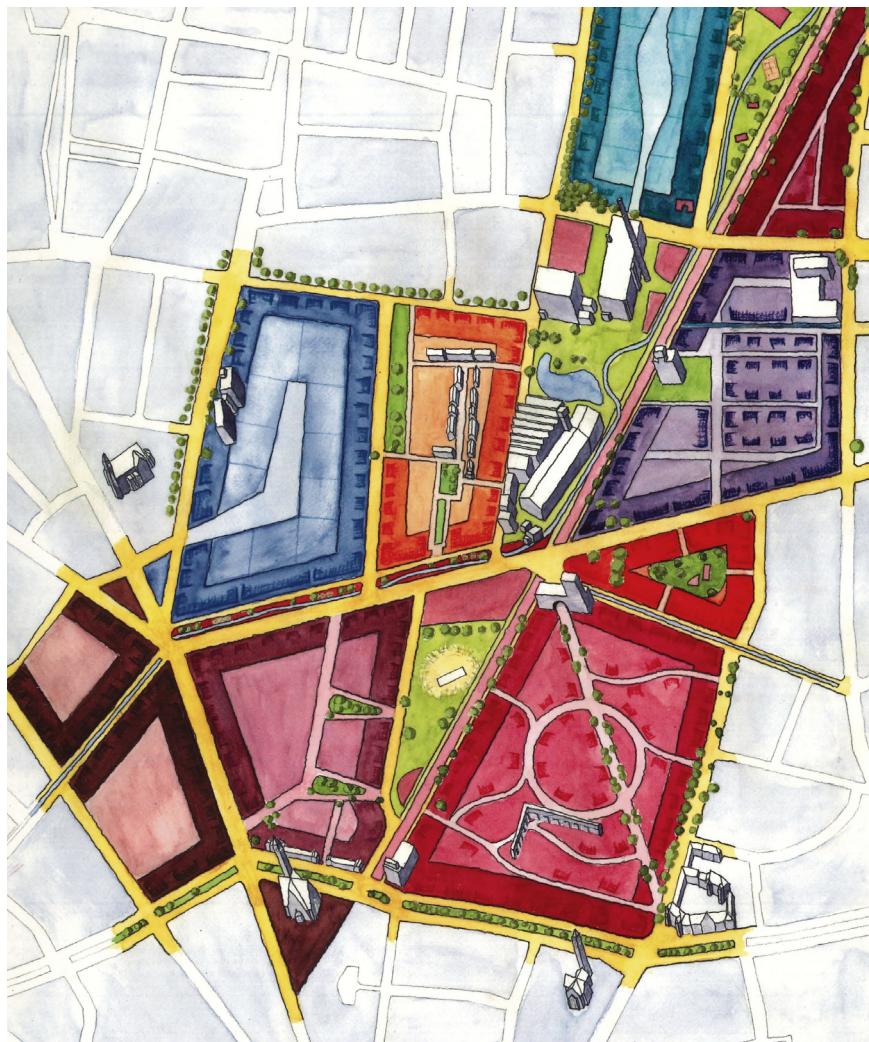


Figure 5.2: Concept spatial plan of Roombeek (De Bruijn & Kuenzli, 2001).

### PI DE BRUIJN

De Bruijn grew up in Losser, a village near Enschede. (Architectuurcentrum Twente, 2004). He studied architecture at the technical university of Delft and is still involved with his company de Architekten Cie.

### JOOST CANNEGIETER

Cannegieter ran an architectural firm in Enschede. In his opinion, the best therapy for victims was to be engaged in the reconstruction process of their houses and neighbourhood. He lived in a farmhouse close to Enschede until he, unfortunately, passed away in 2004 (Twentsche Courant, 2004).

### SINGEL

A *singel* is a canal that surrounds a city centre. A town was allowed to dig the canal after it received town privileges; the canal served as a part of the defence work. An old map of Enschede clearly shows the original canal (figure 3.1). The canal is gone but the road that encircles Enschede is still called *de singel*.

### TUINDORP

A Tuindorp is a city district that looks like a village with single-family homes and greenery. Often built near a factory to provide better housing for the working class.

It was desirable to choose an independent party that could organise the events regarding the reconstruction. Architectuurcentrum Twente was chosen to fulfil the role of the independent party and organised participation meetings during the design process. Additionally, they organised exhibitions, workshops, debates and lectures. The residents, entrepreneurs, architects and others involved had the opportunity to show their vision and give their opinion. The gatherings were not limited to discussions about spatial qualities like urban plans and architectural designs. Social aspects like philosophical or religious perspectives were seen as equally important (Architectuurcentrum Twente, 2004).

The first meeting took place on 12 April 2001 before the concept spatial plan was presented (figure 5.2) and 350 people participated including architects Pi de Bruijn and Joost Cannegieter. Besides their shared passion for architecture and urban development, they were both emotionally connected to the Twente Region (Architectuurcentrum Twente, 2004).

In the first meeting, Pi de Bruijn shared his first thoughts about the design brief and his approach. De Bruijn shared practical and cultural issues about the disaster area, followed by design decisions that would serve as a starting point for the spatial plan. From a practical point of view, two valuable urban structures created a dilemma, Tuindorp Roomveld (figure 3.6) and the buildings along *de singel*. Their preservation was valuable but costly. Another practical issue was the size of the disaster area, which was about 42 hectares. It would take a lot of time to design it while the architects would like to build it as soon as possible to help the people affected. Important cultural issues were how to deal with the industrial heritage, for instance, the Bamhoeve gallery and the Rozendaal complex (figure 5.3 & 5.4), and the identity of Enschede of today.

To conclude, Pi de Bruijn wanted to upgrade the whole area and make it more attractive to live in. He concluded that the plan of Riek Bakker was too similar to other Vinex neighbourhoods and did not fit the story of Roombeek anymore.

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### SPATIAL PLAN OF ROOMBEEK

Figure 5.3: Tuindorp Roomveld, buildings along de singel, Bamshoeve gallery, Rozendaal complex (De Bruijn & Kuenzli, 2001).

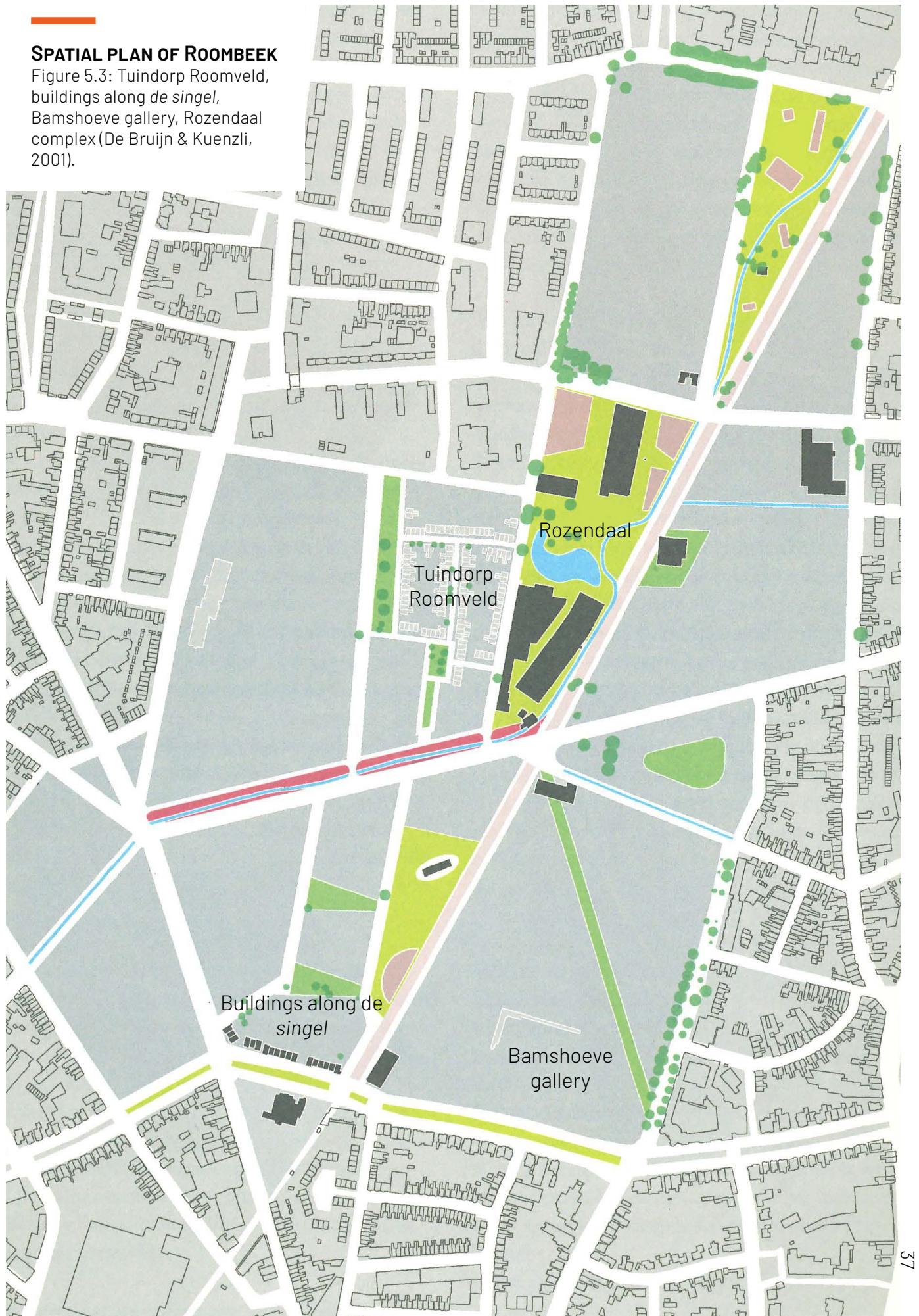




Figure 5.4: The Rozendaal complex is surrounded by water and playing children (Kars Advies & van der Wal, 2014).



## 5.2 Spatial plan Roombeek

After the first participation session, the Architekten Cie office directed by Pi de Bruijn developed the concept of urban structural vision [concept stedenbouwkundige structuurvisie] (figure 5.5). This vision was presented and discussed in the second meeting organised by Architectuurcentrum Twente (Architectuurcentrum Twente, 2004).

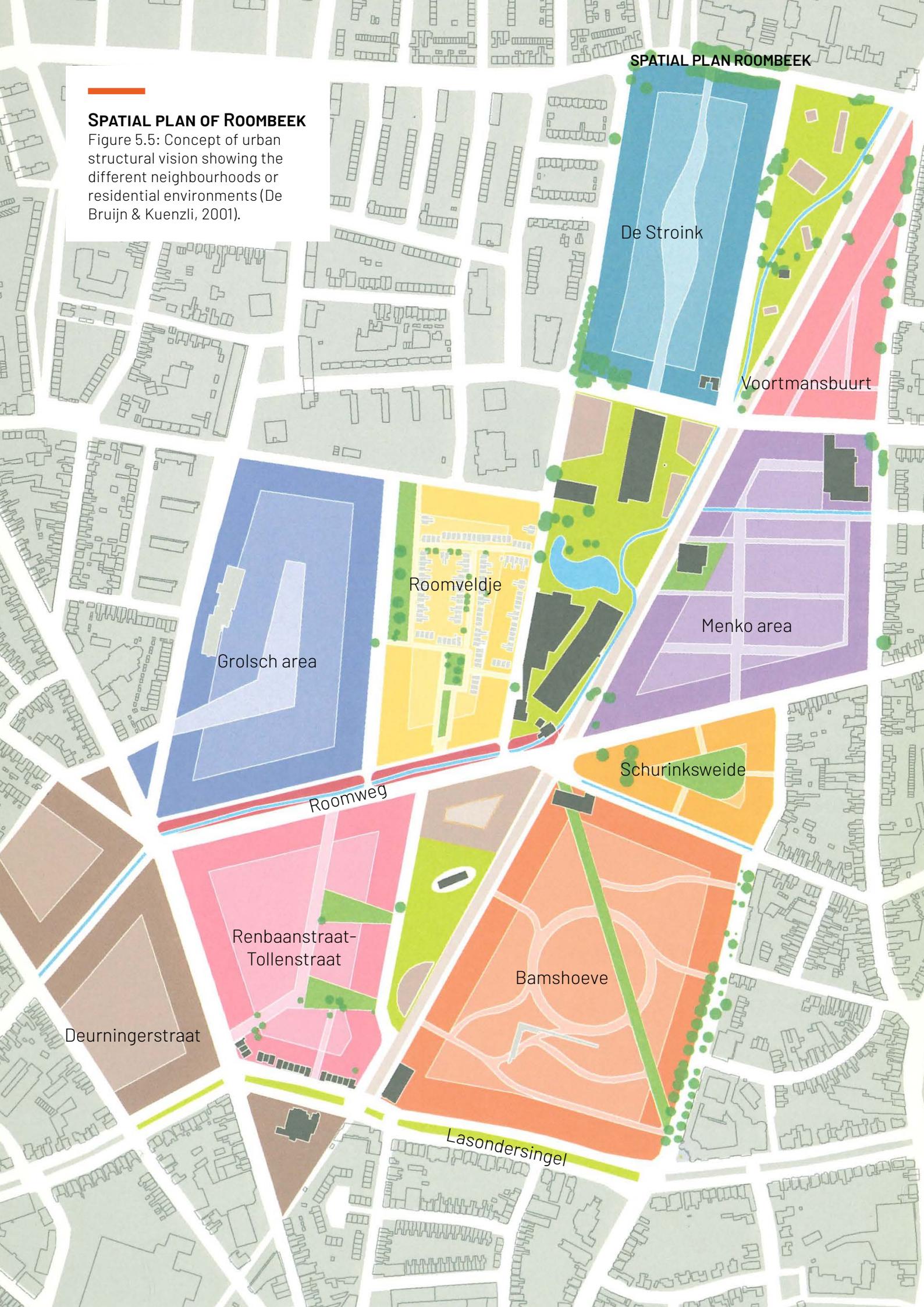
Two accompanying visions were written for the reconstruction: one for the city of Enschede as a whole and one for the Roombeek district. The spatial programme was based on these visions that later served as a foundation for the urban plan. The vision of Enschede was focused on 4 themes. Firstly, the impact of the fireworks disaster was not limited to the Roombeek district, all inhabitants of Enschede were affected in one way or another. Some had family or friends living there, others lost their jobs. Therefore, the reconstruction was seen as a city-wide task. Secondly, the reconstruction was not just simply stacking bricks, it was an integrated construction in which physical, social and economic aspects were well aligned. Thirdly, trust in the city had to be restored; Enschede had to be able to pick up the threads again. Last but not least, the reconstruction also offered opportunities for the future. It was an opportunity to create attractive residential environments and cultural facilities (De Bruijn & Kuenzli, 2001).

The vision for the Roombeek district consisted of 8 themes. The first theme was to make it attractive and possible for old residents to return to their neighbourhood or even to the location of their old home. If the new house was more expensive than the original one, the family was financially supported by the municipality. Additionally, a regulation was set up allowing tenants to return for a maximum rent of 750 guilders. For tenants in the Lasondersingel and Kroethöfte neighbourhoods, there was a rent guarantee based on the

## SPATIAL PLAN ROOMBEEK

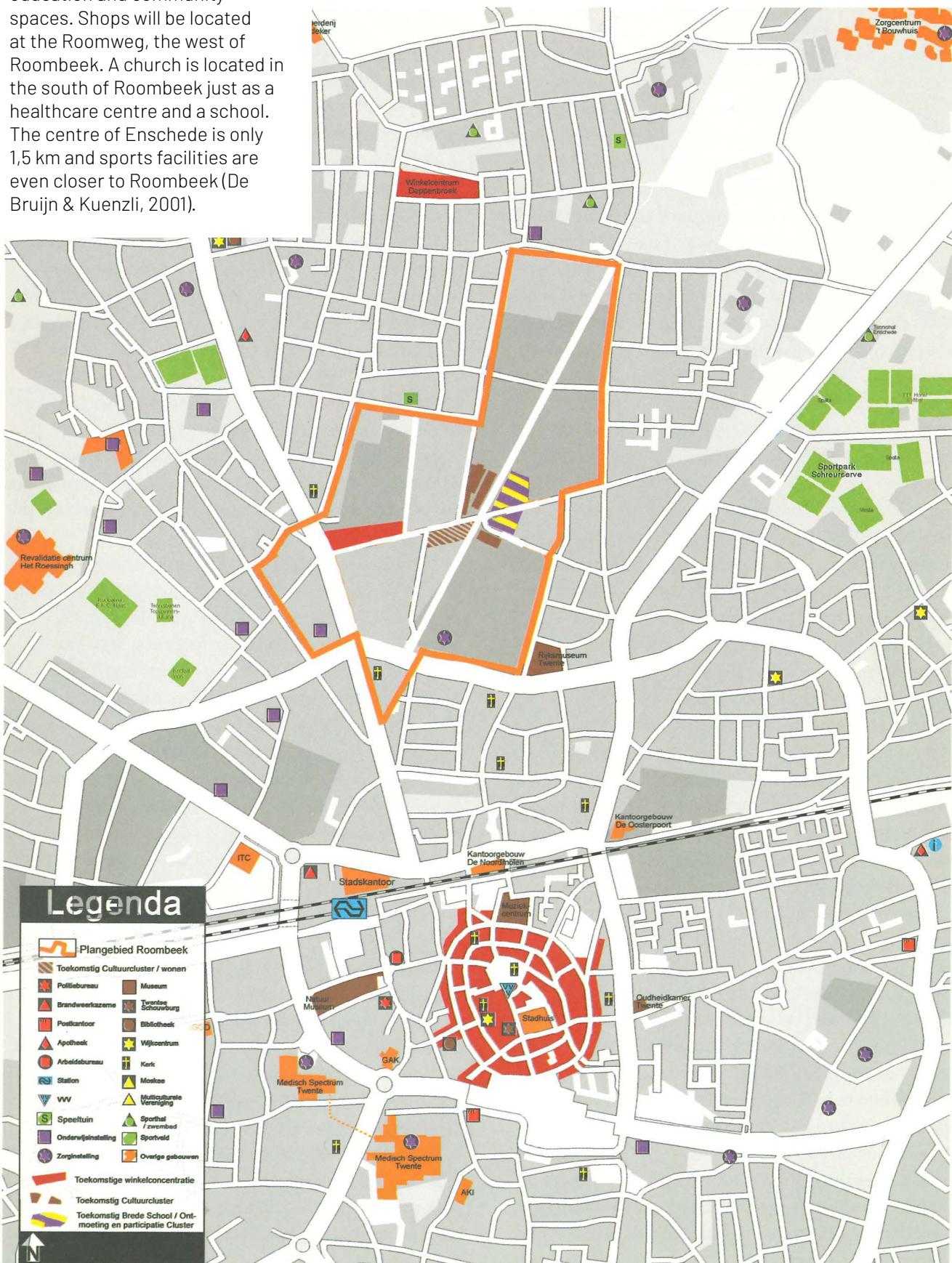
### SPATIAL PLAN OF ROOMBEEK

Figure 5.5: Concept of urban structural vision showing the different neighbourhoods or residential environments (De Bruijn & Kuenzli, 2001).



## THE FUTURE FACILITIES STRUCTURE IN ENSCHEDE NORTH.

Figure 5.6: In the centre of Roombeek will be culture, education and community spaces. Shops will be located at the Roomweg, the west of Roombeek. A church is located in the south of Roombeek just as a healthcare centre and a school. The centre of Enschede is only 1,5 km and sports facilities are even closer to Roombeek (De Bruijn & Kuenzli, 2001).



rent before the disaster. After most of the factories were demolished, there was much space for new housing. So, the housing supply in the district was doubled, including many houses for new residents. This provided the opportunity to create different residential environments. In addition, new facilities and business activities were mixed which created a lively neighbourhood (figure 5.6). The third theme was to create a familiar district. The original street pattern was cherished and the old characteristic activities were revived to give the residents the possibility to feel familiar with the new district. The subtitle of the urban structural vision stated "Een wijk met kennissen" [a district of acquaintances], something a former resident said during a participation meeting. Mutual involvement must be rebuilt, this was part of the familiar and appreciated way of living together in Roombeek (De Bruijn & Kuenzli, 2001).

Creating a familiar district is closely linked to the preservation of heritage. A few buildings survived the explosion, and these were used as landmarks in the district, such as the old factory towers of Tetem and Menko (figure 5.7). Existing street patterns were maintained and historical street patterns, such as the old railway line, were reused. The rich history of the district was also reflected in the return of lost greenery and



Figure 5.7: The Menko factory is transformed into a primary school and apartments (Knippers, 2009).

water structures (figure 5.8) (De Bruijn & Kuenzli, 2001).

Besides the fact that the history of the district played a major role in the vision, the district also had to be prepared for the future. Part of the houses were built for well-off residents and the economy was to be boosted by small-scale business activities. Good facilities and an attractive public space had to attract the new target group. Next to that the neighbourhood had to be connected well to the existing urban structure. The penultimate theme was that there had to be room for participation and initiative in both the design of the district and the house. Finally, it had to be an environmentally, socially and traffic-safe neighbourhood where children could play safely (De Bruijn & Kuenzli, 2001).

The structural vision of De Bruijn & Kuenzli (2001) spoke of creating culture and educational clusters. Using this approach, I analysed the Roombeek district (Figure 5.9 & 5.10). The biggest difference between 1990 and now is the amount of housing and the wide range of facilities that have been added to the district.

## GREEN STRUCTURE PLAN

### ENSCHADE NORTH.

Figure 5.8: Enschede is surrounded by nature and these should be accessible from the city. The Oldenzaalse wig and the Hengelose wig will be connected through the bleken and central street of Roombeek (De Bruijn & Kuenzli, 2001).



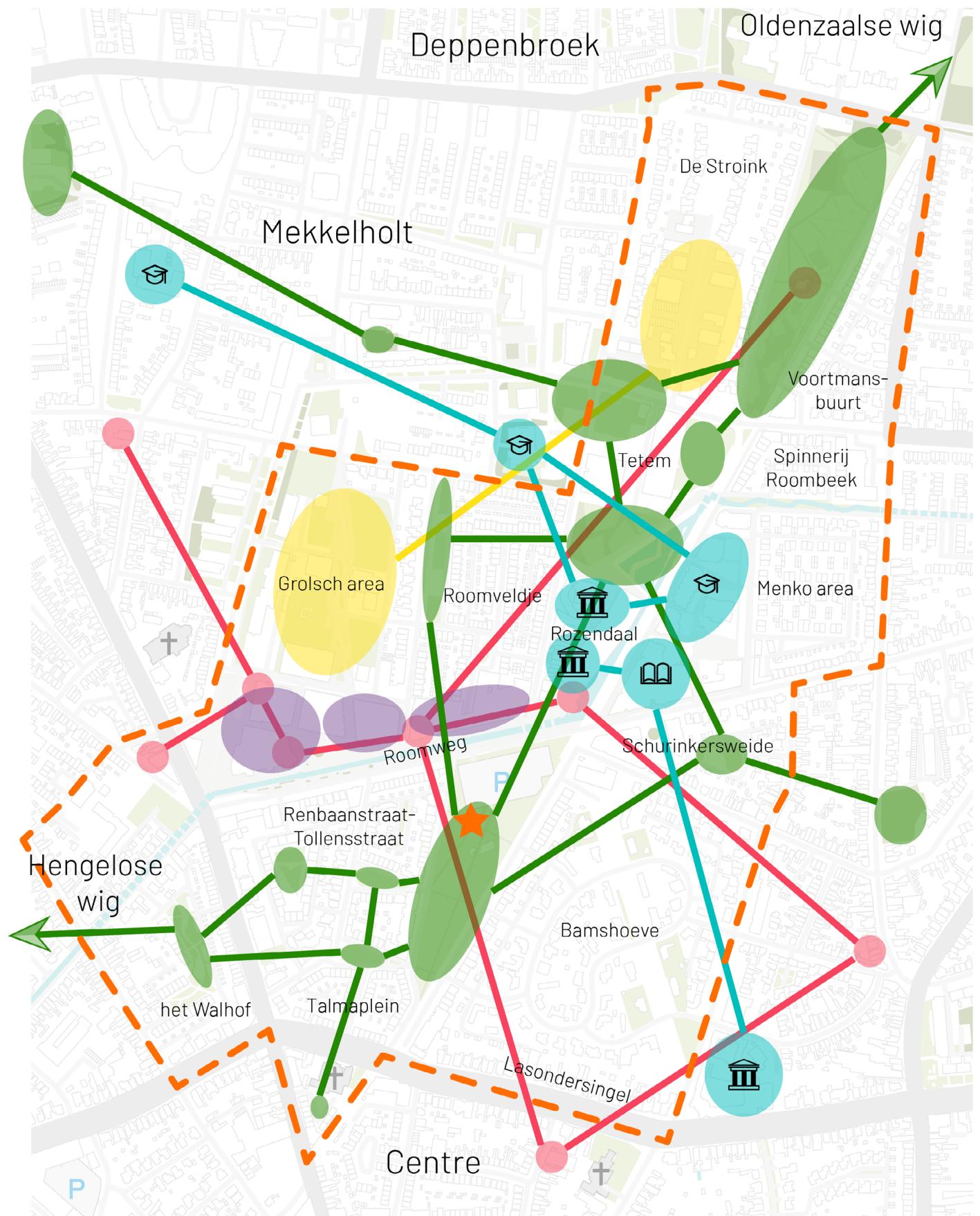


Figure 5.9: Roombeek in 2022

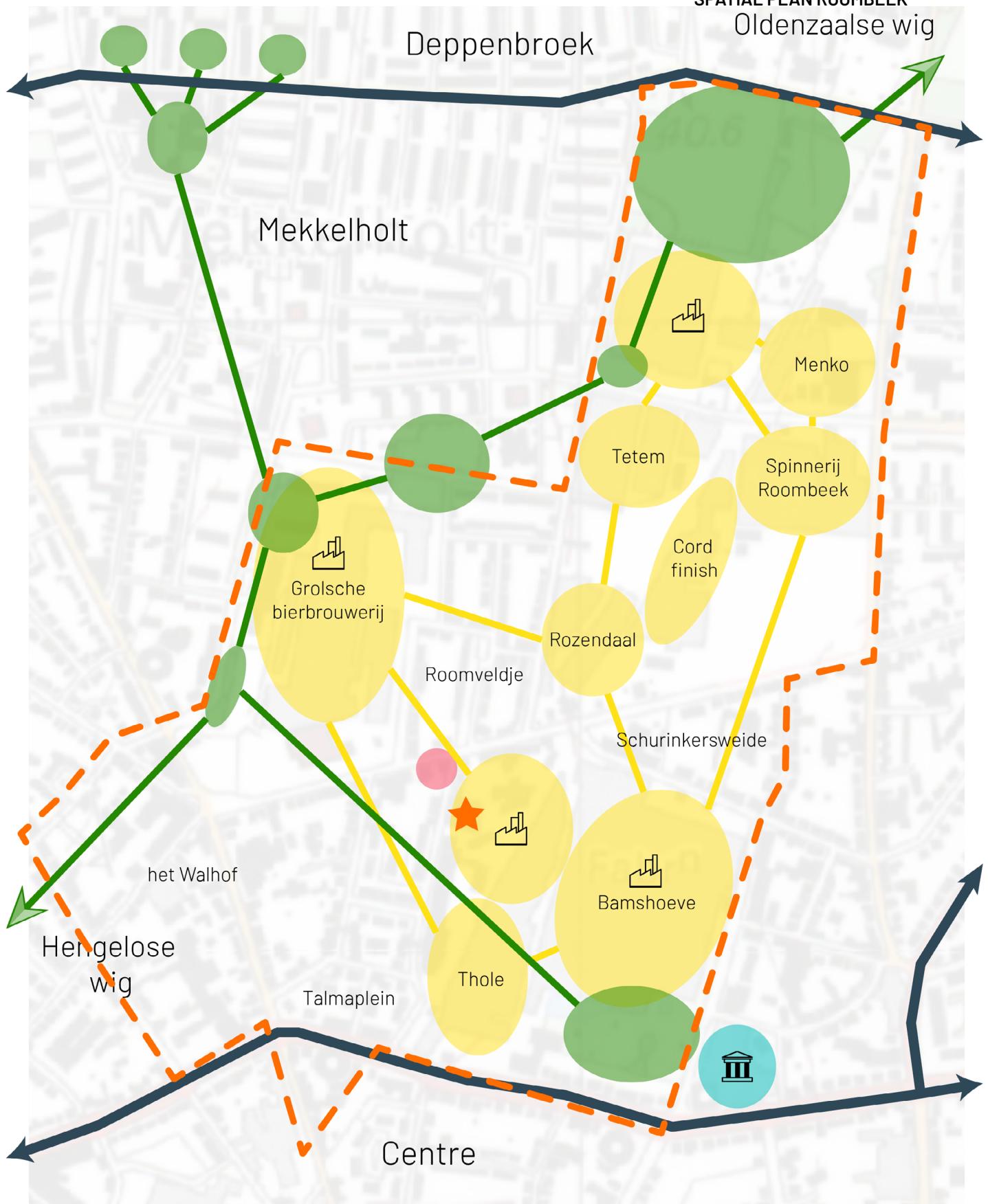


Figure 5.10:  
Roombeek in 1990

## 5.3 Result: Roombeek "Source of Inspiration"

It is now more than 20 years since the disaster in Enschede. Most of the plans were realised between 2004 and 2010 and the district is now almost complete except for a few empty plots in the new business park (figure 5.11 & figure 5.12). Most of the buildings that had been marked as an important heritage for the district have been preserved (figure 5.13). Only the Bamshoeve gallery was demolished but the Bamshoeve transformer building was restored. The street plan of Bamshoeve was revised in later plans, resulting in the current street plan. The green route with a bicycle and footpath has had a place in all plans (figure 5.14). Stepping stones have been placed throughout the district and they fulfil a double function. Water drainage was improved and it created an interactive public space (figure 5.15). In most neighbourhoods, small playgrounds have been built to create a safe environment for children to play in (figure 5.16). Private commissioning led to a streetscape with a great variety of facades (figure 5.17).

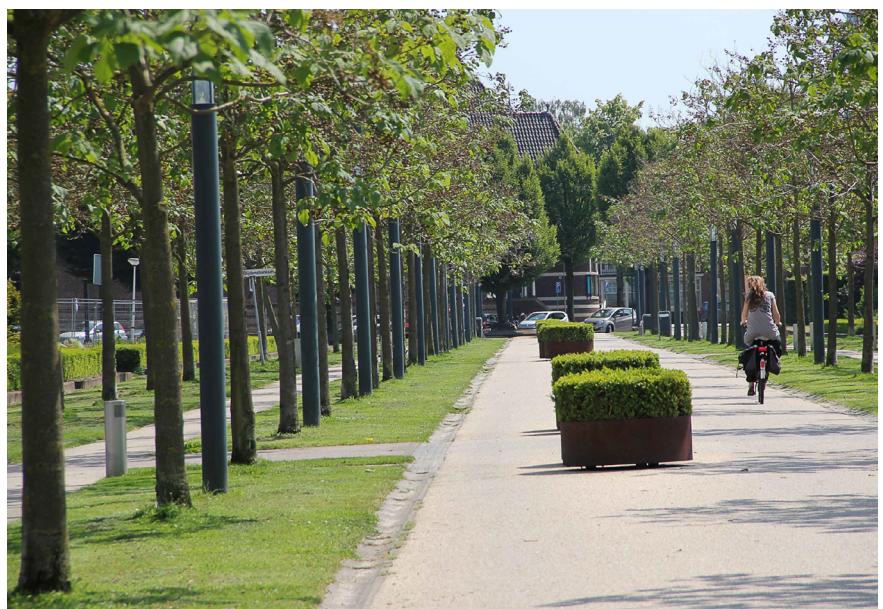
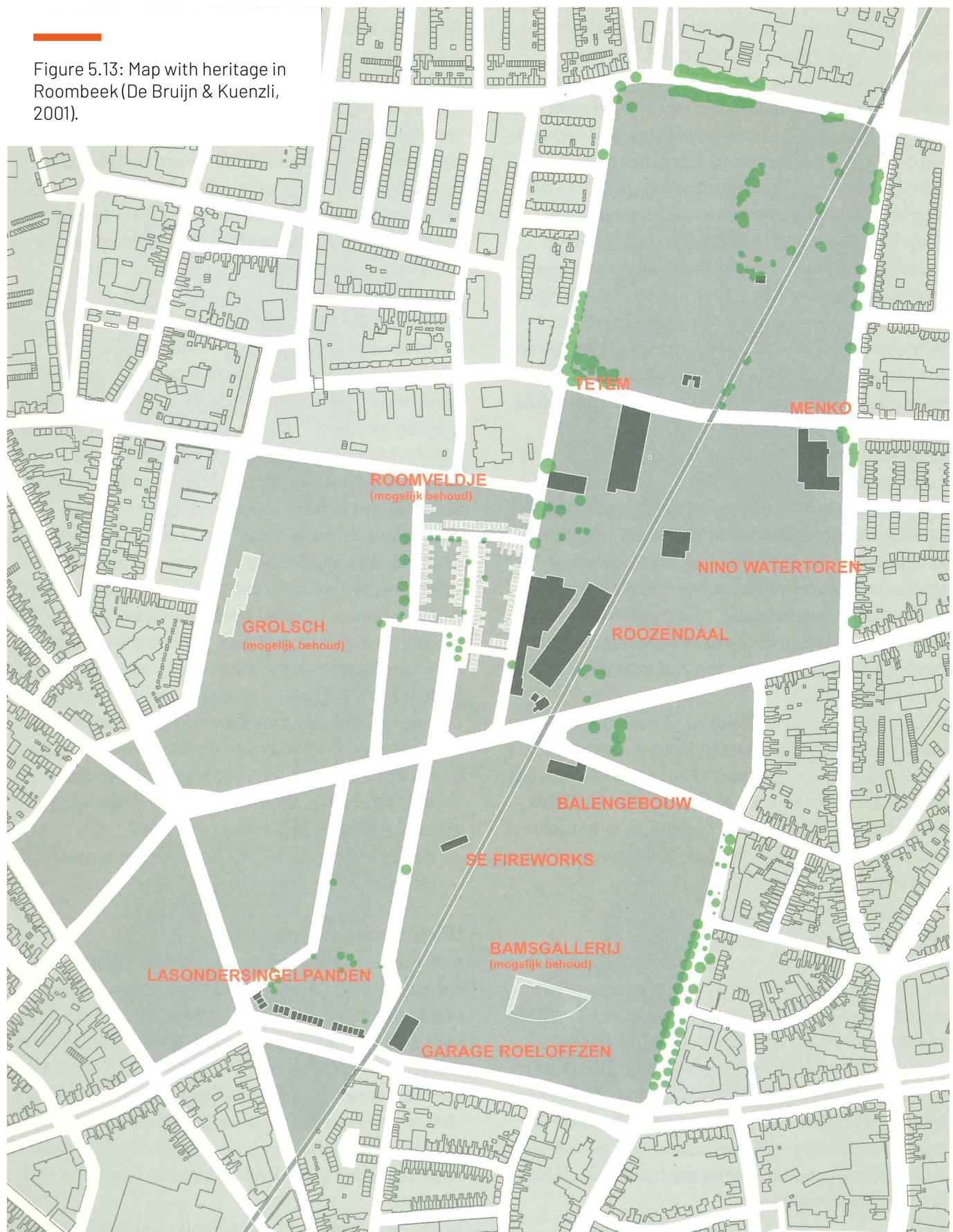


Figure 5.14: Green route in Bamshoeve neighbourhood (Kars Advies & van der Wal, 2014).

Figure 5.13: Map with heritage in Roombeek (De Bruijn & Kuenzli, 2001).



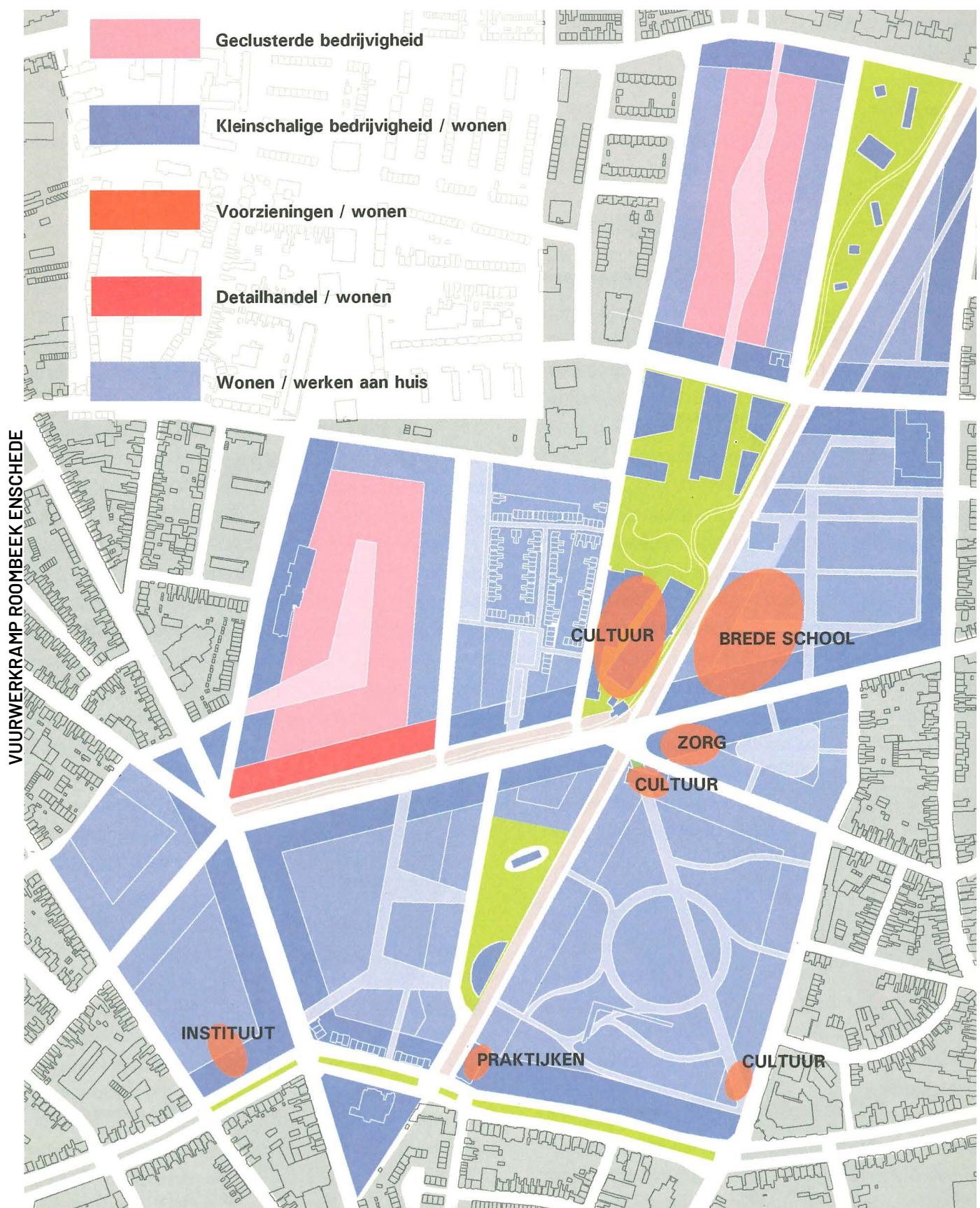


Figure 5.11: Concept spatial plan  
Roombeek (de Bruijn & Kuenzli, 2001)

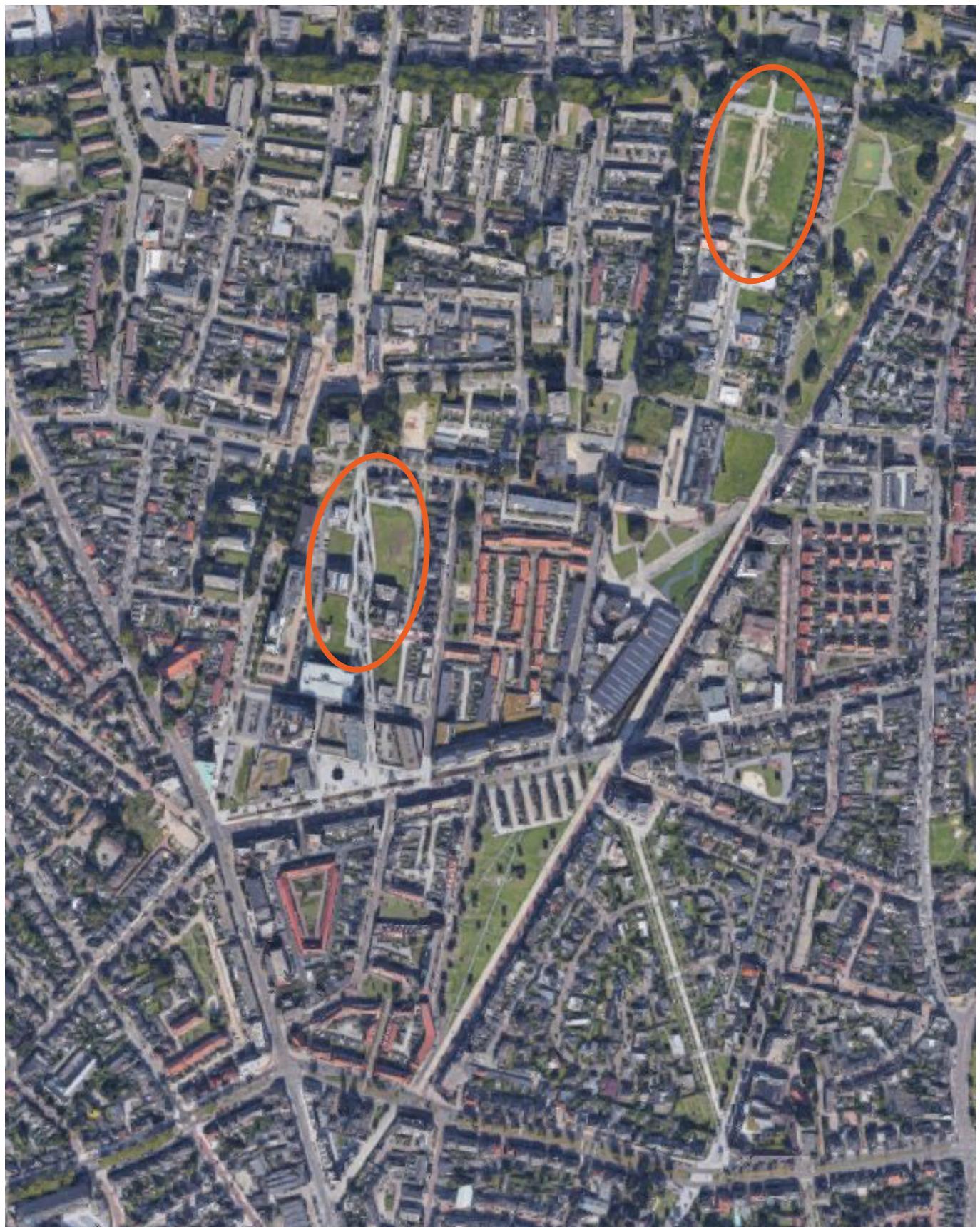


Figure 5.12: Roombeek in 2022  
(Google, 2022)

Figure 5.15: Stepping stones in Roombeek (Kars Advies & van der Wal, 2014).



After the plan was completed, research began into whether the residents of Roombeek had been sufficiently involved during the participation process and whether this had led to concrete outcomes in the plan. For that reason, a meeting was organised by Architectuurcentrum Twente to evaluate the process with the residents, architects, municipality and others involved (Architectuurcentrum, 2004). The University of Twente conducted the research and the overall conclusion was positive, there was genuine participation. This means that all the actors had the opportunity to participate and their opinions are seriously considered in the decision-making process (Klok et al., 2004). A lot of effort was put into reaching all the residents in the neighbourhood. This was successful given the high number of non-Dutch speaking residents that attended the meetings (Architectuurcentrum, 2004).

However, there was a big knowledge gap between the residents and the professionals and therefore it was sometimes difficult to communicate. The participation process was sometimes emotionally difficult for the residents. Mrs Ostendorp describes that she wanted to return to the original location of her house but this process was tiring. Finally, she returned to an apartment close by. There was tension between the emotional



Figure 5.16: Playground (Kars Advies & van der Wal, 2014).

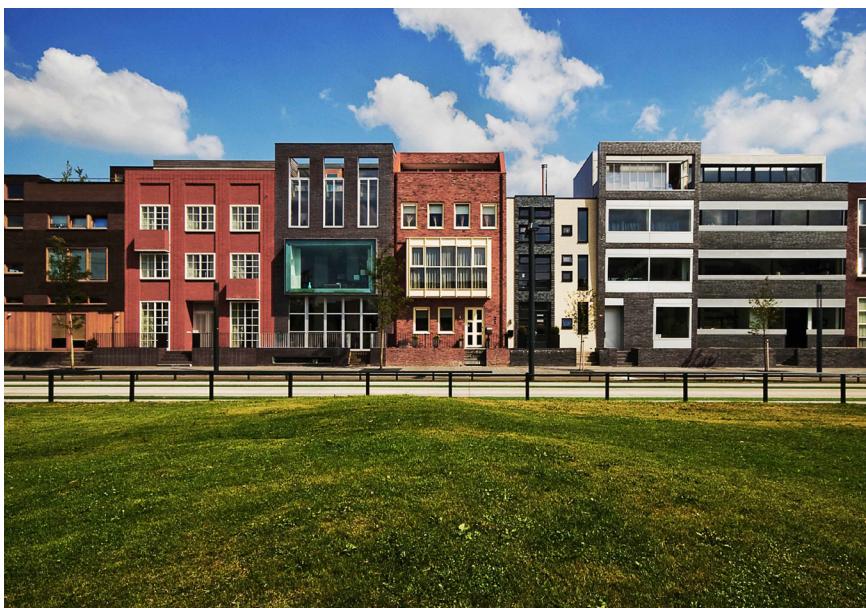


Figure 5.17: The result of private commissioning (Kars Advies & van der Wal, 2014).

residents and the professionals (Architectuurcentrum, 2004). However, the emotional problems and the lack of trust did not significantly influence the number of participating residents (Klok et al., 2004).

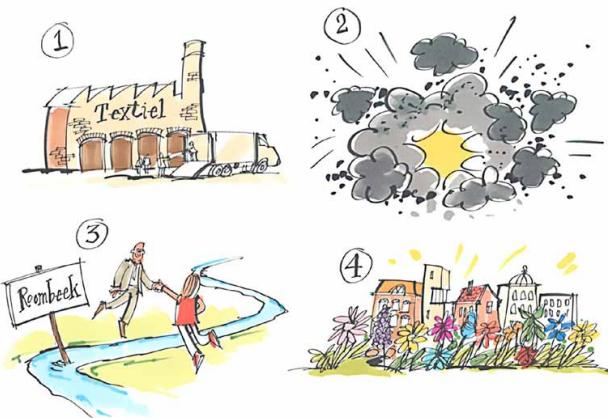
Ten years later, Bureau Kars Advies was asked by the municipality of Enschede to investigate Roombeek's new identity. By that time, the district had more than 4000 inhabitants and 2300 dwellings, 2000 of which were privately owned. The district had many facilities, mainly concentrated in the shopping centre that was completed in 2010 (figure 5.18) and in the building of the former Rozendaal textile factory (figure 5.4). The residents of Roombeek were interviewed to investigate their opinion of the district. This is summarised in 4 characteristics (page 51) (Kars Advies & van der Wal, 2014).



Figure 5.18: Shopping centre "Op de Brouwerij" [at the brewery] (Kars Advies & van der Wal, 2014).

After the district had been completed and the residents who wanted to return had done so. It turned out that only a few of the original residents returned (figure 5.19). It was expected that 20 - 40 % of the residents would return, but only 8% returned (Centraal Bureau voor de Statistiek, 2015). So, it is questionable if the neighbourhood is rebuilt for the original residents, something that was one of the most important themes during the meetings of Architectuurcentrum Twente (Architectuurcentrum Twente, 2004).

### Proud of what you have achieved in life



"The rapid reconstruction showed the decisiveness of the residents and the municipality. The residents created a Roombeek together which now breathes peace and spaciousness, where people love to stay (Kars Advies & van der Wal, 2014)."

### The Roombeek district consisting of islands



"The islands are a metaphor for the different neighbourhoods which are not that well connected. The diversity is appreciated but it is a waste if residents only experience their neighbourhood. In the future, they should be more connected (Kars Advies & van der Wal, 2014)."

### The neighbourhood as a family



"The family is so big that not all of them know each other. It is a family of entrepreneurs. It is not a typical family, but a diverse community (Kars Advies & van der Wal, 2014)."

### The image of Roombeek



"The way Roombeek is perceived differs between residents and other people living in Enschede. The residents are proud and see it as a trendy district. The city looks at it with some envy. There are beautiful buildings, it won many prizes but it cost a lot of money. They felt like all the money went to Roombeek (Kars Advies & van der Wal, 2014)."

Figure 5.19: New residents, returned residents & original residents (Centraal Bureau voor de Statistiek, 2015).

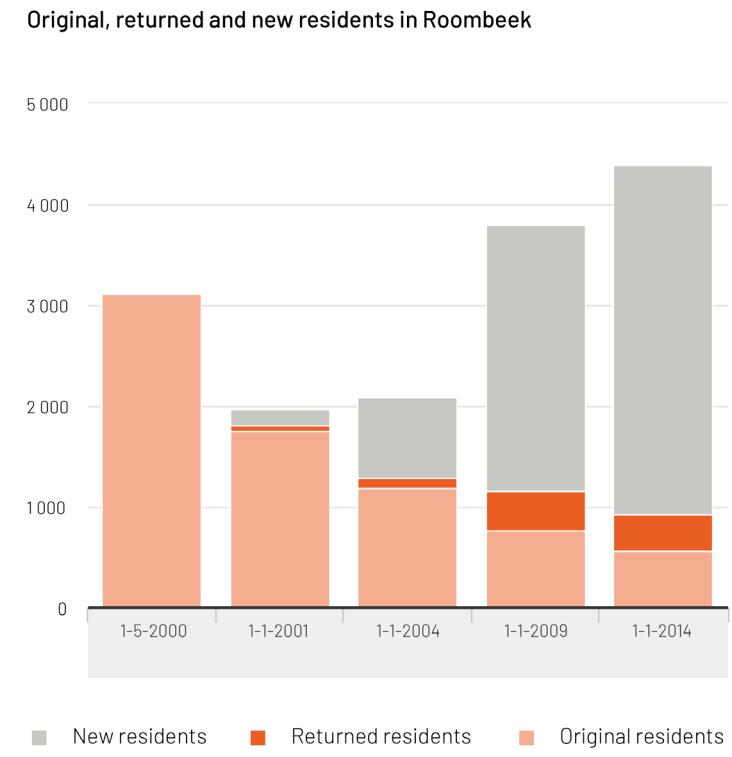


Figure 5.20: The monument "Het verdwenen huis tussen hemel en aarde" ("The vanished house between heaven and earth") and made by artist Balta. Central to the monument's design is the notion of 'house', or rather the 'vanished houses' of the Roombeek district. The names of the victims have been engraved on the black stone (Huis van verhalen Enschede, 2022).



## 5.4 Mental health and Roombeek

The architects of Roombeek talked about spatial, social and economic reconstruction. Social reconstruction focused on dealing with the disaster and repairing the damage in the broadest sense. Further, the trust in the environment must be restored so that the residents feel safe again as well as the trust in the authorities. In addition, self-reliance and actively contributing to social networks must be stimulated (De Bruijn & Kuenzli, 2001). A relatively large number of former residents of Roombeek were on welfare at the time of the disaster. In terms of economic reconstruction, the intention was to allow this group to help with the physical reconstruction. In addition, work was done on the rapid recovery of employment, whereby entrepreneurs were given help to get started again (De Bruijn & Kuenzli, 2001).

Based on the theories of McCay et al. (2017) and Helou (2020) a couple of aspects are important to designing an urban structure that improves mental health. The results of the studies are elaborated in slightly different ways but most of the aspects overlap. The study by McCay (2017) talked about the GAPS framework that combines the following themes that are important for mental health: Green places, Active places, Prosocial places, and Safe places. Helou (2020) mentioned aspects like a pedestrian-friendly city, dynamic spaces, small shops along a sidewalk, windows oriented at the green landscape and enhanced familiarity.

After the development of Roombeek, The University of Twente concluded based on their research that the affected residents had sufficient opportunity to express their views and preferences (Klok, 2004). Therefore, it can be concluded that the emotions and traumas of the residents played a role in the development of the district (Architectuurcentrum, 2004). In the middle of the district, is a monument to remember the disaster (figure 5.20). Next to it is the crater of the explosion, a puddle surrounded by concrete blocks. The artist decided to leave the place as much as it was and nature will heal it up like a wound (figure 5.21)(Cie, 2022).

Figure 5.21: The small puddle near the Monument of the Firework disaster in Enschede (Cie, 2022).

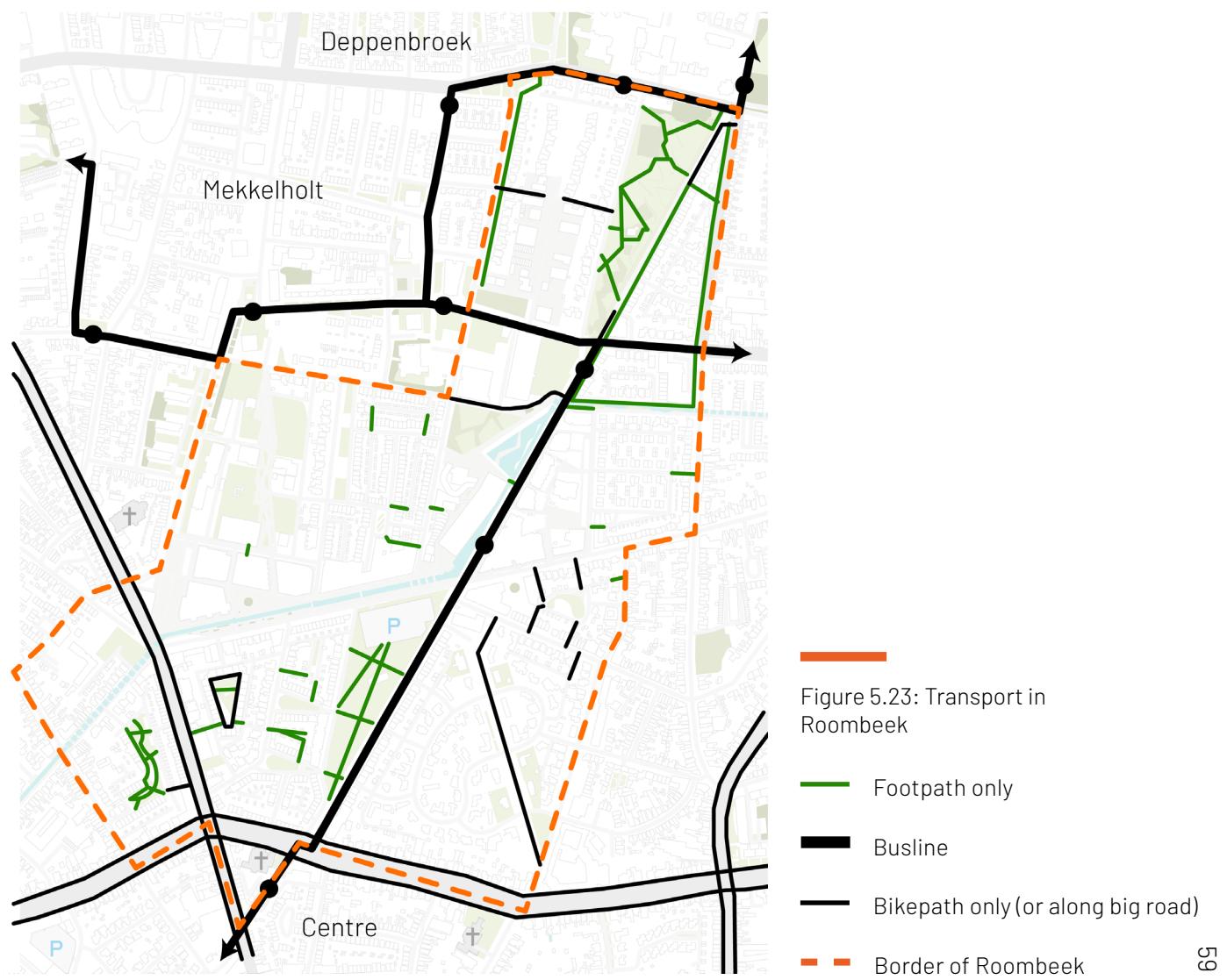


Figure 5.22: Green spaces in Roombeek

- Bleken (big parks)
- Small parks
- Squares
- Water
- Border of Roombeek



The maps show two aspects of the current Roombeek district, the green spaces and the transport. There are plenty of green spaces and other natural elements in the neighbourhood and they offer opportunities for social interaction and activities. Water has also a prominent place in the district that sometimes results in a place where children can play (figure 5.4). The cycling and walking paths provide opportunities for activities and the culture cluster in the centre of the neighbourhood provides a social place where residents can meet each other. In addition, the neighbourhoods are small,



which means that you regularly come across your neighbour. The "Bleken" (parks) are very spacious and they lack a bit of the human scale and therefore it is nicer for young children to go to the small neighbourhood playgrounds. The existing and historic street pattern has been used as a foundation which makes it now easier for old residents to orient themselves. Furthermore, the neighbourhood feels more familiar.

Overall many aspects of the studies conducted by McCay et al. (2017) and Helou (2020) are visible in the Roombeek district. It became a neighbourhood with safe, familiar, green, active, and social spaces.

# 6 CONCLUSION

The Roombeek district has shown how it could recover strongly from a disaster. Before the disaster, it was a poor working-class district with empty factories. De Bruijn's urban plan transformed it into a trendy district with different urban environments. The study aimed to determine to what extent collective trauma played a role in the development of the new urban plan of Roombeek and how this affected the district in the last 20 years.

Right after the disaster, it turned out that many residents had developed mental problems as a result of the disaster. In addition, there was a great need to actively participate in the decision-making process about the development of the district. This was possible thanks to a well-designed participation process. By analysing the neighbourhood on different aspects like functions, greenery and transport it can be concluded that the neighbourhood has many aspects that improve mental health. In addition, research showed that the residents are proud and trust their neighbourhood. The history of the neighbourhood has played an important role in the reconstruction, and this results in important landmarks which are good for mental health.

Due to time constraints, it was not possible to compare all aspects of the design with the current neighbourhood, so some aspects may not have been fully elaborated. For example, it was said that the residents on welfare could help with the reconstruction. I would have liked to verify these intentions. For further research, it would be interesting to investigate other neighbourhoods with the same problems to create a post-traumatic framework that designers can use.

The assumption that the municipality saw the disaster as an opportunity to upgrade the neighbourhood proved to be correct. It was expected that not all residents would be able to return because of the high prices, but the economic/social reconstruction plan provided a solution for this. Eventually, only a few of the original residents still live in the neighbourhood and it is mainly the new residents who can enjoy a strong piece of urban planning.

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