

# Research Paper

A methodology for designing user  
experienced-based public spaces

# A methodology for a user experience-based design of the public spaces: V&D Haarlem as a case study

Rachel Mein <sup>1</sup>

<sup>1</sup> Faculty of Architecture and the Built Environment, TU Delft, Delft, The Netherlands; R.I.N.Mein@student.tudelft.nl

## Abstract:

Urban public spaces are one of the priorities on Sustainable Development Goals established by the United Nations (2015), in the target 11.7, on universal access to safe, inclusive, and accessible green and public spaces. Urban public spaces provide opportunities for people to meet and interact with the community, contribute to the connection between human and nature and have multiple benefits to human and environmental health. With a rising global population and the largest human migration in history, more than half of the world's population currently lives in urban areas. According to the Recommendation on the Historic Urban Landscape, this rapid and uncontrolled urbanization can often lead to the loss of public space. Contributing to the loss of public spaces, the digital and technical developments result in increasing mobility and remote patterns of work and consumption. These changes in user behaviour threaten historic urban areas with loss of population, vacancy, and eminent building degradation that may result in loss of cultural identity. To adapt historic cities towards a sustainable future, it is necessary to focus on the total experience of its users, including the routing and accessible and attractive public spaces. This research aims at developing a methodology for designing user experience-based public spaces as a process to reactivate vacant heritage. It focuses on the case study of the vacant department store V&D Haarlem, built in 1934, and listed as national heritage in the Netherlands. The methodology includes historical analysis, urban analysis, and field observations of the 12 quality criteria for public urban spaces defined by Jan Gehl. The results provide guidelines for integrating user experience in the redesign of public spaces, preparing cities for a sustainable future while conserving its valuable heritage.

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*As a native of Haarlem, I have been visiting the historic city centre a lot since childhood. Cycling along the Gedempte Oude Gracht, we entered the city centre, where the large and stately V&D building was immediately visible. From my bicycle, I could already smell the delicious nuts from the lively market on the Botermarkt, where we parked our bicycles. After visiting the historic city centre, I always hoped that we would go to the V&D before we left. As a child I made it a game to jump from the coloured tile to tile. Waiting until we went to the top floor with the many escalators, 14 in total. The thrill as a child was of course to look all the way down the escalators, which was always a bit exciting. When we arrived at the restaurant, we could immediately see and smell the delicious freshly prepared sandwiches. After choosing my favourite sandwich with cream cheese and a fresh smoothie, I always sprinted up the stairs to the 7th floor. Hunting for the most beautiful spot, which was obviously at the window with the overwhelming view over the city of Haarlem. That view never bored me, time after time I was impressed. And still...*



Figure 1 V&D Haarlem terrace, 1991 (NHA)

## 1. Introduction

The V&D department store was founded by the brothers-in-law Willem Vroom and Anton Dreesmann in 1887. A shop from that time usually had two shop windows with a door in the middle and a curtain behind. The shop windows were also separated from the sales area with net curtains. As a result, passers-by could not see whether the shop was occupied or not (Krijnen & Hondelink, 1987). In the first V&D store, the public did not dare to enter the luxurious establishment. Vroom and Dreesman were innovative and wanted to focus on the general public, they literally opened the doors with which they put an end to seclusion (Krijnen & Hondelink, 1987). The market days were competitive for the retail trade and that is why V&D enticed people with a free cup of coffee on these days. It was a success and the concept was expanded to a lunchroom, which later grew into an affordable buffet restaurant. Over the years, the middle-class retail chain grew into the largest in the country. However, with the rise of the internet in the early 1990s, V&D fell into decay. The digital developments and online shopping ensured that the department store could no longer keep up with the rapid developments. The V&D was officially declared bankrupt in December 2015 (NOS, 2015). After several years of vacancy and temporary functions such as theatre and student housing, Hudson's Bay reopened the building in 2018. The revival was also not a success and closed their doors within a year.

With the closing of the department store, more than its function as a store has been lost. The retail chain was closely linked to everyday life and formed an extension of the public space for the middle class (Miller, 1981). As stated by Gehl (2011), spaces can be defined in varying degrees of public and private, where the city's town hall square is totally public. Although public spaces in the residential group are publicly accessible, due to the close connection to a limited number of residences, they have a semi-public character (Gehl, 2011). Being an extension of the public realm, the interiors had social significance. They were gathering points with a high chance of encounters and functioned as public interiors. According to Pimlott (2016), public interiors are those spaces that are considered public, even though they are privately owned.

They can be experienced as belonging to the public sphere, since they “encompass the space in which civil society can be seen to operate and as those environments, both inside and outside buildings, for meeting and collective use of individuals” (Pimlott, 2016). For instance, places of conviviality, entertainment, transportation, commerce and culture (Pimlott, 2016). The V&D realised this role as a public interior through the restaurant, roof terrace and by organising social events such as Sinterklaas and shopping evenings for people with special needs.

The United Nations has established seventeen Sustainable Development Goals for 2030, which is a plan of action for people, planet and prosperity. One of these goals focuses on the urban areas: “Make cities and human settlements inclusive, safe, resilient and sustainable” (United Nations, 2015). Each goal consists of several targets, one of them is about “Universal access to safe, inclusive and accessible green and public spaces, especially for women and children, the elderly and people with disabilities” (United Nations, 2015). The United Nations defines public and green spaces as open areas and where the land is partially or completely covered with grass, trees, water sources, shrubs or other types of vegetation (United Nations, 2015). In the scope of United Nations 2030 Agenda, “Public and green spaces play a vital role in the promotion of cities’ sustainability and citizens’ well-being, namely, in the connection between human and nature and also in the multiple benefits to human and environmental health. The access to public and green spaces with quality should be ensured by the local and central authorities in order to promote healthy and resilient cities, understood by the World Health Organization as a universal right” (Vidal D.G., Barros N., Maia R.L., 2020). In addition, public spaces are an important asset to our cities, as they provide many opportunities for people to meet each other and interact with the community. Public spaces are successful when they are inclusive of the diversity of groups present in our cities and create a social space for everyone in society to participate in (Jagannath, 2016).

The United Nations predicts that the world population growth will continue in the future, with an estimated population of 11 billion people by 2050 (UN, 2019). At the same time, the greatest human migration in history is taking place, with more than half of the world's population currently living in urban areas (UNESCO, 2011). Urban areas are becoming increasingly important as drivers of growth and as centres of innovation and creativity; they provide employment and training opportunities and respond to people's changing needs and ambitions. However, according to the *Recommendation on the Historic Urban Landscape*, “Rapid and uncontrolled urbanization often leads to social and spatial fragmentation and to a drastic deterioration of the quality of the urban environment and of the surrounding rural areas. This may in particular be due to the loss of public space and facilities” (UNESCO, 2011).

Due to the vacancy of the V&D in 2015, a public interior with significance for the community of Haarlem has been lost. Not only for Haarlem, but in total almost 350,000 square meters of retail space became vacant, where most of the buildings are classified as national monument due to their cultural-historical value. Since the department stores were located at remarkable places in the heart of nearly 60 historic cities in the Netherlands, the communities of historical urban contexts have in common the lack of the valued public interior. The V&D can be regarded as urban heritage that the communities want to preserve. Since urbanization could lead to a loss of public space, while the United Nations shows the importance of these public spaces, it is crucial to reactivate this valued public interior and give it back to the community.

One of the reasons could be the digital and technical developments and increasing mobility, which is resulting in changing user behaviour (Municipality Haarlem, 2017). As a result, the way of working, living, shopping, moving and playing is changing significantly, which requires adjustments from the city. In addition, the Covid-19 pandemic has accelerated these digital developments (Kaufmann, Straganz, & Bork-Hüffer, 2020).

The *Spatial Planning Act of Haarlem* (2017), identifies the changing user behaviour and asks for a transformation from the traditional way of retail into a more experience-based retail (Municipality Haarlem, 2017). Therefore, it is crucial to focus on the total experience, which include the route and the public space (Municipality Haarlem, 2017). There is a demand for easily accessible and attractive public spaces with interesting facilities where people can meet each other (Municipality Haarlem, 2017). An improvement in urban quality is required for the total experience. The urban quality depends on the relationship between the city and the people. In order to improve urban quality, the conditions must be improved, which increases the chance of activities (Gehl, 2011). As stated by Gehl, there are three levels of activities, necessary, optional (urban recreation) and social. To ensure that people stay longer in the city, optional and social activities should be encouraged. Necessary activities include traveling to work, school and shopping. The quality of the public space is important for optional activities. These activities only take place if the climatic conditions, the environment, and the public space are attractive and inviting. This can be recognized by the fact that people stay in the city longer than necessary. Social activities involve interaction through watching, listening and talking. People move in the same place and participate actively or passively in the public space. This is achieved by offering necessary and attractive optional activities. A low quality will reduce the number of fun visits and activities and limit them to only the necessary activities (Gehl, 2011).

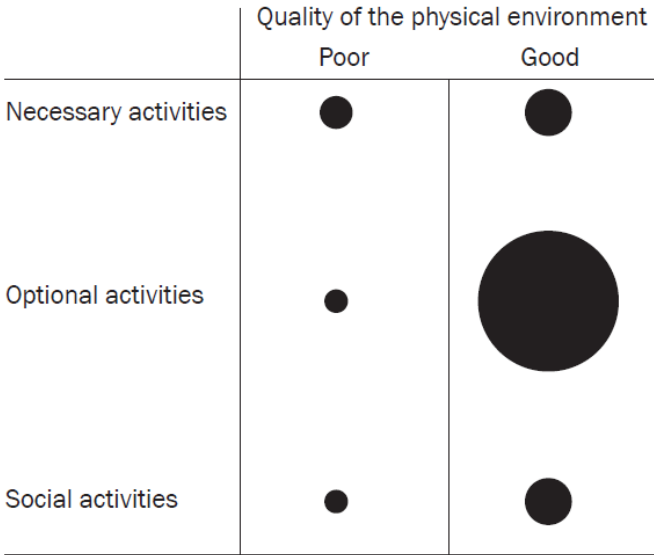


Figure 2 Types of activities, 2011 (Gehl)

The conditions of the urban quality can be improved by applying the 12 quality criteria concerning the pedestrian landscape developed by the Danish urbanist Jan Gehl. This theory incorporates the user experience in the design of public spaces. The author has a people-centred approach and critical observations of the user behaviour. It focuses not only on the design of public spaces, but especially on how the public spaces are used (Gehl, 2011). The book *Cities for People* contains a toolbox, where the 12 quality criteria concerning the pedestrian landscape are described (Gehl, 2010). These criteria are divided into the categories protection, comfort and delight. The comfort part is focussed on creating opportunities that lead to interaction between people. The aim is inviting people to the most important activities in the public space, such as walking, standing, sitting, seeing, talking, hearing and self-expression. The last quality criteria of positive sensory experiences is the ‘umbrella’ of all the criteria. In order to improve the urban quality all twelve criteria have to be applied (Gehl, 2010).

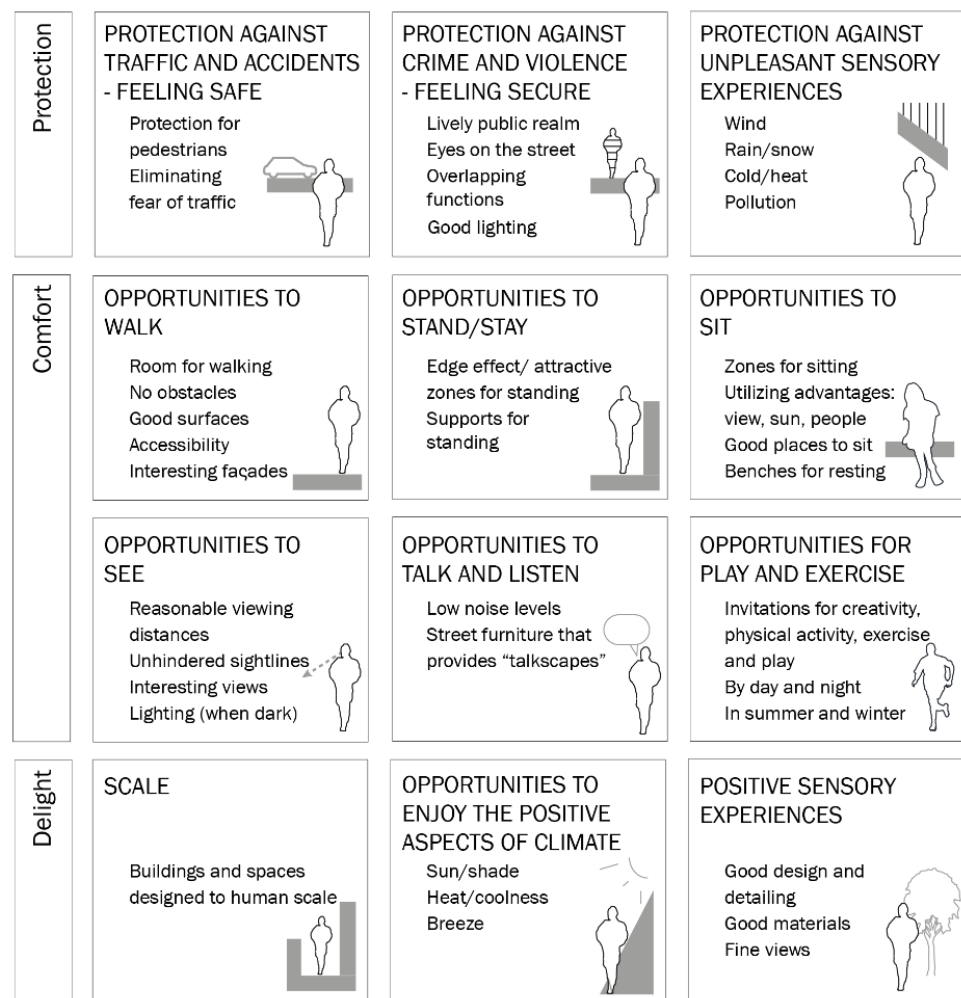


Figure 3 Adapted 12 quality criteria, 2010 (Gehl, p. 239)

#### 4. Aim and research questions

The aim of the research is to contribute to the development of the theory developed by Jan Gehl, by creating a methodology that can be used for a user experience-based design of the public space. The methodology is tested with the case study V&D Haarlem, built in 1934, and listed as national heritage in the Netherlands. By observing the public space on the 12 quality criteria concerning the pedestrian landscape of Jan Gehl, V&D Haarlem can be reactivated and prepared for a sustainable future while conserving valuable heritage. The word reactivate, meaning bring back into action, consists the phase of understanding the use and value, which is translated into an interpretation of the old purpose that can breathe a new life into the building (Alkemade, van Iersel, Minkjan, & Ouburg, 2020). Within this scope the following research question & sub questions were defined:

How could V&D Haarlem be reactivated through a user experience-based design of the public space according to Gehl's 12 quality criteria concerning the pedestrian landscape?

1. How to apply the 12 quality criteria to define guidelines for a user experience-based reactivation of a heritage building?
2. How could the surrounding public spaces improve according to Gehl's 12 quality criteria?

#### 5. Methodology

To answer the defined research questions, this research uses different methods. An interpretative historical research has been done by collecting archival drawings, archival photos, books and magazines which gained insight into the historical context of V&D Haarlem. In addition, an interview with Mr. Benno Vroom (4th generation of the Vroom family) has been held to obtain information about the user experience and the use of the building during the 1970s and 1980s, according to Mr Vroom, who was closely involved in the restructuring of the Haarlem region. To guide the fieldwork, a literature analysis of Gehl's Architects project books *Downtown Seattle* (2009), *Sydney Public Spaces and Public Life* (2007) and *Towards a fine City for People London* (2004) was performed. These project books explain the implementation of the site analysis to understand routes, public-private spaces, landmarks, and (bicycle) parking.

The fieldwork consisted of ethnographic research. This approach allowed to observe people in their cultural setting to write stories about how they move and interact with each other. Photography has been an important means of recording the observations. The observations took place on a Friday afternoon on May 28 2021, which was the first sunny day of spring. This is also the day that there is the organic market on the Bo-termarkt, where the place is known for. Templates were made for the observations, where all information could be collected per quality criteria, and divided into the three streets surrounding the V&D. These templates consisted of a map, as shown in the appendix, where the routes or obstacles could be drawn. In addition, there was space to write down notes and counts. There was also space per street for photos that recorded the observations, and at the end, a score ranging from zero to 5 stars, summarising the space qualities observed. The observations of V&D Haarlem have been used as a case study to test developed observation templates. This tool can also be applied to other case studies.

## 6. Results

### 6.1. Historical research

#### 6.1.1. Haarlem

Haarlem was first mentioned in documents in the 10th century and received city rights in 1245 (Overmeer & de Vries, 1982). The city is nicknamed 'Spaarnestad', because of its location along the river Spaarne. The clean water from the dunes made it suitable for the textile industry as well as beer breweries. Except that the bleaching facilities polluted the water for the breweries. At the end of the 15th century, Haarlem counted 100 breweries (Overmeer & de Vries, 1982). Nowadays, the city is still known for specialty shops and the beer industry, with the most famous brewery being Jopen (Municipality Haarlem, 2019). For this research, the study area was defined within a radius of 150 meters around the old V&D. This includes Verwulft, the popular square Botermarkt and part of the main shopping street Grote Houtstraat.

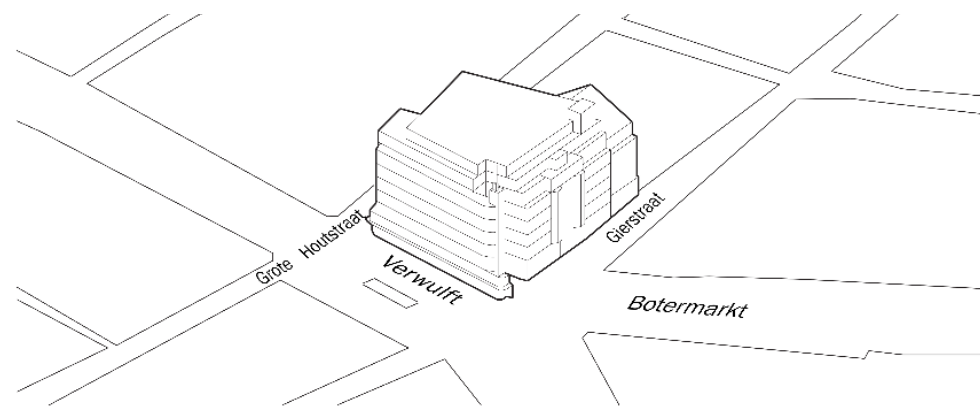


Figure 4 Study area Haarlem, 2021

#### 6.1.2. Verwulft

The Elisabeth's Gasthuis (hospital) was founded along Verwulft, where sick and weak people were cared for free (Hoeben, 1966). Across the street on Botermarkt, Gasthuiskerkhof (cemetery) was realised, which belonged to both Elisabeth's Gasthuis and St. Gangolfkapel (chapel) (Hoeben, 1966). In 1576, there was a major fire in the Waag (where commodities were weighed), along the river Spaarne (Overmeer & de Vries, 1982). It spread rapidly due to the wind resulting in 450 destroyed buildings, including Elisabeth's Gasthuis and St. Gangolfkapel. The Elisabeth's Gasthuis was rebuilt at Groot Heiligland. The Oude Gracht was filled in 1859 for the benefit of traffic, which is why this arterial road is called the Gedempte (filled) Oude gracht (Overmeer & de Vries, 1982). At the beginning of the 20th century plans were made for the reorganisation of Verwulft to obtain an improved traffic situation (Uittenhout, 1993). The buildings on the south side protruded, making Verwulft narrower. There were two plans formed, where plan A would slightly shift the building line, while the radical plan B was to remove the Paardensteeg (alley) and move the entire building block to the rear (Uittenhout, 1993). V&D had been interested in the Grote Houtstraat for quite some time and already owned several buildings in the building block. This led to the construction of the new V&D, where 22 buildings were demolished, except Van der Pigge drugstore, since the owner didn't want to sell the building. Consequently, the V&D was built around this building, which is listed in 1969 as national monument. Nowadays, this is one of the few examples of building built around an existing building in the Netherlands. The implementation of plan B made it possible to widen Verwulft. Subsequently, the avenue of monumental trees on Verwulft was cut down to facilitate traffic. Verwulft was transformed into a traffic junction with bus stops in front of V&D. In 1995, the Monument of the 20th century was built for the 750th anniversary of Haarlem, resulting in a narrower Verwulft.



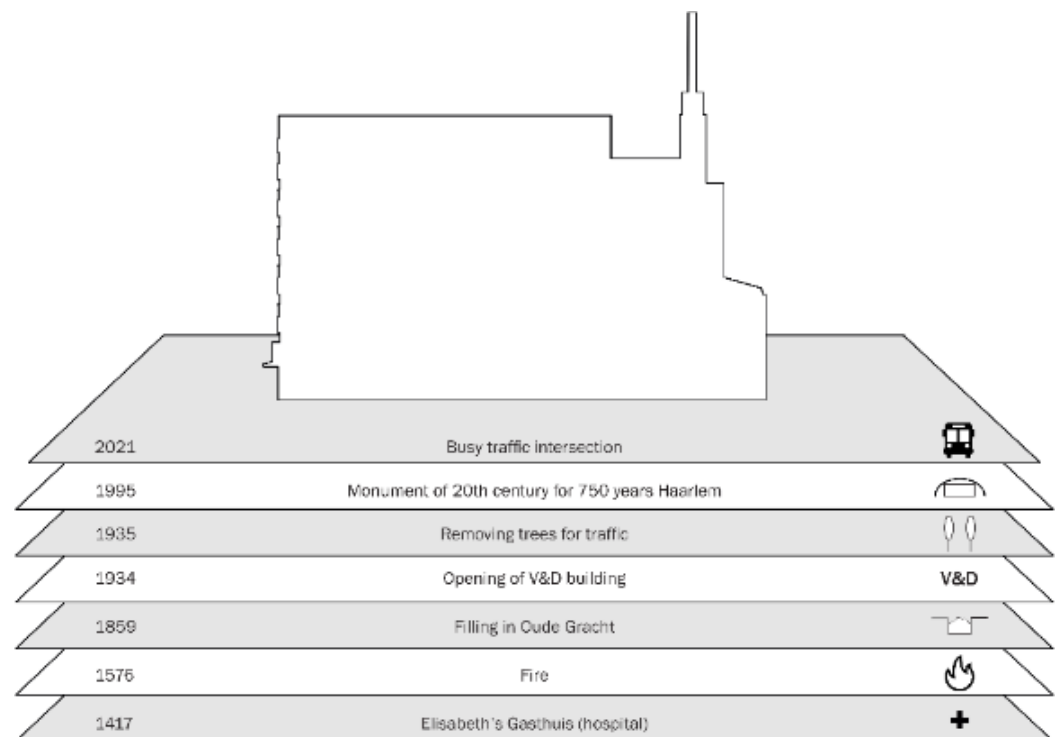


Figure 5 Historical layers Verwulft, 2021

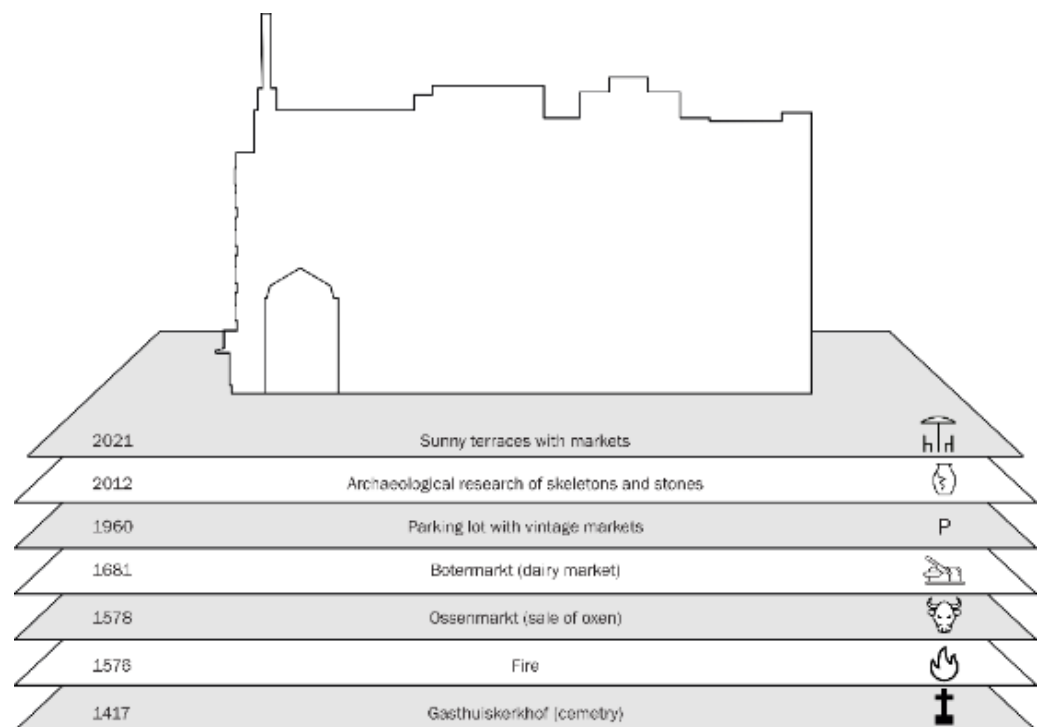


Figure 6 Historical layers Botermarkt, 2021

### 6.1.3. Botermarkt

Since the Oude Gracht (canal) was the city boundary in 1350, Botermarkt was initially located outside the city and served as a cemetery (Overmeer & de Vries, 1982). After the fire in 1576 it became Ossenmarkt, where oxen from Denmark and northern Germany were sold on this market (Hoeben, 1966). The ‘Suijvelmarkt’, which first took place on the Grote Markt, was moved in 1681. In 1888, artificial butter or margarine was on the rise, action was taken to ban this artificial product. During the annual horse market, a pinch of butter was given to the visitors to persuade them to buy real butter instead of margarine. There was also an annual cattle market and fair. Around 1960, it was used as a parking lot with a gas station and vintage markets. In 2012, old skeletons from the 16th century were found, which are exhibited in the Archaeological Museum of Haarlem. In addition, old wall fragments, pottery, facades and natural stone were found from the 14th century. After the parking lot made way for restaurants with outdoor serving areas, the popularity of the Botermarkt has increased. Due to the overlapping functions of day and night, people feel safe again and it stimulates social interaction.

### 6.2. Site analysis

The main pedestrian route runs from the train station to the popular square Botermarkt. The public transport starts from the train station via Verwulft, the widened path in front of the old V&D, towards the river Spaarne. The urban historic route of the tourist information centre guides you along the landmarks of Haarlem, including the Grote Markt as the start and end point (Municipality Haarlem, 2019). Remarkably, all three main routes converge at Verwulft, making it an important junction in the city. Currently, most of it is dedicated to the busy road for vehicular traffic. The existing bicycle parking facilities are located near economic centres, public transport hubs and Park & Rides, but these are overcrowded (Municipality Haarlem, 2017). “The bicycle is becoming the most important means of transport in Haarlem. This is the only way we can guarantee the accessibility of Haarlem and the facilities with a growing number of residents” (Municipality Haarlem, 2017). Therefore, the municipality of Haarlem has examined suitable locations for new bicycle parking facilities. These are located along pedestrians and cycling routes. The municipality is also investigating the possibility of a bicycle parking facility in the basement of the V&D. This would be a strategic place as all routes converge here.



Figure 7 Site analysis city of Haarlem, 2021

### 6.3. Observations of the 12 quality criteria

#### 6.3.1. Feeling safe

The first criteria concerns the protection against traffic and accidents, which is a dominant criteria. As stated by Gehl Architects (2004), there can be an increase in noise and fumes, less space for pedestrians and a higher chance of accidents, which increases the risk of anxiety. The traffic junction of the noisy Verwulft and Gierstraat is a poor crossing due to the lack of traffic lights, which results in chaos of cyclists, cars, buses (32 per hour) and pedestrians. Besides, the footpath at Verwulft is interrupted by the side street Gierstraat. Pedestrians got distracted by all the sensory stimuli and before they even realise, they were standing in the middle of the road due to the lack of markings and almost the same colour of pavement. This resulted in moments of irritation and danger. Due to the lack of markings, cyclists crossed Verwulft at several spots and pedestrians around the Botermarkt. Especially, when a truck came through the narrow street, dangerous situations had arisen. Another problem is that the traffic lights are green for only 12 seconds, which was insufficient for an elderly woman with a walker to cross. Due to the waiting time of 24 seconds, this may explain why pedestrians cross near the Gierstraat. In short, the current traffic situation results in poor conditions for pedestrians and cyclists, which results in a feeling of unsafety.

#### 6.3.2. Feeling secure

If there is insufficient overlap between day and night functions, the city will be deserted at night, which has a negative effect on the sense of security (Gehl Architects, 2004). Since the Botermarkt has been transformed from a parking lot to a lively square, there are several day and evening functions that overlap. This has a positive effect on the sense of security. Because of the restaurants and night buses there are plenty of evening activities at Verwulft as well. Currently, the floors above the shops in the main shopping street Grote Houtstraat are primarily used as storage. The municipality of Haarlem wants to invest in the coming years to transform these into apartments, which will bring more eyes on the street (Municipality Haarlem, 2017). A point of concern are the non-transparent frontages of natural stone, which disconnect the building with the street. This also applies to the emergency exit door on Grote Houtstraat. The graffiti on the monumental building shows the lack of eyes on the street and damages the building.

#### 6.3.3. Unpleasant sensory experiences

According to Gehl, if people are not protected from noise, fumes and rain, they will experience it as unpleasant and will not stay (Gehl Architects, 2004). It is important to protect people from unpleasant sensory experiences to stimulate optional and social activities. The only canopy in the immediate vicinity are on the Verwulft and Grote Houtstraat facade of V&D. However, these are not usable due to the bicycles parking on the Grote Houtstraat. Also, the canopy on Verwulft is too narrow for opportunities to stand/stay as people were not able to pass each other. A father walking hand in hand with a toddler had to stop and hold his child in front of him in order to let others pass. This footpath is also directly next to the busy road, which results in pollution, dust, and noise as unpleasant sensory experiences. Since the Botermarkt is a quiet street in terms of vehicular traffic, there is less pollution and noise nuisance.

#### 6.3.4. Walk

Lack of markings, height differences, obstacles and inconsistent street layout can lead to disorientation and discomfort, especially for people with special needs (Gehl Architects, 2004). The main pedestrian route and urban historic route of the tourist information centre converge at Verwulft. The interesting facades in the historic city centre distracts people from the busy traffic and has a positive effect. The small amount of broken, repaired, or unequal placed tiles results in a high quality of pavement. However, Verwulft have gradually been turned into obstacle course with long waiting periods at the crossing, unorganised bicycle parking and incorrect placed bins. This results in a cluttered streetscape and stressed atmosphere, where pedestrians got annoyed. People were trying to walk in their own pace and in a straight line.

This could lead people to cross the road at several spots, walk at the road and run across roads on red lights (Gehl Architects, 2004). At the Botermarkt, there is a lack of drop kerbs for the accessibility of wheelchairs, prams, or suitcases. It can be concluded that the observations such as long waiting periods at the crossings have already been seen at the quality criteria feeling safe. This also applies to the unorganized bicycle parking, which became visible during unpleasant sensory experiences.

#### 6.3.5. Stand/stay

As stated by Gehl (2011), if there are no attractive zones with an edge effect, people will only come for necessary activities. This transforms the public space into a transit zone. It is important for the ambiance to invite people to spend more time, because staying is also part of their experience of the city. The markets on the Botermarkt provide stationary activities, but there is a lack of supports to stand. The situation of Verwulft has improved over the years. Since the bus shelters have been moved from the front of the V&D to the Gedempte Oude Gracht, where they don't minimise the walking space or obstruct the view anymore. The canopy of V&D could offer an edge effect, but due to the unorganised bicycle parking, places with opportunities to stand/stay are occupied. This is already mentioned in the chapter of unpleasant sensory experiences.

#### 6.3.6. Sit

If there is a lack of opportunities to sit, the city centre becomes a transit zone, where people move from one point to another instead of enjoying the advantages of the public spaces (Gehl Architects, 2004). In the vicinity of V&D there is a lack of public benches, which resulted in people sitting on the street, kerbs, electrical cabinet, steps and tree fences. Those alternative opportunities to sit is called secondary seating and is a symptom of a city without public seating. The outdoor serving areas on Botermarkt and Verwulft are both in the sun, but only the outdoor café seats at the Botermarkt were fully occupied. This could be explained by the view and noise of the busy road at Verwulft. In total there were 8 people using secondary seats, while the outdoor serving areas at Botermarkt were fully occupied. There are a number of private benches of shop owners at Gierstraat. At the Botermarkt, the restaurants have built extensions to the monumental buildings. For this reason, the outdoor serving areas are narrowing the square, but these are removed every evening.

#### 6.3.7. See

The five Aristotelean senses are sight, hearing, taste, touch and smell (Gehl Architects, 2004). In total 75% of the sensory experiences are through eye sight. In order to remain alert people need around 1000 stimuli per hour (Gehl Architects, 2009). For instance, that is why people want to sit at an outdoor seating area and watching other people or activities. When people can enjoy interesting facades and sightlines, the perception of time diminishes during their experience. Due to the monumental buildings, there are several interesting views. The sightlines of Verwulft are strengthened by the lane of trees which is a valuable character. At the Botermarkt, the Gangolf apartment complex is the only exception with a sober appearance. In addition, the plinth of the Van Haren at Verwulft and plinth of V&D at Gierstraat have a greyish closed appearance. The quality of the V&D frontages aren't rich in detail, interesting to see and exciting to pass by. Also, there aren't possibilities to touch and stand beside. Some of the street elements such as information signs and bins are placed incorrectly which results in disturbing the pedestrian landscape.

#### 6.3.8. Talk/listen

If there is a high level of noise, it will stop people from continuing their conversation, which is another aspect of social interaction (Gehl Architects, 2004). Especially, the Botermarkt provides talk/listen zones with the outdoor serving areas, markets and bars. Also, the Grote Houtstraat as the main shopping street provide a talk/listen zone. But, there is no street furniture that provides "talkscapes". If the number of dB exceeds 65, this is labelled as a stressful traffic dominated environment, where it becomes a disturbing factor (Gehl Architects, 2009).

At the Gedempte Oude Gracht and especially Verwulft, there is a lot of noise nuisance from the vehicular traffic. Traffic noise is present between 50 and 65 dB, but not a disturbing factor, which applies to the Botermarkt and Grote Houtstraat. Below 50 dB there is no traffic noise. Traffic noise can cause a stressful environment and restriction in talking and listening (Gehl Architects, 2009). In recent years, the number of buses in the city centre has increased by 20% (Municipality Haarlem, 2020). Especially along the route of the Gedempte Oude Gracht, 64% of the Haarlem residents who completed the questionnaire is annoyed by the nuisance of the amount and size of the buses (Municipality Haarlem, 2020). However, the municipality (2020) mentioned that the number of buses is expected to increase by 50% before 2040. It can be concluded that the observations of the noise nuisance are an important concern which is also mentioned at unpleasant sensory experiences.

#### 6.3.9. Play/exercise

The criteria opportunities to play/exercise focuses not only on play and sports equipment, but also on space that invites city activities such as skating and jogging. For instance, skateboarding can be seen under the canopy of V&D. Creative invitations such as graffiti, art, poetry, or visual arts are also part of these opportunities to play. In the immediate vicinity, there is a lack of invitations to creativity, physical activities, exercise or play. Because of the crowds in the narrow streets, it is only possible to run in the evenings. A number of cities have set a maximum distance between playgrounds, but the current policy of the municipality of Haarlem focuses mainly on the distribution and quality of these playgrounds. In addition, they focus on child-friendly public space, as more informal play is taking place in the street rather than on shaped play equipment (Municipality Haarlem, 2017). The width of the footpath affects the type of activities, from 3 meters it is possible to play. At a footpath of 1.5 meters people can pass each other decently, but 2 meters makes it pleasant to walk on. The sidewalk of Verwulft is suitable with 2.4 meters, but the bicycles function as obstacles.

#### 6.3.10. Scale

If the built environment is designed on a human scale, people feel less lost and more pleasant (Gehl Architects, 2004). In general, the historic city centre of Haarlem consists of low-rise buildings. Nearly all buildings in the immediate vicinity of V&D have three levels and the plinths are designed on a human scale. Only the V&D building stands out because of its height. It was the first high-rise project in Haarlem. V&D's first design was rejected at the time because of its large scale. That is why aspects have been added to the second design to reduce this sense of large scale. For instance, the canopy acts as a transition zone for the human scale. Also, the setbacks are designed for the experience of the seven-story building.

#### 6.3.11. Enjoy positive aspects of climate

A city must offer sufficient opportunities to enjoy the positive aspects of the climate (Gehl Architects, 2009). In the northwest of Europe, it is mainly about being able to enjoy the sun. However, taking the climate change into account, offering shade is also becoming increasingly important. People should be able to enjoy both sun and shade in a comfortable way without a high level of noise and fumes. Due to the low-rise buildings in the immediate vicinity of V&D, there is sufficient space to enjoy the sun. The large V&D building provides shade. In addition, the trees on Verwulft provide shade as well. However, there is no street furniture to enjoy the positive aspects of the climate. This was also mentioned in the opportunities to sit.

#### 6.3.12. Positive sensory experiences

The user experience of the city depends, among other things, on the aesthetic quality (Gehl Architects, 2009). Poor quality of street elements, untracked maintenance and poor lightning have a negative impact on the urban experience (Gehl Architects, 2004). The monumental buildings in the immediate vicinity are equipped with good design, materials and detailing. The diversity in styles and characteristic buildings creates fine views.

The linear character of the Gedempte Oude Gracht is underlined by a lane of trees and street lightning. However, the city centre of Haarlem is quite petrified and has a small amount of water and greenery compared to other cities (Municipality Haarlem, 2017). As a result, there are relatively fewer cool places, which has consequences for heat stress and impact on people's sensory experiences. Despite of a large amount of underground bins, the Botermarkt is full of garbage which has a negative impact on the user experience.

#### 6.4. Challenges and recommendations

With its markets, various shops, bars, restaurants and outdoor service areas, the Botermarkt offers plenty of opportunities that lead to interaction. The overlapping functions of day and night, a low vehicular traffic flow, trees and the richly detailed buildings that are designed to human scale makes it an attractive square to stay. However, Verwulft misses a number of essential opportunities, which means that people won't stay and it becomes a transit zone. An important one is the protection against traffic and accidents, since because of the busy traffic situation people do not feel safe. If a person does not feel safe somewhere, they want to leave as soon as possible. As a result, other existing opportunities cannot be experienced. The protection against unpleasant sensory experiences, such as noise and rain, also contributes to this. First, protection need to be offered, followed by creating opportunities to sit, opportunities to play and exercise and positive sensory experiences. These five quality criteria scored on Verwulft 2 out of 5 or lower. The focus on improving public space will be on Verwulft, because if people don't feel comfortable, the public space transforms into a transit zone instead of a place where they want to stay. Design recommendations will be written for these 5 challenges, which are based on solutions that have been tested on the user experience.

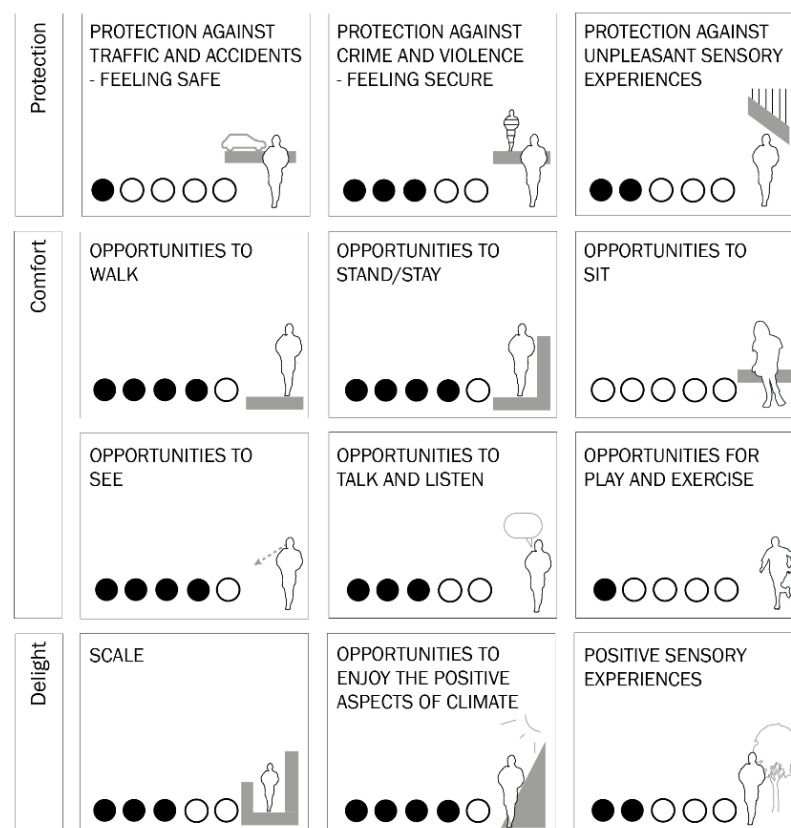


Figure 8 Scores observations Verwulft, 2021

#### 6.4.1 Recommendations for feeling safe

Applying the traditional traffic lights to both crossings can also offer a solution. However, to stimulate people to walk instead of using vehicular traffic, pedestrians should not have to push a button to get permission to cross the road. The focus is therefore on keeping vehicular traffic going. When using zebra crossings as in the 1960s, this is only a solution for pedestrians, while it has a negative effect on the flow of vehicular traffic and cyclists. The use of pedestrian islands or pen crossings in the middle could result in less time to wait for the green light. Unfortunately, by applying pen crossings there is a risk of the phenomenon of 'jay walking', which is avoiding the pen crossing and not paying attention to signals. At the pen crossing of Regent Street in London, for example, only 25% actually wait for the green light. The majority is divided into 45% of red light crossings and 30% of jay-walking (Gehl Architects, 2004). Another possibility to create a sense of safety for pedestrians and cyclists is to separate fast and slow traffic. This could be done by constructing a tunnel, but this requires a big investment and is not always possible. The reason why pedestrian tunnels will not be a suitable solution is because it will give higher priority to vehicular traffic and make pedestrians the secondary city users. In addition, pedestrian tunnels are often perceived as unpleasant, resulting in pedestrians trying to avoid those subways. This can be seen, for example, at St. Giles Circus in London, where only 23% of people actually use the pedestrian subways (Gehl Architects, 2004). The majority prioritise taking risks at street level to avoid the pedestrian tunnels. Another option to separate fast and slow traffic is adding a green lane in between, as was done at the Kruisplein in Rotterdam. Since the Gedempte Oude Gracht is the main arterial road, detouring all buses is not an option. However, it is possible to look at reducing the number of buses and cars. Or replacing the buses with trams in the city centre. In this way, the 7 meter wide road can be narrowed or replaced by rails.

#### 6.4.2 Recommendations unpleasant sensory experiences

For protection against noise and fumes, it is important to see if the amount of vehicular traffic can be reduced. And whether the distance between vehicular traffic and the public space can be increased. For protection against rain, a wide canopy with an attractive plinth could offer a solution. By changing the permeability of the plinth from visual to physical, people are not only protected from unpleasant sensory experiences, but also distracted. The plinth could change from transparent to integration of the plinth into the building (Gehl, Kaefer, & Reigstad, 2006). The quality of the facades would improve, providing opportunities to touch and stand, interesting to see and exciting to pass by. Showing activities in the building, this can enrich the street and contribute to a safe and genuine sense of security (Gehl Architects, 2009). This also leads to opportunities to see. In addition, it is important to remove the obstacles on the street, to prevent people from getting annoyed. By realising an underground bicycle facility, this can offer a solution for the unorganised bicycle parking.

#### 6.4.3 Recommendations sit

Carefully placed benches with fine views can be a valuable part of the city's walking experience (Gehl Architects, 2004). It offers opportunities to rest, talk/listen and enjoy positive climate aspects. The best location is along the main pedestrian routes and destinations. People will stay longer and contribute to a more vibrant city (Gehl Architects, 2009). They could also contribute to economic benefits, because people spend more where they enjoy being. The quality of the seating determines whether people will actually use it. According to Gehl Architects, this depends on climate, view, noise/pollution, comfort and placement. For example, stone benches are designed to discourage homeless people, skaters and graffiti, but those are cold and uncomfortable resulting in that people won't use it. Also, if the seats are placed too low, 40 cm above the ground, the seats are not attractive to the elderly and people with special needs.



People experience comfort on traditional benches (a timber seat with a steel frame), sufficient sun, shade and with fine views of the city life. “When seating is oriented towards activities, it can create a reason or possibility for strangers to talk to each other” – Gehl, 2011.

#### 6.4.4 Recommendations play/exercise

Invitations to play and exercise can be done by literally placing play and sports equipment on squares. However, it can also be interpreted more freely by making streets and squares child-friendly and using a smooth pavement with a few obstacles, making it inviting for city activities such as skating and jogging. Adding elements such as swings or see-saws that can provide fun creates opportunities to play and see. With regard to invitations to creativity, they can be achieved through poems or art. This can be done through both permanent and temporary exhibitions, these temporary exhibitions create new experiences for the user every time. These can be part of an attractive walking route that is enriched with works of art, which gives extra quality to the walking experience. Another option is to look for an attractive route to a place with more space for sports and play equipment than in the middle of the city centre.

#### 6.4.5 Recommendations positive sensory experiences

“A low rise city offers excellent opportunities for enjoying the positive aspects of the climate, even in early spring” – Gehl Architects 2009. The positive sensory experiences can be supplemented by creating an oasis through trees, plants and water. For example, Paley Park in New York, where green, blue and new pavement created a resting place along walking routes. In addition, historical layers can be visually reflected in streets and squares with water, art and lighting. Water can be used in its various forms such as fog, stream and frozen state in winter. Taking London's Somerset House Square as an example, water jets provide positive sensory experiences and opportunities to play. In winter, there is a temporary ice skating hall and winter domes. With regard to greenery, a flexible planting strategy can be used in addition to the general street tree strategy. Because of this, festivals and other public life programs are still possible. By combining the temporary greenery with art, the 'green artists' can play with different types and species (Gehl Architects, 2004). In addition, the 'green streets' can filter and store the rainwater.

## 7. Design

Considering the recommendations resultant from the field observations and analysis, a design proposal was developed, targeting the main issues identified in the V&D Haarlem. The diversion of two bus lines and cars reduces the vehicular traffic in the surroundings of the building, and improves the protection of users against traffic. The fast and slow traffic is separated by an elevated green lane, creating two distinct crossings. This greenery will also be an addition to the city centre with relatively much pavement and benches will be applied on the V&D side.

The green lane also contributes to reduce unpleasant sensory experiences such as noise and fumes. The plinth on the Verwulft side is being transformed from a visual to physical permeability for the reactivation of the vacant heritage building by means of a widened canopy and food market. The green oasis applied in the middle of the void inside the building acts as an attraction and offers rest places along the walking routes that go through the building. By using a bicycle shed in the basement, the obstacles for the V&D disappear and the redesigned building invites users to play, perform art and enjoy temporary greenery projects.

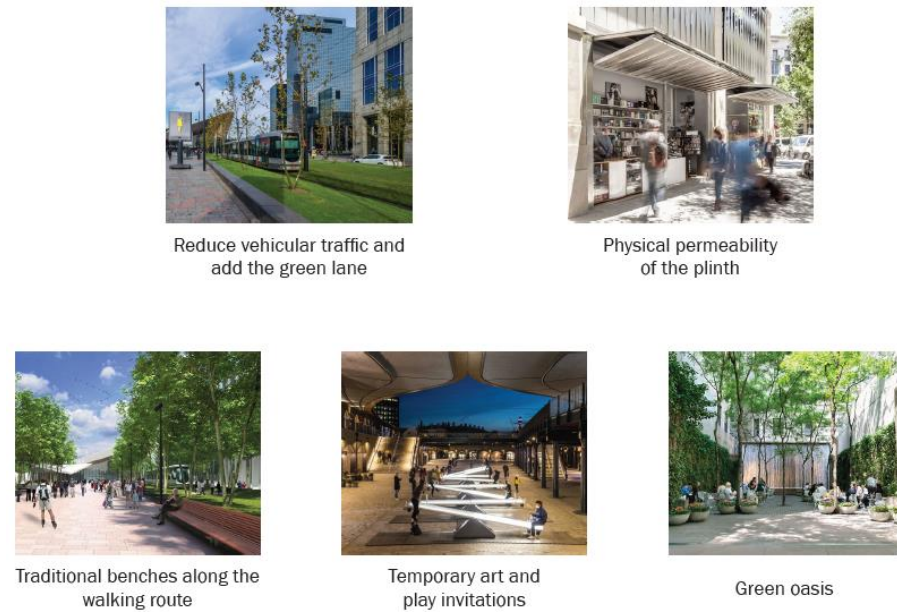


Figure 9 Recommendations applied in design, 2021

## 8. Discussion and social relevance

In the book *Cities for people*, a short explanation is given in the toolbox about the 12 quality criteria concerning the pedestrian landscape. According to this author, all twelve quality criteria must be applied to improve urban quality. The last quality criteria of positive sensory experiences is the 'umbrella' of all the criteria. However, the twelve criteria are only briefly described, and it is currently not clear how to implement the toolbox to support design decisions. This research contributes to fill this gap, by creating templates for each quality criteria, that can be used as a tool to collect and process information from notes, counts, routes, photos and scores. The present research also contributes to define links between the quality criteria, as shown in the figure 10. It can be seen that people must first be offered protection against traffic and accidents. By creating a safe traffic situation, unpleasant sensory experiences such as noise and exhaust fumes are reduced. Once this has been achieved, sufficient space can be made available for walking. By removing obstacles on the street such as unorganized bicycle parking, it is possible to add opportunities that lead to interaction between people such as talk/listen, stand/stay and play/exercise. By creating opportunities to sit, people can enjoy the positive aspects of the climate. In the appendix, there is a guidebook where the steps are described with V&D Haarlem as an example. Since it concerns a heritage context, a number of quality criteria were already present. This ensures that a number of criteria must be preserved and determines what to focus on. In the case of Haarlem, the monumental buildings offer opportunities to see and positive sensory experiences. Therefore, the focus was on the left part. For example, when transforming an industrial area, the focus will be more on the right-hand part. By offering people protection against crime and violence, people feel comfortable and can enjoy the sightlines of the opportunities to see. This makes it possible to see the scale and positive sensory experiences such as detailing of the delight part. Knowing the interrelations between the 12 quality criteria can support designers in prioritising redesign actions, to achieve a user experience-based design of the public space in historic city centres.

Improving the urban quality of the public spaces is crucial to adapt the historic cities for a sustainable future while preserving its valuable heritage. Urban public spaces is one of the priorities on *Sustainable Development Goals* established by the United Nations (2015), in the target 11.7, on universal access to safe, inclusive, and accessible green and public spaces. They provide opportunities for people to meet and interact with the community, contribute to the connection between human and nature and have multiple benefits to human and environmental health. Due to the increasing number of people living in urban areas, it is important to prevent rapid and uncontrolled urbanization from leading to the loss of these public space (UNESCO, 2011). By applying the 12 quality criteria to historic city centres, a number of quality criteria are present that must be preserved. In addition, it is important to do the historical layers of the city and study area. This provides insight into the development of the area, but also the values and attributes. In the case of Haarlem, the history and role of the V&D department stores chain also played a role. How the department store served as a public interior and meant specifically to the Haarlem community.

The *Spatial Planning Act* shows the vision of the municipality of Haarlem for 2040. A number of areas have been designated as transformation areas, where collages provide an image of the new design. However, no specific plans for the historic centre are shown. The design recommendations of the case study could contribute to give an impression of how to adapt the most important junction for a sustainable future. The methodology can be used to adapt other important places in the historic city centre as well. Furthermore, the vision of mobility can be applied to the city centre. The result of the survey which the municipality held about the experience of de Gedempte Oude Gracht and Verwulft shows that most of the residents are complaining about the amount and size of the buses. However, at the same time the municipality says that the buses will increase with 50% by 2040. By diverting two bus lines and car traffic around the historic city centre, the city centre is still accessible by public transport and the unpleasant sensory experiences like noise and exhaust fumes are reduced.

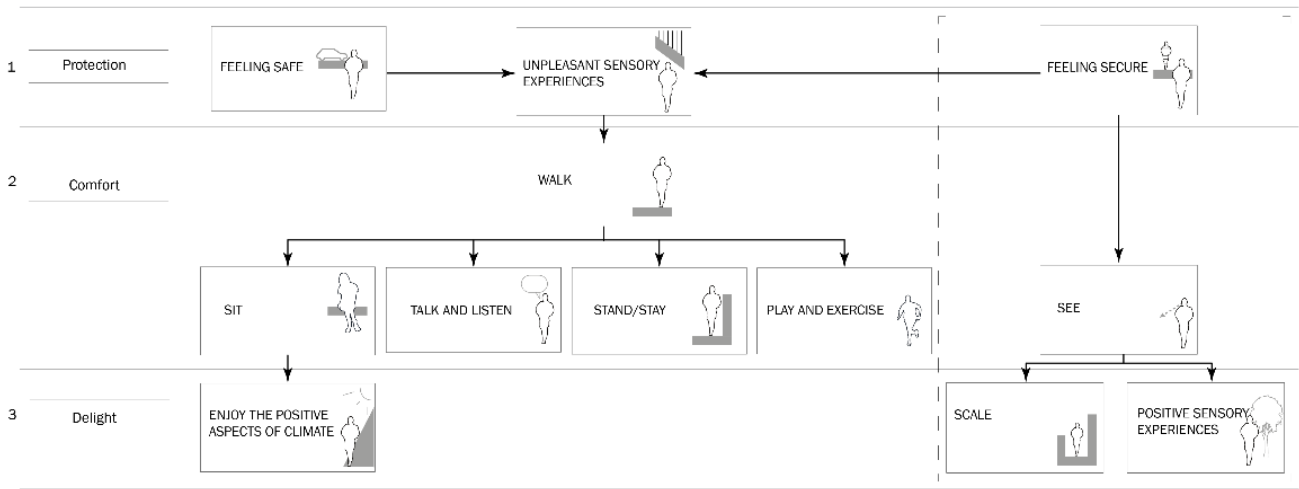


Figure 10 Table of interrelated quality criteria, 2021

## 9. Conclusions

The observations show that the Botermarkt offers plenty of opportunities that lead to interaction. It is an attractive square to stay in because of the overlapping functions of day and night, a low vehicular traffic flow, trees and the richly detailed buildings designed on a human scale. As mentioned before, feeling safe is a point of attention for Verwulft, as well as protection against unpleasant sensory experiences. The most notable observation was the lack of public seating. As a result, the city centre transforms into a transit zone, where people are not enjoying the advantages of the public spaces. By offering people protection, other opportunities such as the opportunities to sit, opportunities to play and exercise and positive sensory experiences, can be created afterwards. The recommendation of feeling safe is to look at the possibilities of reducing vehicular traffic, resulting in narrowing or replacing the wide, busy road. By changing the permeability of the plinth from visual to physical and widening the canopy, this could offer protection against unpleasant sensory experiences. An underground bicycle parking facilities could remove the obstacles on the footpath. Carefully placed traditional benches along the main pedestrian routes offers opportunities to sit. Adding elements such as swings or see-saws that can provide fun creates opportunities to play and see. Temporary exhibitions create new experiences for the user every time. These can be part of an attractive walking route that is enriched with works of art, which gives extra quality to the walking experience. The positive sensory experiences can be supplemented by creating an oasis through trees, plants and water. With regard to greenery, a flexible planting strategy can be used in addition to the general street tree strategy. Because of this, festivals and other public life programs are still possible. With these recommendations, Verwulft can once again transform from a transit zone to a public space where people like to stay.

## References

- Alkemade, F., van Iersel, M., Minkjan, M., & Ouburg, J. (2020). *Rewriting Architecture - 10 + 1 actions*. Amsterdam: Valiz.
- Gehl Architects. (2004). *Towards a fine City for People London Public Spaces and Public Life*. Copenhagen: Gehl Architects.
- Gehl Architects. (2007). *Sydney Public Spaces and Public Life*. Copenhagen: Gehl Architects.
- Gehl Architects. (2009). *Downtown Seattle Public Spaces and Public Life*. Copenhagen: Gehl Architects.
- Gehl, J. (2010). *Cities for People*. Washington: Island Press.
- Gehl, J. (2011). *Life Between Buildings*. Washington: Island Press.
- Gehl, J., Kaefer, L. J., & Reigstad, S. (2006). *Close Encounters with Buildings*. International: Urban Design.
- Hoeben, J. (1966). *Zeven eeuwen Haarlem*. Baarn: Tirion Uitgevers.
- Jagannath, T. (2016). *The Importance of Public Space*. Retrieved from Medium: <https://medium.com/interviews-and-articles-on-art-public-spaces/the-importance-of-public-spaces-5bb49ba6c000>
- Kaufmann, K., Straganz, C., & Bork-Hüffer, T. (2020). City-Life No More? Young Adults' Disrupted Urban Experiences and Their Digital Mediation under Covid-19.
- Krijnen, K., & Hondelink, P. (1987). 100 jaar V&D. *Magazine*, 4-60.
- Miller, M. (1981). *The bon marche : Bourgeois culture and the department store, 1869-1920*. Retrieved from <http://ebookcentral-proquest-com.tudelft.idm.oclc.org>
- Municipality Haarlem. (2017). *Haarlem 2040: Groen en Bereikbaar*. Haarlem: Municipality Haarlem.
- Municipality Haarlem. (2019). *Historisch Haarlem*. Retrieved from Visit Haarlem: <https://www.visithaarlem.com/uploads/media/5e68dd2b69eeb/historisch-haarlem-2019-nl-dig.pdf?token=/uploads/media/5e68dd2b69eeb/historisch-haarlem-2019-nl-dig.pdf>
- Municipality Haarlem. (2020, September). *Uitslag enquête*. Retrieved from Haarlem: <https://www.haarlem.nl/stationsgebied/uitslag-enquete/>
- NOS. (2015, december 31). *V&D failliet verklaard ontslag voor 10 000 werknemers*. Opgehaald van NOS: <https://nos.nl/artikel/2078043-v-d-failliet-verklaard-ontslag-voor-10-000-werknemers>
- Overmeer, A., & de Vries, S. (1982). *Kijk op Haarlem*. Amsterdam: Elsevier.
- Pimlott, M. (2016). *The Public Interior as Idea and Project*. Prinsenbeek: Jap Sam Books.
- Uittenhout, J. B. (1993). *Klein Duimpje en de Reus: het winkelpaleis van V&D aan het Verwulft*. Haarlem: Onbekend.
- UNESCO. (1976). *Recommendation on the Historic Urban Landscape*. Retrieved from <https://unesdoc.unesco.org/ark:/48223/pf0000114038>
- UNESCO. (2011). *Recommendation on the Historic Urban Landscape*. Retrieved from <https://whc.unesco.org/uploads/activities/documents/activity-638-98.pdf>
- United Nations. (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*. Retrieved from A/RES/70/1: <https://sdgs.un.org/2030agenda>
- United Nations. (2019). *International Migration*. Retrieved from UN: [https://www.un.org/en/development/desa/population/migration/publications/migrationreport/docs/InternationalMigration2019\\_Report.pdf](https://www.un.org/en/development/desa/population/migration/publications/migrationreport/docs/InternationalMigration2019_Report.pdf)
- Versluijs, V., Jansen, I., & Zijlstra, H. (. (2020). *Spatial Building Typology. Vacant Heritage: Department Stores V&D's*. Delft: TU Delft Heritage & Architecture.
- Vidal, D., Barros, N., & Maia, R. (2020). *Public and Green Spaces in the Context of Sustainable Development*. Retrieved from Sustainable Cities and Communities. Encyclopedia of the UN Sustainable Development Goals: [https://doi.org/10.1007/978-3-319-71061-7\\_79-1](https://doi.org/10.1007/978-3-319-71061-7_79-1)