GROWING UP IN CITIES

RESEARCHING THE PLAYABILITY OF A DENSE PROSPEROUS NEIGHBOURHOOD

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Master thesis in Landscape Architecture - Wageningen University

COLOFON

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MSc thesis Landscape Architecture:

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PREFACE

This report is the final product of a MSc thesis in Landscape Architecture at Wageningen University. The research for this thesis has started from a personal interest in city environments and well-being of people. I therefore had the desire to research something that is a combination of health and urban environments, which resulted in the topic: playability in dense urban neighbourhoods.

As a child I grew up in a rural environment. My parents had a backyard that was more than 100 metres long, which meant that as a child, my sisters and I could always go outside and play. I have always been wondering what it is like to grow up in a large city without having a backyard to play in and without having permission to go outside because of potential danger. Therefore I wanted to research the urban environment for its playability capacities to design for an environment in which children are safe to go outside and explore the world around them.

I would like to thank my thesis supervisor, Sanda Lenzholzer for her help and input. Furthermore, I would like to thank the Ingenieursbureau Den Haag for their flexibility and for providing facilities which made my work easier. My colleagues for the support, compassion and 'gezelligheid' when I needed it and Vivian in particular for our meetings and her help which kept me on track and gave me the strength to work further.

Above all, I am grateful for the support and understanding of my friends and family; I am sorry for not having been able to come to several birthdays and go on trips with you, just because I wanted to finish my thesis in time. I promise you to be very socially active after I have finished. I especially would like to thank Marloes for helping me out and giving me the last final push and Maarten for listening to me and hearing me nag every time during the whole process of my thesis. You were able to motivate me time after time, helping me to proceed. Thank you!
Because after all: "A smooth sea never made a skilled sailor".

SUMMARY

Nowadays, many children need to grow up in urban environments and the increasing urbanisation with for example the rise in car traffic, make it even harder for children to grow up in cities due to an increasing densification. Above all this, the contemporary pressure on achievements of children, for example on school, but also on the sports club or in the music classes, and the increasing modern technologies in play, for example computers and other digital applications, have reduced the time for children to go outside and play freely. These three pillars, urbanisation, increasing pressure on achievements and the modern technologies have decreased suitable outdoor space for play. Because playing outdoors independently has many developmental advantages for children, it is important for them to have the opportunity to go outside and play. Therefore the urban environment in which children live should be designed for so it becomes as playable as possible for children to be able to grow up and develop in healthy independent adults.

Little literature has focussed on the spatial characteristics of a neighbourhood creating a child friendly or playable environment for children in cities. Most sources are focussed on a broader idea of how play can contribute to health. The Network of Play model has been created with the idea of designing for a playable environment, but because this model has been tested on rather spacious neighbourhoods, it does not say anything about more dense neighbourhoods. Furthermore most literature describes deprived neighbourhoods for stimulating physical play activities, because of a high percentage of overweight children in these neighbourhoods. The goal of these researches is to reduce children being overweight. However, many literature sources indicate that when play is researched with the goal to stimulate physical activity only, many other health outcomes of free play are being forgotten. Furthermore, different literature sources indicate that children living in prosperous neighbourhoods might be even worse off, compared to children living in a deprived neighbourhoods, because deprived neighbourhoods often offer more opportunities for play than prosperous neighbourhoods. Therefore there is a need to research dense prosperous neighbourhoods for their playability, with as goal to find out to which extent children are able to play in dense prosperous urban neighbourhoods, to be able to design for possible improvements for the playability of the public outdoor living environment. Therefore the main research question: “What is the validity of the NOP model for a dense prosperous neighbourhood, with as example the Statenkwartier in The Hague?” will be answered in this research. The outcome of this research can function as example for other comparable neighbourhoods throughout the Netherlands.

The Statenkwartier is not child-friendly or playable in the current situation: there are too little play spaces, especially children in the age of 6 to 12 do not have many play opportunities. Furthermore, the public open spaces that might function as possible play space are not suitable, mostly due to disturbance. The main roads through the neighbourhood create barriers for children and make play spaces inaccessible. Also the possibilities for different qualities of play are too little. The few play spaces that are situated in the Statenkwartier were very crowded and are used by children a lot. The children often played physical activities and were socially active, but there were not many children playing with nature, having mental stimulation or manipulating the environment, which supported the outcome of the analysis that these different play opportunities are not given and therefore children are not able to play these types of play. Furthermore, most of the children think they have too little play spaces in the neighbourhood and they would also like to have different kind of play possibilities: Environmental manipulation opportunity, mental stimulation and nature play were often mentioned in their wishes for more stimulating play environments.

Doing research shows that the NOP model is a usable tool for examining a neighbourhoods playability. The tool makes clear which parts of the neighbourhood need more attention, what the

influence of possible barriers are and which play qualities need to be added to the possible play spaces. The outcomes of the analysis using the NOP model, are the starting points for designing for a more playable neighbourhood. The five main spatial criteria of the NOP model can be used to test a design on its playability. These are also the most important criteria belonging to free play, no matter in which environment, which have also been found in other literature. However the examples given in the original NOP model are not implementable in the Statenkwartier or any other dense prosperous neighbourhood, mostly because there is much less space for a possible play space or because the appearance of the play space does not match the formal look of the neighbourhood.
Because the five spatial criteria are not place-bound and do not give specific guidelines on how to implement something, these are multi-interpretable and therefore partly usable for designing in dense prosperous neighbourhoods as well. However a change to the interpretation of some of the criteria needed to be made, which resulted in some main principles for designing in dense prosperous neighbourhoods. These adjusted principles indicate that the three spatial criteria of quantity, location and accessibility of play, the independent mobility, need to be adjusted most to fit the context of the dense prosperous neighbourhood. Because children, if they are allowed to go outside, cannot always reach a primary play space, the near home environment with several secondary play spaces will be even more important for free play and developmental opportunities of for example meeting other children and learning to estimate distances. However, when wanting a full developmental experience, children should be able to reach a primary play space, if not without, then with their parents to really give them the play experience they need.

By using the principles of the adjusted NOP model, the model becomes a valid tool for researching and designing for the playability of dense prosperous neighbourhoods such as the Statenkwartier in The Hague.

SAMENVATTING

Vandaag de dag zijn er steeds meer kinderen die moeten opgroeien in een stedelijke omgeving. Een groeiende verstedelijking zorgt ervoor dat het nog moeilijker wordt voor kinderen om op te groeien door een verdichting van de stad en een toenemend aantal auto's. Bovendien wordt er tegenwoordig steeds meer druk gelegd op het presteren van kinderen op school, of tijdens de muziek of sport lessen. Bovendien hebben moderne technologieën als bijvoorbeeld de televisie of de computer zijn uitwerking op het buitenspelen van kinderen. De drie pijlers, verstedelijking, prestatiedruk en moderne technologieën, hebben de mogelijkheden voor kinderen om buiten te spelen verminderd. Er zijn minder geschikte plekken beschikbaar, wat zorgt voor een slechte speelbaarheid van een wijk terwijl buiten vrij spel juist een belangrijke mogelijkheid is voor kinderen om zichzelf te ontwikkelen. Daarom zou de stedelijke omgeving waarin kinderen leven geschikt gemaakt moeten worden zodat kinderen in zelfstandige en gezonde volwassenen kunnen ontwikkelen.

Weinig literatuur heeft zich gericht op de ruimtelijke karakteristieken van een wijk om deze kindvriendelijk en speelbaar te maken. De meeste bronnen richten zich op een globale visie over hoe spelen gezond kan zijn. Het Network of Play model heeft zich wel op ruimtelijke karakteristieken gericht, maar is alleen getest op wijken die ruim zijn in opzet en zegt daarom weinig over wijken die dichtbebouwd zijn. Bovendien richt de meeste literatuur zich op arme wijken waarin het hoogste percentage kinderen met overgewicht woont. Deze onderzoeken hebben als doel het stimuleren van fysieke activiteit, terwijl juist veel onderzoeken aantonen dat wanneer men zich alleen richt op fysieke activiteit in spel, de andere ontwikkelingsmogelijkheden vergeten worden. Ook geven bronnen aan dat kinderen in rijke wijken wellicht slechter af zijn dan kinderen in arme wijken omdat arme wijken vaak speelbaarder zijn dan de rijke wijken. Daarom is het nodig om onderzoek te doen naar de speelbaarheid in dichtbebouwde rijke wijken, met als doel het uitzoeken van de mate waarin kinderen in rijke dichtbebouwde wijken buiten kunnen spelen om uiteindelijk te kunnen ontwerpen aan een verbetering van de speelbaarheid van de publieke openbare ruimte. Daarom zal de hoofdonderzoeksvraag: "Wat is de geldigheid van het NOP model voor een dicht bebouwde, welvarende wijk, met als voorbeeld het Statenkwartier in Den Haag?" in deze thesis worden beantwoord. De uitkomsten van dit onderzoek kunnen gebruikt worden voor andere dichtbebouwde welvarende wijken in Nederland.

In de huidige situatie is het Statenkwartier niet kindvriendelijk of speelbaar te noemen: er zijn te weinig speelplekken, zeker voor kinderen in de leeftijd van 6 tot 12 jaar. Bovendien zijn de publieke openbare ruimtes die eventueel als speelplek zouden kunnen functioneren niet geschikt omdat er te veel verstoring is. The belangrijkste wegen door de wijk zorgen voor barrières waardoor kinderen niet op een speelplek kunnen komen en de verschillende spelkwaliteiten die gespeeld kunnen worden zijn niet compleet. Van de weinige speelplekken die er zijn, worden de meesten wel heel druk bezocht. De kinderen speelden vaak fysiek spel en waren sociaal actief. Er waren weinig kinderen die met natuur speelden, mentaal spel speelden of de omgeving aan het veranderen waren. Dit ondersteunt de uitkomst van de analyse dat juist deze typen spel niet mogelijk zijn op de verschillende speelplekken. Ook veel kinderen vinden dat er te weinig speelplekken zijn en dat op deze speelplekken te weinig verschillende typen spel mogelijk zijn. De veranderbaarheid van de omgeving, mentaal spel en natuurspel werden kwamen vaak naar voren in de wensen van kinderen.

Door het doen van onderzoek is gebleken dat het NOP model een bruikbaar instrument is voor het examineren van de speelbaarheid van een wijk. Het geeft duidelijk aan welke delen van de wijk extra aandacht nodig hebben, wat de impact van barrières is en welke speelkwaliteiten toegevoegd moeten worden aan de mogelijke speelplekken. De uitkomsten van deze analyse zijn de vertrekpunten voor het maken van een ontwerp. De vijf ruimtelijke criteria die naar voren komen in het NOP model blijven belangrijk voor ieder type wijk, deze komen namelijk ook vaak in de literatuur

naar voren. De ontwerpen die worden gegeven in het NOP model zijn echter niet bruikbaar voor in het Statenkwartier of een andere dichtbebouwde rijke wijk omdat er veel minder ruimte aanwezig is en omdat de uitstraling vaak niet past in de formele uitstraling van de wijk.
Omdat de vijf ruimtelijke criteria niet plaats gebonden en zijn en op meerdere manieren interpreteerbaar zijn deze gedeeltelijk bruikbaar voor het ontwerpen in dichtbebouwde rijke wijken, ook al is er wel een verandering in de interpretatie van een aantal criteria nodig. Deze veranderingen resulteerden in een aantal hoofdprincipes voor het ontwerpen in dichtbebouwde rijke wijken. De principes geven aan dat vooral de ruimtelijke criteria van kwaliteit, toegankelijkheid en locatie van spelen, samen gezien de zelfstandige mobiliteit van kinderen, enige aanpassingen nodig hebben. Omdat kinderen, als ze buiten mogen komen niet altijd een primaire speelplek kunnen bereiken, worden de secundaire speelplekken in de nabije omgeving nog belangrijker voor vrij spel en ontwikkeling. Alleen om een volledige ontwikkeling mogelijk te maken, moeten kinderen toch de primaire speelplek bereiken, met of zonder ouders, om zo alle typen spel te kunnen spelen.

Al met al blijkt dat door de principes uit het aangepast NOP model te gebruiken, deze een geldig instrument blijft voor het onderzoeken en ontwerpen aan een speelbare dichtbebouwde welvarende wijk zoals het Statenkwartier in Den Haag.

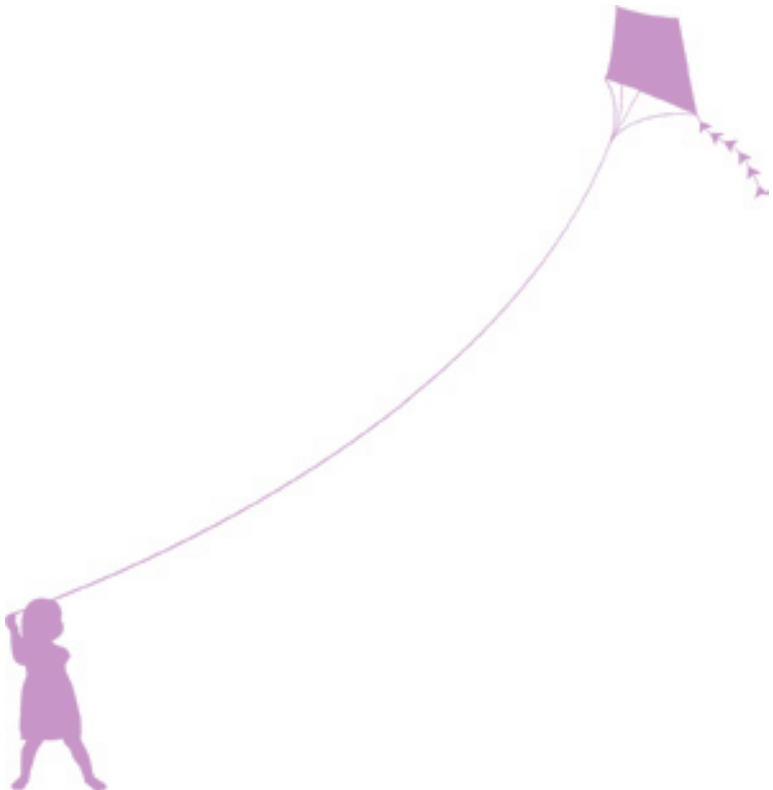


TABLE OF CONTENTS

1. INTRODUCTION

1.1 TRENDS FOR RESEARCH

The following chapter will be structured as follows:

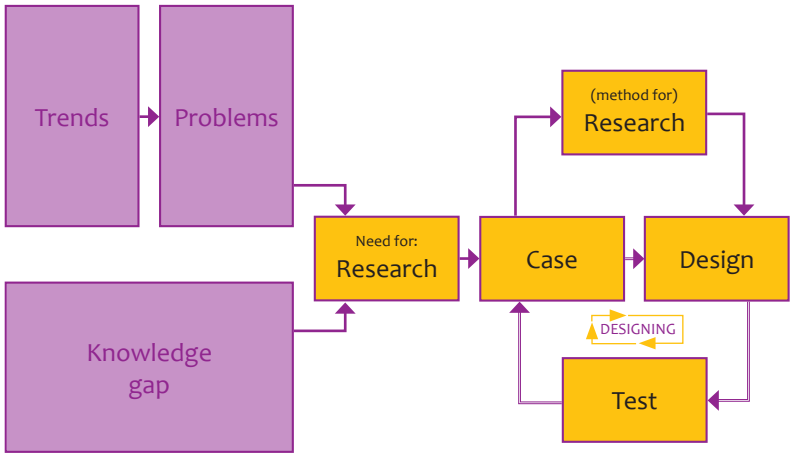


Figure 1.1: Framework for research and design

The trends and problems in contemporary society in combination with the knowledge gap in research leads to the subject of my master thesis. The method selecting a case and doing further research as well as the way of designing and testing will be elaborated in further chapters.

1.1.1 Urbanisation

Our cities are expanding, an increase in urbanisation has been seen over the last few decades, resulting in new suburban neighbourhoods close to the inner city and densification within the city (Bakker et al. 2008). Between 2000 and 2050 the proportion of people living in urban environments globally is expected to rise from 46,6% to 69,6% (Lee and Maheswaran 2011). With this trend of people moving towards cities, concerns about living standards are rising. Especially for city children there is a growing concern about their opportunities for growing up and developing in the contemporary urban environment. Doubts that have arisen concerning the physical outdoor environment include for instance the space, quality and safety of the public outdoor environment (Karsten et al. 2006). According to Karsten and her colleagues, it is essential for young children to have a safe place to play that is not restricted to only their small inner city backyard or even worse, the indoor home environment. Woolcock et al. call for research to watch and evaluate the development of families with children dwelling in cities: for example the amount of children living in flats and the building of higher density centres for the childless are important points of discussion (Woolcock et al. 2010).

One of the problems that arises with the increasing need of urban living, is the car as transport mode. The car as modern technology increases our personal comfort, but also causes our already dense cities to be full of cars, resulting in less space for non-car users. One of the groups that have been badly affected by the emergence of cars are children. The public outside environment in cities in the Netherlands used to be a 'child space', but has turned into an 'adult space' in which children often do not fit. Home has become an increasingly important 'child space' (Karsten 2005). Children have changed and have become 'indoor children' or children of the 'backseat generation', implying they do not go out by themselves anymore, but always accompanied by a parent, or do not go outside at all in their free time. There is a decrease in playing outdoors and an increase of adult supervision. Although neighbourhoods differ

in the way they accommodate children's needs in the outdoor play environment, which will be elaborated later in chapter 2, overall can be seen that children were playing outside much more in the past than in the present. The houses were smaller and more densely populated and in 1950 there were ten times as much children as cars, whereas today there are twice as much cars in comparison to children within a neighbourhood (Notten 2006). The way in which children can move throughout their environment have thereby changed a lot over the past fifty years (Bouw and Karsten 2004). Children are nowadays kept inside because of car traffic and too much parking space. And above all this, researchers have seen an increase in sedentary behaviour, by inside activities, which can be dangerous for a child's development (Hendriksen et al. 2013).

Some researchers state that there has been a decreasing governmental attention on families living within cities in the past few decennia (Karsten et al. 2006). Karsten et al. therefore call for a catch up of the knowledge that is present about families living within the cities. According to Karsten there is a distinction between families that do not have a choice and are thus forced to raise their children within a city environment, mostly immigrant families, and families that explicitly choose to raise their children in a city because they identify themselves as 'city folks', mostly middle-class people (Karsten 2007, Karsten et al. 2006). This distinction can also be seen as a division between wealthier and poorer city dwellers (Karsten et al. 2001).

The middle class families mention time-geographical reasons for their preference for living within a city, not having to travel too far for work, as well as social embeddedness: having friends living nearby, and seeing themselves as true urbanites (Karsten 2007). The immigrant families on the other hand live within cities because they hope to find a good future for their families there.

There is also a contradictory trend starting to arise: many urban planners want middle-class families to come to cities and live there, because they think that with the arrival of these families, other urban problems are going to be solved (Broberg et al. 2013, van den Berg 2013). These developments however are often not the solution to the city problems, because these problems will just move to other neighbourhoods with the relocation of certain 'problem groups'. Furthermore, when wanting families to come to cities, there should also be amenities for them to use in order to give them a pleasant living environment. Middle class families in cities demand suitable play environments for their children.

1.1.2 Achievements and increasing modern technologies

Today's society is very focussed on achievements. This starts already at a young age. Parents want their children to be good at school, perform well at sport lessons and be outstanding at the music classes (Alexander et al. 2012, Aziz and Said 2012, De Visscher 20). Also, some children are taken everywhere with their parents, at the expense of free time for the child (Bouw and Karsten 2004). This has resulted in a society in which play is not seen as something beneficial anymore, and if play is seen as something good, it is seen as good for getting children to be physically active. But play has much more to offer and is good for the development of children in many facets (Koning, 2012). The actual opportunities playing has, will be described in chapter 2.1. Furthermore, another aspect that has made outdoor play diminish more and more is the increase of modern technologies. Having a TV and a computer makes children want to go outdoor less than they used to go. The indoor alternatives are getting too interesting for children (Aziz and Said 2012, Bouw and Karsten 2004, Louv 2005).

1.2 KNOWLEDGE GAP

Most studies, among others the Network of Play model (Bakker and Fähnrich 2008), have examined deprived neighbourhoods in their search for activity stimulating and playable environments for children. These neighbourhoods however are by far not the only neighbourhoods in which children live in the city and because outdoor free play has many benefits for the development of children, more prosperous neighbourhoods should also be examined for their possible outdoor play opportunities. The question is how to deal with prosperous neighbourhoods in making them playable. Can this be the same as designing for a deprived neighbourhood? Because there is no research done on playability of public urban environments for children in more prosperous neighbourhoods, the differences between these neighbourhoods and the deprived neighbourhoods are not known. Designing for these neighbourhoods is therefore harder even though playing freely is important for middle class children as well.

Furthermore, the Network of Play model is tested only on quite spaciously designed neighbourhoods. Also other methods or models are mostly made for neighbourhoods in which there is quite some public space to design for. Therefore it is good to find out how to design for more dense neighbourhoods. Design interventions in dense neighbourhoods might require more space adaptation before a space for children to play can be designed.

1.3 PROBLEM STATEMENT

There is an ongoing battle for space in urban environments, which are becoming one of the most important environments in which people live and work. Many people are moving towards the city and this number is expected to rise in the future (Gemeente Den Haag 2012, Lee and Maheswaran 2011). Due to this trend, children are also required to grow up in an urban environment (Refshauge et al. 2013), where they are often limited in their free behaviour because of lack of space and safety. The changing urban context, with for example the rise of car traffic, has made it harder for children to grow up healthy and safe, especially in densely built urban environments that have been built before the arrival of the car as transport mode. Therefore there is a need for urban environments that can stimulate outdoor free play for children so that they are able to develop into healthy adults.

The possibility for outdoor play depends among others on the type of neighbourhood children live in, which in turn differs by socio-economic status of the neighbourhood. Differences that may occur and that may influence the playability of a neighbourhood have to do for example with the extent to which children have access to a private yard, the amount of cars that families have and the way in which this influences the public outdoor space, the quality and quantity of public playgrounds and the amount of space available for walking and biking purposes. The inequalities that arise with these differences in neighbourhoods can be big. Different sources indicate that children growing up in prosperous neighbourhoods might suffer more from an urban environment that is not inviting to play in (Karsten 2005, Karsten et al. 2001). Because spatial research on outdoor play in city environments has only been done on deprived neighbourhoods, focussing mostly on stimulating physical activity in children, there is a need for research on playability of prosperous urban neighbourhoods.

Summarized, the **problem statement** is: The changing urban context, with by example the rise of car traffic, has made it harder for children to grow up and develop healthy and safe. Therefore there is a need for urban environments that can stimulate outdoor free play for children in densely built, prosperous neighbourhoods.

Research goal: Find out to which extent children are able to play in dense prosperous urban neighbourhoods, to be able to design for possible improvements for the playability of the public outdoor living environment.

1.4 RESEARCH QUESTIONS

1.4.1 Main research question

What is the validity of the Network Of Play model to solve the playability problems in dense, prosperous neighbourhoods, with as example the Statenkwartier in The Hague?

1.4.2 Sub research/design questions

1. What is the playability of the Statenkwartier, a dense prosperous neighbourhood, according to the five spatial criteria as described in the NOP model?
   - (Quantity of play) Are there enough possible play spaces for children?
   - (Location of play) Are the possible play spaces situated in the right location?
   - (Accessibility of play) Are the possible play spaces accessible for children?
   - (Quality of play) Do the possible play spaces contain elements for all qualities of play?
   - (Landscape use) Do the possible play spaces contain landscape elements to play with?

   (Neighbourhood analysis)

2. How do children use and judge the playability of the Statenkwartier, a dense prosperous neighbourhood, today?
   - Do children think there are enough places to play?
   - Do children think the possible play spaces are situated in the correct location?
   - Are children able to access the possible play spaces?
   - When the possible play spaces are equipped with elements for different qualities of play, are these different qualities being used by children and what do children think about these elements?
   - When the possible play spaces are equipped with landscape elements, are these elements used and what do children think about these elements?

   (Observations and sample interviews)

3. How can the contemporary public outdoor environment of the Statenkwartier in The Hague be redesigned using principles from the NOP model, so that it becomes more playable for children?
   - Is the NOP model an usable tool for designing in dense, prosperous neighbourhoods?
   - If it is not an usable tool, how can the model be adjusted so that it becomes applicable?

   (Designing)

1.5 METHODS

The different methods that will be used to answer my research questions should be clear and defined. Therefore a start will be made by doing a literature study on the way children are able to move and play freely throughout the city and what the important aspects for a playable district are. This way secondary data is collected and by getting a good insight in the subject I was able to frame the outline for this thesis proposal and form a few basic criteria on which the neighbourhood has been chosen, as will be explained below. The literature study starts with a broad investigation children in all age categories, but will give more in depth information on the main target group of this research: children until the age of about 14, especially children in between 6 and 14 whom might get the opportunity to play freely, without their parents. In the following section, the methods for researching the individual research questions will be explained.
The purpose of using some different methods to answer the several research questions is that eventually the outcomes of the research can be compared with each other in order to be able to validate the outcomes by means of triangulation. This means that the research, whether this is a neighbourhood analysis, an observations or the sample interviews, must be comparable to each other, so the same criteria should be looked at. This is achieved by using one single model for the different research questions: the NOP model. However, not every method offers the opportunity to focus on all the different design criteria as described in the NOP model. For example, observations of children playing, cannot give a direct insight in the quantity and accessibility of the potential play space. The sample interviews on the other hand, do give an opportunity to ask for those criteria. By asking for these criteria in the sample interviews and by using the criteria in the neighbourhood analysis as well, it is still possible to check the outcomes of both of the methods by using triangulation. Another option is to look at an indirect relation, for example, the accessibility of a playground cannot be seen by observing the children play, but the fact that there are many parents present at the playground or the fact that children arrive at school with their parents only, instead of alone might mean that the accessibility of the child facility, be it a school or a playground, is insufficient (Broberg et al. 2013, Carver et al. 2008, Trapp et al. 2012, van Loon and Frank 2011). The intention is to use at least two different methods per design criteria of the NOP model, and to use all three methods when possible. This third method may be an indirect relation with one of the criteria.
Chapter 2.3 will give a more in-depth insight in the different methods and the way these different methods correlate with each other.

1.5.1 Case selection

City environment

Play opportunities in the public open space are diminishing, especially in city environments. The reason for choosing the Hague as case, besides the fact that The Hague meets the criterion of being a big and dense city, is explained in this chapter.

Today, almost a quarter of all the inhabitants of The Hague are children. On average, these children play half of all days outside (Gemeente Den Haag 2008), which is less than the national figure showing that 60% of the children plays outside almost every day and 35 % a few times a week (Zeijl et al. 2005). Also, the prognosis of the municipality of The Hague shows that the number of children and youth between 0 and 26 years old is expected to rise with 7,1 % towards more than 170.000 in 2025 (Gemeente Den Haag 2012). This will be more than one third of the total number of inhabitants, which makes it even more necessary to research the opportunities for children to grow up healthy and safe. The goal of the municipality is to make The Hague into a “youth- and family-friendly city, in which children can grow up healthy and safe to become independent adults”. This statement applies to all children living within the municipal border of The Hague, meaning that both children living in deprived neighbourhoods and in more prosperous neighbourhoods should be included, and both children in a greener suburban neighbourhood and those living in the inner city with little public space.

Because the municipality itself is focussing on children inside the city environments already and because of the rise in amount of children in the coming years, The Hague is an interesting case for this research.

Neighbourhood selection

To choose the most relevant neighbourhood to focus on in the research, a short look inside the history of The Hague was necessary.

Between 1890 and 1920 the number of inhabitants in The Hague has risen from 155000 to 355000 (Freijser 1991); an increase that more than doubled the amount of people living in the city. In comparison to the amount of people living in The Hague today, nearly a century later (almost 510000 people (Gemeente Den Haag 2014a)), the increase that has occurred at the beginning of the 20th century is significant for the history of The Hague. These new inhabitants all had to live somewhere and this can be seen in the amount of neighbourhoods that have been built within this time period. Some of these neighbourhoods are situated on the higher sandy grounds, the wealthier regions, and some are built on the lower peat areas, the poorer regions. Because entire neighbourhoods have been built in this time period when the car was not in the picture yet as transport mode, it would be interesting to find a neighbourhood from this time period to research for its play opportunities because of the changes pre-war neighbourhoods were forced to undergo when the car did arrive. Research suggests that especially because of the arrival of the car, the play opportunities for children have diminished due to little and bad quality space (Bouw and Karsten 2004, Jansen 1996). Therefore, this research can potentially show how this space claim has been dealt with throughout the years and what has come from it now.

Because contemporary spatial research in outdoor play of children is often focussed on stimulating play and physical activity in deprived neighbourhoods only, this research project focuses on its counterpart: a prosperous neighbourhood. Some researchers indicate that these more prosperous neighbourhoods offer less opportunities for children to play outside (Cutts et al. 2009, Franzini et al. 2010, Karsten 2005). However, these researches are not executed on the bigger spatial environment of the neighbourhoods, but only focus on the smaller elements within the neighbourhoods, such as the amount of formal play spaces and the number of playground equipment.

The neighbourhood choice has been made on the basis of different figures regarding the building period, urban structure and the living environment of children. The main focus point was the amount of children that live in the neighbourhood. The next focus point for me was to take a neighbourhood that shows characteristics indicating that children would need the urban public space in their outdoor play, meaning that for instance neighbourhoods consisting of mostly detached houses are not adequate for this research. Also, a neighbourhood which completely consists of houses with large

Figure 1.2: Location The Hague and Statenkwartier (Google maps 2014)

gardens is less interesting to examine because the children will be less reliant on the urban public space which is to be researched. Therefore, a neighbourhood has been chosen with a relatively high percentage of upper houses or flats, having little or no outdoor space. Because cars have shown to be a big threat to the playability and usability of a neighbourhood for children, both in terms of safety issues and space claims, a neighbourhood is chosen that has been built in a period in which cars were not present yet, resulting in less urban space that is nowadays still available for non-car users among which a large group are children.

I will use the Statenkwartier as case for this research. This is a prosperous neighbourhood situated in the North of The Hague, close to the beach, located on the higher sandy ridges of the city, as can be seen in figure 1.2. It is built around 1900 and has a set-up that includes many narrow streets with lots of parking space for cars and without many open spaces such as public squares or green spaces. The urban development structure has been designed I.A. Lindo, manager of the 'Dienst Gemeentewerken' in that time (Freijser 1991). His designs are characterized by parallel lines, in between which construction companies could build their homes, crossed by some diagonal, more spacious, roads, which have now become major transportation routes through the neighbourhood.
The Statenkwartier houses a percentage of children that is higher than average in The Hague, respectively 24,3% against 23% (Gemeente Den Haag 2014a). Also, within the neighbourhood many people live in houses that do not have a private garden. For example, 47,2% of the total amount of houses in the Statenkwartier are either upper houses or flats. Furthermore, there are also some maisonettes and porch houses that partly do not have private gardens.

Besides these reasons for choosing the Statenkwartier as case, recently the Statenkwartier has been picked as one of the neighbourhoods for the 'Kindvriendelijke wijkaanpak' - child-friendly neighbourhood approach. This approach has been set up to improve the neighbourhood, including its public space and making it child friendly (Gemeente Den Haag 2014b).

Because the NOP model has not been tested on a neighbourhood typology that is comparable to that of the Statenkwartier, it would be interesting to find out if the model is also possibly successfully implementable in this neighbourhood, which is substantially more dense than the 'Naoorlogse tuindorp' and 'de wijkgedachte' that have been examined by Bakker and Fähnrich. The neighbourhood typology of the Statenkwartier is comparable to other neighbourhoods in other cities and therefore this case can be used for a more general outcome for dense prosperous neighbourhoods.

1.5.2 Methods related to individual research questions

The first and second research questions: "What is the playability of the Statenkwartier, a dense prosperous neighbourhood, according to the spatial criteria as described in the NOP model?" and "How do children use and judge the playability of the Statenkwartier, a dense prosperous neighbourhood, today?", including the sub research questions belonging to those two questions will be answered by using the spatial criteria of the NOP model by Bakker and Fähnrich (2008). These are (p.95): 'quantity of play', 'location of play' (social control, disturbance and environmental conditions), 'accessibility of play' (child-friendly connections and separation from motorized traffic) and 'landscape use'. Also the quality of play environments will be analysed, using the six criteria of 'qualities of play' (ibid, p. 66): complexity, environmental manipulation opportunity, plural target groups, physical stimulation, mental stimulation and social stimulation.
The first questions will be researched by a neighbourhood analysis and the second research question will be answered by doing a behavioural observation, or behaviour mapping as described by Moore and Cosco (2010), and sample interviews.

Neighbourhood analysis

By doing a neighbourhood analysis using the NOP criteria, the playability of the neighbourhood can be analysed and possible weak points can be revealed. The spatial design criteria in the method will give some insight into why the neighbourhood is playable or not. The neighbourhood will be divided into three different sections which will each be analysed for the playability opportunities it gives to children.
The last criteria of the NOP model, qualities of play, can differ per neighbourhood section and therefore do not give an insight in the actual difference between the sections although it does give clues on which areas might be more suitable for play than others. As Bakker and Fähnrich also mention in their NOP model, on the neighbourhood level the 'accessibility of play' and the 'location of play' criteria have a higher priority than the 'qualities of play' and 'landscape use' criteria because the location and accessibility of these areas are often difficult to change without major transformation to the urban structure.

Besides the analysis that will be done on the playability of a neighbourhood, other inventories and analyses that can be regarded as 'urban analyses' will be done to find out more about the neighbourhoods as entity and about the people living in this neighbourhood. Furthermore, figures about the Statenkwartier will tell something about the neighbourhood and the way it is structured. The Statenkwartier is much denser built than any neighbourhood on which the NOP model has ever been tested, but it is good to find out how much actual outdoor free space there is to design with for improving the playability of the neighbourhood. This analysis will focus on the different aspects that are important for children to be able to move freely throughout their neighbourhood. These aspects will come forward in chapter 2.1.

Observations

Observations will be done in different places within the neighbourhood that have turned out to be an important (possible) play space for children according to the NOP neighbourhood analysis and the urban analysis. The reason for choosing observations is to watch the movement patterns of the children that visit that place and to see what kind of play they use. Behaviour mapping can yield information about relationships between environment and behaviour (Moore and Cosco 2010).
Also, for example the total amount of children observed, and the extent to which they are active will be noted. Different areas for play will be observed, meaning that some of these areas might be used more than others, which possibly also gives an insight in the most preferred places for children to play and the places where many children are, showing that there are more opportunities for children to play on one site than on another. The focus of the observations is on children in the age category of approximately six to twelve years, but all other children will also be observed and noted down. In total I have observed on nine different days; three times a week for three weeks in a row. Eight different play spaces have been observed each time. The order in which the different play spaces have been visited differs to make sure that every play space has been visited at different times. The visits however did always take place after school hours and when the weather was good enough to play outside. This means that I did not do observations on rainy days and all observations have been done on days with temperatures higher than 16 degrees. These circumstances have also been written down in processing the data.

The observations are noted by using maps. I will use the maps of the areas, such as the ones as described in a book on researching landscape and health (Ward Thompson et al. 2010, pp. 50-60). I will use several maps for one observation, each concerning a different topic. On these different maps I will note down the place of the user and depending on the topic of that map, by using different colours or symbols, their activity. The different topics will be:

- Multiple target groups:
    - Gender: boy/girl
    - Age: parents / children <6 years / children 6-12 years / children >12
- Qualities of play:
    - Manipulating the environment – not manipulating
    - Physically active – Not physically active
    - Mental stimulation: creativity/exploration
    - Social play – individual play
- Landscape use: Using landscape elements or not

The maps that are created during this behavioural observation are being processed into the computer and the different sessions of observation will be shown all together on a map to show the intensity of the different areas of the sites.
Besides these maps, the observations lists that are added in appendix A.1 are used to count the number of children on a site and note down their activities. Also, extra things that stand out can be noted down. The amounts of children will be put in a Excel table to be able to see a complete overview at a glance. On site simple counting lists will be used to note down the amount of children that fall within a certain category.

Sample interviews

The NOP model criteria are used to structure the interviews. Using this prior information makes sure that the interviews become semi-structured, so that beforehand is known what the important issues are and what to ask for. This will make it easier to process the data that comes from the interviews. Also, this way of interviewing leaves a little space for the interviewee to add some of the, in their opinion, important aspects. This can lead to insights and knowledge which initially is not asked for, but can be useful for the research. The outcomes of the interviews will be used to validate the outcomes of the observations by means of triangulation from these different data sources, including the available present literature (Creswell 2009). When doing interviews with children it is important to ask parent's permission and stick to just a few simple questions so that a child's attention will not fade away. Interviewees will stay anonymous, only their age will be asked for. When children were asked for an interview without their parents being there with them, I gave the children a letter for their parents to inform the parents about the questions I asked their children, where I was using the answers for and what they could do if they did not want their children's answers to be used in the research. The information letter to the parents has been added in appendix A.4.

Interviews have been held among children that can be found on the street. Purposeful selection has been used in selecting the children to interview (Creswell 2009), to make sure that children were approximately in the right target group (children between the age of 6 and 12) and to try to interview approximately as much boys as girls. Selecting children on the street might be tricky because you might not reach all the different types of children as described by Karsten (2005). The interviews itself are added in appendix A.2 and A.3 in English and in Dutch, as the questions will have to be asked in Dutch to be able to actually communicate with the children. Some interviews have been conducted in English, as some children were international.

In total 18 interviews have been conducted, on different days with comparable weather. After school hours have been used for interviewing, as this was the time in which children could be found outdoors. When doing the interviews and the observations, multiple copies of the forms as shown in appendix A have been printed and taken with me. The questions and the layout are ordered in a way that it can be processed into a computer easily, so that Excel sheet tables can be made that are able to show the outcomes clearly. Also I have taken several printed maps of the neighbourhood with me so that children are able to draw their most frequent routes and the dangerous points on the routes on these maps. I have made the map that I used in the interview

myself, using different points of recognition on top of a normal areal picture to make it easier for children to read the map. Some of these recognition points are for example the schools, sport centres, shopping streets, churches/mosques and playgrounds. I can also help them to position themselves when answering this question.

The map questions have only been asked to children that are actually able to read the map. If it became clear that they were not able to do this, they did not have to answer the map-question. This means that the amount of children that have been interviewed is not be the same as the amount of children that have filled in the map, which might make it less valid. Therefore the answers to these map-questions will not be seen as a fact, but just as an indication.

1.5.3 Triangulation NOP model criteria

As already introduced in the first chapters, the different aspects of the NOP model will be researched using different methods in order to be able to validate the outcomes. The following list shows sum up of the different methods that are used for the different criteria in the NOP model. Every criteria is tested using at least two different methods and when possible all three different methods. By doing this triangulation, I have been able to draw some preliminary conclusions that I have taken with me during the design phase as described in the next paragraph.

1. Quantity of play – Neighbourhood analysis and sample interviews
2. Location of play – Neighbourhood analysis, observations (indirect) and sample interviews
3. Accessibility of play – Neighbourhood analysis, observations (indirect) and sample interviews
4. Quality of play – Neighbourhood analysis, observations and sample interviews
5. Landscape use – Neighbourhood analysis, observations and sample interviews

1.5.4 Designing

At this point the play opportunities and the play behaviour in the Statenkwartier have been researched. The question that follows is whether the NOP model and its principles are applicable to the dense prosperous neighbourhood and if implementation of this model will solve the problems in the neighbourhoods. In this phase, concerning the last research question: "How can the contemporary public outdoor environment in the Statenkwartier in The Hague be redesigned using principles from the NOP model, so that it becomes more playable for children?", with its sub research questions: "Is the NOP model an usable tool for designing in dense prosperous neighbourhoods", "If it is not an usable tool, how can the model be adjusted so that it becomes applicable?", I will critically reflect on the NOP model and its usefulness for different neighbourhoods. Conclusions can be drawn on the basis of the previous research questions and with these conclusions different design criteria can be derived for a dense prosperous neighbourhood. The design criteria can be compared to the criteria in the NOP model to see if they match. It might be possible that for example the emphasis should be on one criteria more than another criteria of the model within dense neighbourhoods as opposed to the less dense neighbourhoods for which the NOP model has already been tested. Also the model has been tested on deprived neighbourhoods and not on prosperous neighbourhoods, which might also provide some differences between the actual improvement of the case neighbourhood and the NOP model improvement of a neighbourhood. The designing will not involve copying or implementing the NOP model literally; the model will be critically reflected on. This phase of the research, the actual designing, will help to reflect on the triangulation that has been done on the outcomes of the previous research questions. Designing will make clear to which extent the NOP model is a solution to the problem and implementable in the dense prosperous neighbourhood, or not. If it is not entirely implementable, designing will give options for adjusting the NOP model to make it suitable for these neighbourhoods as well.

The neighbourhood, or parts of the neighbourhood, can be redesigned on the basis of the outcomes of the previous research questions, to make it into a playable environment for children. This design can make clear how a dense prosperous neighbourhood can be made into a playable environment for children and in designing for this neighbourhood will be shown in what way the NOP model can still form a basis for this. Different focus points will be derived from the outcomes of the previous research questions, having shown what is more important or more problematic for the playability in the dense neighbourhood, and how to deal with this difference in the implementation of the NOP model on the case. Testing the implementation of the NOP model in a dense prosperous neighbourhood might mean that the adjustment of the model that is necessary, can be seen as adjustment for implementation in similar neighbourhoods as well, making it a more generalizable model for solving playability problems in such neighbourhoods.

The designs that are made will be made in such a way that they can possibly be fitted in the current situation of the neighbourhood. Also, designing only for children will never be an option, as there are also other urban space users. Options for specific locations within the neighbourhood that could be redesigned will come forward when having thoroughly analysed the neighbourhood on its opportunities for free play. For example, a part of a neighbourhood that urgently needs to be redesigned because it does not work in the way that it is now, might be a good option to design for. These in depth designs will only be possible when having done a thorough analysis of the area, meaning that I will have to watch these designs critically to see if they are also generalizable for other neighbourhoods, or not. The first steps into designing for a playable dense, prosperous neighbourhoods can be given and ideas can be derived from this for other neighbourhoods.

1.6 OUTLINE REPORT

The next chapters will tell the story of my research. I will start by giving an outline on literature on the subject of play in cities, why it is important, what the problems are, what the ideal environment would be and what the current methodologies are that are in use by municipalities. The chapter on literature ends with a more detailed description of the Network of Play model and its usability for my research.
Then I will introduce the case of my research in chapter 3. The Statenkwartier in The Hague will be elaborated and some initial information on the structure of the neighbourhood and some figures on it will be given.
The next chapter will go in depth on the research that is executed and therefore gives the outcomes of the neighbourhood NOP analysis, the observations and the interviews conducted. This chapter will end by comparing the outcomes of the three different methods to each other to give an indication on the usability of the NOP model for research. The outcomes of the triangulation will be the starting points for my design which will be explained in the next chapter, chapter 5. These designs give principles for the implementation of the NOP model, how this can be done and to which extent the NOP model is usable for implementation in dense prosperous neighbourhoods. Several detailed designs will be given which will be then be looked at from the perspective of what these designs mean for the entire neighbourhood.
The last chapter will finish by giving a conclusion and discussion. Recommendations for further research will also be given.

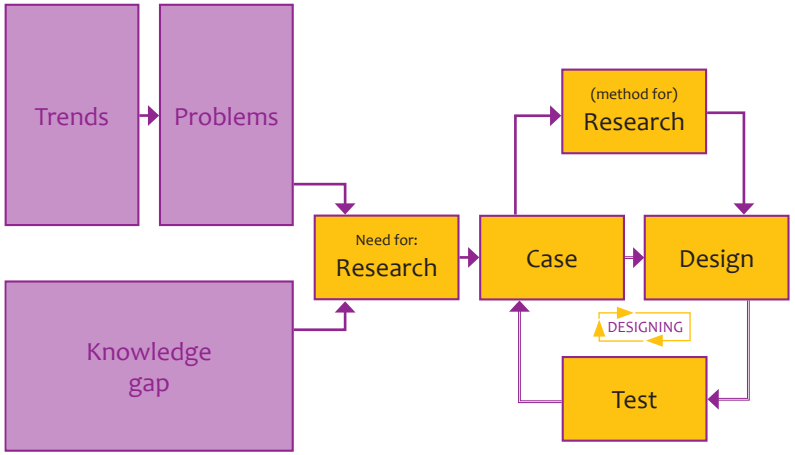
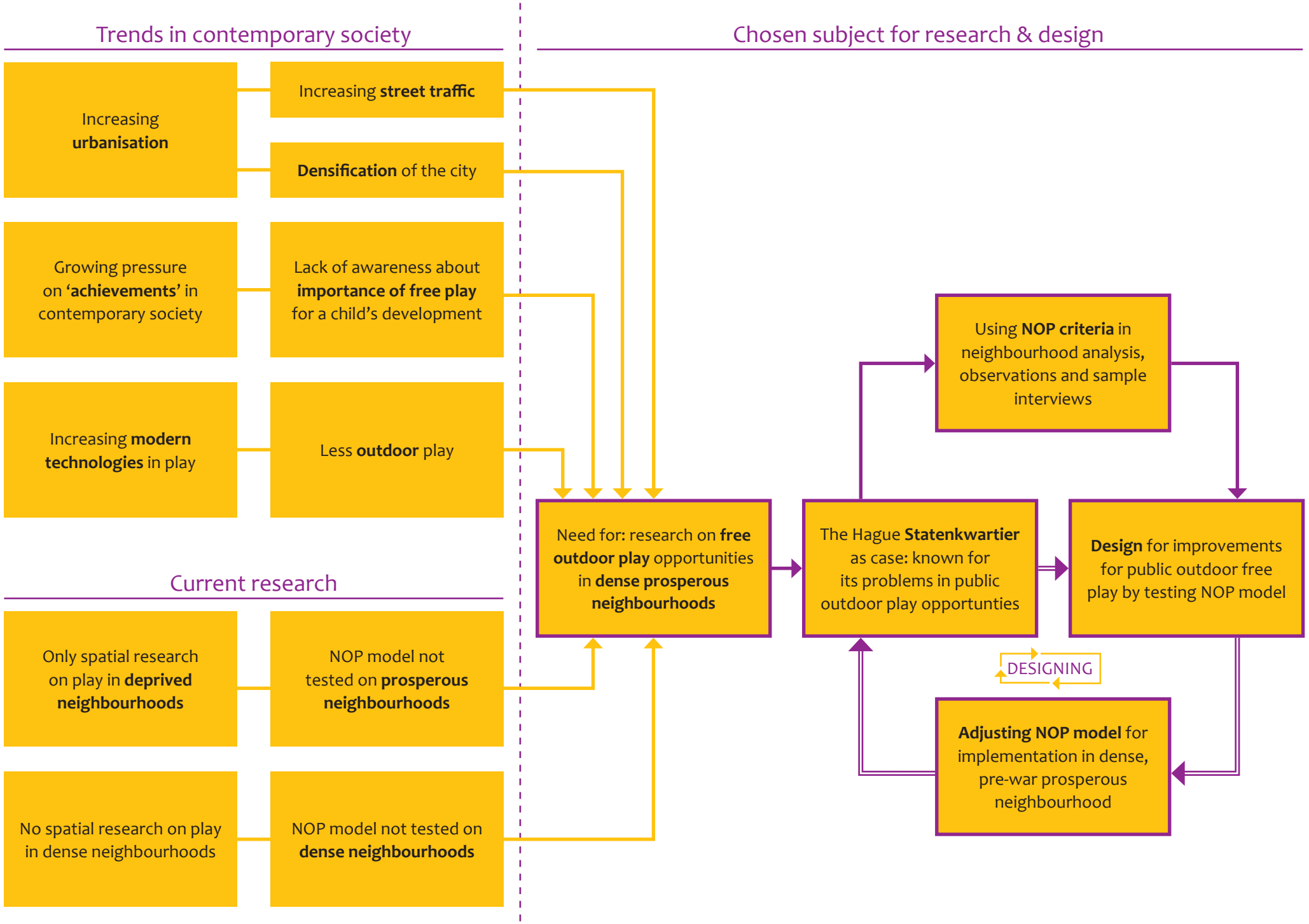


Figure 1.3: Scheme explaining global outine of this thesis report

Figure 1.4: Scheme explaining research and design process >


Trends in contemporary society
Chosen subject for research & design
Increasing urbanisation
Increasing street traffic
Densification of the city
Growing pressure on 'achievements' in contemporary society
Lack of awareness about importance of free play for a child's development
Increasing modern technologies in play
Less outdoor play
Current research
Only spatial research on play in deprived neighbourhoods
NOP model not tested on prosperous neighbourhoods
No spatial research on play in dense neighbourhoods
NOP model not tested on dense neighbourhoods
Need for: research on free outdoor play opportunities in dense prosperous neighbourhoods
The Hague Statenkwartier as case: known for its problems in public outdoor play opportunties
Using NOP criteria in neighbourhood analysis, observations and sample interviews
Design for improvements for public outdoor free play by testing NOP model
DESIGNING
Adjusting NOP model for implementation in dense, pre-war prosperous neighbourhood

2.

THE NEED FOR PLAY

2.1 EXISTING LITERATURE ON PLAY

This chapter will give an outline on the existing literature on the subject of play; the importance of play for development opportunities and how the outdoor public environment can play an important role in this.

2.1.1 Outdoor play for development

Outdoor play for children is important because of the many developmental advantages it has for children. It not only helps them to have enough physical activity, contributing to a healthier lifestyle and less overweight, but it has also shown to be important to children's immediate social, mental and physical health. Furthermore, it protects the children's health when they get older (Veitch et al. 2006).

The outside world is an important aspect in the development of children and therefore it is important that they come in contact with this environment (Reijndorp and van der Zwaard 2007). If children are limited in their outdoor play, regardless the reason why, they are held back in their development opportunities in terms of motor skills, language development and integration (Notten 2006). The broader notion of physical activity is also said to be important for children's immediate social, mental and physical health (Veitch et al. 2006) and is said to make children perform better at school (Bobbert et al. 2012). Furthermore, some developmental basic skills can be learnt from physical activity and play: working together, sharing, give and take, and win and lose. And not only the social contacts between children are improved, also between their parents it might contribute to increased social integration (Koning 2012). Above all this, when being able to play and be active, children will be less aggressive, resulting in less vandalism and less minor crimes (Bakker et al. 2008).

However, development requires exploration space. Space is needed for physical development and spatial insight only arises through experience in estimating distances. The outdoor environment in which children live determines for a large extent the possibility for children to have this development. Furthermore, outdoor play has important cognitive, social and emotional benefits that parents should be aware of (Burdette and Whitaker 2005, Koning 2012). Playing children learn to use their creativity and imagination and develop skills like empathy, flexibility and self-consciousness by having to solve conflicts that they come across when playing (Koning and Poort 2013). In addition to this, children that play outdoor a lot, have a better brain development and learning ability than children that do not play outdoors. Also, the possible contact they have with nature during outdoor play has developmental benefits such as a better ability to concentrate, better self-control and less psychological problems like fears (Bogaard et al. 2009, Koning and Poort 2013). Also, the outdoor environment allows children to get new contacts and might improve their social abilities.

2.1.2 Reduced developmental opportunities

However, the things children can learn from and in the outside environment, can often only be learnt without the direct supervision of a parent telling children what to do. Parents may be too protective of their child nowadays and see them as much more vulnerable than in the past when parents still thought their children were able to handle much more 'problems' on their own (Reijndorp and van der Zwaard 2007). This kind of thinking has also brought some more critical researchers write articles about children's play. For example, Alexander et al. write about free play being "play that is intrinsically motivated with limited adult intervention and is used in contrast to increasingly dominant forms of play that are pre-structured and adult-guided" (Alexander et al. 2012, p. 156). They state that the social, emotional, cognitive and physical benefits that children appear to gain from playing freely early in life come from engaging in play that is less supervised, less structured, more adventurous and from play that includes elements of challenge and risk. This statement indicates two main problems: first, the opportunities for children to be able to have adventurous play are diminishing because these kind of playgrounds are not built and secondly, when children do find their own way of playing

adventurous, for example by climbing fences or trees, they are being stopped by their parents who are afraid to let their children explore.

Researchers are quite critical on today's risk avoidance for children and say that generally, parents were afraid of the way society is today (Alexander et al. 2012). Gill (2007) even wrote a book about today's risk averse society in which children are forced to grow up, in which he describes the shrinking horizons of childhood by reducing the risks and the importance of those risks. He mentions four main reasons not to reduce risks for children too much: (1) being able to learn how to manage risks, helping children to protect themselves, (2) if risk is not fed somehow, children will seek out situations in which they may even be exposed to greater risk, (3) the outweighing of risks by the health and developmental benefits and last (4) the resilience and self-reliance of children by overcoming challenging situations (Gill 2007). This may result in a generation of children who are not able to cope with the unpredictability of the world they are always being protected from. By raising risk avoidance and safety standardisations above the developmental needs of children to play freely without regulation, Alexander et al. (2012) suggest that "children's abilities to creatively, confidently (and ironically more safely) approach future challenges" will be limited (pp. 160-161).
Researchers furthermore stress that the primary focus on play should not only be on the physical activity of children because these are not the only benefits of play: "When the primary focus of public health rests on the physical benefits of play, the social, psychological and emotional components of health, to which play also contributes, tend to be neglected" (Alexander et al. 2012, p. 159). Playing should not only become 'a purpose-oriented activity' for children. According to de Visscher, todays view on play is approaching a point in which children are not only allowed to play, but they are forced to. The right to play is often forgotten and becomes undervalued with respect to other activities such as school performance, competitive sports activities and extracurricular activities such as a music school (De Visscher 2009). In Western society, the need for achievements in early childhood appears to become more important than actually being a free child and being able to play.
Alexander et al. (2012) and De Visscher (2009) are not the only critics on the way play is organised in the contemporary society. Berkhout also expresses some concerns about psychosocial health of children and the decreasing knowledge on the importance of play and the time available for play (Berkhout 2012). Furthermore, there has also an increasing public awareness on the importance of free play: For example the newspaper Trouw published an article called: 'We ontnemen kinderen de kans om zichzelf te ontdekken' (We take away children's opportunity to discover themselves). Within this article is explained that scientists found out that the importance of free play is being underestimated by parents and that parents who are constantly focussed on their children, limit their children in their development (Eimers 2014). The fact that today's society is focussed on individual achievements a lot; not only at school, but also outside of the school environment, is cause for concern. This notion of children that should have a little freedom to explore and to develop themselves, is something that has been acknowledged already for a long time. Mulderij and Bleeker (1982) for example already mentioned the need for children to be able to play outside freely. They state that safety, exploration,

If children are limited in their outdoor play, regardless the reason why, they are held back in their development opportunities in terms of motor skills, language development and integration (Notten 2006)

independency and freedom is important for a child. According to them, lack of independence and lack of freedom makes children vulnerable in their further life (Mulderij and Bleeker 1982).
However, parental safety concerns in cities are not only about the level of possible exploration of children on one particular place. The problem with being able to play freely is that a lot of environments are unsafe for children to play in. Or, at least parents perceive their neighbourhood environments as unsafe, especially in urban environments (Alleman et al. 2005, Carver et al. 2010). Safety of the children's home and school environment can be divided in several aspects which can be seen as barriers to use the space for playing (Corder et al. 2011): the social and the physical environment. Also it can be divided in places in which children actually play and thus stay in for a longer time, and the public environment they use for instance for active transportation: the streets they use to reach a play facility.

Parental safety concerns regarding the public space children are using for active transport to school or play spaces are not criticised in literature, but taken as a very serious problem (e.g. Karsten 2005, Trapp et al. 2012, van Loon and Frank 2011, Van Loon et al. 2014, van Oel 2009). Research on the difference in street environments before and four years after a design intervention which reduced traffic concluded in the fact that improvements in infrastructure safety has led to an increase in children playing outside (De Vries et al. 2010). De Vries et al. state that the infrastructural improvements, creating less traffic intersections and having less speeding cars, were the most important to contribute to children having higher physical activity levels. Not only the actual places for children to play, but more importantly the ways for children to reach these places have shown to be contributing to children's play in this research.Another point of safety according to many parents is the social safety inside a neighbourhood. Social cohesion within a neighbourhood has also shown influence playability positively (e.g. Alleman et al. 2005, Carver et al. 2008, Franzini et al. 2010, Trapp et al. 2012, Veitch et al. 2006). In the contemporary society, a point of concern is the amount of other children living and playing in the neighbourhood. Parents and children often complain about the lack of playmates (Karsten 2005). Another social concern that prevent children from playing outside, mostly because of parental concerns, is about strangers in the environment and about older youth hanging around (Aziz and Said 2012, Karsten 2005).

2.1.3 What environment would be needed?

The ideal image would be that children are able to play outside without many supervision and that they can enjoy themselves having an environment that is safe as well as exiting for them (Reijndorp and van der Zwaard 2007). Within a dense city, these environments may be hard to find. Aziz and Said are summarizing this in a very complete way:
"a range of phenomena are hindering children's play experiences at outdoor environments including rapid urbanisation, increase in street traffic, badly planned urban environments, pollution, pressures of educational accomplishment, creation of indoor play technologies and a lack of awareness about the importance of play for children's development and well-being. As a result of these changes, it is increasingly uncommon to see groups of children walking, running or playing on the outdoor environments without adult's supervision. Such changes certainly have profound repercussions on the psycho-physical development of children. Children need to have the environment that addresses them, challenges them and provides something for them to observe, to think about, to make choices, to attract their attention, to engage in their favourite activities and to give them the opportunity to meet friends. They also need the freedom to explore and to satisfy their curiosity about the world"
(Aziz and Said 2012, p.205)

According to Boogaard et al. (2009) children have several needs, amongst which are being able to rest and make noise, being able to hide and shape the environment, feel at home, experience the elements: earth, water, fire an air and being able to take risks.

To find out if the outdoor environment can offer them for instance the challenges, the opportunities to meet friends and the freedom to explore that Aziz and Said (2012) mention, several indicators have been made to measure the 'child-friendliness' of a neighbourhood. These indicators will be further explained in chapter 2.4. Also the way these indicators incorporate the needs of children as described by Boogaard et al. (2009) will be explained in this chapter.

2.1.4 Play opportunities as part of a bigger health discourse

Giving children the opportunity to play outside and be active in their free time, contributes to a healthy development, as is described in the previous chapters. A healthy development however, requires a healthy environment. In a policy document by the Ministerie van Volkshuisvesting, Ruimtelijke Ordening en Milieubeheer (VROM: Dutch Ministry of Housing, Spatial Planning and the Environment), the physical environment is described as an important factor for health. This publication specifically mentions the physical environment as stimulator for physical activity and play and they have also specified children as one of the target groups (Ministerie VROM and GGD Rotterdam-Rijnmond 2008).
The ministry schematically showed how the physical environment can influence health in all its different aspects, including physical activity outcomes and all the other health benefits that play has.

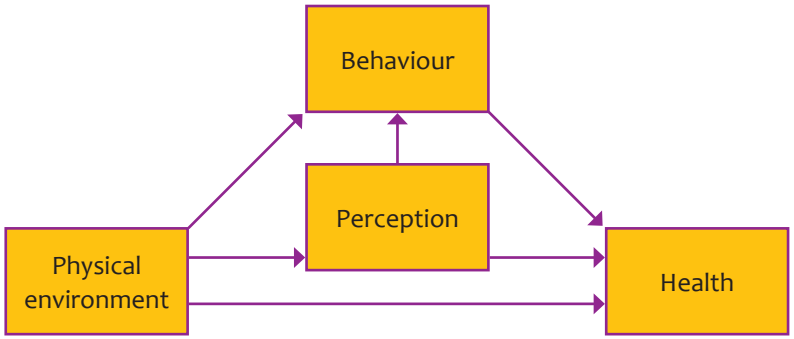


Figure 2.1: influence of physical environment on health (Ministerie VROM and GGD Rotterdam-Rijnmond 2008)

This scheme is the first start in examining how the playability of a neighbourhood can be improved and which different aspects of the physical environment are to be included and thought of. As can be seen, the physical environment has a direct influence on health, as well as indirect influences through perceptions of the physical environment and the behaviour of people.
But, a playable neighbourhood also has benefits for other groups, for example a playable environment is also seen as a better living environment for children and adults, a healthy environment for adults, giving better opportunities for social interaction and an environment that has different economic benefits, for example rising housing prices, attracting families to the city and reducing healthcare costs (Koning and Poort 2013, Koning 2012). A child friendly public space can be seen as place to stay in, meet others and move through: a pleasant living environment. Furthermore, children playing outside can be relevant for cities because of the liveliness and the increased social network in neighbourhoods that it gives (Koning 2012).

The next chapters will further elaborate on the different aspects within the physical environment that can improve health; in this case improve the playability (of the physical environment) to stimulate play and activity (with different health outcomes).

2.1.5 Outside play in city environments

In a study by Veitch et al. (2006), was found that children's most frequently reported location for playing was in the yard at home (74%). One third also usually played on the street and another one third often played in public open spaces such as parks and playgrounds. According to national figures, 58% of the children often plays in their own garden, 46% on a public square or lawn in the neighbourhood, 46% on the streets close by. Only 30% often plays at a playground (Zeijl et al. 2005). Some degree of caution should be taken regarding these figures, because they are taken from a very large sample that are not only city children. But, as city children often have to grow up in an environment without a

backyard, or a relatively small one, their need for opportunities to play in the public outside environment, which may be the street or public open spaces, is higher than of suburban or rural children. Children can see their entire environment as a play opportunity, meaning that these opportunities are not limited to parks, playgrounds, and backyards, but also include streets, alleyways, wasteland, and natural/wild environments. However, as already mentioned in the chapter before, it has been argued that in recent years children's physical activity and play have become constricted, controlled, privatized, and subject to adult supervision (Holt et al. 2008). Which resulted in the fact that policies have mostly been aimed at formal playground opportunities in neighbourhoods, without watching for other needs children have. What the implications of this approach are, will be discussed further in this chapter.

In (dense) urban areas children are playing outdoors less often. 27% of the children plays outdoor once a week or less (Koning and Poort 2013). Furthermore, they are less often allowed to play outside without supervision and are less allowed to go to school alone. Also, city children indicate that they cannot reach a nice place to play, more often than their rural peers. This is because they are restricted by their parents, or because they cannot go there by themselves.
However, when physical activity, instead of play as total activity, is taken as a starting point in research, there are several studies that indicate that the active transportation from home to school and back is an important contributor to the total amount of physical activity children have in cities. This suggests that the streets on which children go to and from school are important for the physical activity levels of children. The researches state that the amount of physical activity is higher when children walk or cycle to school in comparison to public transport or being brought by car (e.g.: Cooper et al. 2003, Rainham et al. 2012, Roth et al. 2012, Smith et al. 2012, Southward et al. 2012, van Sluijs et al. 2009), especially in the urban environment (Pabayo et al. 2012). Furthermore research indicated that high walkability neighbourhoods had more active children overall than low walkability neighbourhoods (Holt et al. 2008). Within these neighbourhoods, children are also able to reach playgrounds. These neighbourhoods, with high walkability meaning that the roads are highly connected and that different places for children are in fact reachable, show more opportunities for play and physical activity than low walkability neighbourhoods. However, a high walkability neighbourhood does not imply that it is always used: when having a low design quality, the high walkability benefits will be diminished, meaning that also the different public spaces, amongst which children's play spaces, will not be reachable. It does however give opportunities for relatively simple improvements. The design quality in this research is divided in different categories, for example general quality, hardscape quality, softscape quality, pedestrian quality and social quality. This division indicates that design quality of a neighbourhood includes many different factors, just like the playability of a neighbourhood, that is connected with this design quality, also has many influencing factors. On the other hand, when having a high design quality but a low walkability, the public environment will not be used for active transport either (Cook et al. 2013). These notions of the importance of high walkability and high design quality neighbourhoods, already indicate that counting the formal playgrounds only will not give a good insight in the playability of a neighbourhood, let alone the amount of physical activity that children will have. When researching the playability of a neighbourhood and its contribution to the level of physical activity, not only the formal playgrounds, but the entire environment should be examined. Different methods for doing so will be explained in the next chapter.

2.1.6 The physical environment as factor for play opportunities

According to Aziz and Said (2012), children's play preferences and behaviours are influenced by developmental needs, and individual-, physical-, and social factors. These researchers divide these three (individual, physical and social) factors into subfactors (Aziz and Said 2012):

- Individual factors, amongst others: demographic, socioeconomic status, place's experiences, attitude to active play.
- Physical factors, amongst others: design and quality of facilities/play equipment, environmental factors/urban design/safety, level of affordances.
- Social factors: parental restriction and level of children's independence, bad people and culture, social aspects, geographical perspective.

When looking at these subfactors in detail, it might become clear that some of the factors are closely related to others. For example, parental restriction is highly related to the safety of the neighbourhood which depends on the design of the physical environment e.g. (Carver et al. 2008, Carver et al. 2010, Holt et al. 2009, Kimbro et al. 2011, Weir et al. 2006). Also, individual place's experiences and attitudes towards active play are related to the design and quality of play facilities; when play facilities are not present, or are in very bad shape, the place is unlikely to be used and the personal attitude to playing will be affected.

However, not everything can be linked back to the physical factors as possible reason, it can also be the other way around: the safety may depend on the social cohesion of the neighbourhood (Aarts 2011, Carver et al. 2008, Karsten 2005, Notten 2006). There are even researchers that suggest that the level of affordances and the design and quality of play facilities is related to the general neighbourhood socioeconomic status (e.g. Crawford et al. 2008, Franzini et al. 2010, Kemperman and Timmermans 2011).
The scheme by the Ministry of VROM (2008), see figure 2.2, can give an insight in the relationship between the different factors. The physical factors, as described by Aziz and Said (2012), can be seen in this scheme, shown in figure 2.3. However, the social factors are also already partly attachable to this scheme: these can be seen as part of the perception and behaviour in response to the physical environment. Other aspects of the social factors,

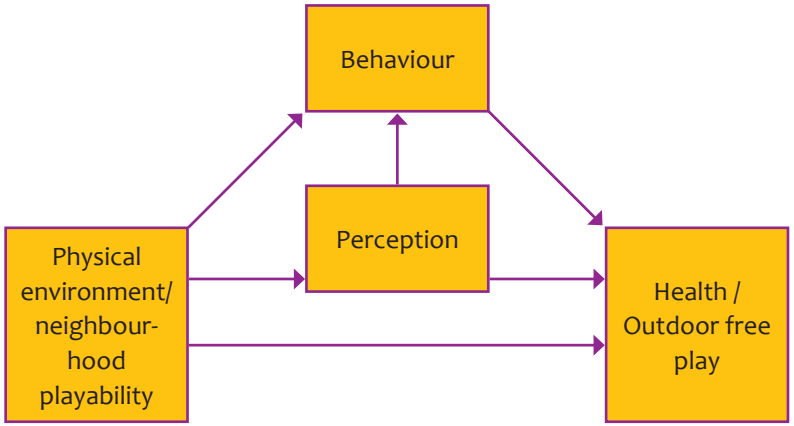


Figure 2.2: influence of physical environment on outdoor free play (Ministerie VROM and GGD Rotterdam-Rijnmond 2008)

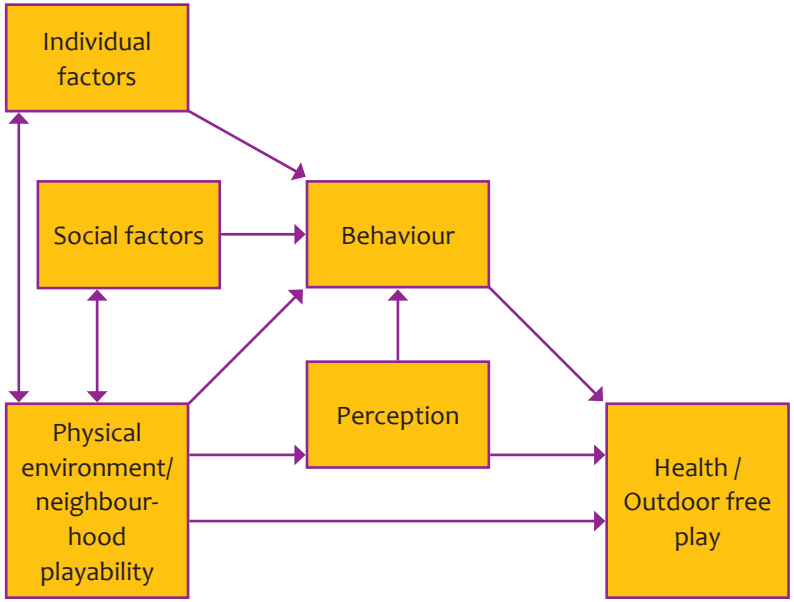


Figure 2.3: influence of physical environment on outdoor free play (Ministerie VROM and GGD Rotterdam-Rijnmond 2008)

such as having friends/family around to play with, are not included in the scheme. The individual factors are not directly visible in the original scheme of the Ministry of VROM, but are of big influence on the behavioural aspect. Therefore, for the research on child healthiness regarding outside play, the scheme of the Ministry of VROM (2008) could be combined with the factors of Aziz and Said (2012), forming the global outline of the factors influencing a neighbourhood's playability.

Veitch et al., (2005) have made a different distinction between the possible factors for children's outdoor active play:

- Safety: surrounding strangers, road traffic and number of places for children to play
- Level of independence: older children are allowed greater independence, younger children rely on their parent's time
- Attitudes to active free-play: being and indoor child or an outdoor child
- Social aspects: availability of nearby friends or siblings to play with
- Facilities at parks/ playgrounds: play equipment for all ages and other facilities in parks
- Environmental factors/ urban design: having a large backyard makes proximity to public open space less important. Also the need to cross busy roads, parks not satisfying children's needs and having to drive to a desirable park influenced usage.

This research is seen through the eyes of the children's parents and may therefore be more subjective than the research by Aziz and Said (2012), researching from an outsiders perspective. The different subdivision of factors that influence children's play makes clear that the way child's play is perceived differs by research. Also, the fact that the different factors as described by Aziz and Said (2012) are interrelated, is shown by this division of Veitch et al. (2005), which is a combination of the factors mentioned by Aziz and Said. For example, in the environmental factors that are mentioned by Veitch et al. (2005), safety issues and backyards are already included, but can also be seen as separate factor.

2.1.7 Places and facilities that make free play possible

The types of affordances or facilities that contribute to free play of children are mentioned in a lot of studies. These studies however are very diverse and have researched several aspects within the public open space that can be stimulating for children to play. A sum up of these aspects will be elaborated here.

Den Hertog et al. call for a multifunctional park within walking distance for children to play in, although they mention that a private yard can have a positive influence on little children (Den Hertog et al. 2006). Also Refshauge et al. state that park playgrounds are valuable places in the increasingly urbanised world (Refshauge et al. 2013). The total area of parks was positively associated with physical activity as well as drinking fountains, streetlights, basketball courts floodlights, walking paths, running tracks, lawns and skateboard areas within these parks (Timperio et al. 2008). Although playgrounds were of less importance to boys as they got older, they did seem to be important to girls. For girls on the other hand, sidewalks seemed to be more important, as they were often not allowed to go far from their house, just like younger children (Grammenos 2013, Van Loon et al. 2014). Examples of sidewalks on which children can play are cul-de-sacs. Within these cul-de-sacs a monotonous, flat landscape offered less affordances to the children than slightly sloping ones with a variety of vegetation (Othman and Said 2012). The proportion of low speed limits seemed to be important for children to be allowed to play outside as well (Van Loon et al. 2014). Also more vague terms such as 'diversity', 'variation' and 'parent's needs' come forward in researching play amenities (van Loon and Frank 2011).

De Vries et al. found that the physical activity in children playing was higher with an increase of green proportion, frequency of terraced housing, flats with less than six stories, proportion of water, cycle tracks, 30km/h zones, parallel parking and parking lots (De Vries

et al. 2007) indicating that environments with these aspects offer more free play opportunities for children.
Physical activity in play was lower in neighbourhoods with staircase entrance flats, unoccupied houses, dog waste, heavy (bus/lorry) traffic, intersections and zebra crossings. Because these last two aspects are situated mostly on places with heavy traffic, these might not be aspects influencing physical activity in itself (De Vries et al. 2007).
Other studies also often have examined the opposite of aspects contributing to the playability of a neighbourhood: aspects that prevent children from playing outside. These include little green, no accommodations, bad lighting, lots of street litter, dog waste and groups of lounging teenagers (Bakker et al. 2008).

Other researchers conclude with a more general recommendation for making children more active in terms of frequency, duration and intensity (van Loon and Frank 2011). They state that children may benefit more from interventions increasing the unstructured play activities, so that play activity can spontaneously occur in short periods, rather than structured activities that require much more preplanning to participate in. This corresponds with the different amenities that are mentioned in the different researches: Most of the amenities that have found to have a positive influence on either physical activity or playing as a whole, were those aspects giving opportunities for unstructured play by children.

2.1.8 Importance of play: conclusion

Free play, meaning that it is not guided by an adult, has important benefits for a child's development. Many researchers suggest that these benefits will only come forward when play is not structured by an adult and when it is not seen as an achievement. When only looking at the physical benefits of play, by for example only focussing on the physical activity levels of children during play activities, the social, psychological and emotional health components are neglected. This means that this research is not only focussed on physical activity of children within the public environment, on free play as a whole.
The health benefits are dependent on different aspects such as the physical environment and the perception and behaviour that is influenced by this physical environment. In urban settings, the physical environment is limited. Also the physical environment in which children can play is limited, which in turn limits the health and development opportunities that children can get in the public open space.

Besides the physical factors that influence outside play, there are also social and individual factors involved in outside play, for example the level of independence and social control. These however can often be linked with the physical environment as well. For example, the level of independence can be linked with the traffic safety of the neighbourhood and the social control on a public space is linked to the spatial layout of that place. One of the most important issues that withhold children from playing outside are safety issues of for example busy motorized traffic and stranger danger. These issues are on the boundary between the physical and social/individual environment.
Therefore, when researching the playability of urban neighbourhoods, it is important to look at the physical environment in relation to the social and individual environment rather than looking at the physical environment as independent entity. A model has been found which incorporates these different factors in its method of examining and designing. This model will be explained in chapter 2.3 and 2.4. An example of looking at the intersections of different factors will be done by looking at social control on different public open spaces which increases the feeling of safety, (individual/social) and can be achieved by changing the physical environment. Or changing the layout of a road to reduce traffic speed which again is beneficial for the feeling of safety. A higher feeling of safety will encourage parents to let their children play more freely outdoors and not restrict them in these playing activities.

2.2 NEIGHBOURHOOD DIFFERENCES

The extent to which different neighbourhoods inside the city environment are playable largely depends on the type of neighbourhood that is meant. Older city neighbourhoods often offer little, bad quality, space to children. Newer neighbourhoods that have been built after the second world war can offer more and better spaces for children to play (Jansen 1996). This is however not true for all before- and after war built neighbourhoods, for example because of the differences in socio-economic status of neighbourhoods. This difference will be elaborated in this chapter.

2.2.1 Socio-economic status of neighbourhoods

As already stated before, the different factors for children to go play outside can be divided into different themes. One of the themes that does not explicitly come forward in any of the lists of reasons for children to play outside is the socioeconomic status (SES) of a neighbourhood. However, the difference between a poor and a rich neighbourhood in terms of percentage of overweight children is very big (Kimbro and Denney 2013) and neighbourhoods with higher levels of poverty and lower education levels are associated with increased child obesity. This might indicate that the opportunities for children to be active in different socioeconomic neighbourhoods differs a lot. This also gives rise to several questions about the degree of playability between different neighbourhoods. Research that has been conducted on this subject is not very conclusive. There are many researches that state that public space in low class or deprived neighbourhoods gives more play opportunities for children, also in The Netherlands. This might be supported by the fact that there is more municipal attention to deprived neighbourhoods because of the many problems that occur in these neighbourhoods. An example of literature on play spaces in deprived neighbourhoods is in Glasgow, Scotland, where there is a higher number of playgrounds per 1000 children in deprived neighbourhoods than in more wealthier regions (Cutts et al. 2009). Also, this same article states that the regions in which the largest population of youth live, have the lowest park access and walkability rankings.

Franzini et al. (2010) found that high poverty neighbourhoods have as good or better accessibility to outdoor spaces than low poverty neighbourhoods. They state that it is not always worse to live in poor neighbourhoods: For example, when living in a poor neighbourhood, you are more likely to live close to a green space or an outdoor playground (Franzini et al. 2010). However, the researchers also indicate that other characteristics of the public space of poor neighbourhoods are less contributable to outdoor play and physical activity, which include less safe, less comfortable and less pleasurable environments. Therefore the different playgrounds which are situated in deprived neighbourhood will maybe not always be reachable for children. Whereas in more prosperous neighbourhoods, the playgrounds can be unreachable because there are too little play spaces and these are located too far away.

Another research states that public open spaces in high SES neighbourhoods have more amenities than in low SES neighbourhoods. There are for example more trees which provide shading, more water features, more walking and cycling paths, lighting, signage regarding dog access and more signage restricting other activities (Crawford et al. 2008). These amenities are all features that are likely to promote play among children. But when counting the number of actual playgrounds and recreational facilities, these were not less in low SES neighbourhoods compared with higher SES neighbourhoods (Crawford et al. 2008). An important remark to this research is that the quality of the public open spaces, playgrounds and recreational facilities was not researched.

On the other hand, some researches that have found other outcomes: Galvez et al. found that there are less resources available on low SES blocks/neighbourhoods (Galvez et al. 2013), and Kemperman and Timmermans found that low SES neighbourhoods have inaccessible environments, fewer physical activity resources and a lower proportion of these resources freely usable (Kemperman and Timmermans 2011). The differences in these outcomes might

be in the fact that not all low SES or deprived neighbourhoods are comparable to other deprived neighbourhoods and not all high SES or prosperous neighbourhoods are comparable to each other. A neighbourhood being deprived or prosperous does not say anything about the spatial layout of the neighbourhood, which is a more important indicator of playability of a neighbourhood.

Besides the research that has been conducted on playability of neighbourhoods, there has been some research on physical activity in neighbourhoods, mainly focussed on active transportation versus non-active transportation. These researches indicate that the environment of disadvantaged neighbourhoods may be more conducive to walking in the neighbourhood environment (Turrell et al. 2013). This research also found that the residents of disadvantaged neighbourhoods were less likely to walk for recreation, but more likely to walk for transport-related purposes.

2.2.2 Types of children and parental influences

Karsten (2005) distinguished three types of children: 'outdoor children', 'indoor children' and the 'backseat generation'. These children generally can be subdivided in different socio-economic classes (Karsten 2005):

- Indoor children are mainly lower class children, of whom many have a migrant background. These children live in mostly deprived neighbourhoods in which, according to Karsten, there is a shortage of nice spaces for children to play and the crowdedness of the streets with many parked cars and a lot of rubbish make it even more unattractive. Both parents and children have some concerns about being outdoors. These concerns are not only about the physical environment, but also about the social environment: strange people wandering around. Some of the children living here are forbidden to go outside by their parents who are afraid something might happen to their children.
- The children of the backseat generation are the children who are most privileged in some terms, because they have the wealthiest parents, but they do not have a place to go outside freely either. They are filled with adult-organised activities such as music classes or sport lessons and do not have time on their own. Parents did not only complain about the lack of space outside for children to play, but also about the lack of friends/playmates for their children in the proximity of their home environment.
- The outdoor children still exist according to Karsten. She has found children that fit in this type playing outdoors in Amsterdam. But, they also had the opportunities to do so by having relatively quiet streets, some smaller green spaces and a bigger playground. They can easily cross the street to come in contact with children in nearby streets. The backgrounds of these children are not very diverse in terms of class and ethnicity, which might make it easier to socialise with each other.

"It is remarkable that children growing up in deprived neighbourhoods and those coming of age in upper-middle class neighbourhoods share the same marginal position when it comes to the freedom of movement in public spaces" (Karsten 2005, p. 289)

Karsten (2005) mentions that "it is remarkable that children growing up in deprived neighbourhoods and those coming of age in upper-middle class neighbourhoods share the same marginal position when it comes to the freedom of movement in public spaces" (p. 289).

Then, there is also the fact that parents have a big influence on the playing and activity behaviour of their children. Many of these influences already came forward in chapter 2.1.2, mentioning safety issues that parents have which results in restrictions they impose on their children. Another influence comes from the support of parents which also differs by social class. Raudsepp mentions three types of support, instrumental and direct support (transportation and payment of fees), motivational support (encouragement) or observational support (modelling) (Raudsepp 2006). These types of support might be harder for parents with time restrictions, for example when having a full-time job, or with a low SES, having no money to pay for transport and fees. Middle-class children for example, have much higher participation rates in enrichment activities than their working-class counterparts (Holloway and Pimlott-Wilson 2014). However, having this type of support does not mean that outdoor free play is not needed anymore. This still is, also for children living in prosperous neighbourhoods, an important aspect for a healthy development. Maybe this is even more important for them, because of the lack of actual free time they have.

2.2.3 Neighbourhood differences: conclusion

Current research in play has mostly been focussing on play in deprived neighbourhoods, focussing on physical activity in play, to reduce obesity rates. However, in urban environments, children living in more prosperous neighbourhoods also do not have many opportunities for outdoor play. This results in a need for research focussed on more dense prosperous neighbourhoods. The differences between the playability of a deprived and a prosperous neighbourhood are not always clear and differ per neighbourhood. Because higher SES neighbourhoods, like villa districts, might have more open space which indicates that there are also more opportunities for children to play outside. However, within the urban environment there are also high SES neighbourhoods that do not have many open space, and are more densely built up. These neighbourhood have smaller backyards and less public space. Therefore these neighbourhoods might actually offer even less opportunities for play than deprived neighbourhoods because the present backyards are too small to offer play opportunities that might have developmental benefits for children and the public space is not designed for children. In deprived neighbourhoods on the other hand, children are more often taken in mind when designing the public space because people are aware of the fact that most children do not have access to a private backyard.

2.3 EXISTING METHODOLOGIES

To research the actual playability of a neighbourhood, some methods have been set up. However, until now, specific research on how to design for playable neighbourhoods has mostly been executed on deprived neighbourhoods due to the fact that these are neighbourhoods in which the percentage of overweight children is highest and therefore probably needed stimulation of physical activity most. However, as I have shown in the previous chapter on the importance of play, physical activity is not the only advantage of playing. There are many developmental reasons for play not to become an adult-controlled and purpose-oriented activity and for play to happen outside the borders of the fenced private backyard. Therefore, physical activity should not be seen as the main goal of getting these children to play outside, but as a subgoal. Subsequently, playing outside is not only important in deprived neighbourhoods, but also in prosperous neighbourhoods, which is supported by Karsten (2005), who states that children from deprived neighbourhoods and from upper-middle class neighbourhoods share the same (bad) position when it comes to the freedom of movement in public spaces and the actual opportunities for children to play freely. Therefore different methods that are in use for researching playability of neighbourhoods will be looked into in this chapter.

2.3.1 Methods used by municipalities

Some examples of methods that are being used by different municipalities are the KInderStraatScan, the Kinderruimte op straat, the indicators used by ingenieursbureau OBB, and the 3% coverage norm as recommended by the government (Koning 2012). The most frequently given problems mentioned by Koning to these methods is that the methods are often very time consuming and therefore cannot be executed on a whole neighbourhood, let alone a whole city. Also some of the methods used by municipalities are mostly meant for examining the roads used by children to reach play spaces, for example the KinderStraatScan, or are only focussed on formal play spaces for children and do not take the informal play areas into account, like most municipal documents and the governmental coverage norm. The differences that come forward in comparing the methods described by Koning (2012), emphasise the importance of choosing the right method as starting point for further research. The method that is going to be researched with has to be complete and incorporate the different dimensions of play within urban environments as described in chapter 2.1.6.

2.3.2 Bullerby model

One of the methods that relates to the literature discussed so far and that is focussed on the outdoor environment as a broader notion instead of focussing on a specified type of neighbourhood, is the Bullerby model by Kyttä (Broberg et al. 2013, Kytta 2006) This model has a very clear setup taking two main principles: children's

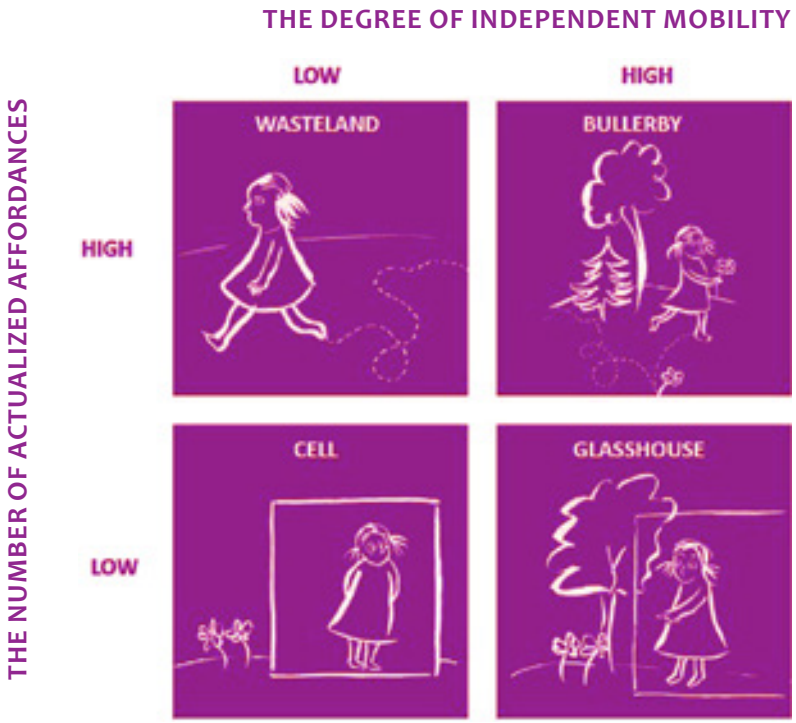


Figure 2.4: Outdoor free play according to the Bullerby model (Broberg et al. 2013)

independent mobility and the opportunity to actualise children's environmental affordances. These two principles are also clearly coming forward in the literature discussed so far. The independent mobility depends on the extent to which a neighbourhood is walkable, as discussed for example by Holt et al. (2008) and Cook et al. (2013), and the extent to which parents think the neighbourhood is safe regarding car traffic (e.g. Karsten 2005, Trapp et al. 2012, van Loon and Frank 2011, Van Loon et al. 2014, van Oel 2009) and are able to let their children out playing on their own. The actualized affordances as described by Broberg et al. (2013) are the objects which offer children the opportunity to develop. The different cognitive, social and emotional developmental opportunities (Burdette and Whitaker 2005, Koning 2012) can only be achieved when the outdoor environment actually offers space and objects that can facilitate in this need for development. Children will only start to explore the environment when there actually is something to explore for them.

Within the Bullerby model, the 'Bullerby environment' is the most child-friendly environment. It has the opportunities for children to move around freely and it thereby also gives them a more and richer variety of affordances which can be further explored by the children. This gives them the ultimate play experience: being free to explore and actually having something to explore in the form of different plantings, structures, textures, smells etcetera. The opposite of the 'Bullerby' ultimate play environment is the 'Cell environment' in which children are not able to form a relationship with the environment, because they cannot get anywhere on their own, for example because of dangerous roads which they are not able to cross, and there is nothing to explore because there are no different and stimulating environments due to a lack of affordances: everything looks, smells and feels the same. In between the 'Bullerby' and the 'Cell' are the 'Wasteland environment', in which children do have the opportunity for independent mobility but there is nothing there to explore, and the 'Glasshouse environment' in which there are stimulating affordances that children want to explore, but the child cannot actually experience it because it is not able to get there due to a low mobility opportunity.

The reason why this method is interesting, is that it is quite simple and easy to understand, but it is complete and does represent the main points of interest for a child-friendly environment as came forward in the literature study described in the chapters before. Independent mobility is good to have, but when there is nothing to explore, children will not use it. On the other hand, when there is a lot to explore, but is not reachable, children cannot use it either. Therefore it is important to create environments for children that are reachable and interesting to explore at the same time. However, the way this should be incorporated spatially and the way this can be researched spatially, is not explained by the Bullerby model. Nevertheless, it is important to see these two principles in the Bullerby model, independent mobility and actualized affordances, as a starting point for research and designing for children in a city environment. The fact that most of the current developments in cities are only focussed on one of the two principles, calls for the need to incorporate both principles in future developments.

2.3.3 Network of Play model

An answer on the question how to incorporate and research the two Bullerby model principles spatially is given by the Network of Play (NOP) model by Bakker and Fähnrich (2008). It corresponds with the Bullerby model, because it also takes the possible affordances (quantity and quality) and the reachability, mobility of children, of these affordances into account. However, the Network of Play model is slightly more in depth than the Bullerby model and because the NOP model has been derived from different other methodologies and models, it includes all the different aspects that are important for the playability of a neighbourhood such as the quantity, location, accessibility and quality of potential play spaces. these spatial criteria are all written from a landscape architecture perspective, meaning that it reasons mostly from the quality of the physical public space, which is influenceable for a landscape

architect. Therefore this model is usable for my spatial research as landscape architect.
Furthermore, the NOP model is incorporating not only the physical environment, but also the related social and individual environment as described in chapter 2.1.6. Examples of NOP criteria in related environments are the amount of social control, which is the social environment dependent on the spatial layout, and the separation from motorized traffic, which is a physical factor that highly determines the individual environment in feeling safe to go outside alone. By incorporating different (social, individual and physical) environments, the NOP model gives a more detailed and realistic view on what might be right environments for children to live and play in than the Bullerby model.

The NOP model is tested on two deprived neighbourhoods in Amersfoort: one 'naoorloogs tuindorp' and one 'wijkgedachte' typology. The spatial criteria that are formulated by Bakker and Fähnrich can be used to analyse neighbourhoods for their playability. The model itself, which is formed to give a framework for designing, is perhaps not usable in more dense prosperous neighbourhoods. If it is usable or not, will be tested in my research. Therefore the next chapter will first explain the NOP model more in depth to explain the framework of the model and how this can be tested.

2.4 THE NOP MODEL FOR RESEARCH

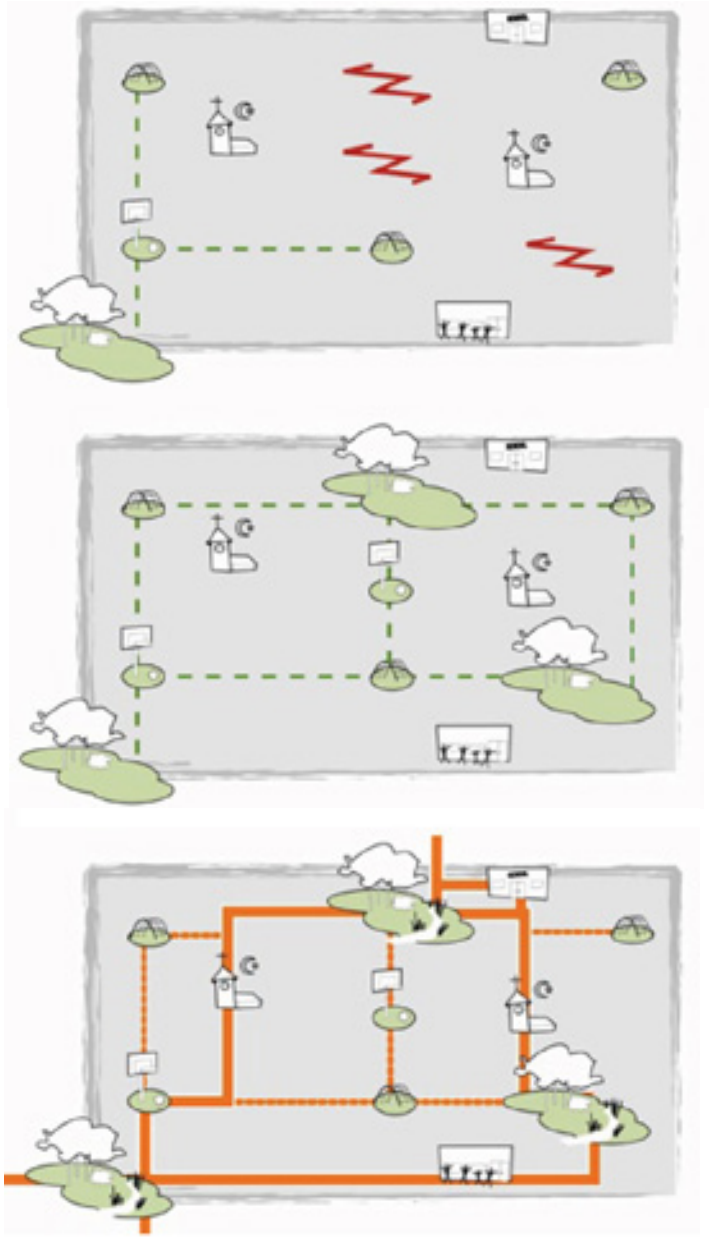


Figure 2.5: The essence of the NOP model: image of the current situation, step 1 and step 2 (Bakker and Fähnrich 2008, p. 60)

2.4.1 Essence of the NOP model

The Network of Play (NOP) model is made as a model to design for improvements in the living environment of children. It starts with two simple steps in which the current play spaces throughout a neighbourhood and the missing links between these play spaces are complemented by additional play spaces, primary and secondary, within 400 metres (primary play spaces) and 100 metres (secondary play spaces) from each other. These new play spaces have to comply with the spatial criteria that have been set up by Bakker and Fähnrich (2008), which will be elaborated on in the next paragraph. The second step in the model is meant to connect the different play spaces with each other so that children are able to go from one play space to another. By connecting the play spaces, a network is formed in which children should be able to play free and safe.

2.4.2 Usability for research

However, as told in the previous chapter, the model has been tested on two deprived neighbourhoods in Amersfoort: one 'naoorloogs tuindorp' and one 'wijkgedachte' typology, both having quite some public open space to design with. Therefore, the model itself, which is formed to give a framework for designing, is perhaps not usable in more dense prosperous neighbourhoods. Furthermore, the NOP model reasons from the problems of children being overweight in contemporary society and therefore Bakker and Fähnrich want to stimulate play to make children more physically active, which can be seen as problem for researching the outdoor free play opportunities for children. But even though their initial goal is to get children active, the NOP model itself is broader and incorporates the different aspects of free play instead of only physical activity and therefore it is usable for my research on outdoor free play. Bakker and Fähnrich acknowledge the different types of play that are used by children and they mention the fact that these different types of play have different developmental benefits for children. The emotional, cognitive, physical and social development that are mentioned amongst others by Burdette

and Whitaker (2005), Boogaard et al. (2009), Koning (2012) and Koning and Poort (2013), are coming forward in the NOP model by their needs expressed through the different qualities of play: Environmental manipulation opportunity, plural target groups, physical stimulation, mental stimulation, social stimulation and use of landscape elements. Furthermore, the spatial criteria of quantity of play, location of play and accessibility of play include the different combined environmental factors, from Aziz and Said (2012) and the ministry of VROM (2008), for play as mentioned in chapter 2.1.6. Examples of these combined factors are the distance between different play spaces, which influences individual choices to go play or not, the social control on a play space which is influenced by the social environment and the physical layout of a place, and the environmental conditions which influence the individual attitude towards certain places.
The scheme in figure 2.6 illustrates the different spatial criteria as described in the NOP model and its subcriteria for research. These are also the criteria which have been used during researching.

The independent mobility of children and the actualised affordances described by Broberg et al. (2013) can still possibly be seen as starting point for improving the outdoor living environment for children. These are the two pillars which make free play possible and make free play into an activity in which children are able to develop themselves on different areas. When only one of the two pillars is located in a neighbourhood, children are not able to play freely, as is explained in chapter 2.3.2. The scheme in figure 2.6, shows the relation between the Network of Play model and the two pillars. This also indicates that the NOP model gives the possibility for outdoor free play and is suitable as model to research with for this subject.

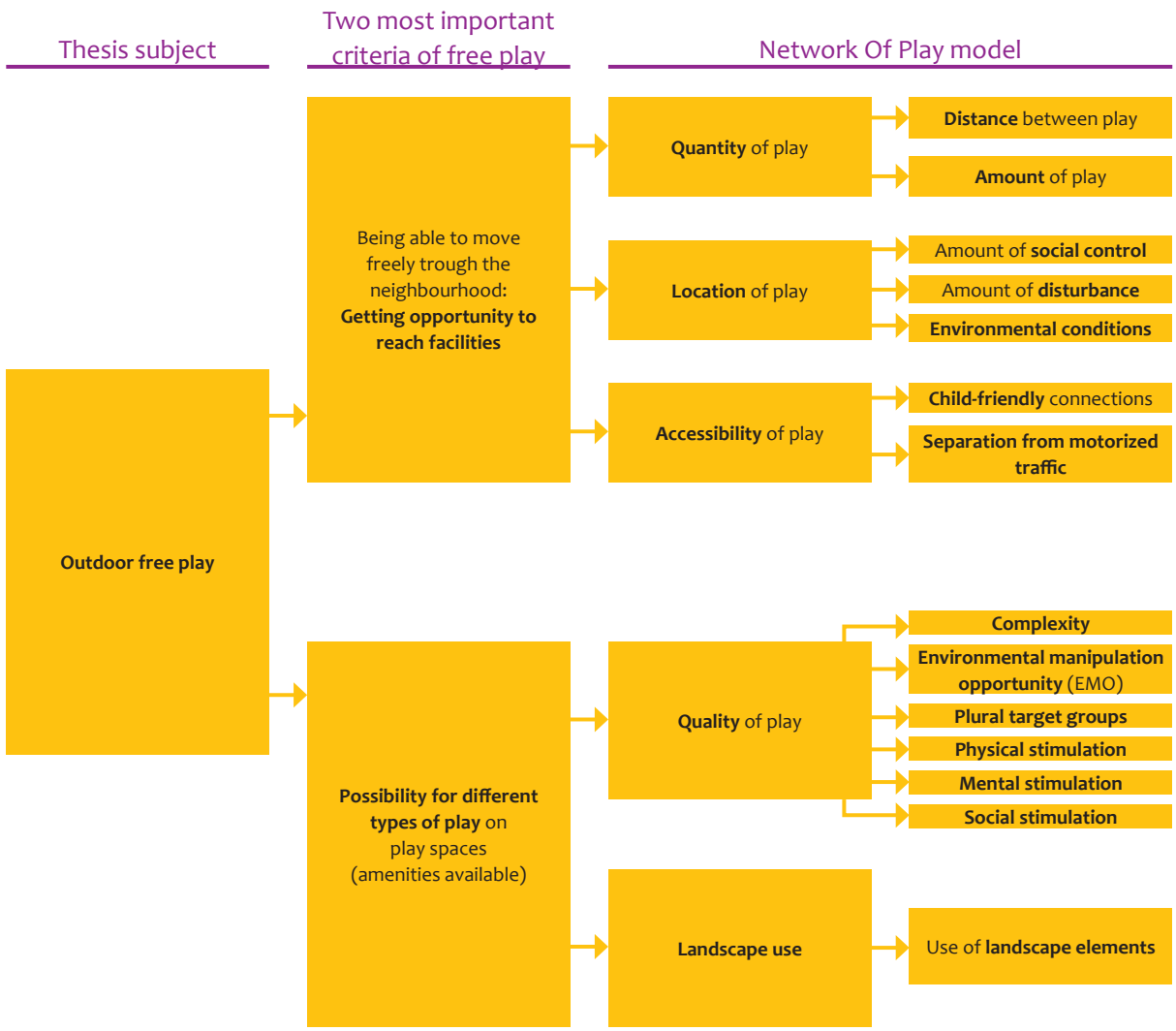


Figure 2.6: scheme schowing the relation between the NOP model and outdoor free play

3.

CASE: STATENKWARTIER

3.1 LAYOUT

3.1.1 History and structure

The Statenkwartier has been built around 1900 and is designed by I. A. Lindo, manager of the 'Dienst Gemeentewerken' at the end of the nineteenth century. The approximate age of the houses in the neighbourhood was 98,8 years in 2013 (Gemeente Den Haag 2014a), due to some rebuilding of houses after the Second World War. It is built on the higher sandy areas of the dunes and has therefore always been a place to live for the wealthier people in the city. The distinction between higher and lower lying areas, sand and peat, can be seen in more residential areas in The Netherlands, showing that the more wealthy people were going to live on the higher grounds and that the working class neighbourhoods were being built on the lower lying areas. The Hague is a city which is a classic school example, it is known for its distinction between sand and peat, commonly called the distinction between 'hats and caps' (hoeden en petten, or: Hagenaren en Hagenezen).

Figure 3.2: Near (play) environment Statenkwartier (Air photography The Hague 2014)

Figure 3.1: Statenkwartier situated in The Hague (Google Maps 2014)

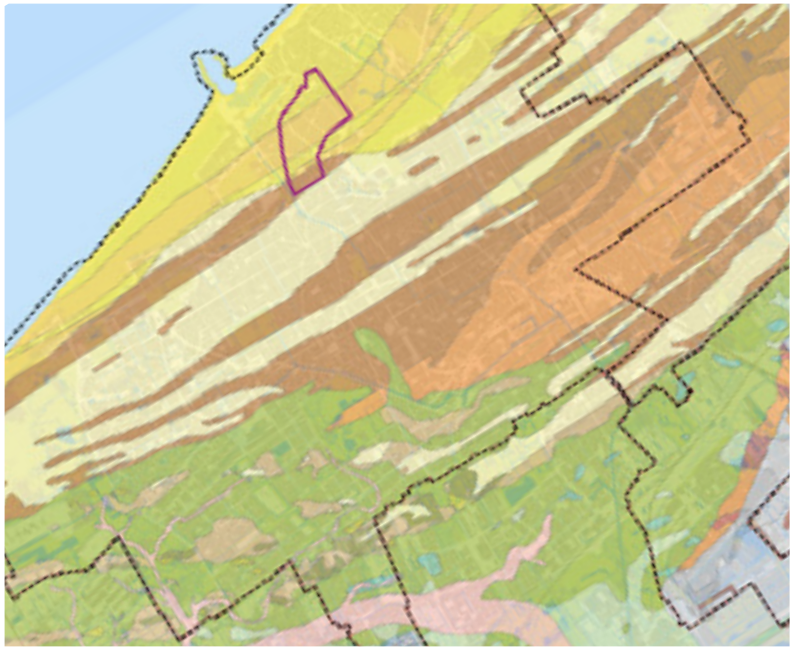


Figure 3.3: Statenkwartier situated on higher sandy grounds (Gemeente Den Haag and Gemeente Rijswijk 2007

Figure 3.4: Air photo Statenkwartier

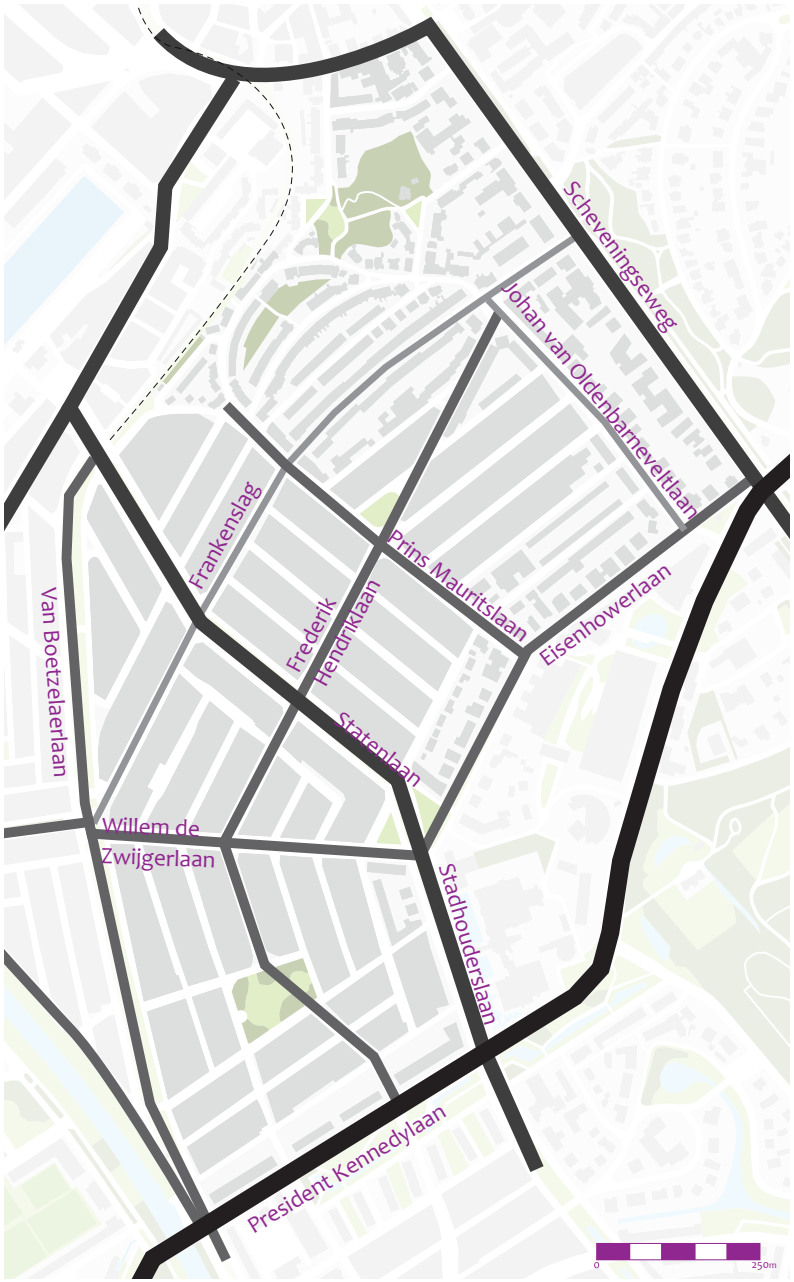


Figure 3.5: Main roads

Legend

- Urban main road 50 km/h
- District access road 50 km/h
- Neighbourhood access road 50 km/h
- Neighbourhood access road 30 km/h

Figure 3.6: Antonie Duyckstraat - current and past situation (Haagse Beeldbank 2014)

Figure 3.7: Frankenslag - current and past situation (Haagse Beeldbank 2014)

The former stream tramline towards Scheveningen and the Stadhouderslaan along the estate Zorgvliet determined to a large extent the current curved layout of the neighbourhood, as is explained in figure 3.6. Most of the streets mentioned in the text on the right, belonging to this figure, are in the current situation the streets on which you are allowed to drive 50 km/hour. Because of the radial pattern, the intersections of the roads resulted in many triangular shaped public squares of which three have been designed as larger squares. The triangular shape of these squares and the fact that they are designed as green areas just for watching instead of green areas that can be used, is typical for this stately neighbourhood. Especially children were not seen as a target group in the design for public space. Furthermore, because this neighbourhood has been built before the arrival of the car as transport mode, it is not built on the fact that almost every household has a car. This especially becomes clear when looking at old pictures from the neighbourhood in which the streets look very wide and spacious. Nowadays this spaciousness has disappeared due to parked cars along both sides of the road.

The following text belongs to the figure on the right:

1. The starting points for designing the Statenkwartier: in the East the old steam tramline, in the upper West the Scheveningseweg dating from 1652 and in the lower West the Stadhouderslaan which was constructed around the park Sorghvliet

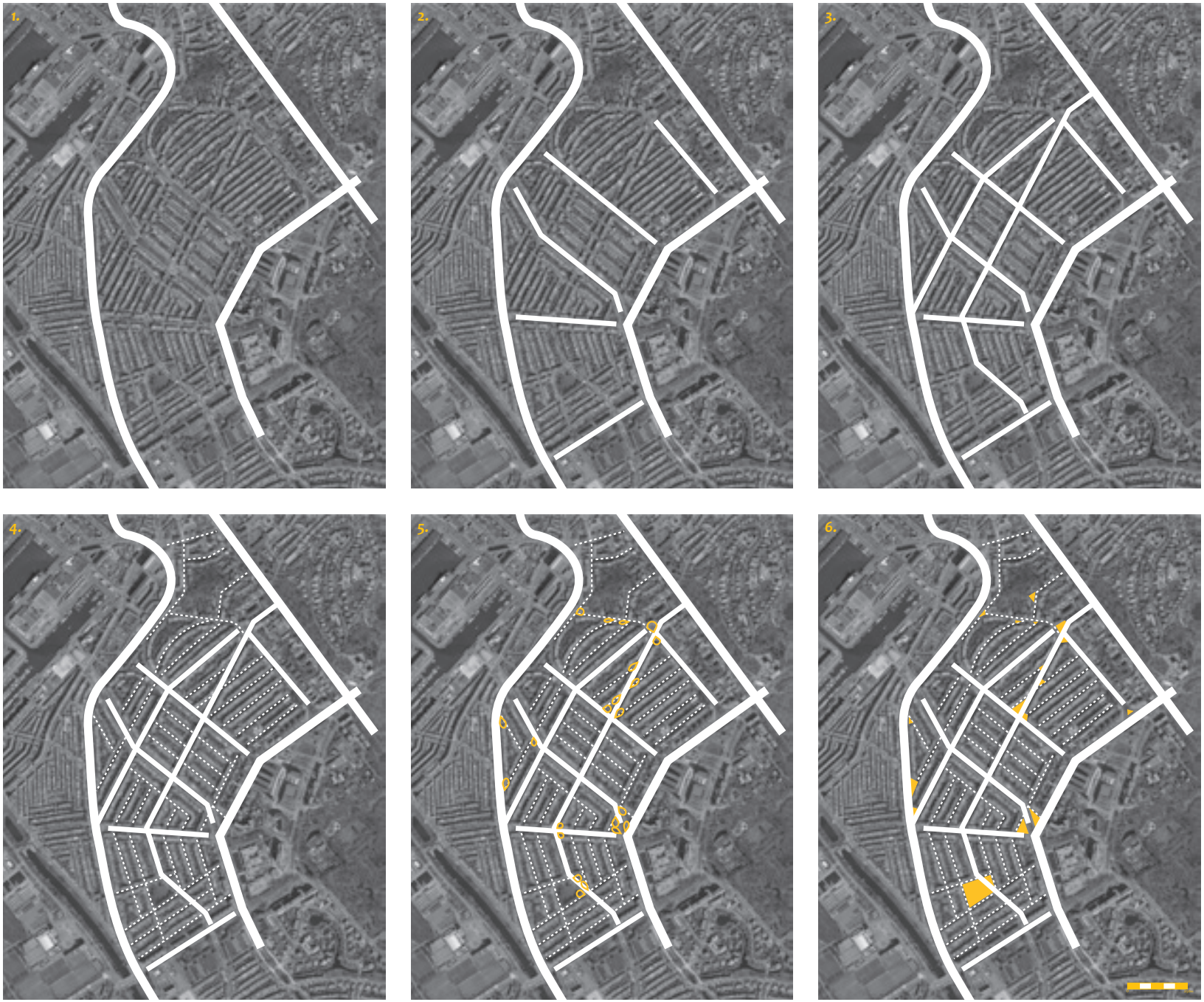
2. The main roads through the neighbourhood (Willem de Zwijgerlaan, Statenlaan, Prins Mauritslaan and the Van Oldenbarneveltlaan) have been laid perpendicular to the already existing structure of the tramline and the Stadhouderslaan.

3. The diagonal lines through the neighbourhood (Frederik Hendriklaan and the Frankenslag) run parallel to the already existing lines, creating a grid in which building companies were allowed to build their homes.

4. The side streets that were constructed are almost all parallel and perpendicular to the main roads. The houses in these streets are a little smaller and a little less decorated than the ones that have been built along the main roads.

5. Because of the diagonal lines through the neighbourhood that can be traced back to the old steam tram line and the Stadhouderslaan, not all the streets are always perpendicular and therefore sometimes some strange sharp corners arise.

6. It is hard to build houses in those sharp corners and that is why nowadays many triangular shaped public squares have arisen in the neighbourhood as can be seen on the picture above. Some of the squares are much smaller than others, but they are typical for this neighbourhood.



< Figure 3.8: series of illustrations on the structure of the neighbourhood

Figure 3.9: Building typologies

Legend

- Villa's - mostly office buildings
- Terraced housing - some upper/lower appartments
- Flats

Figure 3.10: Along the main roads and public squares the houses are bigger and have a more decorated architecture than the houses in the side streets

Legend

- More decorated architecture
- More front gardens than in the rest of the area
- Shopping area in continuation on Valeriusstraat

3.2 Functions

The Statenkwartier is mostly used for housing functions. The houses situated along the main roads are larger and have a richer architecture. Houses along the side streets are smaller and less detailed in architecture. The houses in the Northern part of the neighbourhood are supplied with more front gardens than in the Southern part of the neighbourhood and the main roads are designed as avenues with large trees along it. The Aert van der Goesstraat, Frederik Hendriklaan and the Willem de Zwijgerlaan have been designated as shopping district in continuation on the already situated Valeriusstraat in Duinoord, located on the South of the Statenkwartier.

After the Second World War some changes have been made to the layout of especially the borders of the neighbourhood. The villas along the Scheveningseweg have been rebuilt into offices and the Eastern part of the neighbourhood, along the Eisenhowerlaan, has also become office area, as can be seen in figure 3.9. Most of the houses in the Statenkwartier are terraced houses in a closed building block. The southern part of the neighbourhood has three flats along the president Kennedylaan. These have been built after the Second World War.

The trees in the central strips of the neighbourhood were put under pressure by the increasing car use and car parking after the war. Also the streets that were originally wide enough for different transport modes, were now getting crowded with cars.

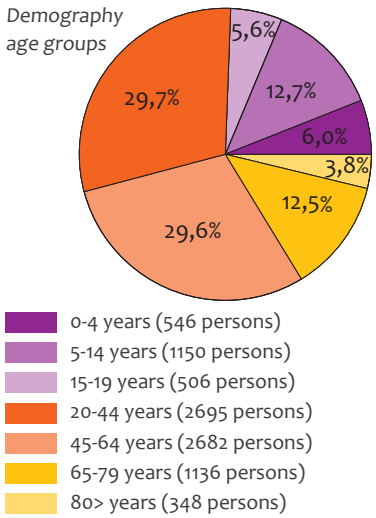
Figure 3.11: More decorated architecture along the main roads

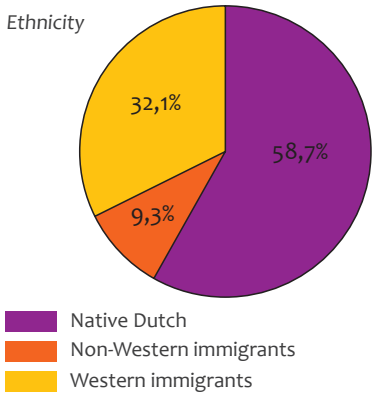
Figure 3.12: Less decorated architecture in the side streets

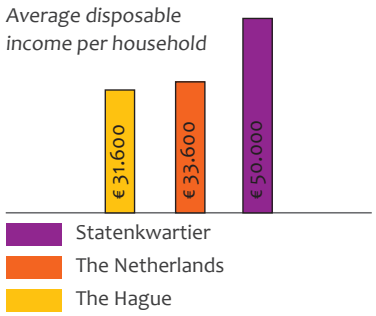
Figure 3.13: Avenue trees under pressure because of parked cars in the central strip

Figure 3.14: Triangular green areas along main roads are only meant for watching, are fenced and are open with some mass of green in the corners

3.2 FIGURES ON CURRENT SITUATION







The Statenkwartier houses more than 9.000 people on a little more than 100 ha, 24,3% of these people are children; 15,8% are children until the age of 12. This total percentage of children is higher than average in The Hague (Gemeente Den Haag 2014a). The Floor Space Index in the Statenkwartier is 0,96 and the Open space ratio is 0,68. 47,2% of the houses are either upper houses or flats, indicating that these do not have a backyard. The children living in these houses therefore also do not have the opportunity to play outside in a private backyard. The amount of children living in the different parts of the neighbourhood and the amount of upper houses and flats in the neighbourhood in comparison to The Hague in total are shown in figures 3.16 and 3.17 and therefore the chance that children living in houses without a backyard is highest in the areas shown on the map in figure 3.18. Children having to live in a house without a private (back)yard, or other place to play are more reliant on the public space.

An aspect that withholds children from playing outside a lot, apart from being perceived as unsafe, but also because it takes a lot of space, is the car. An average household in the Statenkwartier has 0,72 car, resulting in a total of 3245 cars in the neighbourhood. Also the parking pressure in the neighbourhood is quite high, with an occupation of more than 90%. These percentages should be seen as average, meaning that for example in the afternoon, there are less cars parked than this figure suggests, but in the evening when everybody is home, there are more cars than there are parking spaces, resulting in cars parked on the sidewalks and on other public spaces.

< Figure 3.15: figures on the Statenkwartier derived from Gemeente Den Haag (2014) and CBS (2014).

Furthermore, municipal figures show that the Statenkwartier has almost no playgrounds for children, and certainly not for every age group. The mean distance to a playground is 380 metres, which means that for a lot of children these playgrounds will not be accessible. However, these figures are only measured on formal playgrounds and therefore do not give a complete view on the playability of the neighbourhood. This will be further analysed in chapter 4.1.

Above this, some research has been done on the extent to which the neighbourhood is perceived as child friendly, in which for instance information regarding the different facilities inside a neighbourhood and the satisfaction of inhabitants with these facilities has been measured by a city-questionnaire executed in 2011. These figures should be perceived with some care because it is not entirely clear how many people have joined this questionnaire, and therefore it may not be as accurate as it can be.

In the Statenkwartier the mark inhabitants give to the play opportunities is a five (on a scale of ten), which is insufficient. The percent of people that think the play spaces are good enough for children is 49% in the Statenkwartier (49%). The maintenance on the play facilities however is perceived better: 85% stated that the most visited playground was sufficiently maintained. Also some questions were asked about the feelings of safety inside the neighbourhood. For example, 11% of the inhabitants of the Statenkwartier answered that they felt unsafe in their neighbourhood and 29% of the inhabitants thinks that speeding cars are very common.

Figure 3.16: Amount of households with children - compared to The Hague in total

Legend

- Average amount of households with children
- Little higher than average amount of households
- Much higher than average amount of households

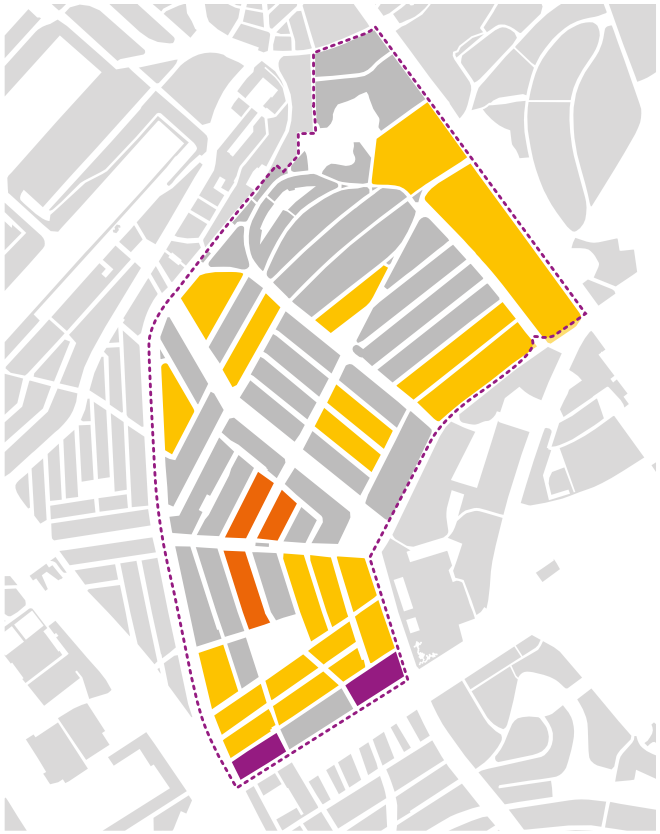


Figure 3.17: Multiple-family homes in one building

Legend

- Average amount of multi-family homes in one building
- Little higher than average amount of multi-family homes
- Much higher than average amount of multi-family homes

Figure 3.18: Children most likely to be living in a home without private (back)yard or other options to play outside

Legend

- Average amount of households with children on average amount of multi-family homes in one buidling
- High or little higher amount of households on average amount of multi-family homes
- High or little higher amount of households on high amount of multi-family homes

4.

RESEARCH

4.1 NEIGHBOURHOOD NOP ANALYSIS

Legend

- Formal play space
- Possible informal play space
- Barriers for children

When starting to research the playability of a neighbourhood, it is important to watch both the complete neighbourhood and the individual spaces that might be possible play spaces. The neighbourhood scale is especially important when looking at the network, accessibility and coverage (quantity) of the play spaces, and the individual public spaces are important for examining the location of the play space and the last two spatial criteria which include the qualities of play and landscape use. The spatial criteria of the NOP model can be seen in figure 2.9. As Bakker and Fähnrich (2008) have mentioned, the accessibility of play and the location of play are more important determinants for situating a play space than the qualities of play and landscape use criteria. Therefore these have also been weighed as more important in the criteria diagram (figure 4.10).

4.1.1 Neighbourhood scale

One of the most important aspects in the NOP model on the neighbourhood scale, especially in urban environments are the barriers which make it hard for children to go to other parts of the neighbourhood. The barriers, mostly busy roads, shown in figure 4.1, affect the location of the different possible play spaces and the actionradius for children that is drawn from the play space; the accessibility of the play spaces. Another important aspect on neighbourhood scale are the total amount of possible play spaces, whether they are within a 100 metres distance from each other and therefore whether they are reachable for children, or not. This however, can only be analysed after having researched the individual spaces for their suitability. It is therefore necessary to switch between the different scales throughout the neighbourhood NOP analysis.

Figure 4.1: Location open public spaces that will be analysed on suitability for play

4.1.2 Public square scale

Every public space has been analysed individually. Figures 4.2, 4.3 and 4.4 show examples of how this analysis has been noted down per public space. The five spatial criteria of the NOP model; quantity of play (in the near environment), location of play, accessibility of play, qualties of play and landscape use, are analysed individually by visiting the different public open spaces. Not every single public open space is shown in this chapter, but all individual possible play spaces, formal as well as informal, have been analysed in this way. After having analysed the individual public spaces, I went back to analysing on a bigger scale in which I looked at the amount of play spaces in the complete setting of the neighbourhood and how accessible they are when placing them in the network of busy roads, as can be seen in figure 4.1.

Figure 4.2: Doornpark (North 1&2)- Entrances homes and shops, social control on public space

Figure 4.3: Doornpark (North 1&2)- Main walking routes throughout the public space

Figure 4.4: Doornpark (North 1&2)- Qualities of play & landscape use

Legend

0 50m

N

Location of play: social control

- Entrance public facility
- Entrance private home
- Social control / No social control
- Indirect social control

Accessibility and location of play: disturbance

- Indirect separation traffic by parked cars
- Direct contact busy motorized traffic
- Indirect accessibility (need to cross some none-busy streets)
- Direct accessibility without having to cross streets
- Busy road, 50 km/h
- Fence around play: both barrier and separation

Qualities of play:

- Environmental manipulation opportunity
- Multiple target groups
- Physical stimulation
- Mental stimulation
- Social stimulation
- Landscape use

Figure 4.5: Subdivision for NOP analysis: North - Middle - South

Legend

0 50m N

- Indirect separation traffic by parked cars
- Direct contact busy motorized traffic
- Indirect accessibility (need to cross some none-busy streets)
- Direct accessibility without having to cross streets
- Busy road, 50 km/h
- Fence around play: both barrier and separation

4.1.3 Outcomes neighbourhood NOP analysis

Having researched every individual possible play space on the spatial criteria in the NOP model by Bakker and Fähnrich (2008) and by analysing the relation of individual play spaces to the bigger neighbourhood context, this resulted in a table (figure 4.10) that shows the suitability of possible play spaces. The neighbourhood has been subdivided in three smaller areas, which can be seen in figure 4.5 and 4.9, to analyse the different individual public spaces in their context.

Because of the structure of the neighbourhood, with its triangular shaped squares along the main busy roads, many of the public areas are not suitable for children. Some of them however have been fenced or have some other physical barrier between the public space and the motorized traffic and therefore can be seen as suitable. Parked cars can also be seen as such a desirable barrier in this dense city space, even though the initial NOP model does not say so. Parked cars can form a barrier which withholds children from going off the sidewalk and crossing the street, and might reduce disturbance from traffic. An example of a square that is suitable according to the NOP principles, but still is situated along main roads, is the Prins Mauritsplein (Statenkwartier-North-6), see figure 4.5, on which the fence keeps the children away from traffic and makes them able to play football on the grass. This is quite contradictory to the actual purpose of the fence: keeping people, including children, of the grass.

However, this does not mean that all parked cars and all fences are always good for children to form a barrier. For example, parked cars might also form a problem for children wanting to cross streets because these cars obstruct the view across the road, making it harder to see if cars are approaching.

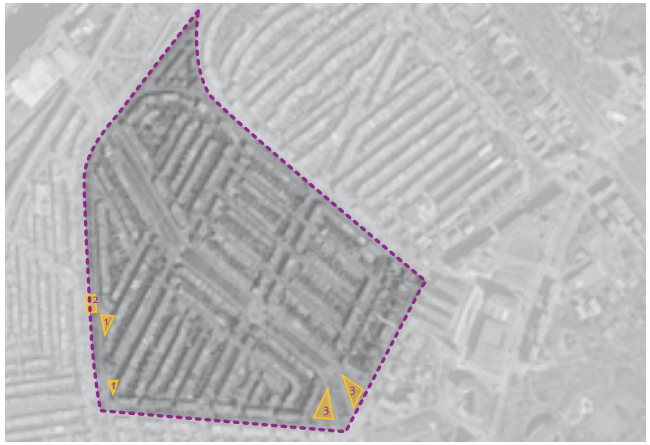
Figure 4.6: Prins Mauritsplein (north6) - Barriers and accessibility for children

Figure 4.7: Prins Mauritsplein (north6) - Barriers function as separation from traffic

Figure 4.8: Parked cars can make crossing harder because roads cannot be overseen, although they are also a barrier between the sidewalk and the motorized traffic on the road

Figures 4.11 and 4.12 show the outcomes of the neighbourhood NOP analysis in maps. Seeing these maps makes clear that there are large parts of the neighbourhood in which children do not have any suitable opportunity for playing in the outdoor public environment. The roads that cross the neighbourhood are largely responsible for this. These roads decrease the actionradius of the children.

Furthermore, many of the play spaces do not offer children the opportunity for some types of play: especially environmental manipulation opportunity and mental stimulation are often not to be found on any possible play space. Besides this, many places are not meant for multiple target groups because they are only suitable for children of low ages or for physical activity for boys, and also the landscape is often not used, resulting in little nature play opportunities. According to the NOP model the different types of play do not neccesarily have to be possible to be played everywhere, but figure 4.12 shows that these two types of play: environmental manipulation opportunity and mental stimulation, can only be played in two areas in the north of the Statenkwartier. Furthermore, natural play and play opportunities for multiple target groups are also scarce in the Statenkwartier. When starting designing, the different types of play should become evenly spread across the neighbourhood, focussing on the types of play that are not possible at this moment.



Spatial criteria for playability (Bakker and Fähnrich 2008)	Statenkwartier - North							Statenkwartier - Middle			Statenkwartier - South				
	1.	2.	3.	4.	5.	6.*	7.	1.	2.	3.	1.	2.*	3.	4.	5.
1 Quantity of play	o	o	o	-	-	o	-	-	o	-	-	o	o	-	-
2 Location of play:															
Amount of social control	-	+	o	+	+	+	+	+	o	-	-	o	+	o	o
Amount of disturbance	+	o	+	-	-	o	-	-	-	-	-	+	o	o	-
Environmental conditions	+	+	+	o	o	o	o	o	o	o	-	+	o	o	o
3 Accessibility of play:															
Child friendly connections	o	o	o	-	-	-	-	o	-	-	-	o	o	-	-
Separation from motorized traffic	+	+	+	-	-	o	-	-	-	-	-	o	o	o	o
4 Quality of play:															
Complexity	+	-	+	-	o	o	-	-	o	o	-	+	o	o	-
Environmental manipulation opportunity	+	-	o	-	-	-	-	-	-	-	-	-	-	-	-
Plural target groups	+	-	o	-	-	o	-	-	o	-	-	+	-	o	o
Physical stimulation	+	+	+	o	o	+	o	o	+	o	o	+	+	+	+
Mental stimulation	+	o	+	-	-	o	-	-	-	-	-	o	-	-	-
Social stimulation	o	+	+	o	+	+	-	o	o	-	-	+	+	-	o
5 Landscape use	+	o	o	-	-	o	-	-	-	o	-	o	-	o	o
Formal/informal	i	i	f-i	i	i	i	i	i	f	i	i	i	f	i	i

Figure 4.10: Outcome neighbourhood NOP analysis

+ = good, o = not good, not bad, - = bad
(A '+' at disturbance means there is no disturbance)

↗ Suitable play space ↗ Suitable on most points

* Officially children are not allowed to play here

< Figure 4.9: Individual public spaces for analysis north - middle - south

Figure 4.11: Quantity of possible formal and informal play spaces including their actionradius

Figure 4.12: Quality lacking in public spaces

Legend figure 4.11

- Formal play space with actionradius
- Informal play space with actionradius
- Unsuitable informal play space

Legend figure 4.12

- Environmental manipulation opportunity
- Multiple target groups
- Physical stimulation
- Mental stimulation
- Social stimulation
- Landscape use
- All types of play possible

Outcome NOP analysis - qualities (legend)

- ! Severe lack of play quality in total neighbourhood
- ! Lack of play quality in total neighbourhood

4.2 OBSERVATIONS

Figure 4.13: location

Legend

- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

All observations have been mapped using the behavioural mapping method of Cosco and Moore (2010). All individual maps, from the different days on the different possible play spaces, can be found in appendix C. This chapter will only show the maps and tables on the combined data of the observation days on individual play spaces. Also, some indications for improvement will be given on the basis of the observations and the NOP neighbourhood analysis. The interviews are not integrated in the indications because these only give general information on the neighbourhood playability and not on the individual play spaces. In chapter 4.4 on triangulation this will be further elaborated.

4.2.1 Doornpark (North 1 & 2)

The NOP analysis showed this place as possible primary play space for children. However, the observations show that there are no children playing in the Doornpark at all. Only three teenagers have been spotted during all the observations.

The NOP analysis indicated that all qualities of play, except for the social play should be highly available for children at this place. Despite the fact that this place offers a lot to children, it is not used. A possible explanation for this might be the lack of social control on the park. Another explanation might be that the houses in the surrounding, except for the flats on the Western side, are all family homes with own yards. Children might not be needing the area to play outside. Also by visiting the park more often, it became clear that the area is often used to walk dogs, resulting in faeces that are left behind. This is something that did not come forward in the NOP model as possible indicator of suitability of a place, but did come forward in different literature on play (e.g. de Vries et al. 2007).

All in all, the area still offers lots of opportunities for children to play and might be an important area for children living in the flats nearby to play outside. To stimulate this, social control on the area should be improved and dog faeces should be reduced.

The smaller area opposite of flat buildings, offers play opportunities for children living nearby, several times children, being watched by their parents, have been observed here. The play qualities that are offered by the small public square are also being used by the observed children. Not only the grass side of the square can be used to play on, but also the sidewalk and the streets were used by children to play, especially physical active play.

Figure 4.14: top: Teenager climbing tree in Doornpark. Bottom: small area opposite of houses

Figure 4.15: North-1 & 2 - Total amount of children and location of play during 9 days of observation

	Date: Location: North -1: Doornpark		27 August 2014	29 August 2014	1 September 2014	3 September 2014	5 September 2014	7 September 2014	8 September 2014	10 September 2014	12 September 2014	Total	Average	Percentage
Weather			Sunny - 21°C	Half cloudy - 20°C	Half sunny - 22°C	Sunny - 22°C	Cloudy - 22°C	Sunny - 22°C	Sunny - 20°C	Half cloudy - 17°C	Half sunny - 21°C			
Time			16.15	17.00	15.30	17.00	12.50	15.30	17.00	16.30	16.00			
Total amount of children			0	0	1	0	0	2	0	0	0	3	0,3	
Total amount of adults			0	0	0	0	0	0	0	0	0	0	0,0	
Multiple target groups	Gender:	boy	-	-	0	-	-	2	-	-	-	2	0,2	67%
		girl	-	-	1	-	-	0	-	-	-	1	0,1	33%
	Age estimation:	<6 yrs	-	-	0	-	-	0	-	-	-	0	0,0	0%
		6-12 yrs	-	-	0	-	-	0	-	-	-	0	0,0	0%
		>12 yrs	-	-	1	-	-	2	-	-	-	3	0,3	100%
Indirect accessibility	With/without parents:	with	-	-	0	-	-	0	-	-	-	0	0,0	0%
		without	-	-	1	-	-	2	-	-	-	3	0,3	100%
		(unknown)	-	-	0	-	-	0	-	-	-	0	0,0	0%
Qualities of play	Manipulating the environment (intelligence)		-	-	0	-	-	0	-	-	-	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		-	-	0	-	-	0	-	-	-	0	0,0	0%
	Not manipulating the environment		-	-	1	-	-	2	-	-	-	3	0,3	100%
	Physically active (with?)		-	-	0	-	-	2	-	-	-	2	0,2	67%
	(such as:)		-	-	just walking around	-	-	baseball playing	-	-	-			
	(in between)		-	-	1	-	-	0	-	-	-	1	0,1	33%
	Non-active		-	-	0	-	-	0	-	-	-	0	0,0	0%
	Exploring (creativity and imagination)		-	-	0	-	-	0	-	-	-	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		-	-	0	-	-	0	-	-	-	0	0,0	0%
	Not-exploring		-	-	1	-	-	2	-	-	-	3	0,3	100%
	Social		-	-	0	-	-	2	-	-	-	2	0,2	67%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		-	-	0	-	-	0	-	-	-	0	0,0	0%
	Individual		-	-	1	-	-	0	-	-	-	1	0,1	33%
Landscape use	Using natural elements		-	-	0	-	-	0	-	-	-	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		-	-	0	-	-	0	-	-	-	0	0,0	0%
	Non-natural elements		-	-	1	-	-	2	-	-	-	3	0,3	100%
Other things that stand out:					Hanging around on her own	Could not be entered because of police blockage								

Figure 4.16: table of observations in the Doornpark (north 1)

Date: Location: North -2: Doornpark			27 August 2014	29 August 2014	1 September 2014	3 September 2014	5 September 2014	7 September 2014	8 September 2014	10 September 2014	12 September 2014	Total	Average	Percentage
Weather			Sunny - 21°C	Half cloudy - 20°C	Half sunny - 22°C	Sunny - 22°C	Cloudy - 22°C	Sunny - 22°C	Sunny - 20°C	Half cloudy - 17°C	Half sunny - 21°C			
Time			16.15	17.00	15.30	17.00	12.50	15.30	17.00	16.30	16.00			
Total amount of children			0	0	2	6	0	4	6	4	2	24	2,7	
Total amount of adults			0	0	5	4	0	8	0	3	2	22	2,4	
Multiple target groups	Gender:	boy	-	-	0	3	-	1	2	1	1	8	0,9	33%
		girl	-	-	2	3	-	3	4	3	1	16	1,8	67%
	Age estimation:	<6 yrs	-	-	2	4	-	2	4	4	2	18	2,0	75%
		6-12 yrs	-	-	0	2	-	2	2	0	0	6	0,7	25%
		>12 yrs	-	-	0	0	-	0	0	0	0	0	0,0	0%
Indirect accessibility	With/without parents:	with	-	-	2	4	-	4	0	4	2	16	1,8	67%
		without	-	-	0	0	-	0	6	0	0	6	0,7	25%
		(unknown)	-	-	0	2	-	0	0	0	0	2	0,2	8%
Qualities of play	Manipulating the environment (intelligence)		-	-	0	0	-	0	0	0	0	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		-	-	0	0	-	0	0	0	0	0	0,0	0%
	Not manipulating the environment		-	-	2	6	-	4	6	4	2	24	2,7	100%
	Physically active (with?)		-	-	0	6	-	0	0	1	-	7	0,8	29%
	(such as:)		-	-	-	bicyling	-	-	-	bicycling	0			
	(in between)		-	-	0	0	-	1	6	0	2	9	1,0	38%
	Non-active		-	-	2	0	-	3	0	3	0	8	0,9	33%
	Exploring (creativity and imagination)		-	-	0	0	-	0	0	0	0	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		-	-	0	0	-	3	0	0	0	3	0,3	13%
	Not-exploring		-	-	2	6	-	1	6	4	2	21	2,3	88%
	Social		-	-	0	6	-	3	6	3	2	20	2,2	83%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		-	-	2	0	-	0	0	0	0	2	0,2	8%
	Individual		-	-	0	0	-	1	0	1	0	2	0,2	8%
Landscape use	Using natural elements		-	-	0	0	-	0	0	0	0	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		-	-	0	0	-	0	0	0	0	0	0,0	0%
	Non-natural elements		-	-	2	6	-	4	6	4	2	24	2,7	100%
Other things that stand out:					Sitting and walking around parents place			Children using grass as place to play picknick or something	Children playing with bicycle					

Figure 4.17: table of observations in the Doornpark (north 2)

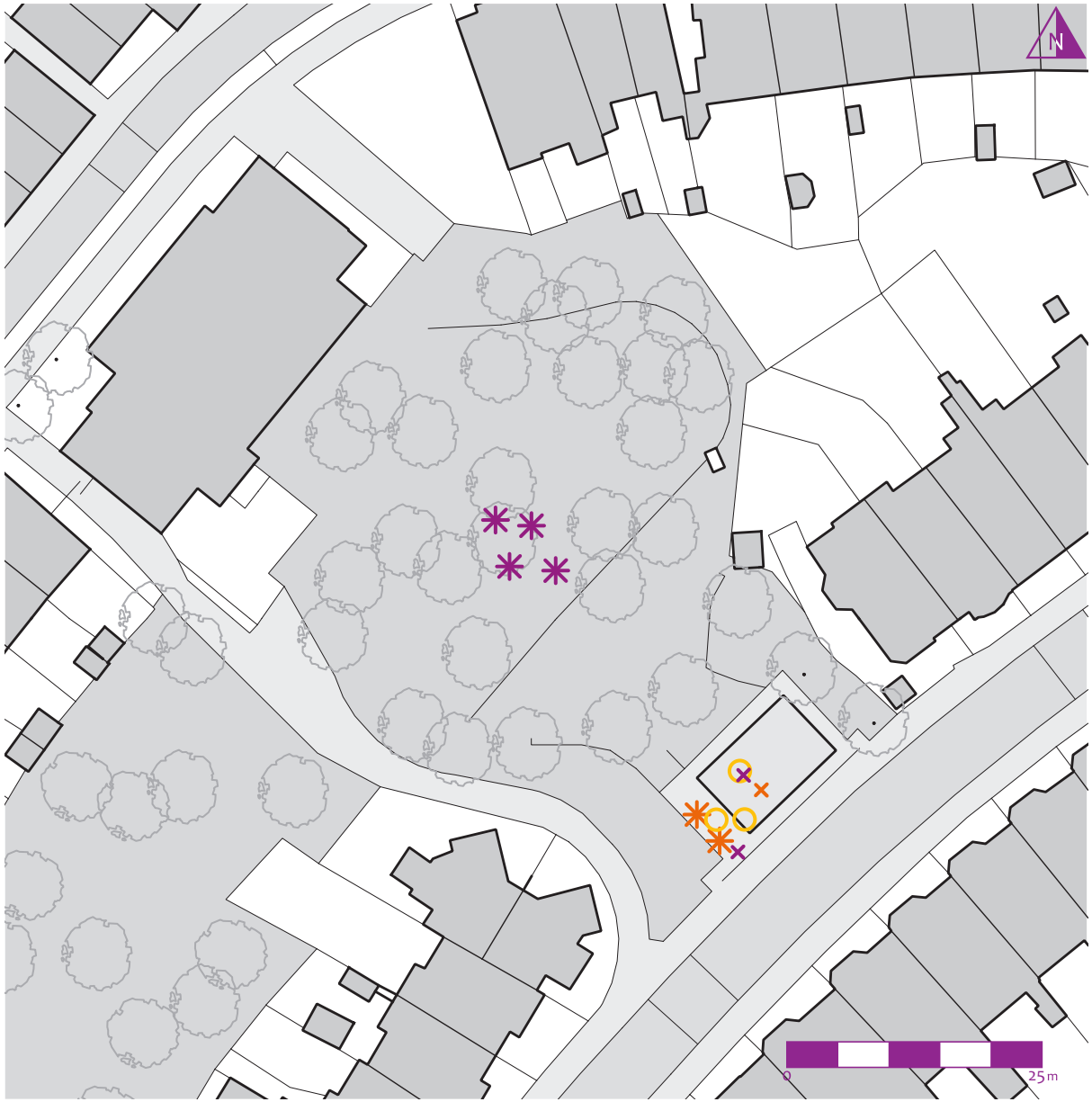
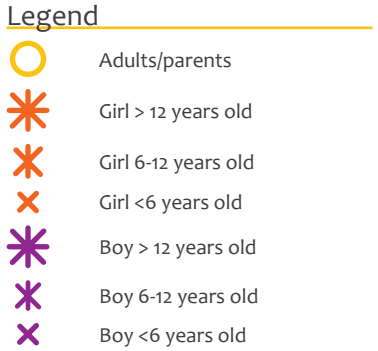


Figure 4.18: North 3 - total amount of children and location of play during 9 days of observation

4.2.2 Frankenstraat (North 3)

The formal play space at the Frankenstraat is meant for younger children and does not offer any challenge for children older than six. The bushes behind this playground however extend the area and make it into an informal playspace as well as a formal playground. During the observations the playground was once used by teenagers to hang around. This makes it possibly unusable for younger children as they are often scared of the teenagers. This illustrates the need for a place for teenagers as well as place for younger children. The place itself is not often used by children although the NOP analysis showed that it is quite accessible for children and there is social control on the playground.

Figure 4.19: location



	Date: Location: North -2: Doornpark		29 August 2014	27 August 2014	1 September 2014	3 September 2014	5 September 2014	7 September 2014	8 September 2014	10 September 2014	12 September 2014	Total	Average	Percentage
Weather			Half cloudy - 20°C	Sunny - 21°C	Half sunny - 22°C	Sunny - 22°C	Cloudy - 22°C	Sunny - 22°C	Sunny - 20°C	Half cloudy - 17°C	Half sunny - 21°C			
Time			17.00	16.15	15.45	16.45	12.40	15.30	16.45	16.15	16.00			
Total amount of children			0	0	6	0	0	0	1	2	0	9	1,0	
Total amount of adults			0	0	0	0	0	0	2	1	0	3	0,3	
Multiple target groups	Gender:	boy	-	-	4	-	-	-	0	2	-	6	0,7	67%
		girl	-	-	2	-	-	-	1	0	-	3	0,3	33%
	Age estimation:	<6 yrs	-	-	0	-	-	-	1	2	-	3	0,3	33%
		6-12 yrs	-	-	0	-	-	-	0	0	-	0	0,0	0%
		>12 yrs	-	-	6	-	-	-	0	0	-	6	0,7	67%
Indirect accessibility	With/without parents:	with	-	-	0	-	-	-	1	2	-	3	0,3	33%
		without	-	-	6	-	-	-	0	0	-	6	0,7	67%
		(unknown)	-	-	0	-	-	-	0	0	-	0	0,0	0%
Qualities of play	Manipulating the environment (intelligence)		-	-	0	-	-	-	0	0	-	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		-	-	0	-	-	-	0	0	-	0	0,0	0%
	Not manipulating the environment		-	-	6	-	-	-	1	2	-	9	1,0	100%
	Physically active (with?)		-	-	0	-	-	-	1	2	-	3	0,3	33%
	(such as:)		-	-	-	-	-	-	-	bicycling and running	-			
	(in between)		-	-	0	-	-	-	0	0	-	0	0,0	0%
	Non-active		-	-	6	-	-	-	0	0	-	6	0,7	67%
	Exploring (creativity and imagination)		-	-	0	-	-	-	0	0	-	0	0,0	0%
	(such as:)		-	-	Hiding/not wanting t	-	-	-	-	-	-			
	(in between)		-	-	4	-	-	-	0	0	-	4	0,4	44%
	Not-exploring		-	-	2	-	-	-	1	2	-	5	0,6	56%
	Social		-	-	6	-	-	-	0	0	-	6	0,7	67%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		-	-	0	-	-	-	0	2	-	2	0,2	22%
	Individual		-	-	0	-	-	-	1	0	-	1	0,1	11%
Landscape use	Using natural elements		-	-	0	-	-	-	0	0	-	0	0,0	0%
	(such as:)		-	-	Using bushes to not	-	-	-	-	-	-			
	(in between)		-	-	4	-	-	-	0	0	-	4	0,4	44%
	Non-natural elements		-	-	2	-	-	-	1	2	-	5	0,6	56%
Other things that stand out:					Older children need their own place to socialise, not really playing									

Figure 4.20: table of observations in the Frankenstraat (north 2)

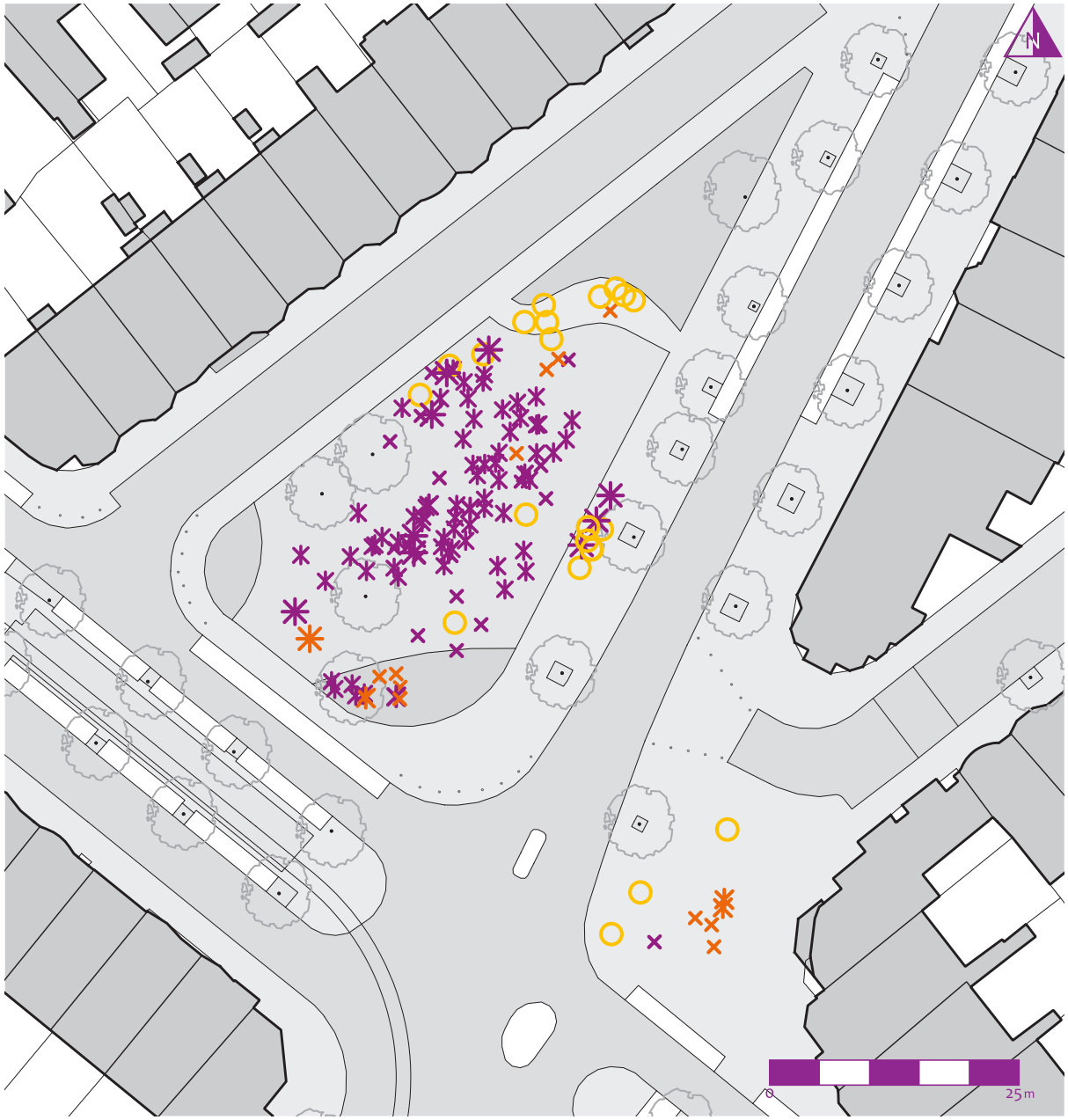


Figure 4.21: North 6&7 - total amount of children and location of play during 9 days of observation

4.2.3 Prins Mauritsplein (North 6 & 7)

The prins Mauritsplein is, in the Northern part of the Statenkwartier, the most intensely used public square (north 6). Even though children are officially not allowed to play here, it is being used a lot, especially to play football on. Surprisingly this square is being used by many different nationalities. Especially German children are often to be found here, but French and British children have also been observed. The biggest group of children is between six and twelve years of age and many play here without direct supervision of parents. The social control on the public square may be a reason for this. Some parents however do bring their children to this place and pick them up again. This might be explained by the busy roads that are situated along the public square, which make it hard to access the square for children individually. In the interviews, that can be seen in the next chapter, this road intersection has also been mentioned as dangerous to cross. The Prins Mauritsplein is also the only site in the Northern part of the Statenkwartier in which children have been seen exploring their environment. The tree that is situated in the lower part of the square has for example proven to be a good tree to climb in. The upper part of the square however is not used by children and only functions as a place in

Figure 4.22: location

Legend

- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

which footballs disappear in the bushes when they are being kicked over the fence by accident. The intense use of the site might also partly explain the fact that all the different qualities of play the square offers are actually used. There is often not many space left and therefore children are forced to find other ways of playing, resulting in more creative solutions such as climbing in trees.

The small square on the other side of the road (north 7) does offer some space for children to play, but is not often used. When it is being used, it is often for a short period of time, being part of an 'en route' stop to play for a little while and then continue to go somewhere else. The NOP analysis showed that one of the problem of this square is the direct contact with motorized traffic, this can be seen in the observations because the children that are playing here, are often accompanied by a parent, or at least watched by a parent from a distance. Another problem is the lack of play opportunities it offers to children. The asphalt can be used to bike on, but the size of the square makes it only attractive to younger children as older children are bored after two rounds of stepping or biking.

	Date: Location: North -6: Prins Mauritsplein		27 August 2014	29 August 2014	1 September 2014	3 September 2014	5 September 2014	7 September 2014	8 September 2014	10 September 2014	12 September 2014	Total	Average	Percentage
Weather			Sunny - 21°C		Half sunny - 22°C	Sunny - 22°C	Cloudy - 22°C	Sunny - 22°C	Sunny - 20°C	Half cloudy - 17°C	Half sunny - 21°C			
Time			16.30	16.30	16.00	16.15	12.40	15.45	16.30	16.00	16.15			
Total amount of children			8	27	9	10	0	10	7	18	14	103	11,4	
Total amount of adults			0	9	0	2	0	2	2	3	3	21	2,3	
Multiple target groups	Gender:	boy	8	24	8	8	-	8	6	17	13	92	10,2	89%
		girl	0	3	1	2	-	2	1	1	1	11	1,2	11%
	Age estimation:	<6 yrs	0	5	0	4	-	2	3	3	5	22	2,4	21%
		6-12 yrs	8	22	5	6	-	5	4	15	6	71	7,9	69%
		>12 yrs	0	0	4	0	-	3	0	0	3	10	1,1	10%
Indirect accessibility	With/without parents:	with	0	9	0	2	-	3	5	5	4	28	3,1	27%
		without	8	18	9	6	-	7	2	14	10	74	8,2	72%
		(unknown)	-	0	0	2	-	0	0	0	0	2	0,2	2%
Qualities of play	Manipulating the environment (intelligence)		0	0	0	0	-	0	0	0	0	0	0,0	0%
	(such as:)		-		-	-	-	-	-	-	-			
	(in between)		0	3	0	0	-	0	1	1	0	5	0,6	5%
	Not manipulating the environment		8	24	9	10	-	10	6	17	14	98	10,9	95%
	Physically active (with?)		8	22	4	10	-	7	6	16	13	86	9,6	83%
	(such as:)		football	football	football	football and runni	-	voetbal	football and hide	football	football			
	(in between)		0	5	2	0	-	1	1	1	1	11	1,2	11%
	Non-active		0	0	3	0	-	2	0	1	0	6	0,7	6%
	Exploring (creativity and imagination)		0	1	0	0	-	0	2	3	-	6	0,7	6%
	(such as:)		-		-	-	-	-	climbing trees	bush, tree climbing	0			
	(in between)		0	3	0	0	-	0	1	0	-	4	0,4	4%
	Not-exploring		8	23	9	10	-	10	4	15	14	93	10,3	90%
	Social		8	25	9	8	-	9	6	14	13	92	10,2	89%
	(such as:)		-		-	-	-	-	-	-	-			
	(in between)		0	2	0	2	-	0	0	2	1	7	0,8	7%
	Individual		0	0	0	0	-	1	1	2	0	4	0,4	4%
Landscape use	Using natural elements		0	1	0	0	-	0	2	3	0	6	0,7	6%
	(such as:)		throwing sand / picking from trees		-	-	-	-	trees and sand	-	-			
	(in between)		1	3	2	0	-	0	1	0	0	7	0,8	7%
	Non-natural elements		7	23	7	10	-	10	4	15	14	90	10,0	87%
Other things that stand out:			All german children	All german	Some international children					All German children	German and French. Teenagers kick ball over the fence constantly, unsuitable for older children			

Figure 4.23: table of observations in the Prins Mauritsplein (north 6)

Figure 4.24: football on the Prins Mauritsplein (north 6)

Figure 4.25: stepping on the Prins Mauritsplein (north 7)

Figure 4.26: climbing trees on the Prins Mauritsplein (north 6)

Figure 4.27: small children playing at the Prins Mauritsplein (north 7)

	Date: Location: North -7: Prins Mauritsplein		27 August 2014	29 August 2014	1 September 2014	3 September 2014	5 September 2014	7 September 2014	8 September 2014	10 September 2014	12 September 2014	Total	Average	Percentage
Weather			Sunny - 21°C	Half cloudy - 20°C	Half sunny - 22°C	Sunny - 22°C	Cloudy - 22°C	Sunny - 22°C	Sunny - 20°C	Half cloudy - 17°C	Half sunny - 21°C			
Time			16.30	16.30	16.00	16.15	12.40	15.45	16.30	16.00	16.15			
Total amount of children			1	0	0	0	0	2	1	1	2	7	0,8	
Total amount of adults			1	0	0	0	0	0	1	1	1	4	0,4	
Multiple target groups	Gender:	boy	0	-	-	-	-	0	1	0	1	2	0,2	29%
		girl	1	-	-	-	-	2	0	1	1	5	0,6	71%
	Age estimation:	<6 yrs	0	-	-	-	-	1	1	1	2	5	0,6	71%
		6-12 yrs	1	-	-	-	-	1	0	0	0	2	0,2	29%
		>12 yrs	0	-	-	-	-	0	0	0	0	0	0,0	0%
Indirect accessibility	With/without parents:	with	1	-	-	-	-	0	1	1	2	5	0,6	71%
		without	0	-	-	-	-	2	0	0	0	2	0,2	29%
		(unknown)	-	-	-	-	-	0	0	0	0	0	0,0	0%
Qualities of play	Manipulating the environment (intelligence)		0	-	-	-	-	0	0	0	0	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	-	-		0,0	0%
	(in between)		0	-	-	-	-	0	0	0	0	0	0,0	0%
	Not manipulating the environment		1	-	-	-	-	2	1	1	2	7	0,8	100%
	Physically active (with?)		1	-	-	-	-	2	1	0	2	6	0,7	86%
	(such as:)		stepping	-	-	-	-	stepping	stepping	-	stepping		0,0	0%
	(in between)		0	-	-	-	-	0	0	1	0	1	0,1	14%
	Non-active		0	-	-	-	-	0	0	0	0	0	0,0	0%
	Exploring (creativity and imagination)		0	-	-	-	-	0	0	0	0	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	-	-		0,0	0%
	(in between)		0	-	-	-	-	0	0	1	0	1	0,1	14%
	Not-exploring		1	-	-	-	-	2	1	0	2	6	0,7	86%
	Social		0	-	-	-	-	0	0	0	0	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	-	-		0,0	0%
	(in between)		0	-	-	-	-	2	0	0	2	4	0,4	57%
	Individual		1	-	-	-	-	0	1	1	0	3	0,3	43%
Landscape use	Using natural elements		0	-	-	-	-	0	0	0	0	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	-	-		0,0	0%
	(in between)		0	-	-	-	-	0	0	1	0	1	0,1	14%
	Non-natural elements		1	-	-	-	-	2	1	0	2	6	0,7	86%
Other things that stand out:			Short time - en route					Using the asphalt as place to step		Using plants in pots for hiding and smelling	En route stopping to play			

Figure 4.28: table of observations in the Prins Mauritsplein (north 7)

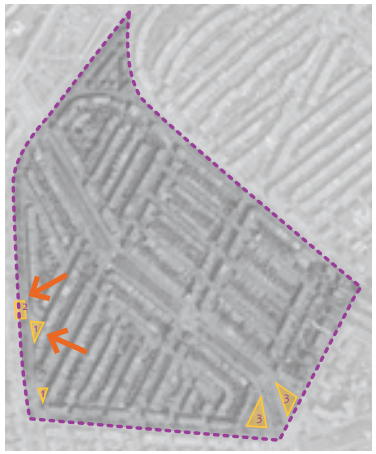


Figure 4.29: location

Legend

- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

4.2.4 Jurgenplein and Van Boetzelaerlaan (Middle 1 & 2)

The Jurgenplein is offering mostly younger children under the age of six the possibility to play outside under the supervision of their parents. Because this square has been made a little personal by for example facade gardens and benches, the place offers opportunities for parents to watch their children play. No children have been observed without a parent. The busy Van Boetselaerlaan that is situated along the square makes it possibly less suitable for playing.

When observing the formal playground on the Van Boetzelaerlaan, it is noticeable that most of the time there are some children playing, but not very many. This might be because the formal play equipment does not offer a lot of excitement for children to play and does not stimulate children. This can also be seen in the observations, the only play qualities children had were some social play and physical activity. But as there are not many other places for children to go, this might be the only option for the children to play inside their action radius, giving them no other option. The situation of the playground next to the barriers such as the tram route and the Van Boetselaerlaan is not optimal because it is not accessible for children on their own. This might be the reason why children, except for the teenagers, are only observed with their parents on this playground.

Figure 4.30: Van Boetzelaerlaan & Jurgenplein (Middle 1&2) - total amount of children and location of play during 9 days of observation

Date: Location: Middle -2: Van Boetselaerlaan			27 August 2014	29 August 2014	1 September 2014	3 September 2014	5 September 2014	7 September 2014	8 September 2014	10 September 2014	12 September 2014	Total	Average	Percentage
Weather			Sunny - 21°C	Half cloudy - 20°C	Half sunny - 22°C	Sunny - 22°C	Cloudy - 22°C	Sunny - 22°C	Sunny - 20°C	Half cloudy - 17°C	Half sunny - 21°C			
Time			17.15	17.30	16.45	17.00	13.00	15.15	17.15	16.45	16.30			
Total amount of children			4	4	3	4	0	0	3	1	4	23	2,6	
Total amount of adults			1	1	2	2	0	0	3	1	1	11	1,2	
Multiple target groups	Gender:	boy	3	4	1	1	-	-	1	1	0	11	1,2	48%
		girl	1	0	2	3	-	-	2	0	4	12	1,3	52%
	Age estimation:	<6 yrs	1	1	1	2	-	-	3	1	2	11	1,2	48%
		6-12 yrs	3	1	0	2	-	-	0	0	2	8	0,9	35%
		>12 yrs	0	2	2	0	-	-	0	0	0	4	0,4	17%
Indirect accessibility	With/without parents:	with	1	2	1	2	-	-	3	1	2	12	1,3	52%
		without	3	2	2	2	-	-	0	0	2	11	1,2	48%
		(unknown)	-	0	0	0	-	-	0	0	0	0	0,0	0%
Qualities of play	Manipulating the environment (intelligence)		0	0	0	0	-	-	0	0	0	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		0	0	0	0	-	-	0	0	0	0	0,0	0%
	Not manipulating the environment		4	4	3	4	-	-	3	1	4	23	2,6	100%
	Physically active (with?)		3	2	0	2	-	-	3	1	4	15	1,7	65%
	(such as:)		formal playequip	-	-	-	-	-	play equipment	equipment	equipment			
	(in between)		1	0	1	2	-	-	0	0	0	4	0,4	17%
	Non-active		0	2	2	0	-	-	0	0	0	4	0,4	17%
	Exploring (creativity and imagination)		0	0	0	0	-	-	0	0	0	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		0	0	0	0	-	-	0	0	0	0	0,0	0%
	Not-exploring		4	4	3	4	-	-	3	1	4	23	2,6	100%
	Social		2	4	2	2	-	-	0	0	0	10	1,1	43%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		0	0	0	0	-	-	2	0	4	6	0,7	26%
	Individual		2	0	1	2	-	-	1	1	0	7	0,8	30%
Landscape use	Using natural elements		0	0	0	0	-	-	0	0	0	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		0	0	0	0	-	-	0	0	0	0	0,0	0%
	Non-natural elements		4	4	3	4	-	-	3	1	4	23	2,6	100%
Other things that stand out:					Two teenagers very close, little child with 2 parents									

1 September 2014	12 September 2014	Total	Average	Percentage	
Half sunny - 22°C	Half sunny - 21°C				
16.45	16.30				
1	3	4	2,0		
0	2	2	1,0	2	1,0
0	2	2	1,0	50%	
1	1	2	1,0	50%	
1	3	4	2,0	50%	
0	0	0	0,0	29%	
0	0	0	0,0	0%	
0	3	3	1,5	75%	
0	0	0	0,0	0%	
1	0	1	0,5	0%	
1 playing with sand u	0	1	0,5	25%	
0	0	0	0,0	0%	
0	3	3	1,5	75%	
0	0	0	0,0	0%	
-	-				
0	3	3	1,5	75%	
1	0	1	0,5	25%	
0	0	0	0,0	0%	
-	-				
1	0	1	0,5	25%	
0	3	3	1,5	75%	
0	3	3	1,5	75%	
-	-				
0	0	0	0,0	0%	
1	0	1	0,5	25%	
0	0	0	0,0	0%	
-	-				
1	0	1	0,5	25%	
0	3	3	1,5	75%	
Very little space and child still finds some 'nature' to play with. Mother can					

Figure 4.31: table of observations in the Van Boetzelaerlaan and Jurgenplein (middle 1&2)

Figure 4.32: sand near the tree trunk offers opportunity for play on the Jurgenplein

Figure 4.33: formal playspace in between the lanes of the Van Boetzelaerlaan

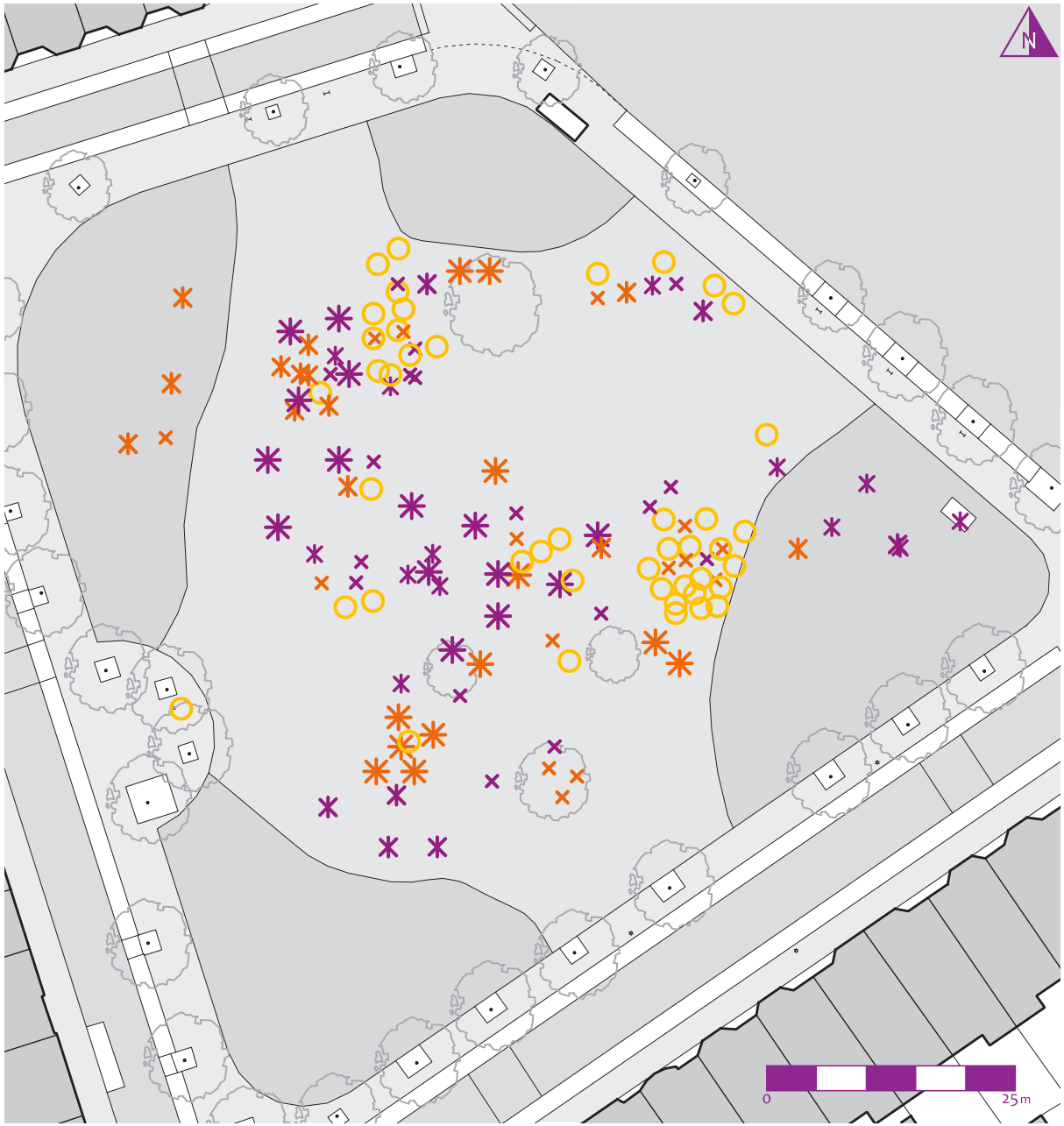


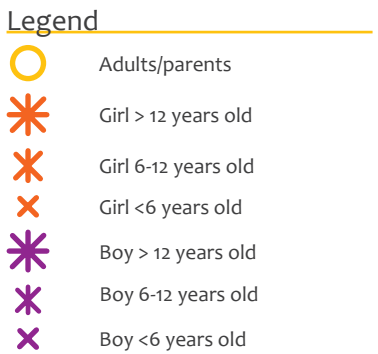
Figure 4.34: South-2: Total amount of children in 10 days of observation and location of play

4.2.5 Frederik Hendrikplein - informal (South 2)

The park side of the Frederik Hendrikplein is used by children a lot for physical play such as football. It is also used for social play and for mental stimulation such as climbing in trees, hiding in bushes and picking leaves. The size of the park gives room for many different groups of children of different age and nationality, with or without parents. The fences that are surrounding the grass field do not always prevent children from getting into the bushes or climbing the trees. Even an old fountain that is almost invisible from outside the fence is found by children that play with the water in it. However, the fences will prevent some children from getting the natural play experience that they could have gotten without the fences. One of the interviewees indicated that the fences were sometimes dangerous to climb over. The fence might also form a pleasant barrier between the Frederik Hendriklaan and the park, which might explain why more than half of the children playing in the park are not accompanied by a parent.

The NOP analysis showed this place as possible primary play space and the observations and interviews indicated the same: the place is rather accessible as children do not think the traffic is bothering them, there is enough social control and the size and amenities on the place offer children many different play qualities.

Figure 4.35: location



Date: Location: South-2: Frederik Hendrikplein			27 August 2014	29 August 2014	1 September 2014	3 September 2014	5 September 2014	7 September 2014	8 September 2014	10 September 2014	12 September 2014	Total	Average	Percentage
Weather			Sunny - 21°C	Half cloudy - 20°C	Half sunny - 22°C	Sunny - 22°C	Cloudy - 22°C	Sunny - 22°C	Sunny - 20°C	Half cloudy - 17°C	Half sunny - 21°C			
Time			16.45	16.00	17.00	15.30	12.30	16.15	15.45	15.00	16.45			
Total amount of children			8	6	16	17	0	9	1	11	25	93	10,3	
Total amount of adults			3	1	3	8	0	17	2	0	9	43	4,8	
Multiple target groups	Gender:	boy	5	2	6	4	-	4	1	8	19	49	5,4	53%
		girl	3	4	10	13	-	5	0	3	6	44	4,9	47%
	Age estimation:	<6 yrs	5	0	3	6	-	6	1	0	11	32	3,6	34%
		6-12 yrs	1	2	6	4	-	3	0	11	7	34	3,8	37%
		>12 yrs	2		7	7	-	0	0	0	7	23	2,6	25%
Indirect accessibility	With/without parents:	with	6	2	5	7	-	9	1	0	15	45	5,0	48%
		without	2	4	11	10	-	0	0	11	10	48	5,3	52%
		(unknown)	-	0			-	0	0	0	0	0	0,0	0%
Qualities of play	Manipulating the environment (intelligence)		0	0	0	0	-	0	0	0	0	0	0,0	0%
	(such as:)		-	-	-	-	-	-	-	water fountain	pulling on tree			
	(in between)		1	0	0	0	-	0	0	1	5	7	0,8	8%
	Not manipulating the environment		7	6	16	17	-	9	1	10	20	86	9,6	92%
	Physically active (with?)		3	4	9	5	-	5	0	8	17	51	5,7	55%
	(such as:)		football	football	football	-	-	ball games	-	football	football			
	(in between)		1	0	4	0	-	1	0	3	5	14	1,6	15%
	Non-active		4	2	3	12	-	3	1	0	3	28	3,1	30%
	Exploring (creativity and imagination)		0	0	4	0	-	0	0	4	2	10	1,1	11%
	(such as:)		-	-	searching route, hidi	-	-	-	-	water, bushes	climbing tree			
	(in between)		0	0	0	3	-	0	0	0	4	7	0,8	8%
	Not-exploring		8	6	12	14	-	9	1	7	19	76	8,4	82%
	Social		6	4	11	13	-	0	0	11	18	63	7,0	68%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		2	2	4	2	-	2	0	0	4	16	1,8	17%
	Individual		0	0	1	2	-	7	1	0	4	15	1,7	16%
Landscape use	Using natural elements		0	0	4	0	-	0	0	4	2	10	1,1	11%
	(such as:)		-	-	Bush and tree area, I	Using grass for rol	-	-	-	water, bushes	Tree climbing, pulling,			
	(in between)		3	0	0	3	-	0	0	0	4	10	1,1	11%
	Non-natural elements		5	6	12	14	-	9	1	7	19	73	8,1	78%
Other things that stand out:			football and picknicking		4 little girls in the bush hiding for each other, exploring what is there			Big family gathering	Baby, can't do anything		People noticing that children pulling on trees are vandals and are destroying the play opportunities for the other			

Figure 4.36: table of observations on the Frederik Hendrikplein (South 2)

Figure 4.37: picknick on the grass of the Frederik Hendrikplein

Figure 4.38: fence around the Frederik Hendrikplein

Figure 4.39: child climbing in a tree

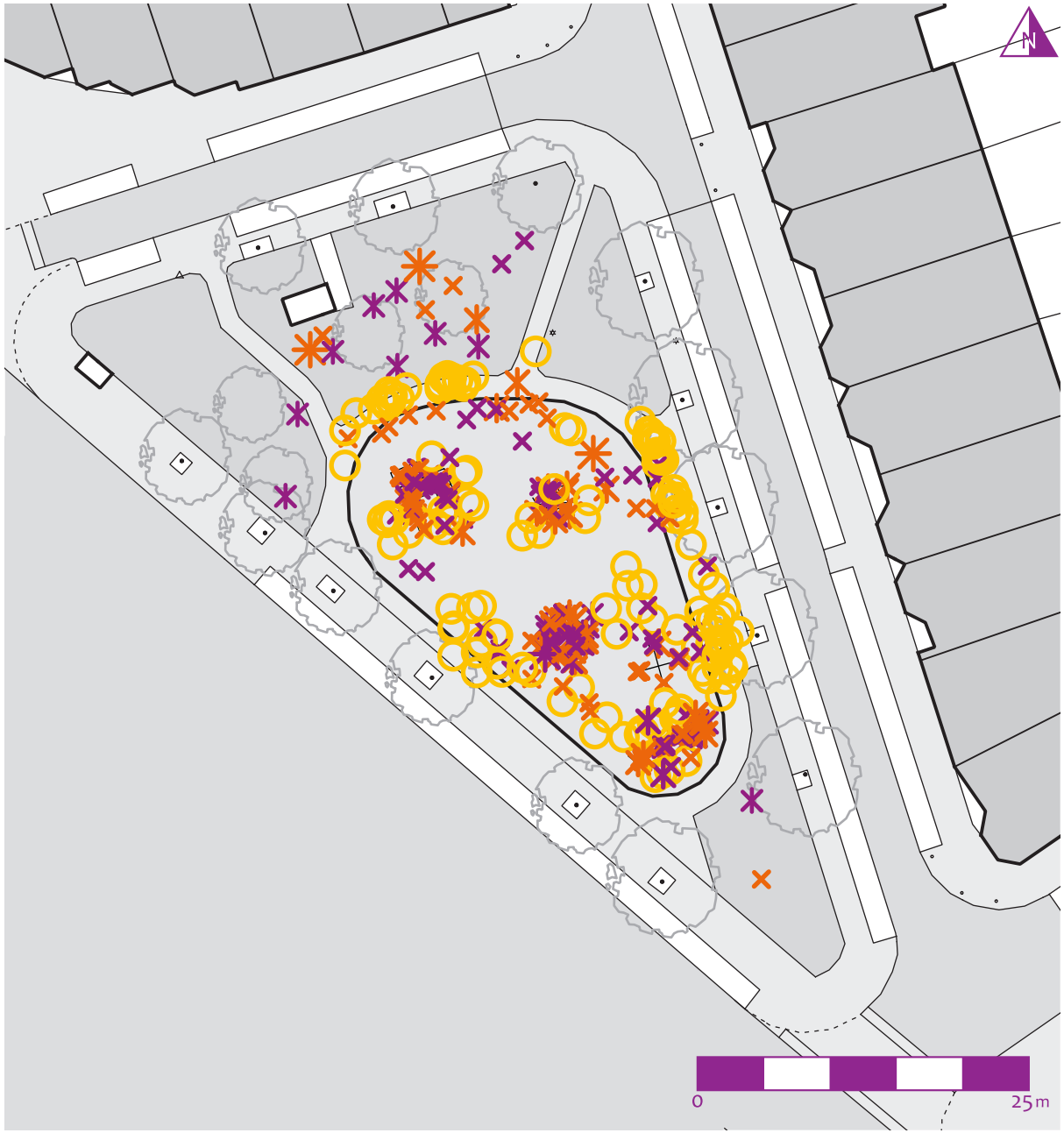


Figure 4.40: South-3 Total amount of children in 10 days of observation and location of play

4.2.6 Frederik Hendrikplein - formal (South 3)

This playground was by far the most intensely used play space throughout the Statenkwartier. It is however only suitable for children until the age of six because it does not offer any challenge to children older than this. This could also be seen in the observations, because the amount of children in the playground above the age of 6 is not very high. Furthermore, most of the children are accompanied by a parent. When children playing on this place were older, they were often using the bushes in the northern part of the playground, offering some opportunities for informal explorative play instead of the formal play equipment only. The observations showed that this place did offer opportunities for children of different nationalities to play. The Frederik Hendriklaan can be seen as a threat to the children playing here, but the fence makes a barrier between the traffic and the playing children, which is good in this case.

Figure 4.41: location

Legend

- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

	Date: Location: South-3: Frederik Hendrikplein		27 August 2014	29 August 2014	1 September 2014	3 September 2014	5 September 2014	7 September 2014	8 September 2014	10 September 2014	12 September 2014	Total	Average	Percentage
Weather			Sunny - 21°C	Half cloudy - 20°C	Half sunny - 22°C	Sunny - 22°C	Cloudy - 22°C	Sunny - 22°C	Sunny - 20°C	Half cloudy - 17°C	Half sunny - 21°C			
Time			17.05	16.00	17.15	15.30	12.30	16.30	15.30	15.45	17.15			
Total amount of children			24	33	25	24	10	31	29	22	20	218	24,2	
Total amount of adults			14	22	16	20	8	20	17	15	11	143	15,9	
Multiple target groups	Gender:	boy	10	14	12	11	4	20	11	8	9	99	11,0	45%
		girl	14	19	13	13	6	11	18	14	11	119	13,2	55%
	Age estimation:	<6 yrs	16	25	19	13	10	25	25	20	16	169	18,8	78%
		6-12 yrs	6	8	6	11	0	4	4	2	4	45	5,0	21%
		>12 yrs	2	0	0	0	0	2	0	0	0	4	0,4	2%
Indirect accessibility	With/without parents:	with	16	23	20	24	10	29	29	22	20	193	21,4	89%
		without	4	2	0	0	0	0	0	0	0	6	0,7	3%
		(unknown)	4	8	5	0	0	2	0	0	0	19	2,1	9%
Qualities of play	Manipulating the environment (intelligence)		0	0	0	0	0	0	0	0	0	0	0,0	0%
	(such as:)		sand play	-	-	-	-	-	-	-	-			
	(in between)		2	0	0	0	0	1	0	0	0	3	0,3	1%
	Not manipulating the environment		22	33	25	24	10	30	29	22	20	215	23,9	99%
	Physically active (with?)		15	30	17	18	9	22	20	19	16	166	18,4	76%
	(such as:)		formal playequipm	equipment	equipment	play equipment	-	play equipment	play equipment	equipment	-			
	(in between)		5	0	5	2	0	4	3	0	0	19	2,1	9%
	Non-active		4	3	3	4	1	5	6	3	4	33	3,7	15%
	Exploring (creativity and imagination)		6	0	0	1	0	3	0	0	0	10	1,1	5%
	(such as:)		-	-	-	-	-	-	-	-	-			
	(in between)		4	4	4	0	0	2	0	1	0	15	1,7	7%
	Not-exploring		14	29	21	23	10	26	29	21	20	193	21,4	89%
	Social		10	16	15	14	0	21	17	14	16	123	13,7	56%
	(such as:)		playing tag (small g	-	-	-	-	-	-	-	-			
	(in between)		11	7	4	0	2	2	0	4	0	30	3,3	14%
	Individual		2	10	6	10	8	8	12	4	4	64	7,1	29%
Landscape use	Using natural elements		6	0	0	1	0	4	0	0	0	11	1,2	5%
	(such as:)		climbing trees/hidi	-	Using bush for hiding	Bushes	-	-	-	-	-			
	(in between)		4	3	5	0	0	0	0	1	0	13	1,4	6%
	Non-natural elements		14	30	20	23	10	27	29	21	20	194	21,6	89%
Other things that stand out:			very busy: older children crowd out the younger children, almost run over	Older children playing tag and hiding, younger ones on equipment. Some french kids, other are dutch. Bush being		Parents notice that when a child turns 8 years old, therer is not enough to play with anymore, not challenging			Bushes are being used as toilet for small child		Later in afternoon, many parents with children already left			

Figure 4.42: table of observations on the Frederik Hendrikplein (South 3)

Figure 4.43: formal playground on the Frederik Hendrikplein

Figure 4.44: parents joining their children play

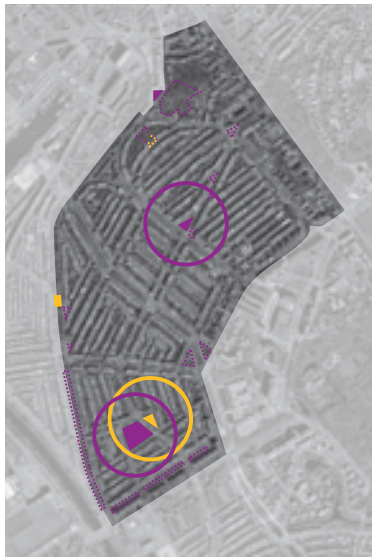


Figure 4.45: Playspaces used a lot

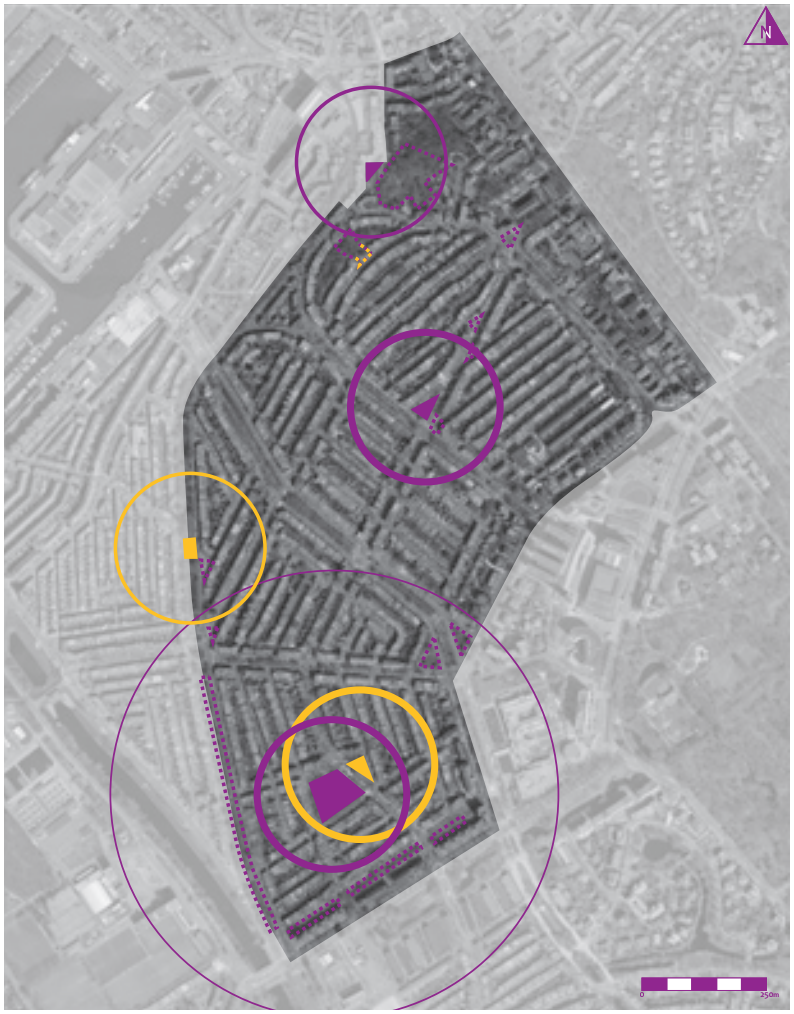


Figure 4.46: Playspaces being used in reality

Legend figure 4.45 & 4.46

- Formal play space with actionradius
- Informal play space with actionradius
- Unsuitable informal play space

Legend figure 4.47

- No environmental manipulation opportunity
- No multiple target groups
- No physical stimulation
- No mental stimulation
- No social stimulation
- No landscape use

More transparent symbols mean that almost no play has occured

4.2.7 Conclusion observations

The observations throughout the neighbourhood reveal the most used play spaces, as can be seen in figure 4.45. These three places, especially the Prins Mauritsplein and the formal playground of the Frederik Hendrikplein are often very crowded, as can be seen in the previous subchapters. Two other play spaces that are used most of the times, but were not that busy, are the formal play space on the Van Boetzelaerlaan and the small green area next to the Doornpark (see figure 4.46). Almost two third of the total amount of children observed (484 children in total) were accompanied by a parent or other adult. This indicates that the accessibility of the play spaces is not very high, or at least, parents do not think their child is safe alone on a possible play space.

Furthermore, the observations show that there are almost no children manipulating the environment and there are very little children exploring, having mental stimulation, and using natural elements, as can be seen in figure 4.47. The only play spaces in which natural elements occasionally have been used are the Prins Mauritsplein and the Frederik Hendrikplein, which is the same for having mental stimulation. Manipulating the environment has not been done at any play space, only occasionally when children were able to find some sand.
All in all the observations show a huge pressure on the public space suitable for children to play on. And too little public spaces in total that are in use as play space, offering not all qualities of play for children.

Figure 4.47: qualities of play being observed

Total of all observations on all locations:			Total	Average	Percentage
Total amount of children			484	6,6	
Total amount of adults			249	3,4	
Multiple target groups	Gender:	boy	271	3,7	56%
		girl	213	2,9	44%
	Age estimation:	<6 yrs	264	3,6	55%
		6-12 yrs	166	2,3	34%
		>12 yrs	54	0,7	11%
Indirect accessibility	With/without parents:	with	304	4,2	63%
		without	156	2,1	32%
		(unknown)	24	0,3	5%
Qualities of play	Manipulating the environment (intelligence)		1	0,0	0%
	(such as:)				
	(in between)		15	0,2	3%
	Not manipulating the environment		468	6,4	97%
	Physically active (with?)		336	4,6	69%
	(such as:)				
	(in between)		62	0,8	13%
	Non-active		86	1,2	18%
	Exploring (creativity and imagination)		26	0,4	5%
	(such as:)				
	(in between)		35	0,5	7%
	Not-exploring		423	5,8	87%
	Social		319	4,4	66%
	(such as:)				
	(in between)		67	0,9	14%
	Individual		98	1,3	20%
Landscape use	Using natural elements		27	0,4	6%
	(such as:)				
	(in between)		36	0,5	7%
	Non-natural elements		421	5,8	87%

Figure 4.48: table on total amount of observations

4.3 INTERVIEWS

The table in which the interviews are noted down can be found in appendix D, as well as the complete questions that were asked in the interview, the letter to the parents and the maps on which children indicated the dangerous crossings and their actual action radius. The table on the enumeration and the average of all interviews can be seen in figure 4.49.

Most of the interviewed children were with their parents or some friend. On average the children said that they played 4,2 days per week outdoors, which is more than the average numbers in the Hague indicate: 3,5 days a week (Gemeente Den Haag 2008). This might be explained by the fact that the interviews were held in good weather circumstances at the end of the summer season, which is a period in which children play outdoors more often than for example in winter. Therefore children might have answered this question not completely representative.
Most of the children indicate that they often play at parks or other green spaces, or on the sidewalk. Only a little more than one third of the children also play at a formal playground often.

The children indicating that they did not go to playgrounds were mostly boys, which is indicated in several literature sources as well: formal playgrounds are more important for girls play than for boys play (Grammenos 2013, Van Loon et al. 2014). The nearest place to play according to the children is only 1,5 streets away on average. However, two third of the children still think that there are not enough opportunities for them to play inside the Statenkwartier. When looking at the play spaces, children indicate that the play spaces are situated on a good location: there is enough social control because there are enough people around who are watching them and they are not having trouble with cars or other traffic. This however does not say that all of the possible play spaces in the Statenkwartier are suitable for children to play on. Because the interviews have been conducted on play spaces which were popular for children (for location interviews, see table with data in appendix D.1), the interviews indicates that these places are suitable for children to play and therefore does not say anything about other public open spaces within the neighbourhood which are less suitable for play. The location of the interviews determines for a large extent the outcomes of the questions. The amount of children that are accompanied by a parent when going to school, two third of the total amount, might indicate that parents think the environment is not safe enough to let their children go to school on their own (yet). This however is not further researched, so does not have to be the case, even though different literature sources indicate that these parental restrictions due to fear of the environment are often the case in city environments (Carver et al. 2008, Carver et al. 2010, Holt et al. 2009, Kimbro et al. 2011, Weir et al. 2006).

Furthermore I asked them what they liked when they were playing and which type of play they were able to play when being outdoors. This resulted in 94% of the children indicating that they would like to have some environmental manipulation opportunity, but only 11% saying they are actually able to play this in the outdoor environment. Furthermore, 83% of the children like to play with

or in nature, but half of all interviewed children state that there is no, or not always nature for them to play with when they want to. All children think they have enough opportunities for physical and social play in the environment and most of them also think that the environment offers enough play possibilities for children of different age and nationality. Also 72% of the children say that they have enough possibilities for mental stimulation: creativity and imagination. However, the most mentioned objects children would like to have inside their neighbourhood which would want to make them play outdoors more, are within the category of mental stimulation. This indicates that they possibly do not know what is included in mental stimulation, when being asked if they have enough opportunities to play this. Furthermore elements that are within the category of physical activity are often mentioned and environmental manipulation opportunities are whished for .

Date		Total / average					
Boy/Girl		11 Boys 61%	7 Girls 39%				
Average age		8,9					
With/Without parent		12 x With 67%	6 x Without 33%				
With/Without brother/sister/friend		16 x With 89%	2 x Without 11%				
Where do you play more often?		1 x Indoors 6%	8 x Outdoors 44%	9 x Equal 50%			
How often do you play outside?		4,2 days					
How long do you play outside?		7 x 0,5-1,5 hrs 39%	7 x 1,5-2,5 hrs 39%	4 x >2,5 hrs 22%			
Where do you go when playing outside?		17 x park 94%	13 x sidewalk 72%	8 x beach/dunes 44%	7 x playground 39%	4 x garden 22%	2x other: s 11%
How far is a place to play from your home?		1,5 streets away					
Do you think there are enough possibilities?		12 x no 67%	6 x yes 33%				
How far are you allowed to go outside without your parents?		5 x 1-2 streets 28%	4 x As far as I want 22%	3 x not allowed 17%	3 x 3-4 streets 17%	1 x 5 or more streets 6%	2 x other: 11%
Are there enough people around to watch you if anything goes wrong?		11 x Yes 61%	6 x Sometimes 33%	1 x No 6%			
Are you having trouble with cars or other traffic at this place to play?		11 x No 61%	5 x Sometimes 28%	2 x Yes 11%			
Do you like playing:	EMO	10 x Fun 56%	7 x Sometimes 39%	1 x Boring 6%			
	Physical activity	14 x Fun 78%	1 x Sometimes 6%	3 x Boring 17%			
	Creativity and imagination	13 x Fun 72%	1 x Sometimes 6%	4 x Boring 22%			
	Social play	10 x Fun 56%	7 x Sometimes 39%	1 x Boring 6%			
	Plural target groups	5 x Fun 28%	8 x Sometimes 44%	5 x Boring 28%			
	Nature	15 x Fun 83%	3 x Sometimes 17%				
Can you play nearby:	EMO	2 x Yes 11%	7 x Sometimes 39%	9 x No 50%			
	Physical activity	18 x Yes 100%					
	Creativity and imagination	13 x Yes 72%	5 x Sometimes 28%				
	Social play	18 x Yes 100%					
	Plural target groups	15 x Yes 83%	3 x Sometimes 17%				
	Nature	9 x Yes 50%	6 x Sometimes 33%	3 x No 17%			
What is your way of transport to school?		11 x Bike 61%	5 x Car 28%	1 x Walking 6%	1 x Public transport 6%		
Are you accompanied by a parent or brother/sister/friend?		12 x Yes, parent 67%	6 x No 33%				
What would make you want to play outside more?		14x Mental stimulation Specifically: 4x water	11x Physical stimulation	8x EMO	5x Nature		

Figure 4.49: table on enumeration and average of all interviews conducted

4.4 CONCLUSION RESEARCH

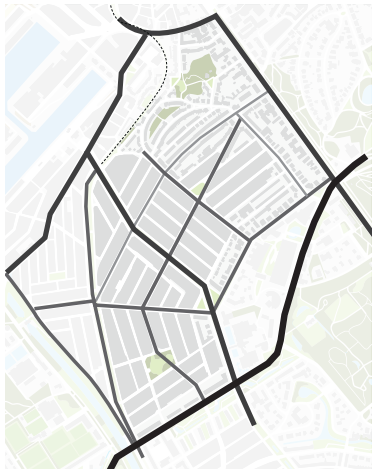


Figure 4.50: Continuous roads (50 km/h) for motorized traffic without separate bicycle lanes cross through the whole neighbourhood, including along (and through) possible play spaces

Legend

- Urban main road 50 km/h
- District access road 50 km/h
- Neighbourhood access road 50 km/h
- Neighbourhood access road 30 km/h

To reach to conclusions, the different spatial criteria as formulated by Bakker and Fähnrich (2008) in the NOP model have been researched using different methods. The methods for triangulation of each criteria are summed up once again:

1. Quantity of play – Neighbourhood analysis and sample interviews
2. Location of play – Neighbourhood analysis, observations (indirect) and sample interviews
3. Accessibility of play – Neighbourhood analysis, observations (indirect) and sample interviews
4. Quality of play – Neighbourhood analysis, observations and sample interviews
5. Landscape use – Neighbourhood analysis, observations and sample interviews

Furthermore this chapter shows several maps that are already shown in the previous subchapters, again, to be able to completely summarize the research and show this using figures.

4.4.1 Quantity of play

The neighbourhood analysis using the method of the NOP model states that the Statenkwartier houses too little play spaces for children, as can be seen in figure 4.51. This concerns the primary as well as the secondary play spaces. According to the NOP model, there are two places that can possibly be seen as future primary play spaces when little adjustments to the public space are implemented: the Doornpark should have a higher social control and the Frederik Hendrikplein should get a better accessibility, less disturbance and some more attention to the different qualities of play.

The secondary play spaces are more difficult to be found and made into play spaces because of the roads that are intersecting the Statenkwartier, making the public (triangular) open spaces in which children could possibly play, mostly wider sidewalks or small urban squares, unsuitable. In addition to this, the lack of formal play spaces (two throughout the whole neighbourhood), which are seen as possible secondary play spaces in the NOP model, makes it hard to find secondary play spaces in the Statenkwartier. Two third of the interviewees also answered that they think there are not enough possibilities for them to play inside the neighbourhood and the observations even show that even though there is just a little number of spaces, not even all suitable play spaces according to the NOP model, are used. Resulting in even less actually used play spaces than the NOP model already indicated.

4.4.2 Location of play

The location of the play spaces is perceived by the interviewees as mostly sufficient. There are enough people around that are watching the children if anything goes wrong, meaning that there is a high social control. The analyses of the different public spaces also showed this high social control on most squares. The Doornpark however did not seem to have a high social control, which was to be seen in the observations, showing little children using the park.

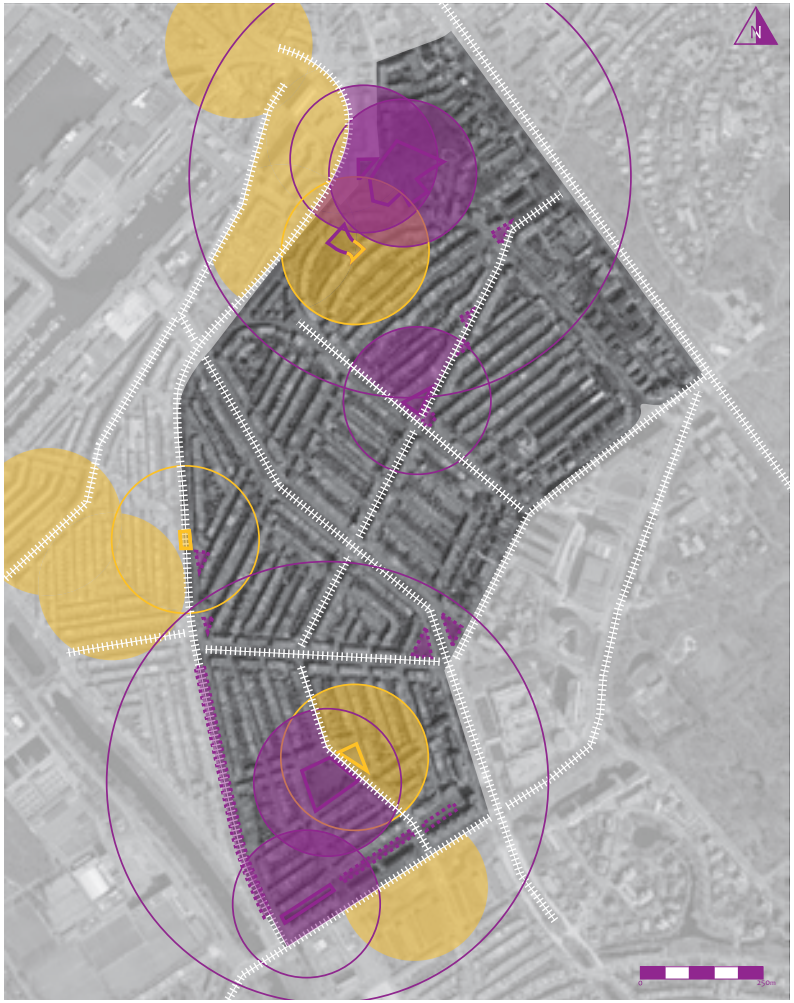


Figure 4.51: Suitability according to the NOP model, quantity and location of possible formal and informal play spaces including their actionradius

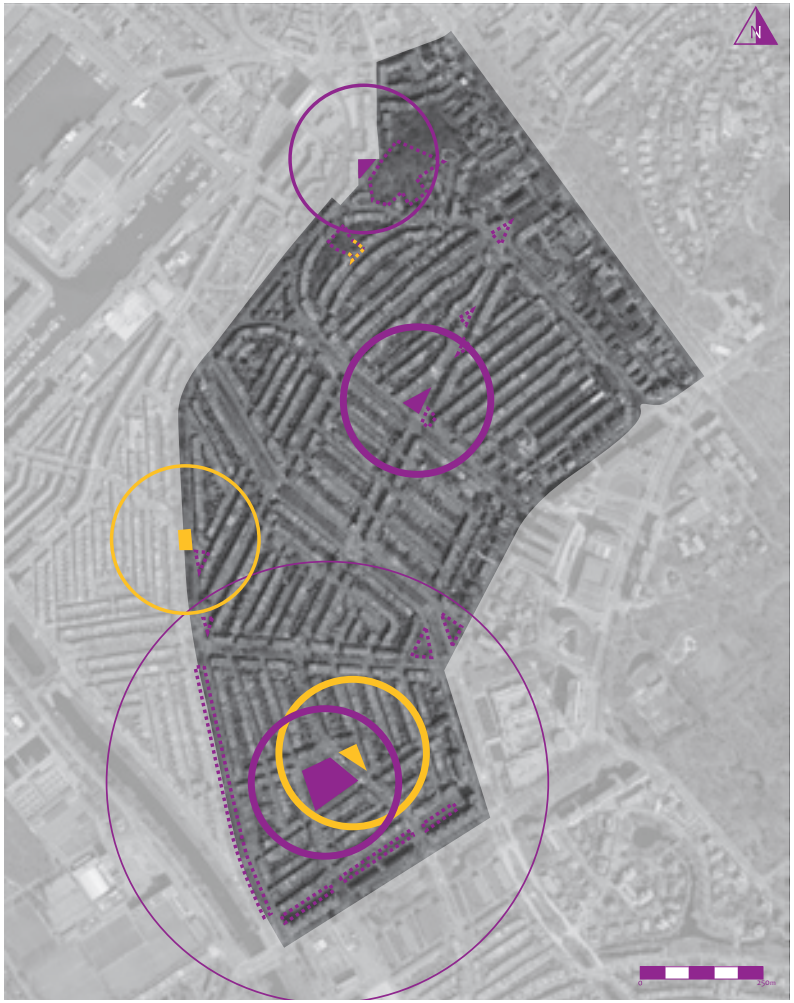


Figure 4.52: Playspaces in use during the observations

94% often play in **parks**, 72% on **sidewalks**, only 39% on playgrounds

67% think there are **not enough** play spaces

Figure 4.53: Main outcomes interviews

Legend

- Formal play space with actionradius
- Informal play space with actionradius
- Unsuitable informal play space
- Barriers for children

Although the NOP model indicated this public place as possible (primary) play space, the observations showed that children were not using this place. The same can be seen in the Frankenstraat play space, which also does not have that much social control. This might indicate that social control on a public space is very important in a dense city neighbourhood. Meaning that when there is not enough social control on a certain place, children are not allowed to play there. Another explanation for this fact might be that playing inside the bushes and on these natural areas not originally assigned as play spaces, is not commonly accepted in the more prosperous community. Furthermore, the near surroundings of these public spaces are for a large extent villa's with a relatively large backyard, which possibly results in lower play rates in the public environment.

As most of the public squares are situated along the main roads, most of the possible play spaces, situated in these public open spaces, are ranked low for their accessibility and their disturbance from motorized traffic (having a low value for disturbance means that the disturbance is high). Despite these busy roads, children still use the play spaces along them, although sometimes they do find it a little bit troubling, especially the intersections of the different 50 km/h roads within the neighbourhood are sometimes seen as quite hard and dangerous to cross as can be seen in the maps in Appendix D.3.
However, children are often accompanied by a parent and are therefore not completely 'free', as outdoor free play needs. Also the children interviewed indicate that they do not have trouble with surrounding traffic. This leads to the idea that children in dense city neighbourhood are accustomed to city traffic. However, the figures indicating that many of the children are accompanied by a parent, might lead to a different conclusion: parents restricting their children to go outside freely and therefore reducing their free play developmental opportunities. Parental restrictions have also come forward in the literature review indicating that this might influence children's play more than children influence their play themselves (Carver et al. 2008, Carver et al. 2010, Holt et al. 2009, Kimbro et al. 2011, Weir et al. 2006). These restrictions haven't been examined in this research due to the fact that this could be seen as a completely different independent master thesis research subject and did not fit within the timeframe of my thesis. Furthermore, the extent to which children are allowed to go outside depends mainly on their age, which also came forward in the sample interviews.
The neighbourhood analysis showed big differences between the location of different play spaces. Many possible play spaces are considered unsuitable because of the disturbance of motorized traffic and some because of the lack of social control. This unsuitability however highly depends on the situation of the independent play spaces and therefore are not generalizable for the whole neighbourhood or dense, prosperous neighbourhoods in general.

4.4.3 Accessibility of play

The accessibility of the play spaces also highly depends on the situation in and around the play spaces, the location of play. Most of the public squares are situated next to busy fifty kilometres/ hour roads and are therefore only reachable for children from one side, which is illustrated in figure 4.51 by the action radii that are not completely filled. Children living on the other side of the road might have difficulties crossing the road to get to the play space even though they actually live very close. Child friendly routes, as described by the NOP model, cannot be found at all in the Statenkwartier because there are no separate bicycle paths or pedestrian routes totally free from motorized traffic. The routes which can be used by children to get to a play space are not comparable to the examples that are given in the NOP model, as can be seen in the pictures shown in figure 5.54. The routes children can take in the Statenkwartier are always on the sidewalk next to a motorized traffic road and the neighbourhood does not offer opportunities for, for instance, back alleys or large green fields that offer opportunities for separation of traffic. However, like is shown in the NOP neighbourhood analysis, there are some objects

that might function as a possible barrier between the children and the traffic: for example fences, around a possible play space, or parked cars in between the road and the sidewalk. Even though in the original NOP model parked cars along child routes are not wanted, the cars in the Statenkwartier and in other densely built neighbourhoods with large busy roads can be seen as beneficial.

The children that were interviewed however do not always see the traffic as such a big problem, as could be read in the part on location of play before. Two third of the interviewees however said that they were always accompanied by a parent when going to school for example. This indicates that these children do not get the opportunity to go outside on their own to play freely. Also the children that drew their action radii on a map show that they are often not allowed to cross the busy motorized traffic roads. When asking them why not, they indicate that there are some intersections that are hard to cross because of the traffic coming from several sides.

Figure 4.54: Desired way of network implementation accoring to the original NOP model (Bakker and Fähnrich 2008, p. 78)

Figure 4.55: Hierarchy in roads - upper picture shows an area in which children are free to play because of slow traffic. Lower picture showing a road which is hard to cross for children, making the accessibility of the play spaces and the disturbance on the spaces worse.

4.4.4 Qualities of play

The neighbourhood analysis showed that the possible play spaces vary regarding the qualities of play they offer to children. There are places in which many types of play are possible and therefore are able to give children the opportunity to develop themselves optimally by different ways of playing, but there were also play spaces, for example the formal play spaces, which did not offer much different types of play to children, this confirms the idea coming forward in the NOP model that formal play spaces can never offer children all types of play and are therefore always perceived as secondary play spaces. The observations also showed that children on some play spaces did not do anything else than physical play, where the neighbourhood analysis showed that more types of play would also probably not be possible. However, sometimes children get quite creative and for example still manage to play with sand on the sidewalk. The few tiles that are left out for a tree to stand in are not covering the black sand that is underneath it, offering a child to be able to build her pile of sand (see figure 4.56). The fact that the child has to play with sand on the sidewalk does indicate that there is a lack of such play facilities: children are forced to use these small possibilities on the sidewalk.

Figure 4.56: Child playing with sand on the sidewalk underneath the tree

Environmental Manipulation Opportunity

The neighbourhood analysis already showed that there weren't many places in which this type of play is possible. 94% of the interviewed children do indicate however that they like manipulating the environment , whereas half of the children also indicate that they are not able to do this on a place nearby and 39% stated they could only sometimes do this: resulting in a total of 89% of the children nog being able to manipulate the environment when they want to. The observations showed only one child, out of 484 children observed in total, actually manipulating the environment and only 15 children manipulating a little, often because they did not have the opportunity for more manipulation, which accounts for only three percent of the total amount of children. Therefore environmental manipulation opportunity is one of the main starting points for the designing phase.

Physical activity

Most of the interviewed children indicated that they liked to be physically active when playing, which was also visible during the observations outside. Only 18% of the children were not physically active outside, of which most children were very little and therefore not able to be really physically active. The way on which they were active depended on the type of play space they were in. For example grass fields, such as the Prins Mauritsplein were used to play football on a lot and the formal play spaces were used by younger children to be active using play equipment. All of the interviewed children said that when they were at a place to play, there were always opportunities for them to be physically active. This is supported by the neighbourhood analysis showing that indeed all of the possible play spaces were offering children the opportunity to be physically active in some way.

Mental stimulation (creativity and imagination)

Mental stimulation was also found to be a little underrated in the Statenkwartier according to the neighbourhood analysis. The neighbourhood does not offer many facilities in which children are

Figure 4.57: Suitability according to the NOP model, quantity and location of possible formal and informal play spaces including their actionradius

Figure 4.58: Playspaces in use during the observations

Legend

- No environmental manipulation opportunity
- No multiple target groups
- No physical stimulation
- No mental stimulation
- No social stimulation
- No landscape use

More transparent symbols mean that almost no play has occured

50% say there is no/not always **nature** to play...

... although 83% like playing with nature

72% say they have opportunity for **mental stimulation**

89% say they have **no EMO**, 94% would like it

< Figure 4.59: Main outcomes interviews

able to develop themselves mentally. When there were options, these would only exist for example of a tree to climb in or some bushes to hide in, indicating that there is much more mental stimulation to discover for children which is not yet present in the Statenkwartier. Almost three quarter of the interviewed children however did indicate that they liked this type of play, but they also thought that the play spaces offered them the opportunity to do so. One of the explanations for the difference between the neighbourhood analysis and the interviews could be that the interviews have been held at locations which did indeed offer some minor opportunities for this kind of play. But another explanation might also be that the children do not know what is possible for this type of play and the questions in the interview only covered a small part of the abilities in mental stimulation. They know that there is one tree in which they can climb, so when being asked if they have the opportunity to climb and hide and imagine, they say yes. However, these are not the only things that belongs to the mental stimulation opportunities. Also the interviews show a contradictory fact: when the children were asked what they would like to play with outdoors and what would make them want to go outdoors more often, the most mentioned aspects fell within the category of mental stimulation opportunities. This is another indication of the idea that children do not know what mental stimulation, creativity and imagination is and the question in the interview has asked too little of this. Furthermore, the observations showed that 87% of the children did not use mental stimulation kind of play activities, which is not surprising regarding the fact that the Neighbourhood NOP analysis showed there are no opportunities.

Social play

Many children liked to play with other children and all of the children indicated in the interviews that they also had the opportunity to do so on the play spaces they visited. However, some children also indicated that they did not always like playing with other children and that they would also like to be able to play alone sometimes. The neighbourhood analysis showed that the social play opportunities in the Statenkwartier are sufficient and that almost every possible play space offered these opportunities in some way. The observations supported this by showing that every single play space that is observed throughout the weeks, showed children playing socially at least once, but also showed some children playing individually when they wanted to. Most of the children observed playing individually were very young and little children.

Plural target groups

Something that surprised me most, was the amount of different nationalities playing at the different play spaces. Especially the Prins Mauritsplein and the Frederik Hendrikplein had a lot of children from different nationalities; for example German, French, British and some Chinese. On these two public squares the children from different nationalities were also sometimes being observed playing together, although they mostly played with children from their own nationality. The sample interviews indicate that children do not always like playing with children from other nationalities. Only approximately a quarter of the interviewees said that they liked playing with children from other nationalities and other ages. They did however state that if they would want to play with children from other ages or nationalities, they were mostly able to do so on the available play spaces. The neighbourhood analysis also showed that on some places this would be possible but that other places, especially the formal play spaces, were for example only made for young children, offering no play opportunities for older children. Or for example play spaces which were only offering a grass field on which football could be played, but therefore would most probably only be used by boys, which is supported by the observations showing that for example the Prins Mauritsplein was mostly used by boys: only eleven percent of the children playing on this square were girls.

4.4.5 Landscape use

The neighbourhood analysis showed that the Statenkwartier did offer some play spaces for children with a little nature. However, these are not very many and not very diverse. Also the two places that come forward in the NOP model as highly usable and interesting for children because of the nature and landscape use, came out of the observations as 'not-used'. Most places for children to play are not very natural and therefore children are not able to come into contact with nature at early age. Although almost all children, 83%, indicated that playing in and with nature was fun to do, this is not always offered to them. Some of the children even said that 'playing in nature is the nicest thing ever'. The notion of nature here is however questionable because half of the interviewees said that they were able to play in nature at a play space. This could probably be explained in approximately the same way as with the mental stimulation: children do not know what could be offered and therefore they think the play space they are going to now, with one tree to climb in and some bushes to hide in, are actually nature, while this could also be seen as just a tree with some bushes, not being 'nature to play in'. It is however nice to see that children do the best they can to reach the natural parts of a play space. For example the Frederik Hendrikplein offers some opportunities for nature play, however these are fenced which makes it hard for children to reach this nature. The children do find holes in the fences or climb over them to be able to play there. But they also indicated that they would rather have no fences around them because they sometimes got hurt climbing over.

4.4.6 Implication for NOP model usability

Comparing the outcomes of the neighbourhood NOP analysis and the outcomes of the interview and questionnaires shows that most of the outcomes of the NOP model are comparable to the outcomes of the observations and the interviews. However, sometimes it is not, for example at the possible play spaces in the Doornpark and the Frankenslag. The reason for this can be due to the fact that there is not enough social control on the environments and the idea that playing in nature, on a non-assigned play space is not always accepted in the more prosperous community. During the observations I have heard parents several times speaking about other children not being well raised because they were strolling through the bushes and giving 'the bad example' for other children. Therefore this neighbourhood might need an extra clear statement that playing in nature is desired and should not be seen as something bad. The qualities of play and landscape use that came forward from the NOP model analysis were also the qualities that arose in the observations and the interviews. The NOP model is therefore highly usable for these type of investigations.

Furthermore the combination of the neighbourhood NOP analysis and the observations give a complete view on what is needed in the neighbourhood. This will probably be the case for all types of neighbourhoods, even though it is time consuming. When there is only little time, using the spatial criteria from the NOP model for analysing gives a nearly complete view on the neighbourhood playability as well, keeping in mind that social control is an important factor and should not be underestimated and that not all children will play anywhere, but sometimes maybe need a trigger. The interviews are very time consuming as well, and are harder to generalise to the complete neighbourhood and even less to other, comparable, neighbourhoods in urban setup. This is because when interviewing children, they will mostly talk about one particular area they have in mind or the one they are in at that particular moment. Therefore this does not give an idea on the playability of the complete neighbourhood. It does however give indications on the individual play spaces and on the more general question what children would like to play with.

4.4.7 Principle NOP model implementation

When the original NOP model will have to be implemented in the Statenkwartier, many play spaces will need to be added to get a full network of play. However, due to the limited space, this will not always be possible. Smaller secondary play spaces might possibly be integrated as optimally as possible in the urban public space, which might mean that not all of the spatial criteria of the NOP model, for example the accessibility and the location criteria, can be fulfilled. These two spatial criteria have been mentioned by Bakker and Fähnrich as factor which must fit to get the distinction 'secondary play space'. The design phase will show the extent to which these two criteria can be fulfilled or not and how this can be done. Figure 4.60 shows the approximate amount and the density of the secondary play spaces that is required according to the NOP model. It is a large amount of play spaces that need to be added to fulfil the NOP requirements, especially in comparison to the total amount of play spaces already present in the area.

Whereas the secondary play spaces might already be seen as hard to fit in the current context of the Statenkwartier, the primary play spaces will even become a harder challenge. When an area is to become a primary play space, it needs to meet the requirements of for example the natural area, the accessibility, the location and needs to offer several different qualities of play. Whereas for secondary play spaces this might fit on 'the corners of the street' or sidewalks, for primary play spaces this will not be enough and bigger areas will have to be found. In figure 4.61, the NOP model already shows two areas which possibly, with little improvements, might fit the name of primary play space. These two areas are however quite far apart and a region is formed in which no primary play space is reachable. These regions should get their own primary play space, as is indicated on the map. However, there is no space inside the neighbourhood to form a primary play space that fulfils every demand of the NOP model. The space for a primary play space can only be created when housing blocks are to be removed, because the public space itself offers no large areas for a primary play space, not even when for example all the parking has been removed.This is an issue which will have to be dealt with in the design phase; designing will be the tool to investigate further options on how to tackle this problem.

The 'network' aspect of the Network of Play is not going to be implementable the way this was possible in the cases on which the NOP model has been tested, as has been shown in chapter 2.4. The cases researched in the NOP model offered many opportunities for pedestrian or cycling routes in between different building blocks, for example flats. The Statenkwartier is more densely built meaning that the ground surface does not offer as much space as in the garden city or 'wijkgedachte' neighbourhoods. The Statenkwartier is a relatively densely built area in which the actual public space for children and pedestrians only consists of the sidewalks and some public squares situated mostly next to, or even intersected by, a busy road. There are no existing bicycle and pedestrian routes throughout the neighbourhood that are separated from car roads. Therefore the optimal primary childline will be less easily implementable in the Statenkwartier as in other, less dense, neighbourhoods which have for example green urban spaces surrounding home areas. Also the secondary childlines will be harder to make than in less dense neighbourhoods because there are for instance no back-alleys in the Statenkwartier, all the housing blocks are closed, there are no rear entrances. The sidewalks will be an option for the secondary childline, however the busy roads that intersect the neighbourhood will have to be crossed and the sidewalks preferable do not lie next to a busy road at all. This is another issue that will be dealt with by designing for different options.
The designing phase will give more information about how to create the child lines in a dense neighbourhood and the difference with the childlines as described in the NOP model. Furthermore, the busy roads that cross the Statenkwartier will be looked into and the way in which these roads might form an extra barrier will be investigated and solutions will have to be designed for.

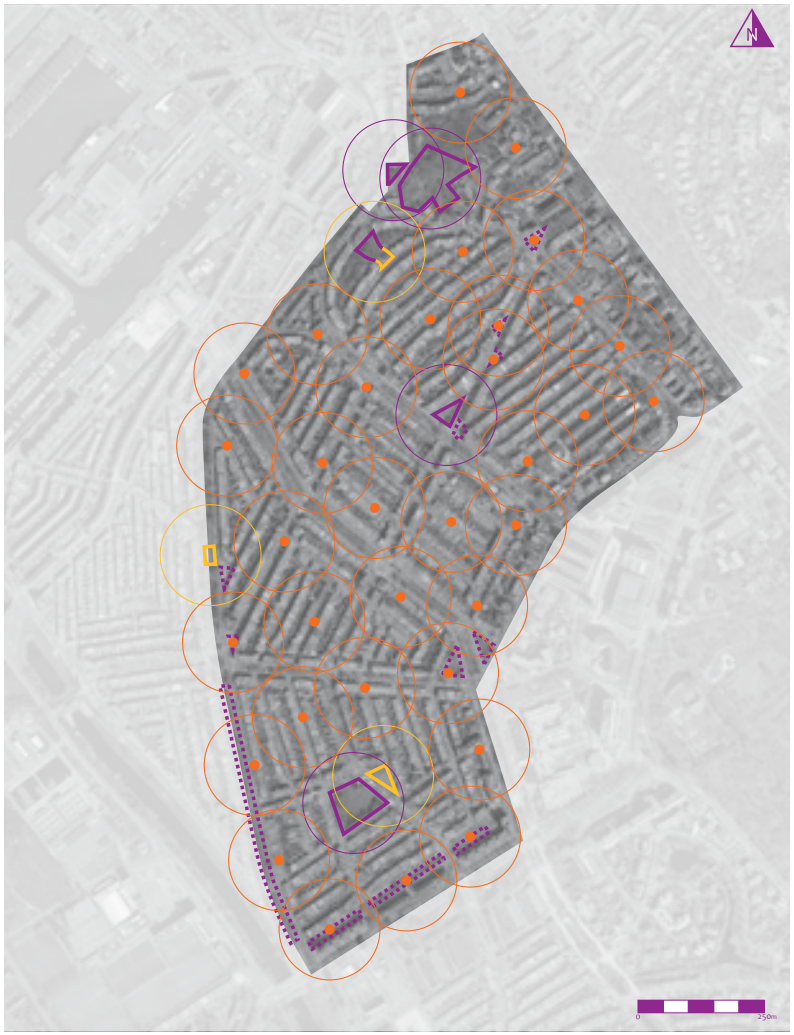


Figure 4.60: Principle of implementing secondary play spaces (orange dots), including actionradius, which is needed to complete the density of the secondary playspaces according to the NOP model

Figure 4.61: Orange dots, including actionradius, that are needed to complete density of the primary playspaces according to the NOP model

Legend

- Formal play space with actionradius
- Informal play space with actionradius
- Unsuitable informal play space
- Approximate place for new play space to be implemented, with actionradius

5. DESIGN

5.1 NOP AS START FOR DESIGNING

5.1.1 Secondary play spaces

The previous chapter showed what would be needed if the principle of the NOP model had to be implemented in the Statenkwartier. Because not all orange dots as shown in figure 4.60 can actually be made into play spaces, looking into the neighbourhood in total, as well as looking into individual public spaces to see if and how these can be made into a play space, will give a possible indication on how to make the Statenkwartier more playable.

Figure 5.1 shows the play spaces that are visited by children to play on, which came out of the observations. Figure 5.2 then shows the possible play spaces that have found to be suitable according to the NOP model, and can be perceived as operating play spaces when little adjustments to the public space have been done. Therefore these play spaces can be added to the network, to see to which extent the neighbourhood is covered with play spaces. Because this still results in a low coverage, the schoolyards, which are normally semi-private and only meant for children at that school during school hours, might be seen as a chance for the network of play spaces. The schoolyards are separated from traffic and do offer some play opportunities for children, as long as they are publicly open. As the addition of schoolyard still does not come near to a full coverage of play spaces, figure 5.4 is added to show what the coverage will be like when the unsuitable play spaces, according to the NOP model, are added. When adding these spaces to the network, these of course need to be improved to make them more suitable. Figure 5.5 shows what is left of these play spaces in total when the barriers of busy roads are to be added, which reduce the action radius of the children's play spaces. Therefore figure 5.6 shows the location of the different designs that are made to show how to improve the playability of a neighbourhood by introducing extra secondary play spaces using the space that can be found within a dense neighbourhood. Three possible ways of implementing a play space in a street will be given in this chapter. These examples can be used to derive principles for other playspaces inside dense neighbourhoods

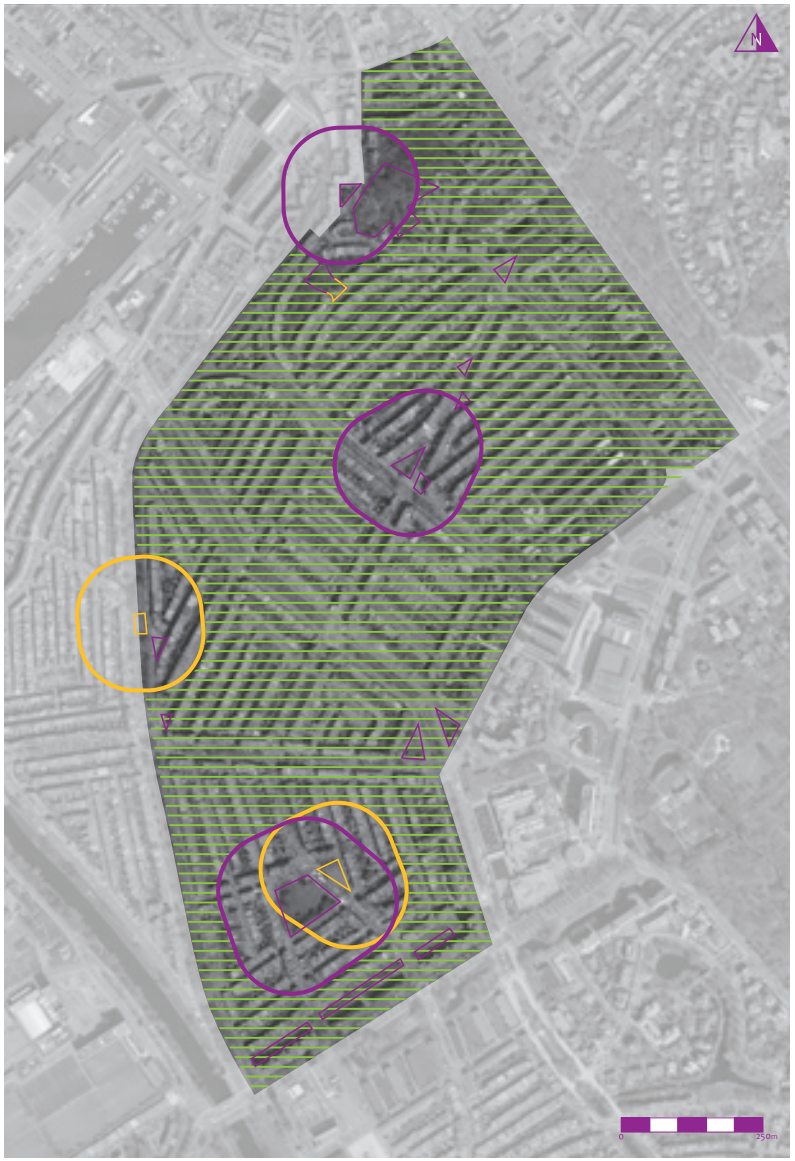


Figure 5.1: Actual working contemporary secondary play spaces

Figure 5.2: Secondary play spaces that should be able to function well according to the NOP model

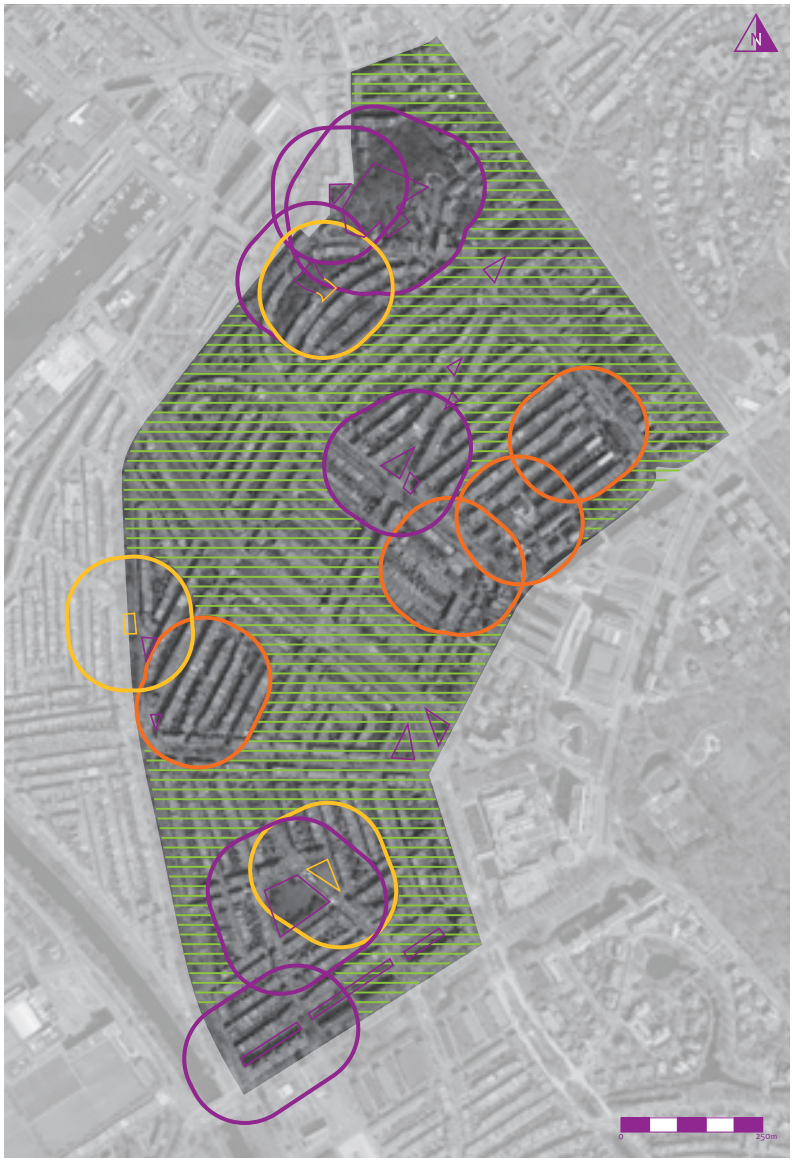


Figure 5.3: Schoolyards added to the potential secondary play spaces in Play Network of the Statenkwartier

Legend

- Suitable formal play space with actionradius
- Suitable informal play space with actionradius
- Unsuitable location for formal play space in contemporary situation
- Unsuitable location for informal play space in contemporary situation
- Possible secondary playspace on semi-private schoolyard
- Left over search area for new secondary play spaces
- Left over search area for new secondary play spaces when integrating barriers

Legend

- Suitable formal play space with actionradius
- Suitable informal play space with actionradius
- Unsuitable location for formal play space in contemporary situation
- Unsuitable location for informal play space in contemporary situation
- Possible secondary playspace on semi-private schoolyard
- Left over search area for new secondary play spaces
- Left over search area for new secondary play spaces when integrating barriers

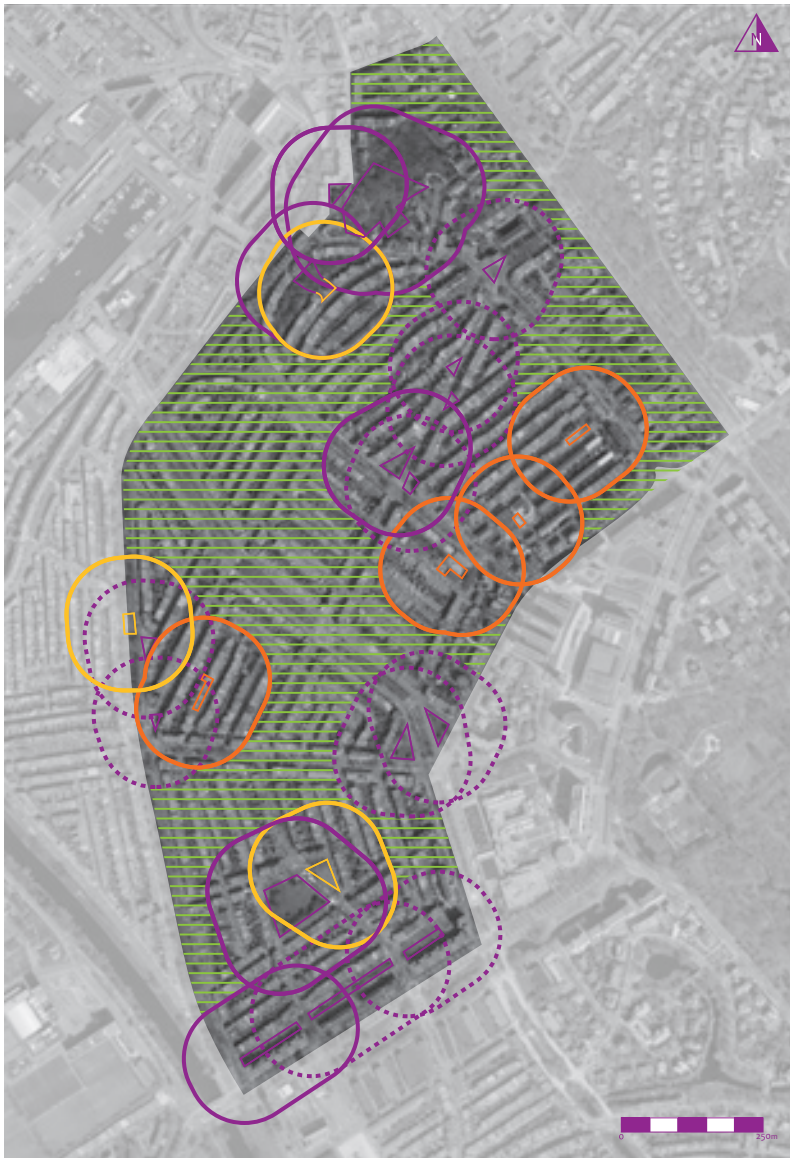


Figure 5.4: Addition of unsuitable play spaces according to the NOP model to the Play Network in the Statenkwartier

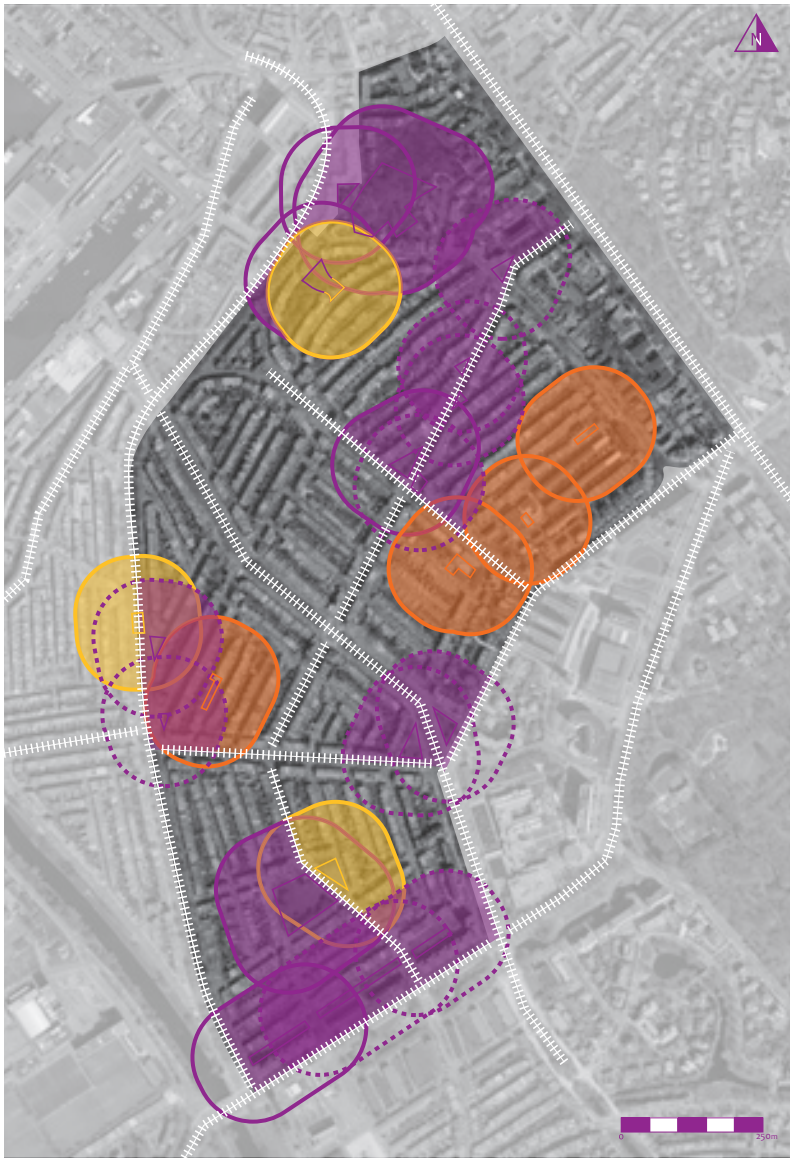
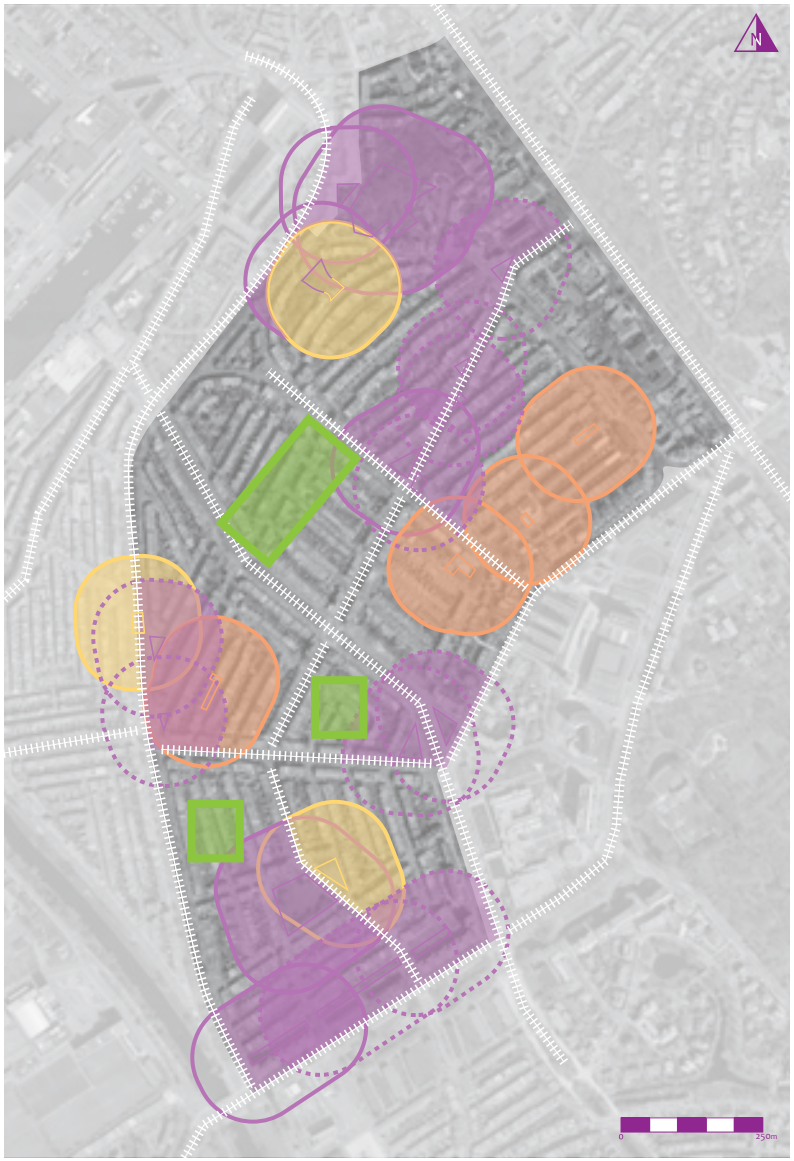


Figure 5.5: the barriers inside the Statenkwartier are important to notice because these result in an ever larger search area without play opportunities



Legend

- Suitable formal play space with actionradius - not accessible / accessible
- Suitable informal play space with actionradius - not accessible / accessible
- Unsuitable location for formal play space in contemporary situation
- Unsuitable location for informal play space in contemporary situation

Figure 5.6: Locations of possible secondary play spaces that will be designed for

Figure 5.7: Location of possible primary play space that will be designed for

Legend

Suitable informal primary play space with actionradius

Square that cannot become a primary play space, but in terms of numbers of children playing there in the observations, functions as more than a secondary place

5.1.2 Primary play spaces

There are two places in the Statenkwartier that could possibly become a primary play space. One of these two places is the Doornpark which offers children the opportunity for free play in the North of the Statenkwartier. It does need some little adjustments to become functional as a primary play space, as is explained in chapters 4.1 and 4.2, but these are small design and maintenance interventions that will not specifically have to be designed for in a further stadium. The Frederik Hendrikplein, including both the formal and the informal part, might be offering children a place to play in the Southern part of the Statenkwartier. These play spaces however are not sufficient yet and therefore need some design work to make it into a good primary play space.

The only option for anything that approaches a primary play space in the middle of the Statenkwartier is on the Prins Mauritsplein. The observations show that the square is already in use a lot by children and therefore it seems plausible to use it for a primary play space. However, the location does not offer enough space to make a primary play space. Therefore this square is not going to be the play space as the NOP model originally intended for. This square is meant to function as a play space for the children who otherwise have no primary play space within a 400 metre action radius, but will never become a primary play space. Therefore this play space is surrounded with a dotted actionradius in figure 5.8. It can however offer more opportunities for free play than the secondary play spaces that fit on the sidewalks in this dense neighbourhood.

A design for a primary play space is going to be made on the Frederik Hendrikplein. The location of this square can be seen in figure 5.7. This square now functions as secondary play space, but has potential to become a primary play space. The way this is done will be shown in the next subchapter. At the end of this chapter will be explained what the different designs, secondary as well as primary play spaces, can mean for the rest of the neighbourhood and the totality of the implementation of the NOP model.

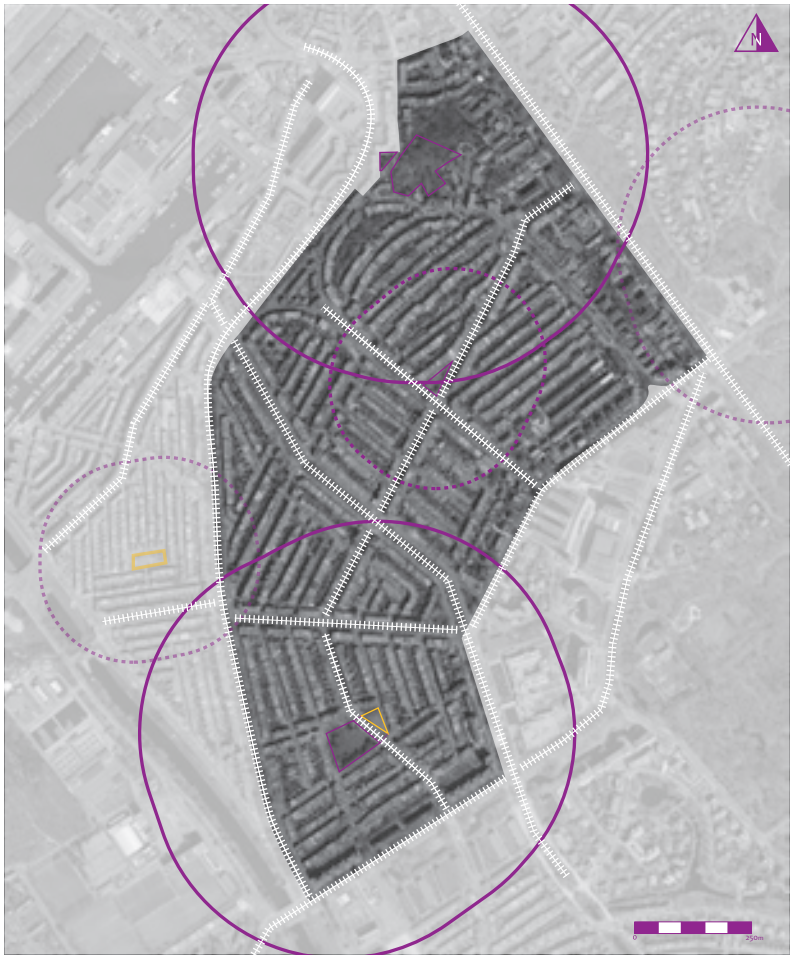


Figure 5.8: Possible primary play spaces in and around the Statenkwartier

5.1.3 Network routes

The connection between the different play spaces by using primary and secondary play routes will be designed for after having designed for possible primary and secondary play spaces, because according to the Network of Play model, these play spaces should be connected with each other by a network. When the location and the function of these play spaces for the network has been determined, a possible route towards these places will be thought of. However, when determining the possible play spaces, accessibility of these places is one of the most important cirteria. Therefore the route towards the different possible play spaces will be a combination of designing for it at the end of the design phase, and designing for it when working on the inidividual play spaces.

Whether a network throughout the whole neighbourhood is possible in terms of busy road barriers for children to cross and the child-friendliness of the routes, for example without too many disturbance, will be critically looked at and designed for, which can be read in chapter 5.4. Figure 5.9 shows that in connecting the primary play spaces with each other, many barriers still have to be taken.

Figure 5.9: Searching for network from one primary play space to the other

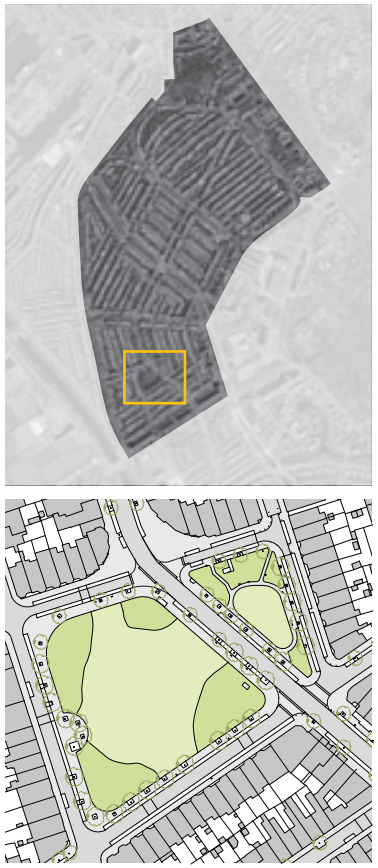


Figure 5.10: Location and current situation Frederik Hendrikplein

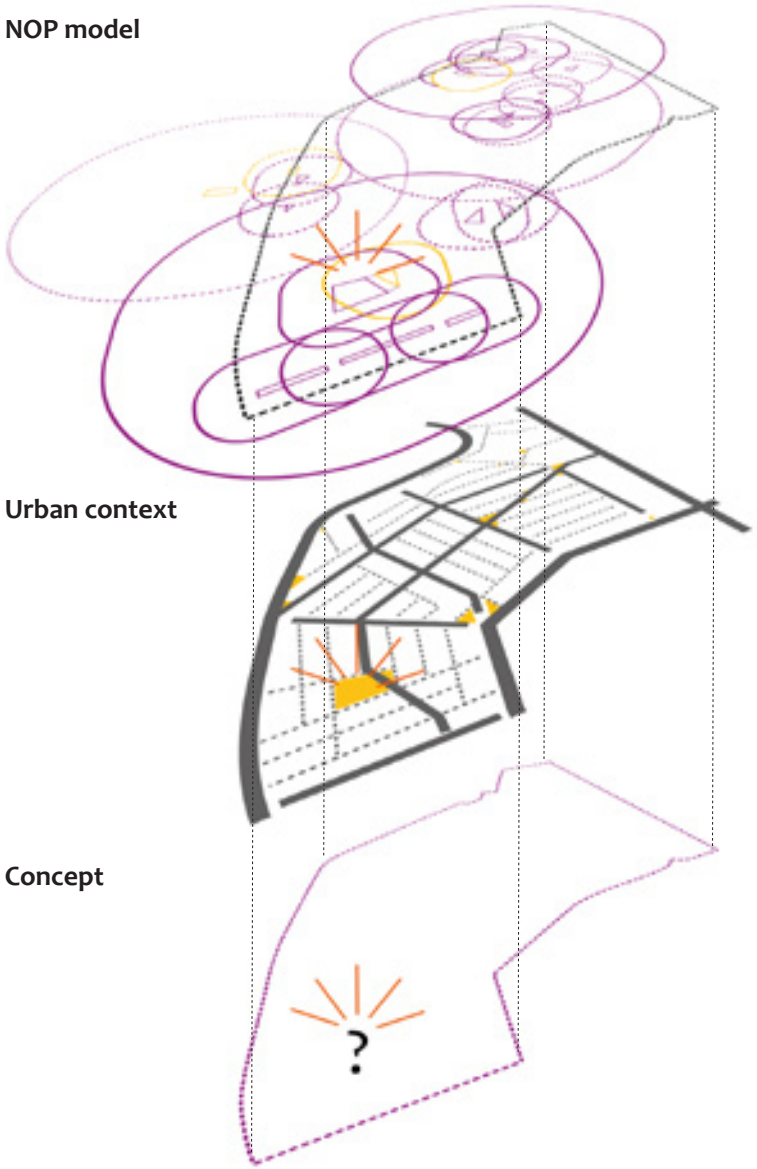


Figure 5.11: NOP model implementation in urban context

5.2.1 Concept phase

When wanting to implement something in an environment, both the wished object or idea and the contextual environment are important. In this case the NOP model, and the urban context of the Statenkwartier including the Frederik Hendrikplein in detail. The NOP model should land in an urban context, which is what the main focus of this research and design is about: to see if the NOP model is implementable and how the model can be adjusted to make it fit. Therefore when starting to think about the concept: the core of the design that is going to be made, some preconditions from both the NOP model as research has shown in chapter 4, as the urban context as shown in chapter 3, should be included. Some of the preconditions however will come forward in the more detailed designing, because the conceptual model does not include those detailed ideas.

Preconditions for the design concept

Neighbourhood scale NOP model:

- Frederik Hendrikplein as location for primary play
- Accessibility to square, crossability of the road
- Reduce disturbance from the 50 km/h road and cars
- Social control on the square should stay
- Western side of square becomes primary play space because of large area and natural layout: include all qualities of play
- Especially adventurous play (observations & interviews): more mental stimulation, EMO and nature

Urban context:

- Making ‘one’ entity of the square
- Formal/stately place that fits the neighbourhood context
- Park/square for everyone, not just for children. Also the elderly should have a place to sit and rest, not situated along the 50km/h road as the benches are now.

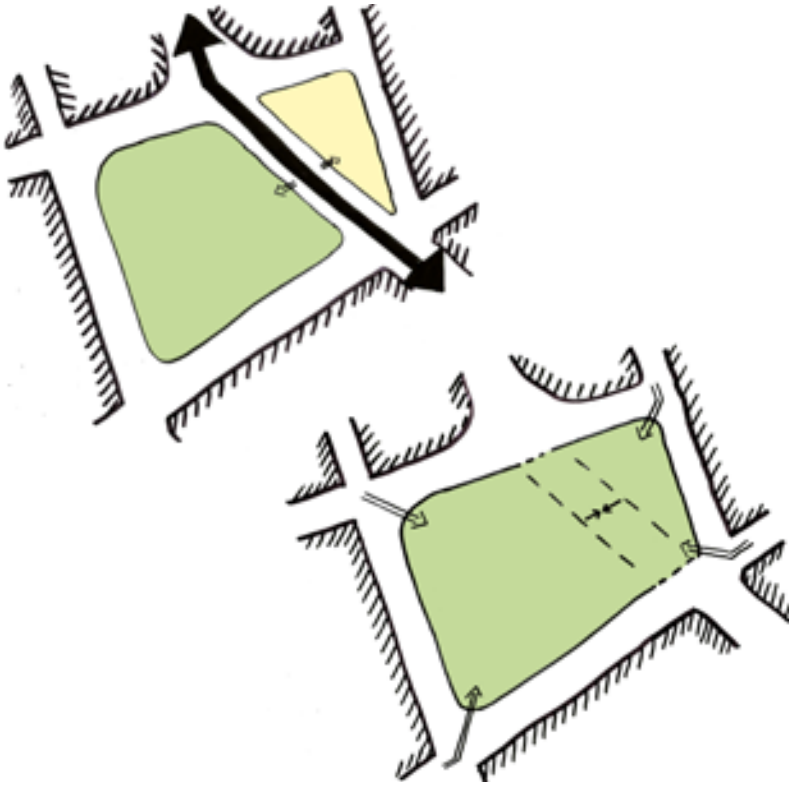


Figure 5.12: Principle for design - old and new situation

A formal play space is already situated on this public square. The other side of the square is designed as urban green space which is also used by children to play on, although they are officially not allowed to play football here. There is a need to make this public square into a **primary play space** for children, to form an important play opportunity for children in the southern part of the neighbourhood, as can be read in chapter 5.1.1. The contemporary green space already offers children opportunities for many types of play, however the road that is intersecting the square is a barrier for children that would like to play on the other side. Therefore the **barrier through the square should be reduced and the public square should become 'one' again**, instead of two separate pieces.

By also making the square more **accessible** from the surrounding streets, the children get more freedom to be able to go to the play spaces and the other side of the square, improving children's free play opportunities.

On the bigger scale of the neighbourhood the Frederik Hendriklaan will become less of a continuous street and more of a shopping street. The cars in the Frederik Hendriklaan will get a less prominent role and the road will have a 30km/h limit instead of the current 50 km/h. The continuous routes through and along the neighbourhood do not need the Frederik Hendriklaan: cars can use the Van Boetzelaerlaan and the Stadhouderslaan/Eisenhowerlaan to get to the other side of the neighbourhood. The fact that the Frederik Hendriklaan is a shopping street also supports the idea of introducing a 30 km/h speed limit: it is a very busy street with people crossing the street often. Furthermore the profiles of both the Van Boetzelaerlaan and the Stadhouderslaan/Eisenhowerlaan give enough width and have separate lanes to cope with additional traffic. In comparison to the Frederik Hendriklaan, these two roads are more suitable for a higher traffic intensity, as can be seen in the pictures in figure 5.14.

Figure 5.13: Continuous streets along the Statenkwartier instead of crossing through it

Figure 5.14: Left and middle - Van Boetzelaerlaan and Stadhouderslaan with two separate lanes and a green strip for the tram, right - Frederik Hendriklaan shopping street

Figure 5.15: Principle entrance square model 1 a & b

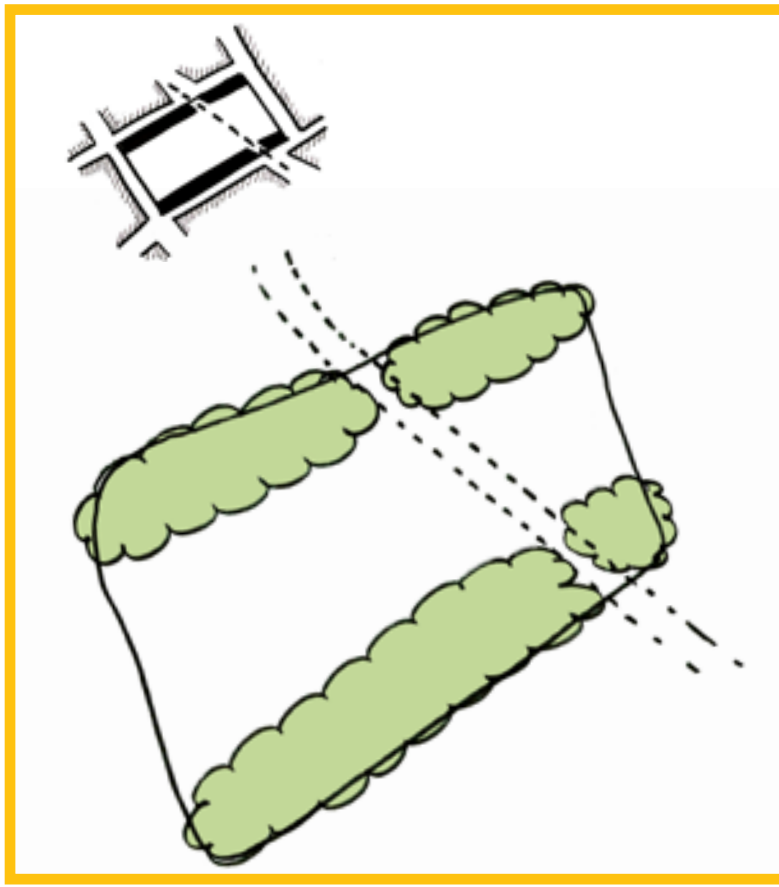


Figure 5.16: Model 1a - Square as linear entity

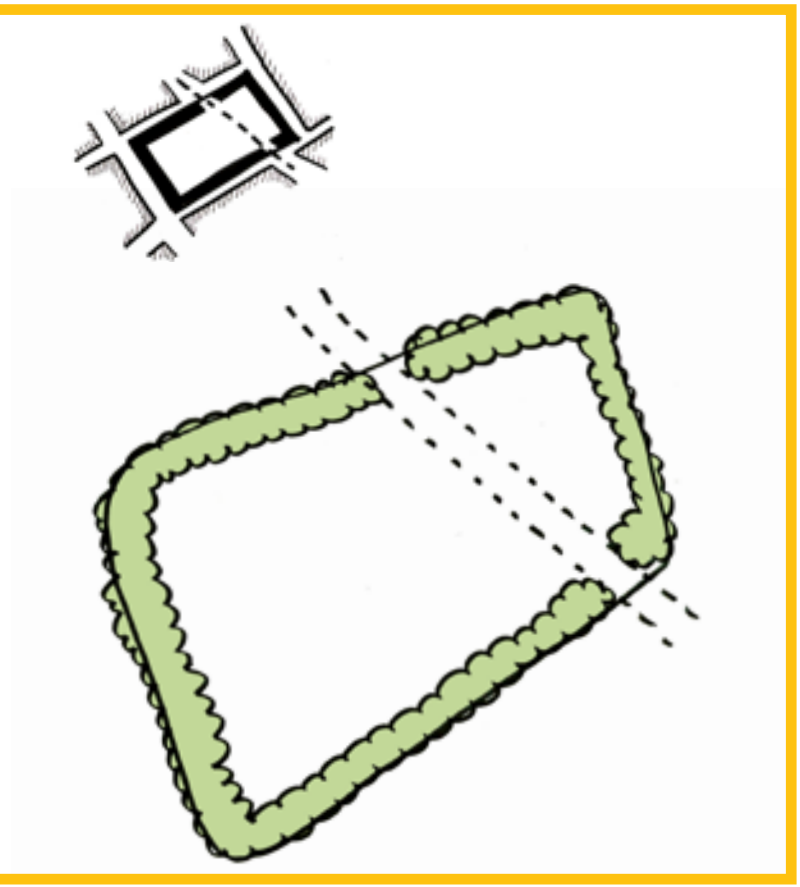


Figure 5.17: Model 1b - Square as enclosed space

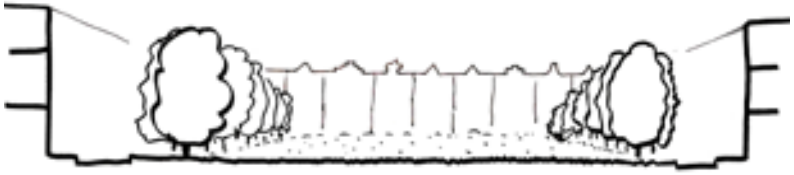


Figure 5.18: Principle north-south section model 1a

Figure 5.19: Principle north-south section model 1b

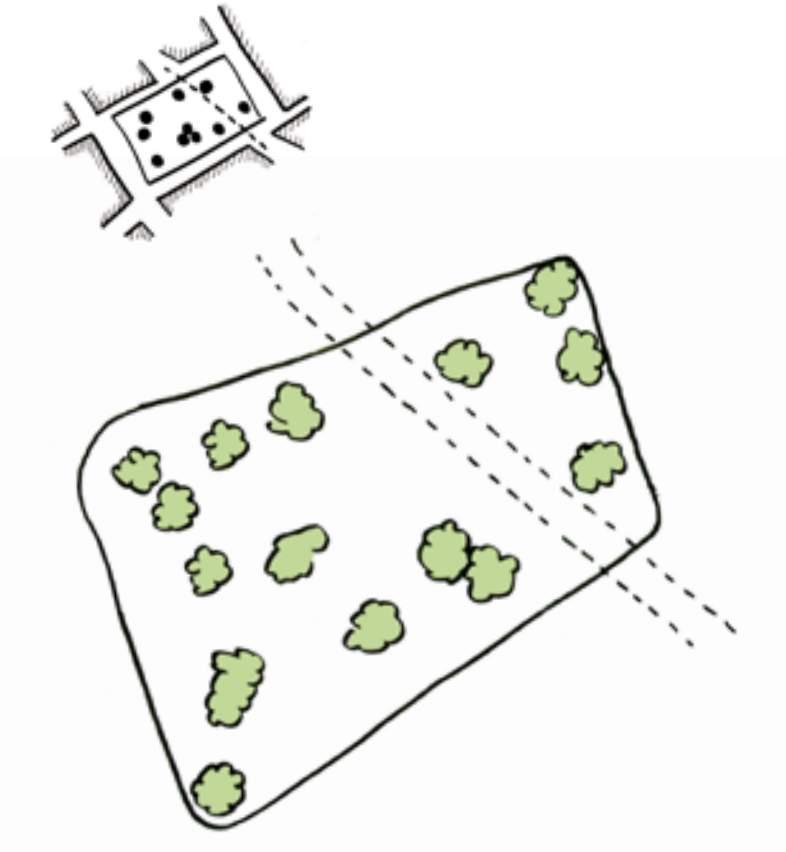
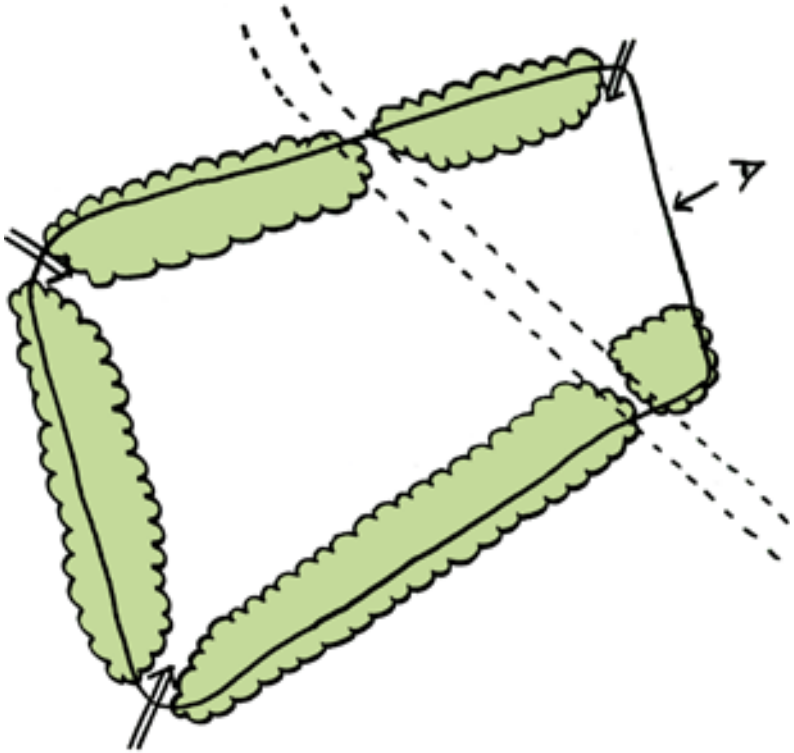


Figure 5.20: Model 1c - Diffusion on the square

Figure 5.21: Principle north-south section model 1c

For the purpose of making the square as one whole entity, the B-model would be best because of the enclosed space that is created which gives the square clear edges and a middle space. However, social control on a square and even more on a play space is very important. The NOP model includes social control as one of the main factors in the location of a play space. The B-model does not give the best options for this social control, meaning that model A or C would therefore be better. As model C is not creating 'one' space, but more a collection of different spaces, I do not see this model as suitable for the Frederik Hendrikplein.
Model A and B both give the car driver the feeling that he or she is entering something, as is illustrated the principle in figure 5.15. This will give the first reason for the car driver to behave as 'guest' on the square, instead of driving past without noticing the square he/she is going through.

For the design that follows, I have chosen to combine model A and B with each other because of the advantages these models have for making one entity of the square and creating social control from the surrounding houses in addition to the social control from the road and sidewalk passing through. The concept that is used as a starting point for the design is shown below.



< Figure 5.22: Concept Frederik Hendrikplein: social control from one side, accessibility from the corners and inferior road crossing public square

Figure 5.23: Location inferior road

5.2.2 Inferior road passing through

To make the road that passes through the Frederik Hendrikplein inferior tho the square itself, a smart solution has to be found on the question how cars can pass without creating too much disturbance, splitting the square up in two parts visually, reducing the total area for children to play, or making the road hard to cross for children causing an inaccessible square. The design of the road should be the same in all design options, because the best solution for the accessibility and the reduction of the disturbance, two of the main focus points for this square, should be integrated in every design, no matter which layout they have.

Therefore different options have been designed for the road, to be able to test these designs on the different aspects that are seen as important for the NOP model (disturbance and accessibility) and the aspects that make the square as one entity in the urban context (making 'one' and remaining the total area), as explained in the design preconditions on page 102. This way, designing is used as method for researching the best option. Tables have been made with pros and cons for the different aspects. These tables make it possible for me to choose for the best option. A first start in reducing the road as a barrier is to make it a 30km/h road instead of 50 km/h and also using materials that indicate this speed, so no asphalt. Furthermore, a one way road is easier to cross for children than a two way road and disturbance is higher when there is no strip separating the road from the square/play space. Making 'one' entity is examined as the extent to which the square can become an enclosed area and the total area of actual square space is seen as the space which can be reserved extra for the square by possible narrowing the profile of the street.

All in all becomes clear that option 2 with one green central strip is the best option for the road crossing the square. It makes the street crossable for children, partly reduces the disturbance from the other side of the road, gives some possiblities for creating an enclosed area and does not change the total area of the square in comparison to the area of the street. It actually gives a little extra room to the playspace at the Eastern side of the road.

1: Narrowing the road

Road crossability / accessibility	-
Disturbance*	-
Making 'one' entity	-
Total area of actual square space	+

2: One green central strip

Road crossability / accessibility	+
Disturbance*	0
Making 'one' entity	0
Total area of actual square space	0

3: Two green strips along sidewalk

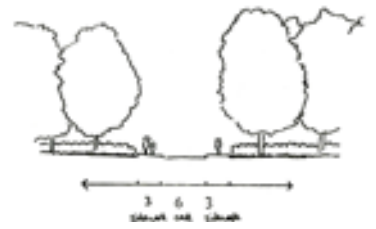
Road crossability / accessibility	-
Disturbance*	+
Making 'one' entity	0
Total area of actual square space	0

4: Three green strips separating parts of road

Road crossability / accessibility	0 **
Disturbance*	+
Making 'one' entity	0
Total area of actual square space	-

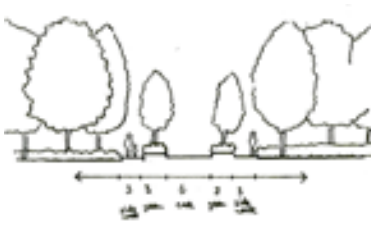
* Disturbance: positive in the table means less disturbance, negative is more disturbance.

** Might become harder because of the complexity of having several different strips



1: narrowing the road

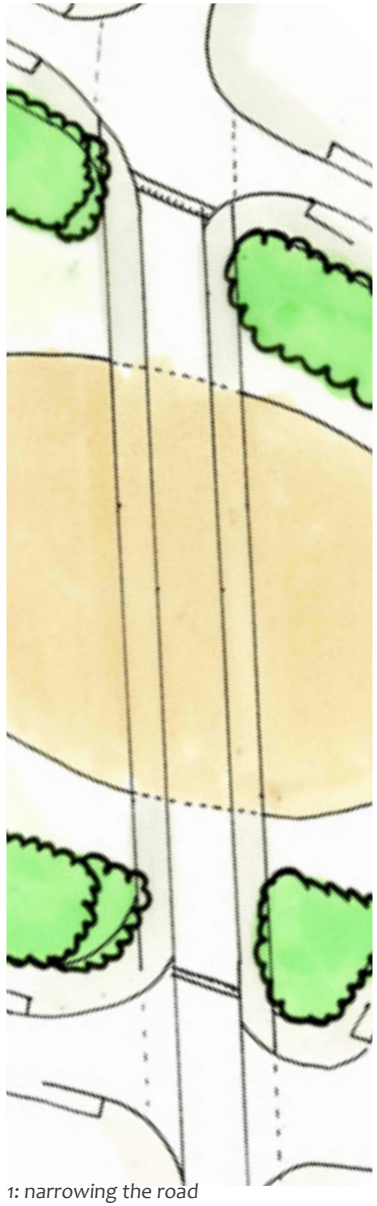
2: one central green strip

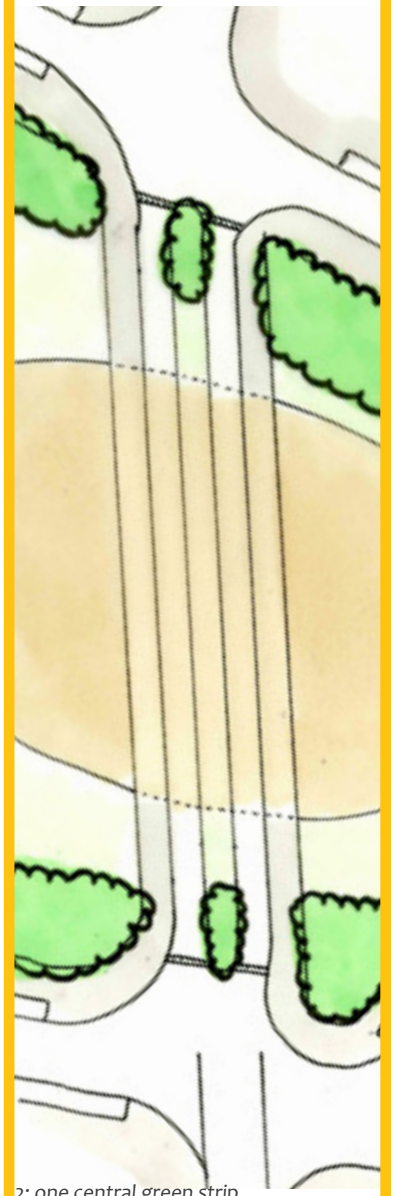


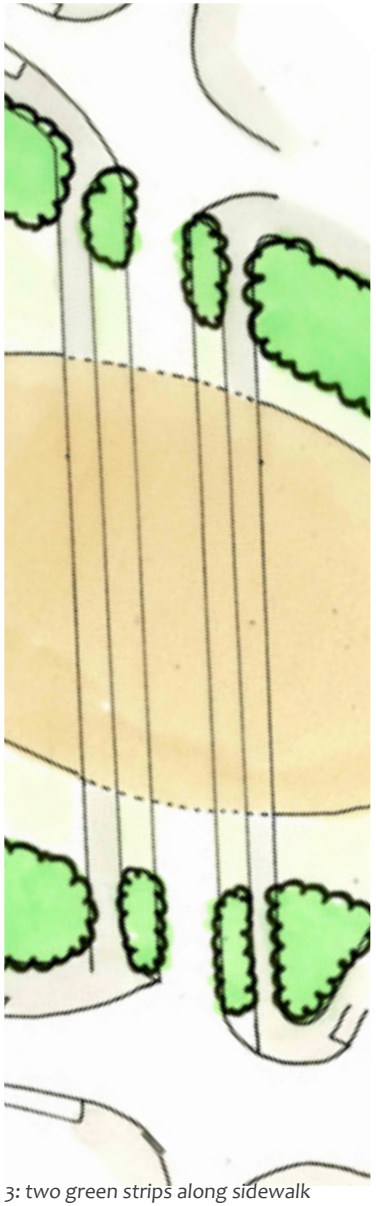
3: two green strips along sidewalk

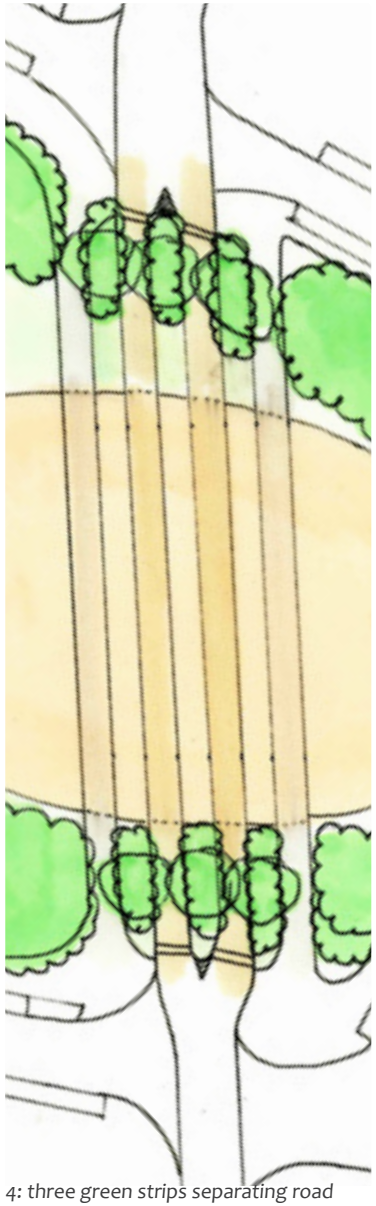
4: three green strips separating road

< Figure 5.24: Principle front views of 4 different ways of implementing an inferior road onto the public square









< Figure 5.25: Floor plans of 4 different ways of implementing an inferior road onto the public square

5.2.3 Valuing different designs

To start finding out the different needs of both the NOP model and the urban context, different designs have been made that are an exaggeration of the principle. For example a 'NOP to the maximum' design (figure 5.26) and a completely formal design (figure 5.27) has been made. These are weighed against a baseline assessment (figure 5.28) in which the layout of the public square stays as it is and only the fences are removed to create a better accessibility: one of the core principles for the design as can be read in chapter 5.2.1. The outcomes of this valuation which can be seen in the table in figure 5.29, reveal that both the formal++ and the NOP++ are better for the playability of the square than the minimal adjustment model. However the NOP++ model scores much higher than the formal++, which is logical, as the different designs are tested using the principles from the NOP model itself. Because both the urban context and the NOP model should be integrated in the final design, a combination of the NOP++ and the formal++ design will have to be made.

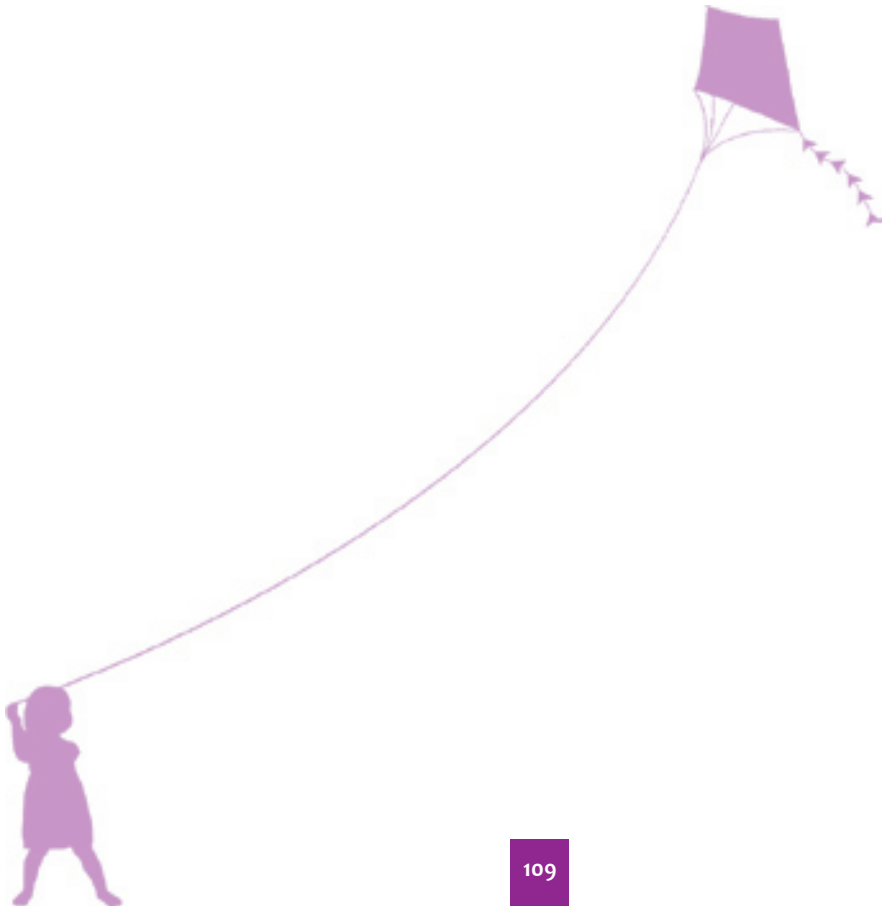
Figure 5.26: Model 1- NOP ++

Figure 5.27: Model 2- Formal ++

Figure 5.28: Model 3- Minimal adjustment

Spatial criteria for playability	1: NOP ++	2: Formal ++	3: Minimal adjustment
1 Environmental manipulation opportunity:			
water/sand/mud	+	-	-
loose rocks, gravel, wood	+	-	-
2 Plural target groups	+	0	0
3 Physical stimulation:			
pathways	+	-	-
stepping stones	+	-	-
vertical elements	0	-	-
horizontal elements	0+	+	+
4 Mental stimulation:			
moveable elements	+	-	-
variety of colours and textures	+	0	-
certain level of intimacy/mystery	+	-	-
elements/obstacles for problem solving	+	-	-
different planting colour and texture	0	+	-
free from disturbance	+	0	0
5 Social stimulation:			
sun-lit places for seating	0	+	0
meeting point	0	0	0
social cooperation games	0	-	-
6 Nature/ landscape use	+	0	0

Figure 5.29: table on the outcomes of the valuation of different designs



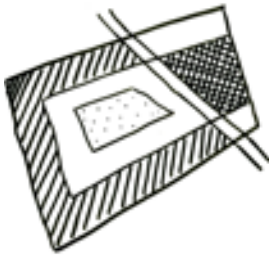


Figure 5.30: Functional layout of the square - option 1

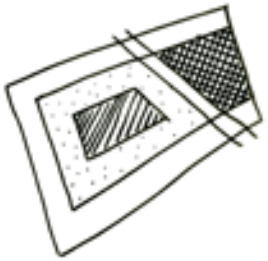


Figure 5.31: Functional layout of the square - option 2

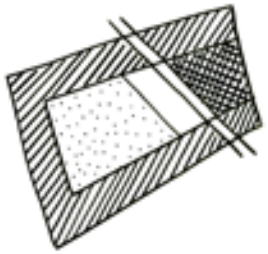


Figure 5.32: Possible other functional layout of the square - option 1b

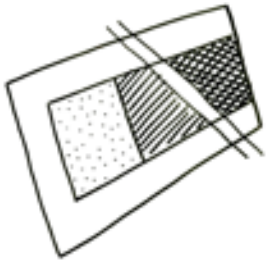


Figure 5.33: Possible other functional layout of the square - option 2b

Principles for functional purpose of the square:

- Leave playspace for small children as it is: keep the same place and the same layout.
- New playspace aims at children above the age of 6/8, giving them an opportunity for adventurous play.
- Keep grass field as part of the square for several different uses by multiple groups of people.
- Create a seating elements for parents or people without children. Their only option to enjoy the square now is from the benches along the road on the sidewalk.

The schemes on the left give **two main options** for integrating the above mentioned functions on the square:

1. Using the border of the square for the new adventurous play and leaving the middle of the square open for different uses by multiple groups of people.
2. Using the border and its surrounding open for different uses by multiple groups of people and create the new adventurous play in the middle of the square.

Figures 5.32 and 5.33 give other layout possibilities that fit in the principles of the first options: creating the play space in the border, or creating it in the middle. Further designing will give an answer to which layout fits best in this place. This is shown by figures 5.34 till 5.37, the designs and a table on the different spatial criteria by Bakker and Fähnrich (2008). This table shows that play in the border offers the best opportunities for free play. When making the final design, these criteria will be tested again.

Legend

- Play for children <6-8 years old
- Play for children >6-8 years old
- Grassfield for multiple use
- Accessible formal/stately part for everyone

Figure 5.34: Model 1a- Play in border

Figure 5.35: Model 1b- Play in border

Figure 5.36: Model 2a- Play in centre

Figure 5.36: Model 2b- Play in centre

Spatial criteria for play qualities	1a: Play in border	1b: Play in border	2a: Play in centre	2b: Play in centre
1 Environmental manipulation opportunity:				
water/sand/mud	o	o	o	o
loose rocks, gravel, wood	o	o	-	-
2 Plural target groups	+	-	o	o
3 Physical stimulation:				
pathways	+	+	o	o
stepping stones	+	+	+	+
vertical elements	o	o	-	-
horizontal elements	+	o+	+	o+
4 Mental stimulation:				
moveable elements	-	-	-	-
variety of colours and textures	o	o	o	-
certain level of intimacy/mystery	+	+	-	-
elements/obstacles for problem solving	+	+	o	o
different planting colour and texture	+	o	-	-
free from disturbance	+	+	o	-
5 Social stimulation:				
sun-lit places for seating	o	o	+	+
meeting point	o	o	o	o
social cooperation games	-	-	o	o
6 Nature/ landscape use	o	o	o	o

Figure 5.37: Table on spatial criteria (derived from Bakker & Fähnrich 2008)


0
25 m
N

5.2.4 Final design

Testing the different models has made clear that using the border for playing creates more opportunities for including loose rocks or wood and creating vertical elements. Furthermore a certain level of intimacy and mystery can be created as well as less disturbance. Therefore in the previous phase has been decided to work with a large border for play, which is further designed.

As already mentioned before, the eastern part of the square is currently a primary play space for children. This was the most crowded play space that has been observed and therefore this side of the square does not need large adjustments. This side of the square will to a large extent stay as it is now, only the border of the square will become part of the 'entity' of the square and therefore is redesigned with the rest of the square.
For the final design the enclosed border at the southern part of the square has been made wider to really make an enclosure and the border at the northern part has been made a little smaller to create a difference between the different spaces. The southern border offers different play opportunities by creating an adventurous path as can be seen in figure 5.39 and 5.43 and also offers children the opportunity to be temporarily out of sight from parents, which is something they want when reaching a certain age (Boogaard et al. 2009). Furtermore the enclosed area in the border offers opportunities for playing games such as hide and seek, manipulating the environment and other types of mental play. The western part of the grass field is enriched with higher natural grass, which is shown in the reference pictures in figure 5.39 and the visualisation in figure 5.44. The individual play qualities are shown in figure 5.41.
The public square offers opportunties for several different target groups to sit and relax, either in the sun or in the shade of the trees.

< Figure 5.38: Final design - adventurous play space

For example parents can sit down here to watch their children play and elderly people can use the square to take a rest. Furthermore the water fountain on the square, a combination of the already existing fountain which was now placed in the corner of the square and a new usable and walk-through fountain, especially offers opportunities for children to play with water, as can be seen in the reference pictures in figure 5.39.
The road that crosses the square has been laid with road bricks replacing the current asphalt to reduce the speed of cars. In addition to this, large pedestrian crossings and speed bumps will make sure that people can cross the square and that the square will not visually break into two pieces.

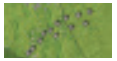
The trees that are in the design are for a large extent the trees that were already present on the square, some of these trees are monumental, and others were already more than fifty years old. In addition to these already present trees, some extra trees have been placed. A few of these are fruit trees, such as *Malus* and *Prunus*, to make children become aware of what nature offers and also some other fruits are used such as hazel, berries and raspberry bushes. Also the spring blossom of the fruit trees is stimulating for mental play. The fruit trees and bushes will be placed and concentrated in the north-western corner of the square, creating a place for picking fruits in addition to the ability for children to pick flowers in the higher grass.
Some other extra trees that are placed are especially suitable to climb in, such as *Carpinus betulus* and *Pterocarya fraxinifolia* (Leufgen and van Lier 2007). These are an addition to the already existing trees that can be used to climb in, such as the *Pinus sylvestris.* Also some trees and shrubs have been planted for their colour or texture, such as the *Rhus typhina.* Furthermore some additional elements have been placed in the bushes to stimulate children to go explore and make parents aware that children are actually allowed to go inside the bushes to play, that this is not a no-go area for children as it is now.

Legend


Fruit trees


Enclosed seating areas


High 'natural' grasses with flowers


Stepping stones


Adventurous path


Benches


Water fountain with loose stones


Existing play equipment for younger children











Figure 5.39: Reference pictures for the square including the primary play space (Bosma 2011, Leufgen 2014c, Leufgen 2014a, Leufgen 2014b, Lobst 2014, Rubato 2014, Spingzaad 2014, Straatkaart 2008)

The reference pictures on the left in figure 5.39 show how the different sections in the square might look like. For example the enclosed area as well as the vertical play elements for climbing are shown and the net rope bridge that hangs above the entrance of the square on the southwestern border are shown. Furthermore the last two pictures show a possible fountain and the crossing of the road on the square.

The table on the right shows the different spatial criteria for play qualities by Bakker and Fähnrich (2008), as they will become when the design will be implemented on the Frederik Hendrikplein. When comparing these citeria oucomes in the design to the criteria outcomes of the original layout of the square, as can be seen in the table in figure 5.40, the proposed design offers more opportunities for different qualities of play.

Spatial criteria for play qualities	Design 1:500	Original	
Environmental manipulation opportunity:			
water/sand/mud	o	-	
loose rocks, gravel, wood	o	-	
Plural target groups	+	o	
Physical stimulation:			
pathways	+	-	
stepping stones	+	-	
vertical elements	+	-	
horizontal elements	+	+	
Mental stimulation:			
moveable elements	o	-	
variety of colours and textures	o	-	
certain level of intimacy/mystery	+	-	
elements/obstacles for problem solving	+	-	
different planting colour and texture	+	-	
free from disturbance	+	o	
Social stimulation:			
sun-lit places for seating	+	o	
meeting point	o	o	
social cooperation games	o	-	
Nature/ landscape use	o	o	

Figure 5.40: Table on spatial criteria in the design (derived from Bakker & Fähnrich 2008)

Environmental Manipulation Opportunity - water, stones and branches

Mental stimulation - different textures, materials, open and enclosed

Social stimulation - seating elements, enclosed and open spaces

Multiple target groups - play equipment for the youngest, challenge and adventure for older children, open space and enclosed space for boys and girls

Physical stimulation - adventurous path, large grass field and exploration space

Landscape use - accessible bushes surrounding square, sand, high grass and water

Figure 5.41: Independent play qualities in different elements of design

Figure 5.42: Visualisation adventurous path >

Figure 5.43: Visualisation enclosed adventure

Figure 5.44: Visualisation 'Wild nature'

5.3 SECONDARY: SIDEWALKS

Figure 5.44: Location different streets

Three different streets have been chosen to design for possible extra secondary play spaces. The streets have a different orientation and have a different function within the neighbourhood. I have chosen two narrow streets, one with an East-West orientation and one with a North-South orientation. Both of these two streets are residential streets and only function for destination traffic. The third street is a wider street with a North-South orientation which is also mainly a residential street, but also functions as a continuous road from the North to the South of the neighbourhood.

The elaboration of the different design possibilities and the final designs that are to be made will give a direction for the way in which play spaces in a dense prosperous neighbourhood can be dealt with, how streets, having different functions and orientations, can be designed for when there is no other space for children to go inside a dense city neighbourhood. Just like with the primary play space on the Frederik Hendrikplein, these play spaces also have to land in the current urban context which means that the play spaces will always be a combination of a play space for children and the requirements of the neighbourhood.

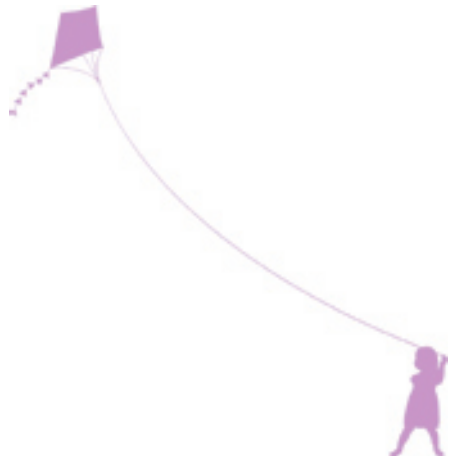
Figure 5.45: Location Antonie Duyckstraat

5.3.1 Narrow street - Antonie Duyckstraat

This street is situated in a side street of the Frederik Hendriklaan, the busy shopping street that has been made a 30 kilometres an hour road as is explained in chapter 5.2 on the play spaces within the structure of the neighbourhood. This side street is mainly used by residents to drive to and park in front of their homes. Therefore this street can be seen as a relatively quiet street in which children will be able to play safely. To accommodate playing here, some extra space will have to be created and for example a meeting point for parents and children in the surrounding streets can be made to make sure children are attracted to the play space. A problem inside this neighbourhood is the amount of cars that need to be parked; in the contemporary situation, cars are even parking on the corners of the streets and on the sidewalks. The parking pressure is very high and therefore not too much parking places can be lost.

However, if removing parking places is the only option to create more play space for children, this will have to be done.

To find out the most suitable location for this play space several small analyses have been done, for example the shadow analysis as is shown in figure 5.46. The most important time for children to play will be after school in the afternoon, around 15.30. Therefore this time is regarded as themost important starting point, but as children also have holidays, are free in lunchtime and might be able to play outside until they have dinner, 12.30 and 17.30 are also taken as starting points for the analysis.
Also, different options for creating extra space, which are shown in figures 5.48, 5.49 and 5.50 on the next page, are designed for and are weighed to find the best solution for a play space on the sidewalk offering children the most opportunities for free play.



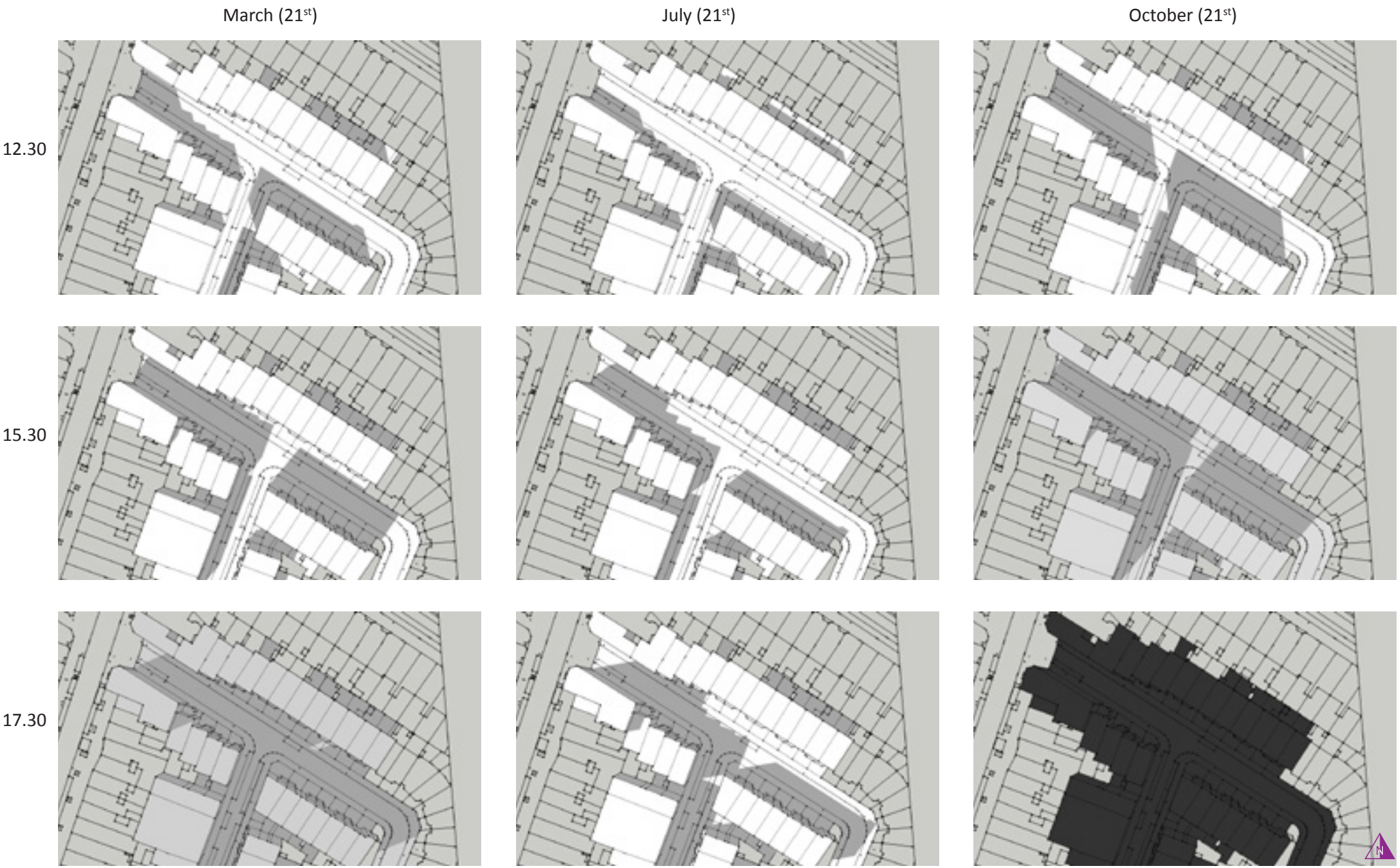


Figure 5.46: Shadow analysis Antonie Duyckstraat

Figure 5.47: Current situation

Three models

Three different options, figures 5.48, 5.49 and 5.50, have been made. All options take away a few parking places and therefore create a little more space for play on the sidewalks. The most functional way of removing parking spaces and creating the most space for the sidewalks are in the corners. Cars are now often parked in the corners of this street and this can be reduced by enlarging the sidewalks in the corners and creating assigned parking places for cars along the sidewalk instead of free parking everywhere, as comes forward in the last two models, figure 5.49 and 5.50. Furthermore, the shade analysis revealed that the most suitable place for play would be in the intersection with the Jacob Hopstraat because the Antonie Duyckstraat itself is quite narrow with high buildings, leaving little room for sun to shine in the street itself, especially on the Southern sidewalks. The Jacob Hopstraat offers opportunity for the sun to come through the side streets, which makes the intersection most suitable for a play space.

Because using only the corners for enlarging the sidewalks for extra play opportunities as shown in figure 5.49, offers a segregated play opportunity instead of a complete play space, option 3 is seen as the best option for creating extra space, keeping in mind that a traffic plateau can be made, connecting the three separated parts of sidewalk with each other. Making a plateau will create awareness for the cars that pass and because this intersection of two streets only has destination traffic at low speed from the surrounding houses this will not be a problem. Making the play space here is regarded more important than the possible risk.

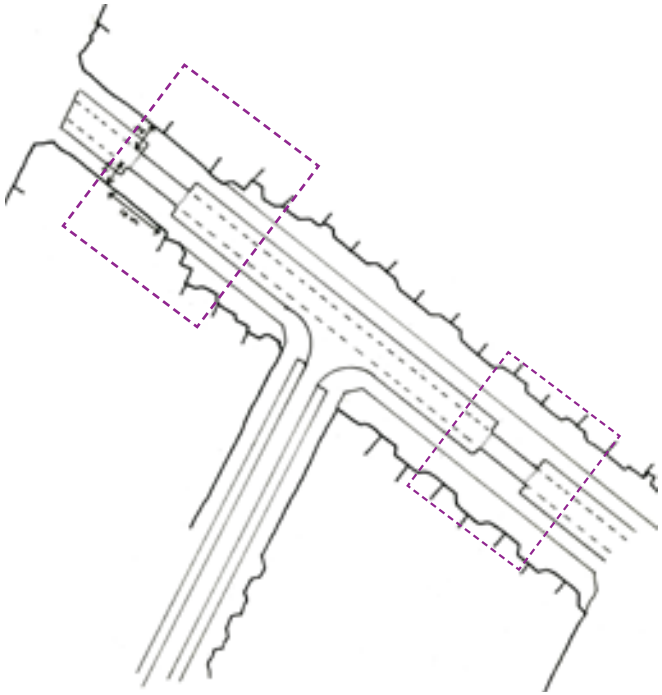


Figure 5.48: Model 1 - creating separate spaces widening the sidewalks

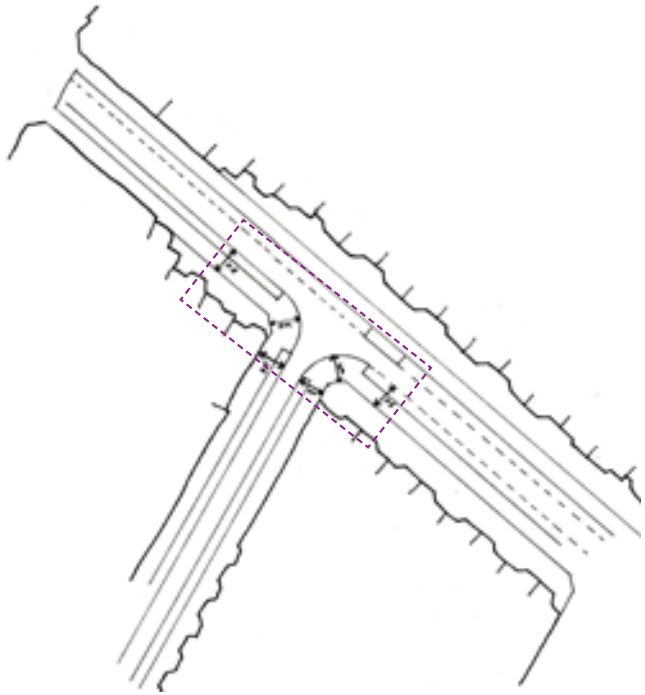


Figure 5.49: Model 2 - creating separate spaces widening the corners of the sidewalks

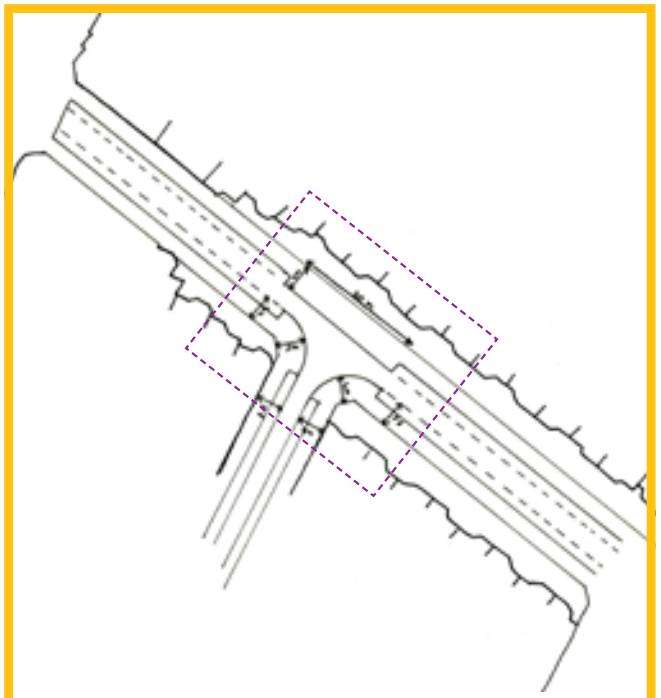
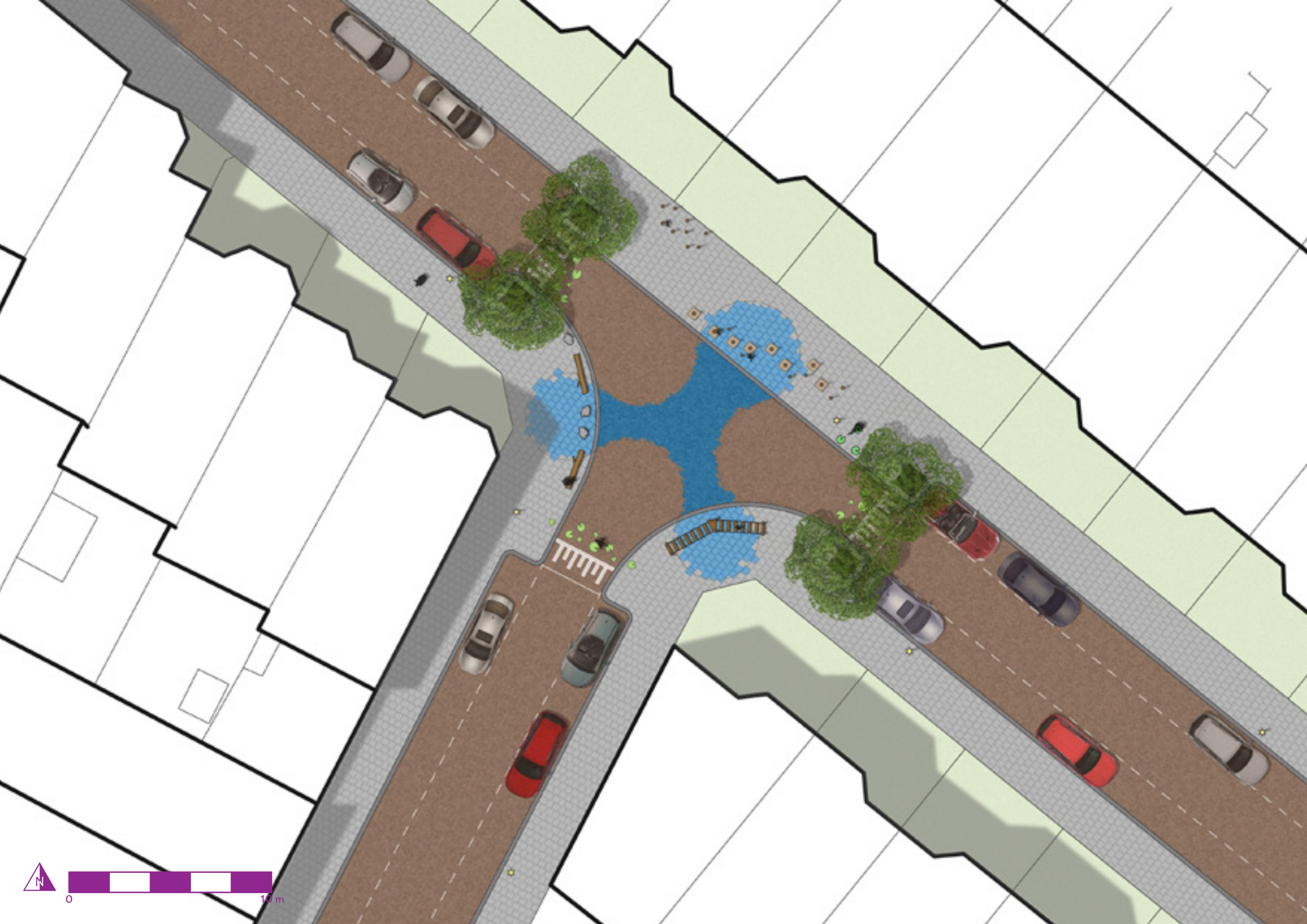


Figure 5.50: Model 3 - creating separate spaces widening the sidewalks and connecting these with a traffic plateau

Figure 5.51: Final design - an imaginary water space >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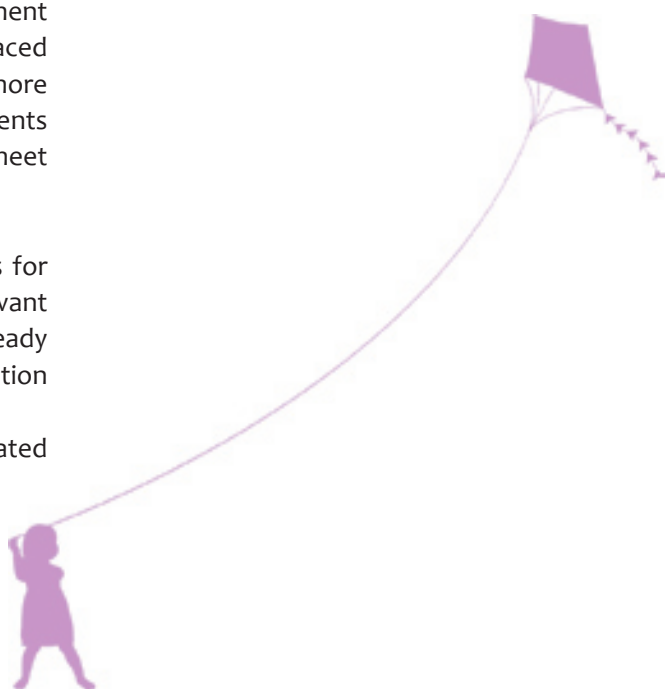
Elements included in this design: physical stimulation, mental stimulation and social stimulation

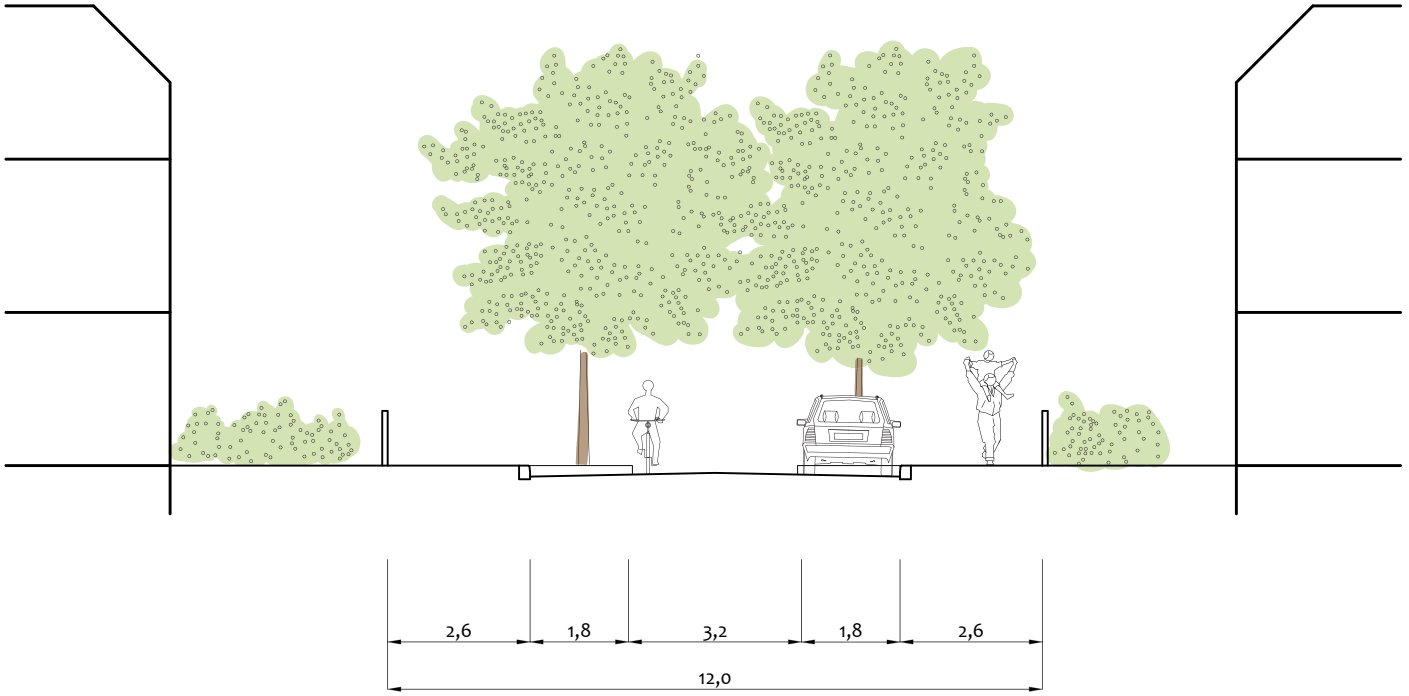
Final design: an imaginary water space

In the final design the three separate sidewalk parts are connected by a traffic plateau on which a big gesture is drawn to make clear that something special happens on this place, to draw attention to the fact that children can cross the street at unexpected moments. Furthermore the layout of the play space and the objects in it can be seen from a distance, attracting children from surrounding streets as well. Because this place can be seen from the shopping street and the surrounding residents streets, children will be attracted and social play will be stimulated. By making this intersection free from parked cars, the children can be seen from a distance; parked cars will not form a visual barrier between the children and the road itself. Furthermore lily leaves are used to make a sort of zebra crossing, making sure extra attention is drawn to the place and the play space. Because a traffic plateau is higher than the surrounding roads, and is approximately on equal ground level as the sidewalks, and because the car pressure is high, the objects placed on the sidewalks are placed in such a way to prevent cars from parking their cars on the sidewalk. The lily leaves and the blue stones in the sidewalk and the road make room for personal interpretation of the children. They will be mentally stimulated by the environment and can make up their own games while playing. The objects placed on the sidewalk will help in this mental stimulation. Furthermore they can be used for example for seating to make sure that parents can keep an eye on the children when necessary. Parents can meet each other while their children play with each other.

The trees that are placed in the sidewalk offer opportunities for children to play in the shadow on hot summer days if they want to. Furthermore, these can be seen from some distance, already indicating that something different is coming, drawing attention from the car drivers to the play space that is arising.
The figure on the next page shows a visualisation of the created play space offering an imaginary water space.

Figure 5.52: Reference photos for design (Huizum - Leeuwarden)
Lower left: (NOP MERCX ONTWERPT 2005)





< Figure 5.53: Detailed ground plan with section of street

Figure 5.55: Current situation Antonie Duyckstraat

< Figure 5.54: Visualisation final design - an imaginary water space

Figure 5.56: Location Van Beverningkstraat

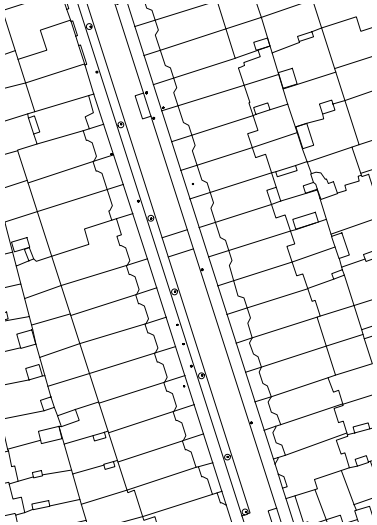


Figure 5.57: Current situation

5.3.2. Narrow street – Van Beverningkstraat

This narrow street has the same function as the Antonie Duyckstraat as discussed in the previous subchapter. However, this street is longer than the Antonie Duyckstraat, and therefore less easy to oversee, and is not situated along a shopping street attracting people. Therefore a possible secondary play space that is situated here is especially meant for the inhabitants living in that particular street. When looking at a possible network in between the primary play spaces in the neighbourhood, the play space in this street might be able to function as secondary play space in the primary play route which will be elaborated on in chapter 5.4.
Because this street is a residential street as well as the Antonie Duyckstraat, it is relatively quiet as well, offering children the opportunity to play. If this play is near some of the cars driving through, this does not have to be seen as a problem. In the chapter 5.3.3 on the Frankenslag will be explained the difference between this street and a more continuous street. However, to accommodate playing here, some extra space will have to be created. A problem for this street is also the amount of cars that need to be parked, but because the only way in which more space can be created is by removing some parking places, this will have to be done.

Design options

For this street different options have been thought of. However, this street does not have as many opportunities as the previous street because there are no side streets situated here. Therefore only the first option which is given in figure 5.48 in the previous subchapter can be fitted in a street like the Van Beverningkstraat. The different options in this are the two different sides of the sidewalks, only the Eastern part, only the Western part, or both. The orientation of the street makes the Eastern side more suitable because of more opportunities for a little sun lighting. The shadow analysis showed that especially in the afternoon after school (15.30 hrs) the street was mostly covered in shadow. However, the eastern part of the street did have some sunlit opportunities.

When having a residential street like this, the best option would be to enlarge both sidewalks and introduce a speed bump on both sides, creating a small traffic plateau to make it easier for children to cross the road, having to cross a smaller distance and being able to look beyond the parked cars. The introduction of speed bumps also alerts car drivers passing by, creating less dangerous situations. Also by using both sides of the road, children have the opportunity to choose between a sunlit area to play in, or a more shaded place.

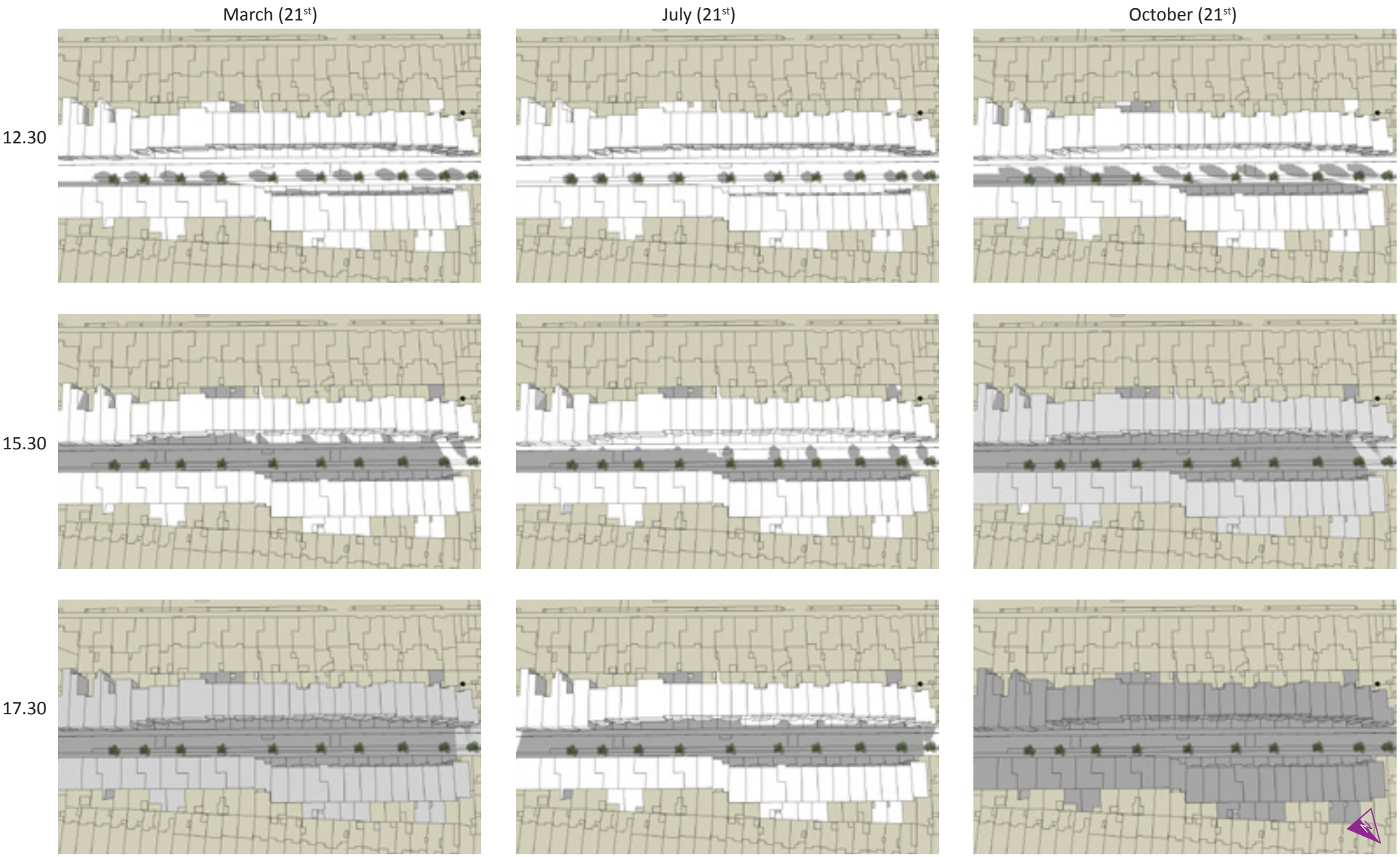
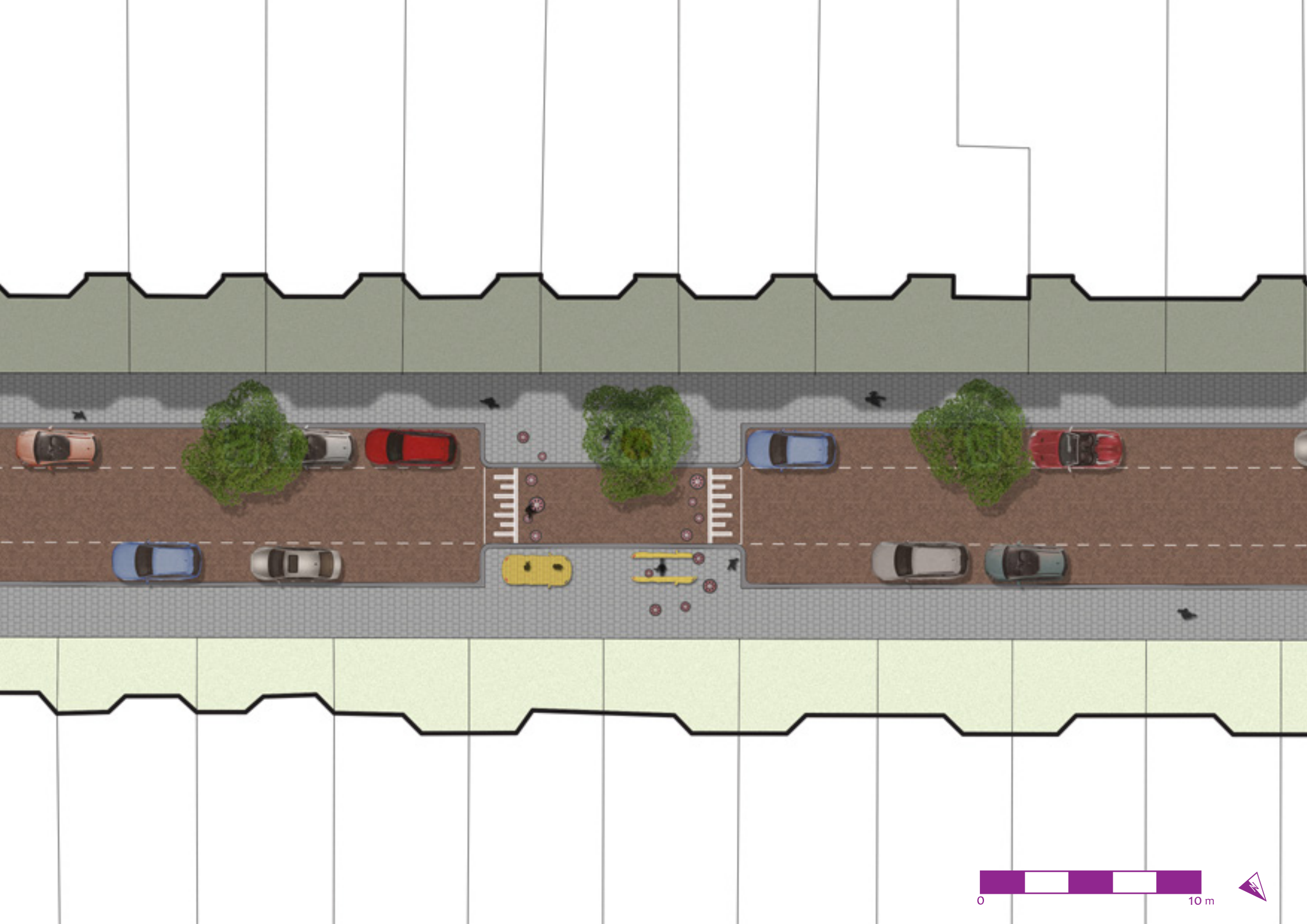


Figure 5.58: Shadow analysis Van Beverningkstraat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Final design

The final design shows the principle of enlarging the sidewalks on both sides of the street to create a larger possible play space for children. The figure on the left shows how this has been done and the visualisation in figure 5.60 shows how this could possibly look like when implemented.

Because there is a high parking pressure in this street, not too much parking space can be taken away. But because play possibilities for children are also important and because this space can function as meeting place and play space for the entire street, four parking places are removed to created a widened sidewalk.

The eastern side of the sidewalk includes elements that trigger play, the western side of the sidewalk is more open for seating elements around the tree, pavement chalk possibilities or playing with marbles.

The crossing of the street is marked with the speed bumps and with horizontal wheels, drawing attention from car drivers and creating another element to trigger play in children.

< Figure 5.59: Final design Van Beverningkstraat

Elements included in this design:
physical and mental stimulation

Figure 5.61: Current situation Van Beverningkstraat

< Figure 5.60: Final design Van Beverningkstraat

Figure 5.62: Location Frankenslag

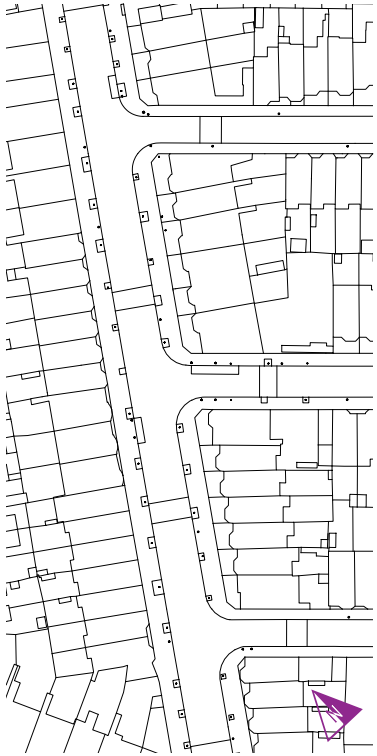


Figure 5.63: Current situation

5.3.3 Wide street – Frankenslag

The Frankenslag is a continuous street from the North to the South of the neighbourhood. As opposed to the Frederik Hendriklaan, the other street from North to South, the Frankenslag is already appointed as a 30 kilometres an hour road and is a residential street. However, it also functions as route towards many side streets of the Frankenslag and therefore is not only used by destination traffic for the people living in the street itself, but also for a large extent destination traffic to or from the surroundings. Therefore this street requires a different approach than the previous two streets in which cars passing are not always seen as problem. In this case however, the intensity of cars passing by and the speed in which they drive will be more dangerous for children and therefore a barrier between the children and the road is desirable.

Furthermore this street is much wider than the previous two streets. Figures 5.63 and 5.74 shows the current profile of the Frankenslag: a sidewalk of about 5 metres on both sides of the road. From this might be said that this sidewalk offers enough opportunities for play on itself, but because there are already too little play spaces in total in the Statenkwartier, this wide profile offers opportunities for a richer play experience and therefore will be investigated what the different options for giving room to a secondary play space are by starting with four main principles of adjusting the street and then working further on one of these three principles.

Four starting principles

Figure 5.66 shows the first principle in which the sidewalk is only widened by one metre to create a little more space on the sunny side of the sidewalk as can be seen in figure 5.64. The second principle is comparable to the first model of the Antonie Duyckstraat and the design that has been made for the Van Beverningkstraat: creating a play space by widening the sidewalks on two sides of the road. The third principle as shown in figure 5.68 is comparable to the second model of the Antonie Duyckstraat: widening the sidewalk on the corners and therewith defining parking space for cars. This principle makes sure that crossing the side streets becomes easier for children: the distance between the two parts of the sidewalk is smaller and there are no parked cars that block the view, which makes it possible to oversee the intersection. Finally the last principle as shown in figure 5.69 is comparable to the design in the Antonie Duyckstraat, making a traffic plateau along which children are able to play.

Because traffic intensity in this street is higher than in the residential streets, the second and the fourth option are not desired. Playing children should not be so close to the motorized traffic in this street. However, the third principle in which the route between the primary play spaces and therefore also route between the different secondary play spaces might become more accessible. Furthermore because principle three also includes the first principle of widening the sidewalk with a metre, this principle is chosen to work on further to see how actual play spaces can be created on a wide sidewalk.

Three models for design

The principle of widening the sidewalk on one side and enlarging the sidewalk corners has been developed into three different models which are shown in figure 5.70, 5.71 and 5.72. The models all use the width of the sidewalk for playing to make something that is impossible on the other, smaller sidewalks. The different models then show how this can be integrated on the sidewalk. In the first model several play spaces are made in front of the front yards

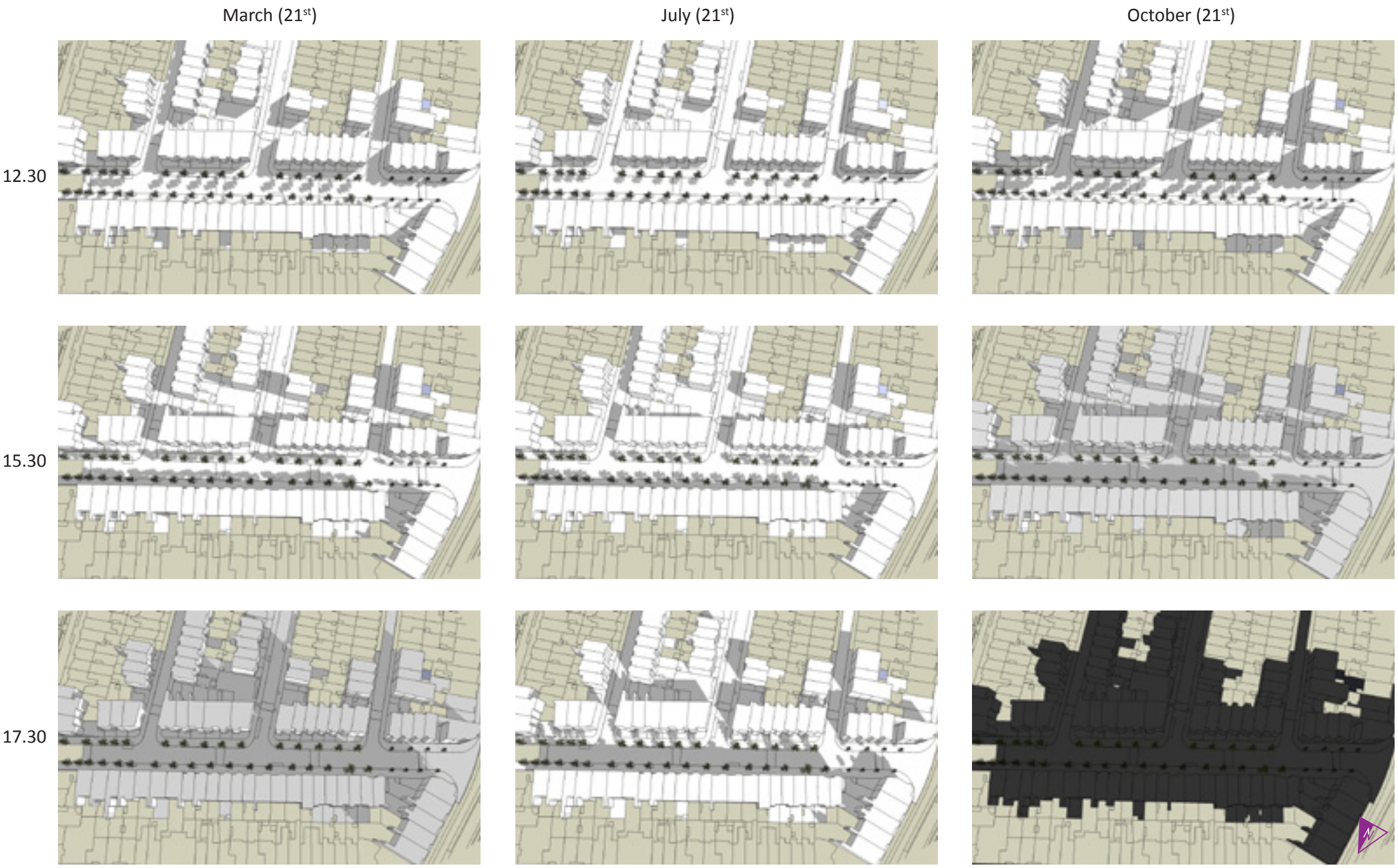


Figure 5.64: Shadow analysis Frankenslag

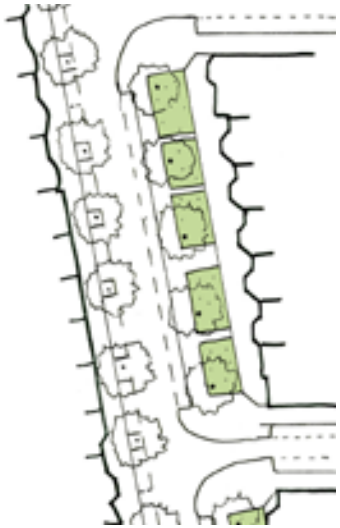


Figure 5.65: adjustment model 1 - widening sidewalk

along the Eastern sidewalk, in the second model these spaces are placed at the side of the parked cars, to make sure that the people walking on the sidewalk have enough space left. In the third model (figure 5.72) play spaces have been made in between the angled parked cars. The first model has as advantage that it is not near cars, but has as disadvantage that the sidewalk itself becomes quite narrow because of the trees that are within the sidewalk. The second model has as advantage that the sidewalk stays walkable, but the play spaces are next to the parked cars. The third model has as advantage that there is an increase of parking places, but as disadvantage that the play spaces are situated in between the parking places and along the busy road. The accessibility is the same for every model, as this has already been improved by choosing the principle with widening the corners of the sidewalks.
All in all the first model is chosen to work on further because this offers the best outcomes for children's play. This does however mean that a solution needs to be found for the walkability of the sidewalk itself.

The solution for this has been found in the idea of enlarging the Eastern sidewalk even more, by narrowing the sidewalk on the Western side of the street, which can be seen in figure 5.65 on the left. This will mean that on the sunniest side of the street, the sidewalks are bigger than on the other side. However, the Western sidewalk will become 3 metres wide, which is still more than sufficient. The cars on the Western side of the street are then parked in between the trees, resulting in a little loss of play spaces, but as this street does not have a real high parking pressure, this is not seen as a problem.

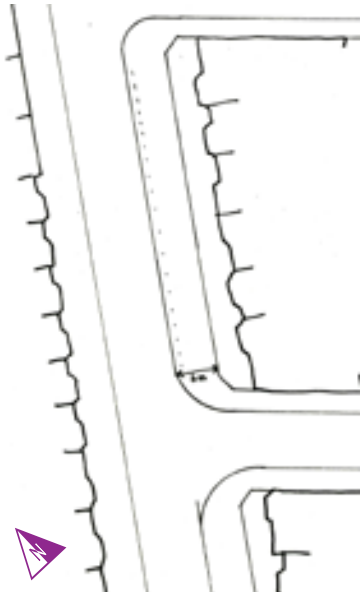


Figure 5.66: principle 1 - widening the sidewalk with 1 metre

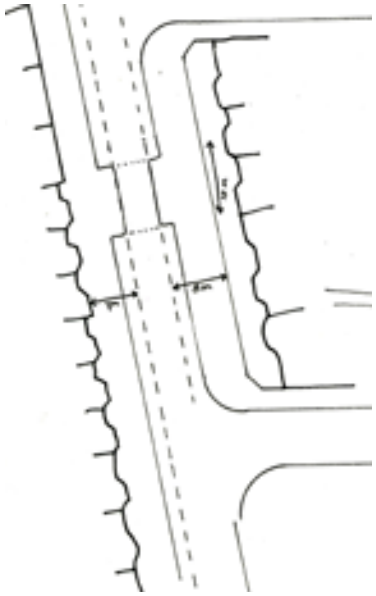


Figure 5.67: prinicple 2 - widening sidewalk on two sides of the road

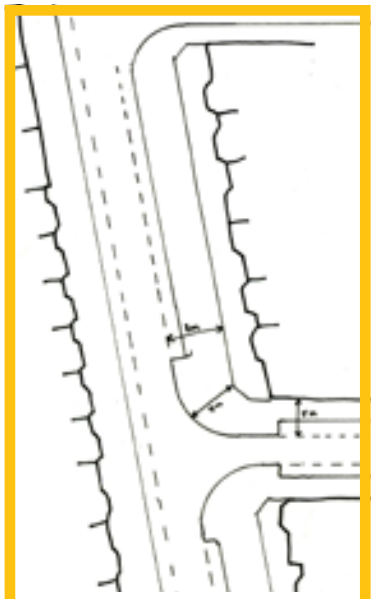


Figure 5.68: principle 3 - widening the corners of the sidewalk

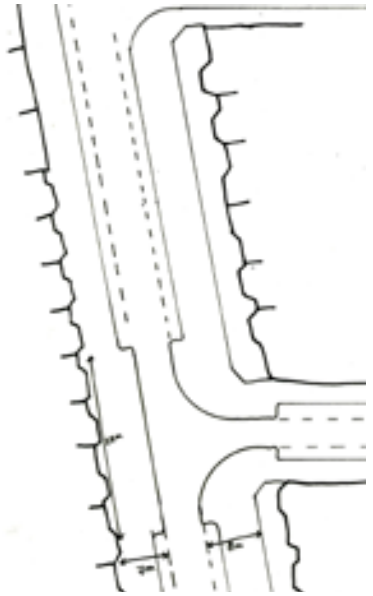


Figure 5.69: principle 4 - widening the corners of the sidewalks and the opposite sidewalk

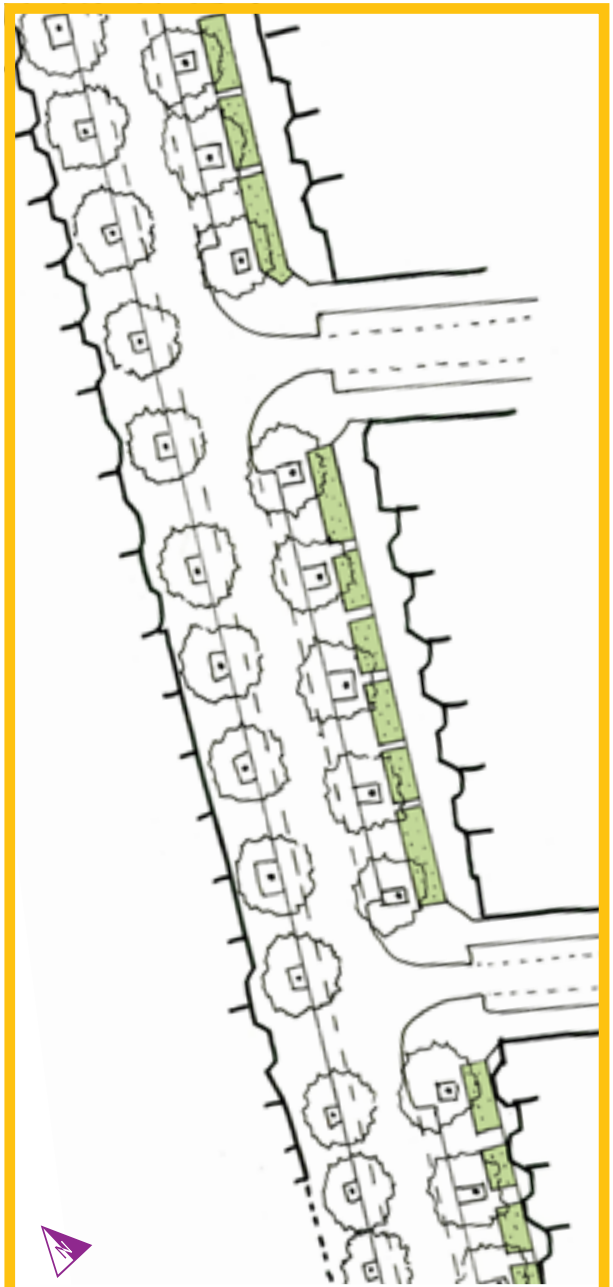


Figure 5.70: model 1 - play spaces at the front garden side

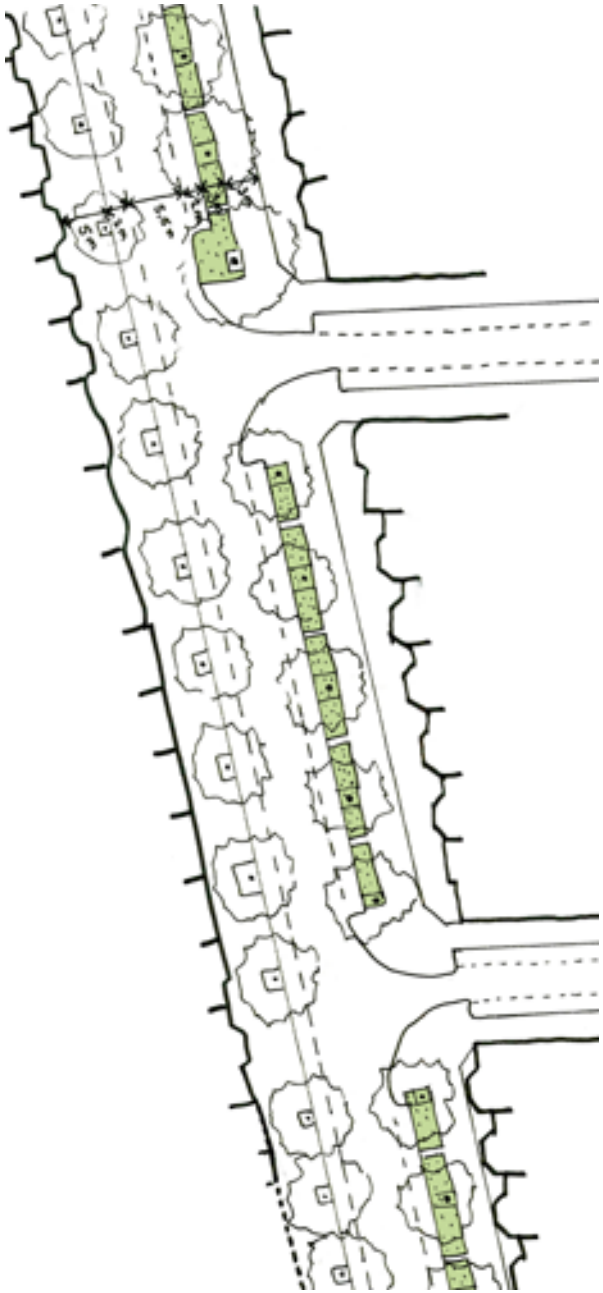


Figure 5.71: model 2 - play spaces next to parking spaces

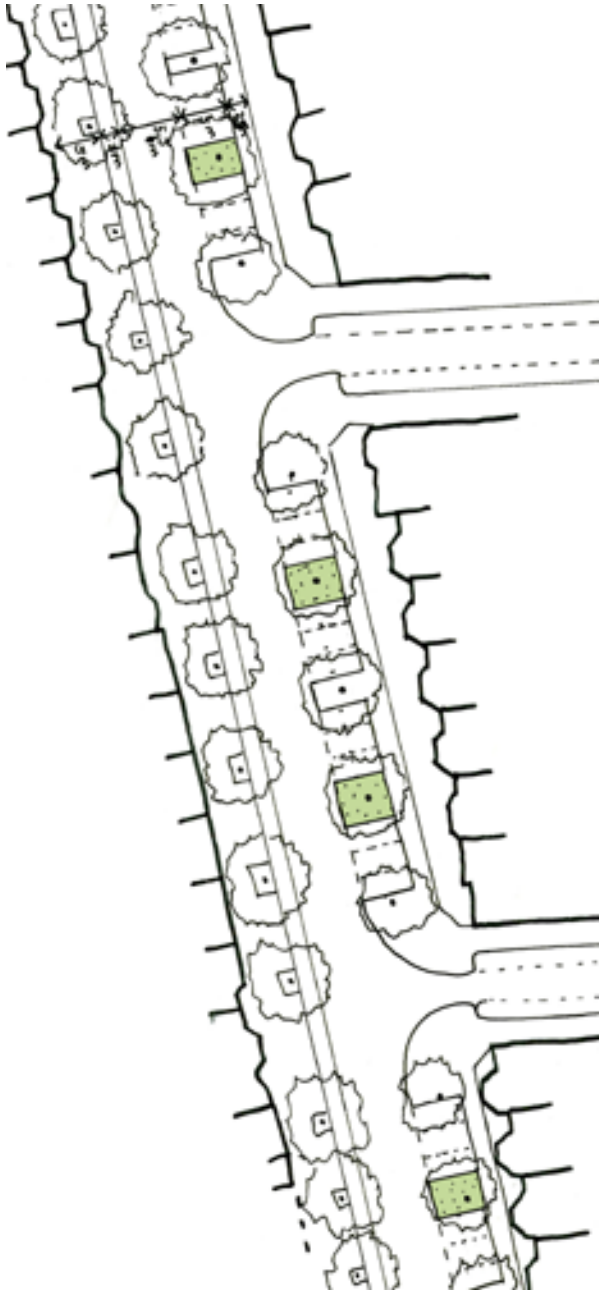


Figure 5.72: model 3 - play spaces in between parking spaces

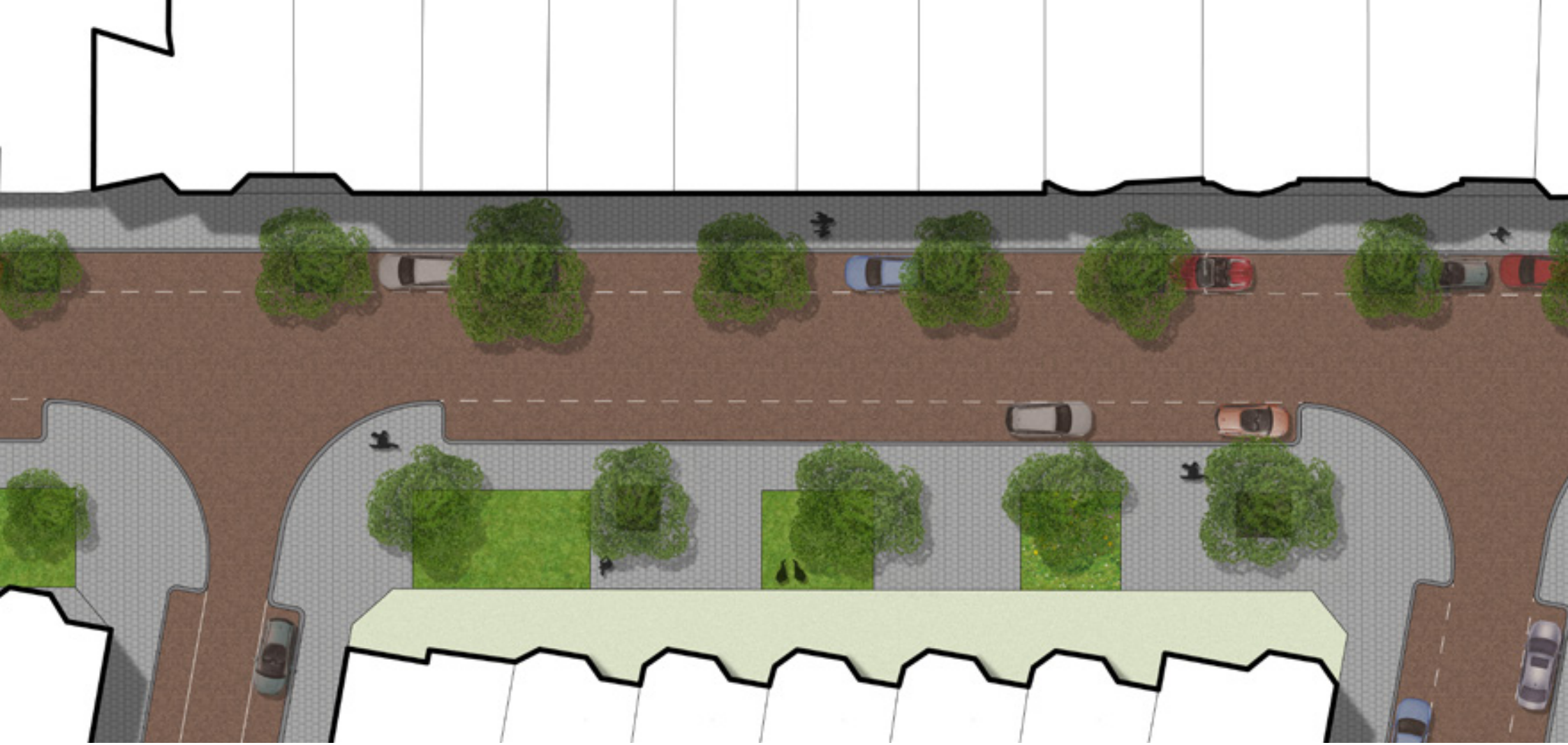
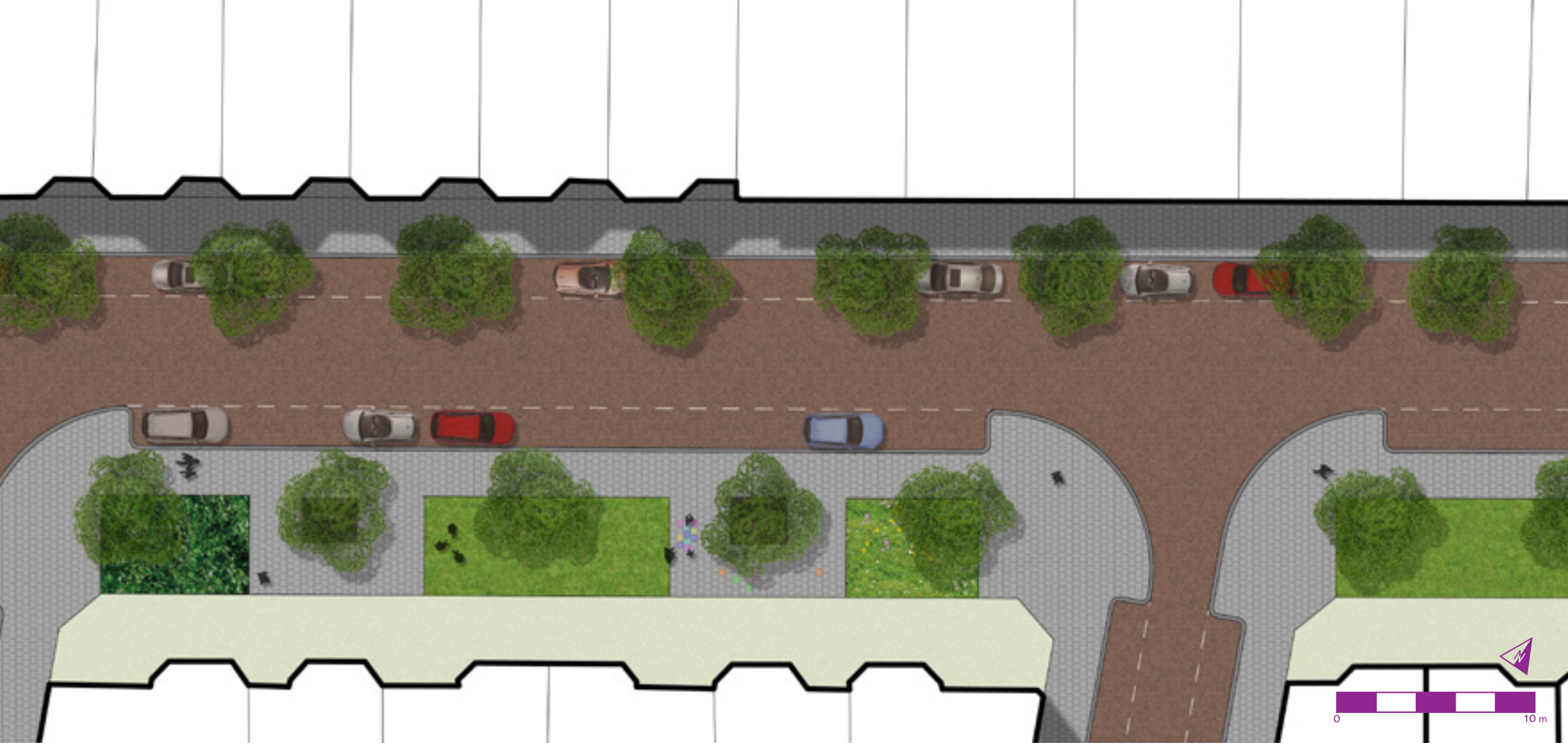


Figure 5.73: Final design - a street full of play possibilities

Final design

The final design that has been made shows the principle of enlarging the sidewalk on one side and narrowing it on the other side. This principle can also be seen in the sections in figure 5.74 and 5.75. The extra space that is created functions as play space for children, but can also function as a meeting point for inhabitants living in this street or one of the side streets. Not all 'sidewalk garden' areas have been made into grass areas, there are also parts in which the sidewalk is left as wide sidewalk for children to chalk on or skate on and some parts have been made into more natural areas, offering opportunities for mental stimulation or nature play. How these different parts might look like is shown in the visualisations in figures 5.76 and 5.77. When wanting to implement a widened sidewalk with all different small gardens, this could be done in close collaboration with the inhabitants living in the streets, meaning that for example, if a resident agrees, a sandbox can be made for



environmental manipulation opportunitiy, which can be closed during times children are not there to play in it. Because every part can be designed differently, it is possible to introduce a different play quality on every single ‘sidewalk garden’ space, resulting in a street in which every type of play can be played when following the play route.

Possible elements included in this design: Environmental manipulation opportunity, multiple target groups, physical stimulation, mental stimulation, social stimulation, landscape use

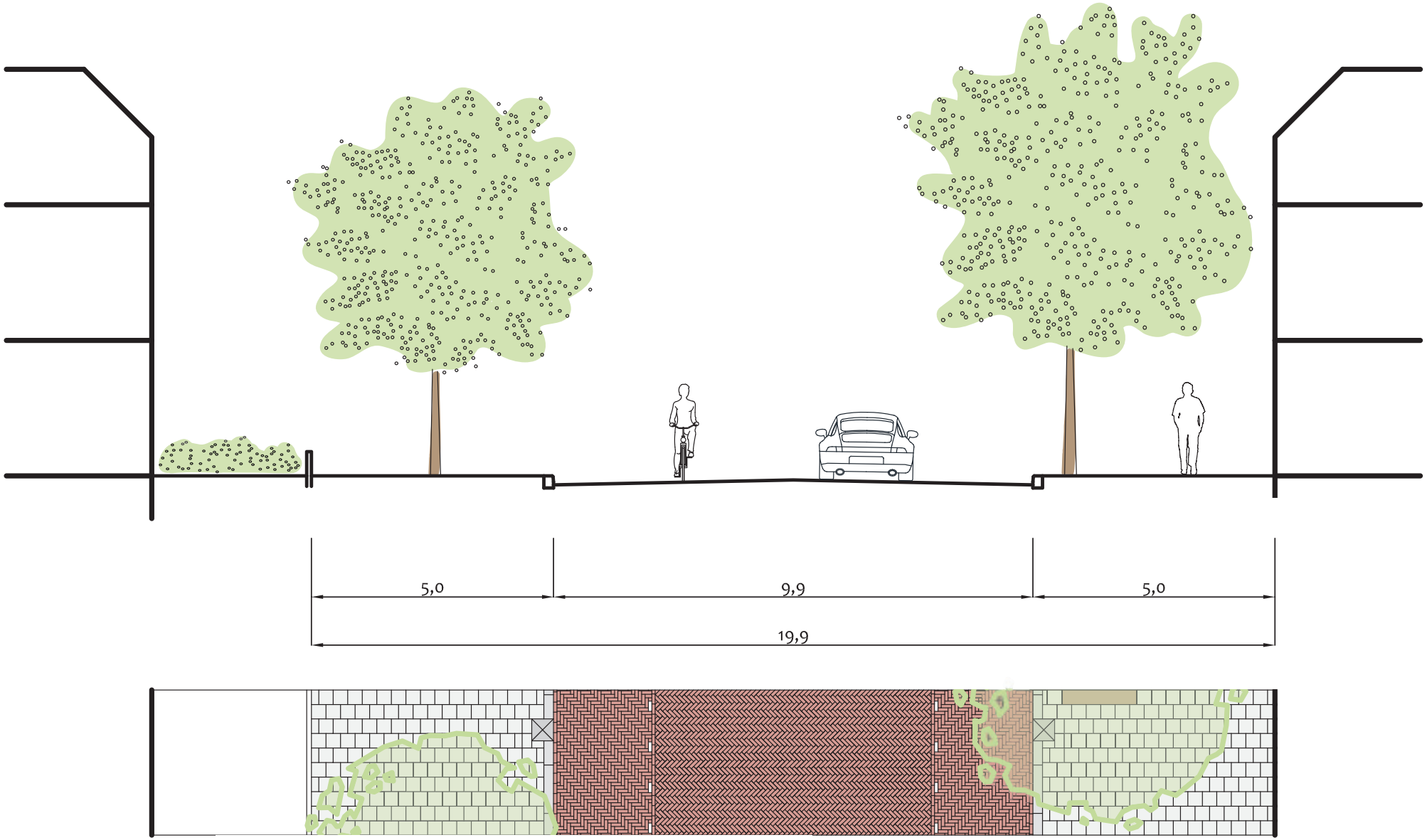


Figure 5.74: Section of the old profile of the street

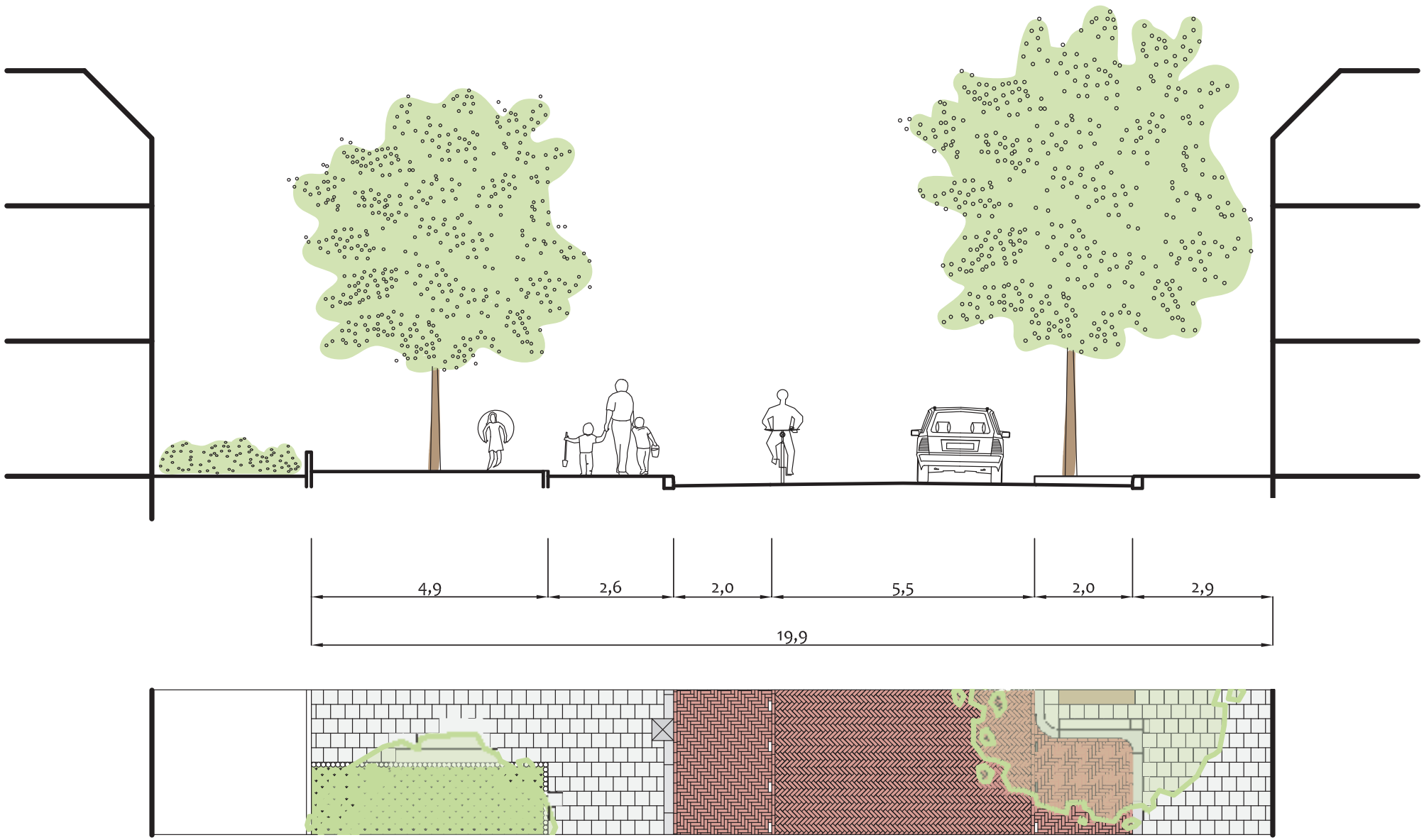


Figure 5.75: Section of the new profile of the street

Figure 5.77: Ideas on different 'sidewalk gardens' (de Bot 2013, De Kim Hekwerk 2014)

Figure 5.78: Current situation Frankenslag

< Figure 5.76: Visualisation final design - a street full of play possibilities

5.4 ACTUAL NOP IMPLEMENTATION

5.4.1 Statenkwartier after NOP implementation

The different design principles that have come forward in the separate designs, have their effect on the neighbourhood as total entity. This effect is shown in figures 5.79 till 5.84. The first figure shows the current possible play spaces, including those public spaces that are unsuitable according to the NOP model. This is seen as the starting point for design. Everything that has been elaborated on in the previous subchapters is added to or adjusted this starting point. In these starting points, possible schoolyards as play spaces have already been added to the coverage of the network, although this originally is not one of the NOP principles.

The most important way of improving the accessibility and the location of the possible play spaces is by reducing the busy traffic roads, which is done with the Frederik Hendriklaan for instance, as can be seen in figure 5.80. This road has been downgraded from a 50 km/h neighbourhood access road to a 30 km/h residential road, which results in a road that are easier to cross for children. The Prins Mauritslaan and the Willem de Zwijgerlaan are also possible roads which can be downgraded in the way that has been done with the Frederik Hendriklaan. But because this has not been investigated in depth in the previous designs, this is seen as a recommendation for further design research to find out of this is possible. The effect of reducing inner neighbourhood continuous 50km/h roads is also that the neighbourhood gets less segregated in separate parts. Further elaboration on the different separate parts within the neighbourhood will be given in chapter 5.4.2.

Other ways of increasing the quantity of play spaces, besides the addition of schoolyards, are done by making play spaces on sidewalks, as is shown in figure 5.81. Different sidewalk play spaces have been shown and the choices that have been made during the designing process are important to watch for when designing for new play spaces on sidewalks. The final designs for the sidewalks that have been shown in the previous subchapter are not to be implemented everywhere in the neighbourhood, but give a direction for possible ways of creating a play space. The steps that are taken before getting to the final design: investigating the possible ways of enlarging the sidewalk, giving children space as far as possible from the surrounding traffic, like on the Frankenslag by widening one side of the sidewalk, or possibly quite close to traffic as has been done in the Antonie Duyckstraat and the Van Beverningkstraat, creating a traffic plateau which alerts car drivers for playing children. The next figure shows that these kind of play spaces, not a direct copy, but the different principle of widening the sidewalks on several different ways, can also be introduced on other sidewalks, resulting in a better coverage of the neighbourhood as is shown in figure 5.81. These sidewalk play space principles make it possible to create an almost complete coverage of secondary action radii. However, the primary play spaces cannot be complemented to create a full coverage. These play spaces require more space than is offered by the public open space within this neighbourhood and other densely built neighbourhoods. Therefore the coverage of the primary play spaces cannot be more than is shown in figure 5.83. When combining the secondary with the primary play spaces, a coverage of play spaces is created as shown in figure 5.84.

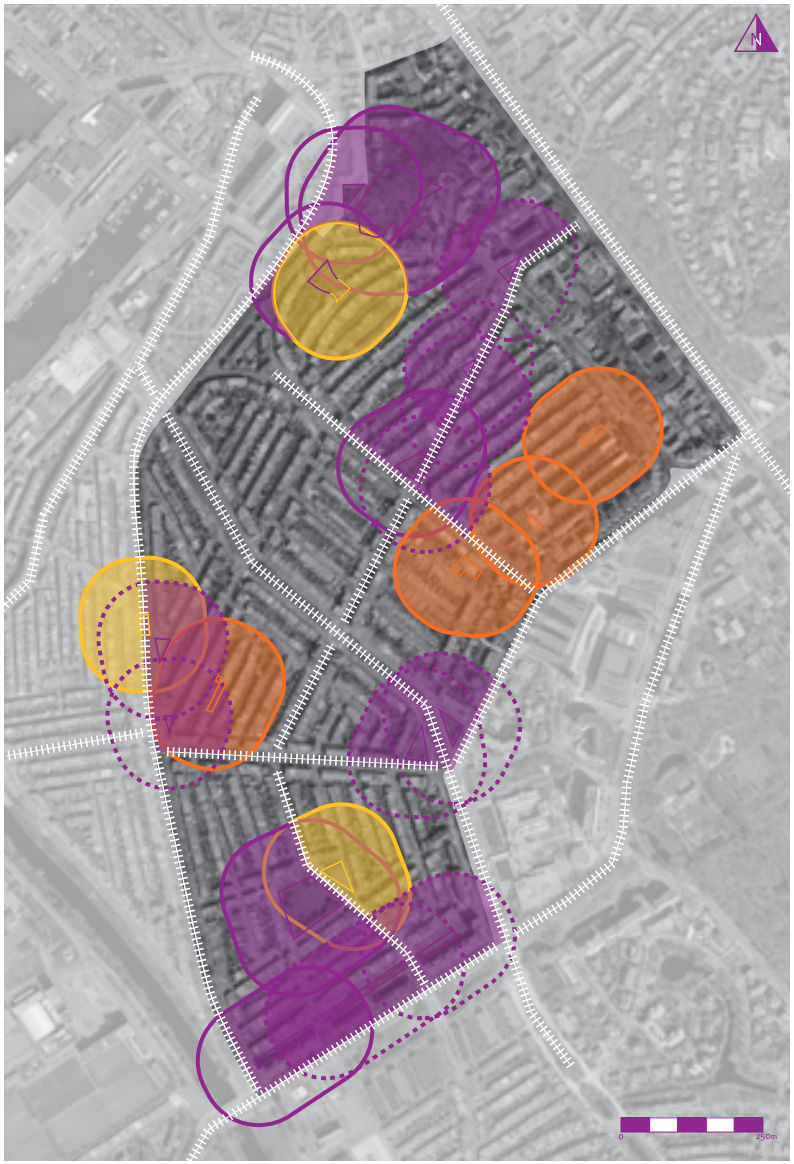


Figure 5.79: Starting point before designing for possible play spaces

Figure 5.80: Reducing busy traffic roads: Making the Frederik Hendriklaan into a 30km/h road, possible option for Prins Mauritslaan and Willem de Zwijgerlaan as well

Legend

- Suitable formal play space with actionradius
- Suitable informal play space with actionradius
- Unsuitable location for formal play space in contemporary situation
- Unsuitable location for informal play space in contemporary situation
- Possible secondary playspace on semi-private schoolyard

Legend

- Suitable formal play space with actionradius
- Suitable informal play space with actionradius
- Unsuitable location for formal play space in contemporary situation
- Unsuitable location for informal play space in contemporary situation
- Possible secondary playspace on semi-private schoolyard
- Possible secondary playspace integrated into sidewalk as shown in designs

Figure 5.81: Placing the designs that have been made in the previous subchapters

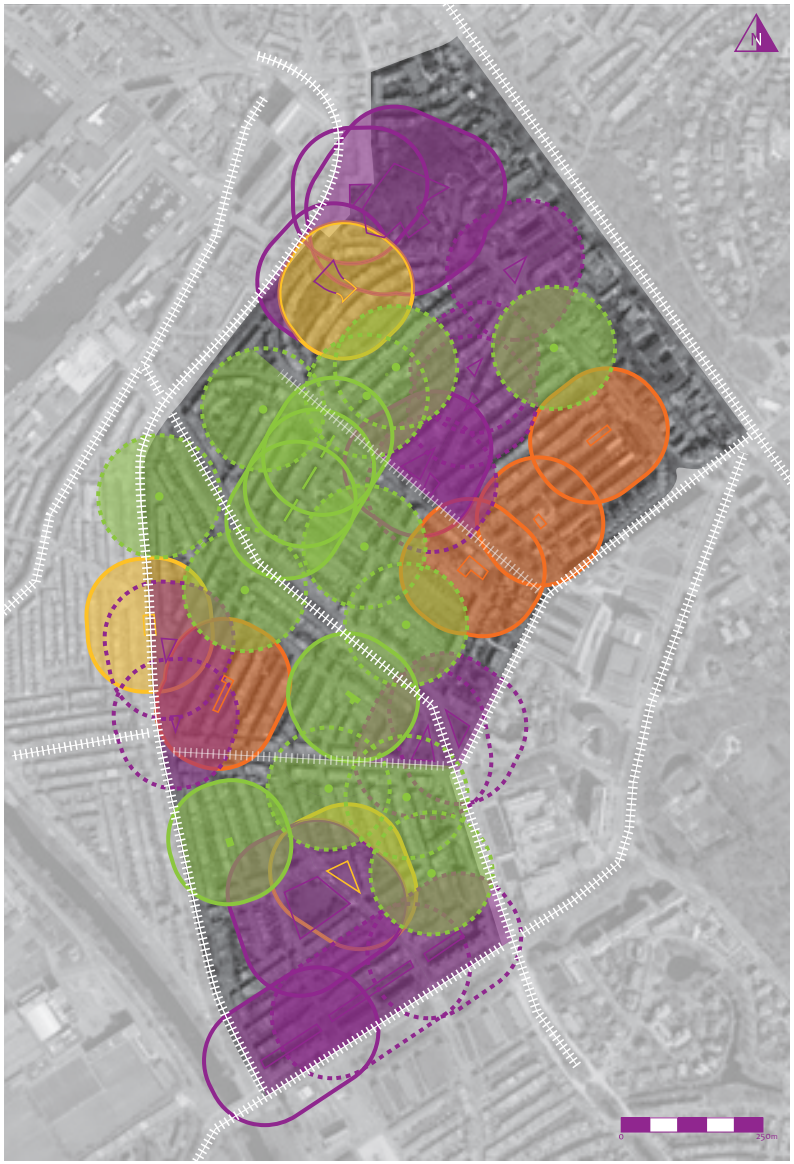


Figure 5.82: Principles of different designs can be implemented on other locations inside the neighbourhood as well, resulting in a denser coverage of play spaces

Figure 5.83: Starting point before designing for possible play spaces

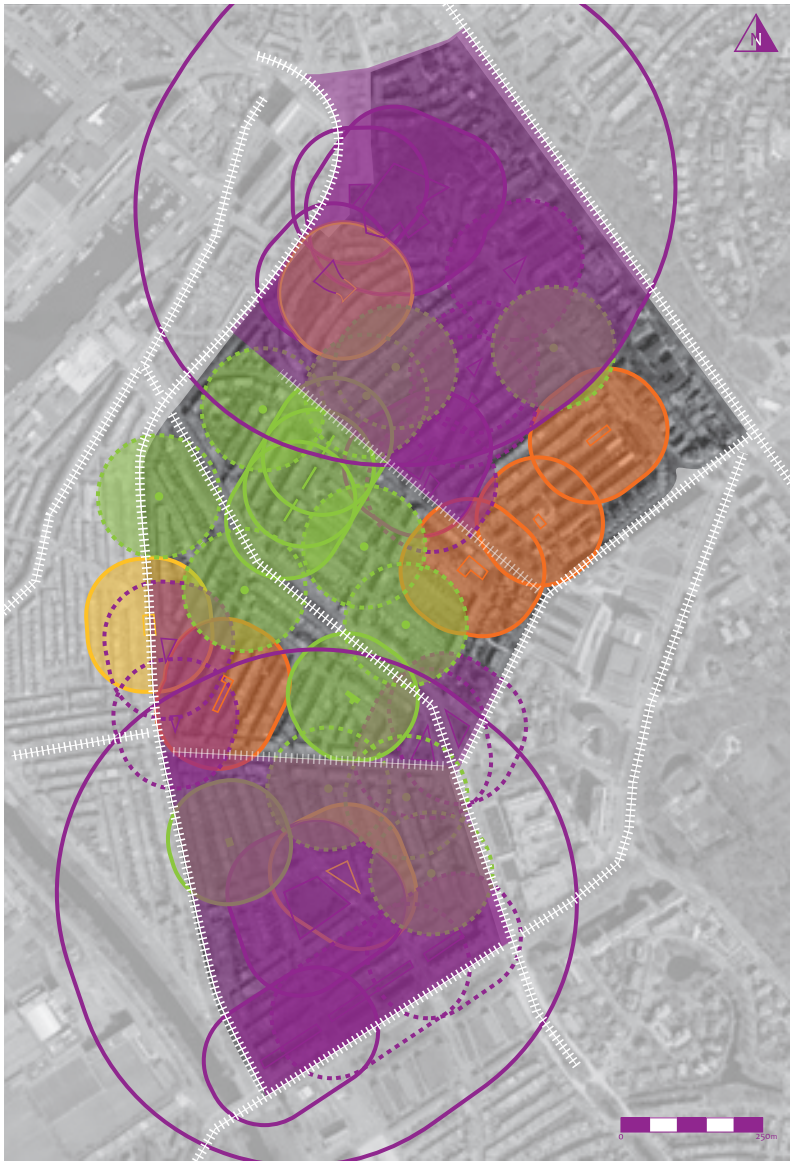


Figure 5.84: Reducing busy traffic roads: Making the Frederik Hendriklaan into a 30km/h road, possible option for Prins Mauritslaan and Willem de Zwijgerlaan as well

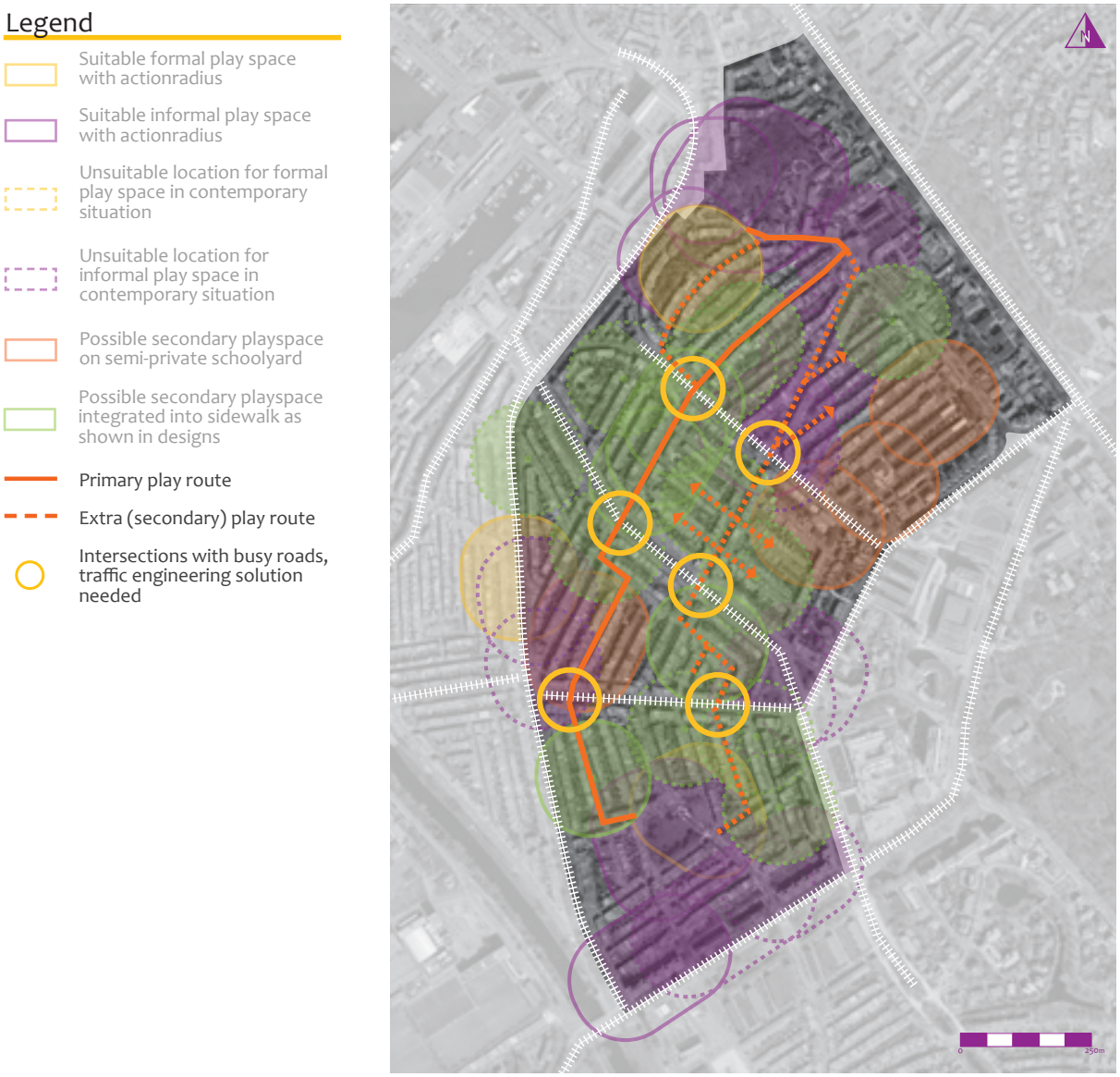


Figure 5.85: Placing the designs that have been made in the previous subchapters

5.4.2 Child routes for different ages

The network in between the primary play spaces, in the case of the Statenkwartier only two play spaces, is important for a child's individual action radius. By making safe routes from one play space to another, the accessibility of the different play spaces will increase. However in the Statenkwartier the routes towards the different play spaces are hard to make because of the lack of possibly suitable routes that are wanted in the NOP model, as is shown in chapter 4.4.3 in figures 4.54 and 4.55.

Figure 5.85 shows the possible child routes that can connect the different primary play spaces and some secondary play spaces with each other. The route is to a large extent placed along the Frankenslag which has been designed for. Because of the barrier with the road by parked cars, the easier to cross intersections with the side streets because of widened corners of sidewalks and the secondary play spaces that are offered on the sidewalk along this road, this road is seen as suitable for a child-friendly play route. Furthermore the route deliberately is not placed along one of the main continuous roads throughout the neighbourhood and only crosses these roads on some points. This has been done to reduce the disturbance from these roads as much as possible. However, the intersections with the different roads that need to be crossed to get to the other side of the neighbourhood and reach the primary play spaces, will need some traffic engineering solution. Roundabouts or traffic lights for example make it safer for children to cross the road because these make it easier to oversee than the current complicated intersections.

Because the Statenkwartier is so segregated by the different continuous roads, it might be important to distinguish between different age groups. Children of the age of six for example will not be allowed to travel throughout the whole neighbourhood, because of the busy roads they need to cross and the absence of people watching their child; social control. Most of the children observed in the neighbourhood were with an adult, indicating

that these parents do not let their children out alone without supervision. It might therefore be more important to focus on different age groups and the extent to which they are allowed to go outside. This means that the primary play space connection by a route is still important, but does not focus on children from the age of six, as is primarily intended in the NOP model. It could be that in dense city neighbourhoods the age of children before they are allowed to go outside freely is about 10. However, to know this for certain, another separate research should be done to examine this.

For younger children it would be wise to focus on the direct space close to their homes. This means that for instance for children younger than the age of six, the street in which they live will have to function as their playground. This means that they are still under direct supervision from a parent, but are allowed to investigate things as long as they stay in their own street. Secondary sidewalk play spaces as designed for in the previous subchapters are an example of how this can be facilitated. The main reason for introducing meeting places for parents in the street is also meant to give children the opportunity to explore the public outdoor environment instead of only a small backyard, or even worse, the indoor environment. The meeting points give parents the opportunity to meet each other and therewith enlarge their social network so that they know each other's children and can also keep an eye on them. Giving the children the opportunity to explore a little more of the outside public world: meeting strangers, being able to explore, learn to cycle, etcetera. These inner street communities and meeting places are the first step in the exploration level of children. The second step for the children will be to explore 'the block'. As shown in figure 3.9 in chapter 3, the Statenkwartier mainly consists of closed building blocks of terraced townhouses which can be explored by children because parents still know their child is close to home. The principle for being able to explore the street as first step and the block as second step is shown in figure 5.86. However, exploration will not be possible on every block. For example, when one side of a block is close to a busy road, children will probably not be allowed to go to that side of the block. They might maybe be able to explore the next block of houses which are not situated along a main road through the neighbourhood. The connection between the different blocks, without having to cross a busy road can be seen as step three in a child's exploration movement pattern: enlarging the action radius without coming in dangerous situations. The 'connected building blocks' principle is shown in figure 5.86. The next step, in which the complete neighbourhood can be explored, involves connecting the different connected block groups with each other. When this step of independent mobility is achieved, the primary play route as described in the NOP model and shown in figure 5.85 will be

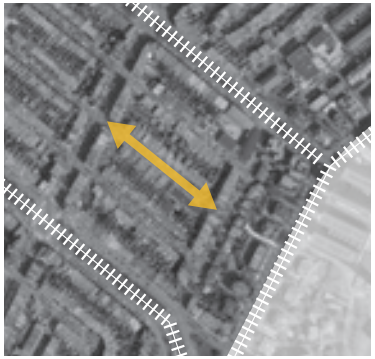
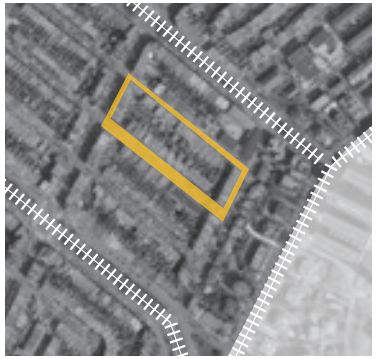
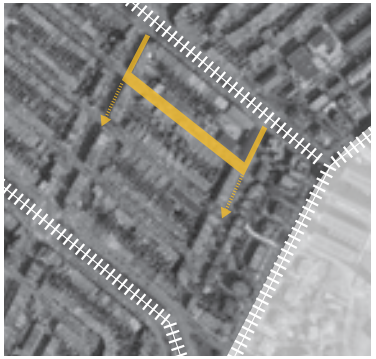


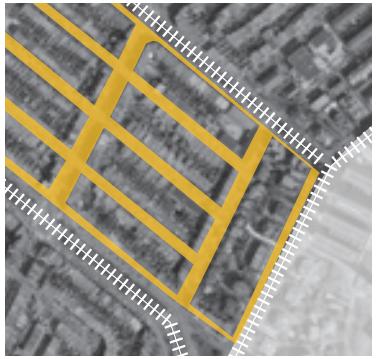
Figure 5.86: Step 1 - exlploring the street



Step 2 - exlploring the block



Step 2 - barrier on one side of the block



Step 3 - exploring the connected blocks

Figure 5.87: Network as originally intended to be in the NOP model (Bakker and Fähnrich 2008)

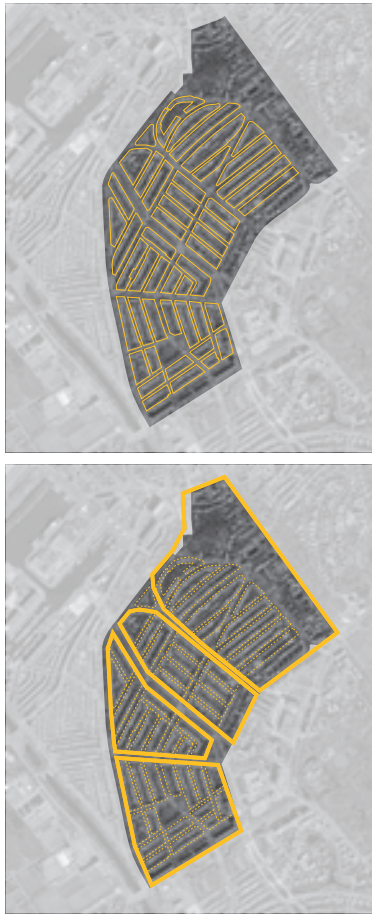


Figure 5.88: separate building blocks and connected blocks

of use. But, having seen many children with their parents in the Statenkwartier during the observations, my idea is that this will not happen until the children reach an age of about eight till ten. However, as said before, this will have to be researched to be able to give clear conclusions on this.

Because the independent mobility of children within a dense neighbourhood is not very high, the play spaces closer to home might even become more important for outdoor free play. The outdoor play that can be done on the two primary play spaces within the Statenkwartier is important for the different types of play children can use, but because these play spaces will be unreachable for children from a large part of the neighbourhood, the importance of these primary play spaces for free play will be limited. Therefore the play spaces within the 'safe' environment of connected building blocks, described as step three in the previous paragraph, or within the street or block itself, described as steps one and two, are more important for free play opportunities in dense urban neighbourhoods. When designing for these different play spaces, which can only be implemented on sidewalks or on possible schoolyards, it is important to watch for the different play qualities to make sure children are able to do every type of play in their near environment. Therefore the sum of the different secondary play spaces within a 'connected building blocks' part of the neighbourhood should include all qualities of play. This can be done by combining different play qualities on a few play spaces, or by creating many individual play spaces. The most important thing is that these play spaces are accessible.
Preferably there is a primary play space inside every 'connected blocks' environment. However, as can be seen in the case of the Statenkwartier already, this is not always possible. Therefore the secondary play spaces inside these 'connected blocks' are getting an even more important role. Because the 'connected blocks' environment is not crossed by barriers, I have not designed for a network route within these small environments. By not making an assigned route for children, they are stimulated to explore freely by themselves, without being steered into a direction. Children will find their own routes inside the relatively safe close home environment.
The primary play route will still be important for steering children into the right direction, also in free exploration, because this primary play routes requires the children to cross busy roads for example. Also the primary play route will have to connect all different 'connected blocks' with each other.

5.4.3 Design principles for NOP adjustment

In the previous two subchapters, 5.4.1 and 5.4.2, several design principles have come forward which have changed in comparison to the original NOP model or are an addition to the model. These principles will form the basis for answering the question if the NOP model is a usable tool for designing in dense, prosperous neighbourhoods and how the model can be adjusted so that it does become an applicable tool. This chapter will give an enumeration on the different principles that have come forward in this chapter and places these principles in the different spatial criteria as described in the NOP model, as is shown in figure 5.89.

To start with, the quantity of play criteria in a dense prosperous neighbourhood are met by transforming former green areas that are meant as areas to watch on, to areas in which children are allowed to play. This however requires a shift in thinking by the neighbourhood dwellers. Furthermore, schoolyards are used to create extra formal playing space and sidewalks are enlarged to create extra informal secondary play spaces. When wanting to use sidewalks for play, it is important that these are large enough and they therefore often need to be enlarged which requires the removal of a few parking lots. To create extra 'child-space', concessions have to be made. Besides this, the Statenkwartier has shown to be a segregated neighbourhood for children in terms of busy road barriers. Therefore not all children will be allowed to go outdoor and explore the entire neighbourhood. An actionradius of 400 metres that is mentioned by Bakker and Fähnrich (2008)

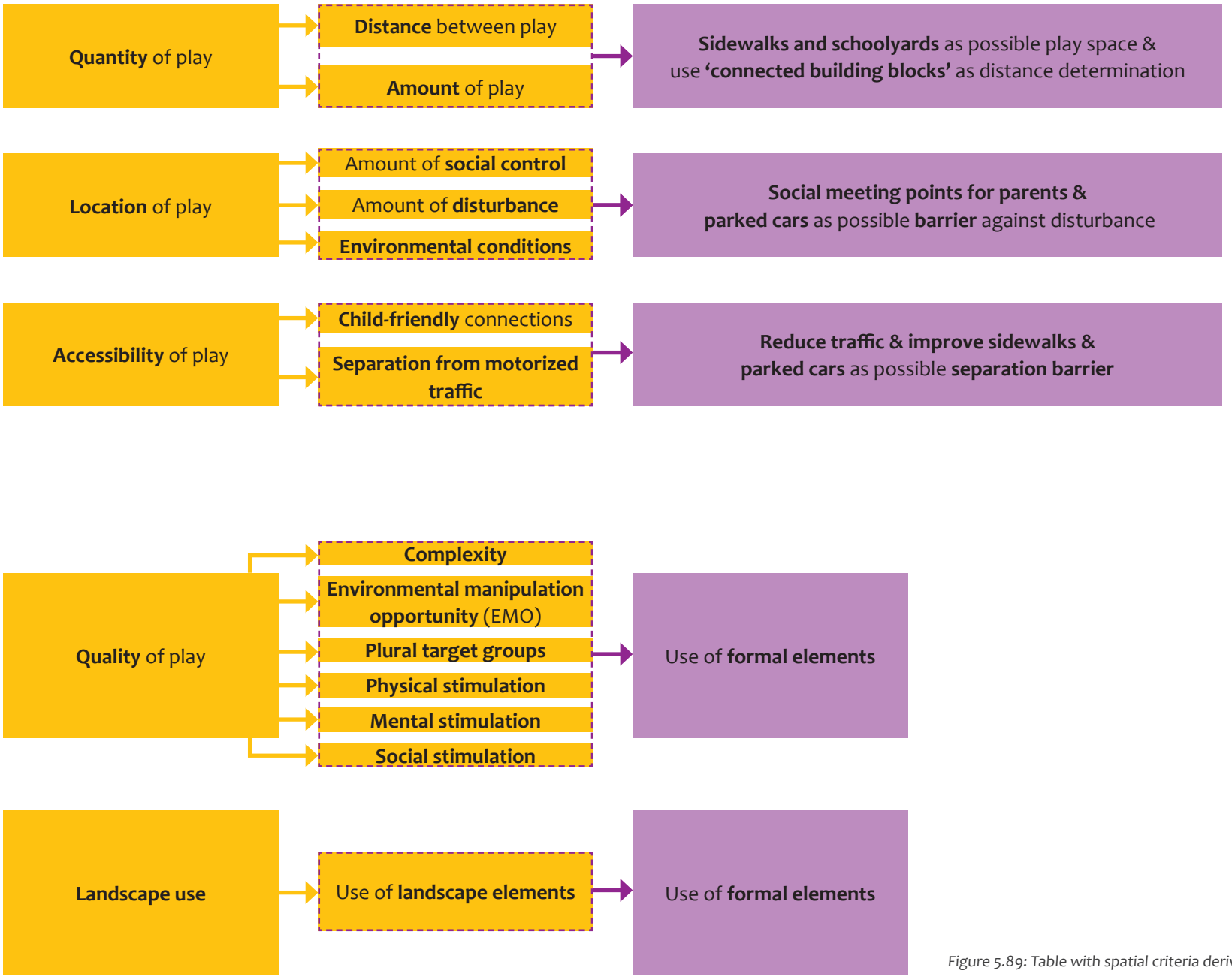


Figure 5.89: Table with spatial criteria derived from NOP model with own adjustments

for children above the age of six, might not be representative for children in dense urban neighbourhoods. Therefore the different action radii that are prescribed should be looked at critically and should be complemented by extra play spaces inside a 'connected blocks' environment to create an environment in which children are able to play every single quality of play without having to cross a barrier. The principle of creating different play spaces throughout the neighbourhood to stimulate children to explore other play spaces as explained in the NOP model still exists, but in dense city neighbourhoods with big barriers, the individual 'connected blocks' environments also need to include all these principles. Children will only be able to explore the rest of the neighbourhood when they get older.

The location of different play spaces is preferable on a place in which there is no motorized traffic, having no disturbance from cars and no unsafe situations. However, in a neighbourhood in which cars are everywhere this principle becomes hard to fulfil. Therefore for example parked cars along sidewalks are seen as separation between motorized traffic for both the accessibility of a play space and the amount of disturbance on the location of the play space. Furthermore the play spaces in a neighbourhood like the Statenkwartier might possibly need social meeting points and seating opportunities for parents more than other neighbourhoods because the children's free play possibilities are smaller than in more spacious neighbourhoods. By creating a social network of parents, children can become more free in their outdoor play behaviour, they might get a bigger action radius because more people can watch for each other's children. Seating possibilities at primary play spaces are needed because the neighbourhood analysis and the observations showed that children are mostly accompanied by their parents when going to a bigger play space. The barriers in the neighbourhood result in a low amount of children going to a play space on their own and therefore seating opportunities for parents might result in a larger amount of children being able to go to a play space.

The added principles for the accessibility of play criteria of the NOP model are partly already mentioned because they are related to the quantity and location of play. Using parked cars as a barrier might increase the separation from motorized traffic and by improving the sidewalks, enlarging these on the corners, the intersections with the side streets will become easier to cross for children, which can increase children's independent mobility. Furthermore a very effective way of improving children's independent mobility is by reducing the main barriers. An example of this has been done with the Frederik Hendriklaan, by making this road from a 50 km/h road to a 30 km/h road. This does not only make it safer for children to walk along or cross the road, but might also make sure that car drivers take other routes along the neighbourhood instead of straight through the neighbourhood, reducing disturbance.

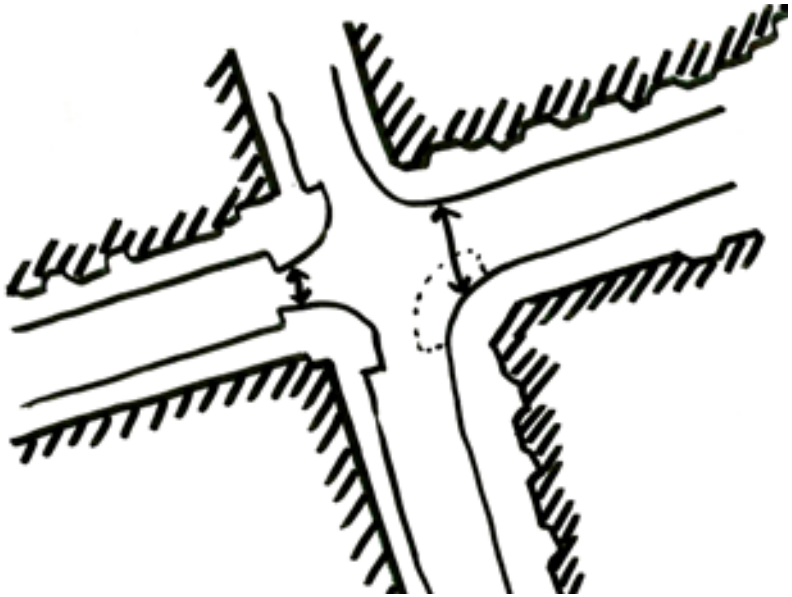


Figure 5.90: principle of enlarging the corners of the sidewalks to reduce parked cars on the sidewalk and improve the crossability of the road for children

The designs that are made for the Statenkwartier show that the implementation of the qualities of play and the landscape use are comparable to the implementation in the NOP model, although the elements used in the Statenkwartier are more formal in comparison to the elements used in the neighbourhoods in the NOP model. For example, letting children play with water can be achieved by creating a pond or a small lake as is shown in the NOP model, but the same outcome can also be achieved by letting children play with a water fountain. Furthermore, children in prosperous neighbourhoods might need a little more stimulation for example to get into the bushes. Also the awareness that children are allowed to do so needs to become clear, therefore placing playing elements in between bushes might make parent perceive these environements as play spaces as well. A natural play space does not always have to be designed for; a lot is already present, but is not being used often.

All in all, the main principles as described in the NOP model are still usable for designing in dense prosperous urban environments. The five spatial starting criteria will stay important for free play and therefore these five criteria should all be taken into account when designing for a playable neighbourhood, no matter which urban setup a neighbourhood has. There is however a difference in implementing the different aspects of the Network of Play inside a dense versus a spacious neighbourhood. For example the play spaces are to be implemented at different places with a different environmental layout and the routes in a dense neighbourhood network are different from the routes in a neighbourhood with more open space. The designs that have been shown in this chapter give possible options for dealing with little public open space and still wanting to design for a playable environment for children. It is therefore an addition to the already present ideas and designs in the NOP model, not a substitution of these designs and ideas. Furthermore, when designing for the best possible child-friendly option on a particular place, the different spatial criteria can give a decisive answer. Different design options can be tested by the five criteria and their sub criteria. The outcomes of these tests will be different for every location, but are applicable to every location because these criteria are still quite generic and can be interpreted in different ways. This different interpretation is needed when wanting to design for a more dense, prosperous neighbourhood.

6. CONCLUSION & DISCUSSION

6.1 CONCLUSION

The goal of this master thesis was to find out to which extent children are able to play in dense prosperous urban neighbourhoods, to be able to design for possible improvements for the playability of the public outdoor living environment. Therefore the main research question: "What is the validity of the NOP model for a dense prosperous neighbourhood, with as example the Statenkwartier in The Hague?" will be answered in this chapter.

Figure 6.1: Statenkwartier The Hague

Because there are many other cities that have comparable neighbourhoods in terms of spatial layout and building density, the outcome of the research and design in this report are also applicable to neighbourhoods besides the Statenkwartier. Examples of other neighbourhoods are the Museumkwartier in Amsterdam, the Middelland in Rotterdam and the Schildersbuurt in Groningen, as can be seen in figures 6.2, 6.3 and 6.4. These neighbourhoods also house relatively wealthier or higher educated people, are dense in built-up and have some main continuous roads crossing the neighbourhood, creating barriers for children to cross.

Playability of the neighbourhood

The Statenkwartier is not child-friendly or playable in the current situation: There are far too little play spaces for children. Especially children in the age of 6 to 12 do not have many play opportunities. Furthermore, the public open spaces that might function as possible play space are not suitable mostly due to disturbance and the main roads through the neighbourhood create barriers for

Figure 6.2: (part of) Museumkwartier Amsterdam

children and make the play spaces inaccessible. There are also too little different possible qualities of play, especially environmental manipulation opportunity, mental stimulation and natural play cannot be played inside the neighbourhood.

How children use and judge their play opportunities

The few play spaces that are situated in the Statenkwartier, are used by children a lot; they were often very crowded. However some of the play spaces that were analysed as suitable possible play spaces were not used a lot. This might be because of the lack of social control on the play spaces, and the unfamiliarity or unknown of the inhabitants to playing freely in nature. Children using nature, a not officially assigned play space, to play with may not be accepted by the middle class inhabitants of this neighbourhood. The observed children often played physical activities and were socially active, but there were not many children playing with nature, having mental stimulation or manipulating the environment. This supports the outcome of the analysis that these different play opportunities are not given and therefore children are not able to play these types of play.

Most of the children think they have too little play spaces in the neighbourhood and they would also like to have more different kind of play possibilities: Environmental manipulation opportunity, mental stimulation and nature play were often mentioned aspects in their wishes for more stimulating play environments. Furthermore they indicated that the accessibility to and the location of the play spaces is not a problem to them. However, they also said that they had to be accompanied by a parent often, which indicates that the barriers of busy roads might be a problem for the accessibility or location of play.

Because the outcomes of the three different ways of researching were globally the same, the NOP model is seen as a usable tool for examining neighbourhoods for their playability. The tool makes clear which parts of the neighbourhood need more attention, what the influence of possible barriers are for the playability of a

Figure 6.3: (part of) Middelland Rotterdam

Figure 6.4: (part of) Schildersbuurt Groningen

neighbourhood and which types of play are possible and which play opportunities need to be added to the possible play spaces. These outcomes can be seen as the starting points for designing for a more playable neighbourhood.

Making a dense prosperous neighbourhood playable

The five main spatial criteria and the sub criteria from the NOP model are usable to test a design on its playability. However the examples given in the original NOP model are not implementable in the Statenkwartier or any other dense prosperous neighbourhood, mostly because there is much less space for a possible play space or because the appearance of the play space does not match the formal look of the neighbourhood.

The reason for the designs not to be implementable is partly due to the fact that a design in itself already gives a clear indication of how something should look like, what exact space would be needed and what the several individual objects are. A design is therefore mostly place-bound and not implementable on other places, that is the reason why in chapter 5 is suggested that the designs made in the original NOP model should be seen as part of a catalogue, just like the designs that are given in this master thesis.

The five criteria that have been set up in the NOP model are the most important criteria belonging to free play, no matter in which environment. These main principles are also found in other literature (Broberg et al. 2013, Koning and Poort 2013, Koning 2012, Kytta 2006). But because these spatial criteria are not place-bound yet and do not give specific guidelines on how to implement something, these are multi-interpretable and therefore partly usable for designing in dense prosperous neighbourhoods as well. However a change to the interpretation of some of the criteria needed to be made, which resulted in some main principles for designing in dense prosperous neighbourhoods, as can be seen in figure 6.5.

The main principles for adding additional play spaces to the quantity of play spaces is by using the schoolyards and the sidewalks as possible play space. Furthermore, when having big barriers inside a neighbourhood, every 'connected building blocks' environment should have their own play spaces, offering children all types of play. The location of play spaces as well as the accessibility of play spaces can be improved by reducing traffic on busy roads and use parked cars as possible barrier for separation from motorized traffic or barrier for disturbance. Besides these traffic measures, creating social meeting points for parents in the street might also create a more suitable location for play. The existing sidewalks will have to be used by children to get from one play space to another and therefore these should be designed in a way that the side roads are easy to oversee and easier to cross. The different qualities of play and the landscape use in play stay comparable to the original NOP model ideas, however the use of more formal elements, for example a water fountain instead of a pond, is recommendable.

These above mentioned adjustments to the original NOP model indicate that the first three spatial criteria: quantity, location and accessibility of play, need to be adjusted most to fit the context of the dense prosperous neighbourhood. These three criteria are contribute to the most important developmental opportunities of free play. Because children, if they are allowed to go outside, cannot always reach a primary play space, the near home environment with several secondary play spaces will be even more important for free play and developmental opportunities of for example meeting other children and learning to estimate distances. However, when wanting a full developmental experience, children should be able to reach a primary play space, if not without, then with their parents to really give them the play experience they need.

Validity of the NOP model

All in all, the adjusted NOP model, a combination of the original NOP model and some adjusted interpretations of the spatial criteria, is a valid tool for researching and designing in dense prosperous neighbourhoods. The Statenkwartier in The Hague can be seen as an example for other dense prosperous neighbourhoods in

becoming more playable. The different criteria as described in the NOP model can function as a testing tool for different designs, which is in my opinion how a design for a play space should be made: by using the different ideal principles from the NOP model, but using these for testing different designs and accepting that in some neighbourhoods it cannot become the perfect way of implementation as is wished for in the NOP model.

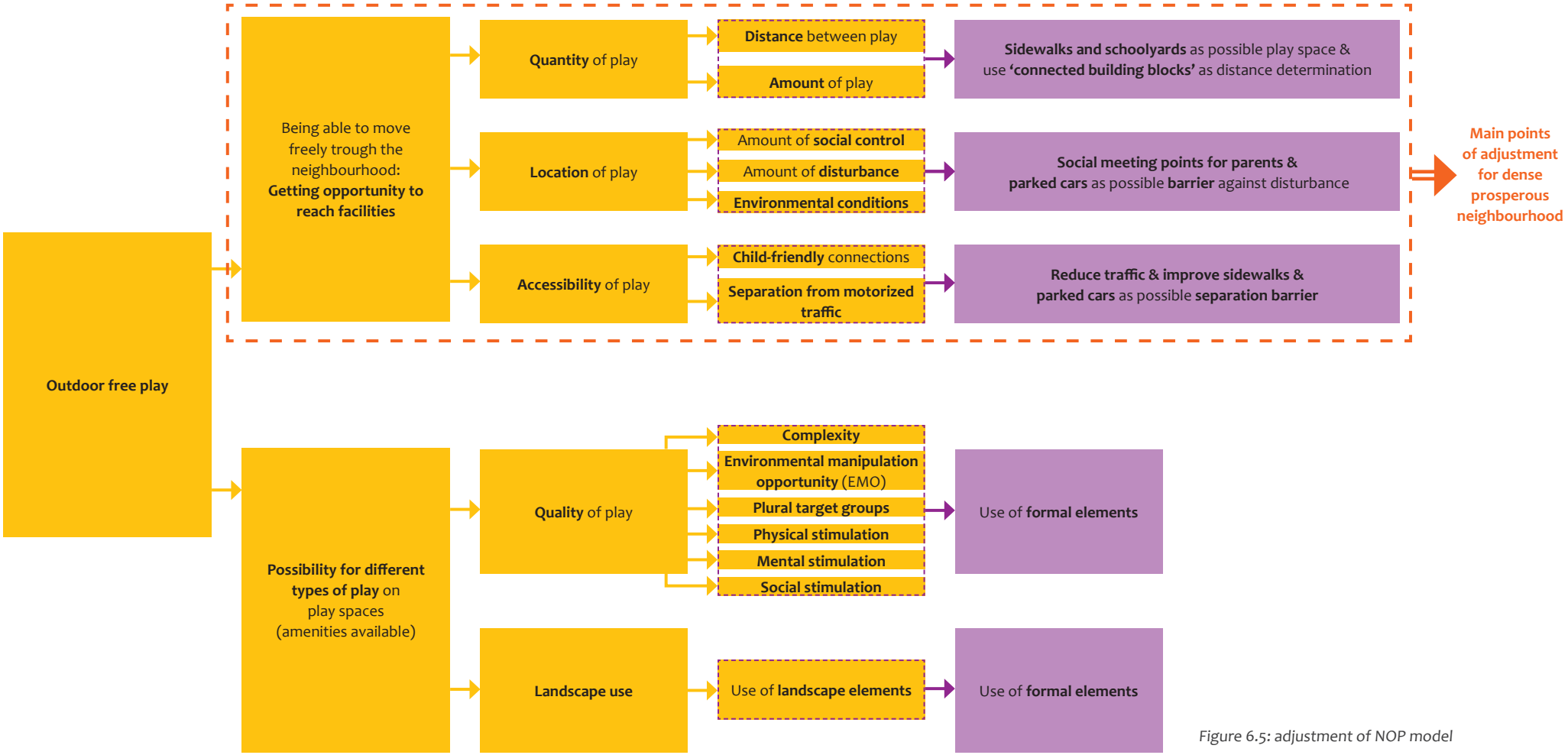


Figure 6.5: adjustment of NOP model

6.2 DISCUSSION

6.2.1 Validity of the research and possible limitations

By using three different methods for research and triangulating these with each other, the outcomes of the research can be validated. Most of the outcomes of the different research questions were generally the same, although some differed. The differences that came forward were mostly due to the fact that most of the questions in the interviews conducted were not generalisable to the complete neighbourhood and can be of use for the public space in which these interviews were held. Because I have found the interviewees on spaces that were actually used for playing, the non-popular or unsuitable play spaces could not be researched by using the interviews with children, because they are not familiar with all different play spaces inside the neighbourhood. Furthermore interviewing with children is always hard because they have just a limited concentration and are sometimes not aware of the dangers of for example traffic.

Also the interviews and the observations can change due to weather circumstances, therefore I have chosen to research during relatively good weather. This resulted in a high amount of children that could be observed outdoors which was beneficial to the research on different play opportunities, but this could also have had some implications on the wishes of children expressed in the interviews. For example one of the outcomes of the interviews revealed that many children wanted some sort of water play possibility. And although water always is a huge attraction for children, warm weather might make this wish come forward even more. This for instance came forward in the answers to the questions about having enough social control or having trouble with cars or other traffic. Children answered that they did not have any trouble with cars and that there were always people around watching them. However, this has only been measured on the play spaces that were quite busy and therefore do not say anything about the social control on other play spaces and because these questions were answered by the children themselves, not perceiving risk from traffic, this does not say anything about their independent mobility because this is also highly dependent on the perceived risk by parents (Aziz and Said 2012, Veitch et al. 2006). Furthermore questions about the accessibility of a play space for example could only be asked to children that were to be found on a play space, therefore they had the opportunity to go to this place, with or without a parent, and they would possibly rank their accessibility higher than the children that could not be interviewed because they were not present on the play space.

Furthermore because the spatial criteria of the NOP model are multi interpretable, the neighbourhood analysis can be interpreted in different ways as well. Because of this multi interpretability, it makes sure that the model is valid to some extent in other neighbourhoods as well as the ones on which it has been tested as is concluded in the previous chapter. However, it is a matter of interpretation how to rank the different sub criteria in the neighbourhood analysis to see if a criteria is met or not. In chapter 4 I have tried to make clear which choices I have made for the neighbourhood analysis, when to rank something as good or bad. Because this interpretation is the same for the whole neighbourhood and because it has been weighed against the original NOP model it is still possible to value the different public open spaces and the neighbourhood as a whole on their playability and maybe compare it to other neighbourhoods. The fact that for example parked cars next to a sidewalk can be seen as something positive for the separation between motorized traffic and the disturbance, did not come forward in the original NOP model, which means that this addition to the NOP model is a change in the interpretation of the spatial criteria.

6.2.2 Recommendations for further research

The possible limitations on this research already indicated that interviewing with children can be hard. They can be hard to reach and they cannot be concentrated for very long. Also different literature indicates that parents restriction is a large part of children's independent mobility, therefore interviewing parents might complement to this research, giving a clearer outline on

what children in dense prosperous neighbourhoods are allowed to. Also the fact that the main adjustments to the NOP model were in the criteria that have to do with independent mobility, especially in different target groups, call for extra research on this subject. However, because this can be an entirely new master thesis research, this could not be done in my thesis. Furthermore, because the NOP model already includes some of the possible fears of parents in their spatial criteria, for instance traffic danger and social control, in this research I have chosen not to research independent mobility of children more in depth.

Furthermore, it would be good to extent the catalogue I have been mentioning in the design phase and the conclusion for other neighbourhood typologies as well. This would require a new research to the validity of the NOP model in other types of neighbourhoods, but when finished would result in an even more complete catalogue on which play solutions can be found in different neighbourhoods.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APPENDICES

A - OBSERVATION LIST AND QUESTIONNAIRE

A.1 Observation list

Counting list – Location: (playground - park/green space - street/sidewalk - other:...)

1. Weather conditions:
2. Day & time:
3. How many children total:
   How many parents total:

(Multiple target groups) Gender:

Boy	Girl

Age estimation:

< 6 years old	6-12 years old	> 12 years old

(indirect accessibility) With/without parents:

With parents	Without parents	Unknown

(Qualities of play)

(EMO) (intelligence)	Manipulating the environment	(in between)	Not-manipulating the environment
Manipulate with: (note down elements)			

Physically active	(in between)	Non-active

(Mental stimulation) (Creativity & imagination)	Exploring (finding other elements to play with)	(in between)	Not-exploring (e.g. only using playground equipment)
Such as: (note down elements)			

Social	(in between)	Individual

(Landscape use) Natural play:

	Using natural elements	(in between)	Non-natural elements
Such as: (note down elements)			

Other things that stand out: ...

A.2 Questionnaire English

Interviews -Afternoon in holiday - Location: (ENG)

1. Weather conditions:
2. Day & time:

Questions

1a. Boy / Girl **O** boy **O** girl
1b. How old are you? .....

2a. With / Without parent **O** with **O** without
2b. With brother or sister or friend / without **O** with **O** without

3. *(Play behaviour)* Where do you play more often? **O** indoors **O** outdoors **O** both equal

4a. How often do you play outside?
O 6>days a week **O** 4-5 days a week **O** 2-3 days a week **O** 1 or less days
4b. How long do you play outside on average?
O 30 minutes or less **O** 30 minutes – 1,5 hour **O** 1,5 – 2,5 hours **O** > 2,5 hours

5. When you play outside, where do you go? (More answers possible)
[]playground []park/green space []street/sidewalk [] private garden
[]beach []other: …

6. How far is a place to play from your home?
O same street **O** 1 street away **O** 2 streets away **O** 3 streets away **O** 4> streets further

7. *(Quantity)* Do you think there are enough possibilities to play in this neighbourhood?
O yes **O** no opinion **O** no

8. *(Accessibility)* How far are you allowed to go outside without your parents?
O not allowed outside **O** home street only **O** 1-2 street away **O** 3-4 streets away
O 5> streets away **O** As far as I want **O** till a busy road: …
O till a traffic intersection : … **O** other: …
(Draw on map when possible)

9a. *(Location)* Are there enough people around that are watching you if anything goes wrong?
O yes **O** sometimes (not) **O** no
9b. Are you having trouble with cars or other traffic at this place to play?
O yes **O** sometimes (not) **O** no

10. Do you like the following things when you are playing? :
a. *(EMO)* Changing the environment, moving stuff around, building sandcastles, piles of rocks:
O fun! **O** sometimes **O** boring
b. *(Physical activity)* Move a lot: climbing, running, playing football, playing tag:
O fun! **O** sometimes **O** boring
c. *(Creativity and imagination)* Wandering and exploring a place, searching branches and making huts and paths: **O** fun! **O** sometimes **O** boring
d. *(Social play)* Playing with other children, talking with other children:
O fun! **O** sometimes **O** boring
e. *(Plural target groups)* Play with many different children, for example of other ages and other nationalities: **O** fun! **O** sometimes **O** boring

11. Do you like playing with and in nature? (So dragging branches, building huts, crawling among the bushes, digging sand, climbing in trees and running across the grass and playing with water):
O fun! **O** sometimes **O** boring

12. Which of the above ways of play are you already able to do at a (play)space nearby?
a. *(EMO)* Changing the environment, moving stuff around:
O Yes I can **O** sometimes **O** No I cannot play that
b. *(Physical activity)* Move a lot: climbing, running, playing football, playing tag:
O Yes I can **O** sometimes **O** No I cannot play that
c. *(Creativity and imagination)* Wandering and exploring a place, searching branches and making huts and paths: **O** Yes I can **O** sometimes **O** No I cannot play that
d. *(Social play)* Sitting or standing watching other children play, talking with other children:
O Yes I can **O** sometimes **O** No I cannot play that
e. *(Plural target groups)* Play with many different children, for example of other ages and other nationalities **O** Yes I can **O** sometimes **O** No I cannot play that
f. *(Landscape use)* Playing in nature with branches, huts, bushes, sand, water, trees and grass:
O Yes I can **O** sometimes **O** No I cannot play that

13a. *(Accessibility)* What is your way of transport to/from school?
O on foot **O** by bike **O** by car
13b. Are you accompanied then by a parent or brother/sister/friend?
O yes, parent **O** yes, brother/sister/friend **O** no, nobody

14. *(Network)* Could you draw your route to school and to the place you play often?
(Which streets do you often take, are there any obstacles? → Draw on map)

15. What would make you want to play outside more, what would you want in your neighbourhood? (Categorise this later into the 5 quality criteria by Bakker&Fähnrich)
(Think of what would be the perfect place to play for you)
…

A.3 Questionnaire (Dutch)

Interviews - Middag in vakantie - locatie: (NL)

1. Weersomstandigheden:
2. Dag en tijd:

Vragen

1a. Jongen/meisje **O** jongen **O** meisje
1b. Hoe oud ben je? .....

2a. Met / zonder ouder(s) **O** met **O** zonder
2b. Met / zonder broer(s) of zus(sen) **O** met **O** zonder

3. Waar speel je het vaakst? **O** binnenshuis **O** buitenshuis **O** allebei evenveel

4a. Hoe vaak speel je buiten? (per week)
O 6 of meer dagen per week **O** 4-5 dagen **O** 2-3 dagen **O** 1 dag of minder
4b. Hoe lang speel je gemiddeld buiten?
O 30 minuten of minder **O** 30 minuten – 1,5 uur **O** 1,5 – 2,5 uur **O** > 2,5 uur

5. Als je buiten speelt, waar ga je dan heen/waar speel je dan? (Meerdere antwoorden mogelijk)
[]speeltuin []park/groene ruimte []straat/stoep [] privé (achter)tuin
[]strand []anders: …

6. Hoe ver van jou huis is er een plek om te spelen?
O in dezelfde straat **O** 1 straat verderop **O** 2 straten verderop
O 3 straten verderop **O** 4 of meer straten verderop

7. Vind jij dat er genoeg plekken zijn voor jou om te spelen hier in de buurt?
O ja **O** weet ik niet **O** nee

8a. Hoe ver mag je van je ouders alleen buiten komen?
O ik mag helemaal niet **O** alleen mijn eigen straat **O** 1-2 straten verder
O 3-4 straten verder **O** 5 of meer straten verder **O** Zo ver als ik zelf wil
O tot een drukke weg: … **O** tot een kruispunt : … **O** anders: …
(tekenen op de kaart als dat kan)

9a. Zijn er genoeg mensen die je in de gaten houden?
O ja **O** soms (niet) **O** nee
9b. Heb je last van auto's of ander verkeer als je hier buiten speelt?
O ja **O** soms (niet) **O** nee

10. Vind je de volgende dingen wel of niet leuk als je aan het spelen bent? :
a. De omgeving veranderen, spullen slepen, zandkastelen maken en stenen stapelen:
O leuk! **O** soms (niet) **O** saai
b. Veel bewegen: klimmen en klauteren, rennen, voetballen, tikkertje:
O leuk! **O** soms (niet) **O** saai
c. Op een plek struinen, sporen zoeken, takken zoeken, paden en hutten maken, verstoppertje spelen:
O leuk! **O** soms (niet) **O** saai
d. Spelen met andere kinderen, praten met andere kinderen:
O leuk! **O** soms (niet) **O** saai
e. Spelen met heel veel verschillende kinderen van andere leeftijden en andere landen:
O leuk! **O** soms (niet) **O** saai

11. Vind jij het leuk om met en in de natuur te spelen? (Dus: met takken slepen, hutten bouwen, tussen de bosjes kruipen, zand graven, in bomen klimmen en over het gras rennen en met water spelen)
O leuk! **O** soms (niet) **O** saai

12. Welke van deze manieren van spelen kan jij al op een speelplek dichtbij?
a. De omgeving veranderen, spullen slepen en op andere plekken neerleggen::
O Ja dat kan **O** soms (niet) **O** Nee kan ik niet spelen
b. Veel bewegen: klimmen en klauteren, rennen, voetballen, tikkertje:
O Ja dat kan **O** soms (niet) **O** Nee kan ik niet spelen
c. Op een plek struinen, sporen zoeken, takken zoeken, paden en hutten maken, verstoppertje spelen:
O Ja dat kan **O** soms (niet) **O** Nee kan ik niet spelen
d. Spelen met andere kinderen, praten met andere kinderen:
O Ja dat kan **O** soms (niet) **O** Nee kan ik niet spelen
e. Spelen met heel veel verschillende kinderen van andere leeftijden en andere landen:
O Ja dat kan **O** soms (niet) **O** Nee kan ik niet spelen
f. In de natuur spelen met takken, hutten, bosjes, zand, water, bomen en gras:
O Ja dat kan **O** soms (niet) **O** Nee kan ik niet spelen

13a. Hoe ga je normaal gesproken meestal naar school? **O** te voet **O** per fiets **O** met een auto
13b. Ga je samen met een ouder of met een broer/zus/vriend(in) naar school?
O Ja, ouder(s) **O** Ja, broer/zus/vriend(in) **O** Nee, ik ga alleen

14. Kan je jouw route naar school en de plek waar je vaak speelt intekenen?
(Welke straten neem je vaak, zijn er obstakels/problemen onderweg? → teken op de kaart)

15. Wat zou er voor zorgen dat jij meer buiten zou willens spelen, wat zou je willen in jouw buurt?
(Denk aan wat voor jou de perfecte plaats zou zijn om te spelen)
(later categoriseren binnen de 5 kwaliteitscriteria van Bakker en Fähnrich)
…

A.4 Parents' permission letter

25 augustus 2014

Geachte heer/mevrouw,

Ik ben een student Landschapsarchitectuur aan de Universiteit van Wageningen en werk momenteel aan mijn afstudeerscriptie voor deze studie. Als onderwerp hiervoor heb ik gekozen om relatief dichtbebouwde stadswijken, met als case het Statenkwartier in Den Haag, te onderzoeken naar mogelijkheden van vrij spelen voor kinderen. Het uiteindelijke doel van het onderzoek is om een ontwerp te maken waarin de speelbaarheid van het Statenkwartier wordt verbeterd.

In het kader van mijn afstudeeronderzoek heb ik uw kind een aantal vragen gesteld over hoe vaak hij/zij buiten speelt, waar hij/zij vaak speelt, wat hij/zij leuk vindt om te doen tijdens het buiten spelen, hoe ver hij/zij zonder en/of met ouders alleen over straat mag en wat hij/zij mist in het Statenkwartier aan speelmogelijkheden of veilige routes naar speelplekken. Hierbij heb ik hem/haar ook gevraagd wat de routes zijn die hij/zij vaak neemt naar school en naar speelplekken, om te kijken waar wellicht een verbetering in veiligheid van routes gewenst is.

Ik realiseer mijzelf dat ik u als ouder niet gevraagd heb om toestemming om uw kind vragen te stellen. Daarom wil ik u graag middels deze korte notitie op de hoogte brengen hiervan. Als u wenst dat de vragen die ik aan uw kind heb gesteld niet meegenomen worden in mijn onderzoek dan wil ik u vragen mij een mail te sturen naar sabine.vandenberg@wur.nl of te bellen op 06-57650686. U kunt mij ook een mail sturen voor meer informatie als u dat wenst.

De informatie die ik heb verkregen met de korte interviews worden alleen gebruikt door mijzelf om conclusies te trekken voor verbeteringen voor speelmogelijkheden in de wijk. Ik heb uw kind niet gevraagd om zijn/haar naam en heb ook niet gevraagd om andere persoonlijke informatie zoals een adres. Daarmee is uw kind anoniem gebleven. Ik heb wel de antwoorden van uw kind onder nummer …… geregistreerd, zodat ik, als u dat wenst, de gegevens kan verwijderen. Als dit het geval is, vermeldt u dan alstublieft dit nummer in uw mail.

De aanbevelingen en het ontwerp zal ik aan de gemeente Den Haag overhandigen wanneer mijn afstudeerscriptie voltooid is. Het is verder is aan de gemeente wat zij hiermee gaan doen en ik kan daarom geen garanties geven dat er daadwerkelijk fysieke ingrepen voor verbetering van de speelbaarheid in de wijk worden geïmplementeerd. Het hoofddoel van dit onderzoek is voor mijzelf om af te studeren en een bijkomstigheid hierbij is om de gemeente een handreiking te geven waarmee zij eventueel aan de slag zouden kunnen gaan om kinderen in het Statenkwartier een beter speelbare wijk te geven.

Ik hoop u hiermee voldoende te hebben geïnformeerd. Als u verder vragen heeft hoor ik het graag.

Met vriendelijke groet,
Sabine van den Berg

MSc student Landschapsarchitectuur
Wageningen Universiteit
sabine.vandenberg@wur.nl
06-57650686

B - TABLES OBSERVATIONS IN TOTAL

			Date:	27 August 2014							29 August 2014					
			Location:	North-1	North-2	North-6	North-7	Middle-2	South-2	South-3	North-1	North-2	North-3	North-6	North-7	Middle-2
Weather				Sunny - 21°C							Half cloudy - 20°C					
Time				16.15	16.15	16.30	16.30	17.15	16.45	17.05	17.00	17.00	17.00	16.30	16.30	17
Total amount of children				0	0	8	1	4	8	24	0	0	0	27	0	
Total amount of adults				0	0	0	1	1	3	14	0	0	0	9	0	
Multiple target groups	Gender:	boy		-	-	8	0	3	5	10	-	-	-	24	-	
		girl		-	-	0	1	1	3	14	-	-	-	3	-	
	Age estimation:	<6 yrs		-	-	0	0	1	5	16	-	-	-	5	-	
		6-12 yrs		-	-	8	1	3	1	6	-	-	-	22	-	
		>12 yrs		-	-	0	0	0	2	2	-	-	-	0	-	
Indirect accessibility	With/without parents:	with		-	-	0	1	1	6	16	-	-	-	9	-	
		without		-	-	8	0	3	2	4	-	-	-	18	-	
		(unknown)		-	-	-	-	-		4	-	-	-	0	-	
Qualities of play	Manipulating the environment (intelligence)			-	-	0	0	0	0	0	-	-	-	0	-	
	(such as:)			-	-	-	-	-	-	sand play	-	-	-	-	-	-
	(in between)			-	-	0	0	0	1	2	-	-	-	3	-	
	Not manipulating the environment			-	-	8	1	4	7	22	-	-	-	24	-	
	Physically active (with?)			-	-	8	1	3	3	15	-	-	-	22	-	
	(such as:)			-	-	football	stepping	formal pla	football	formal pla	-	-	-	football	-	-
	(in between)			-	-	0	0	1	1	5	-	-	-	5	-	
	Non-active			-	-	0	0	0	4	4	-	-	-	0	-	
	Exploring (creativity and imagination)			-	-	0	0	0	0	6	-	-	-	1	-	
	(such as:)			-	-	-	-	-	-	-	-	-	-	-	-	-
	(in between)			-	-	0	0	0	0	4	-	-	-	3	-	
	Not-exploring			-	-	8	1	4	8	14	-	-	-	23	-	
	Social			-	-	8	0	2	6	10	-	-	-	25	-	
	(such as:)			-	-	-	-	-	-	playing ta	-	-	-	-	-	-
	(in between)			-	-	0	0	0	2	11	-	-	-	2	-	
	Individual			-	-	0	1	2	0	2	-	-	-	0	-	
Landscape use	Using natural elements			-	-	0	0	0	0	6	-	-	-	1	-	
	(such as:)			-	-	throwing sa	-	-	-	climbing t	-	-	-	-	-	-
	(in between)			-	-	1	0	0	3	4	-	-	-	3	-	
	Non-natural elements			-	-	7	1	4	5	14	-	-	-	23	-	
Other things that stand out:						All german children	Short time - en route		football and picknicki ng	very busy: older children crowd out the younger children, almost run over				All german		

1 September 2014

Middle-3	South-2	South-3	North-1	North-2	North-3	North-6	North-7	Middle-1	Middle-2	South-2	South-3	
			Half sunny - 22°C									
7.30	16.00	16.00	15.30	15.30	15.45	16.00	16.00	16.45	16.45	17.00	17.15	
	4	6	33	1	2	6	9	0	1	3	16	25
	1	1	22	0	5	0	0	0	0	2	3	16
	4	2	14	0	0	4	8	-	0	1	6	12
	0	4	19	1	2	2	1	-	1	2	10	13
	1	0	25	0	2	0	0	-	1	1	3	19
	1	2	8	0	0	0	5	-	0	0	6	6
	2	4	0	1	0	6	4	-	0	2	7	0
	2	2	23	0	2	0	0	-	0	1	5	20
	2	4	2	1	0	6	9	-	0	2	11	0
	0	0	8	0	0	0	0	-	1	0		5
	0	0	0	0	0	0	0	-	1	0	0	0
	-	-	-	-	-	-	-		playing wit	-	-	-
	0	0	0	0	0	0	0	-	0	0	0	0
	4	6	33	1	2	6	9	-	0	3	16	25
	2	4	30	0	0	0	4	-	0	0	9	17
	football	equipment	just walkin	-	-		football	-	-	-	football	equipment
	0	0	0	1	0	0	2	-	0	1	4	5
	2	2	3	0	2	6	3	-	1	2	3	3
	0	0	0	0	0	0	0	-	0	0	4	0
	-	-	-	-	Hiding/not	-	-	-	-		searching r	-
	0	0	4	0	0	4	0	-	1	0	0	4
	4	6	29	1	2	2	9	-	0	3	12	21
	4	4	16	0	0	6	9	-	0	2	11	15
	-	-	-	-	-	-	-	-	-	-	-	
	0	2	7	0	2	0	0	-	0	0	4	4
	0	0	10	1	0	0	0	-	1	1	1	6
	0	0	0	0	0	0	0	-	0	0	4	0
	-	-	-	-	Using bush	-	-	-	-		Bush and t	Using bush for hiding, and explori
	0	0	3	0	0	4	2	-	1	0	0	5
	4	6	30	1	2	2	7	-	0	3	12	20
			Older children playing tag and hiding, younger ones on equipment. Some french kids,	Hanging around on her own	Sitting and walking around parents place	Older children need their own place to socialise, not really playing	Some internatio nal children		Very little space and child still finds some 'nature' to play with. Mother can watch child from	Two teenagers very close, little child with 2 parents	4 little girls in the bush hiding for each other, exploring what is there		

Schools have started: many more secondary school children outdoors

			Date:	3 September 2014															
			Location:	North-1	North-2	North-3	North-6	North-7	Middle-2	South-2	South-3	North-1	North-2	North-3	North-6				
Weather				Sunny - 22°C															
Time				17.00	17.00	16.45	16.15	16.15	17.00	15.30	15.30	12.50	12.50	12.40	12.4				
Total amount of children				0	6	0	10	0	4	17	24	0	0	0					
Total amount of adults				0	4	0	2	0	2	8	20	0	0	0					
Multiple target groups	Gender:	boy		-	3	-	8	-	1	4	11	-	-	-	-				
		girl		-	3	-	2	-	3	13	13	-	-	-	-				
	Age estimation:	<6 yrs		-	4	-	4	-	2	6	13	-	-	-	-				
		6-12 yrs		-	2	-	6	-	2	4	11	-	-	-	-				
		>12 yrs		-	0	-	0	-	0	7	0	-	-	-	-				
Indirect accessibility	With/without parents:	with		-	4	-	2	-	2	7	24	-	-	-	-				
		without		-	0	-	6	-	2	10	0	-	-	-	-				
		(unknown)		-	2	-	2	-	0		0	-	-	-	-				
Qualities of play	Manipulating the environment (intelligence)			-	0	-	0	-	0	0	0	-	-	-	-				
	(such as:)			-	-	-	-	-	-	-		-	-	-	-				
	(in between)			-	0	-	0	-	0	0	0	-	-	-	-				
	Not manipulating the environment			-	6	-	10	-	4	17	24	-	-	-	-				
	Physically active (with?)			-	6	-	10	-	2	5	18	-	-	-	-				
	(such as:)			-	bicyling	-	football an	-	-	-	play equip	-	-	-	-				
	(in between)			-	0	-	0	-	2	0	2	-	-	-	-				
	Non-active			-	0	-	0	-	0	12	4	-	-	-	-				
	Exploring (creativity and imagination)			-	0	-	0	-	0	0	1	-	-	-	-				
	(such as:)			-	-	-	-	-	-	-		-	-	-	-				
	(in between)			-	0	-	0	-	0	3	0	-	-	-	-				
	Not-exploring			-	6	-	10	-	4	14	23	-	-	-	-				
	Social			-	6	-	8	-	2	13	14	-	-	-	-				
	(such as:)			-	-	-	-	-	-	-		-	-	-	-				
	(in between)			-	0	-	2	-	0	2	0	-	-	-	-				
	Individual			-	0	-	0	-	2	2	10	-	-	-	-				
Landscape use	Using natural elements			-	0	-	0	-	0	0	1	-	-	-	-				
	(such as:)			-	-	-	-	-		Using gras	Bushes	-	-	-	-				
	(in between)			-	0	-	0	-	0	3	0	-	-	-	-				
	Non-natural elements			-	6	-	10	-	4	14	23	-	-	-	-				
Other things that stand out:				Could not be entered because of police							Parents notice that when a child turns 8 years old, therer is not enough to play with								

5 September 2014					7 September 2014								
North-7	Middle-2	South-2	South-3		North-1	North-2	North-3	North-6	North-7	Middle-2	South-2	South-3	
Cloudy - 22°C					Sunny - 22°C								
0	12.40	13.00	12.30	12.30	15.30	15.30	15.30	15.45	15.45	15.15	16.15	16.30	
0	0	0	0	10	2	4	0	10	2	0	9	31	
0	0	0	0	8	0	8	0	2	0	0	17	20	
-	-	-		4	2	1	-	8	0	-	4	20	
-	-	-		6	0	3	-	2	2	-	5	11	
-	-	-		10	0	2	-	2	1	-	6	25	
-	-	-		0	0	2	-	5	1	-	3	4	
-	-	-		0	2	0	-	3	0	-	0	2	
-	-	-		10	0	4	-	3	0	-	9	29	
-	-	-		0	2	0	-	7	2	-	0	0	
-	-	-		0	0	0	-	0	0	-	0	2	
-	-	-		0	0	0	-	0	0	-	0	0	
-	-	-	-		-	-	-	-	-	-	-	-	
-	-	-		0	0	0	-	0	0	-	0	1	
-	-	-		10	2	4	-	10	2	-	9	30	
-	-	-		9	2	0	-	7	2	-	5	22	
-	-	-	-		baseball pl	-	-	voetbal	stepping	-	ball games	play equipment	
-	-	-		0	0	1	-	1	0	-	1	4	
-	-	-		1	0	3	-	2	0	-	3	5	
-	-	-		0	0	0	-	0	0	-	0	3	
-	-	-	-		-	-	-	-	-	-	-	-	
-	-	-		0	0	3	-	0	0	-	0	2	
-	-	-		10	2	1	-	10	2	-	9	26	
-	-	-		0	2	3	-	9	0	-	0	21	
-	-	-	-		-	-	-	-	-	-	-	-	
-	-	-		2	0	0	-	0	2	-	2	2	
-	-	-		8	0	1	-	1	0	-	7	8	
-	-	-		0	0	0	-	0	0	-	0	4	
-	-	-	-		-	-	-	-	-	-	-	-	
-	-	-		0	0	0	-	0	0	-	0	0	
-	-	-		10	2	4	-	10	2	-	9	27	

Children using grass as place to play picknick or

Using the asphalt as place to

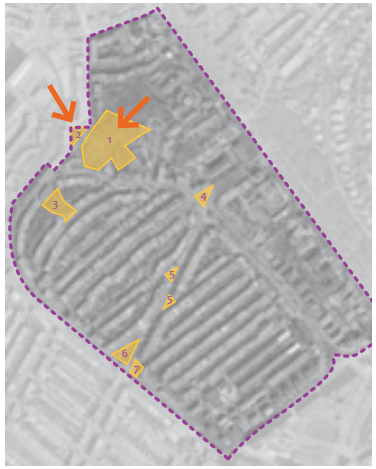
Big family gathering

	Date:		8 September 2014								10			
	Location:		North-1	North-2	North-3	North-6	North-7	Middle-2	South-2	South-3	North-1	North-2	North-3	North-6
Weather			Sunny - 20°C								Half			
Time			17.00	17.00	16.45	16.30	16.30	17.15	15.45	15.30	16.30	16.30	16.15	16.00
Total amount of children			0	6	1	7	1	3	1	29	0	4	2	
Total amount of adults			0	0	2	2	1	3	2	17	0	3	1	
Multiple target groups	Gender:	boy	-	2	0	6	1	1	1	11	-	1	2	
		girl	-	4	1	1	0	2	0	18	-	3	0	
	Age estimation:	<6 yrs	-	4	1	3	1	3	1	25	-	4	2	
		6-12 yrs	-	2	0	4	0	0	0	4	-	0	0	
		>12 yrs	-	0	0	0	0	0	0	0	-	0	0	
Indirect accessibility	With/without parents:	with	-	0	1	5	1	3	1	29	-	4	2	
		without	-	6	0	2	0	0	0	0	-	0	0	
		(unknown)	-	0	0	0	0	0	0	0	-	0	0	
Qualities of play	Manipulating the environment (intelligence)		-	0	0	0	0	0	0	0	-	0	0	
	(such as:)		-	-	-	-	-	-	-	-	-	-	-	-
	(in between)		-	0	0	1	0	0	0	0	-	0	0	
	Not manipulating the environment		-	6	1	6	1	3	1	29	-	4	2	
	Physically active (with?)		-	0	1	6	1	3	0	20	-	1	2	
	(such as:)		-	-	-	football anc	stepping	play equip	-	play equipı	-	bicycling	bicycling aı	footba
	(in between)		-	6	0	1	0	0	0	3	-	0	0	
	Non-active		-	0	0	0	0	0	1	6	-	3	0	
	Exploring (creativity and imagination)		-	0	0	2	0	0	0	0	-	0	0	
	(such as:)		-	-	-	climbing tre	-	-	-	-	-	-	-	bush,
	(in between)		-	0	0	1	0	0	0	0	-	0	0	
	Not-exploring		-	6	1	4	1	3	1	29	-	4	2	
	Social		-	6	0	6	0	0	0	17	-	3	0	
	(such as:)		-	-	-	-	-	-	-	-	-	-	-	-
	(in between)		-	0	0	0	0	2	0	0	-	0	2	
	Individual		-	0	1	1	1	1	1	12	-	1	0	
Landscape use	Using natural elements		-	0	0	2	0	0	0	0	-	0	0	
	(such as:)		-	-	-	trees and s	-	-	-	-	-	-	-	-
	(in between)		-	0	0	1	0	0	0	0	-	0	0	
	Non-natural elements		-	6	1	4	1	3	1	29	-	4	2	
Other things that stand out:				Children playing with bicycle					Baby, can't do anything	Bushes are being used as toilet for small child				Al Germ child

9 September 2014					12 September 2014									
North-7	Middle-2	South-2	South-3		North-1	North-2	North-3	North-6	North-7	Middle-1	Middle-2	South-2	South-3	
f cloudy - 17°C					Half sunny - 21°C									
16.00	16.45	15.00	15.45		16.00	16.00	16.00	16.15	16.15	16.30	16.30	16.45	17.15	
18	1	1	11	22		0	2	0	14	2	3	4	25	20
3	1	1	0	15		0	2	0	3	1	2	1	9	11
17	0	1	8	8	-		1	-	13	1	2	0	19	9
1	1	0	3	14	-		1	-	1	1	1	4	6	11
3	1	1	0	20	-		2	-	5	2	3	2	11	16
15	0	0	11	2	-		0	-	6	0	0	2	7	4
0	0	0	0	0	-		0	-	3	0	0	0	7	0
4	1	1	0	22	-		2	-	4	2	3	2	15	20
14	0	0	11	0	-		0	-	10	0	0	2	10	0
0	0	0	0	0	-		0	-	0	0	0	0	0	0
0	0	0	0	0	-		0	-	0	0	0	0	0	0
-	-	water foun	-		-	-	-	-	-	-	-	pulling on t	-	
1	0	0	1	0	-		0	-	0	0	0	0	5	0
17	1	1	10	22	-		2	-	14	2	3	4	20	20
16	0	1	8	19	-	-	-		13	2	0	4	17	16
all -		equipment	football	equipment	-		0	-	football	stepping	-	equipment	football	-
1	1	0	3	0	-		2	-	1	0	3	0	5	0
1	0	0	0	3	-		0	-	0	0	0	0	3	4
3	0	0	4	0	-		0	-	-	0	0	0	2	0
tree -	-	water, bus	-		-	-	-		0	-	-	-	climbing tr	-
0	1	0	0	1	-		0	-	-	0	0	0	4	0
15	0	1	7	21	-		2	-	14	2	3	4	19	20
14	0	0	11	14	-		2	-	13	0	3	0	18	16
-	-	-	-		-	-	-	-	-	-	-	-	-	
2	0	0	0	4	-		0	-	1	2	0	4	4	0
2	1	1	0	4	-		0	-	0	0	0	0	4	4
3	0	0	4	0	-		0	-	0	0	0	0	2	0
-	-	water, bus	-		-	-	-	-	-	-	-	Tree climbi	-	
0	1	0	0	1	-		0	-	0	0	0	0	4	0
15	0	1	7	21	-		2	-	14	2	3	4	19	20
l man ren	Using plants in pots for hiding and smelling							German and French. Teenagers kick ball over the fence constantly	En route stopping to play			People noticing that children pulling on trees are vandals and are	Later in afternoon, many parents with children already left	

C.1 Doornpark

The maps presented in this chapter are only about the days on which children have actually been observed. The table at the end of this chapter also shows on which days no child has been seen on these two locations.



North 1 & 2

1 September 2014 (Monday: 15.30 hrs)

3 September 2014 (Wednesday: 17.00 hrs)

Legend

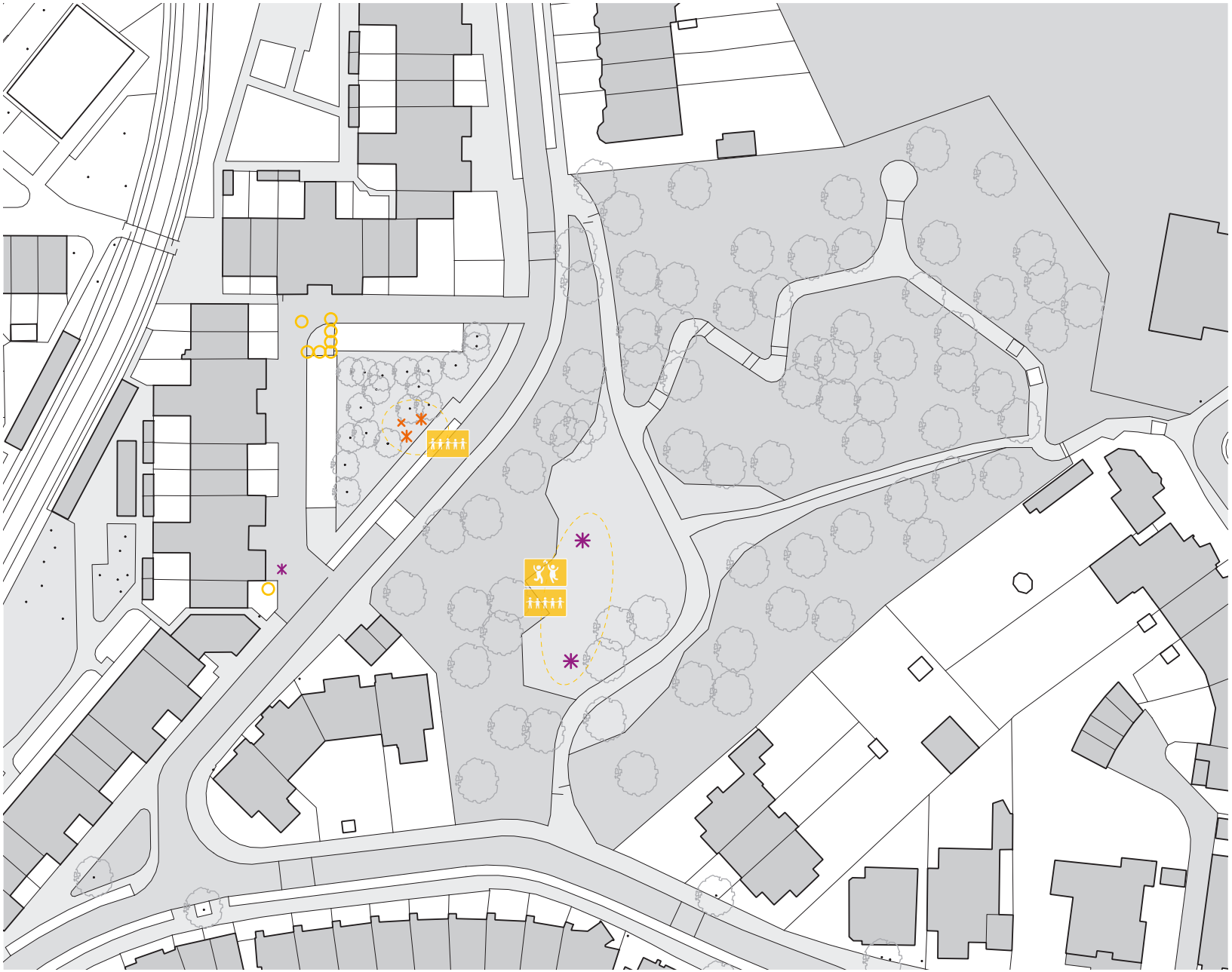
0 25m

Place positioning people

- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

Activities of children

- Environmental manipulation opportunity
- Multiple target groups
- Physical stimulation
- Mental stimulation
- Social stimulation
- Landscape use



7 September 2014 (Sunday: 15.30 hrs)

8 September 2014 (Monday: 17.00 hrs)

Legend

0 25m

Place positioning people

- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

Activities of children

- Environmental manipulation opportunity
- Multiple target groups
- Physical stimulation
- Mental stimulation
- Social stimulation
- Landscape use

10 September 2014 (Sunday: 15.30 hrs)

12 September 2014 (Monday: 17.00 hrs)

Legend

0 25m

Place positioning people

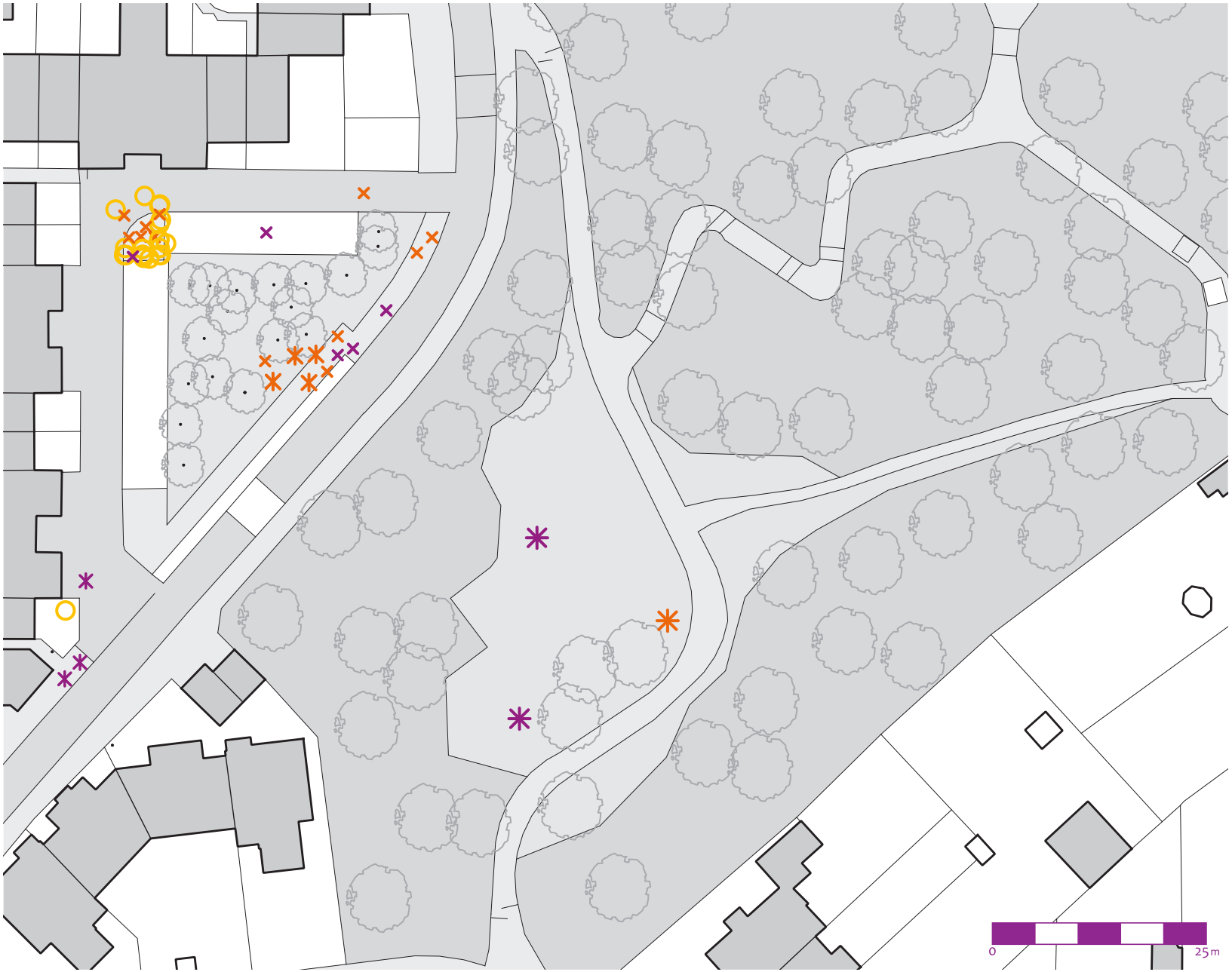
- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

Activities of children

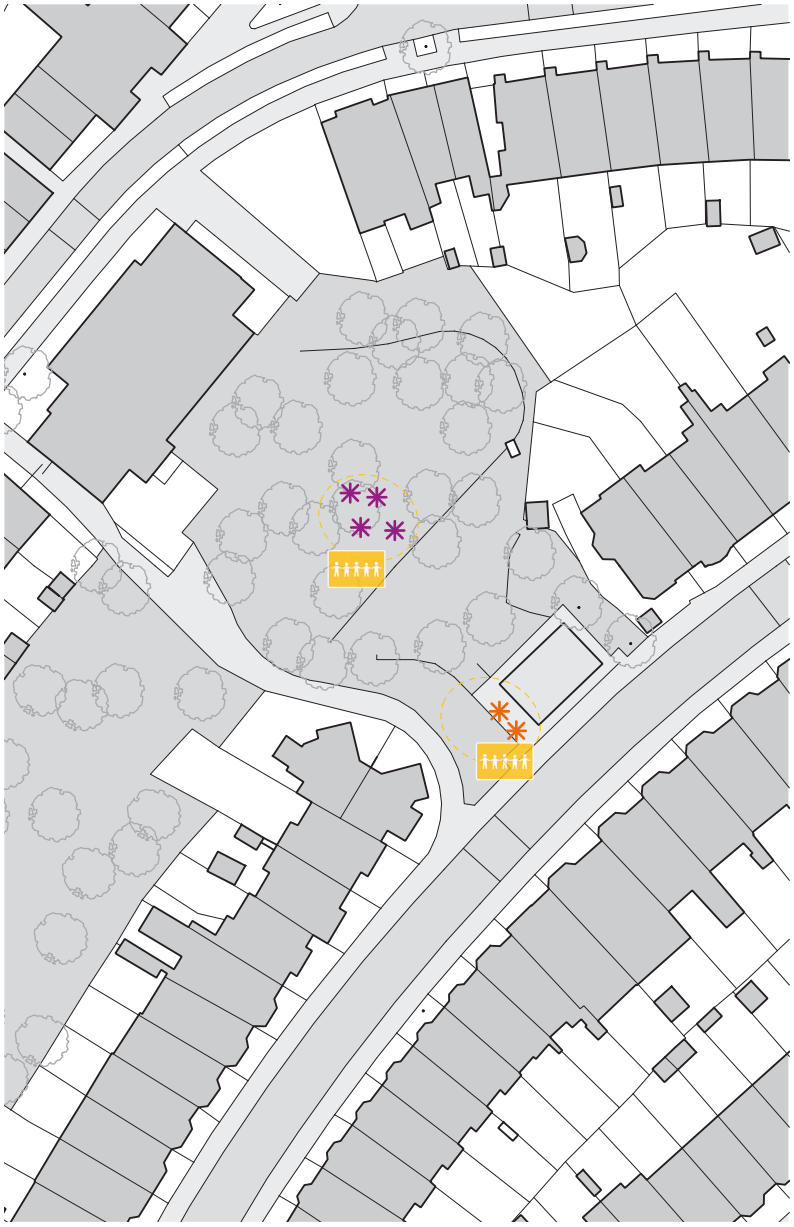
- Environmental manipulation opportunity
- Multiple target groups
- Physical stimulation
- Mental stimulation
- Social stimulation
- Landscape use

Legend

- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old



North 1 & 2: Total amount of children in 9 days of observation and location of play



1 September 2014 (Monday: 15.45 hrs)

8 September 2014 (Monday: 16.45 hrs)

C.2 Frankenstraat

The maps presented in this chapter are only about the days on which children have actually been observed. The table at the end of this chapter also shows on which days no child has been seen on these two locations.

North 3

Legend

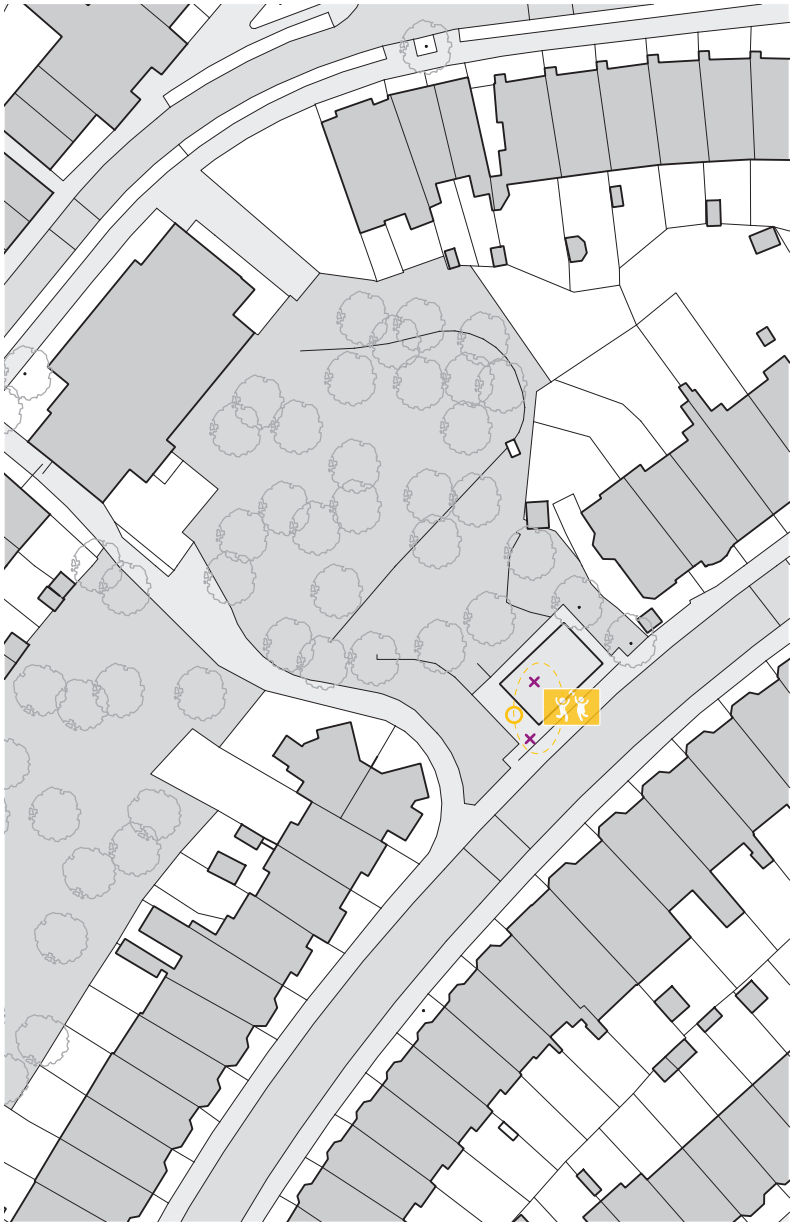
0 25m

Place positioning people

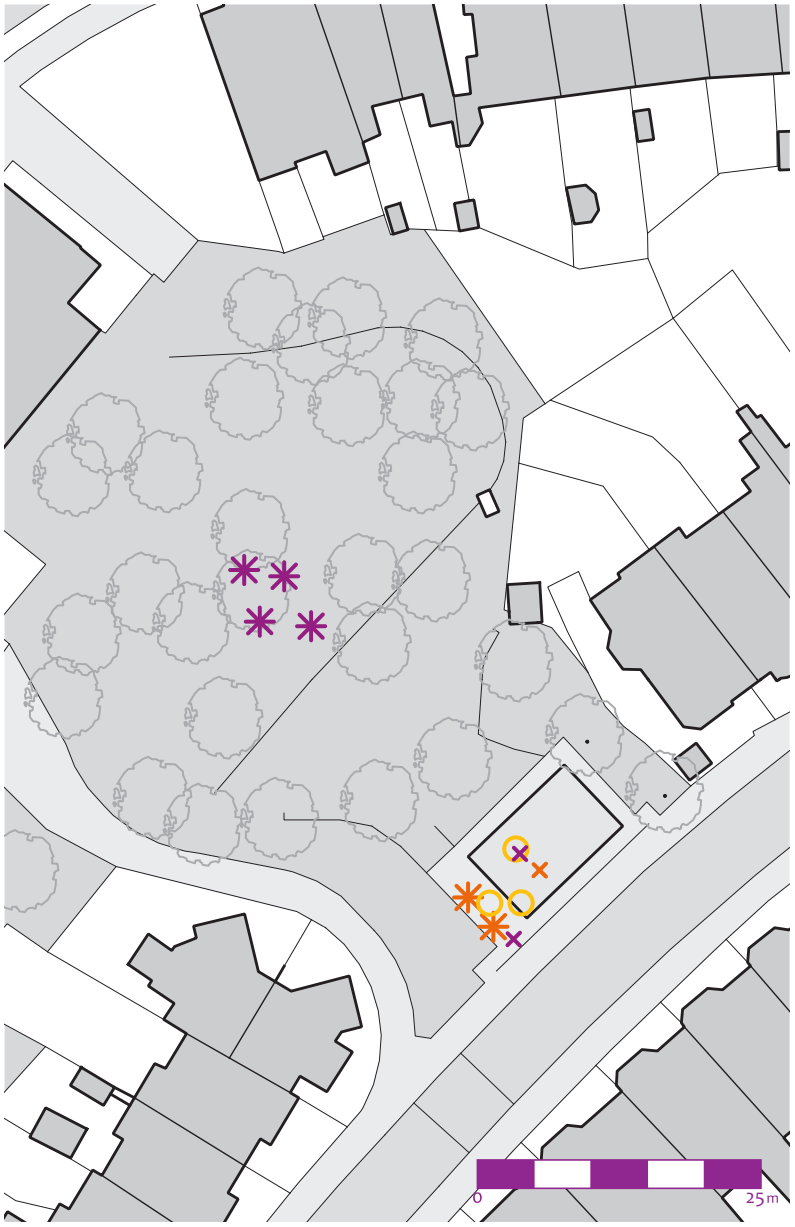
- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

Activities of children

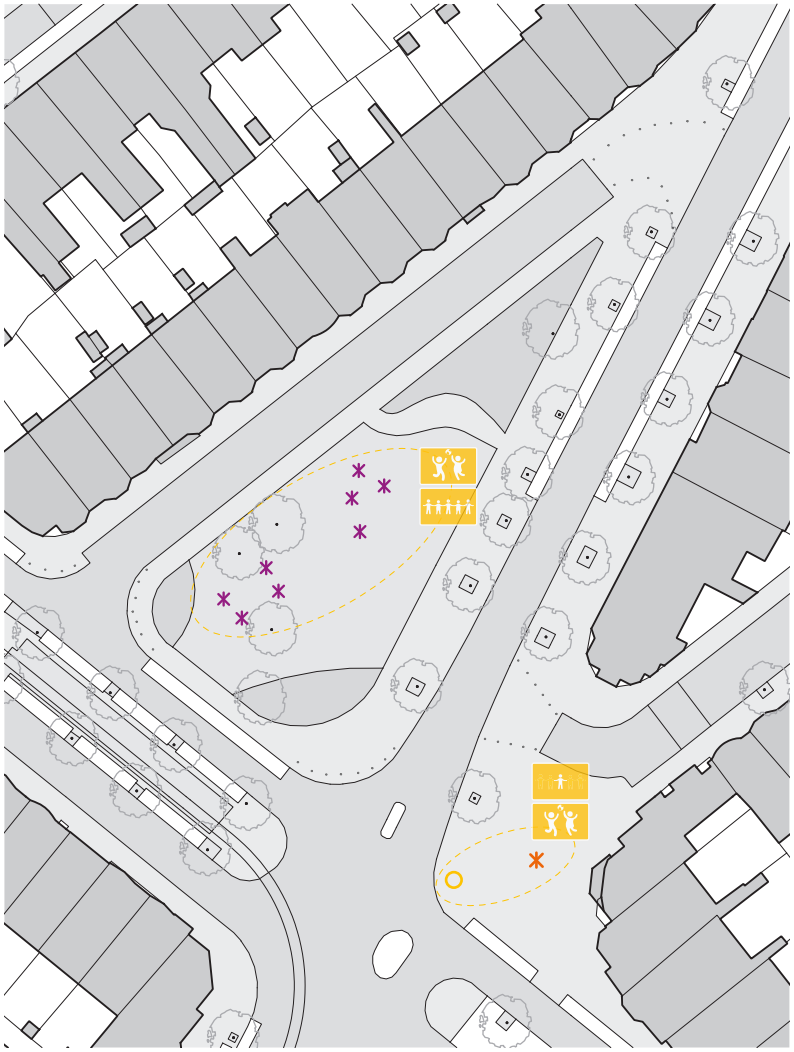
- Environmental manipulation opportunity
- Multiple target groups
- Physical stimulation
- Mental stimulation
- Social stimulation
- Landscape use



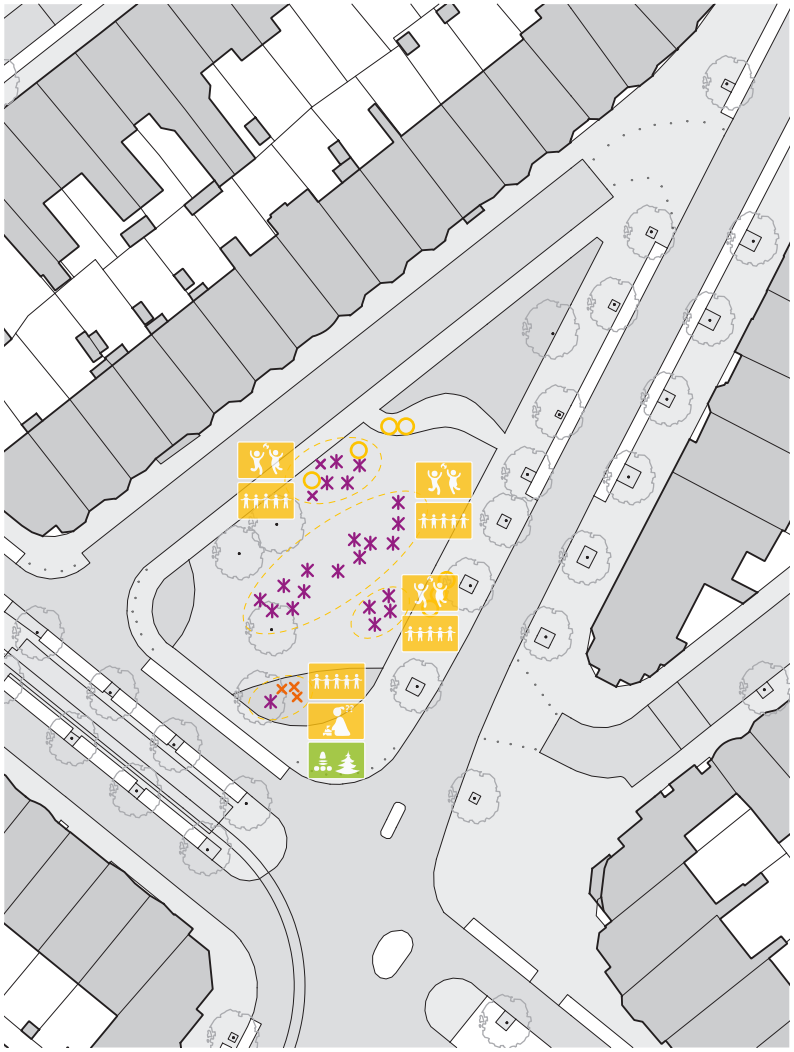
10 September 2014 (Wednesday: 16.15 hrs)



North 3: Total amount of children in 9 days of observation and location of play



27 August 2014 (Wednesday: 16.30 hrs)

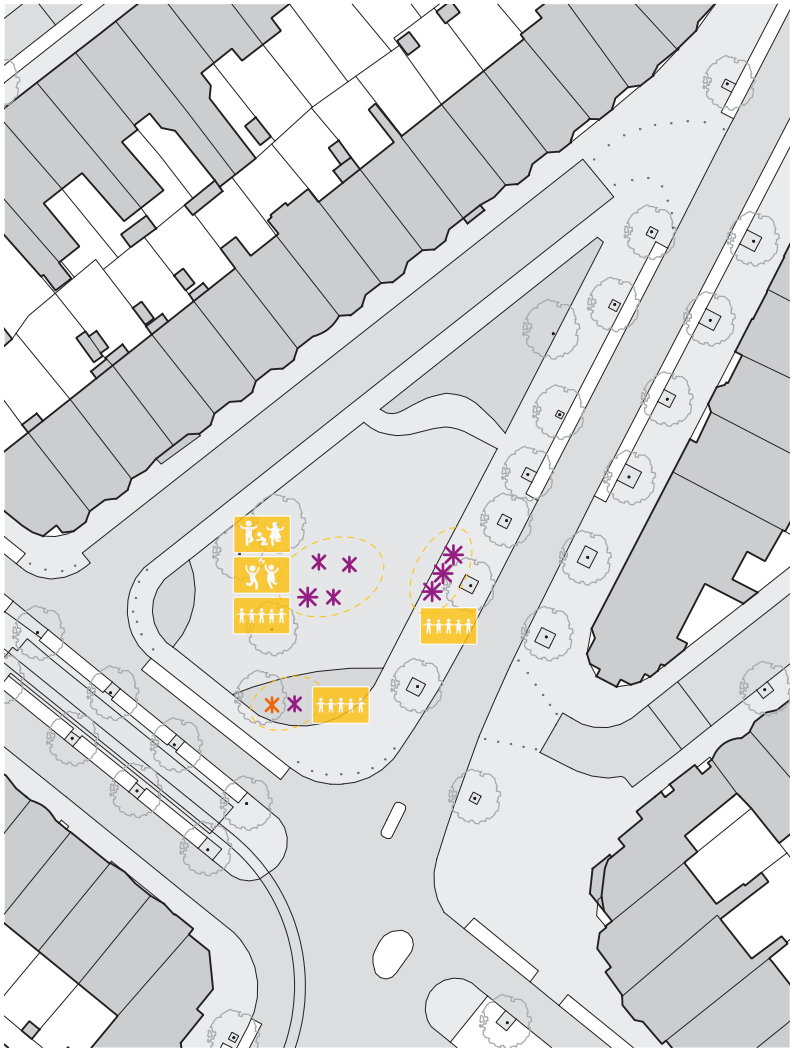


29 August 2014 (Friday: 16.30 hrs)

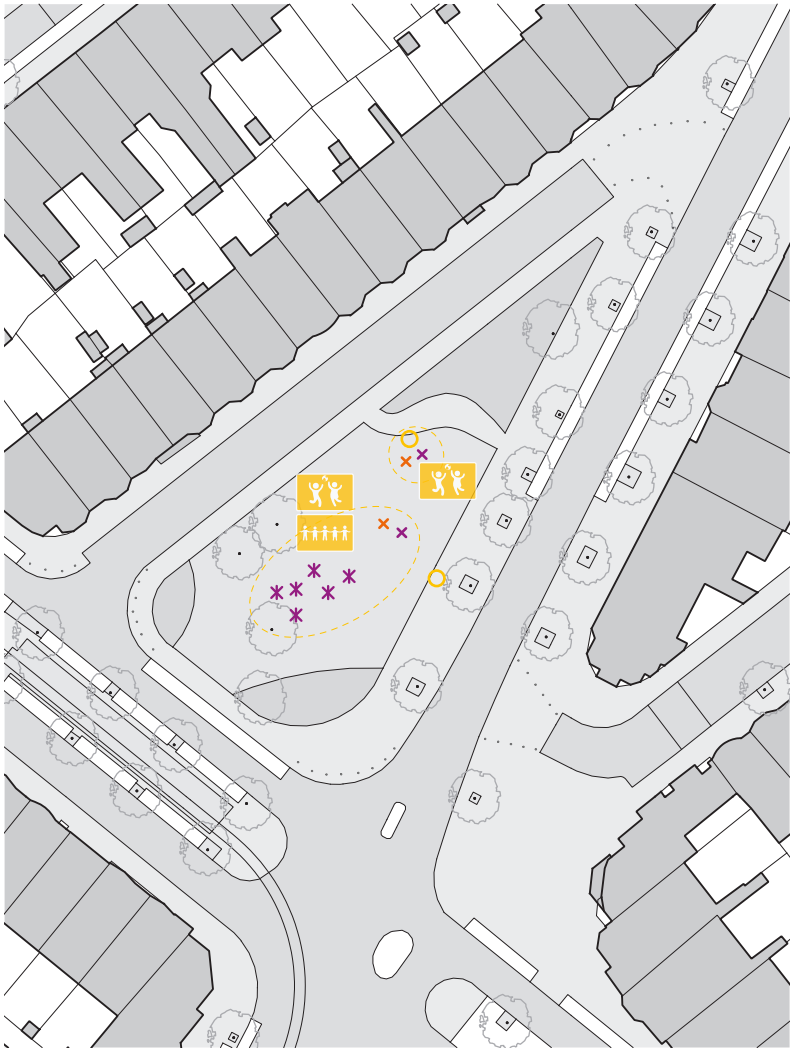
C.3 Prins Mauritsplein

The maps presented in this chapter are only about the days on which children have actually been observed. The table at the end of this chapter also shows on which days no child has been seen on these two locations.

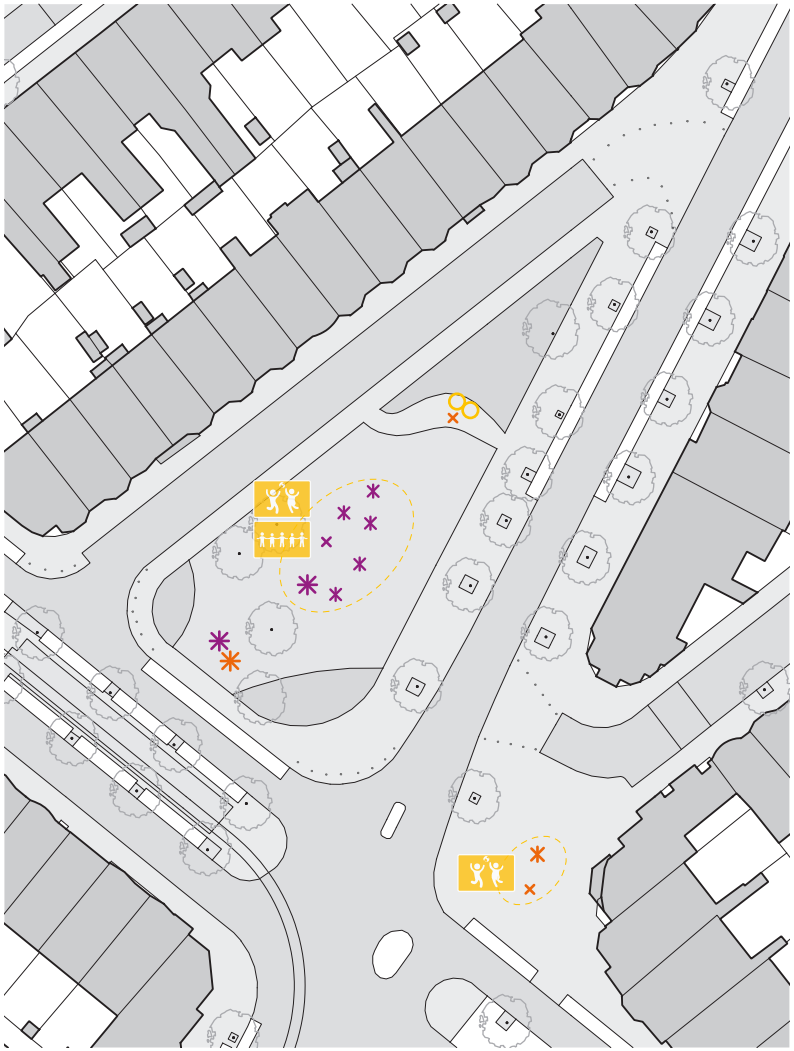
North 6 & 7



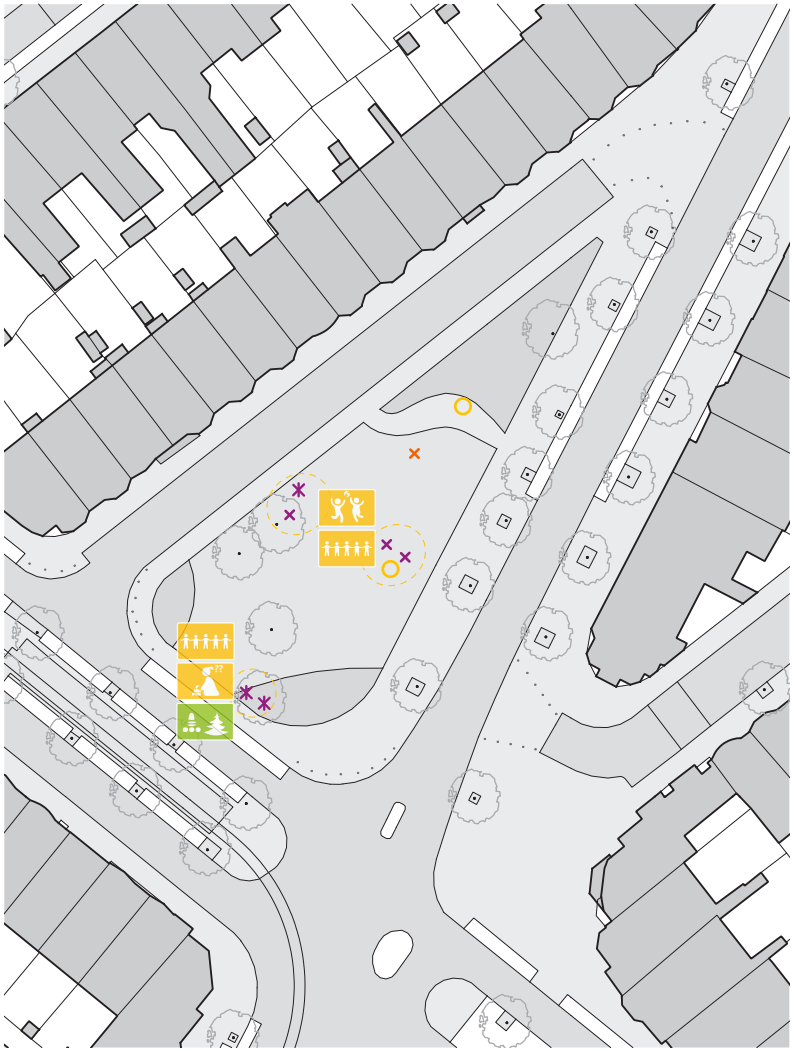
1 September 2014 (Monday: 16.00 hrs)



3 September 2014 (Wednesday: 16.15 hrs)



7 September 2014 (Sunday: 15.45 hrs)



8 September 2014 (Monday: 16.30 hrs)

Legend

0 25m

Place positioning people

- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

Activities of children

- Environmental manipulation opportunity
- Multiple target groups
- Physical stimulation
- Mental stimulation
- Social stimulation
- Landscape use

Legend

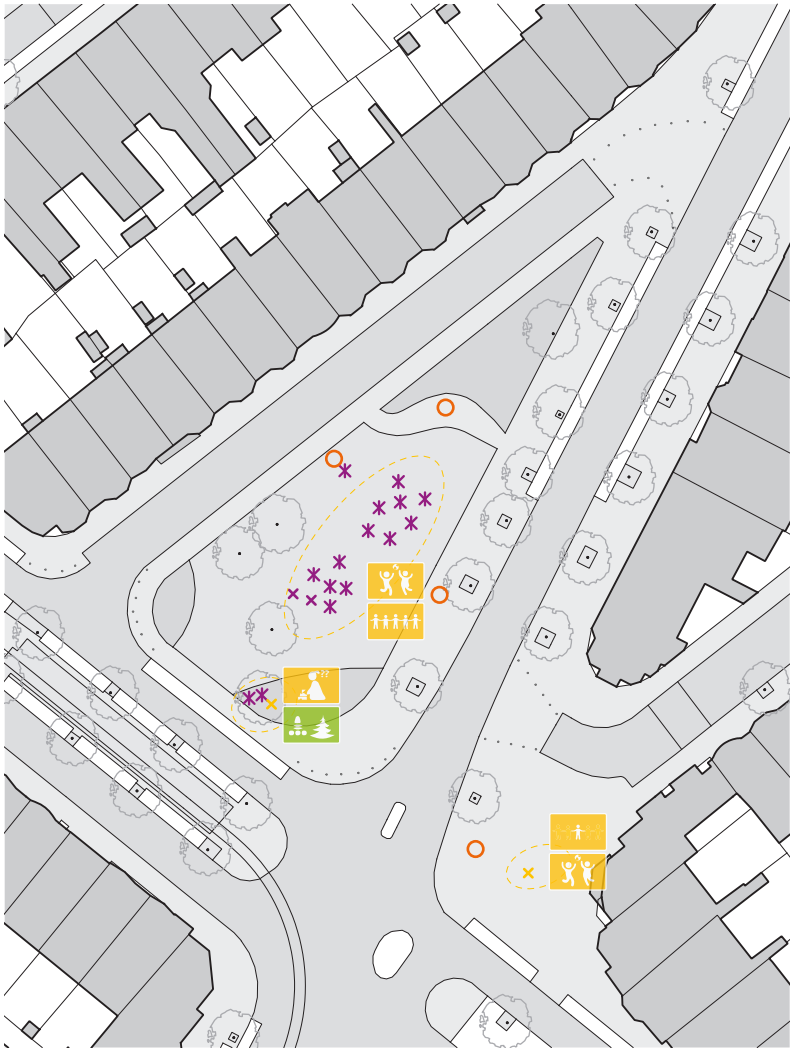
0 25 m

Place positioning people

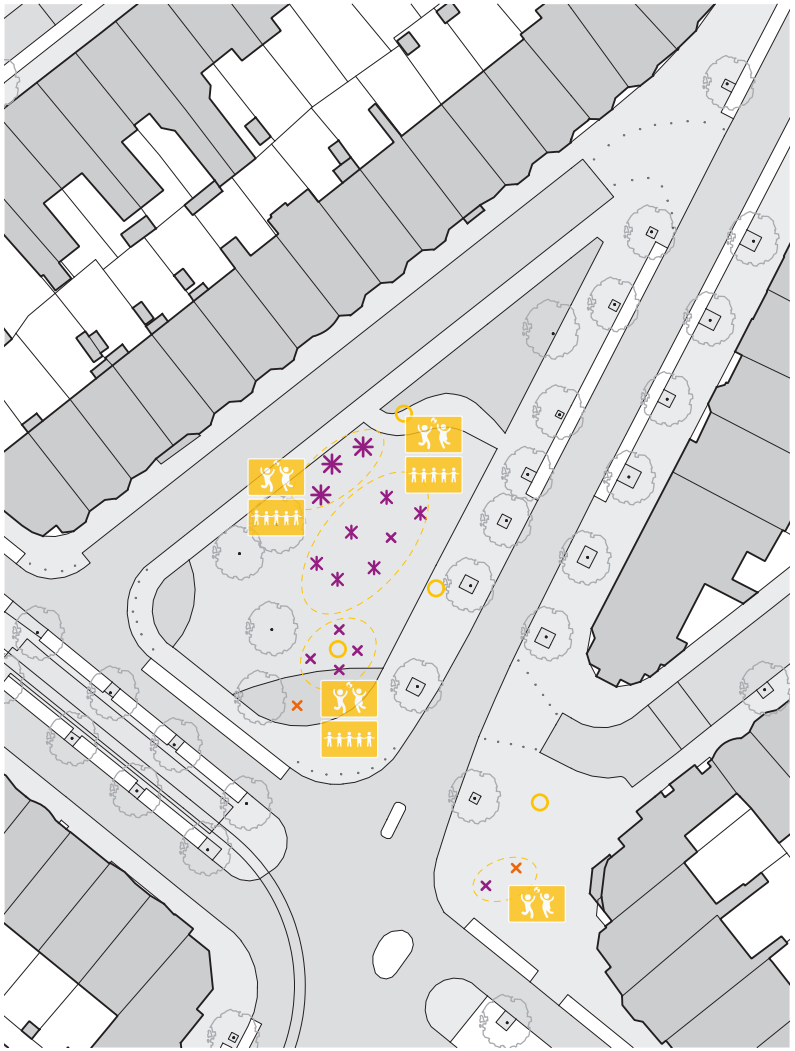
- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

Activities of children

- Environmental manipulation opportunity
- Multiple target groups
- Physical stimulation
- Mental stimulation
- Social stimulation
- Landscape use



10 September 2014 (Wednesday: 16.00 hrs)



12 September 2014 (Friday: 16.15 hrs)

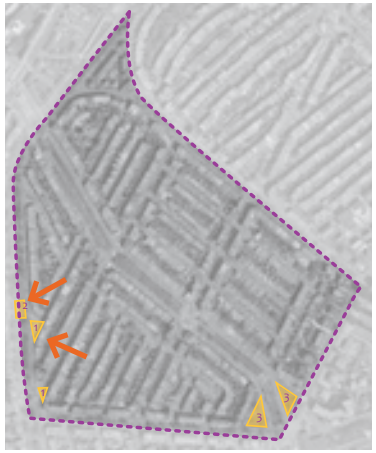
North 6&7: Total amount of children in 9 days of observation and location of play

Legend

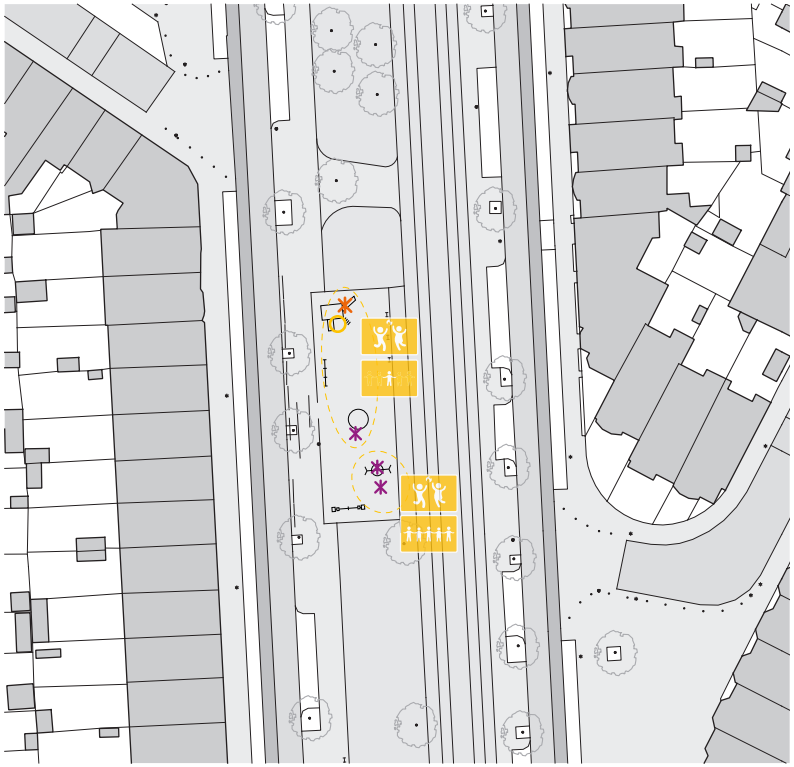
- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

C.4 Van Boetzelaerlaan & Jurgenplein

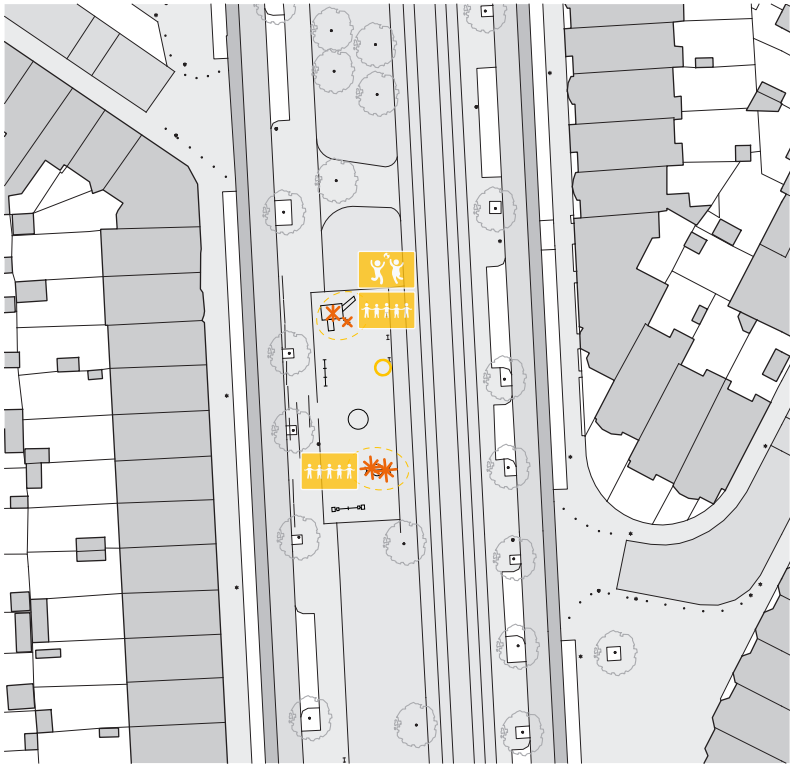
The maps presented in this chapter are only about the days on which children have actually been observed. The table at the end of this chapter also shows on which days no child has been seen on these two locations.



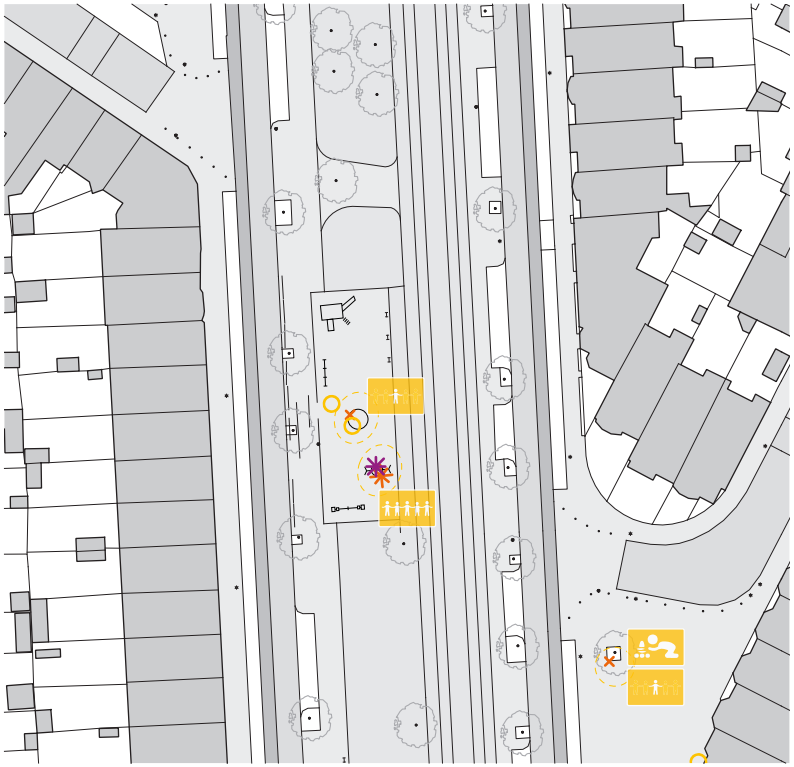
Middle 1 & 2



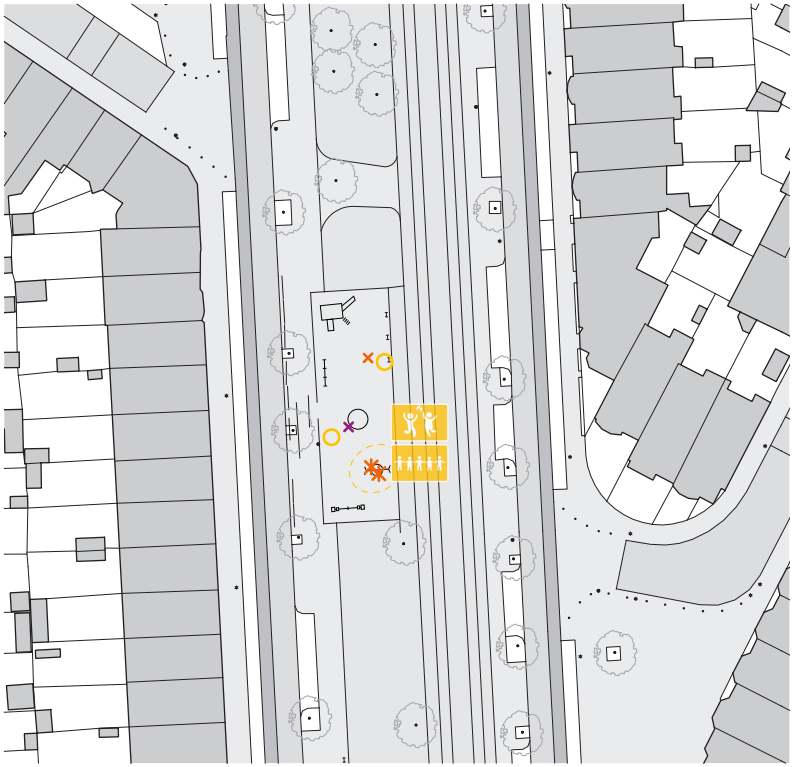
27 August 2014 (Wednesday: 17.15 hrs)



29 August 2014 (Friday: 17.30 hrs)



1 September 2014 (Monday: 16.45 hrs)



3 September 2014 (Wednesday: 17.00 hrs)

Legend

0 25m

Place positioning people

- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

Activities of children

- Environmental manipulation opportunity
- Multiple target groups
- Physical stimulation
- Mental stimulation
- Social stimulation
- Landscape use

Legend

0 25 m

Place positioning people

- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

Activities of children

- Environmental manipulation opportunity
- Multiple target groups
- Physical stimulation
- Mental stimulation
- Social stimulation
- Landscape use

8 September 2014 (Monday: 17.15 hrs)

10 September 2014 (Wednesday: 16.45 hrs)

12 September 2014 (Friday: 16.15 hrs)

Middle 1 and 2: Total amount of children in 10 days of observation and location of play

C.5 Frederik Hendrikplein

The maps presented in this chapter are only about the days on which children have actually been observed. The table at the end of this chapter also shows on which days no child has been seen on these two locations.

South 2 & 3

27 August 2014 (Wednesday: 16.45 / 17.00 hrs)

29 August 2014 (Friday: 16.00 hrs)

Legend

0 25m

Place positioning people

- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

Activities of children

- Environmental manipulation opportunity
- Multiple target groups
- Physical stimulation
- Mental stimulation
- Social stimulation
- Landscape use

1 September 2014 (Monday: 17.00 / 17.15 hrs)

3 September 2014 (Wednesday: 15.30 hrs)

Legend

0 25m

Place positioning people

- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

Activities of children

- Environmental manipulation opportunity
- Multiple target groups
- Physical stimulation
- Mental stimulation
- Social stimulation
- Landscape use

5 September 2014 (Friday: 12.30 hrs)

Legend

0 25m

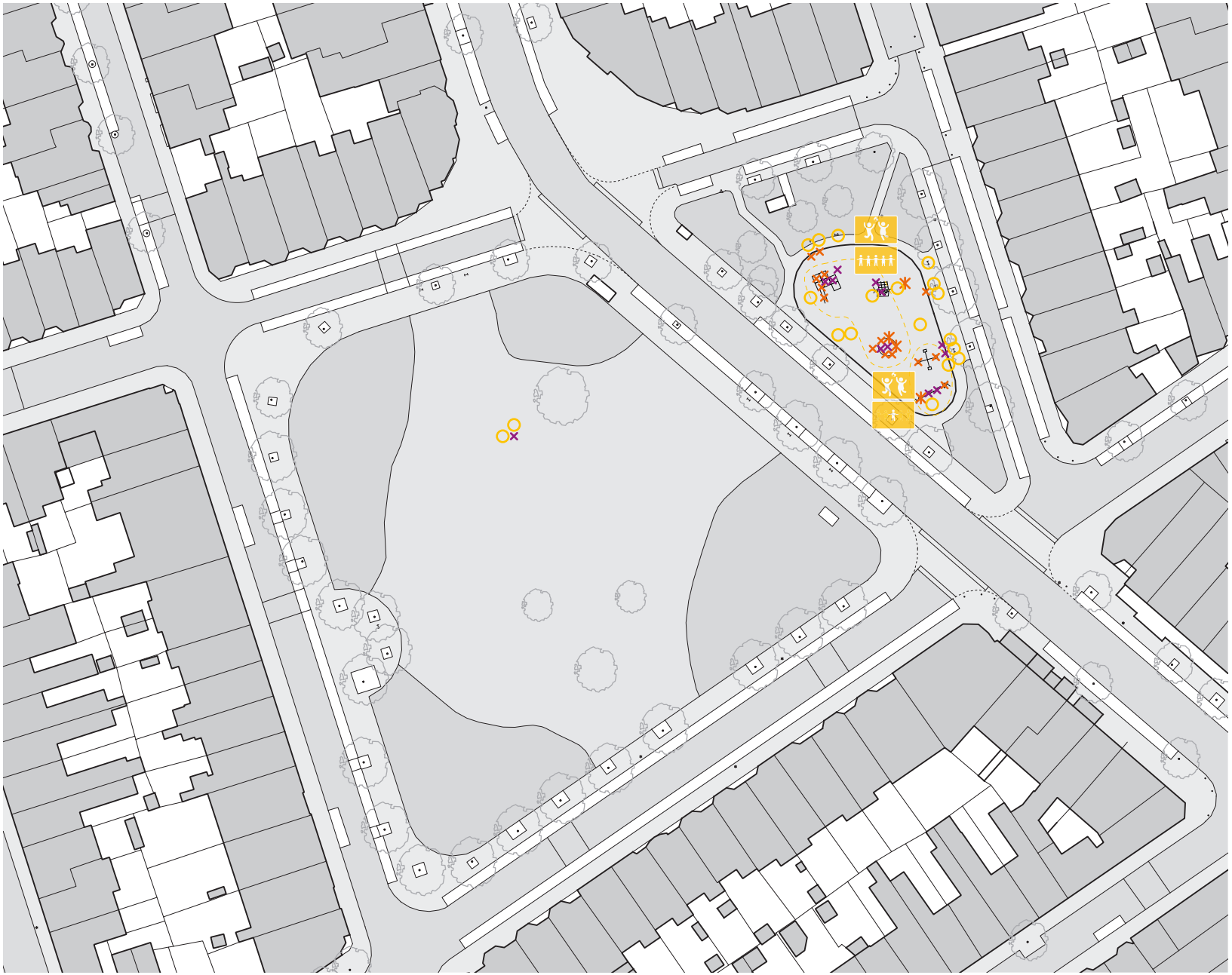
Place positioning people

- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

Activities of children

- Environmental manipulation opportunity
- Multiple target groups
- Physical stimulation
- Mental stimulation
- Social stimulation
- Landscape use

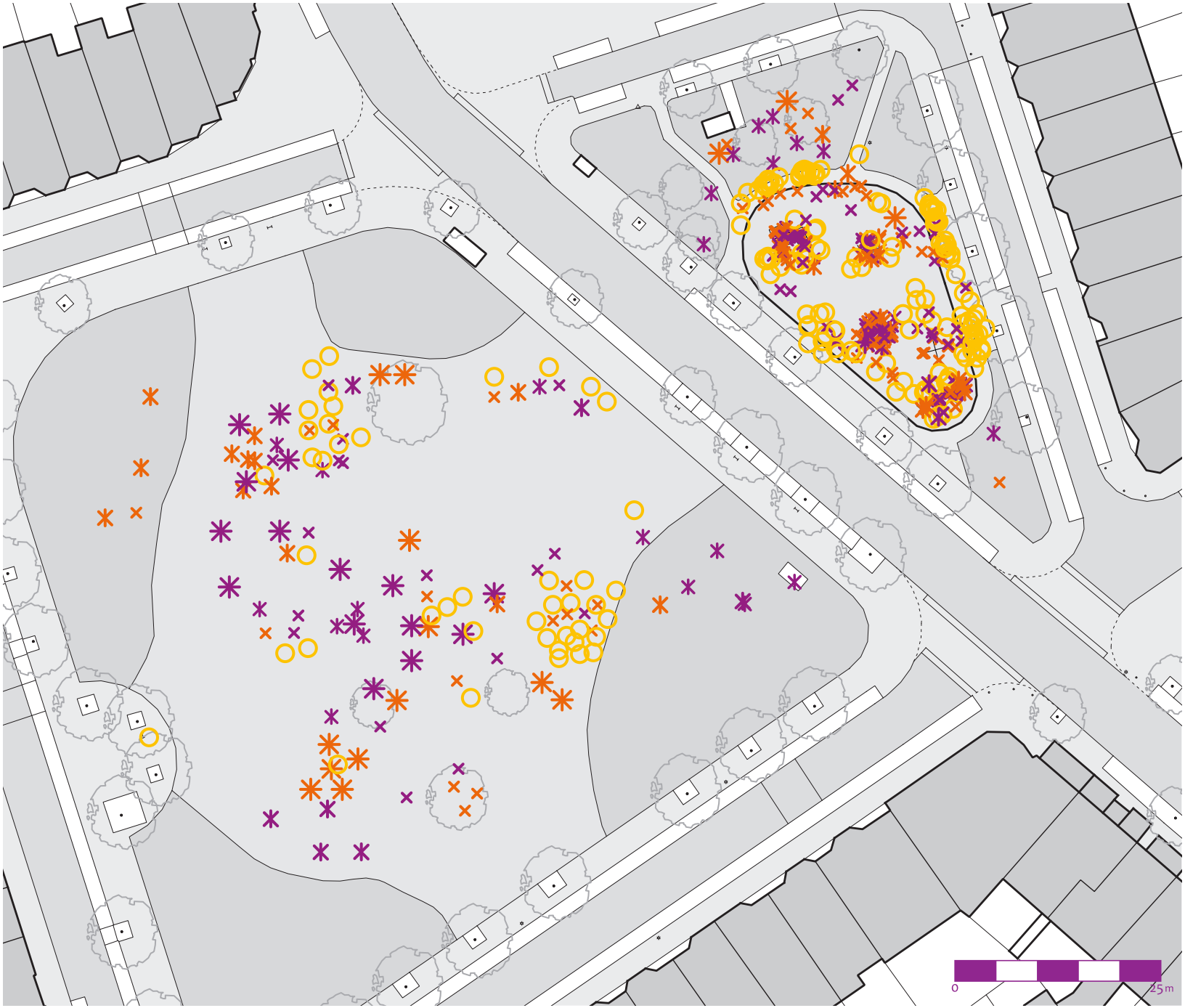
7 September 2014 (Sunday: 16.15 / 16.30 hrs)



8 September 2014 (Monday: 15.30 /15.45 hrs)

10 September 2014 (Wednesday: 15.00 / 15.45 hrs)

12 September 2014 (Friday: 16.15 hrs)



Legend

- Adults/parents
- Girl > 12 years old
- Girl 6-12 years old
- Girl <6 years old
- Boy > 12 years old
- Boy 6-12 years old
- Boy <6 years old

South-2 and 3: Total amount of children in 9 days of observation and location of play

D - INTERVIEWS

D.1 Individual interviews

Date		1 September 2014	1 September 2014	1 September 2014	3 September 2014	3 September 2014	3 September 2014	3 September 2014	8 September 2014
Weather conditions		Half sunny -22°C	Half sunny -22°C	Half sunny -22°C	Sunny - 22°C	Sunny - 22°C	Sunny - 22°C	Sunny - 22°C	Su
Location		Prins Mauritsplein	Prins Mauritsplein	Prins Mauritsplein	Frederik Hendrikplein (playgrou	Frederik Hendrikplein (playgrou	Frederik Hendrikplein (playgro	Frederik Hendrikplein (playgrou	Frederik He
Time		16.00	16.00	16.00	15.30	15.30		15.30	
Boy/Girl		Boy	Boy	Boy	Girl	Girl	Boy	Girl	
Age		7	10	14	8	11	8	8	
With/Without parent		Without	Without	Without	With	With	With	With	
With/Without brother/sister/friend		With	With	With	With	With	With	With	
Where do you play more often?		Outdoors	Equal	Outdoors	Equal	Equal	Equal	Outdoors	
How often do you play outside?		>6 days	4-5 days	>6 days	2-3 days	>6 days	2-3 days	2-3 days	
How long do you play outside?		1,5 - 2,5 hrs	1,5-2,5 hrs	>2,5 hrs	0,5 -1,5 hrs	0,5 -1,5 hrs	1,5-2,5 hrs	0,5 -1,5 hrs	0
Where do you go when playing outside?		park / sidewalk / beach	park / sidewalk / skateboard p	park / sidewalk / skateboard pa	playground / park / garden / be	playground / park / sidewalk /	playground / park / sidewalk /	playground / park / sidewalk / g	playground
How far is a place to play from your home?		1 street away	2 streets away	2 streets away	Same street	Same street	3 streets away	1 street away	2 st
Do you think there are enough possibilities?		Yes	Yes	Yes	Yes	No	No	Yes	
How far are you allowed to go outside without your parents?		1-2 streets away	Untill Bart Smit	As far as I want	Not allowed / home street	As far as I want	No allowed	Home street / 1-2 streets	1
Are there enough people around to watch you if anything goes wrong?		Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Are you having trouble with cars or other traffic at this place to play?		No	No	No	No	No	No	No	
Do you like playing:	EMO	Sometimes	Sometimes	Sometimes	Sometimes	Fun	Sometimes	Boring	
	Physical activity	Fun	Fun	Fun	boring	Sometimes	Fun	Fun	
	Creativity and imagination	Boring	Sometimes	Boring	Fun	Fun	Fun	Fun	
	Social play	Fun	Fun	Fun	Sometimes	Fun	Fun	Sometimes	S
	Plural target groups	Sometimes	Fun	Fun	Sometimes	Fun	Fun	Sometimes	
	Nature	Sometimes	Sometimes	Sometimes	Fun	Fun	Fun	Fun	
Can you play nearby:	EMO	Sometimes	Sometimes	Sometimes	No	No	Sometimes	No	
	Physical activity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
	Creativity and imagination	Yes	Sometimes	Yes	Yes	Yes	Yes	Yes	S
	Social play	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
	Plural target groups	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
	Nature	Sometimes	Sometimes	Sometimes	Yes	Yes	No	Yes	S
What is your way of transport to school?		By car	By bike	Public transport	By car	By car	By car	By car	By b
Are you accompanied by a parent or brother/sister/friend?		Yes, parent	Yes, parent	No	Yes, parent	Yes, parent	Yes, parent	Yes, parent	Y
What would make you want to play outside more?		Swimming pool	Swimming pool and place to change		Trampoline	Go carts, add exitement	more playground equipment, trampoline	Cableway, monkeybars challenging things	More equip Boetselaer bigg
Own / other comments:									
Categorisation wishes children:		Water > EMO & Mental stimulation	Water > EMO & Mental stimulation		Physical & Mental stimulation	Mental stimulation	Physical & Mental stimulation	Physical & Mental stimulation	Nature, st

	8 September 2014	8 September 2014	10 September 2014	10 September 2014	10 September 2014	12 September 2014	12 September 2014	12 September 2014	12 September 2014	12 September 2014	
nny - 20°C	Sunny - 20°C	Sunny - 20°C	Half cloudy - 17°C	Half cloudy - 17°C	Half cloudy - 17°C	Half sunny - 21°C	Half sunny - 21°C	Half sunny - 21°C	Half sunny - 21°C	Half sunny - 21°C	
ndrikplein (playgrou	Prins Mauritsplein	Prins Mauritsplein	Frederik Hendrikplein (grass)	Frederik Hendrikplein (grass	Frederik Hendrikplein (grass)	Frederik Hendrikplein (grass)	Frederik Hendrikplein (gras	Frederik Hendrikplein (grass)	Frederik Hendrikplein (grass)	Frederik Hendrikplein (grass)	
15.30	16.30	16.30	15.00	15.00	15.00	16.45	16.45	16.45	16.45	17.00	
Girl	Boy	Boy	Girl	Girl	Girl	Boy	Boy	Boy	Boy	Boy	
10	6	6	8	11	8	9	8	9	9	10	
With	With	With	Without	Without	Without	With	With	With	With	With	
Without	With	With	With	With	With	With	With	With	With	Without	
Equal	Indoors	Equal	Outdoors	Outdoors	Outdoors	Outdoors	Equal	Outdoors	Equal	Equal	
2-3 days	2-3 days	2-3 days	4-5 days	4-5 days	4-5 days	4-5 days	4-5 days	4-5 days	>6 days	3-4 days	
,5-1,5 hrs	0,5-1,5 hrs	0,5-1,5 hrs	1,5-2,5 hrs	1,5-2,5 hrs	1,5-2,5 hrs	> 2,5 hrs	> 2,5 hrs	> 2,5 hrs	0,5-1,5 hrs	1,5 - 2,5 hrs	
	Playground / park / sidewal	Playground / park / sidewalk	Park / sidewalk	Park / sidewalk	Park / sidewalk	park / beach / sidewalk	sidewalk / park	park / beach/ dunes	park / dunes	park	
treets away	3 streets away	More than 4 streets away	Same street	1 street away	Same street	Same street	2 streets away	Same street	3 streets away	2 streets away	
No	No	No	No	No	No	No	No	No	No	Yes	
-2 streets	Untill this sidewalk	Not allowed	1-2 streets	As far as I want	1-2 streets	3-4 streets	As far as I want	3-4 streets	3-4 streets	5 or more streets	
Yes	No	Sometimes	Sometimes	Yes	Sometimes	Sometimes	Sometimes	Sometimes	Yes	Yes	
No	Yes	Sometimes	Sometimes	No	Sometimes	Sometimes	No	Sometimes	Yes	No	
Fun	Fun	Fun	Fun	Sometimes	Sometimes	Fun	Fun	Fun	Fun	Fun	
Boring	Boring	Fun	Fun	Fun	Fun	Fun	Fun	Fun	Fun	Fun	
Fun	Boring	Boring	Fun	Fun	Fun	Fun	Fun	Fun	Fun	Fun	
ometimes	Fun	Fun	Fun	Fun	Fun	Sometimes	Boring	Sometimes	Sometimes	Sometimes	
Fun	Boring	Boring	Sometimes	Sometimes	Sometimes	Sometimes	Boring	Boring	Sometimes	Boring	
Fun	Fun	Fun	Fun	Fun	Fun	Fun	Fun	Fun	Fun	Fun	
No	Yes	Sometimes	Yes	Sometimes	Sometimes	No	No	No	No	No	
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
ometimes	Yes	Yes	Yes	Yes	Yes	Sometimes	Yes	Sometimes	Sometimes	Yes	
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Yes	Yes	Yes	Yes	Yes	Yes	Sometimes	Sometimes	Sometimes	Yes	Yes	
ometimes	Yes	Yes	Yes	Yes	Yes	No	Sometimes	No	Sometimes	Yes	
bike / by car	By bike	By bike	By bike	Walking	By bike	By bike	By bike	By bike	By bike	By bike	
es, parent	Yes, parents	Yes, parents	Yes, parents	No	Yes, parents	No	No	No	No	Yes, parents	
nature. More ment like Van rlaan for older and ger children.	Playing in nature is the nicest thing on earth! More huts, swimming pool, green slide Young children, not very demanding	Waterfall, more hiding and climbing things, basketballfield	Add a tree to climb in, more nature. Dogs should be allowed.	More playgrounds, more grass and bushes. Swimming pool or lake. Remove fences, they are dangerous. Remove waste from grass and surrounding	Make a roundabout at Paagman, dangerous intersection. Make a field for dogs	More grass fields, cool slide, swimming pool, playground from branches	Nice restaurant with sport and play facilities Not allowed to play football on public square near church and other	football goals and sand to play in	Football goals, trees to climb in, rope ladders, treehouses	Climbing wall	
EMO & Mental timulation	Nature, EMO & Mental stimulation	Physical & Mental stimulation	Nature, Physical & Mental stimulation	Nature & Water > EMO & Mental stimulation		Nature & Water > EMO & Mental stimulation	Physical stimulation	EMO & Physical stimulation	EMO, Physical & Mental stimulation	Physical & Mental stimulation	

D.2 interviews outcome

Date		Total / average					
Boy/Girl		11 Boys 61%	7 Girls 39%				
Average age		8,9					
With/Without parent		12 x With 67%	6 x Without 33%				
With/Without brother/sister/friend		16 x With 89%	2 x Without 11%				
Where do you play more often?		1 x Indoors 6%	8 x Outdoors 44%	9 x Equal 50%			
How often do you play outside?		4,2 days					
How long do you play outside?		7 x 0,5-1,5 hrs 39%	7 x 1,5-2,5 hrs 39%	4 x >2,5 hrs 22%			
Where do you go when playing outside?		17 x park 94%	13 x sidewalk 72%	8 x beach/dunes 44%	7 x playground 39%	4 x garden 22%	2x other: skateboard park 11%
How far is a place to play from your home?		1,5 streets away					
Do you think there are enough possibilities?		12 x no 67%	6 x yes 33%				
How far are you allowed to go outside without your parents?		5 x 1-2 streets 28%	4 x As far as I want 22%	3 x not allowed 17%	3 x 3-4 streets 17%	1 x 5 or more streets 6%	2 x other: Bart Smit / Sidewalk 11%
Are there enough people around to watch you if anything goes wrong?		11 x Yes 61%	6 x Sometimes 33%	1 x No 6%			
Are you having trouble with cars or other traffic at this place to play?		11 x No 61%	5 x Sometimes 28%	2 x Yes 11%			
Do you like playing:	EMO	10 x Fun 56%	7 x Sometimes 39%	1 x Boring 6%			
	Physical activity	14 x Fun 78%	1 x Sometimes 6%	3 x Boring 17%			
	Creativity and imagination	13 x Fun 72%	1 x Sometimes 6%	4 x Boring 22%			
	Social play	10 x Fun 56%	7 x Sometimes 39%	1 x Boring 6%			
	Plural target groups	5 x Fun 28%	8 x Sometimes 44%	5 x Boring 28%			
	Nature	15 x Fun 83%	3 x Sometimes 17%				
Can you play nearby:	EMO	2 x Yes 11%	7 x Sometimes 39%	9 x No 50%			
	Physical activity	18 x Yes 100%					
	Creativity and imagination	13 x Yes 72%	5 x Sometimes 28%				
	Social play	18 x Yes 100%					
	Plural target groups	15 x Yes 83%	3 x Sometimes 17%				
	Nature	9 x Yes 50%	6 x Sometimes 33%	3 x No 17%			
What is your way of transport to school?		11 x Bike 61%	5 x Car 28%	1 x Walking 6%	1 x Public transport 6%		
Are you accompanied by a parent or brother/sister/friend?		12 x Yes, parent 67%	6 x No 33%				
What would make you want to play outside more?		14x Mental stimulation Specifically: 4x water	11x Physical stimulation	8x EMO	5x Nature		

D.3 Interviews on maps - actionradius and dangerous intersections

Boy - 10 years old

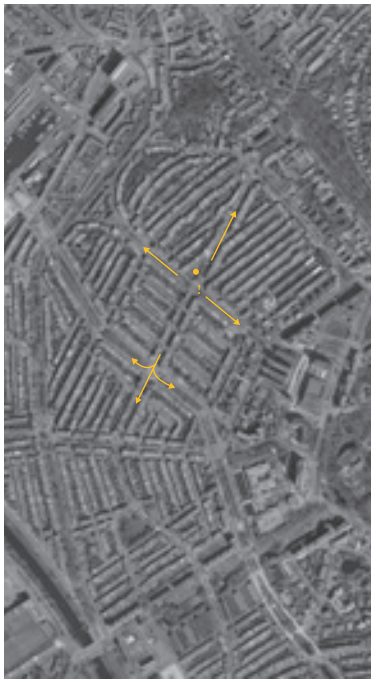
Girl - 8 years old

Girl - 8 years old

Girl - 11 years old

Boy - 7 years old

Boy - 10 years old



Boy - 14 years old