

# Neighbourhoods

Case document Climate Proof Cities  
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Case manager: Andy van den Dobbelsteen

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# 01 Introduction

The Climate Proof Cities (CPC) case of Neighbourhoods focuses on the issue of climate adaptation in neighbourhoods and districts of cities, with a main emphasis on heat, as water problems are already tackled in the Water case of CPC. Together with the hotspot cities and cities that joined the CPC programme specific sites were selected, each with different features, making the whole collection an interesting showcase for many other cities in the Netherlands and abroad. This document discusses the outline of the Neighbourhoods case, as well as detailed characteristics of the locations involved.

## Three foci

The Neighbourhood cases focus on three aspects of the CPC programme:

- Vulnerability and sensitivity of neighbourhoods
- Measures to reduce the vulnerability and increase the climate proofness
- Governance: how to involve stakeholders and organise the measures

These aspects relate to topics coming from work packages 2, 3 and 4 of CPC. In order to estimate the sensitivity and vulnerability and to determine the effects of measures proposed, measurements of work package 1 will also be necessary.

In addition, as a result from the case meetings 2010 and early 2011, another issue raised by some of the cities involved is how to convince municipal management and executives of the necessity of climate adaptiveness and to provide information on the effects occurring when nothing is done to increase climate robustness.

## Definitions

All parties involved in this CPC case expressed the need for clear definitions of terms as sensitivity, vulnerability, climate robust, climate proof etc.

Thanks to Frans van der Ven, the following basic definitions can be used.

### Vulnerability

- Vulnerability is the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity [IPCC, 2007].
- Vulnerability is often defined as the sensitivity of a system to exposure to shocks, stresses and disturbances, or the degree to which a system is susceptible to adverse effects [White, 1974; IPCC, 2001; Turner et al., 2003; Leurs, 2005].
- Vulnerability is the degree to which a system or unit is likely to experience harm from perturbations or stress [Schiller et al, 2001].

According to Turner [2003: 8074], the “design of vulnerability assessments” should contain three key elements: the detection of exposure, the valuation of sensitivity and the estimation of resilience or adaptation capacity. The second key element is the valuation of the sensitivity of the affected biotic, abiotic and socioeconomic systems. This is the valuation part in this approach. “The assessment of (...) vulnerabilities involves (therefore) value judgements” [IPCC, 2007: 784]. The value judgement should be reliant on a general orientation.

### Sensitivity

Sensitivity is the degree to which a system is affected, either adversely or beneficially, by climate variability or change. The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea-level rise) [IPCC, 2007].

### Adaptive capacity (in relation to climate change impacts)

The ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences [IPCC, 2007].

### **Selection through categorisation according to vulnerability**

Neighbourhoods can be characterised by their typology. Typology can be defined in various ways: density (FSI/FAR), openness (GSI/OSR/UPSI), time of construction, ratio of green and water, etc. The exact determination of indicators that accurately indicate the climate sensitivity, vulnerability and robustness of neighbourhoods, has to be done in the process of research, working from crude ideas to more exact definitions.

For the time being, the urban density and heat-reducing potential seem good indicators to divide the city neighbourhoods into categories. Density defines the petrified urban surface and the pressure on public space. The heat-reducing potential is the local capacity to cool down or control urban temperatures.

## 02 Rotterdam

Rotterdam has a special arrangement for green roofs, which can be advantageous in regards to water retention and reduction of heat and drought.

Rotterdam offers the following possible locations to be studied by CPC:

- Bergpolder-Zuid: old (partly existing pre-WW2, partly new construction) living area with potential climate problems
- Lijnbaankwartier: infill project with redevelopment

City stakeholders: Jos Streng → Suzan Buijs, Daniel Goedbloed, Lizzy Nijhuis, Bart Verhagen

CPC researchers: Beitske Boonstra, Andy van den Dobbelsteen, Leyre Echevarría Icaza, Frank van der Hoeven, Bert van Hove, Laura Kleerekoper, Wiepke Klemm, Anita Kokx, Sanda Lenzholzer, Hens Runhaar, Patrick Schrijvers, Nico Tillie, Caroline Uittenbroek, Toine Vergroesen, Alex Wande

### 02.01 Bergpolder-Zuid

#### Specific research questions and focal points

For Bergpolder-Zuid the following applies:

- The area is thermally vulnerable as there are few green or wet spaces; UHI measurements indicate higher temperatures than elsewhere.
- There are no flooding problems in the area as there are quite large inner gardens.
- Public outdoor spaces are unpleasant and uncomfortable. There is wind nuisance in most places designed for people to sit outside. Therefore the wind behaviour in these places needs to be determined, and solutions have to be found.
- Air quality is a big problem in Rotterdam due to the harbour and the A20 motorway. The measures proposed in the master plan for Bergpolder Zuid are likely not going to improve this situation substantially. Therefore solutions are sought that can locally improve the air quality, such as the introduction of green surfaces, preferably with an immediate effect
- In the master plan green facades are planned on the fence between Energiehof and Insulindeplein. What is the effect of this?

#### Case coordinator (from the city)

Jos Streng → Suzan Buijs & Bart Verhagen (Vestia)

#### CPC researchers involved from Neighbourhoods

- 1.1 (metingen): WUR – Bert van Hove
- 1.3 (microschaal modellering): TUD – Patrick Schrijvers
- 2.4 (typologieën): TUD – Frank van der Hoeven, Nico Tillie, Alex Wande
- 3.1 (groen): WUR – Wiepke Klemm, Sanda Lenzholzer
- 3.3 (regen): Deltares – Toine Vergroesen
- 3.6 (stedelijk klimaatontwerp): TUD – Laura Kleerekoper
- 4.2 (zelforganisatie): UU – Beitske Boonstra
- 5.1 (integratie): WUR – Annemarie Groot

<b>Other stakeholders</b>
Local dwellers and companies
<b>Case study approach and methodology</b>
<ul style="list-style-type: none"> <li>▪ Analysis of the current situation and vulnerability before effectuating the master plan: <ul style="list-style-type: none"> <li>– Envimet maps of the current situation will be produced by the end of the summer of 2012 (TUD, Laura Kleerekoper).</li> <li>– Pushbike measurements will be conducted during the summer of 2012 (WUR).</li> <li>– Timing of detailed measurements of surface temperatures by airplane will be very dependent on the weather, especially on the wind direction (WUR)</li> <li>– Temperatures will be measured in and around buildings (TU/e, Mike). The model needs a lot of information on different components.</li> <li>– Stakeholder information will be gathered of precipitation, drains and ducts, soil sealing, etc.</li> </ul> </li> <li>▪ Determining the effects of measures proposed in the master plan (TU/e, TUD, WUR), for <ul style="list-style-type: none"> <li>– Green roofs and facades: Bergselaan, Spoordriehoek (on new buildings)</li> <li>– Increase of green surface: around the church, Savornin Lohmanstraat, Energiehof, inside Bergselaan perimeter blocks</li> <li>– New trees: Bergpolderstraat, inside Bergselaan perimeter blocks</li> <li>– Thermal insulation: Buildings on the corner of Vlaggemanstraat and Insulindestraat</li> </ul> </li> <li>▪ Proposal of additional measures and determining the effects of these <ul style="list-style-type: none"> <li>– Energy renovation of existing buildings</li> </ul> </li> </ul>
<b>Planning</b> (start, end and in-between decision moments)
The project started early 2012 and had its first researchers meeting on 10 April and first stakeholder meeting on April 19. Explorative research of the current situation will be finished around summer 2012; effects of the master plan measures will be known by fall 2012 and new measures and their effects will be presented early 2013.

## 02.02 Lijnbaankwartier

This neighbourhood case has recently started and needs to be further elaborated.

## 03 Amsterdam Nieuw-West

Amsterdam offers the district of Nieuw-West ('new west'), which is a large administrative part of Amsterdam, involving various neighbourhoods, of which some are interesting for CPC in terms of infill projects, redevelopment or transformation, with different characters and different issues related to climate adaptation and mitigation. Until 2015 3,600 new dwellings need to be realised in Nieuw West. Also the overall picture in context of the entire city of Amsterdam is interesting. Nieuw West contains various neighbourhoods. You can find these in the case forms of the Annex.

### General issues of attention

On a political level, the climate issue of urban heat islands is not yet generally considered a problem. Amsterdam is focusing on becoming climate neutral, aiming at the use of energy in buildings. In contrast to this general remark, the necessity of climate adaptiveness seems apparent to the district of Nieuw West, noticeable by a report on participation in climate adaptation [Holstein, 2010]. Nonetheless, the legitimacy of policy and measures of climate adaptation needs to be addressed in this case.

- Is urban heat a problem? Is it significant in regards to health and energy consumption for air-conditioners?
- If so, what can be done about it? Is a distinction between city – neighbourhood – street – building useful when considering measures?
- Rather than tackling existing neighbourhoods, isn't it more effective to aim at new developments or projects of transformation, to do it right where you have greater influence?
- Can a distinction be made between generic, site-independent measures and specific, tailor-made solutions? Could both ones be implemented in the Amsterdam cases?

### Neighbourhoods

- Stadsdeel Nieuw West complete
- Plein '40-'45 / Natural Airco (Eliaspark)
- Couperusbuurt

City stakeholders: Pieter Boekschooten, Anja Boon, Jos de Bruijn, Caroline Elbers, Age Niels Holstein, Judith van Laarhoven, Marloes van Loo, Sarah Pranger, Natalie Rasing, Jan Spaans, Vania Stonner, Jeanette van Stuijvenberg, Florentijn Vos, Jos de Bruijn, Sabine van Ruijven

CPC researchers: Beitske Boonstra, Andy van den Dobbelsesteen, Leyre Echevarría Icaza, Frank van der Hoeven, Bert van Hove, Laura Kleerekoper, Wiepke Klemm, Anita Kokx, Sanda Lenzholzer, Hens Runhaar, Patrick Schrijvers, Karin Stone, Nico Tillie, Caroline Uittenbroek, Alex Wande

03.01 Stadsdeel Nieuw-West complete



<b>Specific research questions and focal points</b>
<ul style="list-style-type: none"> <li>▪ Wat zijn de te verwachten klimaatveranderingen waar het stadsdeel mee geconfronteerd wordt?</li> <li>▪ Welke knelpunten worden nu al zichtbaar m.b.v. metingen (urban heat islands, wateroverlast, droogte etc.)?</li> <li>▪ Tot welke randvoorwaarden voor gebiedsontwikkeling leidt dit?</li> <li>▪ Hoe verhoudt dit zich tot bestaande maatregelen (vb. de 10% compensatieregeling voor verhard oppervlak)?</li> <li>▪ Wat is de betekenis van de hiërarchische groen,- water- en bebouwingsstructuur van de Westelijke Tuinsteden voor de gehele stad?</li> <li>▪ Welke 'fouten' zijn er in het verleden gemaakt die de betekenis van de hiërarchische groen,- water-, en bebouwingsstructuur onderbroken hebben?</li> <li>▪ Hoe kan klimaatadaptatie ingebed worden in de reguliere participatieprocessen in de stedelijke vernieuwingsgebieden?</li> </ul>
<b>Case coordinator</b> (from the city)
Anja Boon ( <a href="mailto:a.boon@nieuwwest.amsterdam.nl">a.boon@nieuwwest.amsterdam.nl</a> ) tel. 020-2537715
Judith van Laarhoven ( <a href="mailto:j.van.laarhoven@nieuwwest.amsterdam.nl">j.van.laarhoven@nieuwwest.amsterdam.nl</a> ) tel. 020-2537806
<b>CPC researchers involved</b>
<p>1.1 (metingen): WUR – Bert van Hove</p> <p>2.3 (kwetsbaarheid): Deltares – Karin Stone</p> <p>2.4 (typologieën): TUD – Frank van der Hoeven, Nico Tillie, Alex Wande</p> <p>3.1 (groen): WUR – Wiebke Klemm, Sanda Lenzholzer</p> <p>3.7 (regio): TUD – Leyre Echevarría Icaza, Frank van der Hoeven</p> <p>4.4 (adaptatiestrategieën): UU – Anita Kokx</p> <p>Toine Vergroessen (3.3, regen) functioneert als consultant vanuit de case Integraal Waterbeheer/Watergraafsmeer.</p>
<b>Other stakeholders</b>
<ul style="list-style-type: none"> <li>- Vastgoedeigenaren/projectontwikkelaars/corporaties</li> <li>- Stedelijke diensten zoals Waternet, dRO, O+S</li> </ul>
<b>Case study approach and methodology</b>
Nader te bepalen.
<b>Planning</b> (start, end and in-between decision moments)
Dit project start begin 2011 en zal uiterlijk eind 2014 zijn afgerond. In de eerste fase tot 2012 hebben de projecten uit werkpakket 1 en 2 de nadruk. Vanaf begin 2012 krijgen de projecten uit werkpakket 3 en 4 de overhand.



04.02 Plein '40-'45



<p><b>Specific research questions and focal points</b></p> <ul style="list-style-type: none"> <li>▪ Treedt er op het plein een urban heat island effect op in warme periodes?</li> <li>▪ Welke (positieve en negatieve) invloed heeft de wind op het plein?</li> <li>▪ Welke maatregelen kunnen genomen worden om de effecten van het hitte-eiland tegen te gaan? Welke maatregelen zijn het meest effectief? Kan dat gemeten worden?</li> <li>▪ Welke maatregelen kunnen gekomen worden om de effecten van wind op het plein te beïnvloeden? Welke maatregelen zijn het meest effectief? Kan dat gemeten worden?</li> <li>▪ Kan er iets gezegd worden over de al dan niet te verwachten wateroverlast?</li> <li>▪ Welke maatregelen kunnen genomen worden om de effecten van de wateroverlast tegen te gaan?</li> <li>▪ Kunnen geplande ruimtelijke ingrepen op het plein doorgerekend worden op de klimaat-consequenties?</li> <li>▪ Hoe kan klimaatadaptatie als thema geïntegreerd worden in het lopende 'place-making traject' (waarbij interventies benoemd zijn die betrekking hebben op de inrichting van de openbare ruimte, maar ook op een bredere functiemenging/toevoeging van programma/sturing op branchering etc. en waarbij een actieve groep stakeholders op en rond het plein (voornamelijk ondernemers en vastgoedeigenaren) betrokken is)?</li> </ul>
<p><b>Case coordinator</b> (from the city)</p> <p>Anja Boon (<a href="mailto:a.boon@nieuwwest.amsterdam.nl">a.boon@nieuwwest.amsterdam.nl</a> tel. 020-2537715)</p> <p>Jeanette van Stuijvenberg</p>
<p><b>CPC researchers involved</b></p> <p>1.1 (metingen): WUR – Bert van Hove</p> <p>1.3 (microschaal modellering): TUD – Patrick Schrijvers</p> <p>2.3 (kwetsbaarheid): Deltares – Karin Stone</p> <p>3.6 (stedelijk klimaatontwerp): TUD – Laura Kleerekoper</p> <p>4.1 (externe integratie): UU – Caroline Uittenbroek</p> <p>4.2 (zelforganisatie): UU – Beitske Boonstra</p> <p>Plein '40-'45 kan als type opgave ook gekoppeld worden aan het Osdorpplein en heeft een sterke relatie met de Natural Airco/Eliaspark.</p>
<p><b>Other stakeholders</b></p> <p>Vastgoedeigenaren/projectontwikkelaars</p>
<p><b>Case study approach and methodology</b></p> <p>Er zal een bijeenkomst plaatsvinden in Amsterdam, waarin de exacte werkzaamheden door de onderzoekers, planning en nadere afspraken worden gemaakt.</p>

## Planning (start, end and in-between decision moments)

Algemeen:

- visiedocument integrale gebiedsontwikkeling Plein '40-'45: vaststelling db 1<sup>e</sup> kwartaal 2011

Deelproject 'optoppen Maco-gebouw'

- aanvraag omgevingsvergunning gepland op 1-5-2011
- start bouw gepland op 1-1-2012

Deelproject 'optoppen Blue Square Hotel'

- aanvraag omgevingsvergunning: 2<sup>e</sup> helft 2011
- start bouw: nog niet vastgesteld (hangt mede af van het toeristenseizoen)

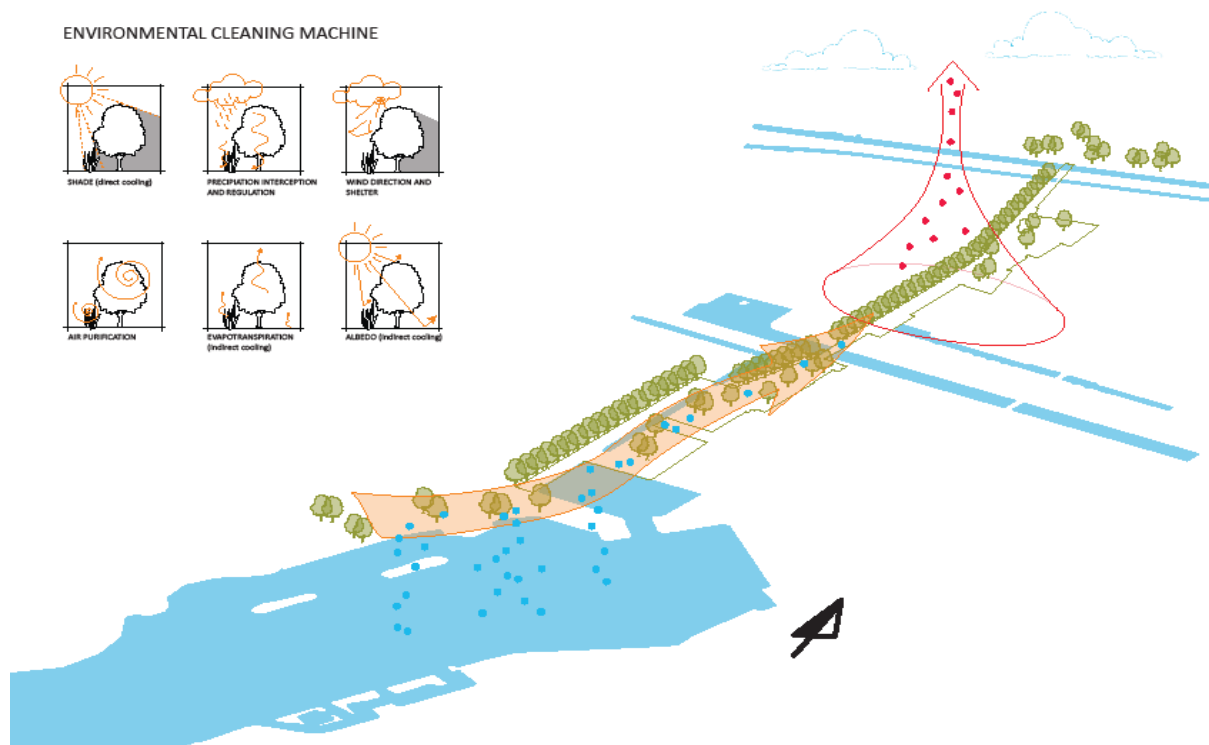
Deelproject 'herontwikking Aldi-locatie'

- opstarten gesprekken ING Real Estate Development na vaststelling visie Plein '40-'45
- gepland programma en start bouw: nog niet bekend

Deelproject 'Placemaking'

- op basis van de uitkomsten van de 'Masterclass Placemaking' (sept. 2010) bepalen welke interventies op korte termijn uitgevoerd kunnen worden. Planning: 1<sup>e</sup> helft 2011

## 04.03 Natural Airco (Eliaspark)



### Specific research questions and focal points

- Prove the influence of the blue-green network on temperature and clean air ( the natural airco and clean machine =>
- study of influence of Eliaspark to be developed on the urban heat island Plein '40-'45 ;
- study of influence of Eliaspark to be developed on the surrounding neighbourhood => water, Co2 and fine dust;
- study of influence of Eliaspark to be developed on the crossing motorway Burg. Roëllstraat and Burg. Vlughtlaan (CO2 and fine dust).

The larger a green area is, the more significant the cooling effect will be? Also, the cooling and cleaning effects extends outside the boundaries of the park at the side of the wind direction. It is also needed to balance with the surrounding neighbourhood because: to divide the entire space allocated for parks into a large number of small parks, spread over the whole urban area, will have a greater effect on the overall urban climate, than would the creation of a small number of large parks. But is the blue-green network of Van Eesteren above all the best solution as a natural airco and clean machine? (ref. Vauban in Freiburg!).

Four important phenomena can be regarded in the influence of vegetation on the climate: (1) permeability, (2) evapo-transpiration, (3) albedo and (4) transmission. These four phenomena cause the air near the ground to be cooler in green areas that are paved or asphalted. The university of Manchester has calculated that an increase of urban vegetation with 10% can lower down summer peak temperatures with 4 degrees C.

Anthropogenic phenomena that influence the urban climate are high proportions of air pollutants and anthropogenic heating from mobile and stationary sources. Anthropogenic heat is all energy that is emitted by human activity; for example by cars, factories and heated buildings. Anthropogenic heat can create a heat island of up to 2-3 C during the day as well as the night!

The most important research question is => is the Blue-Green Network of van Eesteren the best solution for reducing heat island effects and reducing fine dust and CO2. Is the completion of the network by (finally) introducing the Eliaspark therefore a supreme improvement of the natural airco and clean machine?

Continue the idea of blue-green network or spread it out in (a lot of) small more or less isolated parks as proposed by Givoni in 1991.

### Case coordinator (from the city)

Pieter Boekschooten, [p.boekschooten@nieuwwest.amsterdam.nl](mailto:p.boekschooten@nieuwwest.amsterdam.nl), tel. 020-2537515

Vania Stonner - urban designer Amsterdam, stadsdeel Nieuw-West

Sabine van Ruijven – Wageningen University (student)

### CPC researchers involved

1.1 (measurements): WUR – Bert van Hove

1.3 (micro-scale modelling): TUD – Patrick Schrijvers

3.1 (green): WUR – Wiebke Klemm

3.6 (urban climate engineering): TUD – Laura Kleerekoper

This project has a strong relationship with Plein '40-'45 (and Osdorppelein).

### Other stakeholders

Charlotte Buijs – landscape architect, dRO Amsterdam

Edwin van Dijk – designer public environment Amsterdam, stadsdeel Nieuw-West

Jan Spaans - urban designer Amsterdam, stadsdeel Nieuw-West

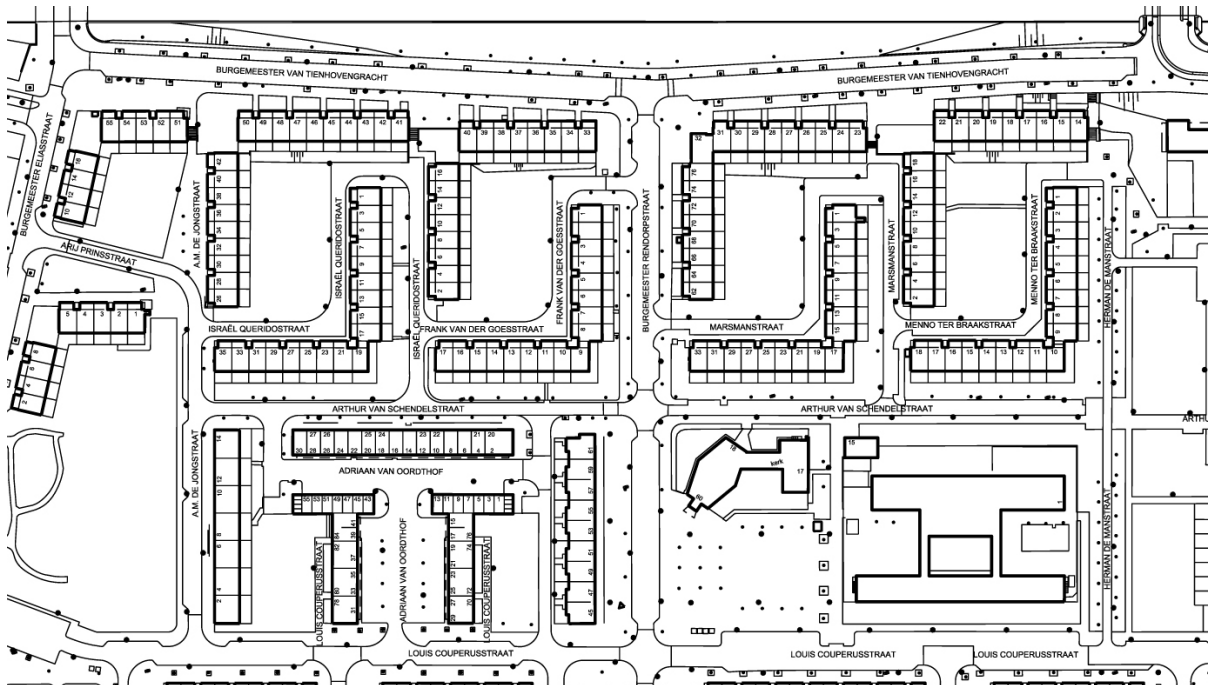
### Case study approach and methodology

To be determined soon.

### Planning (start, end and in-between decision moments)

In discussion caused by the delay in town development and reconstruction

## 04.04 Couperusbuurt



<b>Specific research questions and focal points</b>
<p>What are the expected consequences of climate change for this neighbourhood?</p> <p>1. The Couperusbuurt is a typical neighbourhood for the Western Garden Cities. Typical in the way that it is a fairly purely example for how the Western Garden Cities originally have been designed. The spatial principles of the Western Garden Cities form an optimal basis to attach measures for climate adaptation (buffering of water and heat). Even, the Western Garden Cities are probably – in potential - the most climate-proof area from Amsterdam.</p> <p>Using this purely organized neighbourhood can make the possibilities for the Western Garden Cities clear and can probably lead to an specific climate toolbox for the Western Garden Cities.</p> <p>2. The neighbourhood is – like a bathtub- enclosed by the Burg. Roellstraat and the Burgemeester van Tienhovengracht. Both elements do have a higher street level than the neighbourhood. Also in the centre of the neighbourhood there are public spaces (a square and two green spaces) which can be used for buffering of water. Level differences can be used top transport water to these places, places that also be characteristic for the neighbourhood. The question is what the technical possibilities are from this principle.</p>
<b>Case coordinator</b> (from the city)
<p>Jan Spaans (stedenbouwkundige): <a href="mailto:j.spaans@nieuwwest.amsterdam.nl">j.spaans@nieuwwest.amsterdam.nl</a>, tel. 020-2538723</p> <p>Kees Vissers (projectmanager Stedelijke Ontwikkeling): <a href="mailto:k.vissers@nieuwwest.amsterdam.nl">k.vissers@nieuwwest.amsterdam.nl</a>, tel. 020-2537707</p>
<b>CPC researchers involved</b>
<p>3.1 (groen): WUR – Wiebke Klemm</p> <p>3.6 (stedelijk klimaatontwerp): TUD – Laura Kleerekoper</p> <p>4.2 (zelforganisatie): UU – Beitske Boonstra</p> <p>Toine Vergroesen (3.3, regen) als consultant vanuit Watergraafsmeer.</p>
<b>Other stakeholders</b>
<ul style="list-style-type: none"> <li>▪ Corporaties</li> <li>▪ Bewoners</li> </ul>
<b>Case study approach and methodology</b>
To be determined.
<b>Planning</b> (start, end and in-between dicision moments)
<p>Dit project start begin 2011 en zal uiterlijk eind 2014 zijn afgerond. In de eerste fase tot 2012 hebben de projecten uit werkpakket 1 en 2 de nadruk. Vanaf begin 2012 krijgen de projecten uit werkpakket 3 en 4 de overhand.</p>

## 04 Haaglanden

In addition to the city of The Hague, Haaglanden involves the municipalities of Hoek van Holland, Monster, Kijkduin, Midden-Delfland, Westland, Delft, Nootdorp-Ypenburg, Zoetermeer. At the moment, due to political and financial reasons, Haaglanden is not actively involved but will certainly join later in the process.

### Neighbourhood

The Hague offers the following locations for study by this CPC case of neighbourhoods:

- City centre: existing area, with local infill projects
- Heesterbuurt: existing area (in contrast to the name, no shrub can be found here)
- Haaglanden region (including Westland and Midden-Delfland)

### Issues of attention

A general denominator of many parts of Haaglanden is the urbanisation, with dense, stony surfaces. This can lead to severe flooding after heavy rainfall, or drought regarding groundwater and nature. Specific for this area in the Netherlands, there is a combined threat of sea level rise and soil subsidence. Hence, the need for climate adaptation is clear.

Research questions could be:

- What are the possibilities and impact of cooling sea breezes in summer?
- How can this region cope with rainfall intensification?
- Do greenhouses add to the urban heat island effect or not? Could they function as a solar collector?
- How can green roofs, park roofs, reflecting roofs or other measures increasing the albedo effect be applied to areas in Haaglanden, and what would be the effect?

Due to their late start, the Haaglanden neighbourhood cases still need to be elaborated.

## 05 Nijmegen and Arnhem

Nijmegen and Arnhem are involved in the Future Cities project and therefore quite some research already takes place. For instance, a heat map has been made of Arnhem, showing potentially vulnerable areas.

Nevertheless, several areas are still of interest for CPC, one of which is on the street and building level (Bloemersstraat, Nijmegen and Weerdjesstraat, Arnhem), but also some neighbourhoods:

- Nijmegen, Spoorzone
- Arnhem, Presikhaaf

City stakeholders: Ton Verhoeven, Hans van Ammers

CPC researcher: Anita Kokx

### 05.01 Spoorzone, Nijmegen

Recently the originally planned Nijmegen neighbourhood case studies were altered and therefore no research plan is yet known for the Spoorzone.

### 05.02 Presikhaaf, Arnhem

<b>Specific research questions and focal points</b>
Presikhaaf is een herstructureringswijk.
<b>Case coordinator</b> (from the city)
Hans van Ammers (namens wie Ton Verhoeven optreedt als vervanger)
<b>CPC researchers involved from Neighbourhoods</b>
Nader te bepalen.
<b>Other stakeholders</b>
Woningcorporaties, bewoners
<b>Case study approach and methodology</b>
Er zal een bijeenkomst plaatsvinden in Nijmegen/Arnhem, waarin de exacte werkzaamheden door de onderzoekers, planning en nadere afspraken worden gemaakt.
<b>Planning</b> (start, end and in-between decision moments)
Dit project start begin 2011 en zal uiterlijk eind 2014 zijn afgerond. In de eerste fase tot 2012 hebben de projecten uit werkpakket 1 en 2 de nadruk. Vanaf begin 2012 krijgen de projecten uit werkpakket 3 en 4 de overhand.



## **06 Results**

### **06.01 Deliverables**

As resulted from the neighbourhoods' case meetings, there should be both scientific and practical outcomes from the case studies. This is the intention of the CPC team, which addresses their scientific challenges through the practical study of real-time cases in the cities related to CPC. Research questions are connected to demands from the cities' perspective. Some of the neighbourhoods will function as a source of information to the researchers, whilst city representatives will be provided with information on the severity and possibilities within the designated neighbourhoods. Other neighbourhoods will come in handy when new models or proposed sets of measures are tested, indicating effective and feasible interventions. Some of the neighbourhoods can do both: provide information in the beginning and function as test case for climate-adaptive measures in the end.

General deliverables will be both scientific output including discussion of the cases (in publications and the thesis) and recommendations and proposed interventions (spatial, technical and organisational), reported to the specific cases. In this respect every year an updated report will be provided. Specific deliverables have to be defined by the cooperating teams in the respective city.

Frequent meetings and updates should guarantee regular tuning of research and ongoing effort in the cities.

### **06.02 Cooperation between projects and meeting frequency**

Since January 2011, the neighbourhood cases function on their own, with their own team of researchers and people from the municipality and other stakeholders. Since many of the researchers have a role in more than one case, cooperation will be secured.

In addition, once every half a year, a general neighbourhoods case meeting will be organised to gauge the progress and discuss findings, obstructions and further planning.

### **06.03 Time planning**

19 January 2011 can be considered the real start of all cases involved, although bilateral contacts had already taken place before that date.

By the end of 2011 we plan to have intermediate results concerning measurement and inventory studies. The year following will generally be devoted to the development of solutions, approaches and models, simultaneously tested in the neighbourhoods involved. The year of 2013 will be generally focusing on the validity, effectiveness and governance factor of interventions proposed. For PhD candidates, 2014 will be a year of writing and defending the thesis, not implying that no contact will be made between researchers and cities.

## References

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