Providing a temporary home to homeless people by adapting tent communities in Seattle.
Providing a temporary home to homeless people by adapting tent communities in Seattle.
Times are tough

Times are tough on everyone I know
the economy seems to in a downward flow
People are losing their jobs, homes and saving accounts
with unemployment rising at record amounts

This country has fallen but few will see
that we are falling deeper into debt and poverty
We need to work together to get out of this mess
and stop worrying about self, careers, and stress

We can no longer loan money without repayment
instead of I.O.U.’s and talks of delayment
We are crippling ourselves with these loans
soon all we will be is skin and bones

That’s the fact as they are today
for the poor living in the U.S.A.
Hopefully our government will come to realize
this fact in this I publicize

Matthew R. Barret is homeless for over ten years. He is now living in Tent City 3.
Colophon

Master Thesis HOMETOWN/TEMP

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Urban Climate Studio MSc 4
Department of Urbanism
Faculty of Architecture
Delft University of Technology

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Preface

This is the master thesis for the master of Urbanism from the faculty of Architecture at Delft University of Technology.

The graduation process started with a fascination for temporary cities and their sustainability. This fascination has risen during the construction of the OWee tent in August, 2009 (the OWee is the introduction week for first-year students of Delft University of Technology). With the lapse of time, this fascination led to this master thesis, which is about the graduation project HOMETOWN/TEMP.

HOMETOWN/TEMP is about tent communities that can provide a temporary home to homeless people in the City of Seattle. The project focuses on social sustainability and the adaptation of tent communities in Seattle, on all scales of the city.

I have been working on this project during the last fourteen months. In this time many people helped, motivated and encouraged me, to be able complete my thesis at the highest level.

For that reason I would like to start with thanking the residents of Tent City 3 and Nickelsville, whom were so kind to invite me in their communities. There I learned that tent communities, in spite of their unpleasantness, are an inspiring and motivating environment.

Also I would like to express gratitude to Scott Morrow, Guillermo Romano and Al Poole for their time, knowledge, inspiration and insights into the current situation in Seattle.

Subsequently I would to thank my mentors, Machiel van Dorst, Maurice Harteveld and Arjan van Timmeren, for their concerns and guidance, which were always filled with inspiration, knowledge and wise lessons.

Not to be forgotten are the students and teachers from the urban climate studio, my family and friends whom have always supported me.

The cover of this thesis is constructed out of re-used tarpaulin, which is an important construction material for the tent community residents. Returning to the starting point of this project, the tarpaulin which is used for this thesis was a remnant of the OWee 2009’s decoration.

Vera Kreuwels, October 2010
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This is the thesis for the graduation project "HOMETOWN/TEMP". The graduation project is part of the master of Urbanism at the faculty of Architecture at Delft University of Technology.

HOMETOWN/TEMP is about tent communities that can provide a temporary home to homeless people in the City of Seattle.

In this chapter the problem and the projects' aims will be described at first. Thereafter, the research questions will be introduced. This will be followed by an explanation of the projects relevance and the methods that are used to achieve the final products. Finally the involved faculty chairs and the project's relevance will be discussed.

### 1.1 Social fascination

People in the United States are living up to the American dream. If you work hard, you become rich and successful. If you do not, you end up on the streets. In his TED award-speech Cameron Sinclair states that many places in the US 'have far worse conditions than many developing countries' (Sinclair, 2006).

In developing countries, relief organizations provide a safety net when a war or disaster occurs. This safety net provides the homeless with their basic needs (shelter, food, medicines, etc.). In the United States there is no social system that catches you like a safety net. The American mentality states that it is only you to be blamed that you did not succeed. Among others, this results in very bad living conditions.
1.2 Problem statement

This section starts with the introduction of this thesis’ problem statement. Thereafter, the situation of being homeless in Seattle will be discussed in order to explain the context of homelessness in Seattle.

1.2.1 Problem statement
On a daily basis, people in the world get hit by disasters. Disasters vary in size, nature and impact (e.g. war, natural disasters, economic crisis). ‘Apart from food and water, physical shelter is arguably, the most elemental need of anyone who has been forced from his or her home’ (United Nations High Commissioner for Refugees, 2002, p. 1). The disaster’s victims are often provided shelter in temporary settlements to cater for their primary needs. Many of such settlements often appear to be not as temporary as expected in the beginning, while these settlements are not designed for long-term use. Temporary settlements appear, for example, in war and post-disaster areas, mostly known as refugee camps.

However, temporary settlements also appear on less expected locations. For example, in many big cities in the United States homeless people are living in self-managed tent communities (Staps, 2009). The problem is worsening due to the recent mortgage-crisis (Schilder, 2009, p. 6-7).

In the City of Seattle, only one camp with a maximum of one hundred inhabitants is legally allowed. Besides that, the encampment cannot stay at one location longer than three months (City of Seattle, 2002). Although the homeless people whom are living in a tent community no longer have to live on the streets; a tent community, in its current travelling form, cannot be called a temporary in-between home from where people can start building a new life. This is illustrated in image 1.1.

Together with the centres for the homeless being overfull this results in an enormous amount of people living illegal and scattered throughout the public spaces of Seattle.

It can be concluded that Seattle has a two-way problem:
• Homelessness is scattered throughout the City of Seattle;
• A tent community is not socially sustainable temporary home.

This should both be improved. In order to improve this, attention has to be paid to the scale of the city, the scale of the tent and all the scales in between. This is needed to be able to show where and how tent communities can arise.

1.2.2 Homelessness in Seattle
‘Seattle saw its first Tent City in 1990. The area now boasts three’ (Ehrenreich, 2009). In King County (greater Seattle region) an estimated 8000 people are homeless (Committee
to End Homelessness King County, 2005) and figures are increasing since the recent mortgage-crisis (Schilder, 2009, p. 6-7).

The centres for the homeless provide temporary accommodation for 4600 people (Seattle University, 2009). This does not mean that over 3000 people are living on the streets. From the moment that people lose their house, it takes some time before they end up in a shelter. For example, after losing their house people stay with friends and family as long as possible, before they start living in their car, until they have to give up that one as well. People eventually end up on the streets, in a centre for the homeless or, for example, a tent city.

Homelessness can have multiple reasons. People can become homeless because of an illness. Especially people with psychiatric diseases (e.g. schizophrenia) have trouble with fulfilling their bills. A second group loses their house as a result of the financial and mortgage crisis. These people lose their job (and thus their income) and/or the mortgage rises enormously, both resulting in not having enough money to pay the mortgage (Ehrenreich, 2009). A third possible reason why people lose their house is that many people in the United States do not have proper health insurance. When they get ill, they end up in enormous debts (Poole, 2009).

All three groups of people, and many others, can finally end up being homeless.

Homeless people may choose living in a tent community over living in a centre for the homeless for several reasons. Not only are the centres overfull, it is also not a pleasant living environment. In the centre people feel unsafe and cannot keep their belongings with them. There is no storage room and a lot of theft. Besides that, men and women have to separate into different centres for the homeless (Oppmann, 2009).

In tent communities couples can stay together and almost everybody has a private space: the tent. In the tent they can keep their belongings with them (Oppmann, 2009).

Image 1.2, on the following page, summarizes the problem of becoming homeless as described above.

The following has to be noted: however the political and sociological factors of homelessness are very interesting (and have to be kept in the back of one’s mind while researching), they are out of this thesis’ scope. This thesis will deal with homelessness and tent communities in Seattle from an urban development point of view.
1.3 Goal, research questions and design questions

1.3.1 Main goal
It can be concluded from the problem statement that homelessness is scattered throughout the City of Seattle and that a tent community cannot be called a socially sustainable temporary home.

Consequently the main goal of this project is: designing socially sustainable temporary settlements for homeless people in Seattle, with attention to all scales of the city.

The designed tent communities will be an in-between solution for its residents. The community will be a social coherent and safe temporary home, from where the residents can start building their own future. While living in the tent community the residents will work towards a more stabilized life. For example by living in a real home, getting a job, creating a higher self-esteem and improving their health. So, the project has to be based on the users, not just architects, urban planners and the government.

Hereby it has to be noted that the World Commission on Environment and Development (also known as the Brundlandt committee) stated the following definition for sustainable development in their report ‘Our common future’: ‘meeting the needs of the present without compromising the ability of future generations to meet their own needs’ (Brundlandt, 1987). As a spin-off of this report sustainable development has been subdivided in three groups: people, planet and prosperity.

Goodland (1995) translated this into social, environmental and economical sustainability. In compliance with the project’s main goal, designing for the homeless people in Seattle, this project will focus on social sustainability.

Social sustainability is about ‘systematic community participation and strong civil society. (...) This requires maintenance and replenishment by shared values and equal rights, and by community, religious and cultural interactions’ (Goodland, 1995, p 3). It involves ‘human capital, investments in education, health, and nutrition of individuals’ (ibid.).

Although this thesis’ main focus is social sustainability, environmental sustainability will be taken into consideration because ‘environmental sustainability or maintenance of life-support is a prerequisite for social sustainability’ (Goodland, 1995, p. 2).
1.3.2 Research question
Subsequently, the main research question of the graduation project HOMETOWN/TEMP is:
What are the spatial conditions for socially sustainable tent communities in Seattle, respecting the temporality?

1.3.3 Sub research questions
To found the main research question with an answer, in-between steps need to be taken. Two sub research questions and four design questions have been formulated. Each question has it’s focus on one of the following scale levels: worldwide, City of Seattle or tent community.

1. What are the differences and similarities between the social sustainability in non-western ‘camps of needs’ and the social sustainability in Seattle’s tent communities?
Chapter two discusses what a tent community is, defining tent communities in the perspective of temporary self-build housing in the third world and defining what can be learned from non-western ‘camps of needs’.
Methods: literature review and web search of western and non-western ‘camps of needs’.
Scale level: worldwide.
(This question was the research question for the review paper that is part of the course AR3U022 - theory of urbanism).

2. How is homelessness being dealt with in Seattle at the moment and what urban facilities, spatial conditions and social structures does a tent community need to let the tent community be a starting point for improvement of the inhabitants’ chances of a better future?
Describing the current situation of homelessness in Seattle in chapter three.
Method: anthropological research by interviewing and observing and context analysis.
Scale level: tent community.

1.3.4 Design questions
From the thesis’ main goal and (sub) research questions the following design goal can be concluded: designing socially sustainable temporary settlements in Seattle, with respect and attention for the temporality and the scales of the city.
In order to fulfil this design goal, the following design questions have to be answered:

1. What spatial organization can make the new encampments a sustainable liveable environment?
Defining a set of recommendations for the development of the new tent communities: what can be learned from the spatial organization of other types of encampments in chapter four.
Method: typology studies.
Scale level: worldwide.

2. Which locations in the City of Seattle are well-connected (temporary) urban leftovers that can host a tent community?
In chapter five, the placement of sustainable tent communities in the urban network of Seattle will be described.
Method: mapping.
Scale level: City of Seattle.

3. What measures are needed to assure that the tent community stays an transitional solution that keeps a temporary character on a semi-permanent location?
Chapter six describes the design of the two elaborated tent communities (Froula Park and Pier 62/63).
Method: designing by drawing.
Scale level: tent community.

4. What are the technologies that can be used (for e.g. dealing with water and energy)?
In chapter seven the detailing of the two elaborated tent communities (Froula Park and Pier 62/63) will be discussed.
Method: drawing in detail.
Scale level: tent community.
1.4 Methodology

For this graduation project different methods will be used to establish a successful project. All these methods together will finally lead to an answer to all research questions. Therefore every method is linked to one or more sub research questions. The methods that will be used are literature review and web search, anthropological research, context analysis, typology studies, mapping and design. In this chapter the used methods will be described and in the final section the research question and methods are being linked.

1.4.1 Literature review and web search
The final product of the graduation project is going to be a design. The theoretical arguments for the design will be created by literature review and web search. The literature review and web search will create a theoretical framework that will be the basis of the anthropological research and system table. The literature review and web search will deal with the following topics:

- Western and non-western camps of needs;
- Homelessness;
- Seattle (urban planning and design);
- Tent communities in Seattle;
- Technologies that can be used;

1.4.2 Anthropological research
As stated in paragraph 1.3 one of the aims of this graduation project is to ‘design for the people. The project has to be based on the users’.
A design that is socially sustainable cannot be created if the users are not being paid attention to. This cannot be achieved by only reading literature. Therefore during a field trip to Seattle anthropological research has been done through interviewing and observing. How these techniques will be used is explained in the following sections.

1.4.2.1 Interviewing
To get a good impression of the situation in Seattle people with different perspectives need to be interviewed. The following people have been interviewed:

- Tent City 3 inhabitants.
  Tent City three is a legal tent community for homeless people in Seattle. Only the people who are now living in a tent community can tell what has brought them there and what measures are necessary to improve their life and future chances.

- Nickelsville inhabitants.
  Nickelsville is an illegal tent community for homeless people in Seattle. Nickelsville inhabitants’ are interviewed because they are illegal campers, which makes them face other problems than Tent City 3 inhabitants.

- Scott Morrow is a SHARE2 Consultant and a special Consultant for Tent City 3 and Nickelsville.

  The tent communities Tent City 1, 2, 3 and 4 are initiated by the Seattle based relief organizations SHARE and WHEEL. These organisations are self-managed organizations. This means that people who founded tent communities are homeless themselves. Scott Morrow lives in a SHARE/WHEEL social housing facility.

- Al Poole. He is the ‘Division Director Homelessness Intervention & Block Grant Admin’ for the ‘Seattle Human Services Department City of Seattle’.

  For the city of Seattle Al Poole is responsible for the way the government deals with the homeless facilities in Seattle. His department sets rules and subsidizes shelters and relief organizations. His department also collects data on homelessness in Seattle and King County. Besides that, Al Poole provided information about the history of homelessness in Seattle.
• Guillermo Romano is the ‘Executive Director Seattle Design Commission’ and ‘Manager City Design’ of the ‘Department of Planning and Development City of Seattle’. Romano coordinates new urban developments in the City of Seattle. He will be able to provide information about future plans for Seattle, the problems Seattle is dealing with at the moment and the way urban planning responds to homelessness.

1.4.2.2 Observing
To achieve a design that is socially sustainable, as it is stated in the design goal, not only interviewing is needed. Because the City of Seattle is unfamiliar territory an observing field trip will be undertaken. Observing will be used to get an impression of the situation in the tent communities and the City of Seattle as a whole.

The main focuses of observing will be:
• To get acquainted with homelessness in Seattle.
• To get acquainted with tent communities in Seattle.
• To get acquainted with the City of Seattle.
• To find possible design locations.

Pictures have been taken for registering the observations.

1.4.3 Context Analysis
From the anthropological research many handles for designing tent communities in Seattle have been concluded. To translate the results of the anthropological research into factors that are needed to create a successful collection of tent communities, a context analysis matrix for a tent community has been made in chapter 4. This matrix is based on prof. dr. ir T.M. de Jong’s context analysis publication (2006).

1.4.4 Typology studies
In paragraph 1.3.1 it is stated that the main aim of this project is designing new temporary settlements in Seattle. As stated in the main research question, the spatial organization is an important factor in this thesis. Therefore several typologies of encampments have been spatially analysed. These studies focus on the camp, building and building segment level, as they are defined by the context analysis.

A SWOT analysis is used to compare the different analyses. The following settlements have been studied:
• Tent City 3: legal tent community in Seattle;
• Nickelsville: illegal tent community in Seattle;
• Dignity Village: former tent community on a permanent location in Portland (United States of America);
• European campground: Camping Mooi Bemelen, a vacation campground in the Netherlands;
• American campground: O’Connells Yogi Bear Jellystone Park Camp Resort in Amboy, Illinois. Family campground in the United States of America;
• Black Rock City: the temporary city that annually hosts the Burning Man festival;
• Transitional Settlements:
  - Staggered plan;
  - Hollow square plan;
  - Community road plan.

1.4.5 Mapping
Besides the spatial organization of the settlement, the placement of the settlement in the urban network is just as important because homeless people depend on communal facilities, such as public transport.

In order to define locations that can be a home to a tent community, the factors in the context analysis matrix have been mapped in chapter six. This mapping focuses on the levels from the sub regional scale to the street scale.
1.4.6 Design
The mapping results in a collection of tent communities, real locations in the City of Seattle where a tent community can be realized. The typology study has resulted in a set of recommendations for the development of tent communities. Together they do not yet prove that the collection of tent communities can be a socially sustainable temporary home to homeless people.
Two locations from the collection of tent communities will be drawn into a hypothetical design. The design and their detailing are the test cases for the collection of tent communities.
It has to be noted that the proposed designs are hypothetical test cases, in reality the developments could be completely different.

1.4.7 Use of the methods
The different methods will be used to answer the sub research questions and design questions. Image 1.3 shows what methods belong to which sub research question or design question.

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<td>How is homelessness being dealt with in Seattle at the moment and what urban facilities, spatial conditions and social structures does a tent community need to let the tent community be a starting point for improvement of the inhabitants’ chances of a better future?</td>
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<tr>
<th>Design question</th>
<th>Literature review and web search</th>
<th>Anthropological research</th>
<th>Context Analysis</th>
<th>Typology studies</th>
<th>Mapping</th>
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<td>What spatial organization can make the new encampments a sustainable liveable environment?</td>
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<td>Which locations in the City of Seattle are well-connected (temporary) urban leftovers that can host a tent community?</td>
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<td>What measures are needed to assure that the tent community stays an transitional solution that keeps a temporary character on a semi-permanent location?</td>
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<td>What are the technologies that can be used (for e.g. dealing with water and energy)?</td>
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In this section the relevance of this project will be elaborated. A distinction is made between the scientific relevance in section 1.5.1 and the societal relevance in section 1.5.2.

1.5.1 Scientific relevance
This graduation project focuses on temporary settlements in the form of the tent communities in Seattle.

In literature, these kinds of temporary settlements are called ‘camps of needs’ (‘the spaces that offer accommodation, assistance, and protection’ (Hailey, 2009, p. 323)) or ‘transitional settlements’ (‘settlement and shelter resulting from conflict and natural disasters, ranging from emergency response to durable solutions’ (Corsellis and Vitale, 2005, p. 7)).

Although the tent communities are ‘camps of needs’ and ‘transitional settlements’ the body of knowledge about temporary settlements mainly deals with non-western settlements (e.g. Corsellis and Vitale). There are only a few studies about ‘camps of needs’ in western countries. Examples of these studies are:

This can probably be attributed to two factors. First, camps of needs or transitional settlements are a relatively new and unknown phenomenon in the first world. Most probably people think (or want to think) that this is a problem that does not occur in the first world. Secondly, the common opinion in the western world is that this is a governmental problem.

Hopefully, this project can be a first step towards more (scientific) attention for temporary settlements in the western world.
It has to be noted that, in most cases, homelessness is not a problem that can be easily solved, but it is a problem that can be dealt with in an improved way.

This part of the project is directly linked to the course AR3U022, theory of urbanism, for which a literature review paper was written. This paper can be found in chapter 2.

1.5.2 Societal relevance
It is said, that the United States of America are home of the world’s richest and also the world’s poorest citizens. The difference between rich and poor is enormous. As Cameron Sinclair states in his TED speech that many people in the US ‘have far worse conditions than many developing countries’ (Sinclair, 2006). The poorest Americans are homeless and thereby doomed to live in shelters and on the streets (ibid.). Since the outbreak of the worldwide economic crisis in the fall of 2008 newspapers and television shows have covered many stories about the problems of people who have lost their house and are now living in cars, trailers or tent communities. But it is not such a crisis-related problem as the media pretends it to be. The first tent cities were already founded in 1990. The problem is worsening due to the economic crisis (Staps, 2009), but it is not a new problem.

In the past years tent communities have reached newspapers and magazines all over the world. Some examples:
• HON, D. (2009) Tent city in Seattle, a roving experiment in housing the homeless divides the neighbourhoods where it touches down. Vancouver Magazine, March 1, 2009
Amsterdam, Wegener.


1.5.3 Disciplines
Disciplines that are involved in this project are:
- Environmental design, represented by the first mentor Machiel van Dorst;
- Urban design; represented by Maurice Harteveld (second mentor);
- Product development; represented by Arjan van Timmeren.
This chapter provides an answer to sub research question one: What are the differences and similarities between the social sustainability in non-western ‘camps of needs’ and the social sustainability in Seattle’s tent communities? This question was the research question for the review paper that was part of the course AR3U022 - theory of urbanism.
2.1 Introduction

In the problem statement it has been introduced that people get hit by disasters, on a daily basis. For the disaster victims whom have become homeless, shelter is one of their primary needs (United Nations, High Commissioner for Refugees, 2002).

The size and nature of disasters can vary in scale, from small, personal, disasters (e.g. an unforeseen hospital bill or mental illness) to large disasters such as war and natural disasters.

The physical shelters that result from large scale disasters are the temporary encampments, also known as refugee camps, in war areas.

The temporary settlements resulting from the smaller disasters are more unknown than the refugee camps. They appear on less expected locations. For example in many big cities in the United States homeless people are living in tent communities (Staps, 2009). The problem is increasing due to the recent mortgage-crisis (Schilder, 2009, p. 6-7).

Although the temporary settlements in the United States and the temporary settlements in e.g. war areas can both be called: ‘camps of needs’ (Hailey, 2009, p. 323) and ‘transitional settlements’ (Corsellis and Vitale, 2005, p. 7) they differ on several aspects. Most obvious example: temporary settlements in the non-western world are refugee camps that are the consequence of a large disaster, while temporary settlements in the United States are tent communities that are the consequences of a (small) personal disaster.

However, many of such settlements often appear to be not as temporary as expected in the beginning (United Nations High Commissioner for Refugees, 2007b, p. 207), while these settlements are not designed for long-term use.

Corsellis and Vitale state in their book “Transitional Settlement: Displaced Populations” that a transitional settlement is a ‘settlement and shelter resulting from conflict and natural disasters, ranging from emergency response to durable solutions’ (Corsellis and Vitale, 2005, p. 7). When looking with an open mind, tent communities in the United States can be called transitional settlements because they are the result of a (small) conflict. However, a limitation of this definition is that it focuses on non-western camps, while, as stated before, western camps are happening as well. In other words, the definition of Corsellis and Vitale does not suffice anymore.

In his book ‘Camps’ Hailey deals with numerous types of encampments. In his opinion ‘camps (...) provide an important gauge of local and global situations, because of their rapid deployment and temporal nature’ (Hailey, 2009, p. 1). So, in contrast to Corsellis and Vitale’s transitional settlements the meaning of camps of needs is broader. Camps of needs are ‘the spaces that offer accommodation, assistance, and protection’ (Hailey, 2009, p. 323).

To prevent confusion, from now on the term ‘camps of needs’ will be used for both western and non-western emergency encampments.

One of the unexpected locations, where ‘camp of needs’ can be found is in the City of Seattle. Since Seattle’s centres for the homeless are overfull, homeless people have united in tent communities.

The aim of the graduation project hometown/temp is, therefore, to design tent communities in Seattle and improving the knowledge about western temporary settlements. Consequently sub research question one has risen which will be addressed in this chapter: what are the differences and similarities between the social sustainability in non-western ‘camps of needs’ and the social sustainability in Seattle’s tent communities?

The answer to this question will provide a handle on how the basic principles of planning non-western camps can be used in the planning and designing of a western camp in Seattle.

This chapter focuses on planned temporary settlements. The many unplanned temporary settlements, that are often hidden and unknown, are not being discussed in this chapter.

The chapter will be started with discussing literature about how camps of needs in the non-western world are being dealt with at the moment. In the next section the obtained knowledge will be reflected on western camps of needs in the specific case of tent communities in Seattle.

Both sections about non-western and western camps of needs will deal with the following factors: displacement status of the inhabitants, present facilities, liveability of the camp, land politics, camp planning and organisation and the future possibilities of the inhabitants.

Finally sub research question one will be answered and recommendations for further research will be made.
2.2 Non-western camps of needs

As described in paragraph 1.5.1, the body of knowledge about camps of needs mainly discusses non-western camps of needs. So in this first section the basic principles of non-western camps of needs are being elaborated.

2.2.1 Displacement status

In paragraph 2.1 it was introduced that there is inequality in legal rights between homeless people. People whom are living in camps of needs in the non-western world are on the run for some kind of disaster and looking for a safe place to stay. They can be categorized in two groups: people who, during their flight, have crossed a border and people who have not. The first group are being called ‘refugees’. The second group of people are the, possibly less known, Internally Displaced Persons (IDP’s).

According to the Geneva Refugee convention of 1951 “the term “refugee” shall apply to any person: (...) owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it’ (United Nations High Commissioner for Refugees, 2007a, p. 16).

IDP’s are ‘persons displaced from their habitual place of residence by disaster, fear of persecution or fear of physical harm, but remaining within the territorial limits of their country of origin. Unlike refugees, IDP’s have no internationally defined legal status’ (Correllis and Vitale, 2005, p. 413) According to Doctors without borders an ‘estimated

1 UNHCR, which is the Refugee Agency of the United Nations, is being referred to often in this paper. Note has to be made that UNHCR in essence deals with refugees and only in ‘complex emergencies’ (United Nations High Commissioner for Refugees, 2007b, p. 10) with IDP’s. Consequently their basic principles can be used for IDP-cases as well and so will be done in this paper.

2.2.2 Facilities

‘Everyone has the right to life with dignity and respect for their human rights’ (The Sphere Project, 2004, p. 25). According to The Sphere Project people’s basic needs are the same for all people in all situations:

1. Water
2. Sanitation
3. Food
4. Nutrition
5. Shelter
6. Health care

(The Sphere Project, 2004, p. 19). All relief organizations that are running a camp of needs try to facilitate at least these primary needs to the displaced populations.

Corsellis and Vitale state that ‘the support offered to the displaced populations should not raise their standard of living beyond that of the local population, who may be living in circumstances far below international standards for displaced populations’ (Corsellis and Vitale, 2005, p. 125). So in a non-western camp the level of facilities is lower, than the level that can be offered.

According to UNHCR it is best to let the displaced population built their own shelter with the same materials and techniques that normally are used by the local population. Only if the materials are, for whatever reason, not on hand shelter-material items should be distributed to the displaced. (United Nations High Commissioner for Refugees, 2007b, p. 221). If distribution of shelter-materials is necessary ‘tents, plastic sheeting, prefabricated shelter and containers and materials and tools for construction’ (Corsellis and Vitale, 2005, p. 312) can be distributed.
Over the elapse of time, a temporary settlement can transform from the emergency-phase to a steadier phase. In this more steady situation every effort should be made to create and support livelihood opportunities for displaced populations, to empower them by increasing their self-sufficiency, and to reduce demands upon the aid community (Corsellis and Vitale, 2005, p. 17).

So people’s needs change because after a period of time the temporary settlement is becoming more of a home. Illustration 2.2 shows how people’s shelter priorities change with the lapse of time.

### 2.2.3 Liveability of a camp

As stated in the previous section, over the elapse of time the temporary settlement transforms from emergency housing to being a temporary home. To let a place become a home not only facilities are needed, also a sustainable liveability is desirable (Dorst, 2005).

Van Dorst (2005) describes the following characteristics of a sustainable liveability:

1. Health and safety.
2. Material prosperity, inequality in income and luck.
3. Social relations in relation to tolerance, participation in labour and association, and individualization.
4. Control as common divider of freedom, individualization, tolerance and identity.
5. Contact with natural setting.

Three out of these five characteristics can be traced in a non-western camp of needs. How they can be traced will be explained below.

The first characteristic, health and safety, is provided in every non-western camp of needs through medical care and guards that are organized by the relief organisation.

Since people are on the run, they do not have many possessions and thus there is not a lot of inequality in income or prosperity. But there is a lot of inequality in luck (second characteristic), for example being alive and (not) having your relatives near you.

To prevent intolerant social relations some people are not allowed to enter non-western camps of needs. Official UNHCR regulations for these situations state that people who are not a refugee or IDP or not in need of protection and ‘person who are considered undeserving of international refugee protection’ (United Nations High Commissioner for Refugees, 2007b, p. 24), like war criminals, are barred from non-western camps. Besides it some groups of people need special attention. According to “The Sphere Handbook” ‘women, children, older people, disabled people and people living with HIV/AIDS’ (The Sphere Project, 2004, p. 27) are the most vulnerable groups. In specific situations ‘reason of ethnic origin, religious or political affiliation, or displacement’ (The Sphere Project, 2004, p. 27) can make more people part of the most vulnerable groups.

The camp of needs protects these people, so in order to achieve a sustainable liveability people who want to do them harm have to be banned from the camp.

Letting people build up their own temporary home, as explained in section 2.2.2 gives them control over their own living environment.

Concluding, it can be stated that in non-western camps of needs it is tried to achieve a sustainable living environment. Some characteristics are being met, but there is so much insecurity left that a non-western camp of needs cannot be called a sustainable living environment.

### 2.2.4 Land politics

Another contributing aspect to the liveability of a temporary settlement is the environment in which the settlement is...
situated and its maintenance. Before a temporary settlement can be liveable, a location has to be found where it can be realised. Finding a location for and the planning of a temporary settlement is not an easy task, because ‘in most countries land for the establishment of refugee camps is scarce’ (United Nations High Commissioner for Refugees, 2007b, p. 211). Another factor that makes the site selection become more difficult is that a camp of needs has to be located in a secure area, which is ‘at least 50km from an international border or the front line of conflict’ (Corsellis and Vitale, 2005, p. 365), see image 2.3.

In reality, most sites are provided to UNHCR ‘on public land by the government’ (United Nations High Commissioner for Refugees, 2007b, p. 211). There goes a long way ahead of that land provision. Because (local) governments and populations are ‘reluctant to give up land required for the transitional settlement of displaced persons, especially if the settlement appears likely to become long-term’ (Corsellis and Vitale, 2005, p 21). Their main concerns are:
- The current land value and fear for depreciation.
- Fear that the displaced will not leave the site.
- Fear that the facilities for the displaced are better than the facilities present for the locals.
- Increased and unsustainable use of resources.
- Political unrest.
- Insecurity.
(Corsellis and Vitale, 2005).

Although many people find camps of needs a good and necessary initiative, when it comes close to their home they become a nimby (not in my backyard).

2.2.5 Planning and Organisation
As said before camps of needs are located in a secure area. Corsellis and Vitale describe that the relief organizations manage a network of camps along the route from the emergency area towards the secure area (see illustration 2.3).

The non-western camps of needs are located in the secure area, transit centres and way stations are provided on the way towards it. Transit centres provide overnight facilities; way stations only provide food and drink. The distance between a transit centre and a way station is, at the most, 25 kilometres (half a day walk) (Corsellis and Vitale, 2005).

When the displaced reach the secure area they first get to a ‘reception centre’ where all displaced persons are registered in order to control the entering of the camps of needs. The reception centre decides whether the displaced person has the right to live in a camp of need and in which of the present camps he/she can go to.

Corsellis and Vitale distinct six non-western camps of needs: ‘host families, rural self-settlement, urban self-settlement, collective centres, self settled camps and planned camps’ (Corsellis and Vitale, 2005, p. 68).

The non-western camps of needs are managed and planned by relief organisations, such as UNHCR and the Red Cross. The inhabitants are encouraged to cooperate in construction and as labour force, but the relief organisation will keep the leadership.

2.2.6 Future
After settling the displaced, UNHCR’s ‘ultimate goal is to help find durable solutions that will allow people to rebuild their lives in dignity and peace’ (United Nations High Commissioner for Refugees, 2009). So camps of needs are, in principle, an in-between solution for displaced people that ‘provide (...) protection, while seeking permanent solutions’ (Hailey, 2009, p. 325).

UNHCR has three possible ‘durable solutions’ (United Nations High Commissioner for Refugees, 2009) for refugees and IDP’s: ‘voluntary repatriation; local integration; or resettlement’ (ibid.).
If it is possible the relief organization cooperates with the host country (if applicable) and the country of origin to help the displaced repatriated. Local integration focuses on letting the refugees become a citizen of the country or city of host. If staying in the country of host or repatriation are both not an option it is tried to resettle the displaced in another country then their homeland or the country they fled to. In this new country they receive legal and physical protection (ibid.).

Note has to be made that, unfortunately, these solutions will not be experienced by several millions of refugees and even more IDP’s anytime soon (United Nations High Commissioner for Refugees, 2009).
2.3. Tent community

As stated in the introduction many homeless people in the United States are living in a western camp of needs, a tent community. In this section the principles of non-western camps of needs, as described in section 2.2, will be reflected on the social sustainability of western camps of needs. Western camps of needs have not yet been written about much, though some literature deals with the tent communities in Seattle. Therefore the case of tent communities in Seattle will be used as the example case of western camps of needs.

As shown in illustration 2.1 a tent community looks like an unorganized get-together of small family tents.

2.3.1 Displaced status
Homeless people in King County (greater Seattle region) are IDP’s. They are not on the run, but displaced from their home and are unable to claim on legal rights, such as refugees can. Camping in public spaces is forbidden in the United States, so they are not just displaced, they are illegal.

Other than people in non-western camps of needs they did not have to flee, most of them were evicted from their home, due to any form of economical disaster.

2.3.2 Facilities
As described in section 2.2.2 the basic needs of people living in a tent community are the same as the basic needs of people in non-western camps of needs. In tent communities these basic needs are not always met.

Prepared food (see illustration 2.4) and shelter are usually taken care of by donations of people who cook for them and bring spare objects, like tents and blankets. Water (see illustration 2.5) and sanitations are not always present, because the maintenance of the port-a-potties and sinks (see illustration 2.6) is expensive. Therefore they rely on financial donations. The primary need of health care is not always fulfilled in the settlement, but since tent communities are located in urban areas these facilities can be found in the surrounding urban area (SHARE/WHEEL, 2009).

In non-western camps the level of facilities sometimes has to be kept low, in order to prevent competition between the displaced and the local population (Corsellis and Vitale, 2005). In a western tent community this seems impossible.

In the previous section it was stated that it is best to let the displaced people build their own shelter with the same materials and techniques that are normally used by the local population. For western tent communities this is not an option. The normal techniques are brick houses and do not, in any way, have a temporary character. So they use materials and techniques that the local population uses for temporary housing (e.g. when they go camping): tents, tarps and sleeping bags.

The shelter priorities that are shown in illustration 2.2 also count for tent community inhabitants.

Since tent communities are located in urban areas the level of facilities within the camp can be low, but a much higher level of facilities can be found in the vicinity. For example showers and washing machines are available for tent community inhabitants in some centres for the homeless.

2.3.3 Liveability
Eight thousand IDP’s in King County only, does not directly mean that over 3000 people are living on the streets. From the moment that people lose their house, it takes some time before they end up in a shelter. After losing their house people ‘stay with friends and relatives until those relations fray, then in motels, cars’ (Ehrenreich, 2009) and finally people end up on the streets, in a centre for the homeless or a tent community.

Not only are the centres for the homeless overfull, it is also not a pleasant living environment. The shelter system often splits up families into different housing, does not provide
2.3.4 Land politics
Just as non-western governments and populations the western populations and governments are not lining up to host a camp of needs on their grounds. This is remarkable because the impact of a tent community on the surroundings is a lot lower than the impact of, for example, a 20,000 people refugee camp. Seattle City Attorney’s Office decided in 2002 that tent communities in Seattle have to be ‘established on private land’ (Hailey, 2009, p. 399) and that they can have a maximum amount of one hundred inhabitants and that they cannot stay longer than three months at one location (City of Seattle, 2002).

Another factor that decreases the impact of a tent community is that a tent community operates in urban areas and thus the inhabitants can use the already present urban systems, like sewage, water, electricity and public transport.

2.3.5 Planning and organisation
In contrast to the non-western camps of needs a tent community is a democratic; yet self-managed, closed and controlled community with a ‘Code of Conduct’ (City of Seattle, 2002). Health and safety are achieved by the presence of medical facilities in the surrounding urban areas and the camp’s security (SHARE/WHEEL, 2009). The characteristics of material prosperity, inequality in income and in luck are visible in the possibility that everybody can keep his/her belongings with them in their own tent. Social relations in relation to tolerance are protected by barring unwanted inhabitants. In tent communities drug addicts, alcoholics and weapon possessors are not allowed (City of Seattle, 2002).

People can have control over their life on a small scale, they can control their own tent and they are free to go wherever and do whatever they want whenever they want, they can even have a job. But they are not in control of the living environment outside the camp. Moving every three months and not knowing if a new location becomes available cannot be called sustainable liveability. This freedom of going implies that contact with nature is also possible. So a western camp of needs is based on some characteristics of a sustainable liveability. But it is so weak that it cannot be called a sustainable living environment.

2.5 Tent City 3’s drinking water facility (picture by author, 2009).
2.3.6 Future

The UNHCR goals of repatriation, local integration and resettlement (see section 2.2.6) mainly concern non-western refugees and IDP’s. For people living in a tent community only local integration is an option. They have been evicted from their home due to an economic disaster and their house has probably a new owner, so repatriation in the form of returning to their own house is impossible. Resettlement is also not an option for them, because they do not have the money to leave the United States and, most likely, the will not receive a visa.
Local integration for tent community inhabitants who have become homeless in their own city means integrating in an unfamiliar social layer of their hometown. For tent community inhabitants who have become homeless in a new city have to integrate on many more scales.
So the UNHCR regulations for building a future for displaced are only partly applicable on IDP’s living in a tent community.

2.3.7 Other western camps of needs

Homeless people living in tent communities is not just happening in the United States of America. Other examples in the western world are:

- SDF Camp (sans domicile fixe), a manifestly encampment in Paris (Hailey, 2009, p. 44).
- Hakenmura encampments in Japan (Shinoda, 2009).
- La Jungle, an illegal encampment of immigrants in the dunes of Sangatte, France, that want to go to Great Britain (NOS Journaal, 2009). La Jungle arose after the closure of a semi-legal ‘ad hoc campsites’ (Hailey, 2009, p. 257) in Sangatte.
- Roma, whom are living in suspense in France (NOS Journaal, 2010).
2.4 Conclusions

In the previous paragraphs it is tried to define the differences and similarities between the liveability in western and non-western camps of needs. In this section, at first the conclusions will be described per topic. In paragraph 2.4.7 the answer to sub research question one will be given.

2.4.1 Displaced status
Although both types of camps of needs deal with IDP's, the IDP's background differs a lot. Non-western displaced people have to leave their home behind, because of e.g. a war. Tent community inhabitants have been evicted from their home because they did not obey their financial obligations.

2.4.2 Facilities
Although people's most primary needed facilities are always the same. Corsellis and Vitale's statement 'the support offered to the displaced populations should not raise their standard of living beyond that of the local population, who may be living in circumstances far below international standards for displaced populations' (Corsellis and Vitale, 2005, p. 125) summarizes a big difference between the facilities that can and may be offered to the displaced population in western and non-western camps. The standard of the local population in Seattle is a fully-equipped brick house. While, the standard of the local population in the African desert is a mud hut with the nearest well on an hour walking distance. Another difference in the level of facilities that is provided is that a western camp can rely on the present facilities in the urban surroundings, in a refugee camp all these facilities need to be constructed. And thus are often not available.

2.4.3 Liveability
Both western and non-western camps of needs try to be a sustainable living environment, but in both types of camps the inhabitants have to deal with so many insecure factors, such as moving every three months and not knowing whether they can ever go home, that neither of the camps can be called a sustainable living environment.

2.4.4 Land politics
Even though the impact of a tent community (one hundred inhabitants during 90 days) on its surroundings is a lot lower than the impact of a refugee camp (up to 20,000 people for an unknown period), it can be concluded that everywhere in the world it is hard to find a landowner who is willing to host a camp of needs on his land.

2.4.5 Planning and organisation
The camp politics of western and non-western camps are completely different. The western camps are managed, planned, operated and initiated by the displaced people. The non-western displaced people have to rely on relief organisations to come and facilitate an encampment for them.

2.4.6 Future
Future changes of people in western and non-western camps of needs are very different. In non-western camps of needs people have to rely on governments to decide where and if they can repatriate, integrate or resettle. Western displaced can only integrate, but they have more options that can provide this integration. E.g. finding a job, be on a waiting list, they can partly take faith into their own hands, and they are not just dependent of governments.

2.4.7 Concluding
As an answer to sub research question one (What are the differences and similarities between the social sustainability in non-western 'camps of needs' and the social sustainability in Seattle's tent communities?) it can be concluded that most basic principles of non-western camps of needs can be reflected on western camps of needs as well. But differences occur when these principles are being implemented. This difference shows most obviously in the context of local standards: the locations are surrounded by high-developed urban areas vs. disaster area and the local population. Wether it is a refugee camp, a post tsunami camp, or a tent community all camps of needs have to they rely on themselves. Whether they are self-managing or not, the management has to start a settlement from scratch. Creating basic facilities such as shelter and the provision of water and food. They need to find a good site, that fits their needs. No matter how long the camp has existed, all camps of need must have a temporary character and stay an in-between solution from which the inhabitants can work towards a real home. Note has to be made that in reality the implementation of temporariness is very different: tent communities in Seattle stay three months at one location, while the length of life of a refugee camp can be up to 65 years.
2.5. Recommendations

Since not much has been written about western camps of needs, the further research has to focus on receiving more information about these types of camps. This can for example be done by anthropological research through interviewing and observing of the tent communities in Seattle. Hereby special attention needs to be paid to the spatial configuration of the settlements, because the literature does not provide any information about this.
This chapter describes the current situation of homeless people living in tent communities in Seattle. Consequently, this chapter deals with sub-research question two: how is homelessness being dealt with in Seattle at the moment and what urban facilities, spatial conditions and social structures does a tent community need to let the tent community be a starting point for improvement of the inhabitants’ chances of a better future?

To find the answers to this question, a field trip to Seattle has been undertaken in December 2009. The aim of this field trip was doing anthropological research by interviewing tent community residents and stakeholders and observing the tent communities and the city.

Homelessness in the United States will be briefly described at first before describing the current situation of homelessness in Seattle. Paragraph 3.2 deals with the tent communities, describing the different tent communities, their spatial organization, the influence of their location in the city, the camp management and the influence of the temporality on people’s lives.
3.1 Current situation

Although this project deals with homelessness in Seattle, homelessness is not purely a Seattle problem. Therefore not only the Seattle problem will be described (section 3.2); the problem of homelessness in the entire United States will be described as the context of the local situation (section 3.1.1).

3.1.1 Homelessness in the United States
On the national scale, homelessness in the United States has become a bigger problem since the President Reagan Administration (1981-1989). ‘It was Reagan who halved the budget for public housing. (...) Until then basically there was no homelessness. Since then, neither the disability nor the housing budget has come close to recovering’ (Ehrenreich, 2009).

Besides ending subsidised housing, the Reagan administration also reformed the mental institutions (Poole, 2009). This resulted in patients with psychiatric problems being released too soon and without a housing plan.

The bad psychiatric condition of many war veterans is another of the main reasons homelessness has become such a problem. According to Al Poole (Division Director Homelessness Intervention & Block Grant Admin for the Seattle Human Services Department City of Seattle) ‘every US war creates homelessness and one third of homeless people are war veterans (with a new wave of Afghanistan and Iraq veterans coming up)’ (Poole, 2009).

3.1.2 Homelessness in Seattle
In Seattle the situation became worse in the 1990’s. In those days most Single Room Occupancy-housing (SRO) was demolished, because these houses were located on 1st Avenue in Downtown Seattle. The municipality wanted to revalue 1st Avenue, so the SRO’s were replaced with luxurious housing to give Downtown Seattle a better look. No new low-income houses have been built ever since (Poole, 2009).

According to Scott Morrow (SHARE2 Consultant and a special Consultant for Tent City 3 and Nickelsville) 25000 households are in need of cheap housing and eight thousand people are homeless now in the greater Seattle region (Morrow, 2009). The greater Seattle region’s rural areas are not very thriving (Romano, 2009) so many homeless people from outside the city seek their salvation in the city of Seattle: ‘fifty percent of Seattle homeless’ people are import from everywhere in Washington State’ (Poole, 2009).

So, Seattle has a big front door through which all kinds of homeless people enter the city (e.g. people whom have been released from prison without a home plan, bankrupt people whom have been released from a hospital, or people whom have been released from a mental institution).

The City of Seattle does offer a back door system for homeless people. The procedure starts with a six month stay in transitional housing. Transitional housing is an aid system that prepares homeless people for returning to normal life. After completing this program the person can move to permanent social housing.

But the amount of social housing that is available is so small that all houses are already occupied. This results in a four year waiting list for transitional housing and people staying in transitional housing for two years instead of six months (Poole, 2009).

So the city’s back door is too small. This front door – back door phenomena results in an enormous and increasing amount of homeless people living on the streets of Seattle (Poole, 2009), this is illustrated in image 3.1.

Many homeless people live on the streets and stay in shelters during the night. If a homeless person in Seattle wants to spend the night in a shelter, he has to sign up at a set hour during the day and has to check in at a set hour. So, homeless people who do have a job cannot stay in a shelter, because they cannot sign up or check in.

So the city’s shelters provide help for only one type of homeless people. People who do not fit the profile, cannot stay in a shelter. Alternative shelter is needed for people with different lifestyles (e.g. couples, dog-keepers, bartenders (who work at nights), etc) (Poole, 2009). Examples of alternative shelters are Seattle’s tent communities. They will be described in paragraph 3.2.
3.2 Tent communities in Seattle

Tent communities are encampments where homeless people live together. Several tent communities are operating in the City of Seattle: Tent City 3, Nickelsville and some small communities.

Only Tent City 3 is recognized and legalized by the municipality. All other tent communities are illegal. (Note: another well known tent community is Tent City 4, which is also legal but operates elsewhere in King County, outside Seattle’s city borders.) The small tent communities operate anonymously.

Even though it is illegal, the homeless unite in these small encampments because that makes them feel safer (Romano, 2009). These encampments can be seen on many places in Seattle, especially on quiet, hidden sites, like small woods alongside the highway.

3.2.1 Camp management

The researcher will focus on organized tent communities in and around Seattle (e.g. Tent City 3, Nickelsville and Tent City 4). These are closed and controlled communities with a Code of Conduct. Tent community’s inhabitants are registered and have to identify themselves with the camp’s security before entering. Not only do the inhabitants have to register themselves, it is also obligatory for every tent to have a nameplate, this improves the readability of the camp.

‘Drugs, alcohol and weapons are not allowed in Tent City’ (Seattle University, 2009). The residents are obliged to attend the weekly camp meeting. In the camp meeting decisions are made by voting, and functions are divided for the coming period (security, camp managers, etc.). Every week each inhabitant has to do three times a three hours work-shift (small jobs in and around the camp) and one community-shift (church-visit) (Steve, 2009).

Inhabitants whom do not attend a meeting, a work-shift, a community-shift or do not obey the ‘Code of Conduct’ (City of Seattle, 2002) can be barred temporary or permanent (ibid.).

There is always a safe manager (camp head) and two security managers present in the encampment, mostly in the entrance tent. See image 3.2 for an impression of the camp management.

3.2.2 Moving

A disadvantage of living in a tent community in Seattle, over living in a centre for the homeless, is that you have to move every 90 days. Since camping in public space is not allowed in the United States of America, the Seattle government tolerates one Tent City on one location for a maximum stay of 3 months if the landowner gives approval. A tent community keeps moving as a community; with the help of the homeless organization SHARE/WHEEL the community stays together while wandering through the city (City of Seattle, 2002).

Hereby the residents have to rely upon the hospitality of landowners, because they are only allowed to camp on private property (City of Seattle, 2002). Up until now, the tent communities have mostly been located on church premises. Preferably on the church’s parking place.

All interviewed tent community inhabitants mentioned that although they are now living in a controlled community, they are still living in suspense, due to the continuous moves. According to Madlyn (Nickelsville inhabitant) the constant moving cause ‘nervous breakdowns’ (Madlyn, 2009). Moving not only implies two days of packing and twelve hours of building and unpacking, it also limits the inhabitants’ possibilities to take control over their own life and to create a home. The moves are an enormous stress factor for the inhabitants.

A permanent tent community location would decrease the stress level and improve the liveability of the tent community, e.g. the inhabitants’ mental health and support system. Nickelsville aims after creating an eco-friendly community for up to 1000 homeless people (Morrow, 2009) on an empty plot that has the size of half a football field (Madlyn, 2009). When asked, Tent City 3 inhabitants agreed that a permanent location would improve the situation (Barret, 2009), but they strongly disagree with the plan of a 1000 people community. They think such a community would be unmanageable, ‘they would need breathalyzers and their own police’ (Tent City 3 inhabitant, 2009).

This would not become a socially sustainable settlement.

Note: SHARE/WHEEL is a combination of two relief organisations that are also completely self-managed. (SHARE = Seattle Housing And Resource Effort; WHEEL: Women Housing Equality and Enhancement League.)
3.2.3 Contactability
Although they do not have internet access at home (in the camp), most tent community residents can be contacted by email. They go to the public library to use the internet (Barret, 2009). Many tent community inhabitants have a cell phone, but they cannot use it because they have run out of credit. Therefore the camps have a camp-phone that inhabitants can use for important phone calls (e.g. job interviews and doctor appointments).

3.2.4 Hygiene
The tent communities only have the most basic hygiene-facilities: toilets and washing basins (which are useless in case of frost). The inhabitants rely on the Urban Rest Stop in Downtown Seattle for showers and laundry. The Urban Rest Stop (URS) is a ‘hygiene centre providing free restrooms, showers and laundry facilities to homeless men, women and children within a clean, safe and dignified environment’ (Urban Rest Stop, 2010). On set dates, the Urban Rest Stop also offers free medical care and haircuts (ibid.). It is the only hygiene facility in the city, so there is usually a long queue (Barret, 2009). Sometimes a gym in the vicinity of the encampment also offers the possibility to shower for a small amount of money. This can spare a bus ticket to downtown. It was observed that many of the tent community inhabitants are obese, missing teeth and almost everybody smokes. These are only the visible disabilities, most homeless people have much more health problems (Poole, 2009).

3.2.5 Eco friendliness
Although the ecological footprint of people whom are living in tents is already small, tent community inhabitants are very aware of their influence on the environment. Nickelsville inhabitants do weekly litter pickups in the neighbourhood around their camp (Madlyn, 2009). Besides that many materials are being recycled, for example tent sticks of old tents. It was observed that attention has been paid to the tents as well. Every tent is placed on a basement of pallets and a wooden board. The pallets serve as insulation and the wooden board creates a levelled surface for the tent. To prevent the tents from leaking snow and rain the tents are covered with tarps.

See image 3.3 for an impression of the situation in Seattle’s tent communities.
3.2.6 Tent City 3
Tent City 3 (visited on December 10th, 2009), the only legal tent community in the City of Seattle, is operated by SHARE/WHEEL since 2002. In the “Tent City Consent Agreement” it is stated that ‘SHARE/WHEEL may establish or maintain no more than one encampment at any one time within the limits of the City of Seattle’ (City of Seattle, 2002). This agreement gives Tent City 3 many advantages over other tent communities. The biggest advantage is being legal. Besides that Tent City 3 receives a lot of support of the other Seattleites. When visited in December 2009, Tent City 3 was located in a thriving, North-Seattle neighbourhood and being overwhelmed by donations, mainly food and clothes. Another advantage of being legal is the presence of cheap bus tickets. Daily, SHARE/WHEEL and Metro (the public transport) provide 2 bus tickets for each Tent City 3 inhabitant (Morrow, 2009).

A big disadvantage of the consent agreement is that Tent City 3 can only stay at a location for a ‘maximum duration of (…) three consecutive months’ (City of Seattle, 2002). A second disadvantage is that ‘no open flames are permitted’ (City of Seattle, 2002). This means no open fire or a stove is allowed in Tent City 3. For preparing food, they are depending on the (almost daily) donated warm meals, a microwave and a coffeemaker.

3.2.6.1 Spatial organization and facilities
As you can see in image 3.4 Tent City 3 can be divided in four zones: facility tents, single women’s tents, couples tents and ‘the Mash’ (a big (army-)tent where 20 single men sleep on camp beds or mattresses on crates). The facilities consist of a kitchen tent, a supply zone (a big closet for donations, looks like a dump store), library/television tent (television is analogue, so no television but films) and an entrance tent for the camp manager (camp phone, camp computer, medicines), portable toilets and a
3.2.6.2 Inhabitants

This paragraph gives a glimpse of the residents of Tent City 3. These people have been interviewed on December 10th, 2009.

Sir (name and age unknown) who used to work for Logitech (see image 3.5).
He was fired due to the economic crisis. Came to Seattle because he wanted to try to get a job at Microsoft, whose headquarters are located in Seattle. Unfortunately this did not work out. When interviewed he had been living in Tent City 3 for 2 weeks, he was trying to get a better house via the Salvation Army.

Some remarkable quotes he gave over the life in Tent City 3:
• ‘They’d better make it as uncomfortable as possible; it makes you put even more effort in trying to leave;’
• ‘I met some interesting people here;’
• ‘I was scared to come out here.’

Steve (surname and age unknown, see image 3.6)
Tent City 3 camp manager when visited. He was living in Tent City 3 for 7 months. He stated that the code of conduct has to be obeyed precisely, otherwise it does not work.

A Couple.
Both man and woman are unemployed. They will move out of Tent City 3 into a real house next week. They are very pleased to leave.

Matthew R. Barret (42 years old).
He is suffering from nine types of cancer, due to which he has been declared unfit for work. From the government he receives $649 each month, but that is not enough to cover the costs of renting the cheapest kind of house and paying the daily costs. He has lived being homeless in many cities in the United States. From October 2008 to December 2009 he has lived seven months in hospitals and seven months in Tent City 3 (Barret, 2009).

Roger (surname and age unknown).
The camp’s jack-of-all-trades. When visited he was building a cupboard for the camp office (entrance-tent) out of crates and tie wraps.
3.2.7 Nickelsville

Nickelsville (visited on December 9th, 2009) is the largest and most well-known illegal tent community in Seattle. Nickelsville does not have an agreement with the City of Seattle and is not supported by SHARE/WHEEL (Nickelsville inhabitant, 2009). This results, among others, in the absence of cheap bus tickets and removal of the encampment by the police (Morrow, 2009).

Advantages of being illegal are having cooking facilities and having an open fire (to keep themselves warm). Another advantage is being able to stay at one location longer than 3 months, which in reality has not happened, because the authorities keep removing the encampment.

Nickelsville’s inhabitants are very aware of their influence on the neighbourhood and the environment. So they do weekly litter pickups in the neighbourhood around their camp and they try to be as eco-friendly as possible (Madlyn, 2009). Similar as in Tent City 3 tent sticks of old tents are being reused and pallets are used to isolate the tents.

3.2.7.1 Spatial organization and facilities

Nickelsville can spatially be divided in the same four zones as Tent City 3, except for the mash; in Nickelsville the single men also have private tents, see image 3.7.

The present facilities are a kitchen tent, a kitchen supply tent, an entrance tent (camp phone, registry) a storage tent, toilets and a (when visited frozen) washbasin.

When visited, Nickelsville was located on the premises of New Hope Missionary Baptist Church. This church is located in a, poor, south-Seattle neighbourhood, where they experience a lot of resistance and violence from their neighbours (Madlyn, 2009). As said before tent communities completely rely on donations and their neighbours trust (Morrow, 2009), but not much donations are received in South-Seattle. Although the neighbourhood offered resistance, the church was very helpful. Due to the frost, the residents were allowed to sleep in the church. At this location a bus stop was ‘around the corner’. By this the residents felt fortunate, because at their previous location, in the port, the nearest bus stop was a 15 minute walk.
3.2.7.2 Inhabitants
To give an overview of the kind of people that are living in Nickelsville in this paragraph some Nickelodeons (as they call themselves) will be introduced. They have been interviewed on December 9th, 2009.

Richard (surname and age unknown, see image 3.9).
He is unemployed and has been living in many different cities in the United States. When visited it was frosty weather, he said that frost is manageable, but he is very scared of the snow. He stated that ‘Nickelsville is like an old people’s home’. Meaning that, in his opinion, people sit around and do not take much control over their life.

Billy (surname and age unknown)
First moment Nickelsville inhabitant, he is a Seattleite.

Dominique (surname unknown, 7 years old, see image 3.8.
Dominique does not go to school and he seems to speak his own language. He lives in Nickelsville with his mother and stepfather.

Former Air-Force soldier
(African American, 53 years old, see image 3.9).
He used to be stationed in Dutch Harbor, Alaska. Besides Alaska he has also lived in Africa, Germany and the United States as a soldier. In Nickelsville he lives together with his girlfriend. He misses most of his teeth and has been homeless for 7 years now.

Madlyn (surname and age unknown, see image 3.10).
She is Nickelsville’s safe-manager and camp-master, she is a Seattleite. She has been living in Nickelsville for seven months. It was remarked that when she entered the camp people started making jokes, they probably look up to her. She calls Nickelsville her family, although she has 4 kids, who do not live with her. Madlyn seems to be the mother of the camp.
3.2.8 Tent City 4
Tent City 4 operates in King County, outside Seattle’s city borders. People in King County find homelessness a problem that belongs in the City of Seattle, they think that homelessness only occurs in the city, even though King County counts 8000 homeless people. People whom are living outside the city of Seattle have often moved there especially to get rid of the problems of the city, e.g. homelessness. Because the neighbours do not except a homeless encampment near their home, Tent City 4 has to deal with more resistance from their neighbours and more violence than the tent communities in Seattle (Morrow, 2009). Because this graduation project is focused on the City of Seattle, Tent City 4 has not been visited.

Pictures 3.11, 3.12 and 3.13 shows Nickelsville on moving day. The residents are building their camp’s foundation. This scene is similar to the moving days of Tent City 3 and Tent City 4.

3.11 Nickelsville residents unpacking personal belongings on moving day. (picture by Pamela Klimat, flickr.com, 2010)
3.12 Nickelsville is unpacking on moving day. The pallets are the foundation for the tents, they keep the dampness away (picture by Pamela Klimat, flickr.com, 2010)
3.13 Nickelsville residents are packing their personal belongings on moving day. (picture by Pamela Klimat, flickr.com, 2010)
In this chapter the current situation of homelessness in Seattle has been described. Therefore this paragraph will answer sub research question two: how is homelessness being dealt with in Seattle at the moment and what urban facilities, spatial conditions and social structures does a tent community need to let the tent community be a starting point for improvement of the inhabitants’ chances of a better future? In this paragraph the conclusions will be described per topic, finally the sub research question will be answered in section 3.3.3.

3.3.1 Homeless in Seattle
At the moment, eight thousand people are homeless in Seattle (Morrow, 2009), while only 4600 shelter beds are available (Seattle University, 2009) and the waiting list for transitional housing is four years long. But this is not the homeless’ main concern. Their main concern is that the shelters only provide help for one type of people, mainly people who do not have a job. So Seattle is in need of alternative shelter, for people whom do not fit the shelters’ profile. Tent communities are an example of alternative shelter.

3.3.2 Tent communities in Seattle
Although tent communities have proven to be a good alternative to these problems, they cannot yet be called a socially sustainable temporary home that is starting point for the improvement of the inhabitants’ chances of a better future, as it was concluded in chapter two. According to the tent community’s inhabitants, especially the continuous moves are an enormous stress factor (Madlyn, 2009).

Consequently it can be stated that tent communities are a successful form of alternative shelter, but in order to let them be a social sustainable temporary home, which is the design goal of this project, the concept of the tent communities needs to be improved. In order to achieve socially sustainable tent communities, the tent communities need to be strategically fitted into the City of Seattle and the level of facilities inside the camp needs to be improved. The urban facilities, spatial conditions and social structures that are needed to let the tent community be a starting point for the improvement of the residents’ future is summarized in the context analysis matrix in image 3.14. This scheme is based on Taeke de Jong’s context analysis. De Jong determines ‘22 levels of scale to define context’ (de Jong, 2006, p. 4) varying from the global scale (> 10000 km) to the sub-material scale (< 1 mm).

As stated in paragraph 1.4.5 this graduation project will focus on scales varying ‘from pallet to city’. Therefore the following eight of De Jong’s scales are used in the context analysis matrix for a tent community (image 3.14):

- Sub regional (≤ 10 km);
- Town (≤ 3 km);
- District (≤ 1 km);
- Neighbourhood (≤ 300 m);
- Ensemble (≤ 100 m);
- Building complex (≤ 30 m);
- Building (≤ 10 m);
- Building segment (≤ 3 m).

(De Jong, 2006, p. 4)

The context is not only defined by levels of scale, the context also defined by the layers of the urban network, the physical and social environments (de Jong, 2006, p. 6). For a tent community these layers are: transport, management, culture, economy, technique and ecology. Together all these factors form the context for a socially sustainable tent community. So, to improve the inhabitants’ lives, not only the level of facilities in the camp, but also the level of facilities in the vicinity of the camp needs to be improved.

In section 2.4.7 it was stated that the context of local standards in western camps of needs differs from the local standards of e.g. a refugee camp. Seattle’s tent communities are surrounded by high-developed urban areas. This can be taken advantage of because the surrounding urban areas provide facilities that the settlement can use, and thus does not have to provide for itself. This counts for the sub regional, town, district and neighbourhood scales.

Homeless people usually do not have a car. For transport they depend on public transport, walking and, in rare cases, cycling.

On the sub regional scale, in this case the city of Seattle, the residents of a tent community need to be able to use large scale urban facilities like the police station, social housing agencies, social services, shopping malls, job possibilities and nature and water need to be available. These are facilities that do not need to be used every day.

If children are living in the settlement schools need to be in the settlements’ vicinity. Children that go to high school are becoming independent and can travel by public transport by themselves; therefore a high school should be located on the town scale.

Children, whom go to elementary school, still need guidance for travelling. Therefore an elementary school should be located on walking distance (district scale). Since homeless people are often facing many health problems (Poole, 2009) a health care facility is needed on this scale as well.

On the neighbourhood scale facilities have to be present that help the residents provide in their primary needs, a supermarket and a transit stop.

On the street scale a piece of land needs to be found where the tent community can be located, for example an empty plot or an unused park. The minimal surface area is 1600 m², which is similar to the surface area of Tent City 3. On the street scale also attention has to be paid to the neighbours (Madlyn, 2009). For example by taking into consideration what kind of fencing is used, organizing a neighbours-meeting and doing litter pick-ups. The street scale is the place where the
<table>
<thead>
<tr>
<th>Scale</th>
<th>Sub regional</th>
<th>Town</th>
<th>District</th>
<th>Neighbourhood / street</th>
<th>Ensemble / camp</th>
<th>Complex / camp zone</th>
<th>Building / camp segment / tent</th>
</tr>
</thead>
<tbody>
<tr>
<td>r ≤ 10000 m</td>
<td>+</td>
<td>+ r ≤ 3000 m</td>
<td>+ r ≤ 1000 m</td>
<td>+ r ≤ 100 m</td>
<td>+ r ≤ 30 m</td>
<td>+ r ≤ 10 m</td>
<td>+ r ≤ 3 m</td>
</tr>
<tr>
<td>Transport</td>
<td>Public transport network</td>
<td>+ bicycle</td>
<td>+ bicycle</td>
<td>Public transport stop</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>Police station</td>
<td>Social housing agency</td>
<td>City council</td>
<td>Pay attention to the neighbours</td>
<td>Tent community security team</td>
<td>Tent community board</td>
<td>Neighbours</td>
</tr>
<tr>
<td>Culture</td>
<td>Shopping mall</td>
<td>High School</td>
<td>Elementary school</td>
<td>Health care facility</td>
<td>Semi-private space</td>
<td>Communal space</td>
<td>Semi-private space</td>
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<tr>
<td>Economy</td>
<td>Job possibilities</td>
<td></td>
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<td></td>
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<tr>
<td>Technique</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fence needed?</td>
<td>Internet Shower Sewage Water</td>
<td>Washmach Cooking facility</td>
</tr>
<tr>
<td>Ecology</td>
<td>Water and green</td>
<td></td>
<td></td>
<td></td>
<td>Empty plot (at least 1600 m²)</td>
<td>Detailing (e.g. grey water use)</td>
<td>Detailing (e.g. grey water use)</td>
</tr>
</tbody>
</table>

3.14 Context analysis matrix for a tent community, the scheme shows which facilities a tent community needs on the different scale levels (drawing by author, 2010).
lots of donations and friendly visits and responses from their neighbours. On the contrary when the tent community camps in South Seattle, they experience a lot of resistance and violence (Madlyn, 2009). This reflects on the camps atmospheres. When visited the people in Tent City 3 were cosily chitchatting around the entrance tent. On the contrary, in Nickelsville, people acted very individualistic and nervous about their possessions and food (especially meat).

It has to be taken into consideration that although these homeless people form a strong community, they are individualistic. When asked about their future dreams, everybody’s answer starts with: ‘a house for me’.

3.3.3 Conclusion

Concluding, it can be said that in order to let the tent community be a starting point for improvement of the inhabitants’ chances of a better future Seattle is in need of more transitional housing and alternative shelters.

As stated in chapter one, this project is about tent communities, therefore the following is proposed:

- Alternative shelter in the form of a legal collection of, self-managed, tent communities (see image 3.15);
- Spread throughout the city on semi-permanent (one - ten years) locations, so called urban leftovers;
- Which are well-connected into Seattle’s urban network on the sub regional, town, district, neighbourhood and ensemble scale;
- With improved facilities inside the community on the complex, building and building segment scale.
- With a controllable population (maximum of one hundred inhabitants).

The new tent communities will be a new facility, which helps homeless people get out of homelessness. Therefore only homeless people that are really willing to improve their life are welcome in the new tent communities. Alcohol use, drug use, weapons, violence and theft are forbidden.
Although living in a tent community has proven to increase the quality of the homeless people’s lives over living on the streets or in a shelter; in order to make the tent communities socially sustainable temporary settlements, the communities still need improvements in terms of liveability, control over one’s life and chances of a better future.

From the context analysis it can be concluded that the success or failure of the new to be developed tent communities depends on two factors:

• The encampment itself (from street to building segment scale). The factors on these scales are factors that should be taken into account in the design process;
• The location of the settlement in the urban network (from sub regional to street scale). These are factors that set the context of the encampment, and thus need to be already present in the city.

Chapter four focuses on the encampment itself. In this chapter a set of recommendations for the development of the new tent communities will be defined by learning from the spatial organization of other types of encampments.

The tent communities’ location in the urban network will be elaborated in chapter five by describing the placement of sustainable tent communities in the urban network of Seattle.
In chapter three it was concluded that the success or failure of the new to be developed tent communities depends on the encampment itself and the location of the settlement in the urban network.

In order to answer design question one (What spatial organization can make the new encampments a sustainable liveable environment?) this chapter focuses on the encampment itself. The chapters’ goal is to define a set of preconditions for the development of the new tent communities by learning from the spatial organization of other types of encampments.

In chapter 2 it became clear that a lot can be learned from non-western camps of needs. But things can be learned from many other types of encampments as well.

At first the encampments that have been studied will be introduced in paragraph 4.1. In the following paragraphs all encampments will be studied with the help of a SWOT analysis. In Paragraph 4.10 the results of these typology studies will be summarized in a final SWOT-table. Finally these conclusions will be processed into a set of preconditions for the new tent communities in Seattle.
4.1 Introduction

As stated on the previous page this chapter studies several encampment typologies. In order to achieve this project’s design goal (designing socially sustainable temporary settlements for homeless people in Seattle).

Because both the main research question (see paragraph 1.3) and design question one state that this project focuses on the spatial organisation of a sustainable temporary settlement, the characteristics of sustainable liveability (Van Dorst, 2005) that deal with spatial organisation are used to make a spatial analysis of the encampments on the following levels:

- **Analysis of the facilities**: is analysed because in an encampment facilities that are usually individual (e.g. bathrooms), are now communal facilities. This can limit the feeling of control as common divider of freedom, individualization, tolerance and identity (Van Dorst, 2005, p. 100) as thus limit the sustainable liveability of the encampment.
- **Analysis of the zoning of the camping plots**: because as Van Dorst describes, a sustainable liveability is, among others, about the degree in which residents have control over their own privacy and how much influence they can have on their own building environment (Van Dorst, 2005, p. 100). In the case of a tent community the private space and the building environment is formed by the plot.
- **The zoning of the meeting places**: is studied because social relations and participation are necessary for the success of a tent community (see section 3.2.1) but at the same time they are an invasion on one’s privacy (Van Dorst 2005, p. 100). So with the help of these studies the meeting places can be placed carefully into the designs.

Because in chapter two it has been concluded that western and non-western camps of needs do not meet the characteristics of a sustainable liveability, both temporary settlements for homeless people (not socially sustainable) and temporary settlements for recreational/festive use have been studied. These recreational/festive encampments are experienced as a pleasant temporary living environment and thus have a higher sustainable liveability than the settlements for homeless people.

The temporary settlements for homeless people that have been studied are:

- **Tent City 3**: has been studied because it is a legal tent community for homeless people in Seattle. As described in paragraph 3.2.6, being legal can be an advantage for the residents;
- **Nickelsville**: is an illegal tent community for homeless people in Seattle. Nickelsville is part of this typology because being illegal is a disadvantage and an advantage for its residents (see paragraph 3.2.7);
- **Dignity Village**: is included in this typology study because it is a former tent community that has transformed into a semi-permanent settlement for homeless people in Portland (Oregon, USA). This transformation corresponds to one of the points of departure of the collection of tent communities as described in paragraph 4.4.3;
- **Transitional Settlement**: is a ‘settlement and shelter resulting from conflict and natural disasters, ranging from emergency response to durable solutions’ (Corsellis and Vitale, 2005, p. 7). The community level plans from Corsellis and Vitale are part of this typology study because they are the schematic plans for most non-western camps of needs as described in chapter two.

The temporary settlements for recreational/festive use that have been studied are:

- **American campground**: is part of this typology study because this type of encampment illustrates how the American culture deals with camping;
- **RV campground**: besides the American Campground RV camping is an important part of the American camping culture and thus has to be part of this typology study;
- **Black Rock City**: has been studied because of its extreme temporality (six weeks every year) and the focus on ecological sustainability by the ‘Leave No Trace policy’. This is relevant for the project because in paragraph 1.3 it is explained that tent communities will be developed with respect for their temporality and because ‘environmental sustainability (...) is a prerequisite for social sustainability’ (Goodland, 1995, p. 2).

Even though the types of encampments can be divided in encampments that do and do not meet the characteristics of a sustainable liveability they also differ on many other characteristics, such as type of residents and level of voluntariness. Scheme 4.1 introduces these characteristics of the different typologies of encampments that have been studied.

In the following paragraphs the typology studies of the encampments which are described above, will be illustrated. Each paragraph start with an introduction of the encampment type, secondly the analysis drawings are shown. Finally each typology study is concluded with a SWOT analysis in order to be able to transform the conclusions of each study into a set of recommendations for the design of a tent community.
<table>
<thead>
<tr>
<th>Type of residents</th>
<th>Population</th>
<th>Surface</th>
<th>Legality</th>
<th>Length of stay per resident</th>
<th>Camps life span</th>
<th>Camp's purpose</th>
<th>Shelter form</th>
<th>Level of voluntariness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tent City 3</td>
<td>Homeless people</td>
<td>max. 100</td>
<td>0.0016 km² (1800 m²)</td>
<td>legal</td>
<td>few weeks - several years</td>
<td>3 months/ location, since 2000.</td>
<td>Shelter for homeless people in Seattle.</td>
<td>Tents.</td>
</tr>
<tr>
<td>Nickelsville</td>
<td>Homeless people</td>
<td>max. 100 (55 in december 2009)</td>
<td>0.0009 km² (900 m²)</td>
<td>illegal</td>
<td>few weeks - several years</td>
<td>3 months/ location since September 2008.</td>
<td>Shelter for homeless people in Seattle.</td>
<td>Tents.</td>
</tr>
<tr>
<td>Dignity Village</td>
<td>Homeless people</td>
<td>60</td>
<td>0.0018 km² (1800 m²)</td>
<td>legal</td>
<td>several years</td>
<td>Semi-permanent location since 2001.</td>
<td>Shelter for homeless people in Portland.</td>
<td>Temporary dwellings (wooden structures).</td>
</tr>
<tr>
<td>Transitional settlement</td>
<td>Refugees and IDP’s</td>
<td>varying</td>
<td>variable depending on the specific situation</td>
<td>a few days - 65 years</td>
<td>Several months - 65 years.</td>
<td>Shelter for refugees and IDP’s.</td>
<td>Tents and other temporary structures, depending on the situation.</td>
<td>Very low.</td>
</tr>
<tr>
<td>European campground</td>
<td>Tourists in Europe</td>
<td>700 plots, varying population</td>
<td>0.06 km²</td>
<td>legal</td>
<td>1 day - several weeks</td>
<td>Permanent location</td>
<td>Holiday place.</td>
<td>Tents, recreational vehicles and bungalows.</td>
</tr>
<tr>
<td>American campground</td>
<td>Tourists in the US</td>
<td>900 plots, varying population</td>
<td>1000000 km²</td>
<td>legal</td>
<td>1 day - several weeks</td>
<td>Permanent location.</td>
<td>Holiday place.</td>
<td>Tents, recreational vehicles, bungalows and trailers.</td>
</tr>
<tr>
<td>RV campground</td>
<td>Tourists in the US</td>
<td>165 plots, varying population</td>
<td>0.08 km²</td>
<td>legal</td>
<td>1 day - several weeks</td>
<td>Permanent location.</td>
<td>Holiday place.</td>
<td>Recreational vehicles and bungalows.</td>
</tr>
<tr>
<td>Black Rock City</td>
<td>Festival visitors</td>
<td>50000</td>
<td>13 km²</td>
<td>legal</td>
<td>1 - 6 weeks</td>
<td>6 weeks each year.</td>
<td>Festival location.</td>
<td>Tents and recreational vehicles.</td>
</tr>
</tbody>
</table>
4.2 Tent City 3

4.2.1 Introduction
As explained in chapter one, Tent City 3 is the only legal tent community in Seattle. Tent City 3 is home for a maximum of one hundred homeless people (City of Seattle, 2002, p. 382).

4.2.2 Spatial analysis
Because Tent City 3 has to move every ninety days, no maps or aerial photos of the encampment are available. The following analysis drawings (4.2 – 4.4) are based on aerial photos of the (empty) locations and a visit to Tent City 3 in December 2009.
4.2.3 Conclusion

**Facilities:** only the basic facilities are present. There is no running water, so the bathroom and kitchen rely on water tanks. In the kitchen, there is only a fridge, microwave and a coffeemaker. Preparing fresh food is almost impossible.

**Zoning of the plots:** it can be concluded that the camp is divided in four parts: single women tents, couples tents, a single men tent (the mash) and the facilities. The single women have their own ‘zone’ to prevent harassment. To improve the readability of the camp, every tent must have a nameplate.

**Zoning of the meeting places:** the meeting places are centred around the reception. It is remarkable that the main meeting place is a narrow ‘alley’ where there are no meeting facilities. Like e.g. chairs. The small meeting zone and the numerous entrances of the camp minimize the social control.

**Strengths**
- Centralized facilities.
- Obligatory nameplates.

**Weaknesses**
- No running water.
- No kitchen appliances.

**Opportunities**
- Zoning of the plots by gender.
- Legality, no need to be afraid that one’s home will suddenly be removed.

**Threats**
- Not all single men have a private tent.
- Many entrances.
- No clear communal zone.
4.3 Nickelsville

4.3.1 Introduction
Nickelsville is an illegal tent community in Seattle. When visited in December 2009, Nickelsville was a home to 55 homeless people. Although Nickelsville is not hosted by SHARE/WHEEL, the community’s organization is similar to the organization of Tent City 3.

4.3.2 Spatial analysis
Because Nickelsville is moving around through the city, no maps or aerial photos of the encampment are available. The drawings 4.5, 4.6 and 4.7 are based on aerial photos of the (empty) location and a visit to Nickelsville in December 2009.

4.3.3 Conclusion
Facilities: just like Tent City 3, Nickelsville has only basic facilities at its disposal. Nickelsville does not have to obey the Tent City Consent Agreement because the encampment is illegal. Therefore Nickelsville has cooking equipment and an open fire that keeps Nickelodeons warm. Nickelodeons are aware of their ecological footprint and keep it as low as possible, by doing litter pick-ups en using recycled materials.
Zoning of the plots: the camping plots in Nickelsville are divided in three zones: a single women’s zone, a couples’ zones and a single men’s zone. The couples’ zone functions as a buffer between the single men and women. In Nickelsville all households have their own tent. To improve the readability of the camp, every tent must have a nameplate.

Zoning of the meeting places: the meeting places are zoned around the fire. The fire is the centre of Nickelsville. People gather around the fire and if people enter the camp, they have to pass the fire. It is the place where social activities and social control takes places.
4.4 Dignity Village

4.4.1 Introduction
Dignity Village is a legal ‘space of self-organization’ (Hailey, 2009, p. 405) in Portland, Oregon. Just like the current tent cities in Seattle it is a self-help community where homeless people can find a place to sleep, eat healthy, use the toilet, receive mail and store their belongings (Dignity Village, 2009).

Dignity Village started as Camp Dignity in December 16, 2000. After camping on several locations in the city, Dignity Village has settled on an empty plot near Portland’s airport. Over the elapse of time, the tents have be replaced with more durable and more sustainable, mostly wooden, buildings that still have a temporary character (Hailey, 2009).

The residents use wind energy and collect water with which they minimize their cost and ecological footprint (Hailey, 2009).

4.4.2 Spatial analysis
A website and articles have been written about the way of life in Dignity Village. Unfortunately, not much has been written about the spatial organization of the village. So the following spatial analysis (figure 4.8 - 4.11) is based on a combination of satellite photos (Bing Maps, 2010) (Google Maps, 2010) and site-photos (Dignity Village, 2009).
4.4.3 Conclusion

Since there is almost no information about the spatial organization of Dignity Village the analysis is not complete. But some conclusions can be made.

**Facilities:** windmill, water storage and a community centre.

The encampment is located near the airport, outside the city. Zoning of the plots: it can be concluded that the camp is divided in three parts. A northern, middle and southern zone. The northern and southern zones are the residential areas. The middle part is a communal zone. It can be assumed that this division could also illustrate a division between types of people, but that is an assumption.

**Zoning of the meeting places:** the housing plots are located around small squares. These squares are meeting places for the people that live around it, while at the same time they heighten the feeling of social control.

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**Strengths**

- Generating energy by a windmill.
- Waterstorage and running water.

**Weaknesses**

- The encampment is not properly connected into Portland’s urban network.

**Opportunities**

- Community centre.
- One entrance.
- Small squares between the houses improve social control.
- Use of wind energy

**Threats**

- The encampment is not properly connected into Portland’s urban network.
4.5 Transitional Settlement

4.5.1 Introduction
As explained in chapter 2, a transitional settlement is a ‘settlement and shelter resulting from conflict and natural disasters, ranging from emergency response to durable solutions’ (Corsellis and Vitale, 2005, p. 7). The book Transitional Settlement Displaced Populations by Corsellis and Vitale is a ‘common planning tool for developing and implementing settlement and shelter strategies for people affected by conflict or disaster’ (Corsellis and Vitale, 2005, p. 1). In this planning tool they approach a transitional settlement on four different scales: the camp (20000 inhabitants), a sector (5000 inhabitants), a block (1250 inhabitants) and a community (80 inhabitants), see figure 4.12. The community scale is most interesting for this case study analysis, because that is the scale which is most comparable to the scale of a tent community.

A community hosts 16 family plots. Each family plot is a home to approximately 5 people and has a minimum plot size of 200 m². Each family plot has ‘a family shelter, a latrine, a shower or washing area, and a space for child care, cooking, water storage and a kitchen garden’ (Corsellis and Vitale, 2005, p. 386).

Corsellis and Vitale have three different plans for the community-level: the staggered plan, the hollow square plan, and the community road plan. In the following paragraphs all three plans will be studied.

All spatial analysis drawings in this paragraph are based on the plans from the book Transitional Settlement Displaced Populations (Corsellis and Vitale, 2005).
4.5.2 Hollow square plan

4.5.2.1 Introduction
In the hollow square plan 16 family plots are located around a communal square. Each plot has a public and a more private side. The hollow square plan is based on a grid, which makes it very easy to plot.

4.5.2.2 Analysis
See figure 4.13, 4.14, 4.15 and 4.16.

4.5.2.3 Conclusion
Facilities: the taps and latrines are located around the private square, which makes them more private and therefore well maintained by the community (Corsellis and Vitale, 2005).
Zoning of the plots: all plots are equal. Because the hollow square plan is based on a grid, there is no difference between the roads; it is easy to get lost in the settlement.
Zoning of the meeting places: the private square between the plots improves social control in the community.
4.5.3 Staggered plan

4.5.3.1 Introduction
In the staggered plan the plots are located around a community road. The plots are located back-to-back, which makes the back side private. A staggered plan is not based on a grid.

4.5.3.2 Analysis
See figure 4.17, 4.18, 4.19 and 4.20.

4.5.3.3 Conclusion
Facilities: every family plot has its own latrine, but the latrines are centred by four. So if not enough latrines are available, one latrine can be shared by four families.
Zoning of the plots: all plots are equal. The zoning of the communities is not based on a grid, which makes it harder to plot the encampment. But the staggered plan establishes hierarchy between the roads, which makes the settlement more readable.
Zoning of the meeting places: the staggered square plan has a clear hierarchy between private, semi-public and public places. The family plot is the private zone, the community roads are community places where social control takes place, in the larger road system one can be anonymous and meet other people.

Legend

<table>
<thead>
<tr>
<th>Meeting place</th>
<th>Street</th>
</tr>
</thead>
</table>

Every family has their own latrine.
Plan not based on a grid improves readability.

Plotting the settlement is hard because it is not based on a grid

Clear hierarchy between public, semi public and private places.

Equality in plots.

4.17: Staggered plan (Corsellis and Vitale; 2005, p.390)
4.18: Staggered plan zoning meeting places (drawing by author; 2010)
4.19: Staggered plan zoning plots (drawing by author; 2010)
4.20: Staggered plan (drawing by author, 2010)
4.5.4 Community road plan

4.5.4.1 Introduction

In the community road plan, the plots vary in size and are located around a road. In the middle of the community this road opens up to being a community square.

4.5.4.2 Analysis

See figure 4.21, 4.22, 4.23 and 4.24.

4.5.4.3 Conclusion

Facilities: every family plot has its own latrine, but the latrines are centred by four. So if not enough latrines are available, one latrine can be shared by four families. The tap stands are located on the road which makes them available to passers-by.

Zoning of the plots: the plots vary in size and are not based on a grid. All plots face a main road, which limits the feeling of privacy.

Zoning of the meeting places: the communal square is located on a main road. Not all plots face this communal square and there are a lot of passers-by.

Legend
- Meet on the street
- Diagrams 4.21, 4.22, 4.23, 4.24
-社区
-水槽

Strengths
Every family has their own latrine.
Improvement of the readability because plots vary in size and are not based on a grid.

Weaknesses
Tap stands placed on the road.
All plots face the main road.

Opportunities
Meet on the street zones.

Threats
Not all plots face a communal square.
4.6 European campground

4.6.1 Introduction
For a few days or weeks a year, many Europeans call a tent or recreation vehicle (caravan or mobile home) their home. They are on a holiday, and a campground is their temporary hometown. As an example of a European campground, ‘Camping Mooi Bemelen’ has been analysed. It is a family campground in the Netherlands. Camping Mooi Bemelen is chosen because it hosts all kinds of European campers (long stay, short stay, campers with a tent, caravan, etc). A campground in the Netherlands has been chosen because the climate in the Netherlands is similar to the climate in Seattle (information about the climate will be further elaborated in chapter 7).

4.6.2 Spatial analysis
This spatial analysis in image 4.25, 4.26 and 4.27 is based on a combination of satellite photos (Google Maps, 2010) and the camping map (Camping Mooi Bemelen, 2010).
4.6.3 Conclusions

Facilities: Camping Mooi Bemelen is an extensive camping, with many facilities such as a pool, a supermarket and a game hall.

Zoning of the plots: the camping plots are divided in four different zones for four different kinds of tourists: passers-by, youth, families and long-term campers. It is remarkable that most of the camping plots are divided by hedges, which gives the camping a green character and improves the level of control over one’s life.

Zoning of the meeting places: the meeting places of this campground are mainly large, communal activity places. For example a pool or a restaurant. In these meeting places people can stay anonymous and do not have to meet other people.
4.7 American campground

4.7.1 Introduction
Just as Europeans, American people go camping during their holidays. Campgrounds in the United States were first created on empty plots along the highways. People who were travelling across the country (for example towards and from the World Fair in Seattle, 1962) travelled every day from campground to campground (Hailey, 2009). Nowadays the American campgrounds are still used for one-night-camping, but all-holiday camping has become popular as well.

As an example of the American campground O’Connells Yogi Bear Jellystone Park Camp Resort in Amboy, Illinois has been analysed because, according to Hailey (2009) it is a typical american campground. It is a large camping (O’Connells Yogi Bear Jellystone Park Camp-Resort, 2010).

4.7.2 Spatial analysis
The analysis drawings in image 4.28, 4.29, 4.30 and 4.31 are based on a combination of satellite photos (Google Maps, 2010), maps from the book “Camps” (Hailey, 2009) and a camping map (O’Connells Yogi Bear Jellystone Park Camp-Resort, 2010).
4.7.3 Conclusion

Facilities: The campground offers all the facilities a camper needs. The facilities are very extensive. It is remarkable that there is a lot of entertainment, such as a theatre and a videogame zone. The campground has all the facilities of a small town. If not wanted, leaving the campground is unnecessary.

Zoning of the plots: Compared to Europe, in the United States people go camping in a recreational vehicle. They prefer to combine the camping lifestyle with the comfort of home. The importance of comfort is very clearly shown in the zoning of the campground; the plots are zoned by facility level. For example, plots with and without a connection to the water, electricity or sewage networks.

Zoning of the meeting places: Most of the meeting places are located in the south-western part of the campground. This seems decentral. But the campground has shrunk; these meeting places used to be the centre of the campground.

Strengths
- Facilities are centralized.
- Zoning of the plots by level of facilities (luxury).

Weaknesses
- The campground has all the facilities of a small town, leaving the campground is unnecessary, this limits social interaction.
- Facilities are luxurious and large.

Opportunities
- The campground has all the facilities of a small town, leaving the campground is unnecessary, this limits social interaction.

Threats
- Facilities are luxurious and large.
4.8 RV campground

4.8.1 Introduction
An important way of camping in the United States of America is the so-called RV-camping. Camping in a recreational vehicle, a mobile home. Although the homeless people in Seattle do not have a RV, it is an important part of the American camping culture and has therefore become a part of this analysis. RV camping can be seen as luxurious camping. Therefore, special RV campgrounds are often luxurious (Hailey, 2009). 'America's Best Campground' in Brandson, Missouri is such a campground. According to Hailey (2009) this RV campground is a typical example case.

4.8.2 Analysis
See figure 4.32, 4.33, 4.34 and 4.35.
4.8.3 Conclusion

Facilities: The RV campground has all the facilities a camper can wish for. There are not that many communal facilities, but that is not really necessary because every plot has a full hook-up, with e.g. electricity, TV, internet and a grill (ABC campground, 2010).

Zoning of the plots: Although the plots are not really zoned, it is remarkable that they are all surrounded by a road on two sides. This provides an easy entry and an easy exit for all kinds of RV’s.

Zoning of the meeting places: The meeting places are located in the centre of the campground and around the reception.

Facilities are concentrated in the centre and around the office.

Most facilities are private per plot, no interaction.

No zoning of the plots.

Facilities are luxurious and large.
4.9 Black Rock City

4.9.1 Introduction
Black Rock City is a city that exists only one week each year, when it hosts the Burning Man Festival. During this week it is a city, as large as downtown San Francisco with over 48000 inhabitants. During the rest of the year the place is known as Nevada’s Black Rock Desert, where no trace of the festival can be found. (Burning Man, 2010)
The Burning Man festival is a radical arts festival.

4.9.2 Analysis
The map, on which this analysis (figure 4.36 - 4.39) is based, is the plan of the 2005 Burning Man Festival. Since 1998 the urban plan of Black Rock city has been based on a comparable arc pattern. It started with a quarter of a circle, but due to the growth of festival the plan now covers over two thirds of a circle (Burning Man, 2010).

4.9.3 Conclusion
Facilities: Black Rock City offers every facility that a normal city offers. There is everything varying from a post office to internet access (Burning Man, 2010).
Remarkable about Black Rock city and Burning Man is that it is a ‘Leave No Trace’ camp (LNT camp). Burning Man’s LNT-project started with leaving no visible traces in the desert. Nowadays it is tried to be as ‘green’ as possible, and to leave no trace at all. For Example, by using solar showers and grey-water disposal (Hailey, 2009).
Zoning of the plots: all camping plots are similar and all types of people are allowed to camp on any plot. So there are no zones based on gender or facility level. Some blocks host a theme camp, but all blocks have the same size. The different blocks are divided by ‘streets’. Concluding Black Rock City is not divided in zones and no plots are defined. But the city is divided in blocks (neighbourhoods), just like a normal American City.
Street names help you define where you are in Black Rock City. The radial streets are always named after the numbers of

4.36: Black Rock City facilities (drawing by author, 2010)
the clock. Every year, the annular streets are given a new and festival theme related name (Burning Man, 2010).

Zoning of the meeting places: the main meeting places of Black Rock City can be divided in three groups: the three centres that facilitate urban facilities (e.g. post office), the theme camps and the streets. The centres are located on three central spots and the theme camps are spread over the whole city. Another meeting place is the Burning Man, the sculpture after which the festival is named, which is the absolute centre of the city.

Legend
Camp centres
Theme camps
Camping plots


4.38: Black Rock City zoning plots (drawing by author, 2010)

4.39: Black Rock City zoning meeting places (drawing by author, 2010)

Legend
- Bathroom
- Urban facilities
- Theme camps
- Burning man
- Streets

Streetnames.
Arc pattern.
Division in neighbourhoods.

Weaknesses
The campground has all the facilities of a small town, leaving the campground is unnecessary.

Division:
- urban facilities (public)
- theme zone (semi/public)
- camping plot (private)

LNT-policy.

Opportunities
Awareness of ecological footprint.

Threats
No camping plot zoning.
4.10 Conclusion

With the help of all previous paragraphs an answer to the first design question: what spatial organization can make the new encampments a sustainable liveable environment? will be provided in this paragraph.

In order to provide an answer to this question the sub conclusions of the typology studies will be summarized in paragraph 4.10.1 and subsequently these sub conclusions will be translated into a set of recommendations for the design of a tent community.

4.10.1 Concluding SWOT

As introduced in this chapters’ introduction the characteristics of a sustainable liveability (Van Dorst, 2005) that deal with spatial organisation are the foundation for the typology studies. Consequently these characteristics are also used to organize the sub conclusions into the final conclusion.

The conclusions of all sub conclusions are summarized in the SWOT table on the following page. In this scheme the sub conclusions are divided in five themes that are related to the characteristics of a sustainable liveability:

- **Facilities** are part of this conclusion because, as stated in paragraph 3.2, the lack of facilities and the communality of the facilities can limit the feeling of control as common divider of freedom, individualization, tolerance and identity (Van Dorst, 2005, p. 100) as thus limit the sustainable liveability of the encampment.
- **Readability of the settlement** is a theme because having control over the physical environment is not only about changing the environment, but (...) is also about the possibility to make the environment readable (ibid.).
- **Control over own life** is part of this conclusion because control as a common divided of freedom, individualization, tolerance and identity gives the resident the possibility to control his/her own privacy (ibid.).
- **Social control and social security** have to be taken into consideration because social relations and participation are necessary for a sustainable liveable environment but at the same time a minimal social cohesion is desired for a sustainable liveability (ibid.).

**Environment** is not a characteristic of a sustainable liveability, but it an important theme in this typology study because in paragraph 1.3 it was stated that, even though this project focuses on social sustainability, ‘environmental sustainability (...) is a prerequisite for social sustainability’ (Goodland, 1995, p. 2).

In the SWOT table on the following page, the conclusions from the typology studies, organized by theme, can be read. Note has to be made that even though this project focuses on the spatial organization of temporary settlements, as is explained in paragraph 1.3, also some non-spatial conclusions are included in the concluding SWOT. Because in these non-spatial conclusions are important for the argumentation of the set of recommendations for the design of a tent community which will be introduced in the next paragraph.
### Strengths

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Dignity village</th>
<th>American Campground</th>
<th>Staggered plan, community road plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generating own energy (windmill).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waterstorage and running water.</td>
<td>Dignity village</td>
<td>Hollow square plan</td>
<td></td>
</tr>
<tr>
<td>Taps and latrines around private square.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facilities are centralized.</td>
<td>American Campground</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Every family has their own latrine.</td>
<td>Staggered plan, community road plan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Readability of the settlement</th>
<th>Tent City 3, Nickelsville, RV campground</th>
<th>Tent City 3, Nickelsville</th>
<th>Community road plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralized facilities</td>
<td>Tent City 3, Nickelsville</td>
<td>Staggered plan, community road plan</td>
<td></td>
</tr>
<tr>
<td>Obligatory nameplates</td>
<td>Community road plan, European camping</td>
<td>Black Rock City</td>
<td>Black Rock City</td>
</tr>
<tr>
<td>Plan not based on a grid.</td>
<td>Black Rock City</td>
<td>Black Rock City</td>
<td></td>
</tr>
<tr>
<td>Variation in plot size.</td>
<td>Black Rock City</td>
<td>Black Rock City</td>
<td></td>
</tr>
<tr>
<td>Streetnames.</td>
<td>Black Rock City</td>
<td>Black Rock City</td>
<td></td>
</tr>
<tr>
<td>Arc pattern</td>
<td>Black Rock City</td>
<td>Black Rock City</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control over your own life</th>
<th>Tent City 3</th>
<th>Staggered plan, Black Rock City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legality</td>
<td>Tent City 3</td>
<td>Staggered plan, Black Rock City</td>
</tr>
<tr>
<td>Clear hierarchy between public, semi public and private places.</td>
<td>Staggered plan, Black Rock City</td>
<td></td>
</tr>
<tr>
<td>Creating private space by hedges between the camping plots.</td>
<td>Staggered plan, Black Rock City</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social control and social security</th>
<th>Nickelsville</th>
<th>Dignity village, Hollow square plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communal zone around the fire.</td>
<td>Nickelsville</td>
<td>Dignity village, Hollow square plan</td>
</tr>
<tr>
<td>Community centre.</td>
<td>Nickelsville</td>
<td>Dignity village, Hollow square plan</td>
</tr>
<tr>
<td>Small squares between the houses.</td>
<td>Nickelsville</td>
<td>Dignity village, Hollow square plan</td>
</tr>
<tr>
<td>Zoning of the plots by</td>
<td>Tent City 3, Nickelsville</td>
<td>American campground</td>
</tr>
<tr>
<td>- Gender.</td>
<td>Tent City 3, Nickelsville</td>
<td>American campground</td>
</tr>
<tr>
<td>- Level of facilities (luxury).</td>
<td>Tent City 3, Nickelsville</td>
<td>American campground</td>
</tr>
<tr>
<td>- Type of people.</td>
<td>Tent City 3, Nickelsville</td>
<td>American campground</td>
</tr>
<tr>
<td>Couples zone is a buffer between single men and women zones.</td>
<td>Nickelsville</td>
<td>Nickelsville, Dignity village</td>
</tr>
<tr>
<td>One entrance.</td>
<td>Nickelsville</td>
<td>Nickelsville, Dignity village</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environment</th>
<th>Nickelsville, Black Rock City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness of ecological footprint.</td>
<td>Nickelsville, Black Rock City</td>
</tr>
<tr>
<td>Litter pick-ups.</td>
<td>Nickelsville</td>
</tr>
<tr>
<td>Use of wind energy</td>
<td>Black Rock City</td>
</tr>
<tr>
<td>LNT policy</td>
<td>Black Rock City</td>
</tr>
</tbody>
</table>

### Weaknesses

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Tent City 3, Nickelsville</th>
</tr>
</thead>
<tbody>
<tr>
<td>No running water</td>
<td>Tent City 3</td>
</tr>
<tr>
<td>No kitchen appliances</td>
<td>Tent City 3</td>
</tr>
<tr>
<td>Not proper connected into urban network.</td>
<td>Dignity village</td>
</tr>
<tr>
<td>Tap stands placed on the road.</td>
<td>Community road plan</td>
</tr>
<tr>
<td>Due to the lack of low-scale facilities, it is very easy to stay anonymous.</td>
<td>European campground</td>
</tr>
<tr>
<td>The campground has all the facilities of a small town, leaving the campground is unnecessary.</td>
<td>American campground, Black Rock City</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Readability of the settlement</th>
<th>Tent City 3, Nickelsville, RV campground</th>
<th>Tent City 3, Nickelsville</th>
<th>Community road plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every plots faces a main road.</td>
<td>Tent City 3, Nickelsville</td>
<td>Community road plan</td>
<td>Community road plan</td>
</tr>
<tr>
<td>Plotting the settlement is hard because it is not based on a grid</td>
<td>Staggered plan</td>
<td>Staggered plan</td>
<td>Staggered plan</td>
</tr>
<tr>
<td>Plan based on a grid, all roads and plots are equal in hierarchy.</td>
<td>Tent City 3, Nickelsville</td>
<td>Community road plan</td>
<td>Community road plan</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control over your own life</th>
<th>Tent City 3</th>
<th>Staggered plan, Black Rock City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illegality</td>
<td>Tent City 3</td>
<td>Staggered plan, Black Rock City</td>
</tr>
<tr>
<td>Not all single men have a private tent Tent City 3</td>
<td>Staggered plan, Black Rock City</td>
<td></td>
</tr>
<tr>
<td>All plots are equal.</td>
<td>Tent City 3</td>
<td>Staggered plan, Black Rock City</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social control and social security</th>
<th>Tent City 3</th>
<th>Staggered plan, Black Rock City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Many entrances.</td>
<td>Tent City 3</td>
<td>Staggered plan, Black Rock City</td>
</tr>
<tr>
<td>No clear communal zone.</td>
<td>Tent City 3</td>
<td>Staggered plan, Black Rock City</td>
</tr>
<tr>
<td>Not all plots face a communal square.</td>
<td>Tent City 3</td>
<td>Staggered plan, Black Rock City</td>
</tr>
<tr>
<td>Facilities are luxurious and large.</td>
<td>Tent City 3</td>
<td>Staggered plan, Black Rock City</td>
</tr>
<tr>
<td>No zoning of the plots.</td>
<td>American campground</td>
<td>American campground, RV campground</td>
</tr>
<tr>
<td>Most facilities are private per plot.</td>
<td>Black Rock City</td>
<td>RV campground</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environment</th>
<th>RV campground, Black Rock City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness of ecological footprint.</td>
<td>RV campground, Black Rock City</td>
</tr>
<tr>
<td>Litter pick-ups.</td>
<td>RV campground, Black Rock City</td>
</tr>
<tr>
<td>Use of wind energy</td>
<td>RV campground, Black Rock City</td>
</tr>
<tr>
<td>LNT policy</td>
<td>RV campground, Black Rock City</td>
</tr>
</tbody>
</table>
4.10.2 Set of recommendations

The previous paragraph has provided strong, weak, opportunistic and threatening characteristics of the spatial organization of several types of encampments. In order to answer this chapter’s design question, these characteristics have been organized into a set of recommendations for the design of a sustainable liveable tent community. This set of recommendations is arranged into the same five themes as the concluding SWOT table on the previous page was arranged in.

Recommendations for the encampment’s facilities:
- Because tent community residents depend on public transport and public facilities, the tent community has to be well-connected into the urban network on the scale of the city.
- Support visiting public facilities (e.g. library, school, malls, supermarket) to prevent anonymity of the tent community’s residents and secondly to push interaction with the tent community’s neighbours (to break the prejudices about homeless people).
- Provide basic facilities inside the camp, such as running water, water storage, kitchen appliances, electricity generator, sewage and bathrooms.

Recommendations for creating a readable settlement:
- Adopt street names;
- Obligatory nameplates;
- Design a plan that is not based on a grid, an arc pattern, such as Black Rock City’s plan, is, based on hierarchy and readability, the most ideal plan;
- Create a variety of plots (e.g. varying in size, orientation and hierarchy);
- Centralize the facilities.

Recommendations for creating control over your own life:
- Make the tent community legal to end the homeless’ living in suspense;
- Create hierarchy between public, semi-public and private places. This increases the amount of privacy and the feeling of control over his/her life. This can, for example, be established by adding hedges between the camping plots. This is illustrated in images 4.40 and 4.41;
- Facilitate private tent for all residents;
- Create a hierarchy between the camping plots.

Recommendations for improving social control and social security:
- Centralize the communal facilities around a community centre, to increase social interaction and community feeling;
- Give the settlement one (clear) entrance to improve the social controllability;
- Zone the plots by creating separate neighbourhoods for single men, single women and couples and give each neighbourhood their own bathroom facilities. If complete separation of the neighbourhoods is not possible, use the couples’ neighbourhood as a buffer between the single men and single women’s neighbourhoods;
- Locate groups of plots around squares. The squares should be shared by a limited number of residents, whom can look after each other (or e.g. look after each other children).

Recommendations for increasing awareness of their ecological footprint:
- Let the residents do litter pick-ups in the neighbourhood of the tent community;
- Use renewable wind energy and/or solar;
- Use grey water;
- Adapt an LNT policy.

So, these are the recommendations for a spatial organization
that can make the new encampments a sustainable livable environment. These recommendations have been translated into schematic plans for a tent community with (image 4.42) and without kids (image 4.43).
In chapter three it was concluded that Seattle needs a collection of legal tent communities. It was also concluded that the success of these tent communities depends on two factors: the encampment itself and location of the settlement in the urban network.

The previous chapter has already focused on the encampment itself, so this chapter will focus on the location of the settlement in the urban network, to be able to answer design question two: which locations in the City of Seattle are well-connected (temporary) urban leftovers that can host a tent community?

The location of the settlement in the urban network is an important factor for the success of a tent community because, as was concluded in chapter three, homeless people depend on communal facilities. For example, not being well connected into the urban network limits their flexibility.

In the following paragraphs the search for well-connected urban leftovers that can host a tent community will be described. At first zones in the city will be sought that meet the requirement of being well connected into Seattle’s urban network as they have been formulated in the context analysis scheme (section 3.3.2 and image 3.2). This search will focus on scales varying between the sub regional level and the ensemble level (De Jong, 2006). This will result into zones in Seattle that can host a tent community with and a tent community without children.

But a zone in the city being well connected into the urban network does not imply that it contains urban leftovers that can host a tent community. Therefore in section 6.2 the actual tent community locations will be sought by studying satellite photos.
5.1 Sub Regional scale

The search for zones in the City of Seattle that meet the requirements of being well connected into Seattle’s urban network starts with an analysis of the sub regional scale, as it is defined by De Jong (2006). The requirements have been explained in the context analysis matrix (image 3.14).

In this project the context analysis’ sub regional scale grasps the whole City of Seattle, as is illustrated in image 5.1. As stated in the context analysis matrix (image 3.14) on the sub regional scale the residents of a tent community are in need of large scale urban facilities like job possibilities and nature and water. In the following sections the relevant layers of the context analysis (transport, management, culture, economy and ecology) will be illustrated in text and maps.

More information about the City of Seattle (e.g. demographics and information about Seattle’s economy) can be found in appendix a.
5.1.1 Transport

In section 3.3.2 it has been concluded that most tent community residents depend on public transport. Consequently, a public transport network is a necessity for the context of a tent community on the sub-regional scale of this project.

In image 5.2 it is illustrated that Seattle has a public transport network widespread over the city. Seattle’s transit system is mainly based on busses. During the field trip it was observed that an extensive part of the busses, mainly the busses that cover the busy routes (see image 5.2), are trolley buses.

Besides the busses also one light rail and one streetcar connection are available. The Link Light Rail now connects downtown Seattle and Seattle’s airport, but in the coming years the light rail system will be further extended towards the cities North (Everett), East (Bellevue) and South (Tacoma) of Seattle (Sound Transit, 2010).

Although most homeless people do not have a car, the car is the main means of transport in the United States, so it cannot be completely left out of consideration. The map in image 5.2 also shows the main road network, because the express busses use the city’s highways. As can be seen, the main road network is oriented north-south, with connections to the eastern hinterland. Note: traffic towards the west relies on ferries, which have their terminal in downtown Seattle.

The map in image 6.2 is based on the ‘Metro Transit System Map’ (King County Metro, 2008) and observations during the field trip (December 2010).
5.1.2 Management, culture and economy

According to the context analysis matrix layers’ in image 3.14, facilities such as a police station, a social housing agency, the city council, a shopping facility and job possibilities are important facilities for the residents of a tent community on the sub regional scale.

The facilities police station, social housing agency, city council and shopping mall are mostly located in so called mixed use areas, as they have been defined in Seattle’s comprehensive plan of 2005. The location of the facilities and the mixed use areas are shown in image 5.3. These mixed use areas are the areas in the city where housing, commercial activities, services and employment are present (City of Seattle Department of Planning & Development, 2005).

In chapter three it has been described that besides large scale urban facilities, having or getting a job is very important for the improvement of a tent community residents’ life. Seattle’s mixed use areas and major institutions, as they are defined in Seattle’s comprehensive plan (2005), offer the largest amount of job opportunities, see image 5.3.

The cities’ largest employer is the University of Washington (nr. 2 in image 5.3). The University has a focus on healthcare, which generates a spin-off of 96000 jobs in healthcare. Consequently, Seattle has manifested itself as the US capital of biotechnology and medical devices research and development.

In Washington State, Boeing is the largest employer with 74517 employees (City of Seattle, September 2009). More information about Seattle’s economy can be found in appendix a.

The map in image 5.3 is based on the ‘Seattle comprehensive plan’ (City of Seattle Department of Planning & Development, 2005) and Google Maps (Google Maps, 2010).
5.1.3 Ecology

In chapter two it has been described that ‘contact with natural setting’ is one of the characteristics of a sustainable liveability. Therefore Seattle’s water and green are part of the context analysis matrix in the ecology layer.

Image 5.4 shows Seattle’s water and green networks. Seattle is located on two peninsulas. The peninsula’s separate Lake Washington and Puget Sound. Because only ‘a shallow sill at the north end (...) separates Puget Sound from the Strait of Juan de Fuca, which (...) is connected to the Pacific Ocean’ (Schoenmakers, 2007, p. 9), Puget Sound’s water is saline.

Image 5.4 shows that no large nature areas are present in the City of Seattle. But, on the higher scale Seattle is surrounded by water, nature and mountains, for example, the Cascade Mountains. These mountains’ melt water provides Seattle with drinking water and hydroelectric energy. This is further illustrated in appendix a.

Because, as explained in section 1.3.1, environmental sustainability will be taken into consideration in this project. In the context of the context analysis’ ecology layer the consequences of climate change on Seattle cannot be neglected in this analysis.

Due to climate change Seattle will be facing flood problems in winter and drought in summer (Department of Ecology State of Washington, September 2009). Seattle is facing floods from the hinterland, but, just like the Netherlands, it is also facing floods from the Sea. Puget Sound’s has an open connection with the Pacific Ocean and thus will be facing water level rise (Schoenmakers, 2007). The consequences of the changing climate for Seattle’s water and green will be further elaborated in appendix b.
5.2 Town scale

The second step in the search for zones in the City of Seattle that meet the requirements for hosting a tent community is an analysis on De Jong’s (2006) town scale.

The context analysis matrix in Image 3.14 shows that on the town scale only the presence of a high school, in the culture layer, is a necessity for a tent community. As explained in section 3.3.2 high schools are a necessity on the town scale (three kilometre radius) because children whom are going to high school can go there by themselves, by bike or by bus. Hereby note has to be made that high schools are only a necessity for tent communities that will be a home to children.

Map 5.5 illustrates Seattle’s high schools and the area’s in the City of Seattle where the distance to a high school is over three kilometres. This, according to the context analysis matrix, is the maximum permitted distance between a tent community that is a home for children and a high school. Consequently the orange zones illustrate areas that cannot host a tent community.

The map in image 5.5 is based on Google Maps (Google Maps, 2010) and the Seattle Washington map (AAA, 2007).
The district scale is the third step in the search for zones in the City of Seattle that are fit for hosting a tent community. As the context analysis matrix shows, elementary schools (section 5.3.1) and health care facilities (section 5.3.2) are the factors in the culture layer that need to be present within a one kilometre radius around a tent community.

5.3.1 Elementary school

In section 3.3.2 it has been described that for tent communities that are a home to children, it is necessary to have an elementary school in the vicinity. Children whom are going to elementary school have to be brought and picked up, so an elementary school has to be near the camp, on a walking distance.

Seattle’s elementary schools and the zones in the city that are too far way from an elementary school (the blue zones) are illustrated in image 5.6. The maximum acceptable distance between a tent community and an elementary school is one kilometre.

The map is based on Google Maps (Google Maps, 2010) and the Seattle Washington map (AAA, 2007).
5.3.2 Health care facility

That many homeless people have health problems, was concluded in section 3.2.4. These health problems can be the result of years of long addiction, living on the streets or unhealthy food (Poole, 2009). Since the aim of the tent communities is to improve the inhabitant’s life, it is important that the residents can get medical care on the district scale. Also, for ill people it is harder to get a job.

The map in image 5.7 shows hospitals, general medicine clinics and general practitioners in the City of Seattle. The zones in the city where a health care facility is further than one kilometre away, and thus not fit for hosting a tent community, are shown in red.

The map is based on information from Google Maps (Google Maps, 2010) and the Seattle Washington map (AAA, 2007).
The fourth and last step of the search for zones in the city of Seattle that can host a tent community focuses on the neighbourhood scale. In the context analysis matrix in image 3.14 it is shown that a public transport stop (transport layer) and a supermarket (economy layer) are wanted in the vicinity of a tent community, within a three hundred metre radius. These factors of the context analysis matrix will be elaborated in section 5.4.1 and 5.4.2.

5.4.1 Public transport stops
That homeless people depend on public transport has already been explained in sections 3.3.2 and 5.1.1. For the residents of a tent community public transport is important on the sub regional scale, because on the sub regional scale the public transport network determines the residents’ room to move.

But in order to let the residents be able to use the public transport network, as it is illustrated in image 5.2, a public transport stop is needed on the neighbourhood scale. Hereby the differentiation has to be made that, according to Hocks (2007), the distance that people are willing to walk further for using different kinds of public transport is variable:

- Bus: 150 - 300 metres;
- Streetcar: 300 metres;
- Light rail: 600 metres.

This is included in image 5.8, which shows Seattle’s public transport stops. The red zones on the map illustrate the area in the City of Seattle where the distance towards a public transport stop is over the acceptable distances that are required for hosting a tent community, as described above.

The map is based on Google Maps (Google Maps, 2010), the ‘Metro Transit System Map’ (King County Metro, 2008) and the Seattle Washington map (AAA, 2007).
5.4.2 Supermarket

That many homeless people are unhealthy has become clear in sections 3.2.4 and 5.3.2. This unhealthiness is partially caused by eating unhealthy food, for example: a donut is cheaper than an apple (Poole, 2009).

In section 4.9.2 it is stated that in the new, to be developed, tent communities cooking facilities will be introduced. This will allow the residents to cook a proper and healthy meal, therefore a supermarket, where fresh food can be purchased is a necessity in the vicinity of the tent community on the neighbourhood scale.

The purple zones in image 5.9 show the areas in Seattle where the distance towards a supermarket is more than three hundred meters. These zones do not meet the requirements for hosting a tent community.

The map is based on Google Maps (Google Maps, 2010) and the Seattle Washington map (AAA, 2007).
In the previous sections all factors from the context analysis matrix (image 3.14) that set the context for a zone in Seattle that can host a tent community have been mapped. But all these single maps do not define the zones in the City of Seattle that meet all requirements for hosting a tent community, as they have been described in the context analysis matrix. Therefore all maps (images 5.2 - 5.9) have been brought together in image 5.10. Here, all maps have been layered over each other. The remnants of this layering, the white zones in image 5.10, are the zones in Seattle that can host a tent community that can also be a home to children.

In this chapter’s introduction it was explained that a differentiation would be made between zones in the city that can host a tent community with and without children. Image 5.11 shows this differentiation.
However zones in the city that can host a tent community have now been defined. A zone in the city that obeys the requirements of the context analysis matrix does not imply that it contains locations that can host a tent community. Consequently the collection of tent communities that is proposed for Seattle in section 3.3.3 has not yet been defined.

In order to define this collection of tent communities, specific locations need to be sought. These locations will be sought on the street scale, as it was illustrated in the context analysis matrix. This context analysis in section 3.3 prescribes that the search for locations must focussed on locations that have a minimal surface area of 1600 m² and, at the same time, are out of use for the coming one to ten years.

Since another visit to Seattle was not within the bounds of the possible, locations in the city have been sought by studying aerial photos (Google Maps, 2010; Bing Maps, 2010) of the zones in image 5.11.

This search has come up with twenty eight locations that can host a tent community. Together they are the realization of the collection of tent communities, as it was proposed in section 3.3.3. The collection of tent communities is shown in image 5.12.

In the following sections, the different locations will be introduced. These locations can be divided into four categories:

- Parking spaces
- Empty blocks/plots
- Parks
- Special locations
5.5.1 Parking places
During the field trip it was observed that while Seattle has an enormous amount of parking spaces, many of these parking spaces are unused. This is, most likely, caused by the upcoming presence of many (contemporary) multi-storey car parks. This results in an enormous amount of asphalt lying unused in the city, which is a perfect under layer for a tent community.
Consequently many parking places are found that are fit for hosting a tent community. These tent community locations correspond with the numbered push pins in image 5.13:

1. Nortgate mall parking
2. Sicks Stadium parking
3. North Delridge parking lot
   SW Yancy St & 26th Ave SW.
4. University way Parking lots
   12th Ave NE & NE 47th Street.
5. Salmon Bay parking lots
   Shilshole Ave NW & 24th Ave NW.
6. NW 50th street parking lots
   NW 50th Street & 17th Ave NW. Empty asphalt plain.
7. NW Downtown parking lots
   Denny Way & Westlake Ave & 6th Ave. Enormous amount of parking lots, design for the whole area.
8. KCTS TV parking lot
   Mercer Street & 5th Ave N.
9. Downtown 1st Avenue parking lot
   1st Ave & Stewart Street.
10. Pike place market parking lot
    2nd Ave & Pike street.
11. Capitol Hill – Broadway parking lot
    Broadway E & E Mercer street.
12. Ravenna parking lot
    9th Ave NE & NE 63rd Street.
5.5.2 Empty block/plot
As every city, Seattle also has empty plots or blocks. The empty plots and blocks that meet the requirements for hosting a tent community are illustrated by the numbered push pins in image 5.14:

1. Crown Hill
2nd ave NW & NW 90th Street.

2. North Beacon Hill
S Massachusetts Street & 20th Ave S.

3. North Beacon Hill
S State Street & 22nd Ave S.

4. West woodland
15th Ave NW & NW Leary Way.

5. Capitol Hill
E Madison Street & 22nd Ave E.
Empty plot.

6. Capitol Hill empty house plot
E Columbia Street & 21st Ave.
5.5.3 Parks

As described by the characteristics of a sustainable liveability (Van Dorst 2005) and in the context analysis matrix, the presence of green is important for the inhabitants of the city. But, parks that do not have a specific use, can transform into socially unsafe areas. Adding a use can increase the feeling of safety and the use of the park. A tent community can be such a use.

The following parks, which are shown in image 5.15, are locations that can host a tent community:

1. Maple Leaf Park  
   - Park and drinking water reservoir.  
   - Homeless can be the caretakers of the park.

2. Froula Park  
   - Park, playground, sports fields and water.  
   - Homeless can be the caretakers of the park, playground and sports field.  
   - Live in the park and on the water.

3. Beacon Hill green axis location 1  
   13th Ave S & S Snoqualmie St.

4. Beacon Hill green axis location 2  
   S Ferdinand St & 17th Ave s.

5. Beacon Hill green axis location 3  
   Columbia Dr S & S Pearl Street.

6. University of Washington Golf Driving Range  
   Wasteland near University Village and sports fields.

7. Queen Anne  
   Newton Street & 2nd Ave NW.
5.5.4 Special locations
Although most locations that are part of the collection of tent communities have been categorized, three locations remained from the field trip observations that are fit for hosting a tent community, but could not be categorised as a parking place, an empty plot or a park. These are the special locations in image 5.16:

1. Seattle Center
   Square with children’s entertainment.

2. Pier 62/63
   Alaskan Way.

3. Fairview Ave E empty dock
   Fairview Ave E & E Allison St.
In this chapter an answer to design question two has been sought: which locations in the City of Seattle are well-connected (temporary) urban leftovers that can host a tent community?

To be able to answer this question, at first zones in the City of Seattle that are well-connected have been mapped on the subregional, town, district and neighbourhood scale. The zones have been mapped according to the requirements for being well-connected, which were defined in the context analysis matrix in image 3.14. Subsequently all these maps were assembled into images 5.10. This, together with image 5.11, shows the zones in the city of Seattle.

Since zones do not define locations that can host a tent community, real locations have been sought on the street scale in section 5.5. This search resulted in the realization of the collection of tent communities in Seattle.

So the answer to design question two is the collection of tent communities, which is illustrated in image 5.17. The collection of tent communities exist out of twenty-eight locations in the city of Seattle that are well connected into Seattle’s urban network and that are (temporary) urban leftovers.

However the concept of the collection of tent communities has now transformed into a real collection of tent communities. It is still not proven that tent communities are socially sustainable temporary settlements, in order to answer to this design goal from section 1.3, two locations have been chosen that will be further elaborated into a hypothetical design. The large push pins in image 5.17 show these locations:
- Pier 62/63
- Froula Park

These locations and the designs hypotheses will be further discussed in the following chapters.
In the previous chapter the collection of tent communities in Seattle has been designed, by finding real spots in the City of Seattle where a tent community can be realized. But, as was also stated in section 5.6, to be able to prove that the collection of tent communities can be a socially sustainable temporary home to homeless people design question three needs to be answered: what measures are needed to assure that the tent community stays a transitional solution that keeps a temporary character on a semi-permanent location?

In order to answer this design question, two locations from the collection of tent communities have been chosen to be further elaborated into a hypothetical design: Froula Park and Pier 62/63. These two locations are the test cases for the collection of tent communities.

To be able to illustrate the transitional character of the hypothetical settlements, both settlements have been planned for a longer period of time in the future. Because the pace of development cannot be predicted, both designs are planned in four phases.

It has to be noted that the designs proposed in this chapter are hypothetical test cases, in reality the developments could be completely different.

In the first section of this chapter the hypothetical test case of Froula Park will be elaborated. Subsequently the test case of Pier 62/63 is going to be illustrated. Each section will start with an introduction to the location, followed by the hypothetical design.
6.1 Froula Park

As stated on the previous page, Froula Park is one of the locations from the collection of tent communities that is proposed for Seattle in section 5.6.

To be able to prove that the collection of tent communities will be a functioning concept, a hypothetical design is made for a tent community in Froula Park. The design is discussed in this section. The discussion will start with an introduction of the site and the surrounding neighbourhood. Thereafter the hypothetical design will be explained.

6.1.1 Introduction

Froula Park is located in the suburban Roosevelt neighbourhood. In image 6.1 it is shown that it is a North-Seattle neighbourhood.

In the beginning of the 20th century the development of the area started. Most of the neighbourhoods’ houses were built in the 1920’s and 1930’s. "The majority of residences in the Roosevelt Neighborhood are owner-occupied homes (...) Renters occupying local homes represent a mix of working
households and students. (...) There are approximately 1700 residences and 170 businesses within the borders of the Roosevelt Neighborhood (Roosevelt Neighborhood, 2010). The part of Roosevelt that is shown in image 6.2 shows approximately a quarter of Roosevelt’s surface area. Roosevelt is important in Seattle infrastructure, because many north-south arterials cross the neighbourhood (see image 6.2). Now these are mainly car and bus arterials, in the future, the neighbourhood will also get a light rail station, a new regional north-south connection (ibid.). Image 6.3 illustrates that most commercial activities near Froula Park are located on Roosevelt way.

Froula Park exists of Green Lake Reservoir, an old and a new pump station, a tennis court, a playground and the surrounding lawns. The Green Lake Reservoir is a 190.000.000 litre drinking water reservoir. Together with the old Green Lake reservoir pump station and the identical Maple Leaf Reservoir (located to the north) Green Lake Reservoir is ‘part of the Cedar River Water System No. 2’ (Seattle Department of Neighborhoods, 2010). The constructions were completed in 1910 and 1911. The reservoir is made out of ‘site-made concrete’ (ibid.). At the moment, the owner of the reservoir, Seattle Public Utilities, is constructing a new, buried, Maple Leaf Reservoir, which will replace Green Lake Reservoir. Because of this the Green Lake reservoir will lose its function as a drinking water reservoir (ibid.).

An impression of the park is given in image 6.4, on the following page. From this impression it can be concluded that Froula Park is now an unused lawn (private property (ibid.)) with a concrete pond in the middle. Together with the reservoir losing its function, this implies that the park is in a transitional phase. How a tent community can take advantage of this transitional phase will be described in the following sections.
6.4 Impression of Froula park: pumping station (top left); Green Lake Reservoir (top right and bottom left) and the tennis court (Wikimedia, 2010)
As described in the previous section, Froula Park finds itself in a transitional phase, because the lawns are private property and the Green Lake reservoir will fall out of use.

In section 1.3 this project’s design goal states that socially sustainable temporary settlements for homeless people in Seattle need to be designed and from chapter five it was concluded that Froula Park is a good location for hosting a tent community. Consequently the main aim of Froula Park’s transition will be: giving homeless people a temporary home on a semi permanent location (which is also requested by design question three).

As stated in this chapter’s introduction, the designs that are proposed in this chapter are test cases. The designs are hypotheses for what could happen when a tent community is hosted at a location. Besides the design that is proposed in the following sections, many other scenarios are possible. The tree diagram in image 6.5 shows scenarios for the development of Froula Park. These scenarios are examples of conceivable scenarios, of course many other scenarios are thinkable as well, which is illustrated by the question marks in image 6.5. Since the pace and success of any transformation cannot be predicted, the scenarios are not based on set times. For that reason the transitions are shown in phases. In a desirable time plan phase one, two, three and four would show the site’s status in the years 2011, 2014, 2017 and 2020.

Any development that is part of the collection of tent communities will start with the realization of a tent community. The tent community can be a catalyst for the further developments of the area.

The scenario that is illustrated by the top branch of the tree diagram is further developed into a design for Froula Park in the following sections.
6.1.3 Test case scenario

In section 1.3 it was stated that social sustainability is about ‘systematic community participation and strong civil society’ (Goodland, 1995, p 3). For that reason mutual interaction between the homeless people and the residents of the neighbourhood and acceptance of the homeless people by the neighbourhood is aimed after in the development of Froula Park. Consequently a socially sustainable temporary settlements for homeless people and interaction between residents and neighbours are the goals of the hypothetical design for Froula Park that will be introduced in this section.

This design corresponds with the design scenario of the top branch of the tree diagram in image 6.5. In that branch it is proposed that Froula Park hosts a tent community, where, over the elapse of time, the tents transform into semi-permanent houses (e.g. wooden structures, like in Dignity Village, see section 4.3) and finally permanent houses and self-built houses.

The tent community transforming into permanent housing, is inconsistent with chapter one’s goal of designing temporary settlements. However this design goal implies that the tent community will disappear with the elapse of time, it regularly happens that people get attached to a location or a situation. This happened for example in the village Ruigoord. Due to the expansion of the Amsterdam harbour, the counter culturists’ village lost its residential purpose but the residents got attached to the village and refused to leave (Dorst et al., 2000).

Consequently the scenario that a tent community will transform into permanence could not be neglected.

Simultaneous with the tent community developments, Froula Park will transform into a park, which functions as the centre of the neighbourhood. A place where Roosevelt residents go to meet people, relax and let their children play.

Summarizing, the Froula Park transformation depends on two main developments: the development of the tent community and the development of the park. These developments will be described more in detail in the following sections.

6.1.4 Tent community development

In section 6.1.2 it has been described that all developments that are part of the collection of tent communities will start with the realization of a tent community. Consequently, so will Froula Park.

The plan for the tent community is designed according to the set of recommendations for the design of a sustainable liveable tent community, which was introduced in section 4.9.2. Some example of the implement recommendations are:

- Tent community should be divided into three separate zones: one for single men, one for single women and one for couples. As recommended, the couples’ zone is located, as a buffer, in between the two singles zones. This is illustrated in image 6.6.
- In order to improve the communities’ readability, social control and social security, the communal facilities (kitchen, community centre, office, greengrocery) are centralized around the camps’ single entrance.
- To preserve the residents’ privacy and to admit the tent community into the park, the tent community is fenced off by hedges and kitchen gardens.

To be able to earn their stay in Froula Park, the tent community residents have to maintain the park. Most likely some residents will finally be employed in the park. For example as pool attendant, farmer or carpenter (e.g. to construct the bridges). This is similar to the situation in refugee camps, see section 2.2, where after a while people, for example, start their own grocery shop or start working for UNHCR.
The scenario for the development of Froula Park states that the park will host a tent community from the start. Over the elapse of time the tents will transform into semi-permanent houses (e.g. wooden structures). Over the years, most tent community residents who find a job will move out of the community into normal housing. But the residents whom find the financial means and have gotten attached to the location (see section 6.1.3) can stay in Froula Park. For these residents three housing options are available:

- Build a permanent house. These houses will form a suburban strip of single family houses than are opened up on the street side. These parcels are allowed to host small commercial activities (e.g. a crèche, estate agent, physiotherapy, ballet lessons).
- Build a self-built house. All kinds of counter culturists can create their ideal home (e.g. a tepee, a mud hut, a workshop, a trailer or an earth ship, cultural sanctuary Ruigoord is a reference). These parcels’ entrances will be facing towards the park.
- Launch a houseboat on the lake.

To facilitate this transformation, which is illustrated in image 6.11, the tent community lots are positioned in such a way that several tent community lots can transform into one parcel. This counts for the sanitary fittings as well, sanitary connections are positioned on every second parcel.

Acceptance and social interaction do not arise from the one day to the next. It is a process that takes time to grow. A biological greengrocery, kitchen gardens and a community centre are introduced in the tent community to create a place where the neighbourhood unites. This is described in the next section.
6.1.5 Interaction creators

In order to create socially sustainable temporary settlements for homeless people, one of the main goals of the hypothetical design for Froula Park is creating interaction between the residents of the tent community and the resident of the neighbourhood, this was introduced in section 6.1.3. For Froula Park’s hypothetical design, allotment garden, a biological greengrocery and a community centre are proposed. They are introduced below.

Allotment gardens: the allotment gardens are part of the tent community. All allotment gardens together cover 6500 m². Although the tent community residents are free to grow anything they prefer (fruit, flowers, herbs, vegetables, etc), the surface area of 6500 m² is sufficient to supply all residents with fresh food from a kitchen garden (Boerenbond Welkoop, 2010).

Biological shop: from the kitchen gardens more crops (or flowers, etc) will be harvested than the residents need. The surplus of the harvest will be sold in the biological shop, which is located on the camp’s central square. It is expected that over the elapse of time the neighbours become the shop’s regular customers. So when the tent community is replaced with (semi-) permanent houses the shop and allotment gardens will stay in action.

Community centre: Alongside the greengrocery a community centre will be located on the central square. Hosting tent community meetings and activities is the principal purpose of this centre. But it is also the place where non-residents can be received. For example the building can host a neighbourhood meeting, but also for courses given by residents (e.g. yoga, modelling in clay or French lessons).

At first, the greengrocery and the community centre will be located in a tent. The tents will be replaced with semi-permanent structures in phase two. The semi-permanent buildings will be constructed by the tent community residents out of sustainable and/or recycled materials (e.g. wood and tarpaulin).
Lake: the majority of Froula Park consists of water. An empty pond does not make the park vivid. For that reason a swimming pool, rowing boat hiring out and a cafe have been positioned in the lake. Since facilities have been positioned in the lake, a floating bridge is necessary the reach these facilities. The floating bridge can be constructed by residents of the tent community out of recycled synthetic barrels or PET-bottles and local woods. If the park becomes successful, more bridges will be added strategically. These bridges are run lines for crossing pedestrians and cyclists. They connect eastern Roosevelt to the commercial activities on Roosevelt way and western Roosevelt to the bus stops on the eastern side of the park.

6.1.7 Plans and sections
As explained in section 6.1.3, the posible development is designed in phases. The plans and sections on the following pages illustrate the transformation of Froula Park with the lapse of time.

Sports: Froula Park already has a successful tennis court. To make the park a facility for the neighbourhood were people go for relaxation; more sports fields (a soccer field, basketball fields and swimming pool) are introduced in the southern part of the park, see image 6.19 - 6.21.

6.1.6 Park development
Playgrounds: in the south western corner of the park a small playground is already present. A new water playground will be introduced along the walking route from the supermarket in phase three.
6.35 Section bb' phase 3 - scale 1:500 (image by author, 2010)

6.36 Section bb' phase 4 - scale 1:500 (image by author, 2010)
6.1.8 Concluding

The plans and section on the previous pages have shown the development that is proposed for Froula Park. In section 6.3 the development for Froula Park is being reflected.

In this chapter’s introduction it was described that two locations from the collection of tent communities will be elaborated into a hypothetical design to provide design question three with an answer. The second hypothetical design will be discussed in the following section.
In this chapter’s introduction it was stated that in order to be able to answer this chapter’s design question, besides the hypothetical design for Froula Park, also a hypothetical design for Pier 62/63 would be proposed. In this section the hypothetical design for Pier 62/63 will be introduced. The section will start with an introduction of the Pier and its surroundings, secondly the design will be discussed.

6.2.1 Introduction

Pier 62/63 is an empty pier on Seattle’s downtown waterfront, see image 6.37 and 6.38. Until 1900 the waterfront’s function was purely industrial. Therefore the piers are constructed under the angle that allows a train to turn. After 1900, the train tracks were replaced by the present Alaskan way and highway viaduct (Romano, 2009). Nowadays the piers are home to e.g. the Seattle Sea Aquarium, hotels and restaurants. During the field trip it was observed that Seattle is very proud of its waterfront (e.g. in tourists information booklets), but that it is exploited badly. The views towards the water...
are fantastic, but the strip of land along the waterfront is dominated by a concrete highway viaduct. The highway viaduct causes air pollution, noise pollution and a spatial obstacle between downtown and the waterfront. At the site of Pier 62/63 this causes that two of the city’s touristic highlights: Pike Place Market (the former farmers market, and the centre of the retail district, see image 6.39) and the waterfront are not properly connected, see image 6.38. To go from the one to the other visitors have to walk through a multi-storey car park that is located under the highway viaduct. In such a way the viaduct blocks a connection between the waterfront and its hinterland (downtown). New plans for the waterfront are being developed (Romano, 2009).

In 2001 an earthquake damaged the seawall and the viaduct. So the seawall needs to be rebuilt and the viaduct will be replaced by a tunnel. The City of Seattle seizes this opportunity to take the waterfront in hand. A boulevard will be developed at the waterfront. The boulevard will be home to a streetcar line, a road and a promenade (Romano, 2009).

Pier 62/63 used to be in use for concerts and festivals. Nowadays it is empty because the foundation poles are rotting (Romano, 2009). They need to be replaced with a smaller amount of concrete or steel poles. A smaller amount of poles is necessary because the current grid makes the water very dark, that scares the present salmon population (Romano, 2009).

An impression of the site is given in image 6.40, on the following page. From this impression it can be concluded that Pier 62/63 is a pier with a wide view of the scenery, but for a touristic attraction it lacks a real connection with the town centre. Due to the planned waterfront developments the area is in a transitional phase. How a tent community can take advantage of this transitional phase will be illustrated in the following sections.
6.2.2 Transition scenarios

In the coming years the waterfront will be in continuous transformation, this was introduced the previous section. According to Guillermo Romano this period of transition can take up to ten years. The hypothetical design will be formed in this time span.

Similar as in Froula Park, the main goals of this hypothetical design are, of course, giving homeless people a temporary home on a semi-permanent location and creating interaction between the tent community residents and the inhabitants of the neighbourhood. Since Pier 62/63 is located in downtown Seattle, not only contact with the neighbours needs to be established, but also interaction with passers by (e.g. ‘other’ Seattles and tourists) needs to be created.

The design for Pier 62/63 is, just like the Froula Park design, a test case of the collection of tent communities. The design is a hypothesis of what could happen when a tent community is located at pier 62/63. The tree diagram in image 6.41 shows scenarios for the development of Pier 62/63. The question marks in the tree diagram show that many other scenarios are thinkable.

The bottom branch in image 6.41 shows the scenario that is further elaborated into a hypothetical design in the following sections.

Because the pace of the transformation cannot be predicted the development is not based on set times, the transitional is shown in phases. In a desirable time plan phase one, two, three and four would show the site’s status in the years 2011, 2014, 2017 and 2020.
6.2.3 Tent community development

Just as all developments that are part of the collection of tent communities (see section 6.1.2) the developments on Pier 62/63 will start with the realization of a tent community.

The tent community is designed according to the set of recommendations for the design of a sustainable liveable tent community, which was introduced in section 4.9.2. Some example of the implement recommendations are:

- the tent community is divided in three separate neighbourhoods: one for single men, one for couples and one for single women. This is illustrated in image 6.42.
- These neighbourhoods are connected by the communal street, along which the communal facilities (office, kitchen, community centre, and market) are located. This will improve the communities’ readability, social control and social security.

In contrast to the developments in Froula Park, in this hypothetical case, the tent community will disappear from the Pier when the waterfront developments are finished. For that reason no permanent structures are allowed in the camp. Replacement of a tent with a temporary structure is permitted. These temporary structures need to be constructed with renewable and/or recycled materials. For these temporary structures the wooden buildings of Dignity village can be used as examples, see section 4.4.

In the previous section it was stated that besides giving homeless people a temporary home on a semi-permanent location, creating interaction between the tent community residents and passers by is another design goal of this plan.

In section 6.1.4 is has already been explained that acceptance and social interaction take time to grow. A market, a coffee shop, a university laboratory and an urban rest stop are introduced on the Pier to create a place where the people mingle. These developments will be described in the next sections.
Coffee shop: that Seattle is the hometown of Starbucks is very visible on the streets of Seattle. Seattleites and tourist walk around with a cup of coffee in hand. To combine this coffee culture and the view of Pier 62/63, a coffee shop is planned on the pier. The coffee shop is constructed out of re-used (sea) containers, to maintain the harbour character of the site.

UW experimental laboratory: during the field trip, Tent City 3’s residents were surprised that they were being visited by a technical student. Up until then they were visited by ‘social students’, whom study for example psychology, sociology or medicine. This is remarkable because the tent communities are a vivid topic among students. Seattle University hosted Tent City 3 in 2005 for a month (Seattle University, 2005). Seattle’s largest university, the University of Washington (UW), has not hosted a tent community because the university’s president sees to many disadvantages (Lucas, 2010). But there is an ongoing discussion about this topic (Lucas, 2009). If the homeless people cannot come to the university, why not bring the university’s knowledge to them. At pier 62/63’s encampments a UW experimental laboratory will be established. The technical goal of the laboratory is to make the pier independent of polluting sources. For example by providing renewable energy (e.g. windmills), drinking water from Puget Sound and water purification. The social goal of this laboratory is providing medical and psychological care to the residents. This laboratory will provide a place for students to test their projects and work with the homeless people.

6.2.4 interaction creators

Handcraft market: In order to improve the residents’ privacy, as proposed by the set of recommendations, the south-western side of the encampment is fenced off by a collection of market stalls. On this market tent community residents can sell homemade and/or handcrafted products. It is likely that when the tent community disappears, Seattleites have gotten attached to the market. Possibly, the market stall structures will remain on the pier and a market will take place at the pier a few times per week.

Coffee shop: that Seattle is the hometown of Starbucks is very visible on the streets of Seattle. Seattleites and tourist walk around with a cup of coffee in their hand. To combine this coffee culture and the view of Pier 62/63, a coffee shop is planned on the pier. The coffee shop is constructed out of re-used (sea) containers, to maintain the harbour character of the site.
6.2.5 other developments

Urban Rest Stop: in chapter four it is described that homelessness is very visible on the streets of downtown. In the vicinity of Pier 62/63 most homeless people can be found in Victor Steinbrueck Park. In Victor Steinbrueck Park coffee is being distributed every morning at 7 a.m. (Morrow, 2009). As described in chapter four, the Urban Rest Stop, is the only hygiene facility for homeless people in Seattle. To decrease the pressure on the Urban Rest Stop and the streets of downtown Seattle a second Urban Rest Stop will be introduced near Pier 62/63. The Urban Rest Stop will be a permanent facility; therefore it cannot be located on the Pier.

6.2.6 Plans and sections

The possible development for Pier 62/63 is designed in phases, that has been explained in section 6.2.3. The plans and sections on the following pages illustrate the transformation of Froula Park with the lapse of time.

Connection Pike Place Market - boulevard: before, it has been described that the highway viaduct is a spatial obstacle between the waterfront and downtown Seattle. Especially the connection between Pike Place Market and Pier 62/63 has to be improved. An improved connection is included in the boulevard development (phase 4).
6.61 Section aa’ phase 1 - scale 1:400 (image by author)

6.62 Section aa’ phase 2 - scale 1:400 (image by author)
6.63 Section aa' phase 3 - scale 1:400 (image by author)

6.64 Section aa' phase 4 - scale 1:400 (image by author)
6.65 Section bb' phase 1 - scale 1:250 (image by author, 2010)

6.66 Section bb' phase 2 - scale 1:250 (image by author, 2010)
6.67 Section bb’ phase 3 - scale 1:250 (image by author, 2010)

6.68 Section bb’ phase 4 - scale 1:250 (image by author, 2010)
6.69 section CC plan for the new connection between Pike Place Market and the boulevard (image by author, 2010)
6.3 Conclusion

The goal of this chapter was to prove that the collection of tent communities can be a socially sustainable temporary home to homeless people by answering design question three: what measures are needed to assure that the tent community stays a transitional solution that keeps a temporary character on a semi-permanent location?

Possible answers to this question have been provided by the hypothetical design of two locations in the collection of tent communities. Note: because the designs are drawn as test cases of the collection of tent communities, many other answers to this design question are conceivable.

Although both hypothetical designs are test cases of tent communities that are a transitional solution that keep their temporary character on a semi-permanent location, both test cases are very different. Therefore their characteristics are summarized in the table in image 6.74.

These characteristics can be used as an inspiration and a starting point for the development of other tent communities or other designs for the same locations.

Returning to the scales of the context analysis matrix (chapter 4), this hypothetical design deals with the scales varying from neighbourhood to building level. In chapter seven, Froula Park’s building and building segment level will be further elaborated.

<table>
<thead>
<tr>
<th></th>
<th>Froula Park</th>
<th>Pier 62/63</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community character</td>
<td>Conservative character.</td>
<td>Provoking character and location.</td>
</tr>
<tr>
<td>Location</td>
<td>Quiet suburban neighbourhood.</td>
<td>Busy, touristic downtown.</td>
</tr>
<tr>
<td>Temporality</td>
<td>Encampment transforms into permanent housing.</td>
<td>Encampment disappears when the new boulevard is finished.</td>
</tr>
<tr>
<td>Spin-off effect</td>
<td>Permanent park, which is a central point in Roosevelt neighbourhood.</td>
<td>Vivid Pier along Seattle’s dazzling boulevard.</td>
</tr>
<tr>
<td>Zoning of the plots</td>
<td>Couples are buffer between single men and single women’s zones.</td>
<td>Three completely separate neighbourhoods.</td>
</tr>
<tr>
<td>Interaction with</td>
<td>Neighbours from Roosevelt.</td>
<td>Neighbours, other Seattleites and Tourists.</td>
</tr>
<tr>
<td>Energy</td>
<td>Hopefully by windmills, if not a connection to the neighbourhoods’ electric mains.</td>
<td>Provided through UW laboratory, probably by windmills.</td>
</tr>
<tr>
<td>Drinking water</td>
<td>Filtered from green lake reservoir.</td>
<td>Provided through UW laboratory, most likely from Puget Sound.</td>
</tr>
<tr>
<td>Grey water</td>
<td>From green lake reservoir.</td>
<td>Provided through UW laboratory, most likely from Puget Sound.</td>
</tr>
<tr>
<td>Waste water</td>
<td>Filtered by helophyte filter and pumped back into the lake.</td>
<td>Provided through UW laboratory, most likely filtered by helophytes and then returned to Puget Sound.</td>
</tr>
</tbody>
</table>
This project focuses on a variety of levels: from sub regional to building segment zone (section 3.3). In the previous sections all scales have been dealt with, except the building segment scale. Consequently this chapter deals with that level in order to answer design question four: what are the technologies that can be used (for e.g. dealing with water and energy)? This design question is answered by designing details of the hypothetical design test cases in chapter six.

In the introduction it has already been said that although this project focuses on designing socially sustainable temporary settlements for homeless people in Seattle, ecological sustainability cannot be neglected (Goodland, 1995). For that reason not only the situation of the residents and passers-by has to be taken into consideration in the details, but attention has to be paid to ecological sustainability as well.

At first a brief introduction of Seattle’s climate will be given, in order to set the context in which the technologies will be used. Subsequently the detailing of Froula Park and finally Pier 62/63 will be discussed. The detailing is divided in three groups:
- Detailing for the tent community residents;
- Detailing for the passers-by;
- Detailing of the places where interaction is created.

Finally design question four will be answered in section 7.4

The details that are proposed in this chapter are possibilities of the way problems could be solved. They are details of hypothetical design; so many more solutions are conceivable.
### 7.1 Introduction

Since this chapter is about the building segment scale, some climate effects have to be taken into consideration while detailing. The City of Seattle surrounded by water (Puget Sound and Lake Washington) and nature areas (Cascade Mountains and Olympic mountains); this is illustrated in image 7.1.

However Puget Sound is connected to the Pacific Ocean, Seattle has a mild climate because it is located inland. This climate is comparable to the climate in the Netherlands: 24 °C in July and 15 freezing days/year (City of Seattle Office of Intergovernmental Relations, 2008, p. 1).

Seattle is known as ‘the rainy city’, not because of its 941.6 mm / year precipitation (City of Seattle, 2010b), but because of its ongoing drizzling rain.

Seattle evaporation measures 457.5 mm / year (National Weather Service Climate Prediction Center, 2010).

Due to the location of the city between the mountains, Seattle’s main wind direction is south-southwest (Windfinder, 2010), this is illustrated in image 7.2.
For the detailing of Froula park attention has been paid to the residents of the tent community, the passersby and the place where the two groups of people meet: the situation on the lot, the floating bridge and the connection between tent community and the lake.

7.2.1 Between tent community and lake - scale 1:50
As described in chapter 6, the tent community is admitted into Froula Park with hedges and allotment gardens. Image 7.3 illustrates this place where tent community resident and passer-by meet. As can be seen in image 7.3 these hedges follow the path along the lake. Due to the continuous work in progress, kitchen gardens can look messy, an image one does not want to be confronted with during a walk along the pond. The strip of lawn between the path and kitchen gardens makes the mess disappear from sight and keeps only the plants stay in sight.

On the lake side, the plants of the camps’ helophytes filter and floating reeds form a natural boundary of the path. The helophytes filters transform the camps black water into grey water that can be drained off into the lake. Per resident three to five square meters of helophytes are needed (Ecofyt, 2010). Because the tent community will have a maximum of one hundred residents and the partial use of compost toilets (see image 7.4) three hundred square meters of helophyte filters will be built alongside the camp. Each houseboat and swimming pool has his own filter. The elapse of grey and black water in Froula Park is illustrated in image 7.4 on the following page.
The precipitation in Seattle is 941.6 mm/year (City of Seattle, 2010), while the evaporation measures 457.5 mm/year (National Weather Service Climate Prediction Center, 2010).

So, a water-surplus will arise:
- Lake surface: 190 m x 190 m = 36100 m²
- Rainwater surplus: 941.6 mm/year – 457.5 mm/year = 484.1 mm/year.

Water surplus: 0.4841 m/year x 36100 m² = 17476.01 m³/year = 17476010 litre/year.

Exemplary this water can be used to do (17476010 litre / 57 litre/wash) = 306597 loads of washing per year (Vewin, 2008).

So where Green Lake Reservoir used to supply Seattle with drinking water, now it can supply the neighbourhood with grey water. For example for flushing the toilets, watering the kitchen gardens, watering the lawns and doing laundry.

For energy the tent community relies on a few Tulppaani wind turbines, which are placed in the lake. The Tulppaani is a wind turbine, a fountain and a sculpture in one (Kuckir, 2010), see image 7.5.
7.2.2 The tent
The tent is the home of tent community residents. The tents are bought or received by donation; mostly family tents are in use.
Pallets (donated) and a wooden board are reused in the tent community to provide the tent a leveled base, this is illustrated in image 7.6. On hilly grounds, the pallets can be piled. The pallets will be filled with Isovlas insulation. Isovlas is chosen because it is an easy building material; with the help of a Stanley knife residents can install it themselves.
Around the foundation, an epdm sleeve can be installed to keep water out. A detailed image of this connection between tent and pallet is shown in image 7.11b.
The plots sizes (in Froula Park and on Pier 62/63) vary between thirty and forty square metres. This supports the transition of the structures on the plot, from tent, towards temporary and semi-permanent structure. Thirty square metres is sufficient, because that is also the size of a homeless person’s house in Dome Village, Los Angeles (Architecture for Humanity, 2006, p. 180).
7.2.3 Floating bridge - scale 1:20

However the floating bridges are mainly used by passers-by, the floating bridges are meant to be constructed by tent community inhabitants.

The idea for the bridge is based on the concept of a raft. So, before the bridge can be constructed, the residents need to collect floating materials, like synthetic barrels and PET-bottles, see image 7.7 and 7.0 and 7.8.

Under the most favourable circumstances, the bridge is constructed out of Western larch, ‘one of the strongest and hardest softwood species’ (Western Wood Products Association, 2010) from the Pacific Northwest.
7.8 Floating dining room foundation (ArchDaily, 2010)
7.3 Pier 62/63

The detailing of the plans on Pier 62/63 can be divided into low profile details for the tent community and regular details for the boulevard developments. Details for the tent community residents, passers-by and the place where both groups of people meet each other (e.g. the market).

7.3.1 Market

On pier 62/63 the market forms the boundary of the tent community, see image 7.9. Besides being a market where people interact, the structure functions as a wind buffer and rainwater collector for the tent community as well. The structure can easily be built by the tent community residents out of recycled and donated materials, such as (truck) tarpaulin. The different tarpaulins will create a cheerful sight, comparable to the floating market in Curacao (image 7.10).

On very rainy and windy days, the market can be closed with perforated tarpaulin, which creates a covered shopping street.

![Diagram of Pier 62/63 market and tent community]

- Recycled tarpauling roof, clamped between western larch bars
- Ivy along steel cables (every 3 meters)
- Curtain of recycled tarpaulin
- Western larch wipple tree
- Western larch column
- Double sided gusset plate
- Market stall counter
- Tap (grey water)
- Rainwater basin
- Submersible pump and filter
- Existing pier planks
- Existing wooden foundation
- Puget Sound Water

Scale 1:50 (image by author, 2010)
7.3.2 The tent.

The tents on Pier 62/63 are set up in the same setting as the tents in Froula Park, except for the fencing between the lots. For the fencing on Pier 62/63 two options have been illustrated in Image 7.11:

- Tarpaulin between wooden beams.
- Hedges in flower boxes.

The hedges are preferred because of their windbraking qualities. Because hedges take time to grow the hedges and full-grown hedges are very expensive, the tarpaulin option is possible as well.
7.3.3 Street Furniture

From the viewpoint of developing an attractive boulevard where people can enjoy the waterfront and its views street furniture needs to be added. In order to make this walking route for passers-by an entity, new street furniture will be placed on the promenade, the pier and the pike place market square.

In Seattle most benches are in use by homeless people. The Department of Planning and Development City of Seattle advises to place many benches, to create a mix of people that are sitting in public space (Romano, 2009). Chairs will be placed instead of benches, to shut the door on camping.

To avoid litter and a feeling of social unsafeness every set of chairs will be equipped with a dustbin and lampposts.

Image 7.12 and 7.13 show impressions of the suggested street furniture. The combination of wood and steel is chosen to combine the sturdy character of the port and Seattle’s eco hipness. The municipality can hire some tent community residents to build and install the street furniture.
7.3.4 Escalator passage

In chapter 6, the new connection between Pike Place market and the boulevard has been introduced. To prevent a dark and unsafe passage the walls of the passage will become a green wall. This green wall is inspired on the green wall of Urbanarbolismo (see image 7.17). The wall consists of several squares with different plantation (Urbanarbolismo, 2010). Sometimes (maximum five percent) a plantation square can be replaced with an art or commercial banner. This is illustrated in image 7.15. Below, image 7.14 shows the locations of the details in the building’s section.
Escalators can be used outdoors, but Seattle is not called the rainy city without a reason. Therefore rotating glass strips are placed upon the passage. The roof can be open and closed whenever wanted. As you can see in image 7.16 pv-cells are integrated in the glass strips.

- **Glas strips**
- **Integrated PV cells**
- **Spider glass fixing**
- **Rotating pipe, rotation depending on weather and position of the sun**
- **Western red cedar beam**
- **Clamping piece**
- **Dripping pipe**
- **Perforated panel**
- **Wooden column (western red cedar)**
- **Wooden wall board (western red cedar)**
- **Supporting wooden column (western red cedar)**
- **Vegetation**
- **Ground cloth**
7.4 Conclusion

The purpose of this chapter is to deal with the context analysis’ building segment level and to answer design question four: what are the technologies that can be used (for e.g. dealing with water and energy)?

An answer to this question is provided by the details in the previous section. To show how hierarchy is created between public, semi-public and private places and how the amount of privacy and the feeling of control over one’s life is increased, as it is recommended by the set of recommendations in section 4.9, the details deal with the tent community residents, the passers-by and the places where interaction is created.

It has to be noted that the details proposed in this chapter are part of the hypothetical test cases; in reality the developments could be completely different.

In section 1.3 it has been said that although this project focuses on designing socially sustainable temporary settlements for homeless people in Seattle, ecological sustainability cannot be neglected (Goodland, 1995). For that reason not only the situation of the residents and passers-by has to be taken into consideration in the details, but attention has to be paid to ecological sustainability as well. This implies:

- Use of renewable, recycled (donated) and local materials.
- Simple constructions. This allows the residents to build the constructions themselves, which increases their self esteem and the feeling of control over their life (Van Dorst, 2005). Logically, this does follow for the boulevard developments along Pier 62/63.
- Use of environment-friendly decentralized systems for water, energy and waste management. E.g. helophyte filters and windmills.
This chapter will give an answer to this thesis’ main research question: what are the spatial conditions for sustainable tent communities in Seattle, respecting the temporality?

In order to answer this question, two sub research question and four design questions have been answered in chapters two to eight. In section 8.1 the findings of the literature review, anthropological research, context analysis, typology studies, mapping and design are used to provide the main research question with an answer. Subsequently recommendations for future research and reflections on this graduation project are given section 8.2 and 8.3.
8.1 Conclusion

Since this is the final chapter of the thesis, this paragraph summarizes the research and gives an answer to the main research question: what are the spatial conditions for sustainable tent communities in Seattle, respecting the temporality?

In order to answer this question, three sub research questions and four design question have been answered in the previous chapters.

The answer to sub research question one was that most basic principles of non-western camps of needs can be reflected on western camps of needs. All encampments have to start from scratch. They have to create basic facilities such as shelter, the provision of water and food and they have to find a good location.

Differences between western and non-western camps of needs occur when these basic principles are being implemented. This difference shows most obviously in the context of local standards: the locations in Seattle are surrounded by high-developed urban areas vs. disaster areas in non-western camps of needs.

Zooming in from a worldwide scale towards the city of Seattle sub research question three concluded that the homeless people in Seattle need more transitional housing and alternative shelter. This thesis has focused on alternative shelter in the form of tent communities.

The current tent communities are not a socially sustainable temporary home, because, amongst others, the encampment has to move every three months, no running water, cooking facilities or showers are available. Therefore, it is proposed to develop a legal collection of, self managed, tent communities; with a maximum of one hundred inhabitants. Which is spread throughout the City of Seattle on semi-permanent (one - ten years) locations. These locations need to be well-connected into Seattle's urban network on context analysis' sub regional, town, district neighbourhood and ensemble scale.

Inside the encampment (complex, building and building segment scale), improved facilities are needed (toilets, basins, mirrors, washing machines, drying facilities, ironing facilities, internet, kitchen appliances, telephone, and sewage).

The new tent communities will be a new facility that is socially sustainable. Because low social security and crime decrease the sustainable liveability (Van Dorst, 2005, p. 93) alcohol use, drug use, weapons, violence, theft are forbidden in the collection of tent communities.

With the help of the context analysis matrix, it has been concluded that the success or failure of the new to be developed tent communities depends on the encampment itself and the location of the settlement in the urban network.

The research questions have set a clear framework for the development of new tent communities. But in order to design the tent communities more design related information was searched by answering the design questions.

Zooming in to the level of the encampment, design question one dealt with: what spatial organization can make the new encampments a sustainable liveable environment? By doing a typology study, of different types of encampments recommendations for the design of a sustainable liveable tent community, which can be found in section 4.9.2, was created.

This set of recommendations deals with the characteristics of a sustainable liveability (Van Dorst, 2005) that deal with spatial organisations:

- Facilities
- Readability of the settlement
- Control over own life
- Social control and social security
- Environment
Design question one has dealt with the lower scales of the context analysis matrix (complex, building and building segment scale). To be able to answer design question two, the scales between sub regional and street level are handled by mapping in chapter five. Zones in the City of Seattle that are well-connected have been mapped on the sub regional, town, district and neighbourhood scale (images 5.10 and 5.11). The zones have been mapped according to the requirements for being well-connected, which were defined in the context analysis matrix in image 3.14. Since zones do not define locations that can host a tent community, real locations have been sought on the street scale; this resulted in the realization of the collection of tent communities in Seattle, which is illustrated in image 5.17. The collection of tent communities exists out of twenty-eight locations in the city of Seattle that are well connected into Seattle’s urban network and that are (temporary) urban leftovers.

However the concept of the collection of tent communities has been transformed into a real collection of tent communities. It still needs to be proved that tent communities are socially sustainable temporary settlements, in order to answer to this design goal from section 1.3. For that reason two locations (Pier 62/63 and Froula Park) have been chosen that have been further elaborated into a hypothetical design. To establish proof design question three had to be answered: what measures are needed to assure that the tent community stays a transitional solution that keeps a temporary character on a semi-permanent location? The hypothetical designs are the possible answers to this design question. Because the designs are made as test cases of the collection of tent communities, many other answers to this design question are conceivable. In image 6.74, the characteristics of the test case designs are summarized, these characteristics can be used as an inspiration and a starting point for the development of other tent communities or other designs for the same locations.

The final design question zoomed in to the smallest scale of the context analysis matrix, the building segment level. An answer to this design question (what are the technologies that can be used (for e.g. dealing with water and energy)?) is provided by detailed drawings of the hypothetical designs of Froula Park and Pier 62/63. The details focus on:
- The hierarchy between public, semi-public and private places, as it is recommended by the set of recommendations in section 4.9;
- Use of renewable, recycled (donated) and local materials;
- Simple constructions, which allow the residents to build the constructions themselves, which increases their self esteem and the feeling of control over their life (Van Dorst, 2005);
- Use of environment-friendly decentralized systems for water, energy and waste management. E.g. helophyte filters and windmills.

It has to be noted that the proposed details are part of the hypothetical test cases; in reality the developments could be completely different.
8.1.1 Main Research question

Returning to the main research question it can be concluded that the spatial conditions for sustainable tent communities, which respect the temporality, in Seattle can be divided in spatial conditions for the legal collection of tent communities and spatial conditions for the tent communities. These spatial conditions can be used for the development of tent communities in Seattle and they can be a starting point for the development of a collection of tent communities elsewhere as well.

Spatial conditions for the collection of tent communities:

- A location that is well connected into the urban network, according to the context analysis matrix.
- A location that has a minimal surface area of 1600 m².
- A location that is out of use for the coming one to ten years, so calls urban leftover. Usually, the designing process focuses on the final realisation, e.g. a new building, a new neighbourhood or a new waterfront. Especially in urban planning, between the start of designing and completion of the plan, many years can go by. Years during which the plan location is (mostly) unused. In this in-between phase, these locations are ideal for hosting a tent community.

Spatial conditions for each of these communities:

- A tent community can have a maximum of one hundred inhabitants per community. The tent community is self managed by a democratic system with a tent community board, security shifts and work shifts. In order preserve this system, a minimum of twenty residents is needed;
- A clear community with one entrance, centralized facilities (town square) and separate neighbourhoods with a plot for every resident;
- Improved facilities inside the camp, for example showers, toilets, basins, mirrors, washing machines, drying facilities, ironing facilities, internet, kitchen appliances, telephone, and sewage
- All buildings must have a temporary character and stay an in-between solution. Therefore only temporary structures are allowed to replace a tent;
- Use local and renewable materials, minimize the use of drinking water, use of grey water and rain water and create less waste;
- An interaction creator is needed, which creates positive social interaction between the residents of the tent community and the inhabitants of the neighbourhood. For example the market on Pier 62/63 and the biological greengrocery in Froula Park. Positive interaction often results in social acceptance.
- So, the tent community development cannot be seen as a single development, to make it successful other developments need to happen simultaneously.

Besides the spatial conditions it does always have to be taken into consideration that the homeless people really want to be part of society again. By living in a socially sustainable temporary settlement that is part of the collection of tent communities that can be achieved. Because interaction is created between the homeless people and non-homeless people the homeless people gain self-respect by the respect they receive from the other people.
8.2 Recommendations

This thesis has dealt with tent communities in Seattle. It can be seen as a first step towards more research about tent communities. Therefore this chapter tries to give guidelines for further research.

**Recommendation 1:**
This project focuses on tent communities, as an alternative shelter for homeless people. Besides tent communities also other types of alternative shelter could be taken into consideration.

**Recommendation 2:**
The planned tent communities in this thesis are only open for people who are willing to improve their life. For example alcoholics and drug addicts are not welcome in these tent communities. For them alternative shelter is needed as well.

**Recommendation 3:**
In the target group for the collection of tent communities also a distinction could be made between the types of disaster that caused the residents’ homelessness. It could be studied how different kinds of disasters can be dealt with in different kinds of shelter.

**Recommendation 4:**
It has to be noted that the two designs (Froula Park and Pier 62/63) are a suggestion of what reality could bring. Rules and regulations that could support or slowdown the projects have not been taken into consideration. This could be studied.

**Recommendation 5:**
However western camps of needs are part of the urban fabric of a city, the body of knowledge of western camps of needs (e.g. Hailey (2009) and Architecture for Humanity (2006), mainly deals with the ‘architectural scale’. The urban scale should be studied as well.
8.3 Reflection

This paragraph gives a reflection on the thesis. This reflection is based on the topics: interaction, homelessness, politics, realisation and collection of tent communities outside Seattle.

8.3.1 Interaction
Interaction between the researcher and homeless people is necessary to create a successful plan. Due to the distance between Delft and Seattle this was hard. It is tried to achieve interaction by visiting the tent communities and Seattle. But if the ‘collection of tent communities’ is going to be realized more interaction between the residents, neighbours and designers should be established. For example by living in the tent community for a few days and using community planning.

8.3.2 Homelessness
Tent communities will not solve the problem of homelessness. It is a transitional solution. To solve homelessness the City of Seattle will have to enlarge their backdoor by building more social housing. Unfortunately this cannot be expected in the near future. Therefore structural changes in the United States of America’s social security system need to be made. In any way it has to be prevented that Seattle is the only city in the United States that finds a way to deal with the homeless people. Because it is thinkable that when the collection of tent communities appears to be successful, Seattle could become a ‘homeless Valhalla’. This is a very unwanted situation and it could be easily prevented by admitting a collection of tent communities in other cities as well.

8.3.3 Politics
The current tent communities in Seattle are a politically burning question. The debate even takes place at Mayor’s level, the city’s highest political level. Since January 1, 2010 Seattle has a new mayor. The former mayor, Greg Nickels (as an ironic remark Nickelsville is named after him), was no friend of the tent community residents. Although he has not yet made any decisions, the new mayor seems to have a more open mind towards the tent communities. But it is still in the dark what this can lead to.

8.3.4 Realisation
In the previous section it has been described that the current tent communities are a very delicate subject in Seattle. Realization of the collection of tent communities would take some doing. Not only because of the political situation, but also because, most likely, many people will react negative about a tent community being realized near their home (not in my backyard!). Besides the response of the people, the rules and regulations regarding informal building and land ownership could stand in the way. However I truly believe in the value of semi-permanent tent communities, it cannot be expected that the collection of tent communities is going to be realised.

8.3.5 Collection of tent communities outside Seattle
In this thesis a collection of tent communities is proposed for Seattle, a city that has a long history of political progressivism, which results in the residents and politicians having an open mind for sustainability and solidarity. In the United States, this is a typical west coast attitude. Therefore realization of a legal collection of tent communities can be expected in other west coast cities. Portland, for example, already has a legal tent community: Dignity Village. Given the resistance of Seattleites towards the tent communities, a realization of a legal collection of tent communities in the more conservative cities of the United States (e.g. Houston) is not to be expected. But for these areas, other ways of dealing with homelessness are conceivable. For example in shrinking cities, like Detroit, homeless people can be provided accommodation in vacant houses, in order to prevent ghost areas. The hypothetical designs in Seattle rely on donations. This could be a problem in non west coast locations.


CITY OF SEATTLE (2002) Tent City Consent Agreement. IN CITY OF SEATTLE (Ed.) 49428-7-I. Seattle.


COMMITTEE TO END HOMELESSNESS KING COUNTY (2005) A roof over every bed in King County our community’s ten-year plan to end homelessness. Seattle, Committee to End Homelessness King County.


Interviews


Seattle is the biggest city in the state of Washington. It is the commercial and financial hub of the Pacific Northwest. As you can see in image 3.1, the city is surrounded by water (Puget Sound and Lake Washington) and nature areas (Cascade Mountains and Olympic mountains). In this paragraph the main characteristics of Seattle will be described point by point.

**Economy:**
- Unemployment: 9.3% in September 2009 (Woodward, 2009)
- Main Industry: Microsoft (headquarters are located in Seattle).
- Boeing factories employ 74,517 people in the region.
- Port (top-ten United States container port)
- Fishing (nr. 1 fishing port United States).
- Knowledge centre: University of Washington; Seattle Community College; Seattle University (private); Seattle Pacific University (private); Art institute of Seattle; Cornish College of the Arts.
- Main services: Healthcare (96,000 jobs)
- Main sector: Many companies, relief organizations and seven universities have manifested Seattle as the US capital of healthcare, biotechnology and medical devices.
- Main commercial: Starbucks (headquarter is located in Seattle).
- Main leisure: Surrounding nature, space needle, Pioneer Square; Pike Place Market; Capitol Hill, Seattle Center; Experience Music Project; Pacific Science Center; Puget Sound; waterfronts.
- History: In 1962 the World Expo was organised in Seattle. The famous Space Needle and monorail are visible remains of this event.

**Demographics:**
- Seattle: 582,484 inhabitants
- Greater Seattle: 3,524,000 inhabitants (King, Snohomish, Pierce and Kitsap Counties)
- Cascadia: 14,636,386 inhabitants (Washington, Oregon and British Columbia)
- Density: 2701 people/km² (City of Seattle Office of Intergovernmental Relations, 2008, p. 1)

**Climate:**
- Climate: mild climate (24 °C in July and 15 freezing days/year) (City of Seattle Office of Intergovernmental Relations, 2008, p. 1)
- Precipitation: 941.6 mm / year (City of Seattle, 2010b)
- Evaporation: 457.5 mm / year (National Weather Service Climate Prediction Center, 2010)
- Wind direction: south-southwest (Windfinder, 2010)
Appendix B - Climate Change in Seattle

The system table analysis is a method that is provided by the Urban Climate graduation studio. A system approach is a method to study phenomena as a whole with a mutual consistency and in interaction with the surroundings. (...) It offers the possibility to consider changes on complex adaptive systems like the city. Especially in climate change the balance between mitigation and adaptation strategies is something that is very unclear. (...) Not only because it is needed to adapt to climate change in the near future but especially to be able to adjust elements of the urban environment that have a longer lifecycle or are difficult to change (Hooimeijer, 2009).

The system table analysis that is used in the urban climate studio gives the students 'insight into the city as a system and the meaning of their urban design interventions on this system' (ibid.).

The analysis takes place in three steps; the first step looks into specific local circumstances, actors and interests. These threads can be divided in three groups: threats, system threats and urban threats. The second step, the problem analyses, translates the vulnerability (...) of the city system to the climate change into the functioning (and thus the weaknesses) of the city (ibid.). The third step, the intervention, uses 'the vulnerability analysis to determine where the biggest issues lay en if there should be mitigating or adaptive strategies used to solve them' (ibid.).

Every step is 'ordered in the physical layers of the city, since climate change is in first instance a physical threat.' The used layers are: users, metabolism of the city, infrastructure, occupation/buildings and underground (ibid.).

The system table analysis is used to:
- Understand what system threads Seattle is facing.
- Understand what urban threads Seattle is facing.

The system table analysis can be found on the following pages.
<table>
<thead>
<tr>
<th>Layer</th>
<th>Stock</th>
<th>City System</th>
<th>Threats from climat</th>
<th>Vulnerability (what will be damaged)</th>
<th>Effect (what is the result of this damage)</th>
<th>Mitigation interventions (Changes at the source)</th>
<th>Adaptation interventions (changes of the physical system)</th>
<th>Background information</th>
<th>references</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social structure</td>
<td>Shale</td>
<td>City health</td>
<td>Housing</td>
<td>People cannot work.</td>
<td>Significantly more heat and air pollution deaths.</td>
<td>Increased public health costs.</td>
<td>New policies for better natural ventilation. - Take of the heat.</td>
<td>Seattle Central Business District will offer less from the city heat than the suburbs, while the City has many high-rise buildings.</td>
<td>Observations during field trip in December 2009</td>
</tr>
<tr>
<td>Social behaviour</td>
<td>Shale</td>
<td>Infrastructure</td>
<td>Buildings</td>
<td>People cannot buy a single family house and are moving help from the government.</td>
<td>Poor (e.g. land used for living).</td>
<td>Subsidies sporadically.</td>
<td>Infiltration; be satisfied with a smaller house.</td>
<td>Radial more dense. Radial smaller houses.</td>
<td>Beilby, 1997</td>
</tr>
<tr>
<td>Users</td>
<td>Shale</td>
<td>Health</td>
<td>Food</td>
<td>People get ill.</td>
<td>Poor cannot mortgage and become homeless.</td>
<td>Introduce a social security system. Provide social housing.</td>
<td>Projected to the environment and damage.</td>
<td>Medium family income: $ 42,385. (2010 has less). More people in Seattle homeless since financial crisis outset.</td>
<td>Committee to End Homelessness, King County, 2005</td>
</tr>
<tr>
<td></td>
<td>Shale</td>
<td>Social vulnerability</td>
<td>Health</td>
<td>People are homeless and living on the streets, in shelter as in Tent Cities.</td>
<td>Warmth: People before wind on the street because of the present housing.</td>
<td>Adapt working hours to the weather.</td>
<td>Energy neutral building. Use solar energy to power the arc.</td>
<td></td>
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<tr>
<td></td>
<td>Shale</td>
<td>Forest fires</td>
<td>Fire protection</td>
<td>Houses become isolated or destroyed people become homeless, original as can be linked.</td>
<td>Subsidies for health.</td>
<td>User less water.</td>
<td>Fire protection continues in forests.</td>
<td>N. P. of population has finished high-school: 52% has ten degree or higher.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shale</td>
<td>Flooding</td>
<td>Real social housing</td>
<td>Between 1990 and 2010 Washington State will be the fastest growing region in the US.</td>
<td>More social housing.</td>
<td>Increase the heat. Separate emergency access.</td>
<td>Use more information emergency sources.</td>
<td></td>
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<tr>
<td></td>
<td>Shale</td>
<td>Health</td>
<td>Seattle</td>
<td>People are homeless, unemployed and become homeless since financial crisis outset.</td>
<td>More use of public transport.</td>
<td>Collect and use rainwater when possible.</td>
<td>Seattle city is the richest city.</td>
<td>City of Seattle Office of Intergovernmental Relations, 2000 (c.f. Census Bureau, 2000) (Department of Environment, King County, 2005) (Schoenmakers, 2007)</td>
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</tr>
</tbody>
</table>
### Energy
- **Increased use of renewable energy coming from Cascades inlets where the maximum diurnal temperature changes.**
- **Energy shortfall / fall out.**
  - Energy shortage during winter for rural families.
- **Large-scale use of green energy sources, reduced use of less energy.**
- **Changes in energy capacity.**
- **More rain in winter, meat-eaters in winter/spring, floodwater rose in Puget sound.**
- **Floods in Cascade mountains.**
- **More and earlier snowmelt in the Cascade mountains.**
- **Less safe on the streets because of more than 3 months heat, productivity falling.**

### Food
- **Declining food production.**
- **Reduced quality and extent of freshwater production.**
  - Reduced food productivity, health risks.
- **More rain in winter, meat-eaters in winter/spring, floodwater rose in Puget sound.**
  - Meat-eaters in winter/spring, floodwater rose in Puget sound.
- **More rain in winter, meat-eaters in winter/spring, floodwater rose in Puget sound.**
  - Meat-eaters in winter/spring, floodwater rose in Puget sound.
- **More rain in winter, meat-eaters in winter/spring, floodwater rose in Puget sound.**
  - Meat-eaters in winter/spring, floodwater rose in Puget sound.

### Water
- **Drought.**
- **More rain in winter, meat-eaters in winter/spring, floodwater rose in Puget sound.**
  - Meat-eaters in winter/spring, floodwater rose in Puget sound.
- **More rain in winter, meat-eaters in winter/spring, floodwater rose in Puget sound.**
  - Meat-eaters in winter/spring, floodwater rose in Puget sound.
- **More rain in winter, meat-eaters in winter/spring, floodwater rose in Puget sound.**
  - Meat-eaters in winter/spring, floodwater rose in Puget sound.

### Waste
- **City health.**
- **Floods in Cascade mountains.**
  - Floods in Cascade mountains.
- **Floods in Cascade mountains.**
  - Floods in Cascade mountains.
- **Floods in Cascade mountains.**
  - Floods in Cascade mountains.

### Air
- **Federal road building program.**
  - Federal road building program.
  - Federal road building program.
  - Federal road building program.
  - Federal road building program.
  - Federal road building program.
  - Federal road building program.

### Working
- **Fires and floods not observed in many of the regions.**
  - Fires and floods not observed in many of the regions.
  - Fires and floods not observed in many of the regions.
  - Fires and floods not observed in many of the regions.
  - Fires and floods not observed in many of the regions.
  - Fires and floods not observed in many of the regions.
  - Fires and floods not observed in many of the regions.

### Living
- **Homes become isolated or destroyed.**
  - Homes become isolated or destroyed.
  - Homes become isolated or destroyed.
  - Homes become isolated or destroyed.
  - Homes become isolated or destroyed.
  - Homes become isolated or destroyed.
  - Homes become isolated or destroyed.

### Facilities
- **Building climate resistance.**
  - Building climate resistance.
  - Building climate resistance.
  - Building climate resistance.
  - Building climate resistance.
  - Building climate resistance.
  - Building climate resistance.

### Culture
- **Increased use of tourism.**
  - Increased use of tourism.
  - Increased use of tourism.
  - Increased use of tourism.
  - Increased use of tourism.
  - Increased use of tourism.
  - Increased use of tourism.

### City metabolism (flows in the buildings)

<table>
<thead>
<tr>
<th>Energy</th>
<th>Food</th>
<th>Water</th>
<th>Waste</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Energy shortfall / fall out.</strong></td>
<td><strong>Declining food production.</strong></td>
<td><strong>Drought.</strong></td>
<td><strong>City health.</strong></td>
<td><strong>Federal road building program.</strong></td>
</tr>
<tr>
<td>Energy shortage during winter for rural families.</td>
<td>Reduced quality and extent of freshwater production.</td>
<td>More rain in winter, meat-eaters in winter/spring, floodwater rose in Puget sound.</td>
<td>Floods in Cascade mountains.</td>
<td><strong>Fires and floods not observed in many of the regions.</strong></td>
</tr>
</tbody>
</table>

### Observation (of the buildings)
- **Energy:**
  - Increased use of solar energy.
  - Increased use of energy-saving appliances.
- **Food:**
  - Increased use of fresh food.
  - Reduced use of processed food.
- **Water:**
  - Increased use of water-saving appliances.
- **Waste:**
  - Reduced use of disposable products.
- **Air:**
  - Increased use of cars.
  - Increased use of public transport.

### City of Seattle Office of Developmental Relations, 2008
- **Observations during field trip in December 2009 (Seattle, 2008).**
### Mobility

<table>
<thead>
<tr>
<th>Description</th>
<th>Impact</th>
<th>Other Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>People do not work by walking on the streets</td>
<td>Increased use of cars with airconditioning</td>
<td>Higher CO2 levels</td>
</tr>
<tr>
<td></td>
<td>Driver needs more working time to travel</td>
<td>Create urban structure with lots of roads</td>
</tr>
<tr>
<td></td>
<td>Higher air pollution</td>
<td>Develop urban structure with lots of roads</td>
</tr>
<tr>
<td></td>
<td>Involvement of his high school</td>
<td>Create urban structure with lots of roads</td>
</tr>
<tr>
<td></td>
<td>Major urban conformance</td>
<td>Create urban structure with lots of roads</td>
</tr>
<tr>
<td></td>
<td>More use of public transport</td>
<td>Create urban structure with lots of roads</td>
</tr>
<tr>
<td></td>
<td>Drivers with a less deep straight</td>
<td>Create urban structure with lots of roads</td>
</tr>
</tbody>
</table>

### Infrastructure (connectivity between the buildings)

<table>
<thead>
<tr>
<th>Description</th>
<th>Impact</th>
<th>Other Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased amount of commuters, walkability</td>
<td>Pedestrian island (private)</td>
<td>Reduce car traffic</td>
</tr>
<tr>
<td></td>
<td>Public transport</td>
<td>Reduce car traffic</td>
</tr>
<tr>
<td></td>
<td>Storm water defence structures</td>
<td>Reduce car traffic</td>
</tr>
<tr>
<td></td>
<td>Public transport</td>
<td>Reduce car traffic</td>
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### Network

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>More use of public water levels and pipelines</td>
<td>More use of public water levels and pipelines</td>
<td>Increase in demand for water</td>
</tr>
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### Public Space (around the building)

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<tr>
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<tbody>
<tr>
<td>Seattle is surrounded by forests</td>
<td>Seattle is surrounded by forests</td>
<td>Increase in the number of people</td>
</tr>
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### Culture

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### Nature

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### Underground

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**Notes:**
- **Wells:** Drinking water is mainly coming from the main water reservoir and the backup well is not used.
- **Public transport:** Public transport is provided by the city.
- **City of Seattle:** Seattle is surrounded by forests.
It can be concluded from the system table analysis that the city of Seattle is mainly facing water problems caused by heat. At first the heat will cause an earlier and faster snowmelt in the Cascade Mountains. The second effect is more frequent and more intensive rainwater in winters. This combination will possibly result in flooding during winter and drought in summer (Department of Ecology State of Washington, September 2009). Since Seattle is provided with drinking water and hydroelectric energy from the Cascade Mountains', melt water does not only affect the city’s liveability but also Seattle’s drinking water stocks (Department of Ecology State of Washington, 2009).

Puget Sound has an open connection with the Pacific Ocean and will thus be facing water level rise. This is especially a risk for the Central Business district and the coastal areas. Consequently, Seattle is facing troubles from the hinterland and from the Sea. This is illustrated in image 3.3. Therefore, more drinking water stock capacity, use of grey water systems and improved flood defence is needed.

Although Seattle is mainly facing water problems, the enormous amount of car use should not be underestimated. As many American cities, Seattle is an extent city. Only the Central business district is dense, the rest of the city is a suburb. A consequence of suburbia is an enormous amount of car use. This leads to congestions and increased CO2-emissions.

The public transport does not really help to decrease these problems. The public transport system is mainly based on busses, one light rail connection, one streetcar and ferries (on which cars can travel along). Densification, driving electric cars and an increased use and development of the public transport would help to decrease these problems.