Strategy for Shrinkage
The development of a strategy to accommodate and stabilise shrinkage in Delfzijl

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“Je kunt wel proberen voor de groei uit te bouwen, maar je kunt niet voor de krimp uit slopen.”

- Helma Born (Born 2009, p.24)
Preface

Before you lies the result of my graduation year for the Master of Urbanism at the faculty of Architecture at Delft University of Technology. It is the product of a process that took over a year and a half to complete. Although this delay can partly be attributed to – unplanned- extra-curricular activities, it is also a consequence of the complexity of the subject of this thesis and the local situation in Delfzijl.

Demographic shrinkage is a complicated phenomenon and Delfzijl a special case. When I started working on this thesis I was unfamiliar with both topics other than what I had seen and read in a few articles. My initial fascination with the subject of shrinkage lied in its contrast with the day-to-day practice taught during five years of studying architecture and urbanism. This is the practice to develop and build, to expand cities and redevelop neighbourhoods. Shrinkage appears to contradict this practice and introduces a new perspective on the profession of urbanism.

Having lived all my life in the Randstad, I had never been in the Eemsdelta and Delfzijl. My first bicycle trip in the Eemsdelta led me from Appingedam through the agricultural landscape and a few small villages on refuge mounds (terpen/wierdes) to Delfzijl where I saw the ongoing redevelopment of Delfzijl Noord. What struck me was the lack of any visible effects of shrinkage. For an occasional passerby there did not seem to be any problem. I had anticipated seeing the spatial consequences of shrinkage more clearly, but what I found was an area that actually looked quite similar to other ‘sparsely populated’ areas. (And as it turned out, the redevelopment of Delfzijl Noord was actually a project to reduce vacancy.) What I then realised was that the process of shrinkage is gradual, especially in the Netherlands. There is not one major shift causing the decline like the end of the German Democratic Republic in East-Germany. Slowly but steadily more and more houses start to remain vacant for longer periods of time. Meanwhile the normal day-to-day processes of the housing market still occur and portions of the housing stock remain unaffected. It almost seems a statistical anomaly, but on the long term it does lead to significant physical changes to city and neighbourhoods.

Finding the proper scale level at which to address the topic of shrinkage as an urbanist took me quite some time. I initially set off analysing and trying to address shrinkage in the Eemsdelta at the regional level. Reconsidering the role of urbanism was an eye-opener and I realised the main task from an urbanist’s point of view lies at the level of city and neighbourhood: reconfiguring the city for a smaller population and ensuring a positive future.

Dealing with shrinkage requires a different mindset that is not oriented on growth. A transition from our current mindset –without growth there is no future – towards a new one – shrinkage is just another phase in cities’ development – is difficult. In fact after working on this project for such a long time I am still not entirely convinced I have made this transition myself. I think it lies within human nature to want preserve or improve the status quo. Shrinkage, demolition and permanent loss therefore goes against our very nature and it is hard to find an upside in such occasions.

I hope that this project for Delfzijl illustrates that despite the declining population and accompanying problems there can still be a bright future for shrinking cities. That through acknowledging and dealing with the accommodation of shrinkage, a pleasant and very viable city can remain.

Lastly I would like to thank my parents for their support and my graduation mentors for their guidance and advice during this project.

Robert Stam
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Nature reserve the Slechter Ae
Woudbloem, Groningen, Netherlands
Source: www.panoramio.com/photo/17298172
PART 1 – INTRODUCTION
1. Introduction

1.1 What is demographic shrinkage?

The notion of shrinkage can refer to several processes among which economic shrinkage and demographic shrinkage. Although these two processes can be related to one another, this master thesis is mainly concerned with the process of demographic shrinkage.

Demographic shrinkage can indicate three different – though interrelated - types of shrinkage which all have different spatial effects (as will be explained in depth in chapter 4):
- Decreasing size of the population in general;
- Decreasing number of households;
- Decreasing size of (a) certain population group(s), e.g. dejuvenation.

In this thesis, the term ‘demographic shrinkage’ is being used to indicate a decreasing size of the population. The extent to which the population decreases can lead to a decreasing number of households as well. As will be demonstrated in chapter 4, this is the most influential form of shrinkage (van Dam et al. 2006).

Demographic shrinkage is generally regarded as a negative process. However, demographic shrinkage is not by definition negative, it is merely the opposite of growth and therefore part of the context of a location (de Graaf 2009). Cities such as Hilversum, Bussum and Haarlem have decreased in population as well, but are generally not regarded as being in a difficult or problematic situation. Shrinkage in these centrally located regions has a different cause than shrinkage in a peripheral region and therefore should be regarded in a different way.

Demographic shrinkage is not a new phenomenon in urbanism. Cities have often grown and shrunk rapidly, for example due to war or natural disasters (Oswalt & Reiniets 2006). However, since the Second World War growth has become a constant in the Netherlands. Even the closure of the coalmines in Limburg and the accompanying unemployment did not prevent the region’s population to continue to grow. A rapidly growing population, increasing wealth and changing social-cultural circumstances have contributed to the need for urban expansion. As a result, the debate in planning and urbanism is predominated by themes like network cities and agglomerations: for example Randstad Holland, Deltametropool, VINEX and double-city Amsterdam-Almere.

However, this phase of growth we are currently experiencing is not everlasting. Some regions in the periphery of the Netherlands like the Eemsveld and Northeast-Groningen and Parkstad Limburg have already met the summit of their growth and have had to reconsider their long-term development. Shrinkage is therefore not a unique or brand-new problem, but until a few years ago it was not regarded as an issue.

When does demographic shrinkage become problematic? Demographic shrinkage can have undesirable side effects (further explored in chapter 4) such as vacancy, social segregation, deterioration of public space. This affects the direct living environment of inhabitants of regions and cities affected by demographic shrinkage.

Images of shrinking cities all over the world (for example Detroit in the United States, Halle and Leipzig in Germany or Ivanova in Russia) showing vacant, dilapidated buildings and plots or gaping holes in the urban fabric give a discouraging example of the possible prospects of shrinking cities.

1.2 Demographic shrinkage in the Netherlands

It is unlikely that the decline of the population in the Netherlands will become as severe as in those regions. The current prognosis of the Dutch national bureau of statistics (CBS), indicates a declining population growth and after 2035 (figure 1), the start of a very slow general decrease of population in the Netherlands (van Dam et al. 2006; RIVM 2010).

A declining population does not automatically reflect on the built environment. A declining number of households in an area can however result in a lower demand of houses, leading to vacancy and deterioration of the living environment. In most parts of the Netherlands, the predicted general decline of the population will largely be counteracted by the ongoing process of thinning of
There are many examples of shrinking cities in the world. Former industrial areas have had to reconsider their long-term development. Shrinking has become as severe as in those regions. The current prognosis of the national bureau of statistics (CBS), indicates a declining population growth and after 2025 the population in many regions will stabilize or decrease.

![Figure 1](image1.png)

**Figure 1**
CBS population prognosis, based on four different scenarios, 1975-2050.

Source: van Dam et al. 2006, p. 61

![Figure 2](image2.png)

**Figure 2**
Growth and decline of the population per municipality, between 2008 and 2025 in percentage.

Source: Renooy et al. 2009, p. 17

![Figure 3](image3.png)

**Figure 3**
Growth and decline of the number of households per municipality, between 2008 and 2025 in percentage.

Source: Renooy et al. 2009, p. 17
households. Although many municipalities will likely see a declining number of inhabitants (figure 2), only a small amount of municipalities will actually face a declining number of households as well (van Dam et al. 2006) (figure 3). A changing composition of the population (shrinking of certain groups, for example segregation, dejuvenation and a diminishing labour force) is and will be a more common issue in the Netherlands.

To gain a better understanding of demographic shrinkage in the Netherlands from an urbanism point of view, it is most interesting to look at an area where demographic shrinkage is already occurring and is showing significant influence on the built environment. This is currently already the case in three peripheral regions of the Netherlands: Zeeuws-Vlaanderen, Parkstad Limburg and the Eemsdelta in Northeast-Groningen, of which the latter will be investigated more closely in this thesis.

1.3 Demographic shrinkage in the Eemsdelta

The Eemsdelta is a region in Groningen, consisting of the municipalities Delfzijl, Eemsmond, Appingedam and Loppersum (abbreviated as the DEAL-municipalities). The population of this region has already been declining for 20 years and Delfzijl for 30 years (data from CBS, 2010) and is expected to continue to decline in the coming decades (figure 4). Demographic shrinkage has only been acknowledged as an irreversible process in the late 1990s. However, it is currently on the agenda and the municipalities are actively seeking ways to address the situation.

This has already led to a transformation of the housing stock by tearing down 5500 social rented houses in Northeast- and East-Groningen (Dijkstal & Mans 2009) replacing part of them by private housing. Within this region, Delfzijl is being affected most severely. Prognoses by the province of Groningen (2009) indicate a further decline of up to 40% for the number of inhabitants (figure 5) and up to 30% for the number of households (figure 6) for the period until 2030.

A report from Topteam Krimp (Dijkstal & Mans 2009) labels the situation in Northeast- and East-Groningen as urgent and special. The provincial report Krimp in Groningen concludes that "the liveability in parts of the Netherlands is being threatened" (Provincie Groningen 2009, p.7) due to consequences of a declining population and number of households. According to Dijkstal & Mans (2009) and the Province of Groningen (2009) these consequences include vacancy, social segregation, pressure on facilities, and degeneration of public space.

Several reports on the proposed course of action have been published, which are being translated into policy. A recent agreement between the four municipalities of the Eemsdelta labelled Pact Regio Eemsdelta (Municipalities of Delfzijl, Eemsmond, Appingedam and Loppersum 2009) concludes that another 3,300 dwellings will have to be torn down, while 2,300 new dwellings will be constructed in the period between 2008 and 2018; an overall reduction of the housing stock by 1,000 dwellings. While Appingedam and Eemsmond are still allowed to grow slightly, Delfzijl will have to reduce its housing stock by 1,335 dwellings, about 12% of its current amount.
Figure 4
Development of the population in Northeast Groningen
Source: Author, based on data from ABF Research, 2009

Figure 5
Development of the population in the municipality of Delfzijl
Source: Author, based on data from ABF Research, 2009

Figure 6
Development of households in Northeast Groningen
Source: Author, based on data from ABF Research, 2009
2. Problem Field

2.1 Problem statement

The Eemsdelta will have to undergo a thorough transformation of its housing stock to accommodate the process of shrinkage. However there is no simple answer to the question how that should be done. Delfzijl faces a difficult challenge in deciding which houses or neighbourhoods will have to be demolished and which will remain. It brings forward a number of questions concerning the form of the city. How to adapt the city to a smaller population size? What to do with vacant sites? What are the future prospects of the city in general? What will still exist of the city in the distant future?

The Eemsdelta is facing a situation of a declining size but also changing composition of the population. Consequently, there is an excess of dwellings and facilities - e.g. schools, sports facilities, retail (Gemeente Delfzijl 2009).

A decreasing size of the population and - more in particular – a decreasing number of households can cause vacancy of dwellings, segregation, and deterioration of the living environment (van Dam et al. 2006; Schetke & Haase 2008; Provincie Groningen 2009). The effects of demographic shrinkage interrelate in the form of a downward spiral or cyclical pattern. Although there are many aspects involved, a simple representation is that vacancy leads to deterioration of houses and their direct surroundings, causing new out-migration and more vacancy (van Vliet & Dijkstra 2009, p.64) (figure 7). The attractiveness of an area is crucial in this respect. Once an area is seen as an undesirable place of settlement for residential or business purposes, a downward spiral can occur, aided by selective migration (van Dam et al. 2006).

Schetke & Haase (2008, p.488) reach a similar conclusion: out-migration of inhabitants leaves weaker social groups behind, causing vacancy and devastation, which then "cause an atmosphere of insecurity, precarious social conditions and creates a basically negative image within the city."

Van Dam et al. (2006) illustrate this downward spiral by an (extreme) example of what transpired in Detroit and Leipzig. Both cities were faced with out-migration of their inhabitants. Vacancy of residential property caused decay. Vulnerable social groups (such as addicts and homeless) took residence in some of these houses, as well as vandals and criminals. This development enforced a feeling of insecurity and dissatisfaction among the remaining inhabitants. Many wanted to move out of those neighbourhoods, but were unable to due to their personal situation.

If no action is being taken, a situation can transpire in which the cyclical pattern of demographic shrinkage (vacancy leading to deterioration of the living environment causing more inhabitants to leave) will occur in an increasingly strong capacity, leaving only the weakest social groups behind in a deteriorating living environment.

In order to break through this vicious circle and achieve a stable demographic development – limited shrinkage or perhaps even zero-growth – the process of out-migration must be stopped. This requires counteracting the effects of demographic shrinkage: reducing vacancy and deterioration of the living environment. Therefore the process of demographic shrinkage must be accommodated (combating vacancy, reducing deterioration of living environment) through adapting the size of the housing stock to the new demographic reality. However, demolition of houses alone will not suffice to stop out-migration. A more thorough change is required, but what that should be is uncertain.

The problem is two-fold:

1. The existing assignment for the reduction of the housing stock by 1000 units must be implemented,
2. The vicious circle must be broken to stabilise the population.

How can demographic shrinkage be given a place in an existing city? What dwellings should be provided for and in which neighbourhoods? Should this be a structured, planned approach or more ad-hoc interventions? What does this mean for the structure of the city on the long term? And can a city remain a viable and attractive living environment while its population is declining?
Figure 7: Cyclical pattern of demographic shrinkage

1. Vacuum
2. Deterioration of living environment
3. Feelings of insecurity and hopelessness
4. Out-migration

The cycle continues with each step leading back to the first, illustrating the cyclical nature of demographic shrinkage.
2.2 Aims

Main goal
- Develop a spatial strategy for Delfzijl which can accommodate and stabilise demographic shrinkage.

Research goals
- Determine causes and (spatial) effects of demographic shrinkage; 
- Gain insight into ways to accommodate the process of shrinkage; 
- Determine criteria for liveability and its relation with shrinkage.

Design goals
- Critically analyse and make adaptations to existing (regional) plans; 
- Determine a strategy for shrinkage for Delfzijl; 
- Within that strategy, develop elements on a lower scale level; 
- Address different scales: region, city, and neighbourhood.

2.3 Research questions

2.3.1 Main Research Question
How to develop a spatial strategy able to accommodate and stabilise demographic shrinkage in Delfzijl?

2.3.2 Sub questions
1. What are causes of demographic shrinkage? 
Determine causes of demographic shrinkage in general.

2. What are (spatial) effects of demographic shrinkage? 
Determine the spatial effects of population decline, both positive and negative.

3. What are causes of demographic shrinkage in the Eemsdelta? 
Determine causes of shrinkage for the study area. Results can help clarify the cause of the problem and establish focus points for intervention.

4. What are the (spatial) effects of demographic shrinking in the Eemsdelta? 
Determine the spatial effects of demographic shrinkage in the Eemsdelta which could indicate a certain approach.

5. Which (spatial) processes currently define the Eemsdelta? 
Determine the spatial structure of the Eemsdelta and become familiar with different elements of the region. Establish strengths, weaknesses, opportunities and threats.

6. What (spatial) criteria determine liveability in peripheral villages in the Netherlands, facing demographic shrinkage? 
According to reports liveability in the Eemsdelta is being threatened due to consequences of shrinkage. Which (spatial) criteria determine liveability and how does shrinkage affect those?

7. Which spatial strategies have been used in shrinking, peripheral regions elsewhere and what were the results? 
Analyse other cities/regions and their spatial strategies to accommodate shrinking, plus the results those approaches have delivered.

8. What opportunities arose from shrinking in these regions? 
Shrinking does not only have negative effects, but could also yield positive effects. The objective is to find out what these opportunities could be.
2.4 Methodology

- Eemsdelta analysis
  - Regional analysis
  - Historical analysis
  - Causes & effects of shrinkage
  - Policy & plans

- Shrinkage
  - Causes & effects of shrinkage
  - Approaches and results
  - Opportunities

- Eemsdelta
  - Assessment of and addition to existing plans

- Analysis of Delfzijl

- Design
  - Strategy for shrinking Delfzijl
  - Key projects

- Liveability (theory paper)
  - Spatial criteria for liveability

- Case studies

- Aims

- Evaluation of strategy
2.5 Societal and scientific relevance

2.5.1 Societal relevance

Since consequences of demographic shrinkage and household decline – vacancy, deterioration, and segregation – affect the direct living environment, the social relevance is apparent. Although shrinkage is currently only occurring in the periphery of the Netherlands, it is expected to become a more widespread phenomenon in the coming 25 years due to the decreasing growth of the population in general. Therefore, it will start to affect more cities, more neighbourhoods and more people.

2.5.2 Scientific relevance

Dealing with all aspects of growth has been the primary focus of urbanism and spatial planning in the past century (Pellenbarg & Embregts 2010; Bontje 2005; de Graaf 2009; Renooy et al. 2009; van Elkeren et al. 2010). Consequently, research and design have focussed on growth as well. As a result, governmental policy, financing and design tools are all aimed towards growth as well. Unfortunately, those tools are not (directly) applicable to accommodate shrinking.

A new reality – growth is not everlasting – poses questions on how to deal with a decreasing size of the population and the resulting consequences on all aspects of city life: education, healthcare, housing market, facilities, labour market, public transport, infrastructure, etc. What policies or strategies can a city adopt to stimulate recovery?

How can interventions be financed? How to balance the inevitable decrease of housing stock and investment in the remaining city? How can a city structure its shrinking process? Should it even attempt to do that or allow a more natural process to occur?

2.5.3 The role of an urban designer

Much attention is being paid to address the ‘software’ of the city (which often are actually consequences of a shift in composition of the population): education, healthcare, sports facilities, public transport. Less attention and research addresses the hardware: how best to adapt a city to a smaller population?

Perception plays a key role here. Planners can contribute to a more positive image by showing a positive side, that despite a decreasing population and reduction of the housing stock, a vital city remains. A city that could even benefit from shrinkage as it also allows planners and urban designers to reimagine existing cities. Or as Hollander et al. (2009, p.223) state: “Planners are in a unique position to reframe decline as an opportunity.”
Figure 9
A few recent newspaper headlines regarding shrinkage.

- Oost-Groningen kampt met krimp en tegenslag (03-11-2009)
- Een nationaal probleem in de uithoeken van Nederland (16-06-2009)
- ‘Ook in Nederland dreigen spookdorpen te ontstaan’
  Van der Laan waarschuwt voor conflict tussen rijke en arme gebieden (15-05-2009)
- ‘Krimp gaat grote stad geld kosten’ (18-06-2009)

Bijleveld: geen huis kopen in krimpgebied (05-02-2010)
Adapting the housing stock, demolition in Delfzijl Noord
One of several vacant shops in Delfzijl city centre
3. Causes of demographic shrinkage

3.1 Introduction

This chapter will give an overview of what processes can cause a shrinking population in general, followed by an exploration of what causes areas in the Netherlands to shrink.

3.2 Causes of demographic shrinkage in general

Historically demographic shrinkage is not a unique phenomenon. Demographic changes often occurred due to war, diseases and natural disasters and the population of cities varied accordingly (Oswalt & Reiniets 2006; Hollander et al. 2009). The more recent occurrences of demographic shrinkage in the western world are however different in character.

Bontje (2005) and Hollander et al. (2009) mention the transformation of the economy from industry to services as an important cause for demographic shrinkage. There are many clear examples of regions which depended on a single economic branch, such as Detroit’s steel and car industry, Glasgow’s/ Newcastle’s heavy industry and shipbuilding, and the German Ruhr area. When this branch came into difficulties - due to international competition, development of new (production) technologies or changing consumer markets, etc. – the region was confronted with massive unemployment and sometimes considerable out-migration of their inhabitants. Under economic transformation, some cities and regions become more important, while others dwindle and lose significance (Prigge 2005).

Hollander et al. (2009) also mention suburbanisation, aging or low birth rate, and the dissolution of socialist systems as cause for shrinkage.

It is difficult to separate the dissolution of socialist systems from the accompanying economic transformation. Some authors (Prigge 2005) identify both political transformation and deindustrialisation as cause of shrinkage, while others (van Dam et al. 2006; Bontje 2005; Hollander et al. 2009; Akbar & Kremer 2005) only identify (a more general form of) economic transformation.

Furthermore, a distinction can be made between shrinking cities in a shrinking region and shrinking cities in a growing region. Suburbanisation can strongly influence demographic processes in a region. This is most noticeable in cities in the United States, for example in Detroit, and can be characterised as shrinking cities in a growing region. In the case of Detroit, out-migration of factories accompanied by their employees to satellite cities in Detroit’s surroundings caused the city to lose nearly 1 million inhabitants in a period of 50 years. Meanwhile, the cities in the suburbs grew by roughly 2 million inhabitants (Oswalt 2004).

A similar process, although much smaller in size, also occurred in the Netherlands during the 1960s until 1980s, partly under the influence of the settlement policy of the Dutch government. In order to spread growth more equally across the Netherlands and prevent the major cities in the west from growing disproportionally to the rest of the country, a policy of bundled deconcentration was adopted. Several governmental institutions moved to peripheral parts of the Netherlands and new towns were erected in the countryside in proximity to the major cities. Consequently, The Hague was confronted with demographic shrinking due to out-migration of the population, following the institutions. The situation in The Hague was so severe that a report was published in 1973 titled De ontwikkeling van de Haagse economie op de lange termijn: planning for decline (van Dam et al. 2006). Of course, this situation changed again in the following decades.

Van Dam et al. (2006) discern three main causes of demographic shrinkage.

- Socio-cultural causes (e.g. individualisation and emancipation) which influence birth rate and migration;
- Economic causes (international economy, international and national economic situation and regional employment) which influence migratory patterns;
- Planning policy, which can stimulate or prevent a municipality from growing (e.g. suburbanisation).

These causes often occur simultaneously in complex interrelation. This makes it hard to identify the main cause of
demographic shrinkage in a certain area, as the situation in East-Germany clearly illustrates. An enormous political and economic transformation followed the reunification of East and West Germany and the dissolution of the socialist systems, causing high unemployment and out-migration of many citizens seeking suitable jobs in West-Germany. Due to uncertainty regarding the future, birth rate in East-Germany had dropped by 45% in 1991 (Bonţe 2004). Birth rates have risen since that period but a birth gap remains and influences the current population development.

3.3 Causes for shrinking population in the Netherlands

The Province of Groningen (2009) states the following two causes for population shrinkage in the Netherlands:

- Demographic change in size and composition of the population due to a birth deficit and decreasing immigration;
- Departure of households due to living preferences, planning policy, downturn of regional economy, dissolving public transport lines and emergence of problems concerning liveability.

Birth rate in the Netherlands is currently around 1.7, while 2.1 is required to counteract population loss due to mortality (van Dam et al. 2006). Population growth in the Netherlands is therefore dependant on immigration. However, in peripheral regions, migration mainly occurs in the opposite direction: out-migration of – often young – inhabitants.

According to van Dam et al. (2006) migration is both influenced by the characteristics of the migrant himself as well as the properties of a region. Out-migration is caused by a diminished attractiveness of an area or region for specific groups. Employment is a key factor in the attractiveness of a region, the attractiveness of a city or municipality is influenced by its size, quality of its housing stock and level of facilities and the attractiveness of a neighbourhood by its social and physical properties as well as the quality of the housing stock.

Born (2009) identifies the relative distance of peripheral regions to the nuclei of the economic network as the reason for the poor future prospects of these regions in the Netherlands. She states that the Randstad will remain the economic stronghold of the Netherlands, a process which is enforced by the internationalisation of the economy. Economic competitiveness relies on good accessibility and a living environment offering a wide range of amenities. Job opportunities will therefore remain concentrated in urban centres, which maintains the current out-migration of well educated individuals to more centrally located areas. The peripheral regions of the Netherlands (Zuid-Limburg, Zeeuws-Vlaanderen, Northeast-Groningen, but also in Twente) find themselves outside these economic nuclei and are therefore confronted with out-migration of their youth.

However, not only municipalities in the periphery of the Netherlands have seen the size of their population decrease. A number of centrally located municipalities, for example in het Gooi, have also seen a clear reduction in the size of their population. This was caused by the limited or non-existent development opportunities available in these areas. The ongoing process of a decreasing amount of residents per household, combined with a more or less stable size of the housing stock lead to a decreasing size of the population (van Dam et al. 2006).

Causes for shrinkage in the Netherlands are therefore a combination of socio-cultural factors – birth rate below mortality rate and emancipation influencing migration –, economic factors – limited economic development in peripheral regions influencing migration –, and planning policy – whether or not municipalities are allowed to increase the size of their housing stock.
4. Effects of demographic shrinkage

4.1 Introduction

This chapter will describe the consequences of demographic shrinkage in general.

A few preconceptions concerning the effects of demographic shrinkage persist in public debate. These preconceptions stimulate the negative associations people have with demographic shrinkage. Van Dam et al. (2006) have researched the causality between a shrinking population and these supposed effects for the situation in the Netherlands. The following paragraphs are loosely based on their research.

The consequences of demographic shrinkage are not always evident. First of all, demographic shrinking is a gradual process, occurring simultaneously with other processes in the built environment. Demographic shrinking has an enforcing effect on these other processes (van Dam et al. 2006), which means that it enforces processes already occurring in a region. It is therefore not always evident what the effects of demographic shrinking are, however it forces existing (or upcoming) problems to become more severe.

This is best illustrated by analysing the consequences of demographic shrinkage on a number of sectors.

4.2 Housing market

Vacancy is often named as the likely consequence of a decreasing population. However, the relation between a declining number of inhabitants does not necessarily translate to an increasing vacancy of houses as this is mostly determined by the amount of households. It is possible that while the overall population of a region decreases in size, there still is a housing shortage that can be attributed to a growing number of households. The process of the thinning of households can therefore counteract consequences of a decreasing population size. Furthermore, vacancy due to demographic shrinkage (and in this case decreasing number of households) has to be distinguished from the normal – temporary – vacancy that occurs in any housing market. For a passer-by it is not clear whether vacancy is a temporary or more structural phenomenon and a sign of demographic shrinkage (van Dam et al. 2006).

Where is vacancy most likely to occur? Bontje (2004), van Dam et al. (2006) and van Eikeren et al. (2010) state that dwellings most prominent to vacancy are located in the least attractive parts of the rental housing sector and inexpensive private housing sector. These are located in early post-war neighbourhoods, in neighbourhoods with an unfavourable price/quality ratio, but also in small villages in less appreciated landscapes in the periphery of the Netherlands.

4.3 Social segregation

Once a neighbourhood or city becomes less attractive, some of its inhabitants will start to move out. This process is selective by nature: those who are able to move out (young people and more affluent groups) can relocate to a more suitable place elsewhere. Those who cannot will remain. Meanwhile, either houses remain vacant or new inhabitants of lower socio-economic status are drawn to cheap houses in the area. The resulting segregation process is a downward spiral. Out-migration of the higher-income groups, vacancy and in-migration of lower-income groups, attracted to cheap houses. As lower-income groups are less able to invest in their house and living environment, degeneration occurs, reinforcing the downward spiral of out-migration and vacancy (van Dam et al. 2006).
4.4 Living environment

Vacancy can negatively influence the living environment and lead to physical deterioration and vandalism. This process is further intensified by segregation. It can also cause feelings of insecurity (unoccupied houses, fewer ‘eyes on the street’) and malcontent (van Vliet & Dijkstra 2009; van Dam et al. 2006; Schetke & Haase 2008).

4.5 The need for space

While it appears commonsense that less people require less space, this is not necessarily a valid conclusion. The relation between demographic shrinkage and the need for space is indirect. Prosperity is a more influential factor. As a household’s income grows, so does the need for space (van Dam et al. 2006). Kroll and Haase (2010) come to a similar conclusion in their analysis of the relationship between demographic and land use change in East-Germany. They concluded that the influence of economic processes is of greater significance for land consumption than a declining population.

Van Dam et al. (2006) state that through interfering processes the opposite could even be the case. In general, lower demand leads to lower costs. A smaller demand for space therefore leads to lower costs, which means a household can afford a larger plot and larger house with the same income. A similar conclusion can be drawn for business estates and offices.

As the need for space increases per capita, the severity of shrinkage determines whether or not less space is required.

4.6 Diminishing support base of facilities

An oft-mentioned preconception is that demographic shrinkage causes the disappearance of facilities. Similar to the need for space, it might seem evident that fewer people require fewer facilities, but again this relation is not as direct as it might appear at first.

Although areas affected by demographic shrinkage do often see facilities disappearing it is not necessarily a consequence of a declining population. Rather it is a consequence of a changing composition of the population and of changing behavioural patterns of consumers and providers of those facilities. These behavioural patterns of consumers and providers of facilities determine the support base (and thereby the level) of facilities. There is some truth in the statement that a decreasing size of the population influences the support base of facilities. Other processes are however of far greater importance (van Dam et al. 2006).

Behavioural patterns of consumers refer to the way people use facilities, which is influenced by increased prosperity and mobility, and changing lifestyles (how and where people want to spend their (free) time). How much they spend on groceries and whether they buy their groceries at a small local supermarket, a large supermarket in a central city or perhaps order groceries through internet is more significant in the viability of a local supermarket than the amount of people living in its proximity.

Managerial decisions regarding operating costs and greater efficiency through increases in scale are important factors for providers of facilities. This applies to commercial as well as education and healthcare facilities, although the government also tries to ensure a sufficient spread of at least primary schools (van Dam et al. 2006).

Thus the disappearance of facilities is a natural process. If people buy their groceries in a central city there is no need for a local supermarket. However it can become problematic for people who are less mobile, potentially making life more difficult for them (van Eikeren et al. 2010).

4.7 Shrinking regional economy

Another general misconception is that a decreasing size of the population will cause economic decline as well, through a declining size of the labour force. Higher workforce participation can (partly) counteract the effects of demographic shrinkage on the labour force. Secondly, the development of the economy is also dependent on development of productivity. Even with a decreasing size of the labour force,
the gross domestic product per capita can still increase. However, when workforce participation and productivity are both declining, so will economic growth.

4.8 Conclusion

Spatial effects are primarily related to vacancy of dwellings – although only in case of decreasing amount of households – and degeneration of the living environment. Segregation occurs as mainly weaker social groups (low income, low education) remain and move in to the least attractive neighbourhoods. This process of segregation enforces degeneration as these groups are less able to care for their living environment.

Demographic shrinkage does not directly lead to a lower need for space, nor does it cause a lower level of facilities. These aspects are more dependent on other processes than demographic shrinkage, although a significant decline does have some influence.

The regional economy does not necessarily have to suffer from demographic shrinkage either. Economic development is mainly dependent on the development of productivity and workforce participation. However, economic growth will have to come from an increase of those factors.
5. Demographic shrinkage and liveability

5.1 Introduction

This chapter answers the following two questions: How is liveability affected by demographic shrinkage and how can urbanism, through interventions in the built environment, contribute to improving liveability?

5.2 Demographic shrinkage and liveability

Contrary to statements in reports from Topteam Krimp (Dijkstal & Mans 2009) and the Province of Groningen (2009) that liveability in parts of the Netherlands is being threatened, results from the theory paper (see appendix I) indicate only a limited effect of demographic shrinkage upon liveability. This contradiction can in part be explained by the definitions used in the research. An indication of liveability is given for an entire area, without isolating specific groups. Certain groups, particularly socio-economic weaker groups such as non-mobile elderly, could indeed be affected more strongly by the consequences of demographic shrinkage.

Social cohesion is the most contributing factor in determining liveability and is strongly related to the socio-economic composition of the population. Social segregation as a consequence of demographic shrinkage is the largest threat in that respect. Projects aimed at maintaining or enhancing liveability in the Eemsdelta should therefore always take social cohesion into account. This presents some opportunities for bottom-up urbanism, through involving the local inhabitants.

In general, liveability is determined by three domains: physical quality of the living environment, social cohesion and security. The physical living environment encompasses the level of facilities, housing stock and quality of the living environment (public space). Social cohesion is influenced by integration of different groups, involvement with neighbours and neighbourhood, volunteer work and nuisance by people. Security is determined by the risk to become a victim and feeling of insecurity.
6. Shrinking cities elsewhere

6.1 Introduction

Through literature study a number of strategies and interventions have been identified which have been applied in shrinking cities elsewhere. A quick scan of experiences from two small cities in East-Germany has been performed in order to gain insight in the strategies that have been adopted for these cities and the results they yielded.

6.2 Shrinking cities in East-Germany

Germany already has a lot of experience in accommodating shrinkage in the former German Democratic Republic (GDR). The Stadtumbau Ost program has resulted in a significant investment to combat vacancy by tearing down buildings and renovating cities. The results vary. Unemployment in East-Germany still resides at an average of 20% and the population is still declining. The end is not yet in sight and low birth rates following the dissolution of the GDR are currently showing effects (Bontje 2005).

For example, urban development strategies in Leipzig aim to stabilise the current population and adjust the housing stock and infrastructure to the population size (Bontje 2005). Yet according to Bontje, the main cause of population decline and the resulting housing vacancies, namely the lack of sufficient employment and career opportunities, was barely being addressed. Without employment, the city will not be able to retain its current citizens let alone attract new ones, despite all the efforts to create a more attractive housing stock and public space.

Akbar and Kremer (2005) state that shrinking cities require strategies of development as well as protagonists who sustain this development. Therefore shrinking cities must “draw on their endogenous potentials, develop their local economic resources and emphasise their cultural traditions and qualities in order to differentiate and assert themselves in competition with other cities.” It is not only essential to “retain or increase the attractiveness of the direct environment for the present residents of shrinking cities, [but] at the same time, visions must be developed to attract others,” (Akbar & Kremer 2005, p.36) whether for a short, medium or long term. Therefore it is paramount that the city is perceived in an attractive manner.

Programmes like IBA-Stadtumbau stimulate experiments and evaluate projects in a number of shrinking cities (ranging from a very small to medium sized). IBA stands for International Building Exhibition and is a programme initiated by the state of Saxony-Anhalt in East Germany. 19 cities affected by demographic changes worked within the programme to each develop and apply a strategy or tool to improve their cities. The themes include urban models, landscape, education, built heritage and identity.

A quick scan of these 19 cities shows that the most common approach is to uncover the local potential of the city. Often this applies to the renovation of the historic city centre as part of the strategy.

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6.3 Two examples: Aschersleben and Staßfurt

Aschersleben and Staßfurt are two cities in former East-Germany that took part in the IBA Stadtumbau 2010 program. These cities will quickly be reviewed in the next paragraphs.

6.3.1 Aschersleben

Aschersleben is a small city that has lost nearly 15% of its population after the reunification.

“IBA Profile: From the outside to the inside – focusing on the centre. Aschersleben aims to gain a new profile by focusing on its most important aspect, the renovated historic town centre. Buildings are being demolished on the peripheries, while the inner city is being improved. The city ring road, a hitherto unappealing noisy and dirty street, forms the interface between the peripheries and the town centre. Most of the changes in the town are taking place here: some historic structures disintegrate and usages formerly found on the peripheries are now settling around the city ring road. The city is endowed with new functions and qualities by means of artistic, architectonic and landscape interventions.” (Heller 2009a, p.16)

Strategy

The approach in Aschersleben has been to focus on the city centre and contains three areas of intervention. Develop the city centre, improve the image of the city and bind families by offering a complete educational track.

Interventions

Vacant buildings in the periphery have been demolished and the dilapidated historic city centre renovated.

The renovation of the through-road bordering the city centre was instrumental in improving the image of the city. Drivers used to pass through a narrow, dilapidated street. Removal of vacant buildings, relocation of functions from peripheral locations to the ring road and a semi-temporary exhibition – the Drive-Through Gallery – on the vacant plots has significantly improved the image of the city.

Landscape interventions have also been undertaken. These include the new Bestahorn Park on an industrial wasteland near the city centre, a recreational route along a small stream south of the city centre and a noise reducing barrier made from debris from demolition of houses.

In order to bind families to the city, education has been developed as a prominent asset, drawing on its pre-existing regional position as educational centre. A new school complex has been built in the new Bestahorn Park and the city now offers a complete educational career.

Future prognosis

Aschersleben has successfully managed to improve its image and renovate the city. The city has managed to reduce out-migration and now has a more stable population with only a small reduction every year. (The increase of population in 2010 is due to the addition of three municipalities containing some 2300 inhabitants to the municipality of Aschersleben in 2008.) The local economy has been diversified through the development of education and art.
6.3.2 Staßfurt

“IBA profile: giving up the old town. How much of a centre does a city need? How can loss be handled and memories preserved? These questions are relevant to almost every city, which has experience of migration and empty space. The IBA is examining these issues in an exemplary way in Staßfurt, where subsidence has caused the irretrievable loss of its historic centre, including town hall, church and houses. The objective is to give the city centre a new image and thereby give the town as a whole a new relevance.” (Heller 2009b, p.18)

Staßfurt is a small city with a long history dating back to at least early 9th century. A more relevant year for the current situation is 1852, in which two mining shafts were opened. The potash mined here brought wealth to the city and supplied the new chemical industry. Late 19th century, the mines had to be abandoned due to water problems and the shafts were backfilled in 1905. The mining that had brought prosperity to the town had an unexpected side effect. The ground level underneath the historic centre sank by over 7 metres. Consequently, more than 800 buildings, including many historic buildings dating back to the 16th century, had to be demolished. Under the reign of the socialist government, the remaining buildings were poorly maintained and instead new housing complexes were constructed outside the city centre. These complexes have now fallen into disarray.

Similar to other cities in the East-Germany, economic upheaval followed reunification causing unemployment and out-migration. “It became increasingly clear that a functioning and intact town centre, a presentable town centre as a mark of pride in the past achievements, is crucial to the residents’ sense of identity.” (Heller 2009b, p.14)

Strategy
Renovation of the city was initiated in 1991 with Alt-Staßfurt, a 19th century neighbourhood on the other side of the river that became a popular residential district. Due to the uncertain situation in the subsidence area, renovation of the remaining buildings in the city centre did not start until 1999.

Interventions
The subsidence area and former location of the city centre could no longer be redeveloped. In order to prevent further causes of mining subsidence, the area had to be flooded and was turned into a landscaped park surrounding a lake, with integrated reminders to the sites’ history. This however did mean a permanent loss of a coherent structure of the city centre. On the other hand, it also is a definite solution to a persistent problem, a solution that brought momentum for the future.

Future perspective
Historic buildings close to the subsidence area have been renovated and let and some vacant sites have been redeveloped, two indications of private investment in the city centre. On the other hand, shrinkage persists and despite demolition of dwellings, vacancy rates are still around 16%.
6.4 Experimental research in the Netherlands: BNA ontwerplab krimp

Also in the Netherlands, experiments are starting to occur in which new ideas for regions facing demographic shrinkage are being sought. Through research by design, Ontwerplab Krimp (de Graaf 2009) came to a number of recommendations and strategies for shrinking regions. These strategies are however, unproven and have not been executed. A logical next step would be to facilitate these kinds of experiments in a similar monitored framework as the IBA program in Saxony-Anhalt, with the intention to gain relevant information about possible interventions and approaches.

According to De Roo (2009), professor spatial planning in Groningen, there is no simple solution, no broadly applicable strategy to accommodate shrinkage. Every strategy will have to be tailored to local circumstances and will consequently be unique. There are however, certain elements which he states are part of this strategy: adapting to new economic sectors (e.g. leisure), new forms of living and working and attention for local qualities for which landscape and cultural history are essential. An attractive spatial structure prevents stress on liveability. It is therefore inevitable that many structures built in the 1970s which are of poor quality will have to be demolished.

Ontwerplab Krimp brings forward a number of recommendations:

- Use local potential in whatever form it presents itself – landscape, cultural history, socio-economic, spatial. These potentials can help to form new identities with which districts can discern themselves.
- Reveal spatial qualities, for example in the form of cultural-historical elements, identity and sense of pride for an area can be enhanced, as well as strengthen spatial quality.
- Apply different levels of control. A high level of government involvement to steer development and investment in areas which contain a particular spatial quality and future value, and a lower amount of control in other areas that can be given back to nature or perhaps to local inhabitants for private initiatives and use.
- Through strategic removal of unattractive dwellings, the relation between built environment and the surrounding landscape can be strengthened or restored.

In order to break through the downward spiral of vacancy, decline and out-migration, it is important to not only work on long-term projects that open up new (regional) possibilities, but also on noticeable improvements on a short term.

Although the need for a locally tailored strategy is apparent (de Graaf 2009; IBA-Büro 2005; van Dam et al. 2006) Van Dam et al. (2006, p.13) also conclude that most municipalities end up applying the same strategies: to create an attractive living environment and attract new forms of commercial activities. Therefore they wonder if the line of reasoning behind these interventions is correct as they find it unlikely municipalities with different contexts end up employing the same strategy. They also point out the risk of competition that could accompany this approach.

6.5 Strategies in adapting city form to a smaller population

When a city is facing severe population and household decline resulting in high amount of vacancy, the form and development of that city can become a topic of debate.

According to Hollander et al. (2009) there are two models for reconfiguring a city’s form to a smaller population: urban islands and de-densification.

With the model of urban islands, development is concentrated on nodes or urban islands in order to maintain density and vitality in that location. In the areas surrounding the nodes demolition will take place. The benefits of this strategy are the preservation of densities and physical characteristics of the central nodes. Implementation of this strategy is difficult as it advocates demolition of entire areas. Distinguishing weak and viable areas is difficult and involves a complicated political process.

The model of de-densification takes a different approach and uses dispersed vacancy to reduce overall density of a city. De-densification itself is already a common tool in the redevelopment of neighbourhoods, albeit in a top-down capacity where existing blocks are replaced by new blocks of a lower density. In shrinking cities, de-densification could become a grassroots initiative where home-owners are encouraged to take claim over vacant
lots adjacent to their own. This could even be a subsidised process in exchange for some form of agreement pertaining to the use and maintenance of these plots.

These two strategies are developed to the background of the American property market. The situation in the Netherlands is different as much of the housing stock consists of row houses. Clearing one plot in case of detached housing is easy in comparison. On the other hand, the large amount of rental property in some neighbourhoods allows for easy intervention as only one owner – a housing corporation – is involved. De-densification is a common strategy in the redevelopment of neighbourhoods in general, but only in the form of tearing down entire blocks and replacing them by larger houses on larger plots. In shrinking cities, it is a strategy applied by housing corporations to replace some of their outdated housing stock. Grassroots de-densification could have merit for counteracting vacancy in owner-occupied housing. At this moment, demolition of houses is concentrated on rental property. Vacancy in the private housing sector is expected to become a problem in the near future, according to the Province of Groningen (2009). The de-densification approach could be an interesting strategy to achieve the required transformation of the housing stock while maintaining the layout of a neighbourhood.

Blume (2005) brings forward the notion of strong cores. To “concentrate on boosting and modifying the already existent urban intersections, core areas and networks which are capable of development” (Blume 2005, p.112). These core areas are then developed as strong, stable areas which will remain functional on the long term, while around those cores demolition could take place.

Blume deduced 5 ways to restructure a city, forming new concentrations and structure waste areas and empty landscapes.

1. Concentration on one centre. This strategy refocuses the city to one, preferably historic, core. Some districts are abandoned, forming new edges and returning functions to the city centre which had been extended to the periphery.
2. Concentration on urban islands. Similar to the strategy mentioned by Hollander et al. the city is transformed into several smaller differentiated urban centres. Greenery links the urban centres into one urban constellation.
3. Concentration on a form of traffic. An infrastructural corridor links several cities. A variety of functions is located along this corridor.
4. Concentration on networks of infrastructure. As cities become urban constellations where boundaries between the cities are invisible, the heart of the city will form along roads and their concentrations on the periphery.
5. A radical new beginning. The most radical step is to abandon the old city and rebuild under optimal conditions. The new location can be located within or outside the confines of the old city.

Akbar & Kremer (2005) offer some critique for the oft applied focus on existing (old) city centres. They wonder whether this approach is based too much on a traditional image of the European city as a city centre with high density containing shops and facilities, while in reality shops and facilities are being relocated to infrastructure nodes on the edge of the cities and inhabitants move to more spacious housing on the edge of town.

Based on the above sources, four general approaches can be deduced regarding the adoption of a new structure for a city facing demographic shrinkage. Whether or not a strategy is applicable depends mainly on the existing size and structure of a city or region. An agglomeration such as Parkstad Limburg requires a different approach than a single city in a thinly populated agricultural landscape.

1. **Focus on existing city centre**

Many of the strategies applied in the IBA program have a strong focus on the existing, historic, city centre. This centre was often neglected during the GDR era when the focus lied in constructing modernist apartments in a suburban setting. Since the 1990s investments were made to renovate the city centre and exploit its historic quality as a basis for identity.

2. **Focus on sub centres, urban islands**

Some cities are agglomerations that lack a single dominant core. These polycentric cities could then once again be separated through strategic demolition of
Some flexibility is required from the local government in order to promote temporary use. Grassroots initiatives must not meet too many barriers.

6.7 New opportunities

Often named opportunities include more attention for nature and general well-being, low property values allow easier start-up for new companies and grassroots initiatives. It can also make de-densification strategies in densely built neighbourhoods more attractive (de Graaf 2009; Bontje 2005; Hollander et al. 2009). However, in general these opportunities are quite limited and do not compensate the negative effects of shrinkage.

6.8 Conclusions

A number of conclusions can be drawn up.

1. Adapt the housing stock in both size and quality;
2. Use reduction of the housing stock to reimagine the structure and development of the city;
3. Based on existing qualities and potential, establish a core (or multiple cores) as focal point(s) for development;
4. Use and develop local potential and look for new economic sectors;
5. Retain or increase attractiveness of direct living environment;
6. Apply temporary uses to vacant plots to uphold property values;
7. Aim for results on both short and long term.

There is not one generally applicable strategy on how to deal with shrinkage. Every situation is different, yet often the same strategy is applied: focus on the existing city centre. Whether or not this strategy is suitable depends on the structure and use of the city. We should however be careful not to fall back too quickly to the traditional image of the concentric European city. Use of the city and its facilities has changed. The declining level of facilities in villages and the emergence of new nodes around intersections of infrastructure are indicators of change. The dominance of the traditional city centre has been broken but there is not yet a true edge-city development and (historic) city canters are still valued as living environment.
Marsum, near Appingedam

Photo by Dennis Wubs, 2010
Source: www.panoramio.com/photo/31969330
PART 3 - ANALYSIS
7. Eemsdelta

7.1 Introduction

This chapter will give an overview of the Eemsdelta and its primary characteristics in order to determine the regions’ strengths, weaknesses and possibilities for further development.

As was concluded in chapter 1, the Eemsdelta is facing a situation of demographic shrinkage and there is a clear assignment to reduce the size of the housing stock. However, in order to devise a strategy able to stabilise demographic shrinkage in the city, the cause of this shrinkage must be identified.

Furthermore, as was concluded in chapter 6, new potential must also be found to give the region positive development and improve attractiveness of city and region: employment, identity and an attractive living environment. This potential can be found on the scale of the city, but also in the surrounding region. Therefore the following questions must be answered.

7.2 Geographic location: the Eemsdelta at a glance

The Eemsdelta is located in the north-eastern part of Groningen, in the periphery of the Netherlands. It is a rural region with a low population density. Villages and cities lie along three infrastructural corridors:

- Groningen-Delfzijl: N360 and railroad
- Groningen-Winssum-Uithuizen: N363 and railroad
- Groningen-Winschoten: A7 corridor

Geographically, the region has a central position in-between the Randstad and the area around Hamburg, although it lies at some distance from the A7 corridor. The shipping route from western to northern Europe is of more importance for the two harbours in the area and their related businesses.
7.3 Cultural History

The Eemsdelta has a long history of occupation, dating back multiple centuries. The most prominent remnants of this long history are the traditional villages built on refuge mounds in the landscape. On the top of many refuge mounds still stands an old church. The villages were built on and around these refuge mounds, resulting in small characteristic villages in the countryside. An important part of the landscape has been shaped by man. Part of the traditional parcelling is still visible north of Delfzijl and Appingedam.
Cultural history

- Refuge mound (wierde)
- Windmill
- Historic church
- Traditional small-scale parcelling
- Wide, open landscape

Map of Northeast Groningen in the Bleau Atlas
Source: www.leidenarchief.nl/home/collecties/verhalen/bladeren-door-blaeu/blaeu

Church on refuge mound in Uitwierde, near Delfzijl

Suspended kitchens in Appingedam
Source: www.flickr.com/photos/30006798@N05/3793476708/

Godlinze, a village around a refuge mound in the Eemsdelta
7.4 Landscape

7.4.1 Water structure

The water structure shows a number of different zones.
1. A traditional small scale irregular pattern in the area north of the river Damsterdiep, with remnants of old river beds;
2. A more standard orthogonal system south of Eemskanaal;
3. New polder structures perpendicular to the sea dyke north of Roodeschool and Uithuizen.
7.4.2 Nature

Agricultural use is dominant in most of the Eemsdelta. Apart from the Waddenzee (Natura 2000) along the coast, there are only a few areas destined for nature, mostly located south of the Eemskanaal, around Schildmeer, Hondhalstermeer and the newly developed Oldambtmeer.

An extension of the Ecologic Main Structure from the lakes around Haren via Schildmeer, Hondhalstermeer to Oldambtmeer is in the planning stage and partly under construction. This could provide a boost for recreational use of the landscape.
7.4.3 Landscape: characterisation

Based on properties of the landscape itself, its water structure and primary use, a characterisation of the landscape can be made.

1. Intensive arable farming in a landscape containing refuge mounds in the north;
2. Small scale agriculture and traditional parcelling just to the north of Delfzijl and Appingedam;
3. A purely agricultural zone without special character;
4. A wide, open agricultural landscape.
7.5 Economy

7.5.1 Regional economy

There are two economic nuclei in the Eemsdelta: the Eemshaven in the north and the harbour and chemical industry near Delfzijl.

Unemployment is above the average level in the Netherlands. According to the city of Delfzijl (2009), for 25% of the people leaving the city a lack of job opportunities was the main reason. There is a mismatch between available jobs and available employees. The dominant sector is industry, whereas many people are looking for a job in the service sector.

New developments in the Eemshaven and near Delfzijl will yield 1500 jobs on the long term (van Vliet & Dijkstra 2009). At the same time, 50% of the employees in the industrial sector (about 3250 jobs in 2008 (Gemeente Delfzijl 2009)) will retire in the coming 10 years.

A similar development applies to health care. Retirement plays an important role in this sector as well and the aging population will put an increased strain on facilities.

A new challenge lies ahead to attract enough employees despite a declining size of the labour force.
7.5.2 Facilities & Interdependence

Delfzijl, Appingedam and Winschoten are important regional centres. They offer facilities that are lacking in other villages in the region, including regional hospitals, shopping centres, secondary schools and cultural facilities. A number of changes are occurring in relation to the presence of facilities. Retail in Delfzijl is currently slightly too large and this situation will aggravate in the future. Healthcare facilities require a certain support base to remain operational. With a changing and diminishing population, this might not always be possible (Gemeente Delfzijl 2009) although the increasing number of elderly could counteract this process.

There are fewer children in the region due to dejuvenation, yet there are currently still a lot of primary schools. Many have already become too small to remain operational and some will inevitable have to merge. A similar observation can be made for sports facilities and local associations. Local policy aims at reducing the quantity, but also improvement for the remaining facilities while guarding accessibility.
7.6 Energy

In terms of developing a new economic branch, policy documents mention the desire to utilise and expand the present role of the energy sector in the Eemsdelta and make a transition to a more sustainable energy sector.

However, although the traditional energy sector is being expanded by the addition of two more power plants in the Eemshaven, there is currently no transition to a more sustainable alternative.

There are possibilities for CO2 storage in depleted natural gas pockets, but public protest against this unproven technology has been strong and at least for now, application has been put off.

The most visible aspects of sustainable energy production is the presence of wind turbines across the landscape, with recent additions near the chemical industry of Delfzijl and along the dyke.
7.7 Recreation

Demographic changes have also a positive side-effect. The number of active affluent elderly increases, causing a demand for recreational facilities. This demand encompasses sport and recreation (cycling, walking, sailing, and fitness), culture (museums, film, theatre, and city trips), healthcare (wellness), catering industry (dining) and shopping (van Vliet & Dijkstra 2009).

The existing recreational facilities and infrastructure needs improvement to better accommodate these developments.

7.7.1 Cycling and walking routes

There are currently only a few ANWB cycling routes in the area and one main walking route. A ‘fietsknooppuntennetwerk’, already implemented in other parts of the Netherlands will be ready in 2012.
7.7.2 Water recreation

Schildmeer, Oldambtmeer and Eems/Waddenzee offer the best opportunities for water recreation. The Eemskanaal is part of the ‘staande mast route’ and connects Delfzijl to Groningen and other parts of the Netherlands. A recreational port in Delfzijl’s harbour also, offers direct access to Eems and Waddenzee.

The secondary water courses such as Damsterdiep are open for smaller boats, but do contain some immovable bridges that limit their potential. At this moment a connection between Schildmeer and Oldambtmeer is not present and access to Oldambtmeer is only possible via the south. A new connection on the north side is being planned, connecting it to Termunterzijl and access to the Eems.

Canoeing on the smaller water courses is often possible, but is also hindered by a number of obstacles.

7.7.3 Recreational attractions

One of the main tourist attractions is the historic city centre of Appingedam. The harbour and beach of Delfzijl also have the potential to attract visitors, but at this point do greatly lack in quality. The Eemsdijk offers an overview of the Eems and Waddenzee and an opportunity to survey the land.

There is potential for small scale recreation. Cycling through a quiet and peaceful agricultural landscape passing through small villages and ancient refuge mounds, but also water recreation along Damsterdiep river and on the lakes.
7.8 Shrinking Eemsdelta

Demographic shrinking; its causes and consequences

7.8.1 Demographic changes

The demographic processes facing the Eemsdelta include an overall decline of the population, dejuvenation, decreasing size of the workforce and a slight increase of the amount of elderly (aging population). About 60% of the inhabitants of Delfzijl and Appingedam will be older than 55 in 2030 (van Vliet & Dijkstra 2009).

7.8.2 Causes of demographic shrinkage

Average birth rate in the Netherlands lies below mortality rate. Population growth is therefore largely dependant on migration processes. This is also the case in the Eemsdelta, but here migration numbers are negative as well (Companen 2009) resulting in a negative natural growth of the population.

According to Born (2009) the peripheral location of the Eemsdelta in the Netherlands places the region outside of economic nuclei, limiting economic development. According to the municipality of Delfzijl, a lack of suitable employment is an important motive for out-migration. 25% of the people leaving Delfzijl are doing so because they are unable to find a suitable job (Gemeente Delfzijl 2009). The regional economy is growing, but this does not directly translate into a growth of employment (Provincie Groningen 2010).

Furthermore, there is a process of out-migration of young people for education, employment and due to lack of facilities (Companen 2009; Gemeente Delfzijl 2009; van Eikeren et al. 2010).

7.8.3 Consequences of demographic shrinkage

Shrinkage is causing vacancy in dwellings of the least attractive part of the housing stock, resulting in degeneration and decay of the living environment (Gemeente Delfzijl 2009; van Dam et al. 2006; Dijkstra & Mans 2009). There is also some social segregation: Young people and people with opportunities migrate to other areas, leaving more vulnerable social groups (elderly, unemployed) behind (Dijkstra & Mans 2009; Provincie Groningen 2010). Local reports also state that the declining population size threatens the support base of facilities and enforces the existing process of up scaling facilities (Provincie Groningen 2009). However, this can only in part be contributed to demographic shrinkage, as was concluded in chapter 4.

Vacancy

Demographic shrinkage has already led to responses from governmental parties and housing corporations. A large transformation process in Delfzijl and Appingedam has been in effect for about a decade now.

Downsizing and adapting the housing stock to different groups (higher quality, fit for elderly) will remain an important part of policy. For the period of 2009-2019, 3300 dwellings will be demolished while 2300 new dwellings will be built in the Eemsdelta (Provincie Groningen 2010).

Living environment

Vacant land as a result from tearing down houses is being transformed into a large park, but some other areas still lie fallow. There is no application of temporary use on such sites.
Vacant plots in Delfzijl Noord

Number of inhabitants 1960-2040. Municipality of Delfzijl: city and villages
Source: Author
Data source: CBS, 2010

Changing composition of the population in the Municipality of Delfzijl
Source: Author
Data source: CBS, 2010

Vacant plots in Delfzijl Noord

Vacant plots in Delfzijl Noord
7.9 Existing plans

In general, existing plans are aimed at conservation of the status quo, due to the lack of any major developments in this part of Groningen. This leads to somewhat ‘standard’ plans of enforcing the economy, ensure a pleasant living environment, strengthen recreation in the countryside, promote sustainable development etc. In short, seize opportunities that are already present in the region.

Focus in the plans lies in developing the Eemshaven as economic motor, combined with development of the energy sector.

One feature which could have a stronger spatial impact on the region south of Eemskaanaal is the development of the Ecologic Main Structure, ranging from Groningen, via Schildmeer to Oldambtmeer.

Shrinkage is not placed in a central position in provincial or municipal plans, except for Delfzijl. This could also be related to the scale level in which shrinkage manifests itself. Regional prognoses show a declining population and number of households, but the resulting vacancy will only manifest itself on the local scale. It is therefore mostly a statistical phenomenon on the regional level, but a more prominent part of spatial planning on the scale of the city.

The plans do acknowledge shrinkage as an issue to be addressed, but it did not yet translate into concrete policy. However, there are also a number of reports which specifically address the topic of demographic shrinkage on various scale levels such as the provincial ‘Krimp in Groningen’ and ‘Kijk op Krimp – Provinciaal Actieplan Bevolkingsdaling’, regional ‘Pact Regio Eemsdelta’ (regarding agreements for the construction of new and demolition of surplus of houses) and municipal report ‘Krimpen en Groeien in Delfzijl’.

New residential development is still allowed in a few locations, mostly in towns close to the city of Groningen.

There is definitely a level of awareness concerning demographic shrinkage. Pact Regio Eemsdelta is an important and necessary step. Further integration of the municipalities on other terrains such as education and financing is inevitable.

Recreation is being put forward as a goal, but there seem to be only few concrete plans supporting it. However, recreation and tourism definitely have potential, albeit in a small-scale capacity. Further development of water recreation can boost the areas around the lakes and places along the water courses connecting them as well as stimulate the maritime industry in the region.
## 7.10 Conclusions

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<td>• Relatively high unemployment</td>
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<td>• Mismatch available jobs and employment and consequently out-migration</td>
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</tr>
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Damsterdiep with the new neighbourhood Doklanden in Delfzijl

Photo by Auko Mensinga
Source: www.panoramio.com/photo/25328957
8. City of Delfzijl

8.1 Introduction

Although the city has been analysed more thoroughly, this chapter will focus on the most important aspects for the project.

The goal of the analysis was to become more familiar with the city of Delfzijl, to discover qualities, potential, weaknesses and how it is being affected by shrinkage.
8.2 History

Delfzijl has a rich history, similar to the rest of the region. It was a fortified city from the 12th century and has always been a small harbour city.

The structure of the city was initially formed by two villages – Delfzijl and Farmsum – and the surrounding refuge mounds and roads connecting them. After the Second World War, Delfzijl was considered a city for major development and growth in national policy. It was anticipated to house 80,000 inhabitants by the year 2000 and new neighbourhoods were constructed in the typical 1960s and 1970s style, in anticipation of a huge population influx. The structure of the city was also designed to make larger expansion possible. However, national policy changed and the ambitious plans had to be abandoned. As a result, some of the dwellings had never been occupied when they were recently torn down and the city’s structure is not tailored for the current situation.

More recent developments on the south-western outskirts of Delfzijl consist primarily of single family houses. The city has still expanded between 1980 and 2010, but the population has been shrinking since 1980 (Dijkstra & Mans 2009). In the 21st century, redevelopment of the existing fabric has commenced. Apart from redevelopment of the neighbourhood directly north of the city centre, single family houses in-between Damsterdiep and Eemskanaal, and on the outskirts of Delfzijl have been built.

Delfzijl is a port city, but its relation to the water has changed during the decades. While it historically provided direct access from its harbour to the river Damsterdiep and canal Eemskanaal, this access is no longer provided. In 1958, new locks to the east of Farmsum were put into use, turning the old locks (between Delfzijl and Farmsum) obsolete. Access to the Eemskanaal now took place via a new route for the Eemskanaal. Access to harbour and docks also changed in the course of the 20th century. Industry expanded eastwards and by 1990, the entrance to the harbour was moved eastwards as well.
The old fortress of Delfzijl

Source: www.geocities.jp/trankiel/VestingDelfzijlF-ranseTijd.jpg
8.3 Landscape

Traditional qualities of the countryside are not much present in Delfzijl.

Water
The water structure is primarily shaped by the two main water courses Damsterdiep and Eemskanaal. These two have a distinctly different character. The old river Damsterdiep is quiet, peaceful and enclosed, with some older ribbon developments along its course. Its function as a recreational river is greatly hindered by the lack of a proper start in the city of Groningen and proper ending in Delfzijl. The Eemskanaal on the other hand is busier and wider, offering wide vistas of the straight canal. Part of the ‘staandemast route’, the canal is being used for both transport and recreational use. The river and canal belong to separate water systems and are only occasionally connected via small locks.

Industry is dominant along most of the Eemskanaal in Delfzijl and there is barely any relation between Eemskanaal and the city. The Damsterdiep is also only partially connected to the city. Most neighbourhoods in the west of Delfzijl along the river or canal are not oriented toward these water features (and not to the countryside either). Recreational use along the river and canal is made difficult by lack of (continuous) walking/cycling paths along its course.

Green
There are no prominent green structures within the city, apart from a central park in the bend of Damsterdiep. The recent redevelopment of Delfzijl Noord will result in the construction of a new park.

The edges of the northern neighbourhoods consist of thick bushes and trees that prevent mostly any visible relation between city and open countryside. Although these neighbourhoods do come across as open and green, the enclosed character is very different from the wide vistas offered by the dyke or countryside a few hundred metres away.
Character of Damsterdiep

Character of Eemskanaal
8.4 Occupation

8.4.1 Functions

Functionally, the Eemskanaal separates housing and industry, with the exception of Farmsum, which is surrounded by industry. Retail is concentrated in the city centre of Delfzijl, with some additional (shoddy) retail at the maritime quarter, adjacent to the city centre. Two small shopping centres are located in the surrounding neighbourhoods.
8.4.2 Barriers

Barriers are formed by the primary infrastructural lines that run through the city as well as the river and canal. The corridor consisting of N380 (Groningen-Delfzijl) and railroad (Groningen-Delfzijl-industry estate Oosterhorn) form a divide in the city, clearly separating north and south, and is difficult to cross. Near the city centre, railroad, road and dyke form a distinct barrier, preventing a good relation between city centre and harbour. The dyke also intersects the river and canal which are no longer directly connected to harbour and city centre.
8.4.3 Character of the neighbourhoods.

The next few pages show a characterisation of Delfzijl's neighbourhoods, based on an assessment of the unique qualities of Delfzijl and its surrounding region: relation to the water and spacious landscape – through the neighbourhoods’ structure, density and composition of housing stock.

Based on the assessment four types of neighbourhoods can be identified.

1. Pre-war neighbourhoods adjacent to the city centre of high density with a high variety of dwellings and a clear structure;
2. Neighbourhoods with high density and a closed internal orientation; the typical neighbourhoods from the early post-war era, lacking almost any connection with their direct surroundings. These neighbourhoods are located in the north and southwest;
3. Neighbourhoods with a high density, but with a more open internal structure;
4. Spacious neighbourhoods of low density and large variety of dwellings.

Most existing neighbourhoods do not represent the qualities of Delfzijl (port city in a spacious open landscape). Although Delfzijl contains a harbour, an historic river and a canal, there was very limited housing development along the river until the development of the Doklanden district (in-between the river and canal) early 21st century. Many neighbourhoods – especially those built between 1950 and 1980 - are no different from those built in other places of the Netherlands. Therefore, these neighbourhoods of Delfzijl offer no uniqueness regarding living environment compared to neighbouring cities and villages in the region or province.

In terms of attractiveness of the housing stock as one of the factors determining migration, most neighbourhoods lack a discernable quality.
2. Neighbourhoods with high density and a closed internal orientation; the typical neighbourhoods from the early post-war era, lacking almost any connection with their direct surroundings. These neighbourhoods are located in the north and southwest.
Characterisation of neighbourhoods:
- Clear, open structure
- Open edges
- Oriented inwards
- Chaotic
- Differentiated buildings
- Dense
- Average density
- Related to the water
- Enclosed
- Spacious

Map: Neighborhoods characterised by clear, open structure, oriented inwards, and chaotic average density, related to the water.
3. Neighbourhoods with a high density, but with a more open internal structure
Clear, open structure
Open edges
Oriented inwards
Chaotic
Average density
Related to the water
Enclosed
Differentiated buildings
Dense
Spacious
4. Spacious neighbourhoods of low density and large variety of dwellings.
Clear, open structure
Related to the water
Enclosed
Differentiated buildings
Dense
Spacious

Characterisation of neighbourhoods

Open edges
Oriented inwards
Chaotic
Average density

71
8.5 Shrinkage in Delfzijl

8.5.1 Prognoses

The population of Delfzijl has been shrinking since 1990 and this process is expected to continue at roughly the same pace. That means a further decline of the population by 40% in 2040 and nearly 30% for the number of households in 2040 (Provincie Groningen 2009).

8.5.1 Housing development for the coming decade

Although the Eemsdelta region will shrink as a whole, the main task in accommodating this process has been assigned to the city of Delfzijl.

Based on the agreements in Pact Regio Eemsdelta (Municipalities of Delfzijl, Eemsmond, Appingedam and Loppersum 2009), we can deduce the task for Delfzijl until 2018: reduction of the housing stock by 1,335 dwellings.

8.5.2 Identifying the most susceptible neighbourhoods

The relative attractiveness of a neighbourhood determines its susceptibility for shrinkage and vacancy. As was concluded in the literature research, these are primarily the early post-war neighbourhoods, with a large amount of housing in the social rented sector: houses of low quality and technically out-dated in a non-discriminable living environment.

This map indicates the neighbourhoods/areas in which the majority of houses is owned by housing corporations. It is in these areas that the reduction of the rental housing stock will have to be accommodated.
District with mainly social rented housing
Property owned by housing corporation
Contour of neighbourhoods
9. Conclusions from the Analysis

9.1 Character of the region

The Eemsdelta is a thinly populated, agricultural region where one can still find a peaceful and quiet environment in a wide and open landscape. Its long history is evident through the presence of refuge mounds and old churches that spot the landscape. It is not well developed in terms of recreational use. Although there are some routes, it is still awaiting the opening of the ‘fietsknooppuntennetwerk’. The same applies for water recreation. There is definitely potential – the old river Damsterdiep, Eemskanaal as part of the ‘staandemast route’ leading to Delfzijl and the Eems/Waddenzee, and a few lakes – but the existing water courses are poorly connected.

9.2 Character of the city of Delfzijl

Delfzijl itself is a fragmented city that does not use much of the available qualities of the surrounding landscape: river/canal, harbour, cultural-history, a spacious and diverse countryside. This is evident in the structure of the city as a whole, but also in most of the neighbourhoods.

9.3 Demographic shrinkage

The population of Delfzijl is expected to continue to decline, resulting in a reduction of the number of inhabitants by 40% and nearly 30% for the number of households in 2030 (Provincie Groningen 2009). The consequences which are to be expected include vacancy, physical deterioration of the living environment and social segregation. Whether or not the local economy will be affected depends mainly on the developments within the labour market; to what extent can job vacancies be filled?

9.4 Government responses

Local and regional government are aware of the situation and some important first steps have been taken to increase cooperation between municipalities and come to agreements concerning adaptations of the housing stock. Policy is not yet showing an evaluation or adaptation of the region’s or cities’ structure.

9.5 Opportunities for development

There are of course positive developments as well. The economy is still growing – although mainly the industry in the Eemshaven and harbour of Delfzijl – resulting in an increasing amount of jobs. An increasing demand for recreational facilities is expected due to the growing amount of active elderly. There are plenty of opportunities to utilise the existing qualities of the landscape and cultural history to stimulate recreational use.
10. Regional design

10.1 Introduction

One of the conclusions from the research is to make use of local qualities to develop new economic branches. In the case of the Eemsdelta this would mean to use opportunities for (water) recreation and tourism, for which the recreational infrastructure will have to be improved.

The main role for urbanism in working on shrinkage lies on the scale of city and neighbourhood. Nevertheless, some developments on the regional scale can contribute to a successful intervention in Delfzijl. Delfzijl currently functions as the entrance to Eemskanaal from sea. This role could be extended to include a starting point (or destination) for recreation in the area, whether by bike, boat or on foot. Improving the recreational network, primarily the water network, can boost tourism in the region and create new jobs in that sector as well.

However, local government can only go so far in developing routes and providing accessibility. Eventually it comes down to local investors to add functions such as boat tours/lease, hotels, camping sites, restaurants, cafes, bike lease or perhaps golf courses and museums.

10.2 Stimulating recreation and tourism

Recreation is somewhat underdeveloped in the Eemsdelta. Although there are definitely assets which can be developed, it must be said that it lacks the concentration of recreational facilities that can attract mass tourism. Nonetheless, it does offer potential through a well established cultural history, water recreation on and around Schildmeer and Oldambtmeer and the general peace and quietness of a diverse agricultural setting, with both arable and cattle farming.

The Fietsknooppuntennetwerk, expected in 2012, can greatly benefit recreational cycling. However, some routes of great potential - for example along Eemskanaal and Damsterdiep - are currently missing, or lacking continuity and quality. Addition or improvement of these routes can increase the value of the network.

10.3 Water recreation

10.3.1 Existing role of water recreation

As has already been mentioned in chapter 7, there is already a basis for a water network, but the existing water courses are often separated and discontinued. Apart from a new connection on the north of Oldambtmeer, there are no plans to further extent this network.
Existing fairways

- Main water course
- Secondary water course
- Water course under construction
- Connection to Eems
- Water course interrupted

Scale: 0 1 2 5km
10.3.2 Interventions: Possibilities for water recreation

On the short term, it is important to allow the possibility of a circuit, which requires connections between Schildmeer, Oldambtmeer and Delfzijl/Appingedam.

Once the connections have been realised, they can be improved to remove barriers such as immovable bridges and, depending on the water system in the area, removal of locks.

Depending on usage and available funding (e.g. a combination with development of the ecological main structure), the connections can be improved by including lakes, nature reserves and other facilities.

An example of such a development is shown on the right.
10.4 New railroad Veendam – Delfzijl/Eemshaven

A second proposal is the addition of a new railroad from the intermodal transport node in Veendam to the harbour of Delfzijl and optionally to the Eemshaven. Main incentive for this proposal is the problematic passage from the chemical industry in Delfzijl harbour through the city centre of Delfzijl and onward to Groningen. Although it has been mentioned in policy documents (Gemeente Delfzijl 2010, p.46; van Vliet & Dijkstra 2009, p.59), it is nowhere near concrete policy and due to lack of demand unlikely to be realised. It is more likely that transport of dangerous substances through the city centre will be prohibited. Nevertheless, it would aid significantly in removing the barriers in the city centre of Delfzijl.
11. City design

11.1 Introduction

In order to break through the downward spiral and stabilise shrinkage, both accommodation and investment is required. The first to counteract consequences of shrinkage and maintain attractiveness of neighbourhoods, the latter to improve attractiveness of city and neighbourhoods.

The proposed strategy for Delfzijl is therefore composed of two parts.  
1. Accommodation of shrinkage: combat vacancy and deterioration of the living environment through reduction of the housing stock;  
2. Strengthen the city through investments in local potential.

The assignment for the accommodation of shrinkage consists of two parts. First the planned reduction of the housing stock by 1335 dwellings until 2018 (as was established in Pact Regio Eemsdelta (see also chapter 8.5)), secondly the development of an approach for the period after 2018 when reduction of the housing stock shifts from rental property to owner occupied housing.

In the case of Delfzijl, local potential consists of its location as a port along Eems, Damsterdiep and Eemskanaal, in a wide and peaceful landscape. Municipal plans also express the desire to strengthen Delfzijls identity as a port city and improve the relation with the harbour (van Vliet & Dijkstra 2009).

11.2 City form

Chapter 6.7 outlined the possible approaches to adapt the form of the city to a smaller population. Given the existing division of facilities in Delfzijl – there is only one centre – and the existing role of the city centre as a regional centre on which neighbouring towns and villages depend, the approach to ‘focus on one city centre’ is best applicable in the case of Delfzijl. Furthermore, there is a lot of potential in the city centre to strengthen the identity of Delfzijl through its proximity to Damsterdiep, Eemskanaal, harbour and Eems and develop unique living environments. The city centre will therefore be the focus for investments, the stable core within the shrinking city.

11.3 Elements forming the strategy

An approach was devised for the neighbourhoods of Delfzijl (11.4), based on the character of the neighbourhoods (8.4.2), combined with the areas most likely to be affected by vacancy: concentrations of rental property (8.5.2).

In chapter 11.5 the reduction of housing stock from Pact Eemsdelta will be implemented, based on the approach established in 11.4.

In chapter 11.6 a number of interventions will be established which dwell on local potential to strengthen the character of the city.

Together these elements – accommodation of the reduction of housing stock and investments to strengthen the city - form the strategy for Delfzijl (11.7).
11.4 Where to accommodate shrinkage?

In chapter 8.5.2 the neighbourhoods which are most likely to be affected by shrinkage were identified, and in chapter 8.4.3 the character of the neighbourhoods (open/spacious structure, relation to water (if any), and relation to the surrounding landscape) was analysed. These two factors determine the future prospects of the districts. Whether or not they are attractive and discernable enough to attract new and retain existing inhabitants.

Based on those factors, four types of districts were identified:
1. Districts where new construction can help to strengthen the (character of the) city;
2. Districts that do not require intervention;
3. Districts which are discernable with a clear structure yet could benefit from small de-densification (see chapter 6.7), such as the strategic demolition of a few dwellings to make room for e.g. a small park or playground, the merging of two dwellings to create one larger dwelling, etc.;
4. Districts which are not discernable, offering relatively low quality and technically out-dated houses and have an internal orientation that does not connect to the city or surrounding landscape. It is these districts where demolition can best take place, removing the non-discernable, low quality housing. The land that becomes available can then be used to re-establish a connection with the surrounding landscape.

This map identifies a long-term approach for the neighbourhoods of Delfzijl: where and how to intervene. But it is not yet a plan on how to implement the required reduction of the housing stock. This will be done in the next chapter.
11.5 Allocation of the reduction in housing stock

In order to decide where shrinkage should be allocated, the map showing the long-term approach (11.4) can be combined with the location of the rental housing stock (8.5).

The goal for 2018 (Pact Regio Eemsdelta) is to reduce the housing stock by the following amounts:

- 1660 single family rental houses (eengezins huur)
+ 105 zero-steps rental housing (0-treden huur)
+ 270 land-based zero-steps rental housing (grondgebonden 0-treden huur)

+ 15 single family private housing (eengezins koop)
- 130 zero-steps private housing (0-treden koop)
- 10 land-based private housing (grondgebonden koop)

This reduction of the housing stock has been implemented here, removing primarily rental property in the least attractive neighbourhoods in the periphery of the city, thereby adapting the form of the city to a smaller yet coherent size. The current proposal includes a reduction of the housing stock by about 1650 rental houses and 140 owner occupied houses. (New additions to the housing stock are not implemented in this scheme.)
Reduction of housing stock

- Demolition
- No change
- Number of houses to be removed

Number of houses to be removed:
- 62
- 322
- 181
- 138
- 79
- 70
- 177
- 96
- 108
- 56
- 78
- 89
11.6 Investments

In order to strengthen the character of Delfzijl as a port city, local potential will have to be utilised: the relation of the city with harbour, river, canal and surrounding landscape.

- Development of quays in the harbour;
- Integration of the dyke near the city centre;
- Housing development in the maritime quarter in-between Eemskanaal and Damsterdiep;
- Housing development to complete the city centre;
- Orientation of neighbourhoods along Eemskanaal and Damsterdiep;
- (Accessibility of) routes along Eemskanaal and Damsterdiep.
Investments

- New or redeveloped green
- Touristic highlight
- Existing objects of cultural-historic value
- Expansion of beach
- Redevelopment of quays
- Housing development
- Existing river bank route
- New riverbank route
- Existing route
- New green axis to surroundings
- New connection by boat
11.7 Strategy for shrinkage

The strategy for shrinkage is the combination of the physical accommodation of shrinkage by steering removal of housing in certain districts (11.6) and the simultaneous interventions to invest in the character and quality of the city (11.7) which help to improve attractiveness.

The following chapter will further elaborate on investments in the city centre.
Investments

- New or redeveloped green
- Touristic highlight
- Existing objects of cultural-historic value
- Expansion of beach
- Redevelopment of quays
- Housing development

- Existing river bank route
- New riverbank route
- Existing route
- New green axis to surroundings
- New connection by boat
11.8 Strategy for shrinkage after 2018

For the period until 2018, the main focus lies on removal of rental housing property. However, the assignment is expected to shift to cheap owner occupied housing in the future (Provincie Groningen 2009; Companen 2009). Apart from the type of dwellings which will be affected by shrinkage, the amount of shrinkage is uncertain.

Compared to the rental part of the housing stock, major changes in neighbourhoods containing owner occupied housing are much harder to achieve. Therefore, a different strategy is applied for the period after 2018, when the effects of shrinkage will become more visible in the owner occupied sector of the housing market.

Whereas previously demolition of houses and new investments were concentrated on adapting the form of the city in its entirety, the focus now lies on conservation and de-densification within the existing structure.

The following instruments can be applied to achieve de-densification:
1. Combine plots;
2. Demolition and construction of a small park;
3. Combine dwellings and plots;
4. Replacement with fewer dwellings.

The role of the local government is different: reactive in stead of pro-active. Once a certain property has remained vacant for some time and is unlikely to be sold, local government can decide to intervene in order to protect property values and general state of wellbeing of the direct surroundings.

This intervention can consist of different types of involvement:
- Intervening: Buying plots, demolishing buildings, selling vacant plots;
- Stimulating: co-financing the sale of a building or plot (offering at reduced price);
- Greening & maintaining: Simple landscaping on vacant plots, maintenance of vacant land or property.
Approach per neighbourhood

- Densification
- No changes
- De-densification, maintaining existing structure
- De-densification
Aerial photograph of Delfzijl city centre
Source: Gemeente Delfzijl 2010, p. 12
12. Investment - City Centre

12.1 Introduction

The development of the city centre plays a major role in the proposed strategy. This is the location where the character of Delfzijl as a port city comes forward and where most investments will take place to create a strong core for the city and a place of stability in the shrinking city. Therefore, the design for the city centre will be further elaborated in this chapter. The design is separated in two parts: inside and outside the dyke. First the existing situation within the city centre will be described, followed by a proposal for the area inside the dyke. The complex situation concerning the dyke and its role as defence against the water will be discussed in 12.5, followed by two proposals that deal with redevelopment of the dyke and harbour. These two proposals will finally be evaluated at the end of this chapter.

12.2 Current situation city centre

The following paragraphs will briefly describe the current situation in the city centre with a focus on public space.

12.2.1 Morphology

The city centre can be identified as an area enclosed by the ring road in the west (Buitensingel, Stationsweg, Oosterveldweg) and the dyke in the east. Within these borders most of the city centre consists of closed building blocks, but the western and northern part is unfinished. Parking lots fill the voids at these locations. The main shopping streets run from the railway station to the Grote Waterpoort. The route to dyke and beach leads through a small alleyway, across a parking lot and up some stairs.
12.2.2 Public space

Public space in the city centre is lacking quality and coherence. Materialisation was poorly executed, often lacking any coherence and the result was a collection of streets and areas without a clear profile and a generally chaotic image. Parking is very dominant in the city centre. The two main squares – the historic Molenberg square adjacent to an old church and the Vennenplein – are primarily being used as parking lots, as well as the voids on the north-eastern edge.

Fortunately, redevelopment of public space is currently in progress (see also paragraph 12.2.4). The inner ring road now has (for the most part) a single materialisation and the Molenberg square is also being redeveloped.
12.2.3 The Quays: Handelskade West and Damsterkade

The quays in the harbour consist of several parts: Handelskade West, Handelskade Oost and the old Damsterkade. The first is mainly in use for recreation (hotel, restaurant, small convention centre) but contains a few businesses as well. These quays are still open for larger ships to dock. It also contains a – now mainly obsolete – through road (Oosterveldweg) and railway line for goods trains (among which also dangerous substances).

The old Damsterkade is located in a currently unused part of the harbour and is no longer in use. It contains a very dilapidated wooden warehouse, cycling path and mainly undefined open space.

Handelskade Oost is located on the opposite site of the harbour and is still in use for shipping goods.

Handelskade West and Damsterkade are greatly lacking in quality for recreational use. Infrastructure is clearly dominant and the result is a public space cut into pieces by bicycle path, road, railroad and parking lots. Materialisation is inconsistent and as uninspiring as the sheds which occupy the waterfront.
12.2.4 Current work in progress

As was mentioned above, redevelopment of the inner ring road is largely complete and redevelopment of the Molenberg square is currently in progress.

Another recent development is the construction of a new building for the Scheepvaartschool which is being relocated from its current position near the hospital.
12.3 What remains to be done?

Despite these good improvements, the outer edges of the city centre are still unaddressed: The north-western edge of Buitensingel/Stationsweg (red) and the eastern edge consisting of dyke and quays (blue).
12.3.1 Design principles for intervention

In order to structure the investments, 4 principles have been established.

1. Create a clear edge for the city centre

Historically, the edge of the city centre was determined by the fortifications. However, this demarcation was weakened over time by dismantlement of the defences and construction of the railroad. The city edge still has a clear profile on the southern and western side of the city centre, near the canal, but this profile is abandoned beyond that point. This lack of continuity due to changes in the profile results in a weak definition of the city centre in the northwest.

By extending the canal and repositioning the road near the city hall, combined with the construction of new buildings, this profile can be restored once more.
2. Complete the fabric

Within the city centre, several plots are unoccupied. Mainly in use as parking lots, the result is an incomplete look and an interruption of the strong edge.
3. Improve integration of the dyke
The dyke is currently mainly a barrier between city centre and harbour. The path running along it is only accessible at a few locations and does not offer much quality. However, it could also be a qualitative element from which one can experience both the city and harbour. The dyke could even be an element connecting several sites along Delfzijls waterfront. The beach in the north, the quays, up to the new scheepvaartschool in the south.

Some beautification and better accessibility is required, as well as program along its path.
4. Develop the quays as a coherent, qualitative space

Historically, the city of Delfzijl was defined by its relation to the harbour. This relation was weakened over time by closure of the sluice connecting Damsterdiep to the harbour and in a later period by closure of the sluice connecting Eemskanaal to the harbour, and by relocation of the harbour entrance.

The quays are an ideal location to start improvement of the centre. It is the perfect place to experience the industrial harbour and already contains a number of recreational facilities that make use of the existing marina.
12.4 City centre behind the dyke

12.4.1 Overview

The proposal for the city centre behind the dyke consists of the redevelopment of the outer ring road and construction of a maritime quarter to the south (6). Redesigning the outer ring road creates room for reintroduction of a canal along the north-western edge (1). The park along the canal can be extended to a redeveloped station square (2). Given the limited amount of available space, a small part of the rail yard will be used for the canal. From the station square, a new route leads towards the dyke along the Eems and the beach (3). The landscaping in Kwelderland (a redeveloped neighbourhood just north of the city centre and adjacent to the dyke) is continued towards the city centre (4). The urban fabric in the northern part of the city centre has been finished in order to complete the edge. Special care should be paid to the scale of the buildings, in order to properly match them to the small scale of the existing buildings in the vicinity (5). These building blocks are quite narrow, but should – at least visually – not be developed as one block, but continue the variation and small scale of the other blocks in the city centre. Building height is therefore mainly limited to 3 and incidentally 4 stories.
12.4.2 Program

The program for this extension of the city centre consists mainly of housing; roughly 175 apartments and 75 row-houses. More commercial program would preferably be incorporated on the ground floor, but since the existing commercial program in the city centre already exceeds demand this is unlikely to find users. The only planned commercial program is the Albert Heijn which is retained at its current position, but in a new building. Existing program that has to be removed includes an apartment block (17 apartments), a small office block, a gas station and the Albert Heijn.
12.4.3 Maritime quarter

South of the city centre, along the road to Farmsum lies a wholesale business for construction materials (Ubbens) at a unique position in-between Damsterdiep and Eemskanaal. This area is an ideal location to construct new dwellings with a direct relation to the river and preferably a new private harbour. In terms of program, this proposal incorporates about 15,000 m$^2$: 40 dwellings and 65 apartments. It replaces the existing wholesale business of about 8700 m$^2$.

Commercial program along the road is possible although there seems to be limited demand given the current status – vacant shops and plots - of the street.

(A similar proposal was made by bureau de Zwarte Hond (2008) for the Inspiratiedocument Delfzijl Waterfront.)
12.5 Sea dyke

The main barrier in the relation of the city centre with its adjoining harbour is the sea dyke. The presence of this dyke is a complicating yet crucial factor that influences the current and future potential of the city centre.

The dyke itself consists of several parts: A traditional dyke north and south of the city centre (1 and 3), a steel wall along the city centre itself (2) and the Schermdijk (4), a longitudinal dyke which breaks waves but is not a part of the sea dyke.

The current dyke does not meet the required specifications as primary defence against the sea. Many plans and studies have been made in the past concerning the future of the dyke and how the necessary improvements can be made, while also taking into account the development potential of the city centre and its relation with the harbour.

Furthermore, the existing locks to the east of Farmsum (3a) are in need of modifications to allow larger ships to pass through, and make improvements to the region’s water management.

Research into a number of alternatives has taken place. In short there are three main alternatives (Gemeente Delfzijl 2010):

1. Replacing the existing locks on their current location (east of Farmsum) and heightening of the existing dyke,
2. Part of the dyke will be relocated and separates the harbour into a recreational harbour and commercial harbour. Access from recreational harbour to Eems is provided through new locks in the north.
3. New locks at the existing entrance to the harbour, combined with an upgrade of the Schermdijk to a primary sea dyke.

The second and third alternatives could yield major improvements to the city centre, its relation to the harbour and in general its character as a maritime city.

- Removal of the sea dyke and the possibility to construct new buildings oriented towards the harbour.
- A calm harbour, free of tidal influences, making more recreational program in and around the harbour possible;
- Free passage to and from Damsterdiep and Eemskanaal;
- Both these alternatives are unrealistic and undesirable according to the multidisciplinary workgroup discussing this issue. The second alternative due to high transition costs and silt problems that would render the locks to the recreational harbour inaccessible in the future. The third alternative would also require considerable investment – estimated at € 500 million – but is also undesirable for both industry and recreational vessels as they find having to pass through sluices problematic. Therefore the third alternative itself becomes undesirable as well (Gemeente Delfzijl 2010).

The workgroup currently focuses on heightening the dyke at its existing location.
Alternative 1
Heightening existing dyke
Source: Author
Based on: Delfzijl 2010, p. 50

Alternative 2
Separated harbours
Source: Author
Based on: Delfzijl 2010, p. 50

Alternative 4
New dyke and locks
Source: Author
Based on: Delfzijl 2010, p. 51

Elements of the sea dyke
Source: Author
Based on: Gemeente Delfzijl 2010, p. 10
12.6.1 Two proposals, two designs

As absolving the dyke along the city centre entirely yields the best development opportunities for the city centre, an altered version of the second alternative – two separate harbours – was devised.

In comparison to the proposal mentioned above, the location of the dyke has been moved closer to the city centre, allowing part of the industry to remain at its current location. Furthermore, the locks are positioned in this new dyke, connecting recreational and industrial harbour. The dyke along the city centre can be removed and free passage between harbour and Damsterdiep/Eemskanaal becomes possible.

There are a number of constraints concerning this proposal, first and foremost the scale of this intervention. As this solution only encompasses a small sluice for recreational vessels, the existing industry along Handelskade Oost will no longer be viable. Part of this industry could be relocated to the Zeehavens industrial zone, which is only partially in use. The existing chemical industry will then be moved to Oosterhorn.

The required investment will consequentially be vast, although upgrading the dyke is part of the Delta program. Nevertheless, the question remains whether the spatial benefits and new opportunities presented by a recreational harbour can overcome these (financial) constraints.
The second proposal follows the main conclusion of the workgroup – the dyke will remain at its current position – and looks for ways to redesign the dyke. The harbour will remain in use as an industrial harbour, in close relation to the character of Delfzijl as an industrial port. Consequently, it ensures a certain amount of liveliness in the harbour all year round, as opposed to a recreational harbour which is dependant on leisure.

According to prognoses in the Delta reports (Gemeente Delfzijl 2010) the existing dyke does not offer sufficient protection and will have to be heightened by 1,5 meter. Due to the limited available space along the path of the dyke, alternatives are also being researched. One proposal of students of the Hanze Hogeschool (van der Leest et al. 2009) is to introduce pre-embankments at the Schermdijk to reduce the strength of the waves, allowing the dyke itself to have a reduced height. Applying pre-embankments should only be used in case the normal practice of increasing the height of the dyke is impossible.

On the next pages, the designs will be further elaborated, followed by an evaluation of the two proposals.
12.6.2 Recreational Harbour

The two solutions for the harbour differ in character and program.

For the Recreational Harbour, the program and character is related to leisure, water recreation, floating houses and dunes. Housing development along the quays will also be possible.

This proposal will be elaborated in chapter 12.7.
12.6.3 Industrial Harbour

The industrial harbour dwells on the existing industrial character of the harbour. The floating docks, large cranes unloading sea-going ships and large hangars. The dyke remains a prominent element along the quays but will become more accessible from both quays and city centre.

Through integration of functions as parking and housing the dyke becomes part of the city centre in stead of merely a solitary object.

This proposal will be elaborated in chapter 12.8
12.7 Recreational harbour

12.7.1 Overview

Due to the changed course of the dyke, industry along Handelskade Oost is relocated to the other side of the harbour. A dune landscape can be realised on the location of the former industry. The idea for the dunes originates from a design proposal for the coast of Delfzijl. Although they would be completely artificial, it does add a unique feature to the coastline of Groningen. Most of the dunes would be covered in grasses, but the outside could still consist of sand as there is also some sedimentation at that part of the river. A large beach would of course be part of this proposal.

Removal of the locks between harbour and Damsterdiep/Eemskanaal allows unhindered passage for ships and promotes the harbour of Delfzijl as a node for water recreation.

The harbour is surrounded by quays, which allow for a full circuit. The path on top of the new dyke gives an overview of both harbours.

In the south is an area which could be used for a number of different programs, see also 12.7.3.

A more detailed map of the quays adjacent to the city centre can be found on pages 122 and 124.

12.7.2 Program

The program for this design proposal consists mainly of housing. Both apartments and (differentiated) row housing.

Again, no commercial program has been strictly planned, but it should definitely be possible to incorporate small shops, restaurants and cafes in the buildings along the quays. Due to the long term of realisation (see also phasing, 12.7.7), the possibilities should be re-evaluated once these sites become available for construction.

Without tidal influences in the harbour it also becomes possible to place floating houses along the quays. These could be used for permanent use or as holiday homes.

This proposal also incorporates two museums. The first is interwoven in the dunes and is a relocation of the existing MuseeAquatium just north of the city centre, featuring exhibitions on the ecosystem of the Waddenzee and Eems-Dollard. The second museum is an annex of the Northern Maritime Museum (Noordelijk Scheepvaartmuseum) in Groningen, with exhibitions on naval history and along the quays several historic ships accessible for visits.
12.7.3 Optional program

Due to the long scope of this proposal, the southern part of this plan can have different uses depending on the demands of the local economy, housing market or new opportunities which may present themselves in the future. Three types of use have been designed to illustrate the possibilities, but since realisation can only take place after the construction of the new and removal of the old dyke, the situation should be re-evaluated at that point.

There are a few common elements:
- Reuse of the old pumping station;
- Boat ramp;
- Open zone along the water;
- Railroad in the south for freight trains.

1. Housing development
2. Sport fields: soccer and tennis

Due to demographic changes there is fewer demand for sports fields in the city. Existing sports fields along Eemskanaal or outer edge of Delfzijl Noord could be moved to this location, in correspondence with the idea of a more compact city. It also brings liveliness to this side of the harbour and encourages use of routes along the quays.
3. Shipbuilding

There are a number of businesses for shipbuilding along the Eemskanaal for both transport and recreational purpose. An addition of a (small) estate for shipbuilding can aid the function of the harbour as an important node for water recreation.
12.7.4 Quays near the city centre

The character of the quays in this proposal is green and tranquil. Industrial use of the harbour has been discontinued and leisure is now the main occupant. This previous use is expressed in the simple landscaping. Some of the cranes along Handelskade Oost could also be retained as remnants of the industry.

The beachpark separates Delfzijl from the Eems. Incorporated in these dunes is a museum, but also a small building offering dressing rooms and room for a café.

Across the Grote Waterpoort lies the new Waterfront square which leads down towards the water.
The southern half features the maritime museum as main element at the end of Handelskade West. The Damsterkade has a more open character. Planting of trees is (most likely) impossible due to the wooden construction of the quays, yet this also distinguishes the Damsterkade from Handelskade West. The edge of the quay has been slightly altered to allow for stairs leading down towards the water. The stairs are oriented to the south and have steps of sufficient width to be used as terrace for the adjacent catering business.

Both the sluice between harbour and Damsterdiep, and the sluice to Eemskanaal have been removed to allow unhindered access from the harbour to these water courses. Removal of the dyke in-between these sluices creates room for some more housing development overlooking this small end of the harbour.
12.7.5 Visualisations

These images show a few impressions of the quays. The housing blocks lining the quays have a strong continuous line, but should meanwhile offer sufficient diversification in correspondence with the adjacent city centre. The edges of the planting troughs offer informal places to sit on.
12.7.7 Phasing

The phasing of this proposal will form an important part of the final plan. Construction of a new dyke will take a long time and requires acquisition of existing industrial estates.

2012-2020

The first step is to remove existing buildings on the Damsterkade and Handelskade West, starting with the small shed in between Oosterveldweg and hotel de Boegschoef. This creates the necessary room to alter road and railroad. Adjustment of the road also includes removal of the bridge crossing the harbour, freeing up room for a pedestrian bridge.

Removal of the events hall (the building in the middle of the quays) allows the construction of the waterfront square and a more direct route from Grote Waterpoort to the waterfront. Meanwhile, the rest of the quays can already receive new, more consistent materialisation. Hotel de Boegschoef is initially retained during the first and second phase.

Re-opening the old sluice between harbour and Eemskanaal re-establishes a more direct connection to the city centre for private boats.

Phase I
- Removal of existing buildings on Damsterkade and Handelskade West
- Construction of road and railroad
- Construction of waterfront square, pavement and planting along the quays
- Reconstruction of the sluices to (old) Eemskanaal
- Removal of Oosterveldweg bridge, construction of pedestrian bridge

Meanwhile, preparations start for the construction of the first part of the new dyke: relocation of part of the existing shipping along Handelskade Oost to industrial estate Zeesluiizen. This estate appears to be only partially in use, thereby making it a suitable candidate for redevelopment.
Phase II
- Acquisition of industrial estate Zeesluizen and removal of existing occupation.
- Construction of new dyke
- Construction of new docks

2020-2030

Once the new docks are finished, existing businesses at Handelskade Oost can be moved, freeing up room for the construction of dunes and second part of the new dyke. With the construction of a new sluice the harbour is divided in two parts and removal of the old dyke is possible.

Phase III
- Acquisition and removal of businesses at Handelskade Oost
- Construction of dunes and dyke
- Construction of sluice

Construction of new housing developments along the quays now has become possible. Easier access from Eemskanaal and Damsterdiep to the harbour can be established through removal of the – now obsolete – locks.

Phase IV
- Removal of old dyke and sluices near the city centre
- Construction of dwellings along the quays.
12.8 Industrial harbour

12.8.1 Overview

The size of the second proposal is intervention is smaller in comparison to the Recreational Harbour and concentrates on the existing dyke and quays. The main element is the dyke, which has been transformed from an obstacle into an integral part of the city centre.

The dyke – which is actually a cantilever wall covered with steel – has been moved farther onto the quays, allowing for program to be realised behind the wall. The water barrier only consists of a thick wall, covered with corten-steel positioned at a slight angle. A parking garage is located behind this wall, with houses or small apartment blocks on top of it. The width of the ‘dyke’ allows for a wide route on top as well as private gardens for the housing blocks and groups of trees planted on top of the dyke.

Access from quays to dyke and vice versa is possible at multiple locations via ramps and stairs.

This plan also includes redevelopment of the beach, expanding its size and preferably allowing swimming 24 hours a day by constructing a low dyke that retains water during low tide. For example like the proposal by Hans Been Architecten (Van der Sloot Management & Hans Been Architecten 2008, p.34) on this page.

Furthermore, the connection between harbour and Eemskanaal will be re-established to give recreational vessels a more direct access to the marina near the city centre. This is a relatively simple operation as the sluice is still physically present. Reconnecting Damsterdiep and harbour will be a more complicated process but increases the recreational potential of this river.
12.8.2 Program

A large portion of the new program consists of parking garages in the dyke. Combined they offer close to 400 parking places which replaces part of the existing parking lots, as well as offer parking for the buildings on top of the dyke. Commercial program is possible on the quays. Hotel/restaurant Boegschroef is maintained in this proposal, but considering the aesthetic quality – or rather lack of any – a new building would be welcome as well.

The MuseeAquarium currently located just to the north would preferably move to a new building somewhat closer to the city centre and better connected to dyke and landscape of Kwelderland. Bureau de Zwarte Hond made a similar proposal – albeit for the establishment of seal shelter (zeehondencreche) Lenie ’t Hart – which portrays the principle quite well.

Some existing buildings on the quays will have to be removed, for a total of about 7600 m², while new program of approximately 27.500 m² is added.
Proposal for a seal shelter integrated in the sea dyke

Source: de ZwarteHond 2008, p. 36, 37
12.8.3 Quays near the city centre

At the northern part of the quays, the dyke has been extended inwards to the inner ring road. A ramp leads up to the pedestrian bridge which connects the two dykes. Also on this location is the entrance to the parking garage (see also 12.8.4).

The dyke arches inwards to the Grote Waterpoort, which is maintained as an historic element. Opposite this gate lies the new waterfront squares which leads down to the water.

In order to create more room for development of dyke and quays the road and railroad have been repositioned to use less space and reduce its pressure on public space.

At the southern half, the dyke has also been widened but to a lesser extent. Again a parking garage is incorporated into the dyke with housing development on top. The entrance to the parking garage is located at the small square in front of the Grote Waterpoort.

The dyke at the end of the Damsterkade has been widened and moved outward to give the small building block directly adjacent to it some more room.

On an elevated platform along the quays is room for catering industry or small shops, with a larger tower at the head of the quays, overlooking the harbour. This tower could be used for a restaurant and hotel, but also offices. Housing development is not possible due to its location outside the dyke.
Cafe/restaurant/
small shops

Housing development on
top of parking garage

Access to dyke

Tower block
Hotel/offices

Wooden deck

Pedestrian bridge
12.8.4 Sections

This section illustrates the dyke as a thick wall of which one side has been slightly angled. On the left is hotel/restaurant De Boegschroef on an elevated platform. Housing development consists of small blocks of 5 floors of which the two bottom levels have a single sided orientation. The third floor allows access to a private garden on top of the dyke. The fourth and fifth levels contain a second dwelling which is accessible through an internal stairway.

The parking garage offers 300 parking spaces.

In the back is a new tower block overlooking the harbour.
Principle of housing

Parking garage second level.
The parking garage and housing development in the south are slightly different. This part of the dyke is smaller and the housing units are built directly on top of the parking garage. The first level of the parking garage offers 70 parking places for public use, where the first floor offers 38 places for the dwellings plus access to storage rooms and the houses. On the same level, at the back of the houses, is also a small private garden or terrace oriented on the west. The main entrance to the houses is on the third level, on top of the dyke.

On the quays, the old wooden construction of the Damsterkade has been made visible through use of a wooden deck.
Parking garage ground floor/first level.

Parking garage second level.
12.8.5 Visualisations

These visualisations show the materialisation and character of the redeveloped quays. The red-brown wall of corten-steel has a strong presence. Where this wall arches inwards it leads to the Grote Waterpoort – the main gate between city centre and harbour – and the city centre.

The quays have a simple materialisation to meet the industrial character of the harbour and its large scale. Large concrete tiles of different sizes from the basis. The existing edge of the quays showing the tracks where once cranes used to be is maintained in the plan.

The buildings on the quays have been elevated similar to the current situation. This allows for some protection in case of minor flooding while it also helps to structure the space on the quays.
12.8.6 Phasing

2012-2020

Phase I
- Demolition of existing buildings on the quay.
- Redevelopment of road and railroad. Demolition of bridge.
- Construction of waterfront square and new pavement along the quays.
- Reopening of sluice to Eemskanaal.

Phase II
New tower at the head of the quays.
2020-2030

Phase III
- Construction of new outer wall for the dyke

Phase IV
- Removal of old dyke
- Construction of parking garages and housing
12.9 Evaluation of proposals

12.9.1 Criteria

In order to evaluate the two proposals, they have been weighed for a number of criteria.

- Required investments
- Spatial quality
- Time span required for development
- Program and development potential
- Flexibility of the plan, given the uncertain situation of a shrinking city
- The ability to organise Delfsail event.
- Protection against the rising sea level
- Long term potential

12.9.2 Evaluation of the two proposals

Required investments
The public investments required for the realisation of the Recreational Harbour are vast: annexation of the – largely still functioning – industrial estates, construction of a new dyke, construction of a new sluice for recreational vessels, construction of the dunes, removal of the obsolete old dyke. Part of the investments would be covered by the necessary investments for upgrading the dyke, which are national budgets from the Delta Programme. But most of the additional costs would have to be covered by other parties. Some revenue is to be expected from construction of housing blocks along the quays.

In comparison, the investments for the Industrial Harbour are far more limited and mainly incorporate already required investments to upgrade the dyke near the city centre. The construction of parking garages will be expensive and possible revenue through the housing development on top of the dyke is limited.

Spatial quality
The identity of Delfzijl is for an important part connected to the chemical industry and its location at the Eems. This industrial character is best represented by the proposal for the Industrial Harbour. The removal of this function from the harbour changes its entire character and thereby also its uniqueness. On the other hand, industrial use also has a number of downsides. Accessibility of the terrain is usually prohibited, preventing routes along the quays, and there is often noise nuisance.

The possibility to remove the barriers between harbour and Damsterdiep/Eemskanaal entirely is a major benefit in the Recreational Harbour. It allows uninterrupted access to the harbour and city centre and promotes the city centre of Delfzijl as a destination for water recreation.

The edge of the city centre is shaped more clearly by the buildings in the Recreational Harbour than by the integrated dyke in the Industrial Harbour. However, the elevated path on the dyke does offer a unique vantage point to survey the harbour and the closeness of the industrial harbour to the city centre is quite unique.

Time span
For both proposals the redevelopment of the quays can already take place within a short time span. Realisation of the complete program will take more time, also depending on the cooperation of the other actors involved, primarily Rijkswaterstaat and the Water Boards. To change the course of the dyke requires a major decision, whereas a multifunctional dyke is more in line with the current discussion. Realisation of the latter is easier by far as the required land is already available.

Program
The Recreational Harbour allows for more use of the harbour for recreational purposes: an annex of the Noorderlijk Scheepvaartmuseum, floating dwellings, large marina and shipbuilding. However, the liveliness of this harbour is dependant on the establishment of these functions. Failure to attract these functions would impede the quality of such a harbour. The Industrial Harbour on the other hand is more limited in the use of its harbour, but will still allow the industrial use to continue. However, it is also this industrial use that gives the harbour a special character. The floating dock, the cranes and the sea-
going vessels make for a unique character as well. For the Industrial Harbour, redevelopment of Handelskade Oost, for example through construction of a beachpark with dunes, is still possible on the long term. They would however not be part of the sea barrier. There have already been a number of proposals to incorporate a larger beach in the current situation allowing for more recreational use of the shore.

Flexibility
Given the current uncertain situation concerning the housing market in Delfzijl and the Eemsdelta, construction of a large amount of new dwellings might be difficult to realise. The development of Kwelderland in Delfzijl Noord has partly been halted due to a lack of demand. Risking largely vacant plots is very undesirable when effort is combined for the realisation of a prospering city centre as the stable core for a shrinking city.

The risk of inability to realise the building program is largest for the Recreational Harbour although both proposals will face this problem.

Protection against rising sea level
The adaptation of the dyke is done to offer sufficient protection against flooding on a long term. It is likely that some time in the future the height of the dyke will have to be increased again. In case of the Recreational Harbour, that would not be a problem. Sufficient room for adaptation of the dyke can be incorporated in the plan. The dyke in the Industrial Harbour is less adaptable due to the construction of parking garages and housing. The current proposal will have to ensure enough safety on a medium term, where secondary measures such as pre-embankments could be applied to ensure long term protection.

DelfSail
DelfSail is the most important event for Delfzijl to promote itself both nationally and internationally. Due to the direct connection of the harbour to the sea all ships can easily get close to the city centre.

In case of the Recreational Harbour, accessibility of the harbour is impeded for larger ships. Currently all ships can moor at one of the (industrial) quays, but once the harbour has been closed down, the size of the sluices is the limiting factor for the accessibility of the quays near the city centre. The larger ships would have to be positioned outside the inner harbour, which is not likely to be a proper alternative due to the distance from city centre to the new industrial quays.

For the Industrial Harbour there are no significant changes to the accessibility of the harbour which would interfere with the organisation of DelfSail.

Long term potential
The Recreational Harbour offers most room for housing and commercial development. The question is how much new program is required. A living environment in a harbour setting is fairly unique within the region and within Groningen. However, given the current situation of shrinkage, some hesitance in adding new program is required. It is unlikely that Delfzijl will return to a situation of growth. Therefore demand for new housing development will be limited and mainly serve as replacement of outdated housing stock.

12.9.3 Recommendation
The Recreational Harbour requires a far greater investment. Considering the task Delfzijl faces in adapting its existing housing stock, this investment is likely better spent for that purpose. Furthermore, the time span that would be required is long and flexibility concerning the biggest investment – reconstructing the dyke and harbour – is quite small. The only crucial factor where the Industrial Harbour proposal is lacking is protection against the rising sea level, although with proper technical elaboration it should be able to offer that as well.

In short, the possible benefits of a more direct connection between city centre and harbour do not outweigh the downsides: significant costs, time span for realisation, limited flexibility of program, limitations to organising DelfSail, loss of unique character due to removal of industry.
Along Damsterdiep looking towards Delfzijl city centre. In the middle, the pumping station where once was a sluice to the harbour. On the right, Ubbens.
PART 5 - CONCLUSIONS
13. Conclusions

13.1 Demographic shrinkage: causes, effects and strategies

Demographic development depends on natural growth and migration patterns. Demographic shrinkage is caused by a combination of different factors that influence birth rate and migration. These factors are related to either socio-cultural (e.g. individualisation, emancipation) or economic processes (international economy, international and national economic situation and regional employment) or planning policy (e.g. suburbanisation or specific constraints which limit growth).

In the peripheral regions of the Netherlands and the Eemsdelta, the main cause of shrinkage is a birth deficit and decreasing immigration. Out-migration, the only factor that can really be influenced, is caused by a diminished attractiveness of the area and region for specific groups. Different factors on different scale levels contribute to this attractiveness: employment is the key factor on the regional scale, size and quality of the housing stock as well as the level of facilities on the scale of a city and social and physical properties of a neighbourhood and the quality of the housing stock at the neighbourhood scale.

There are a number of common misconceptions regarding the consequences of shrinkage. It does not directly lead to a lower need for space, nor does it directly lead to a lower level of facilities. A significant decline of population and number of households is likely to have some effect, but other processes are more influential. The regional economy does not have to suffer either; however economic growth will have to come from an increase in productivity and workforce participation.

Demographic shrinkage does result in social segregation and vacancy causing also deterioration of the housing stock and living environment. Vacancy occurs in the least attractive part of the housing stock, mainly dwellings from the (early) post-war era; technically outdated and non-discriminable. Unfortunately, predictions regarding the future are always uncertain and although we can construct new dwellings in anticipation of growth, we cannot demolish houses in anticipation of shrinkage. The physical accommodation of shrinkage is therefore always reactive.

Although the consequences of shrinkage are always the same, there are no standardised interventions that are easily applicable. Each case requires a specific approach tailored for that particular situation. Although some general guidelines or advices can be deduced.

- Adapt the housing stock in both size and quality;
- Use reduction of housing stock to reimagine the structure and development of the city;
- Establish a core (or multiple cores) as focal point(s) for development;
- Use and develop potential and look for new economic sectors;
- Retain or increase attractiveness of direct living environment;
- Apply temporary uses to vacant plots to uphold property values;
- Aim for results on both short and long term.

We should be careful not to revert too quickly to the traditional image of the monocentric European city. The way in which cities are being used has changed and this traditional model might no longer be valid.

13.2 The Eemsdelta and city of Delfzijl

The quality of the region lies in the open, quiet landscape and cultural history. There is potential for more recreational use, but a good recreational network is currently missing. The industrial sector is the only main economic motor in the region. Although it is a strong sector at the moment, this dependence could be dangerous as well. Should this sector start to decline it might very well aggravate the process of out-migration and shrinkage.

City of Delfzijl

Delfzijl is a fragmented city that is not well connected to the surrounding landscape: Damsterdiep, Eemskanaal, harbour and Eems, and the spacious countryside. A significant part of the housing stock is outdated and given the existing prognoses, susceptible to vacancy. The current assignment for Delfzijl is to
reduce its housing stock by 1335 dwellings by 2018, primarily rental houses. After 2018, reduction of the housing stock will be focussed more on owner occupied housing.

13.3 Strategy and design
Although the region lacks a strong concentration of touristic attractions required for mass tourism, improvements to the recreational infrastructure could develop the role of tourism as a new economic branch and bring some diversification to the regional economy.

However, the focus in this study was the development of a strategy for Delfzijl.

The goal of this strategy is to both accommodate demographic shrinkage and stabilise the process of shrinkage in order to achieve a viable future.

The proposed strategy for Delfzijl consists of two elements:
1. Accommodation of shrinkage through reduction of the size of the housing stock;
2. Strengthen the city through investments in local potential.

Based on the existing qualities and weaknesses of the housing stock, an approach per neighbourhood was established, which formed the basis for the allocation of the planned reduction of the housing stock from Pact Regio Eemsdelta. The result is a concentrated removal of a number of districts while at the same time investing in the remaining neighbourhoods.

The city centre plays an important role in this strategy as focal point for investments. There is a lot of potential in the city centre to strengthen the character of Delfzijl as a port city and add new housing developments related to water, which are relatively unique in this region. Aided by these investments the city centre can become a stable core, an area with long-term potential which is sure to remain a diverse and qualitative living environment where the downward spiral of shrinkage is unable to occur.
14. Evaluation & Reflection

14.1 Process and methodology

At the start of this graduation project, I did not yet have a clear idea what this project would lead to. It took a long time before I decided to focus on Delfzijl and then there was still not a very clear focus. I believe this has somewhat weakened the project, that it tries to address too many subjects without really going in-depth. A more concrete focus on strategies on the scale of the city early in the graduation process would have benefitted the result.

At the end of the process I also noted that I have only very shortly addressed the reasons for out-migration in the Eemsdelta and Delfzijl. A better analysis of these motives would have benefitted the development and argumentation of the proposal.

14.2 The role of employment

One of the outcomes of the literature study and analysis was the important role of employment for combating shrinkage. Without (suitable) employment in the region, municipalities will be unable to retain their existing inhabitants. The important role of chemical industry in Delfzijl can be dangerous as plenty of examples around the world have shown (e.g. Detroit). It is not unrealistic that this branch of industry could leave, which would most likely result in a further increase of problems. Diversification of the regional economy is an important topic in the discussion about shrinkage, but I have not really addressed it in this project.

14.3 Omitting financial constraints

During this project I decided to omit the financial issue concerning shrinkage. The question of who should pay for the reduction of housing stock and for the proposed investments in the city centre.

I did of course come across this discussion during the research and there did not yet appear to be an answer to this question. Interventions – in whatever form – all require money, while in general not yielding any revenue in shrinking cities. The financial system for spatial development is arranged around the sale of land. As there is few or no new program that replaces vacant property, revenue is also absent. This places the regions and municipalities in a difficult position. On their own they cannot cope with the situation. Finacing shrinkage is a subject on its own. In Germany, large sums of money from the European Union and German government have been spent onreviving the shrinking cities.

14.4 Considerations about the design

The proposed intervention of removing entire districts is drastic and likely to meet a lot of protests if it were implemented. I do however think it is better to take these drastic measures than to use half methods. The existing policy is to incidentally remove rows of houses, which I believe will not result in a very desirable outcome. The transformation process in Delfzijl Noord already shows many vacant lots awaiting redevelopment. These undefined zones do not make for an inspiring living environment and only raise questions about the future of such a neighbourhood.

The transformation process – from something to... nothing? – is painful; block by block the neighbourhood disappears and those people still living there cannot avoid a sense of failure. But in the end, I believe it is an unavoidable step in order to achieve a more promising future. A neighbourhood with empty plots and holes in its fabric is similarly undesirable as vacant and decaying buildings. When considering a long time perspective, drastic measures must be considered as well. Insufficiently addressing the problem at this point in time will only lead to mitigation of the symptoms – removing a surplus of dwellings – without addressing the entire problem – adapting the scale and form of the city and its housing stock to the situation of the present day.
14.5 The future of Delfzijl

Perhaps the most important question at this moment is whether this proposal will be able to turn the tide. I do believe that the proposed redevelopment of the city centre will improve the situation in Delfzijl, but there is only so much that interventions in the built environment can do. The situation of shrinkage of the population is unavoidable as there is simply no natural growth. The only demographic factor which can be influenced is migration. Improving existing neighbourhoods and adding new types of living environments does help to diversify the housing market and add more discernable housing to Delfzijl, thereby improving its attractiveness and limiting out-migration. But Delfzijl remains a city in the periphery of the Netherlands, far away from the economic centres of the country. I therefore think that this project helps to establish a more promising future for Delfzijl and improve its character and identity, but that it will remain a shrinking city all the same.
15. Recommendations

As this project progressed, a number of general recommendations and requirements came forward. The following recommendations were based on a number of sources as well as my own experiences during this project.

15.1 Understanding the problem

Demographic shrinkage is a complex phenomenon as it is interrelated with many different fields. Not all spatial and societal changes currently occurring in Delfzijl and the Eemsdelta can be attributed to shrinkage. For example the changing composition of the population and therefore changing requirements for facilities – more health care, less education, less sports – occurs simultaneously. Also a part of the current transformation of the housing stock is a consequence of an aging population.

Involving local inhabitants will be an important step. Once local inhabitants are similarly aware of the certainty of shrinkage, one can work towards a future perspective for the city.

What examples in East-Germany show is the strong role of inhabitants. There is an awareness of the situation and people are willing to contribute to improve their neighbourhood. Contributions can range from the construction and maintenance of a small park or playground, taking part in artistic projects, establishing taxi services for elderly or simply being involved in the planning stage of neighbourhood redevelopment. The financial constraints for the government are severe and municipalities can no longer be looked upon to improve city, neighbourhoods, maintain accessibility of facilities. Local involvement and contributing to the community will have to be a part of the solution. The upholding strategies mentioned in chapter 6 are as much in the interest of property owners as of municipalities.

15.2 Mindset

Demographic shrinkage is not by definition a bad thing. It is simply another phase in the development of cities. We should however, accommodate the process physically. Intervening in an existing neighbourhood is always difficult as many actors – with strong feelings toward their neighbourhood – are involved. Redevelopment of a neighbourhood is usually understandable and discussion will focus on the how. Removal of – part of – a neighbourhood is explainable from a planning point of view, but it will be very difficult to convince inhabitants that it is best for entire neighbourhoods to disappear. The perspective and interests of the local inhabitants – protecting their place of living – and those of the spatial planner – the long term development of the city in its entirety – are conflicting.

Creating sufficient awareness and convincing local inhabitants is a very significant part of the accommodation of demographic shrinkage. It goes without saying that a strong political consensus, persistence and a certain amount of courage is required to focus on the long term perspective of the city and convey that message to the public.

15.3 Regional cooperation

Once an entire region is shrinking, municipalities should avoid competition to each maintain the status quo. It is unfeasible to maintain public facilities in every city or village and more beneficial on the long term to ensure quality and accessibility rather than quantity. Fusing the interests of different municipalities in a region – for example the strong cooperation of municipalities in Parkstad Limburg – in special governmental institutions is a necessary step to avoid competition and create a stronger and more capable institution.

The Eemsdelta has already taken a first step in the DEAL-cooperation and the agreement on the allocation of demolition and construction of houses.
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Appendix

Spatial criteria for shrinking villages
Determining criteria for liveability in Dutch villages facing a declining population

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6th Graduation Lab Urbanism Conference

Abstract – Some regions in the Netherlands are shrinking, more will follow according to demographic forecasts. Consequences of demographic shrinking include social segregation, vacancy and deterioration of buildings and lots, a strain on facilities and a general deprivation of public space. These factors negatively influence the liveability of neighbourhoods and villages. (van Dam et al. 2006; Dijkstal & Mans 2009) The cyclical nature of this process causes additional migration, leaving only the less affluent in a further declining neighbourhood. This paper will research this supposed relation between demographic shrinking and decline of liveability. It aims at deducing criteria for liveability in shrinking villages, to break through the spiral of decline.

Key words – liveability; shrinking villages; pressure on liveability; spatial criteria; social cohesion.

1 Introduction
Demographic shrinking is not a new phenomenon in the Netherlands, but has not been a major issue over the last few decades. In fact, most of Dutch policy and planning currently aims at accommodating growth. Dealing with demographic shrinking therefore requires a fundamental shift from our current growth-oriented mindset. In comparison to other countries in Europe, the severity of shrinkage is small on national or regional scale. However, the local situation can differ greatly within regions and cities as consequences manifest themselves on a low scale. At the present date, demographic shrinking affects only a few areas, the most significant being North-East Groningen (or Eemsdelta) and Parkstad Limburg. It will become a more common issue in the next 25 years, according to demographic forecasts (van Dam et al. 2006).
This paper discusses what criteria determine the liveability of Dutch villages in the periphery of the Netherlands and in what way a declining population influences those criteria. The results of this study will serve as a framework to establish possible interventions to deal with the effects of shrinking in those villages and break through the spiral of decline. This paper will start by defining the notions ‘liveability’, ‘demographic shrinking’ and ‘villages’. On that basis it will define criteria for villages in the periphery of the Netherlands and determine the influence of demographic shrinking on these criteria.

2 Sources
At the basis of this paper lie several academic studies concerning liveability in general and in the countryside from mainly Dutch sources. Two studies from the Social and Cultural Planning bureau (SCP) concerning the living situation on the Dutch countryside and social cohesion in the Netherlands, and studies from the research agency RIGO and van Dorst concerning liveability in general. A RIGO study for the development of the Leefbaarometer (a tool to measure and compare liveability of neighbourhoods in the Netherlands) is used as a basis for specific criteria and their significance. However, to translate these to a more concrete situation of villages in the periphery of the Netherlands, other sources are consulted as well.

To determine the impact of demographic shrinking on liveability of villages in the periphery of the Netherlands, a study by the Netherlands Environmental Assessment Agency (PBL) concerning the spatial effects of shrinking is used, together with reports from other regions facing demographic shrinking.

3 Definitions
In order to avoid any confusion concerning used terminology and as a framework to establish criteria, this paper will start by defining the notions ‘liveability’, ‘demographic shrinking’ and ‘villages’.

3.1 A definition for liveability
Liveability is a popular container notion that can be interpreted in different ways. (Leidelmeijer & van Kamp 2003; Knol et al. 2002; van Dorst 2006) What is clear is that it concerns the relation between a subject, in this case a person or a group of people, and its surroundings (van Dorst 2006; Leidelmeijer et al. 2008)

Different words, following different perspectives are used to describe this relation. (Illustration 1) ‘Quality of place’ and ‘liveability’ concern the environment from the human perspective (does the environment match the conditions human life demands of it), ‘quality of life’ and ‘life satisfaction’ concern the human from the perspective of the environment (in what way does the environment contribute to quality of life). (Leidelmeijer et al. 2008) Liveability appears to be the appropriate in term in the context of demographic shrinking, but that is no guarantee for a common interpretation. There is a wide range of theories at the basis of research into liveability. For example, Maslow’s hierarchy of needs includes different levels of needs ranging from requirements for human survival to requirements for self-actualisation. Different opinions in what is considered as human requirements lead to a different interpretation of what is liveable.

Knol et al. (2002) state that liveability concerns the living situation and living environment of people and that it is therefore mainly related to the scale of the neighbourhood. They do not mention a clear definition, except that liveability is "the interplay between the physical quality, social attributes and safety of the living environment.” (translation by author, Knol et al. 2002, p.25)

Steenbekkers et al. (2006) use the term ‘living situation’ as a synonym for liveability in their research into the living situation of residents of the Dutch countryside. They do however use a different definition: “the social and cultural wellbeing of individuals and households.” (p. 17) The emphasize lies, similar to the other sources, on human needs, but it does not relate directly to the environment. Personal characteristics such as income, and wellbeing/health are considered.

Van Dorst discerns three main definitions of liveability.
- "The perceived liveability: the appreciation of an individual for his/her living environment,"
3.2 A definition for demographic shrinking
Demographic shrinking can affect three different types of shrinking: a declining population in general, a declining number of households and the decline of a certain group affecting the composition of the population, for example dejuvenation. (van Dam et al. 2006)

3.3 A definition for villages
There is no clear definition of village or city in terms of inhabitants. A different type of classification seems possible. Steenbekkers et al. (2006) discern five levels of urbanity, of which the lowest two, ‘non urban’ and 'slightly urban' compose the country side. The resulting state is less then 1000 addresses per square kilometre, measured per zip codes. Vermeij & Mollenhorst (2008) have further divided the zip codes that comprise the country side into five different social typologies of the country side. Differences are the size of the villages, level of facilities (if any) and relation or proximity to cities.

3.4 Conclusion
Liveability concerns the living environment from a human perspective; how does the environment suit the human needs and desires? The definition from Leidelmeijer et al. (2008) is suitable in that respect. "Liveability is the extent to which the environment suits the conditions and needs which humans demand of it." (translation by author, Leidelmeijer et al. 2008, p.14) Demographic shrinking can indicate a declining population, declining number of households or the decline of a particular group. There is no clear definition for villages. A possible conclusion is that a village has an average density of addresses that is less then 1000 per square kilometre and is not in close proximity to a city. Furthermore, for this paper it is located in the periphery of the Netherlands.

4 Defining criteria
"Liveability is the extent to which the environment suits the conditions and needs which humans demand of it." (translation by author, Leidelmeijer et al. 2008, p.14) This chapter will discuss what those needs encompass and which aspects of the environment contribute to it.

Van Dorst (2006) uses Maslow's hierarchy of needs to describe requirements for a liveable residential environment. Leidelmeijer et al. (2008) conclude that all attributes of the environment and all personal characteristics influence the extent to which people and environment fit together. Some limitations are required in order to be able to deduct criteria. The three definitions of liveability mentioned in the previous chapter use a different method to determine liveability. The apparent liveability gives the best indication, but can only be determined afterwards by how long and happy people have lived in an environment. Although this is the most objective way to determine liveability, it is not that useful in every day practice, where the term liveability is used to get an indication at a certain moment in time. Therefore, a different approach is required. An indication of liveability can be established by using an objective and subjective approach. The objective approach, the supposed liveability uses measurable indicators to predict how (un)liveable an environment is. The subjective approach is based on how people experience the environment, influenced by their personality and social and cultural background: the perceived liveability.
Both of these approaches are valid, but are insufficient by themselves. Residents do use the indicators of the environment for their judgements, but use their own background in the process. (van Dorst 2006) Leidelmeijer et al. (2008) describe a similar method, using a normative and evaluative approach. The first being the supposed liveability predetermined by a set of indicators, the latter being the perceived liveability as experienced by residents.

Environmental aspects that comprise the supposed liveability should consist of both physical and social aspects of the environment. In addition, the strongest relation between supposed and perceived liveability lies in the quality of the housing stock, the amount of public green and social structure. (van Dorst 2006) Kno\l\ et al. (2002), Leidelmeijer & van Kamp (2003) and the ministry of housing, spatial planning and the Environment (VROM) (2004) also determine liveability by a combination of the physical quality, social features and security of the living environment. Based on their research, Kno\l\ et al. have illustrated these key aspects of liveability in a diagram. (Illustration 2)

Illustration 2: Key components of liveability according to Kno\l\ et al. (2002).
Source: Kno\l\ et al. 2002, p. 27

Van de Donk et al. (2009) deem ‘facilities’ and ‘culture and identity’ to be of more importance for their villages and have therefore added a fourth component to the model due to specific developments concerning the level of facilities within the five municipalities. However, facilities are of little importance according to Leidelmeijer et al. (2008). Van Dorst (2006) comes to a similar conclusion. There are a number of aspects, including the level of facilities, that are regarded as indicators of liveability from a political point of view, while in fact they have no relation to perceived liveability.

Although van Bree (2006) does name ‘access to facilities’ as part of a liveable village, he states that facilities are not a direct requirement, except for a meeting place. However, lack of facilities can become problematic for some groups, particularly elderly on the long term.

The following subsections will explore the three aspects (physical quality of the living environment, social cohesion and security) in more detail, followed by an evaluation of their supposed contribution to a(n) (un) liveable village in chapter five.

4.1 Physical quality of the living environment

The physical quality is determined by the components housing stock (density, type of dwellings, value, period of construction) general quality of the living environment (proximity of green and water, noise nuisance and destruction of dwellings) and proximity of facilities. (Kno\l\ et al. 2002; Leidelmeijer et al. 2008; Ministerie van VROM 2004)

A higher density and/or more flats lead to a worse opinion about the neighbourhood. Density also results in a lesser importance of green and public transport. Furthermore, the type of dwellings and density are strongly related to the social component. (Ministerie van VROM 2004) Nieboer (2005) reaches a similar conclusion. The relation between physical housing characteristics and the socio-economic characteristics of the residents has been confirmed by several studies.

4.2 Security

Nuisance and degeneration contribute to feelings of insecurity. (Ministerie van VROM 2004)

Van Dorst (2006, p.87) disagrees and writes “degeneration is not a contributing factor to unliveability and there is no causal relation between liveability and insecurity.” However, he also presents arguments supporting the statement that (a lack of) nuisance does contribute to perceived liveability.

Nuisance and threatening situations have a larger impact on the perceived liveability than crime. (Ministerie van VROM 2004) Van Dorst (2006) supports this claim by saying that the quality of social relations has a great impact upon feelings of insecurity.

4.3 Social cohesion

There is a discrepancy between the indicators as given by Leidelmeijer et al. (2008) and the other sources. In their model, social cohesion forms only a small proportion of the social domain. Social cohesion (together with age structure) only has a small contribution (10%) to the supposed liveability.

Van de Donk et al. (2009), van Bree (2005) and van Dorst (2006) disagree. According to them, social cohesion is very important, which is also confirmed by Vermeij and Mollenhorst. (2008)
The difference may lie in the used methodology in the study. Leidelmeijer et al. (2008) are defining objective, measurable indicators to determine liveability in an area. Indicators for social cohesion in this model include the percentage of owner-occupied dwellings and relocations. This does not cover the amount and quality of interactions, involvement and participations in local clubs or willingness to help one another. The social-cultural and social-economic aspects such as the composition of the population have a direct relation to liveability in the model, while the other authors assume a indirect relation via social cohesion.

Knol et al. (2002) separate two levels, the individual and neighbourhood, and give a number of objective and subjective indicators. The individual level includes:
- General involvement of people with their fellow human beings.
- Relations people take on and their integration in the social environment.
- Affinity with social institutions, as well as the extent to which people are willing to participate.

And the neighbourhood level:
- Social quality of relations between local inhabitants, the extent to which one feels at home, identifies with and feels responsible for the liveability of the neighbourhood.
- Heterogeneity of the population.

Furthermore, van Dorst (2006) mentions the importance of identity as a requirement for social cohesion, in line with van de Donk et al. (2009) and Knol et al. (2002)

### 4.4 Conclusion

There is an agreement among the authors about the three general aspects physical quality, social cohesion and security. The debate circulates around the influence of different subcomponents. A possible explanation is the scale of different studies. A study on social bonds in the countryside will yield different results than one covering the whole of the Netherlands.

The physical and security aspect also seem well defined. Most of the discussion concerns the social component. Differences occur with different assumptions regarding causality of social aspects and perceived liveability. Not surprisingly, all aspects interrelate. The housing stock influences the composition of the population and therefore cohesion and nuisance by neighbours is more important than crime. Social cohesion seems to have the strongest effect on perceived liveability.

### 5 Significance of the criteria for peripheral villages

Facets of supposed liveability can be a good indication for the perceived liveability, but there is no clear causality in terms of dose and effect. (van Dorst 2006) That being said, the Leidelmeijer et al. (2008) do give a list of criteria and their influence on liveability (table 1), based on their models. The importance of the different subcriteria in determining the liveability score in the model is illustrated in illustration 3. As has already been mentioned in the previous chapter, social cohesion has limited importance in this model. A possible explanation has already been presented in the previous chapter. Furthermore, this concerns a general model for all inhabitants and every type of neighbourhood, while it has also been stated that individual characteristics are of great importance in the perceived liveability.

![Illustration 3: Average contribution of the subcriteria to the score on the Leefbaarometer. Source: adaption from Leidelmeijer et al. 2008, p. 123](image)

A similar conclusion can be drawn towards facilities. The presence of facilities is not a direct complication for most groups, but the lack of facilities can pose a problem for elderly. (Steenbekkxers et al. 2006) The very slight relevance of facilities in the model could be more significant in reality, depending on the groups and their mobility that are involved.

The overall effect of the physical environment on liveability is limited. A similar situation applies to security. According to Illustration 3, the social component comprises for roughly half of the liveability score. The social component is most influential for liveability in a neighbourhood.
The living situation of inhabitants of the countryside is fine in general. There are few problems concerning degeneration and nuisance. Residents are safer than in cities. Physical quality of the living environment and social cohesion are good as well. These conclusions are based on a national level for all inhabitants. The situation can be different for less affluent and mobile groups. However, income and health are the main drawbacks in their living situation. (Steenbekkers et al. 2006)

6 Effects of shrinking

The influential factor in shrinking is the development of the number of households. The spatial effects of shrinking do manifest themselves on the level of neighbourhood, district and village. Therefore, the effects could influence liveability. (van Dam et al. 2006; Schetke & Haase 2008)

In the shrinking regions of Groningen, social segregation is already visible. Inhabitants leave for other places, but very few people move towards these areas in return. Consequently, the composition of the population has become one-sided with a relatively large amount of elderly, unemployed people, low educated people and low-income groups. (Provincie Groningen 2010)

Foreign examples show worst case scenarios. Detroit is well-known in that respect. Youngstown (Ohio, USA) for example had 170,000 inhabitants in 1950, but was left with only 82,000 residents after processes of suburbanisation and de-industrialisation. As a result it was faced with vacant buildings, overgrown lots and social segregation. (Blanco et al. 2009)

6.1 Physical quality of the living environment

The effects of shrinking are obviously reflected on the housing market which will transform from a sellers market to a buyers market. The least attractive houses, often situated in post-war neighbourhoods, will become vacant first. Vacancy, even if only temporarily, results mainly in economic loss due to houses not being rented out and maintained. This in turn also reflects on the appearance of the neighbourhood.

The development of prosperity and related to that, the behavioural patterns of inhabitants, together with the planning policy are more influential for spatial changes then the process of shrinking itself. Nonetheless, local differences will certainly occur, but not on a scale that is comparable to, for example, Detroit or East Germany where cities lost half their population in a period of 10-20 years. Vacancy can lead to deterioration of the living environment and vandalism. Vacancy also influences the sense of security and dissatisfaction of inhabitants. (van Dam et al. 2006) But, according to conclusions from previous chapters, this does not pose a real issue for liveability.

Van Dam et al. (2006) also state that demographic shrinkage does not influence the level of facilities directly. The way people use facilities and considerations of individual companies determine the presence of facilities far more than demographic changes. The requirement of space is dependant on similar observations. Other factors are much more decisive for the amount of space that is (or is not) required. The general level of prosperity, spatial policy and economical development are also decisive factors in this case. This statement is confirmed by Kroll & Haasse (2010). The declining population in core cities and rural areas of East-Germany has not resulted in a decrease of land use.

6.2 Social living environment

Changes in the social living environment depend on which groups depart from a neighbourhood. Social segregation can have two different effects. On the one hand, a more homogeneous composition of the population can strengthen social cohesion as like-minded individuals get in touch with and help each other. On the other hand, groups of lower social status have less attention for their neighbours and less need for social cohesion. They are often less capable in keeping their living environment attractive than groups of a higher social status. However, these groups negatively influence the social status and identity of a neighbourhood. (Van Dam et al. 2006) Social segregation leads to “further vacancy and devastation, which cause an atmosphere of insecurity, precarious social conditions and creates a negative image within the city.” (Schetke & Haase 2008, p.488)

6.3 Conclusions

Van Dam et al (2006) conclude that “the effects of demographic shrinkage on the physical living environment will differ per neighbourhood, depending on the nature of the housing stock and composition of the population.” (translated by author, p. 83)

Following conclusions from the previous chapters, social cohesion is the main factor in a liveable village. The physical environment has a smaller effect. The effects of demographic shrinking will therefore mainly pose a problem in a situation of social segregation and to a lesser extent degeneration of the living environment.

7 Conclusions

Liveability concerns the living environment from a human perspective; how does the environment suit the human needs and desires? “Liveability is the extent to which the environment suits the conditions and needs which humans demand of it.” (translation by author, Leidelmeijer et al. 2008, p.14)

Demographic shrinking can indicate a declining population, declining number of households or the decline of a particular group. There is no clear definition for villages. A possible definition is that a village has an average density of addresses that is less than 1000 per square kilometre.
and is not in close proximity to a city. Furthermore, for this paper it is located in the periphery of the Netherlands. The three general aspects that define liveability are physical quality, social cohesion and security. The debate circulates around the influence of different subcomponents. All aspects interrelate. Social cohesion seems to have the strongest effect on perceived liveability. The process of social segregation influences cohesion in neighbourhoods. It can cause a concentration of like-minded individuals, or a concentration of individuals who are less interested in their surroundings. Social cohesion is the main factor in a liveable village. The physical environment and security have a smaller effect. The effects of demographic shrinking will therefore mainly pose a problem in a situation of social segregation and to a lesser extent degeneration of the living environment. In general, the living situation of villages in the periphery of the Netherlands is good. Inhabitants of the countryside are generally satisfied with their living environment. This is not the case for all groups though, as peripheral regions have a higher rate of unemployment and lack of facilities can pose a problem for (the increasing amount of) elderly.

8 Recommendations
The decisive factor in liveability is social cohesion. Projects aimed at maintaining or enhancing liveability in the Eemsdelta should always take the social cohesion into account. This does present opportunities for bottom-up urbanism. Furthermore, the current policy of municipalities in the Eemsdelta to use urban renewal as a means to improve the quality of houses and invest in the heterogeneity of the population seems to be an appropriate response. There are still concentrations of poor quality social housing from the early post-war era in the larger municipalities of the Eemsdelta. Results from this paper give rise to further investigation of these areas.

9 Discussion
I would like finish with a few remarks considering the contents of this paper. The importance of employment has not been mentioned here, while some authors (van Dam et al. 2006; Bontje 2005) do mention it in relation to retain the current population and attract new inhabitants. This is probably caused by the used definition of liveability. When using a broader definition such as living situation, other factors such as employment and health can be incorporated as well. These however, are not elements of the environment. Secondly, the sources used in this paper do go in to depth on the separate subjects, but I was unable to find concrete sources that researched the connection between demographic shrinking and liveability. Furthermore, they mostly cover the whole of the Netherlands, without addressing individual groups.

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