BACHELOR THESIS DELTA MANAGEMENT

Development of a Community Flood Resilience Assessment Tool

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Abstract

This bachelor thesis describes the graduation period of the Delta Management course. The study was conducted within the Resilient Deltas research group of the HZ University of Applied Sciences, partner of the FRAMES-project. A cooperative project between the Netherlands, United Kingdom, Belgium, Germany and Denmark to address the shared territorial challenge of on-going climate change. The municipality of Reimerswaal is indicated as pilot area for the FRAMES-project. In search for a suitable pilot location for the toolkit, Yerseke is selected, because this community experienced a pluvial flood in 2016.

The aim of the research is to investigate how the development and application of an assessment tool can increase community resilience, participation in flood risk management and give insight to decision makers to identify differences between communities and include this knowledge in future policy and development. While taking into account the shift towards holistic, multifaceted flood risk management, demand for better understanding of a resilience approach, and include awareness raising, public risk perception and indigenous knowledge.

The concept of resilience is defined as the ongoing process in which a set of adaptive capacities is linked to a positive path of function and adaptation before, during, and after a disturbance/disaster. Community resilience adds complexity to this definition, as it is more than the ability of an individual to cope with disaster. Community resilience includes the interaction between members which create a collective unit, the term captures the dynamic nature of communities as 'systems' and emphasize of their capacity to adapt to the changing environment around them.

The building blocks of Community Resilience is visualised in a dynamic framework as a set of five networked components, including indicators to explain the characteristics of the component.
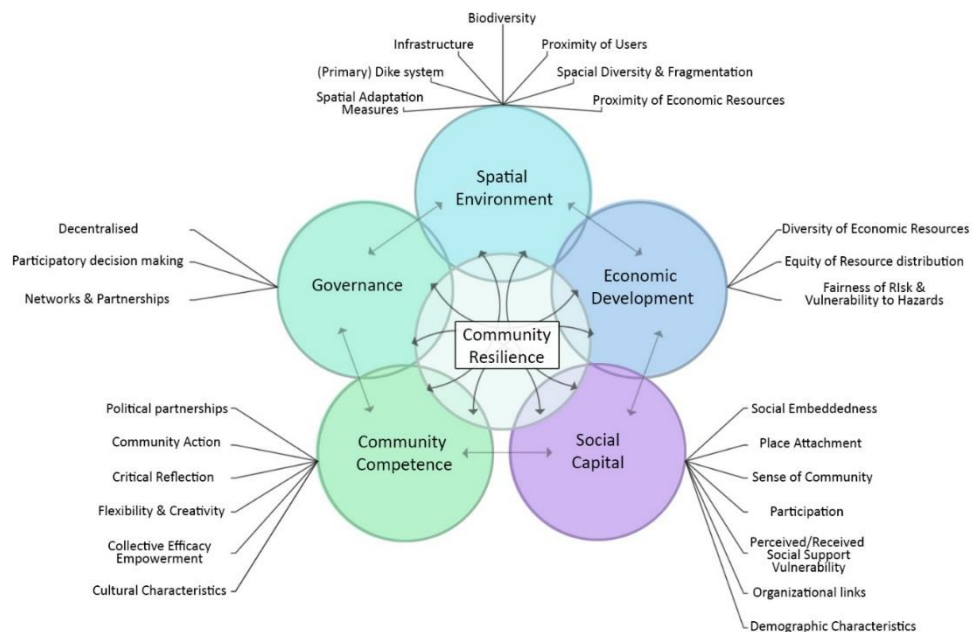
The dynamic framework of community resilience is used as theoretical foundation. Review of existing community resilience assessment tools and results of interviews with experts of the municipality of Reimerswaal add the next layer of preconditions for the design of the toolkit. Main design principles:

- use an actual casuistry for the toolkit: *pluvial flooding.*

- In case of low response data should still be representative for the whole community: *conduct the toolkit with 'key figures'*
- Include broad view of the concept of community resilience (as described in the dynamic framework): *include risk casuistry questions and general perception questions*
- Keep time investment for cooperation to a minimum: *semi-structured interview style with 12 main questions, indicators from the dynamic framework are used as keywords in order to ask additional questions.*
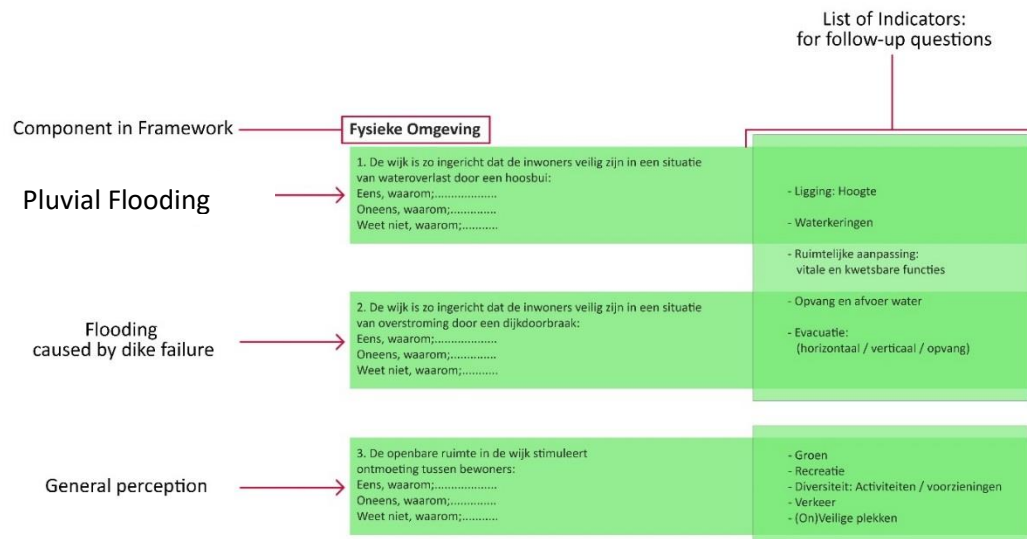
In process of applying the toolkit as a pilot within the municipality of Reimerswaal, two communities were assigned as test location. The community of Yerseke, as this village experienced an event as described within the casuistry. The community of Rilland as second location after some geographic and socio-economic differences were seen. The community characteristics helped to explain certain results of the pilot.

Generally the layout and casuistry design were well understood by all respondents. In line with the characteristics of the community, the response from Yerseke was low, as this village has a general focus on their own community.

Based on the key figure's position in the community, respondents identified 'the community' differently. Within the spatial environment differences were recorded between questions on pluvial flood and flooding caused by dike failure. Considering the general perception of the public space, this was identified as being mainly functional towards traffic. In the question on disruption of the community, again differences became clear between the two risk questions. Respondents stated pluvial flood only caused material damage, whereas flood caused by dike failure would also cause complete disruption of economic activities and daily life. Especially respondents of Rilland reported it is difficult to initiate economic activities. All respondents stated inhabitants would help residents during disruptive events as described in the casuistry, if the possibility presented itself. General result of both communities is that people know each other. However, (in)formal networks and organisations, the respondent of Yerseke stated this was not strongly developed in Yerske, only if issues presented themselves people unite. In Rilland networks and organisations exist, but are segregated from each other. Respondents from Rillandand Yerseke state the municipality is a cooperative partner in initiatives from the community. Considering governance; all respondents state that there is a general vagueness considering the responsibilities during (pluvial) flood events. This results in the fact inhabitants from both communities expect the local government to take responsibility.

Table of Content

1 Introduction

This Bachelor thesis describes the graduation period and related research, started in February 2017 for the Bachelor of Delta Management at the HZ University of Applied Sciences. The main topic of the research is a practical way of developing an assessment tool in order to assess the resilience of a community towards flood risk. The generic tool will be tested within the municipality of Reimerswaal, Zeeland. This area is presented in Figure 1

Figure 1 Visual representation of Reimerswaal within Zeeland

This chapter, the introduction of the graduation research, defines the problem statement and therefore the motivation of the related subjects. The research questions are explained and serve as guidelines for the research. This chapter will end with a 'reading guide' section, including a description of how the graduation research is structured in this Bachelor thesis.

1.1 Background and Problem Statement

The municipality of Reimerswaal in the province of Zeeland is a slim stretch of land, connecting the peninsula of Walcheren with the mainland of the Netherlands. It is a low lying area, with a scattered set of inhabited villages, these general characteristics demand a solid indication of the local characteristics considering resilience in order to ensure fitting policy towards flood risk reduction. The municipality of Reimerswaal is one of the pilot areas within the FRAMES-project. FRAMES is cooperative project between the Netherlands, United Kingdom, Belgium, Germany and Denmark to address the shared territorial challenge of on-going climate change. Climate change is likely to increase physical, economic and social effects of floods and extreme weather events. Yerseke, a village within the FRAMES pilot area Reimerswaal experienced a pluvial flood in 2016 and will figure as showcase for this research. Further explanation in detail on the location and case can be found within Chapter 4 paragraph 4.3 '*Pilot Municipality Reimerswaal: Process Design'.*

In general; accounting for approximately one third of all natural disasters flooding is causing problems both in developed and developing worlds (UNISDR, 2017). More than half of all disaster related fatalities, and a third of economic losses from natural disasters can be attributed to flooding (White, 2001). Globally an upward trend has been identified, this can be partially explained by the improved reporting of flood events. The frequency and severity of flood related incidents however also increased (EM-DAT, 2017). Multiple studies show that climate change, increasing urbanisation of and industrial development of watershed areas are contributing factors in this regard (Kay, Crooks, Pall, & Stone, 2011; Mc Carthy, 2001; Nirupama & Simonivic, 2007). Already for some years it is

agreed that adaptation purely based on structural protection is not sustainable (Kundzewicz, 1999; Tobin, 1995). Currently the way authorities across Europe deal with floods shifted towards a multi-facetted flood risk management approach. Embracing non-structural measures such as: land-use planning, flood forecasting and warning, and relocation. National policies across Europe emerge, based on a twofold approach of more holistic and societal analysis and assessment and mitigation of flood risk (Mc Gahey, et al., 2009) for example the 'Making Space for Water Project' in the UK (Defra, 2004) and 'Room for the River' in the Netherlands (Room for the River, 2017), underpinned by the EU Floods Directive 2007/60/EC (European Commission, 2016). As stated before, the physical losses and destruction due to flood disasters leads to social and psychological disruption. However, some individuals and communities better adapt to, recover from and are able to cope with floods compared to others: they are more resilient (Mayunga, 2007).

The complex risks that arise, due to the changes within and interactions between the social, built and physical environments, are increasing the demand for better understanding of community resilience (Paton, Becker, & Johnston, 2015; Brown & Damery, 2002). Although the social aspects of floods and the importance of community resilience have been reported for some time (Marincioni, 2001), policies have been known to fail or lead to maladaptation if the public perceptions of individuals and communities are overlooked (Granger-Morgan, 1997). Despite the fact that a lot of people receive the information from top-down public campaigns, it often has little impact, because public risk perception is not taken into consideration (Terpstra, 2010). Risk perception is strongly related to critical awareness and are key in the process of disaster preparedness and thus community resilience (Paton, Mc Clure, & Burgelt, 2006). Another component that addresses the risks of overlooking the underlying interrelating human, social and cultural factors which influence risk is the local knowledge of communities. A lot of research has been conducted stating that indigenous perceptions of disasters, local knowledge and practices, and coping can improve disaster preparedness (Alcantara-Ayla, 2004; Battista & Baas, 2004; Campbell, 2009; Chan & Parker, 1996). As is stated in the Hyogo Framework for Action and the successor instrument 'Sendai Framework for Disaster Risk Reduction; a community is a source of 'knowledge, innovation and education to build a culture of safety and resilience at all levels' (UNISDR, 2007; UNISDR, 2015).

The increased awareness and acceptance of the fact that completely preventing a disaster is not possible, a shift in thinking towards a resilience approach is present. The resilience approach is directed towards decreasing the vulnerability of the population and its functioning and increase the adaptive capacity. The opportunities and benefits of utilising the resilience approach is also mentioned in the Dutch Delta programme: 'application of methods within the resilience approach […] helps to recognise and utilise the best practices.' Next to that another transition can be observed in the Dutch Water governance: from technocratic and state-oriented governance practices towards more collaborative governance approaches, involving multiple governmental actors, and private and societal actors in search for integral solutions (van Buuren, Klijn, & Edelenbos, 2012)

Taking into account:

- Shift towards more holistic and multi-facetted flood risk management in the EU and Netherlands specific.
- Demand for and better understanding of a resilience approach
- awareness raising, public risk perception and indigenous knowledge

The aim of this research is to investigate how the development and application of an assessment tool can increase community resilience, participation in flood risk management and give insight to decision makers to identify differences between communities and include this knowledge in future

policy and developments. Decision makers are defined as policy makers and managers of local governmental bodies and aid agencies.

1.2 Research Questions

The main question of this study is formulated as:

'How can the development of a assessment tool increase community resilience and give decision makers insight in community specific differences in the level of resilience?'

In order to answer the main question and to structure the research process, a list of sub-question are stated:

- *What are the building blocks of Community Resilience?*
- *Which method and characteristics of existing community self-assessment tools are compatible with the design for an assessment tool for the municipality of Reimerswaal?*
- *In what way should the process be designed to successfully implement the tool as a pilot within a community of the municipality of Reimerswaal?*

1.3 Reading Guide

The theoretical framework is presented in the first chapter. This provides the framework of theory in which this research takes place. Results of this chapter provide an important basis from which tool is developed.

The second chapter provides an overview of the methods used, in search for the answers to the research questions.

Results and discussion chapter describes the results of applying the different methods. Data is discussed and main conclusions are presented after each paragraph.

The final chapter contains the conclusions and recommendations. The main research questions in answered and recommendations towards future research or application of the toolkit are presented.

2 Theoretical Framework

2.1 Resilience, what is it?

As metaphor, the term 'resilience', originates from the sciences of physics and mathematics, and was used to 'describe the capacity of a material or system to return to equilibrium after a displacement' (Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008). Rather than breaking a 'resilient material' is able to bend and bounce back when stressed. Only quite recently the concept found its way into human systems and disciplines varying from medicine, economics, information management, health, security, social to emergency management and is now used to describe the adaptive capacity of individuals, communities and societies (Sonn & Fisher, 1998; Godschalk, 2003; Butler, Morland, & Leskin, 2007).

Many studies define resilience in different ways. In general the definitions emphasize the capacity for successful adaptation to or ability to withstand stresses, disturbances or calamities. Next to that there is a general consensus on the point that the term 'resilience' is not necessarily an outcome, but better conceptualised as process or ability (Brown & Kulig, 1996/97; Pfefferbaum, Reissman, Pfefferbaum, Klomp, & Gurwitch, 2005).

It is therefore that in this study the concept is defined as the outcome of the ongoing process in which a set of adaptive capacities is linked to a positive path of function and adaptation before, during, and after a disturbance/disaster. The definition of concept of resilience as ongoing process underlines the importance of considering both pre- and post-disaster adaptation.

2.2 Community + Resilience

This research will focus on the level of community resilience, this adds another layer of complexity to the definition of resilience by the variation in the meaning of community. A community can be seen as complex system with four elements that influence one another: the built, natural, social and economic environments. It includes organisations and cooperative structures, a sense of relatedness and individuals sharing a culture, values, laws, history and geographic proximity form a community. The members live and sometimes work in this dynamic environment. The potential interaction among individuals is essential in order to share values and norms, and build a strong social system; providing services to the community and address problems (Jerusalem , Kaniasty, Lehman, Ritter, & Turnbull, 1995).

In comparison with the definition of 'resilience' as explained before, the term 'community resilience' adds to it that it is more than the ability of individual members to cope with disaster, as community resilience includes interactions between members which creates a collective unit. The concept of Community Resilience is particularly useful in the face of earlier mentioned future challenges and shift in governance, because the term captures the dynamic nature of communities as 'systems' and emphasize of their capacity to adapt to the changing environment around them. This in combination with the trend of failed support for or maladaptive top-down policies is the reason the focus of this study is to investigate on community adaptation

Similar to 'resilience' the concept of 'community resilience' can be defined in many ways with many similarities among definitions (Community & Regional Resilience Institute, 2013). Rather than defining the concept, a set of capacities is given which characterise a disaster resilient community (Arbon, Gebbie, Cusack, Perera, & Verdonk, 2012; Norris, Stevens, Pfefferbaum, Wyche, & Pfefferbaum, 2008).

A disaster resilient community is able to:

- Maintain functioning while under stress
- Be self-reliant
- Successfully adapt
- Develop strong social capacity

There is general consensus on the fact that community resilience is a function of different components, or aspects of a community. Multiple publications have been arrived at similar or comparable components calling them 'capitals', 'capacities', 'aspects', 'resources', 'enablers' or 'outcomes', with differences in emphasis or prioritisation on one or more of the components (Mayunga, 2007; Callaghan & Colton, 2008; Fundter, et al., 2015; Keating, et al., 2017). This literature has been used draw out the comparable components that give indication of community resilience and to develop a community resilience framework as presented in Figure 2.

Figure 2 Dynamic Framework of Community Resilience as set of networked components. Arrows and overlapping circles indicate the presence of linkages and relation between components.

The five components as presented in the dynamic framework of community resilience form the foundation for further literature review and research sub-question one and the community resilience assessment tool.

3 Methodology

This chapter describes the methodology used within this research. The research design and related methods describe the order and process of knowledge and data acquisition to ultimately provide answers to the research questions and to ensure validity of the research.

3.1 Research Design

A qualitative research design is chosen for this research. A qualitative approach for the research is most appropriate, considering:

- The purpose of the study being to collect indigenous data and reasoning behind statements that are made, instead of analyse quantified differences.
- The complexity of the subjects make it difficult to be quantified.
- The limited timeframe of the study does not allow for large scale data acquisition and quantitative analysis.

3.2 Data Collection

Triangulation of the data through the use of multiple methods for data collection increases the validity of the data and capture different dimensions of the same subjects. The set of different data collection methods used in this research:

- Literature Research
- Interviews
- Consultation & Results Reflection

3.2.1 Literature Research

Extensive literature review is done, concerning the topics proposed within the introduction and theoretical framework, from multiple sources:

- Peer-reviewed scientific articles, from multiple databases;
  - SpringerLink
  - ScienceDirect
  - ResearchGate
  - Google Scholar
- Books, dissertations, other non-governmental publications.
- Policy documents and reports of different governmental organisations, both Dutch and international publications.
- Statistical data: CBS, 'Staat van Zeeland' and 'Zeeland Scan' databases.

The specific literature was chosen based on the relevance with the subjects presented within the theoretical framework. Step by step process started by investigation of the broad subjects, then narrowing down the topics into more detail. Within this approach it proved to be effective to investigate bibliographies of already used sources, in order to find detailed related sources.

3.2.2 Interviews

During the process of designing the toolkit, semi-structured interviews with two professionals from the municipality of Reimerswaal are conducted, as can be seen in Table 1 . The two respondents were selected as they met the requirements of being an expert in the field of public safety and resilience.

Interviewee	Expertise
Wim Huissen	Advisor Public Safety: Physical Safety
Evelyn Lambert	Advisor Public Safety: Social Safety

In order to guide the semi-structured interviews a set of subjects was prepared beforehand. This set included, but was not limited to, related subjects of the research: *expertise, professional activities, (community)resilience, experience with resilience, resilience in policy, population of the municipality, physical environment, economic development, social capital, community competence, governance.*

These interviews are recorded and the results are compared and validated with the data found within the literature research.

For testing the toolkit, semi-structured interviews are conducted with key figures of two communities in Reimerswaal. Key figures are individuals which have an idea about the general conditions of the community, through their functions within the neighbourhood. This is further explained in detail in Chapter 4 in paragraph 4.3.1. '*Location for Pilot'*. The interviews are conducted using the toolkit, a form of semi-structured interview as described in Chapter 4 in paragraph 4.2.3. *'Summary & Tool Design'.* The subject of the interviews is 'pluvial flooding' mainly due to the actuality of this casuistry. The casuistry is further explained in detail in Chapter 4 paragraph 4.3. The data collected from these respondents is recorded and validated through comparison with the literature research data and knowledge gained from the interviews with the municipal Advisors of Public Safety.

3.2.3 Consultation & Results Reflection

Throughout the process of the research, interim results were discussed and reflected upon in cooperation with two experts in the field of resilience, and flood preparedness within the Resilient Deltas research group. Consulted experts:

- Drs. J.M. (Jean-Marie) Buijs
- Dr. Ir. T. (Teun) Terpstra

3.3 Data Analysis

The data analysis of the research is described for each sub research question.

o   Sub-question one:

What are the building blocks of Community Resilience?

In order to answer this question literature research is applied as described in the previous paragraph. Answer to this questions forms the foundation on which the assessment toolkit is based.

o   Sub-question two:

Which method and characteristics of existing community self-assessment tools are compatible with the design for an assessment tool for the municipality of Reimerswaal?

In order to answer this research question a combination of literature research and interviews, as described within the previous paragraph, is conducted. The Literature research focusses on investigation and critical analysis of existing methods for assessing community. Through the

interviews experience and recommendations of the municipality of Reimerswaal is added to this analysis. Outcome of this sub-question is the proposed design of the assessment tool.

- o Sub-question three:

In what way should the process be designed to implement the tool as a pilot within a community of the municipality of Reimerswaal?

For answering this sub research question a combination of literature research and interviews is applied, as described within the previous paragraph. Literature research is conducted in order to compare pilot locations for the toolkit. Interviews are conducted in order to test the toolkit.

4 Results & Discussion

4.1 The building blocks of Community Resilience

As stated in the theoretical framework the foundation for this sub research question are the five components of community resilience, as drawn out from different studies. On their own these components have little to no meaning, therefore this chapter will give a more detailed explanation of each of the components: Spatial Environment, Economic Development, Social Capital, Cultural Competence and Governance.

In an effort to give the components of community resilience more background, indicators are added to each 'disc'. Indicators are what you could call characteristics of the specific component and explain in which way it is important to community resilience. This chapter will elaborate on these indicators and thereby explain and where possible give practical examples.

Although the indicators are the outcome of extensive literature review, it should be noted that no single set of indicators will satisfy and inform all possible policy interventions. Intention of using indicators is to provide data, that will help decision-makers to improve the quality of their decisions and possibly strengthen community resilience. However, indicators do not provide answers alone.
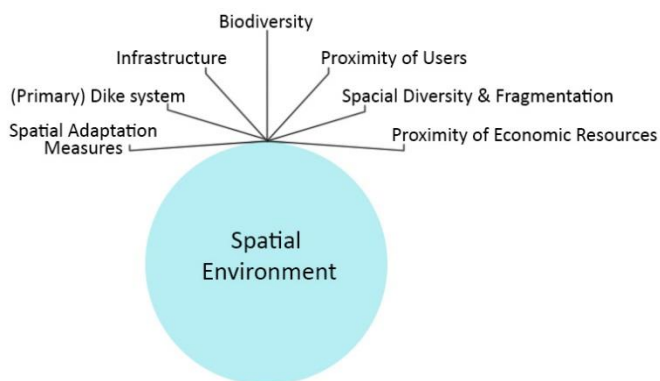
4.1.2 Community Resilience: Components & Indicators

Figure 3 Spatial Environment and related indicators

Spatial Environment
Space is a scarce resource, especially in environments which have diverse functions and are prone to the impacts of flooding. The use and organisation of the physical environment and its assets is essential to meet the need of the user and at the same time safeguard the resources for the future. In order to gain a complete understanding of the physical environment, infrastructure and organisation of space aspects should be analysed through the layer-approach. This approach distinguishes and gives insight in the substrate, network and occupation layer of the physical environment (van Schaick & Klaasen, 2011). A visual representation of the indicators for the component 'spatial environment' can be seen in Figure 3.

Multi-Layer Safety: Dike system & Spatial Adaptation Measures
The primary dike system protecting the hinterland from flooding is the first layer within the Multi-Layer Safety approach, these physical structures are essential for flood prevention. The Multi-Layer Safety approach is a Dutch policy which embodies a method for flood risk reduction (Leskens, Boomgaard, van Zuijlen, & Hollanders, 2013). Last decades full attention was given to the first layer, however, efforts are being made to also invest in the second (and third) layer, simply because in theory floods cannot be fully prevented. The second layer, spatial planning, addresses the spatial

measures and organisation serving multiple purposes with the goal of decreasing the impact and damage of floods (Sophronides, Steenbrugen, Scholten, & Giaoutzi, 2016). Due to their preventive and precautionary characteristics and efforts made within one or multiple layers of the physical environment Layer 1 and Layer 2 are considered building blocks of community resilience.

Infrastructure, Proximity of User & Economic Resources
Flooding, and natural hazard events in general, have damaging effects on private property and affect individual and community well-being. One of the underlying aspects within the physical environment and often heavily disrupted due to flooding are critical infrastructures. Critical infrastructure is a broad term, including energy, water, transportation, data- and telecommunications and critical services (Miller, 2006). Disruption of one of these vital sectors on its own decreases the continuity of daily life, but in case of mutual dependency of systems, one disruption can have a cascading effect causing others to fail (van Eeten, Nieuwenhuijs, Luijf, & Cruz, 2011). Infrastructure is closely related to the proximity of the user and economic resources as infrastructure should facilitate the user to reach economic resources and services, thus location or proximity of users and resources plays a role. Dense population and high value economic development in flood prone areas can be heavily impacted in case of a flood disaster, proximity of the users, infrastructure and resources, to the potential source of threat is therefore increasing the risk. However, if essential infrastructure components, are not well accessible due to remoteness, it can harm circulation of people, goods, services, and information upon which health, safety, comfort and activity depend (Cutter, Mitchell, & Scott, 2000; Platt, 1995).

Ecological value
This term is referring to the ecosystem services which provide a broad variety of natural resources, ecosystem services and space to live and work; essential in sustaining all forms of life. Degradation of ecological value is endangering the future production, thus the community resilience. On the other hand, if well maintained, services derived from ecological systems can form a natural buffer from weather related hazards (Mayunga, 2007).

Economic Development
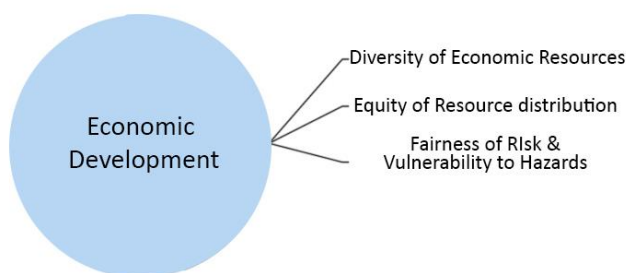
Figure 4 Economic Development and related indicators

The characteristics of economic development are important for community resilience, due to the general financial stability, but also the diversity, distribution, and access of economic resources. These characteristics give an indication on the amount of economic damage, due to a flood disaster, on both materialistic and activities. A visual representation can be seen in Figure 4.

Diversity of Economic Resources
Not only the sheer volume of economic resources, also the diversity is a major building block of community resilience. Studies in the aftermath of Hurrican Katrina show that communities relying on a single type of industry (shrimping industry), the storm's impact was much higher (Cutter, Emrich,

Mitchell, & Melton, 2006). Likewise, higher levels of economic (and social) diversity, enable cities to respond in a more complex way and positions communities within in a better environment to adapt to change and disturbance. Within the economic diversity literature, diversity is defined and structured as a level of distribution of economic activity across a range of sectors. However this does not take into account the possible interindustry linkages or support to social and cultural services, therefore quantitative diversity of sectors should be assessed, as well as qualitative relations within sectors and support systems towards the community, which ensures an attractive place for people to live and work (Ahern, 2011; Wagner & Deller, 1998).

Equity of Resources & Fairness of Risk
Research on socio-economics as buffer of (post)disaster stress shows a clear link between economic resources and postdisaster wellness. It is shown that people from lower socio-economic classes often experience more adverse psychological consequences (Norris, Friedman, & Watson, 2002). Next to that the distribution of support is in practice not following the rule of relative needs. It is often stated stated that poor communities or groups within communities often are the weakest in hazard mitigation (Cutter, Boruff, & Shirley, 2003). As it seems that the capacity to distribute postdisaster resources to those who need them the most is essential for community resilience. However, it is often the embeddedness of individuals in the community, political connections and social class that determine availability and accessibility of resources (Kaniasty & Norris, 2004).

Social Capital
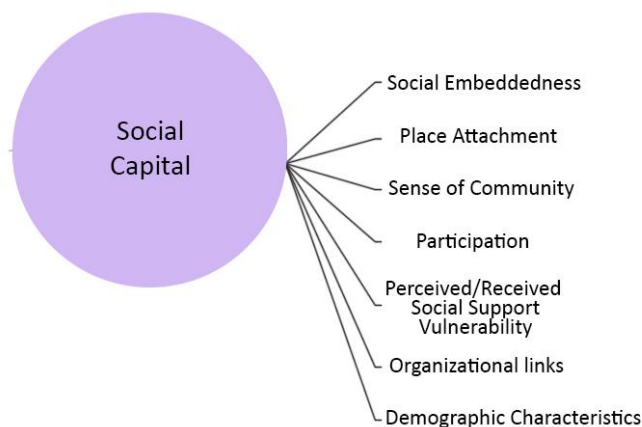
Figure 5 Social Capital and related indicators

As it is with the term resilience, 'social capital' is a widely researched theme and is highly relevant in the theory of community resilience (Kadushin, 2004). This component is often overlooked, as stated in the introduction. Summarised visual showing the indicators connected to this component is shown in Figure 5.

Organisational links
According to (Goodman, et al., 1998) the presence of networks, inter-organisational networks, characterised by supportive interactions, overlapping with other networks have the ability to form new associations and support cooperative decision making processes. Next to that these organisations often have the capacity and experience that are essential for the functioning of the community network. These organisations and relations play an essential role in solving problems and initiate development and therefore strengthen the community resilience.

Social support, vulnerability & embeddedness
This aspect within the Social Capital component refers to the interactions that provides assistance to individuals and embed them into a network of social relationships perceived as being caring and available (Barrera, 1986). Social support can be divided in two types: received support and perceived support. The first is reflected in the overall pattern of help application; having a broad foundation with family, followed by other support groups (friends, neighbours, colleagues). Perceived or expected support explains the emotional and informational support (Kaniasty & Norris, 2000). Social influence is another function of social support as individuals compare themselves with similar others in order to base their decisions about appropriate behaviours. As example; it is more likely to receive information about (recommended) evacuation if one has better social ties. This emphasizes the importance of social support and embeddedness for community resilience. Moreover, it is in line with Pfefferbaum et al. (2005) stating that the community's care about needs and well-being of individual members is an important factor of community resilience.

The extent to which social vulnerable individuals or groups exist within a community will influence the level of resilience (Community & Regional Resilience Initiative, 2008). This statement ties in with the literature on social vulnerability, a term explaining how social and cultural conditions place some individuals or groups at higher risk to disasters. A variety of risk factors influence this vulnerability, such as: economic status, political power, gender, and age and disabilities. Especially the last two factors, age and disabilities, can largely impact the resilience of certain groups, as was painfully obvious in post-Katrina, New Orleans (Brunkard, Namulanda, & Ratard, 2008).

Sense of Community, Place Attachment, & Participation
Stated as an attribute of resilient communities, 'sense of community' explains the sentiment of trust and belonging of an individual with other members of a community (Landau & Saul, 2004; Perkins, Hughey, & Speer, 2002). Characterised by mutual concerns of community issues, respect and services to others, and connection (Goodman, et al., 1998).

Because of the connection between 'Place Attachment' and the effort of citizens to revitalise their community, it is labelled as essential for community resilience (Perkins & Long, 2002). Apart from the connection with people, place attachment implies an emotional connection with the neighbourhood or city. However, this connection could also impair community resilience as disasters can increase the devastating effects of place disruption (Brown & Perkins, 1992). On the other hand, however, place attachment increases the likelihood that there is the will to rebuild the community (Manzo & Perkins, 2006).

Engagement of community members is believed to be a fundamental element of community resilience. Citizen participation is refers to the opportunities for involvement and engagement; taking into account the diversity, abilities and interests of the community members. It is important for community resilience, because broad participation increases awareness and broad support for initiatives (Goodman, et al., 1998).

Demographic Characteristics
The more adequate, skilled and trained individuals, present within the community work force, the more likely a community is able to build resilience. Demographic characteristics emerge from a composition of population, -density, development, gender, ethnicity and education census data, as these influence people's vulnerability, as described in the *'social support, vulnerability & embeddedness'* section (Cutter, 1996; Renschler, et al., 2010).
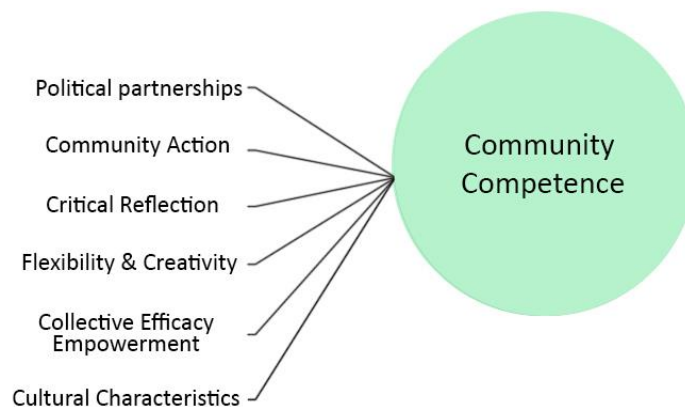
Community Competence

Figure 6 Community Competence and related indicators

To cope with risks, communities should be aware, learn about these risks and work together in order solve problems in a creative way. The accessibility of accurate and trusted information, critical reflection on the information and collectively solve emerging problems is essential and more important for community resilience than a detailed security plan (Longstaff, 2005). Community competence in this study therefore has to do with collective action and decision making through partnerships stemming from collective efficacy and empowerment. Although the aspects mentioned in this component are quite similar to those within Social Capital, it might be considered that social capital is a prerequisite for Community Competence. Social capital defines the characteristics to form social groups and thus community competence in this sense is an aggregation of individual resilience and from the endurance of social structures, as described in Social Capital (Brown & Kulig, 1996/97). Collection of the community competence and the related indicators is shown in Figure 6.

Collective Action & Reflection
As stated before, resilience in this study is defined as an active process; not only a passive 'bouncing back'. Therefore in the context of communities there should be a level of meaningful and intentional action with a twofold outcome. First; communities are resilient if they take action to recover from negative physical or social events, second; communities are resilient if they take action to transform their physical and social environments to mitigate against negative events. Due to the complex and challenging characteristic of environment treats, critical reflection and collective problem solving is fundamental for community competence and resilience (Goodman, et al., 1998). These characteristics in combination with previous maladaptation can lead to the creation of active community groups. However success of such groups are highly relying on the extend of collective efficacy of the community and the nature of political interactions (Ganor & Ben-Lavy, 2003).

Collective Efficacy & Empowerment
Collective Efficacy is based on the mutual trust in the effectiveness of community action combined with the willingness of the individual to invest for the common good of the community (Perkins & Long, 2002). Closely related to collective efficacy is the term 'Empowerment', defined here as a process in which individuals gain better access to and control over an equal share of valued resources. Both terms are allowing the individual and group to cope with or overcome (environmental) challenges and difficulties, due to the interwoven and close social network (Perkins, Hughey, & Speer, 2002; Benight, 2004). Combined with empowerment, collective efficacy is bridging the domain of Social Capital and Community Competence in this model of community resilience, however placed within community competence as it is fundamental in facilitating community action.

Political Partnerships
The afore mentioned components of community resilience are essential, however, to be effective and efficient, communities need some direction and structure from (formal) agencies, which possess detailed knowledge and expertise. Next to that, communities with developed social capital and community competences are able to advise governments and equally participate in the design and implementation of disaster related efforts (Ministry of Civil Defence & Emergency Management, 2012).

Cultural Characteristics
The interaction between culture and resilience is very important for both the individual and the community as a whole. An individual's cultural background impacts on the way the person communicates feelings and copes with adversity. Both individual and the community's culture influences how people respond to different stressors. Moreover, culture 'decides' which skills, faith and activities are important within the community and it influences development of networks (Gunnestad, 2006). As stated in literature on disaster preparedness, disaster experience increases precautionary adaptation and thus community resilience, as it influences risk perception and critical awareness (Paton, Mc Clure, & Burgelt, 2006). Experience with hazard situations strongly influences culture, in a way that a disruptive event has far reaching effects on the indigenous knowledge within the community resulting in the importance of commemoration (sharing this disruptive experience with future generations. Indigenous knowledge can reduce disaster impact, as stated by Arunotai (2008), communities in Thailand who had indigenous knowledge of tsunamis were able to move away before the Indian Ocean Tsunami in December 2004 hit, and thus increasing community resilience.

Governance
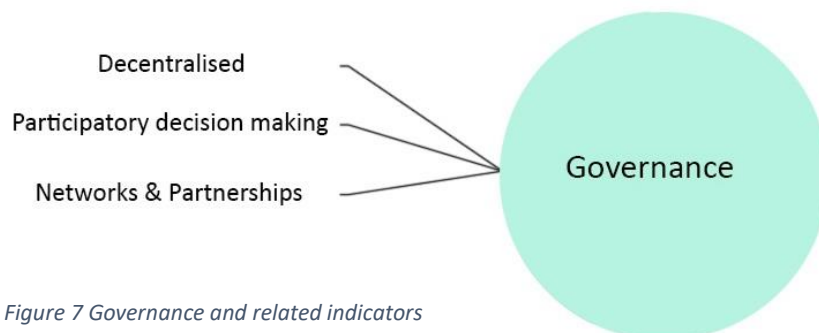
Figure 7 Governance and related indicators

As discussed before coordination and cooperation between communities and formal organisations is essential. This component explains which howf 'governance' and governance processes are beneficial for strengthening resilience.
According to the 4+1 model, resilient systems demand governance on different levels and should have the capability to switch between these. In this study, focussing on community resilience, it is therefore essential that relevant stakeholders develop adaptive governance relationships and through decentralisation and participatory decision making come to capacity to quickly react and adapt to changes (Fundter, et al., 2015). In the light of community resilience, cooperation between local municipal government should be transparent and democratic. This in order to ensure broad support and avoid wrong expectations on both sides. The indicators in relation to the component is shown in Figure 7.

4.1.2 Sumarry

The main outcome of the elaborate literature review is a set of indicators for each of the components important for strengthening community resilience. A complete overview of the framework is shown in Figure 8.
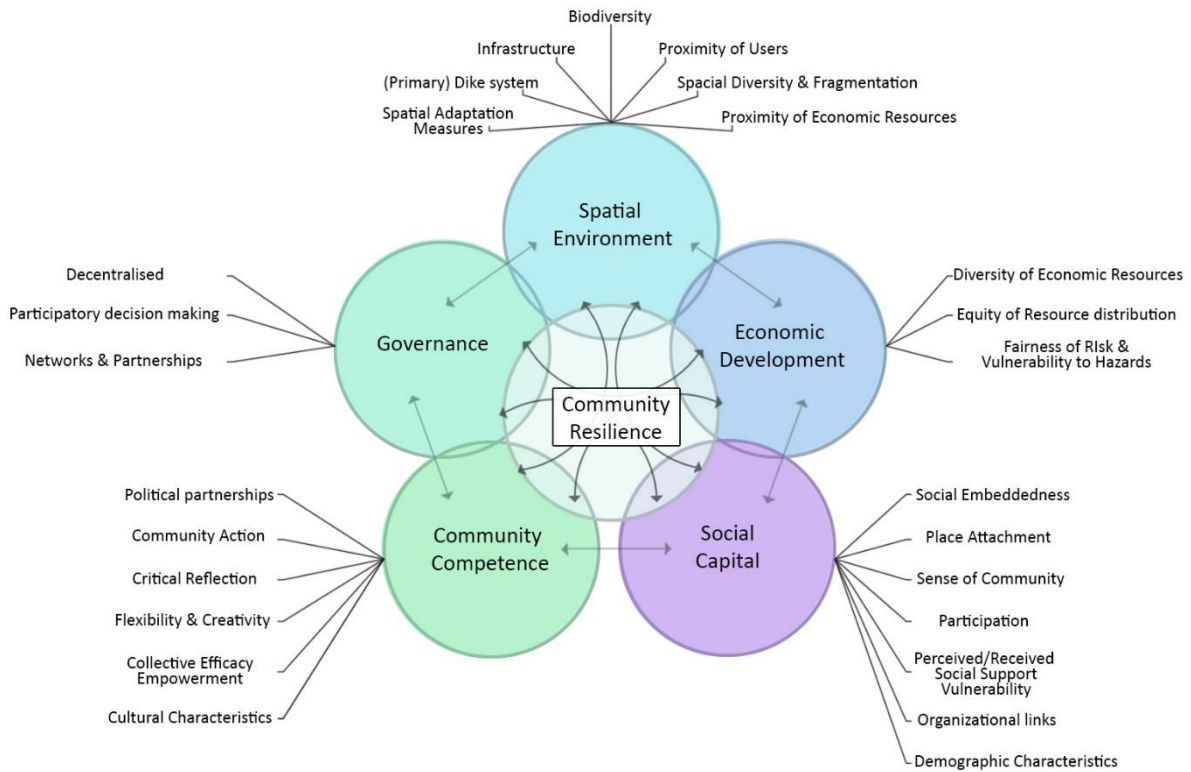
Figure 8 Dynamic Framework of Community Resilience as set of networked components. Arrows and overlapping circles indicate the innumerable possible linkages and relation between elements.

The visual indication of the relations between components emphasises the fact that all components are equally important. One component cannot reach its full potential if others are not well developed. As a practical example: if a municipal government invests a lot in a participatory approach of decision making this will only result in successful (policy) developments if there is certain level of sense of community and community action present within the community. If not, this approach will not lead to broadly supported decision making and possible maladaptation.

4.2 Design of a Community Resilience Assessment tool

The theoretical framework explaining community resilience as the outcome of the previous chapter, should be transformed into a workable community resilience assessment tool. This chapter investigates existing methods and similar tools and compares lessons learned to knowledge gained from interviews with the municipality of Reimerswaal. Tools investigated in this study are relatively largely funded tools and of recent development. The chapter ends with an explanation of the design of the community resilience assessment tool as outcome of this part of the research.

4.2.1 Existing tools

An extensive list of already developed tools can be found online. The aim of tools differ in scope, methods, and targeted population. List of reviewed tools can be seen in Table 2.

Table 2 Reviewed Toolkits

Title	Author	Year
Development and Testing of a Community Flood Resilience Measurement Tool	(Keating, et al.)	2017
Developming a Model and Tool to Measure Community Disaster Resilience	Torrens Resilience Institute (Arbon, Gebbie, Cusack, Perera, & Verdonk)	2012
Flood Resilience Community Pathfinder Evaluation	Department for Environment Food and Rural Affairs (Twigger-Ross, et al.)	2015
Coastal Resilience Index	Sea Grant Consortium, National Oceanice and Atmospheric Administration (NOAA) (Sempier, Swann, Emmer, Sempier, & Schneider)	2010
Disaster Resilience Scorecard for Cities	The United Nations Office for Disaster Risk Reduction (UNISDR)	2015

Scope

The scope of the community (self)assessment tools differs in the way resilience and community resilience is defined. Some toolkits approach and define the concepts in a broad way, for example within the tool presented by Keating et al (2017). Other tools, for example the disaster resilience toolkit presented by the Torrens resilience institute is not considering this broad definition of resilience (Arbon, Gebbie, Cusack, Perera, & Verdonk, 2012). Although differences exist in the way the concept of resilience is defined, frameworks presented and used in the toolkits are often similar, including similar components as described in the framework used in this study. Clear similarities can be seen in the frameworks of Keating et al., the Torrens tool and the Flood Resilience Community Pathfinder Evaluation by Defra (Twigger-Ross, et al., 2015). Example of a tool which does not clearly follow this structure is the Coastal Resilience Index, this toolkit focuses on the infrastructure component of resilience (Sempier, Swann, Emmer, Sempier, & Schneider, 2010).

Methods

Qualitative vs. Quantitative

The first major difference between the reviewed toolkits is the focus on either qualitative or quantitative data. The tools presented by Keating et al., Torrens, Coastal Resilience Index and the Disaster Resilience Scorecard for Cities (UNISDR, 2015) have a clear quantitative approach due to the fact that indicators or issues are analysed by giving a score, often ranging from 1 – 5, to each subject or by filling in a checklist. The Flood Resilience Community Pathfinder tool by Defra however, is clearly based on a mixed use of both quantitative and qualitative methods. Here the qualitative data sources helped to address the problem of the variability of some data and gives detailed qualitative evidence in order to support the evaluation.

Population

All reviewed toolkits are supposed to be or in fact are already tested on large quantities of respondents. However, differences are present in the type of population that is surveyed. In the Community disaster resilience toolkit by Torrens, working groups are formed by local people, representing a community. The Coastal Resilience Index is developed for community leaders, requiring a team of experienced local planners, engineers, floodplain managers or administrators to complete the process. The pathfinder tool by Defra uses a mixed method, both including experts related to the evaluated projects and household surveys to include local knowledge.

The Disaster Resilience Scorecard for Cities toolkit initially requires a team of local governmental professionals, however also encourages consultation of citizens in order to improve the validity of the results. More over, if during the process it becomes clear that certain aspects of disaster resilience are not within the field of expertise of the working group, the scorecard should completed in cooperation with related other organisations.

The tool presented by Keating et al. (2017), also encourages a mixed use of data collection methods. Assessors should make their own selection based on availability of resources, local context and appropriateness. Examples of the approaches focussed on that including local knowledge are: household surveys and community group discussions. Examples of methods of including professional knowledge are key informant interviews or consultation of third-party sources.

Timescale

All reviewed tools share the fact that data is collected during extensive periods of time, often with different moments in time of data collection. As example of very extensive data collection period the community flood resilience measurement tool by Keating et al. (2017), is tested in a period of two years including baseline, end line, and outcome measurements. The Community Pathfinder tool (2015) was also funded for a period of two years, during this period baseline, interim and end of project stages are evaluated.

The Disaster Resilience Scorecard tool (2015) can be approached as a high level survey, only as a limited exercise or as a city's complete resilience posture. Time scale of the data collection then depends on the approach used, where a limited exercise could be done within a day, a high level survey would be organised via 1 or 2 day workshops, and a detailed review of the city's complete resilience posture could take weeks to months to complete.

The Community Disaster Resilience Toolkit by Torrens (2012) and the Coastal Resilience Index (2010) require a more limited timescale for using the tool. However setting up the working groups as described above is time consuming and requires at least a full day of work invested in grading the multiple indicators and collect the general outcomes.

4.2.2 Experience Municipality of Reimerswaal

In order to develop a community resilience assessment tool, which is applied within communities of Reimerswaal as a test case, experiences and knowledge from the municipality of Reimerswaal should be taken into account.

This type of information was gathered through interviewing two experts in the field of public safety from the municipality of Reimerswaal. One of the interviewed experts is Advisor on Public Safety specifically on Physical Safety, the second is Advisor on Public Safety specifically on social safety. The choice for these particular two professionals was made in order to get a broader view concerning what the municipality experienced in the field of working with communities, (flood) resilience and awareness.

Scope: how to approach the subject of community resilience
Both the consulted experts from the municipality of Reimerswaal were familiar with the term and concept of resilience and understood how that would work on community level. However, in the way of approaching or using this term in order to start a conversation and eventually gather local data some differences existed. Expert on Physical Safety explained that due to the fact that there is only a small chance of flooding; approaching the concept only the light of flood resilience would not be efficient. He states that considering a broad set of disasters in adaptation would have a bigger effect on the overall resilience. However, if considering community resilience and the aim of including local indigenous knowledge a too broad subject would again not lead to a valid response, as these subjects are most likely not actual and do not spark the imagination of local inhabitants without background knowledge. The expert on Physical Safety explained this in further detail by stating that in general inhabitants within the communities in Reimerswaal are not aware of or considering resilience towards major disaster such as flooding and nuclear disaster. He advises that resilience based approaches should be using subjects which are actual and spark conversation among inhabitants rather than using large scale disasters; these do not trigger motivation of increasing awareness or develop action perspectives on the community scale. The expert on Physical Safety gives a factual example of an action taking by the municipality of Reimerswaal which was not effective at all, due to the fact that it was not something the population of Reimerswaal was considering relevant. The case: the municipality Reimerswaal informed people about the fact that there were 'iodine tablets' available at the city hall, only 5% of the target population responded by getting these pills.

Examples of subjects that could work, as given by the Advisor on Public Safety; Physical Safety, are reoccurring calamities such as large scale fires, problems with chemicals in the atmosphere, water nuisance, or criminality.

This statement is also backed up by the experience of The expert on Social Safety. She states that if subjects are actual, responses from within communities are relatively high compared to occasions where low chance non-actual disasters are discussed. As example the expert on Social Safety gives the success of neighbourhood prevention applications, focussed on preventing criminality.

Population & Timescale
The most important conclusions made from the conversations with both professionals from the municipality of Reimerswaal, considering the respondent population and time investment by respondents are described in this paragraph.

Inhabitants from Reimerswaal are generally focussed on their own community; this can be seen in the fact that a large number of people stay and live in the same community their whole life as stated by the expert on Social Safety. The expert on Physical Safety explains that campaigns or actions from outside a community are often not very effective if these local networks and community bonds are

not considered. On the other hand if solid cooperative relations are formed between outside and inside organisations, local networks can in fact have an impact on larger population groups within a community. Expert on Physical Safety gave the example from a campaign in Krabbendijke. The municipality of Reimerswaal cooperated with representatives from the local religious networks in order to promote safe and civilised use of fireworks during the new year's eve.

Considering the time respondents would be willing to invest in the process of an assessment tool, both representatives of the municipality mentioned the difficulty of getting people's attention and time. Explanation of this can be seen as twofold; again ,as described above, depending on the subject used. Second, the fact that inhabitants tend to focus within their community and hesitate on participating in campaigns or actions from 'outside'.

In general, from the experience of both respondents, in organising or attending informative meetings or in conducting a survey on community scale, they conclude that if large time investments are required responses tend to be low.

4.2.3 Sumarry & Tool Design

As concluded from the previous chapter and answer to research question one, a community resilience framework was developed containing five umbrella components and a list of indicators. This framework is taking the broader view of the concept of resilience into consideration. However, as was concluded from the interviews with professionals from the municipality of Reimerswaal, broad concepts and using disasters, which are not actual, as a case, does not spark the imagination of inhabitants and will not create the motivation of cooperation, due to the lack of awareness. It is therefore that the first conclusion and step towards the design of the community resilience assessment tool was to narrow down the framework. The outcome of this process can be seen in Figure 9.
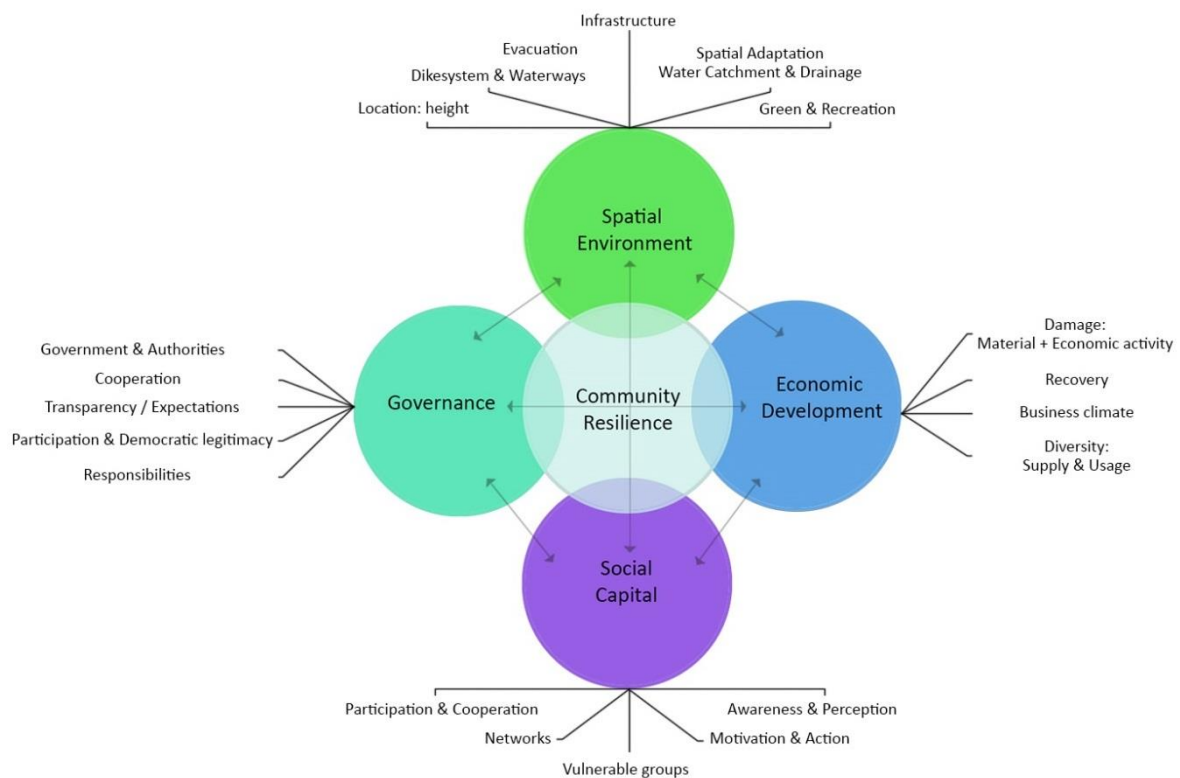

Figure 9 Narrowed down version of dynamic framework of Community Resilience

Most noticeable difference between the theoretical dynamic framework presented in Chapter 3, is that in this version the Social Capital and Community Competence are morphed within one circle of the framework. This was done due to the relative overlap of these two components. 'Social Capital' as title in the circle is used as this indicates the focus and aim of this component in a clearer way. Indicators as were presented within the first version of the dynamic framework are translated into a more practical set.

Second conclusion and step in the design of the tool was to decide which case or subject should be used in order to base the questions on. As concluded from the interviews with the municipality of Reimerswaal, general awareness and perception on major disasters, out of the blue, without having any actual relevance, would not motivate inhabitants to think and they might possibly refuse to cooperate.

It is therefore that for the development of this tool the case 'pluvial flooding' was chosen. First motivation for the choice was the fact that this would be a good starting point from which also questions could be asked about 'flooding caused by dike failure'. Using a more actual case at first, triggers the respondent to already think about related subjects and therefore the road is somewhat paved and makes it possible to also introduce another (less actual) related subject. Second motivation for using the 'pluvial flooding' casuistry is the fact that in one of the communities in Reimerswaal, inhabitants recently experienced this.

However, as conclusion from reviewing existing toolkits, focusing on certain aspects of the concept of community resilience should be avoided. In order to still achieve the broader view of the concept of community resilience questions were added which address the 'general perception' of the respondents.

In order to avoid non-response, as stated by the the expert on Physical Safety and to avoid research fatigue, the tool should be designed in a way that:

1. In a case of low response the data should still be representative for the whole community
2. Time investment for cooperation should be kept to a minimum.

Considering point number one, the tool should be directed towards key figures within a community. Key figures are people within the community who have a larger overview and knowledge about the inhabitants within the community. This knowledge can either emanate from the key figure's position in a formal established association or club, or due to the fact that he or she is generally concerned with community issues. It is important that these key figures are recognised either by a fair amount of people within the community or appointed as key figure by the local municipality.

Directing the tool towards key figures within the community should ensure the answers given to the questions are thus representative for the larger group. These key figures are consulted using a structured questionnaire. However, next to the structured list of questions, the list of indicators as presented in the framework form additional options to question the respondent in further detail. This is to ensure the answers become more complete in the light of the specific component.

In order to keep the time investment required by the key figures/respondents to a minimum, the tool is designed in such a way that it would take a maximum of one hour to complete the questions. The idea behind the time division of the questions is as follows:

- There are four components, as shown within the simplified dynamic framework.
- Within each component: 1 question on 'pluvial flooding'
- Within each component: 1 question on 'flooding caused by dike failure'

- Within each component: 1 question on the 'general perception'.
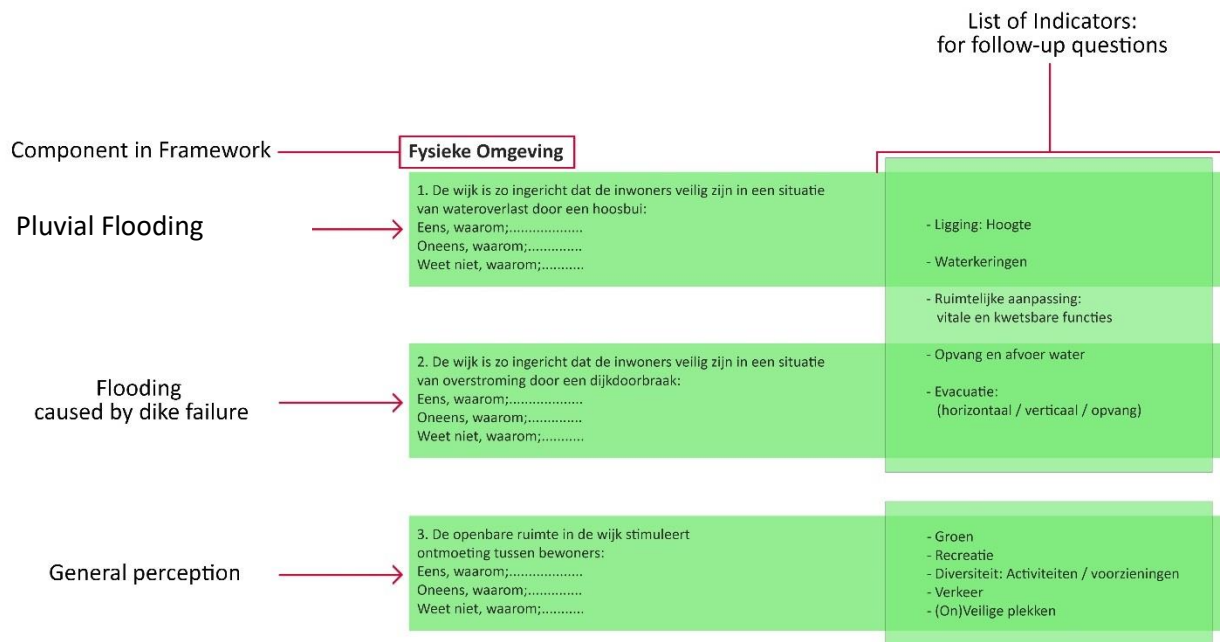
Figure 10 Design of the tool and example of question division

By dividing the questions in this way, five minutes per main question can be used, including the follow-up questions made possible by the included list of indicators. An example of the visual representation can be seen in Figure 10.

In order to properly introduce the respondent to the tool a short description is added. Next to that, an introducing question is added, which addresses in what way the respondent would indicate his or her 'neighbourhood/community'. This in order to check if this aligns with the geographical location, as assigned by the municipality or that it depends on social factors. An attachment is added with a map of the community, here the respondent can indicate factors that form 'the community'.

The full version of the Community Resilience assessment tool can be seen in Appendix I

4.3 Pilot Municipality Reimerswaal: Process design

As conclusion from the previous chapter a final design for the Community Resilience assessment tool was developed. This chapter describes the process is before testing the toolkit.

4.3.1 Location for pilot

The first, and most important, step within the process is to pick a location in order to test the toolkit. As explained before, the casuistry 'pluvial flood' is actual as it is a relatively high chance calamity. Therefore, the choice for the initial test location was based on a recent pluvial flood event. This was the case within the village of Yerseke, the community experienced a pluvial flood on the 16th of June 2016.

Pluvial flood event, in Yerseke

During the evening of the 16th of June 2016 a large raincloud moved over Yerseke. The intense precipitation of 19.8 mm/hour, caused a lot of problems, including; flooded streets at multiple locations and water within 50 – 100 private properties. Although efforts were made in order to pump the water away, this was hindered due to the fact that the sewer system was already full and pumping towards the Easternscheldt was not an option as this could harm the oyster- and mussel farms (van Sluijs, 2017). Pictures in Figure 11 give an indication of this calamity in Yerseke.

Figure 11 Pictures of pluvial flooding, Yerseke 2016 (Omroep Zeeland, 2016)

In order to avoid biased conclusions being made from only testing the tool in one location, another location was needed in order to compare with the outcomes in Yerseke. In the process of finding another location the geographical location of Yerseke (test community A) was compared in relation to another community within the municipality of Reimerswaal. Another requirement for the second pilot location is that this community should not have experienced a recent pluvial flooding.

For this stage in the analysis a general map was used, a height map and two maps indicating the flood safety of Reimerswaal.

Comparing two Communities

General location

The general location of Yerseke as can be seen in Figure 12. The village is located in the north-western part of the municipality of Reimerswaal. Yerseke is characterised by its location next to the Easternscheldt, only separated by a dike.
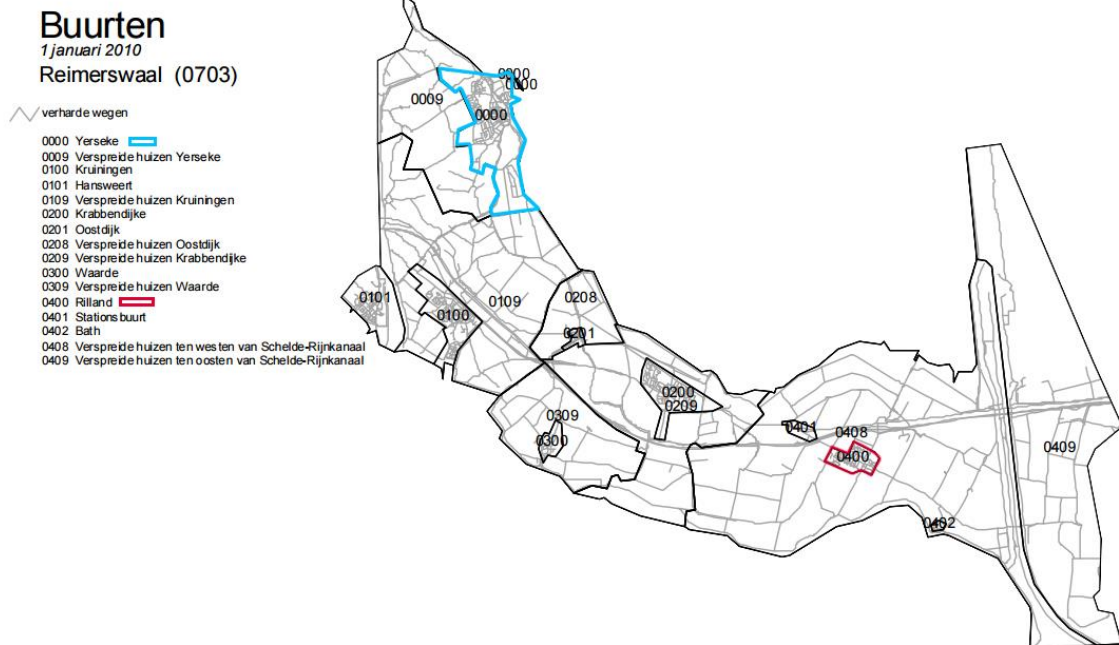
Figure 12 Municipal map of Reimerswaal. Highlighted Yerseke - Rilland

The second community, officialy called Rilland-Bath, stood out in the analysis, with its location on the other side of the municipality and not being as near to a dike and sea as Yerseke. This location and characteristic was the initial argument in order to choose the community of Rilland as second village for testing the community resilience assessment tool. The village of Rilland also fitted the requirement of not experienced a recent event of pluvial flooding.
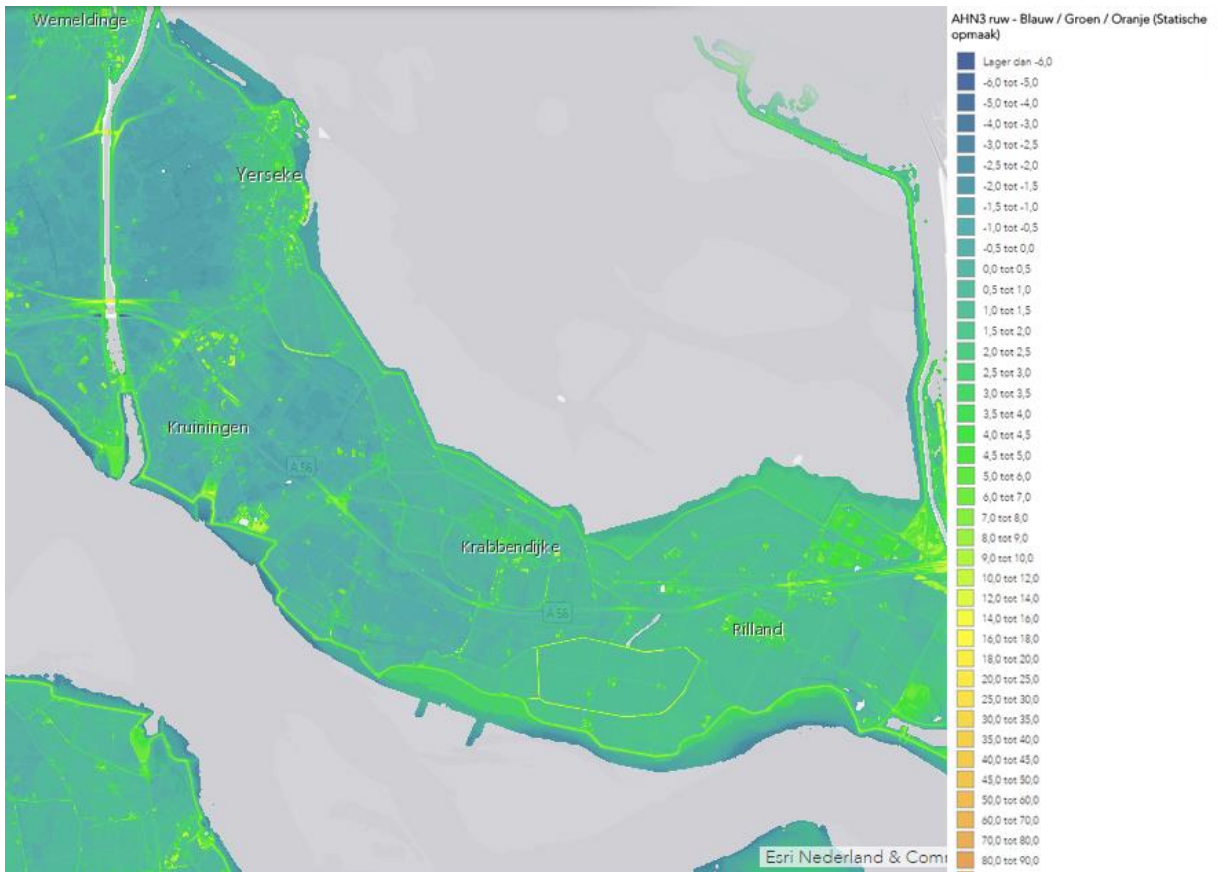
Figure 13 Height map municipality of Reimerswaal (Algemeen Hoogtebestand Nederland, 2017)

Height & Flood risk

Another difference between these two communities is their relative height. If a map of the complete municipality of Reimerswaal is used in order to compare Yerseke and Rilland, it becomes clear that especially the surroundings of Yerseke are low, around -1.5m NAP, this is called the 'Yerseke Moer' polder and can be seen in Figure 13, as the darker blue area, west of Yerseke.

Figure 14 Height map village of Yerseke (Algemeen Hoogtebestand Nederland, 2017)

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If the height maps of both the village of Yerseke and Rilland are zoomed in, other differences become visible. For this comparison, the AHN3 groundlevel with dynamic layout is used, in order to identify differences more visually clear.

The high dikes protecting the low laying hinterlands of Reimerswaal are clear high ground, around +5m NAP, veins through the village of Yerseke. Also the area around the church in the centre of the village is lightly elevated, around +2m NAP, and can be seen in Figure 14.
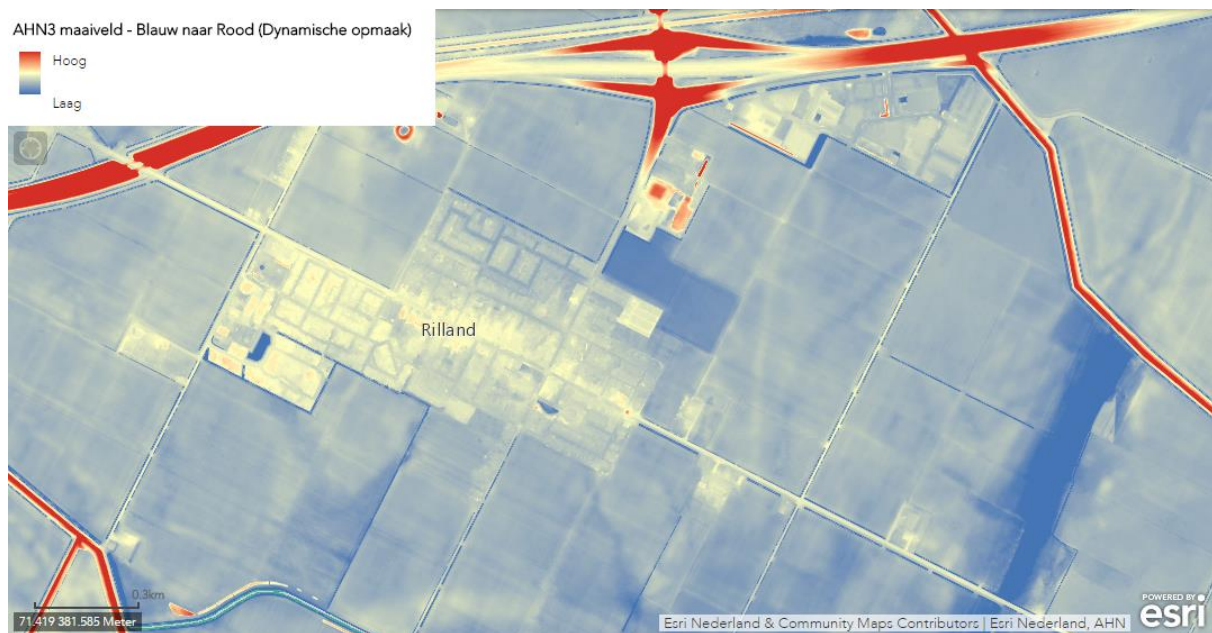
Figure 15 Height map village of Rilland (Algemeen Hoogtebestand Nederland, 2017)

The map presented in Figure 15, is showing the detailed height map of the village of Rilland and makes it possible to compare with Yerseke. Unlike Yerseke, Rilland does not have any dikes bordering the village, this is clearly visible due to the missing high ground 'veins'. However slightly higher than the surrounding polder areas, the village is missing areas which are more elevated as others. The polder area is elevated to around +1m NAP, whereas the village is around +1.5M NAP (Algemeen Hoogtebestand Nederland, 2017).

As can be seen within Appendix II, the municipality of Reimerswaal is surrounded by dike ring number 31. As was concluded in the 2011 report published by the Ministry of Infrastructure and Environment, there were some major differences between the different dike segments within dike ring 31 (Rijkswaterstaat, 2011). Figure 16 shows that especially along the channel through 'Zuid-Belevand' and the dikes at the northern part of the Yerseke Moer polder had a larger probability of failure in comparison with other segments.

Figure 16 Failure probability of dike segments in dike ring 31 in 2011, Reimerswaal (Rijkswaterstaat, 2011)

Analysis and findings in the report on Mapped Dutch Safety from 2011 (Rijkswaterstaat, 2011), also included the visual representation of the local individual risk factor (LIR) as outcome of the failure probability of the dike segments. This can be seen in Figure 17.
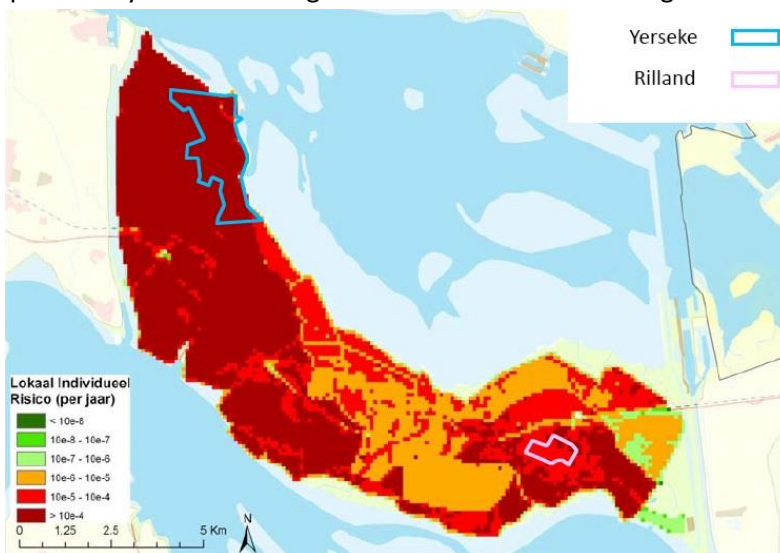
Figure 17 Local Individual Risk(LIR) per year, 2011 (Rijkswaterstaat, 2011)

As logical outcome of the relative higher probability of dike failure in the north-western dike segments, is the fact that the LIR in these areas are among the highest within the municipality. It is clear that Yerseke lies within the area with the highest LIR and Rilland only scores slightly lower, due to lower failure probability of the surrounding dike segments.

As one of the outcomes of the 2011 report, interventions have been made in order to decrease the dike failure probability of the bad segments. The updated report, published in 2015, shows us that the failure probability of dike segment is decreased, along all the segments (Rijkswaterstaat, 2015). As result of the decreased failure probability, also the local individual risk is decreased throughout the municipality. As shown in **Error! Reference source not found.** and Figure 19 , it is clear that both Yerseke and Rilland currently have a lower LIR compared to the situation in 2011. However, the Yerseke Moer, polder located west from Yerseke, still has a higher LIR and is bordered by one dike segment with a relative higher failure probability.

Figure 18 Failure probability of dike segments in dike ring 31 in 2015, Reimerswaal (Rijkswaterstaat, 2015).
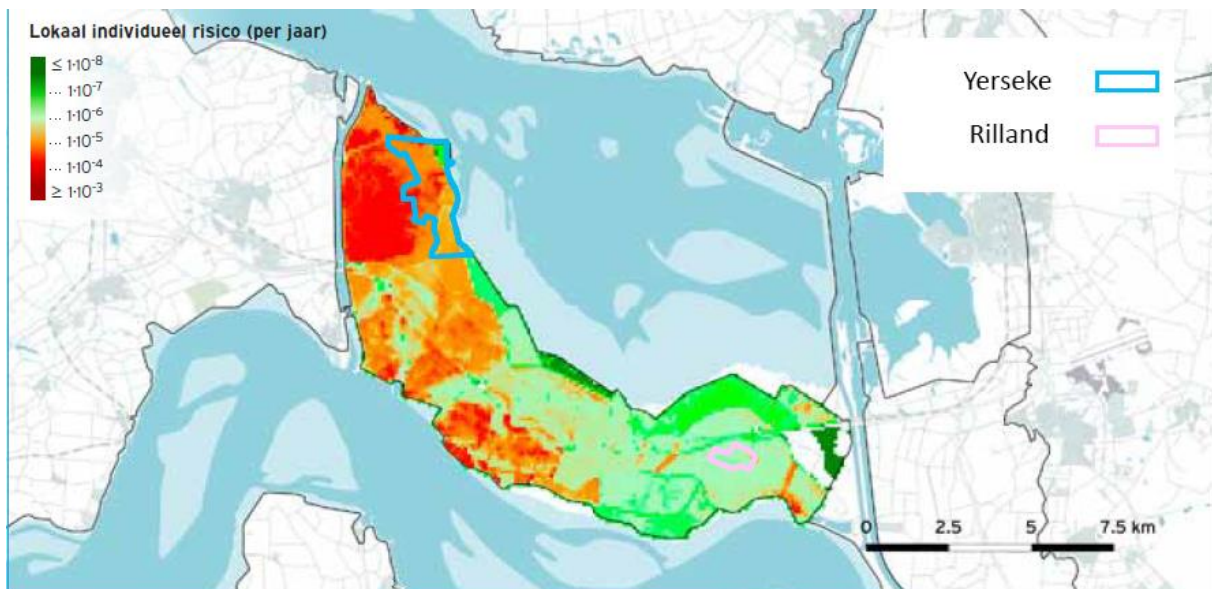
Figure 19 Local Individual Risk (LIR) per year, 2015 (Rijkswaterstaat, 2015).

Socio – Economic
Yerseke is twice as large as Rilland considering the amount inhabitants. Yerseke has around 6700 inhabitants, whereas Rilland has around 3000. In Yerseke the percentage of inhabitants within the age of 15-24 is the biggest with 26% of the population. In Rilland the largest percentage of the population (28%) is within the age of 45-64. As also already mentioned by the expert on Social Safety

from the municipality of Reimerswaal, the composition of the population in Rilland is different compared to Yerseke. As described by this representative of the municipality, due to the relative location to the mainland of the Netherlands, more people from outside Zeeland settle in Rilland. This state ment is also strengthened by the number of immigrants settling in these communities. In Rilland the percentage of immigrants, including both western and not-western, is 15% of the total population of the village. Yerseke scores lower with only 7% of the total population coming from another country.

Originally Zeeland is a relative religious province and this is still the case, as was mentioned by the expert on Physical Safety and can be concluded from figures from CBS (Schmeets & van Mensvoort, 2015). However, in Rilland the percentage of people who do not practice religion is high, 60.2%, compared to the percentage in Yerseke, 29.8%. This is another outcome of the fact that the inhabitant composition differ; in Yerseke mainly people originating from this region and in Rilland more people from outside.

The average property value is somewhat higher in Yerseke compared to Rilland. In Yerseke the average value is 199.000 euro, in Rilland this is 176.000 euro. This slight difference could be explained through the fact that within Rilland the percentage of rental housing is higher, 46%, compared to only 37% of the housing stock in Yerske. Nonetheless, both communities score high, with Yerseke 93.3% and Rilland 94.6% of the population being satisfied with their house.

The source of income from both villages are quite similar. With the exception of the difference in the percentage working within agricultural or fishing sector. In Yerseke the percentage within this sector is twice as high as in Rilland, this is visualised in Figure 20.
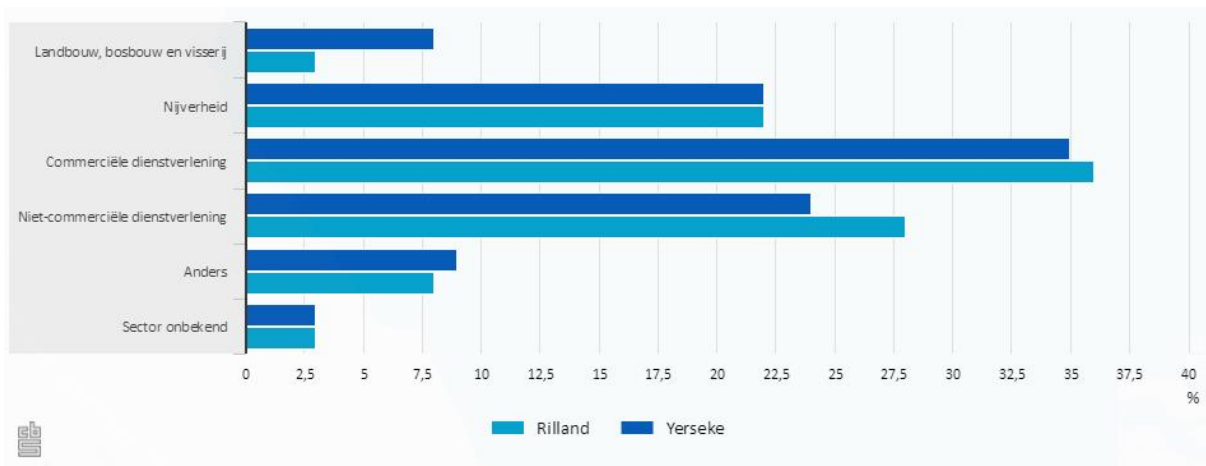

Figure 20 Labour force devided in sectors (CBS, 2011)

On the subject of social networks and participation some differences become evident between Yerseke and Rilland.

In general 68% of the population in Yerseke have a very strong developed attachment to the village, in Rilland this is only 42.1%. Again the composition of the population could be the reason for this, another reason becomes evident through the types of social networks present in the community. Social networks as presented in Figure 21 spider-graph, show percentages of the population within the two communities falling within a certain type of social network.

The 'family oriented' typology explain the social network of people with a lower education, who always lived within the same region. Family and friends of people fitting in the 'family oriented' typology also live within the same community, this is important to then. 'Family oriented' people have a lot of contact with close neighbours, however do not participate in voluntary work or activities within the community. The largest share of the population of Yerseke fits within this social network typology, 48.8%, and only 30.6% in Rilland. These figures could explain the fact that the percentage of people being active in voluntary work is a lot lower in Yerseke, 19.9%, compared with
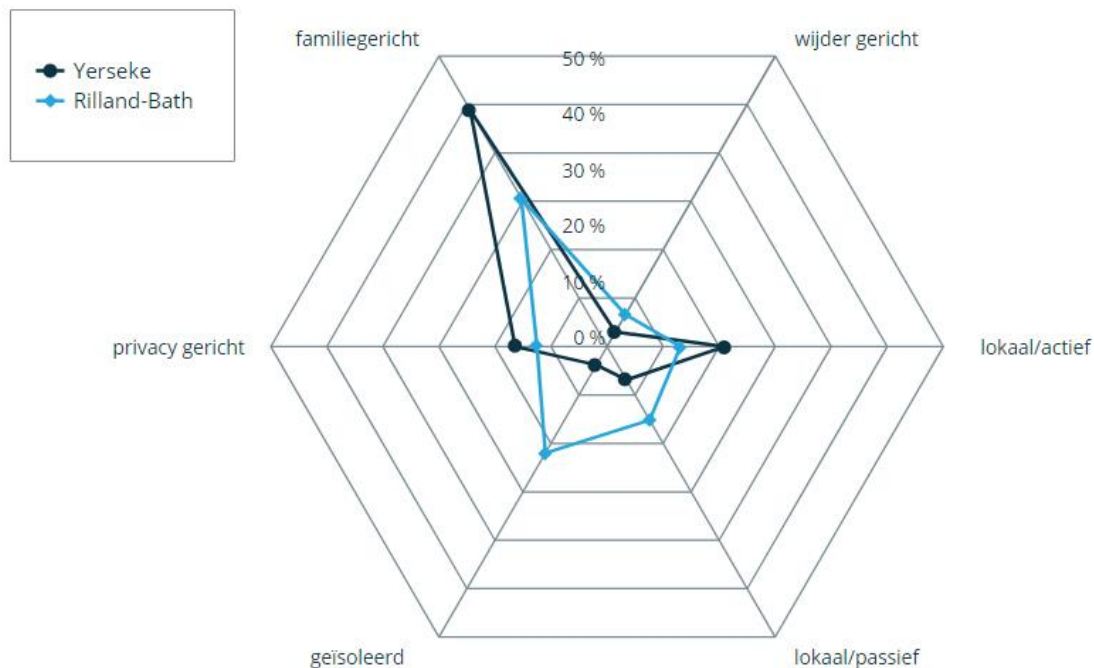
Figure 21 Social Network Types % of population (ZB|Planbureau, Staat van Zeeland, 2013).

Rilland where 31.9% joins voluntary activities.

In contrast to the figures on participation in voluntary work, the percentage of people in Yerske fitting in the 'local/active' typology is higher than the percentage in Rilland. It is a contrast because, people within this typology are medium-skilled and often lived their entire life within the direct surrounding of the community. Participating in voluntary work and activities within the village is important.

In the 'Isolated' typology, people are older high educated people who are originally not from Zeeland. Family and friends are living mainly outside of the province, and frequent contact is not important. Contact with neighbours, and attending activities in the neighbourhood is considered un important. The community of Rilland is scoring relatively high on this social network typology

compared to Yerske (Rilland: 22%. Yerske: 3.8%). These figures are complementing earlier statements considering the difference of where inhabitants of the two villages come from.

Key Figures

As conclusion in the design of the toolkit the semi-structured interview/questionnaire should be conducted with key figures within the community. The chosen locations for the pilot of the tool are the villages Yerseke and Rilland within the municipality of Reimerswaal.

In order to reach out to key figures within these communities, contact data was acquired through the municipality of Reimerswaal. List of people by their function that were contacted within the two communities is shown in Table 3 Contacted Respondents Yerseke - Rilland.

Table 3 Contacted Respondents Yerseke - Rilland

Yerseke	Rilland
Members village council Yerske	Chairman consultative group Rilland
Owner church centre 'the Haven'	Owner criminality prevention application
Owner café 'de Sportvisser'	Chairman senior council Rilland
'Stichting Promotie Yerseke'	
Entrepreneur association Yerske	
'Stichting Vrienden van de Mossel'	
Youth club ''t Contact'	
Reformed youth council	
Journalist PZC in Yerseke	

4.3.2 Conclusions

This chapter described the process for coming to a proper pilot for the community resilience assessment tool within the municipality of Reimerswaal. Due to the chosen casuistry, the village of Yerseke was concluded to be location one. In order to avoid biased data and get a broader test result, the village of Rilland was chosen as test location two. The community of Rilland was chosen as it did not experienced a recent event as described in the casuistry of the tool and because of the geographical differences with Yerseke. The socio-economic characteristics were analysed as those should be taken into account in discussing the results.

4.4 Results Pilot Toolkit in Reimerswaal

This chapter will describe and discuss the results of the pilot for the community resilience assessment conducted in the community of Yerseke and Rilland. Results of the general experience with taking the interviews will be presented and discussed first. In order to review the rest of the results the set-up of the toolkit is used; including the introduction, the results are presented per components of the community resilience framework a (Figure 22). An overview of the results per respondent can be found in Apendix III.

Figure 22 Dynamic Framework Community Resilience, foundation for the Toolkit.

4.4.1 General

In all the interviews with the key figures in both Rilland and Yerseke the general experience is that the questions were well understood, without requiring the respondents to have any background knowledge on the subjects. The design of the tool with a list of structured questions and option of questioning in more detail worked well. List of indicators meant for asking detailed questions fitted the structured questions and tied in with the answers of the respondents. As was expected beforehand, sometimes the respondent already touched on the subjects presented by the indicators in their own story.

The set target for the response was at least three key figures per community, so a total of six interviews. This target was easily reached within the community of Rilland. However, although there was an extensive list of contacts for Yerseke, only one of the targeted key figures was willing to participate. Reasons given for not participating in the interview can be summarised in either not having or wanting to invest the required time, or the respondent did not felt acquainted with the presented subjects. The result of low and non-response for the community of Yerseke could be explained through several reasons. Although not completely logical, given the fact that Yerseke recently experienced a pluvial flood event, the general 'awareness gap', as described in the report of the OECD (2014), could still be one of the reasons the response was low. The 'awareness gap' is describing the low awareness and perception among Dutch citizens related to key water management functions and water risks. Next to that, also the local socio-economic characteristics as analysed within Chapter 4 paragraph 4.3 and as stated by experts from the municipality of Reimerswaal could explain this phenomenon. Generally the population of Yerseke is composed of people who already lived there their entire life or in the direct surroundings. Majority of the inhabitants therefore have a strong connection with the village and are oriented within the

community. This is further explained in the fact that a large share of the population of Yerseke fits within the 'family oriented' social network typology.

4.4.2 Introductionary question

The respondent from Yerseke mentioned that due to his position and due to the fact he lived his entire life within the community he also considers the entirety of Yerseke as part of his neighbourhood. Respondents from Rilland, except from the chairman of the senior council, considered their community even larger, extending beyond the boundaries of the village. This was mainly due to their extended network gained through their position within the community. Chairman of the consltative group Rilland defined 'the community' including the surrounding agricultural areas in the Reigerbergse polder. Owner of the criminality prevention application defined 'the community' as the area including members of the application, this extends the borders of the village.

4.4.3 Spatial Environment

All respondents agreed with the statement that people within their community would be safe during a 'pluvial flood' event. Respondents argued that mainly adaptation measures taken within the village would prevent such an event from taking place. Respondent from Yerseke added to his statement that after the event in 2016, the municipality immediately responded and starting to adapt the public space; people understood what was going on and why is was needed. Interviewee from Yerseke the increased capacity of the sewer system and development of extra catchment and infiltration possibilities within the public space. All respondents stated, evacuation is not a possible issue in a pluvial flood event.

The respondent from Yerseke and all from Rilland stated that people would not be safe in case of a flood event caused by dike failure. Respondent from Yerseke mentioned that, although Yerseke is situated relatively on higher ground, unsafe conditions would arise. Also he argues, people are not aware of horizontal evacuation routes or possibilities of vertical evacuation. Considering evacuation during this event, respondents from Rilland state that people are not aware of the routes. However, the location near the highway is mentioned as possible horizontal escape route. Vertical evacuation is mentioned by the owner of the criminality prevention application, respondent of Rilland. He states there is not a large scale option for vertical evacuation. However, previously mentioned respondent and the chairman of the senior council state that elderly housing facilities are a possibility for vertical evacuation of elderly, as these buildings are three stories high.

Considering the general perception of the physical environment, interviewees from Rilland mention the public space in their village is mainly functional, and does not clearly stimulate connection between inhabitants. There are some basic facilities like a playground, however the rest of the street is purely functional towards traffic. Respondent from Yerseke states that there are enough facilities like playgrounds, parks and benches, here people can meet eachother. However, these spaces are scattered through the community and the rest of the public space is dominated by traffic. All respondents, consider the public space as a safe space. One example that was given from interviewee in Rilland: the municipality removed some bushes, which were blocking the overview of an intersection, this improved the safety in an unsafe situation.

4.4.4 Economic Development

All interviewees from Rilland and Yerseke state that during a pluvial flood, the disturbance within the village will only occur as material damage and not directly or indirectly disrupt economic activities.

However, chairmen of the consultative group, who is also chairmen of the agriculture association Rilland, mentioned that such events of flooding due to precipitation does harm the economic activities of the people outside of the village. The interviewee mentions the agricultural businesses surrounding the village and states that saturated or flooded soils, due to precipitation can disrupt daily affairs of farmers.

In discussing the event of a flooding caused by dike failure, all respondents from Rilland and Yerseke state that such an event would induce a lot of material damage and also heavily disrupt daily affairs and economic activities, both in a direct and indirect way. Once such an event occurs people are trapped an interviewee from Rilland mentions. Depending on the extend of the damage people from both Rilland and Yerseke are likely to work hard in order to return to business as usual.

Especially in Yerseke, as mentioned by the respondent, there are enough possibilities for new development of economic activities. This is proved due to emerging new businesses and the stimulating policy of the municipality; as they developed a new area with business plots. Respondents of Rilland are more sceptical about these economic possibilities, all mention the limited user group, due to the fact that the community is relatively small. Outside of the village of Rilland, in the semi-industrial and horticulture areas, there better opportunities for the development of economic activities.

4.4.5 Social Capital

As stated by all respondents, it is very likely people will help each other in Yerseke and Rilland, during a pluvial flood event. The respondent from Yerseke mentions that people are not thinking about the risk and action perspectives beforehand, and are likely to help people within the direct surrounding. Interviewees from Rilland explain that in general the population of the community is quite individualist, or feels connected only with a small group, however, if help is required people are likely to help each other. Also in this community people are not considering this type of calamity, as it did never occur in Rilland, mentioned the owner of the criminality prevention-app.

Both respondents from Rilland and Yerseke state that also in the case of a flood caused by dike failure, inhabitants of the community will help each other. However, given the fact that such an event everyone is affected, some will first ensure their own safety, before helping others. Moreover, all respondents state it would be more difficult for individuals to identify action perspectives in a flood event caused by dike failure.

In Yerseke the population is mainly organising themselves on informal basis and only if there is a clear motive. This is also the case during informative meetings organised by the municipality; inhabitants of Yerseke only attend if they are concerned with the issues at stake. However, Yerseke recently started a village council, which is broadly supported by the community. Trigger for forming the village council was the trend of disappearing facilities, such as the maternity clinic, from Yerseke. Respondents from Rilland report that in general the population is quite individualistic oriented or feels connected to one particular group. This characteristic is causing that general initiatives and networks are organised and stay within one group. However, if there is a particular problem inhabitants of Rilland will initially cooperate informally in order to address it and then seek support from the formal associations.

4.4.6 Governance

In general the respondents from Rilland report that organisations and municipal government are open to initiatives from inside the community. Generally the municipality has a 'wait and see attitude' towards initiatives. However, if an inivitative is presented as having broad positive influence on the community as a whole the municipality is often willing to cooperate and facilitate. Still, possibilities for financial aid are limited. The municipality is also a member of the consultative group Rilland. However, in order to either cooperate with municipality, organisations from outside the community and even with other associations within the community it has to be clear whom to contact. Chairman of the senior council gives a clear example story of this: After successful organisation of the 'Rilland-Dag' in 2007, all members of the organisation of this event spoke their wish for more frequent events. This lead to a stronger, diverse network with clear responsibilities for participating partners. This resuled in more and diverse events that have been organised since.

The interviewee from Yerseke states that initiatives from this community are most of the time finding support from the municipality. He explicitly give the example of the aftermath of the pluvial flooding event in 2016. During this period people really organised themselves in order to ensure the municipality would deal with these issues. It is clear that experiencing this event lead to broad support and participation of inhabitants and eventually a large scale solution to avoid recurrence.

In discussing who would be responsible during a 'pluvial flood'' or a 'flooding event caused by dike failure' all respondents from Rilland and Yerseke gave similar answers. The population of both communities would appoint the municipality as responsible for communication, evacuation, and recovery. People trust in the government and are convinced the municipality arranges everything during such calamities, as currently these issues are not discussed in cooperation with inhabitants.

People will, as mentioned earlier by all respondents, help each other. However, especially during a flood event caused by dike failure, action perspectives are low or unknown. Reasoning behind these statements, as given by the interviewees, is that the awareness on these issues is low. Chairmen of the consultative council adds, that he thinks the issue of nuclear disaster is concerning more people in Rilland.

5 Conclusions & Recommendations

5.1 Conclusions

'What are the building blocks of Community Resilience?'

By using a broad starting point in defining the concept of resilience a complete dynamic framework was developed. This framework includes indicators that defined the five components of community resilience, the building blocks of community resilience.
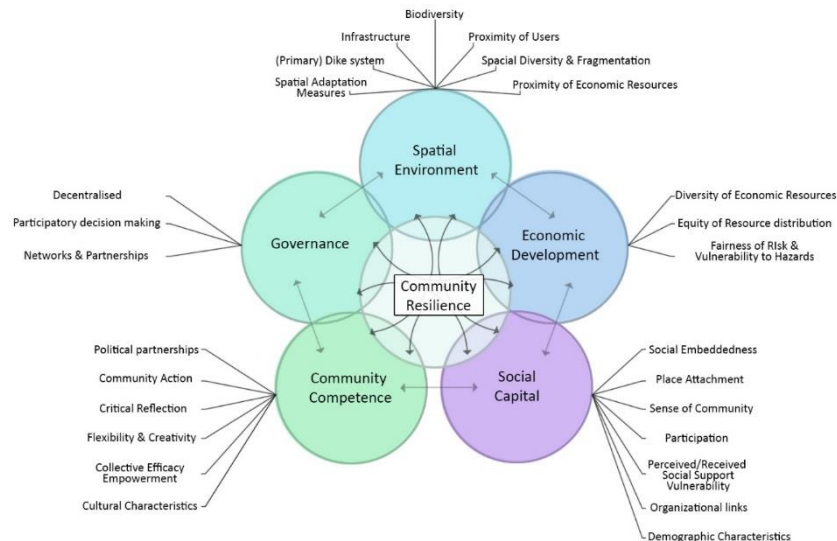

Figure 23 Dynamic Framework of Community Resilience as set of networked components: the building blocks of Community Resilience

'Which method and characteristics of existing community self-assessment tools are compatible with the design for an assessment tool for the municipality of Reimerswaal?'

By transforming the highly theoretical dynamic framework into a simplified version, it formed the basis of the community resilience assessment tool. The four components formed the four subjects for the questions, and the indicators per components became additions to these. This is the general design of the toolkit and allows for a detailed semi-structured interview.

Including both risk specific and general perception related questions within the toolkit formed a balanced whole and ensured the broader concept of community resilience is taken into consideration.

'In what way should the process be designed to successfully implement the tool as a pilot within a community of the municipality of Reimerswaal?'

The tool should be conducted with key figures in the neighbourhood, as these people can tell something representing the whole community. This decreased the time investment needed for the implementation.

By selecting an actual casuistry for the pilot area Reimersaal, the tool was further developed. The casuistry used for the pilot: 'pluvial flooding'. This is an actual issue and allows to connect the subject of 'flooding caused by dike failure' within the tool.

The process of implementing the toolkit started with selecting two test locations, in order to compare the outcomes. The village of Yerseke, location A, recently experienced an event as described by the casuistry. The village of Rilland, location B, did not experienced such an event.

Analysis of the physical and socio-economic characteristics was done in order to be able to declare certain differences between the communities.

These characteristics mainly declared the low-response from the community of Yerseke. This can be avoided in further pilots or projects by contacting the community through existing cooperative networks between the municipality and local associations. Moreover, adapting the toolkit to even more actual topics could increase the response.

The results do not show a major difference between the awareness and resilience of the two communities. However, within the 'Social Capital' component the community of Yerseke showed that after experiencing a pluvial flooding events, the population did in fact organised themselves more, compared to business as usual periods.

As the socio-economic analysis already concluded, both villages have a relatively narrow focus on their own community or individual lives. Initiatives such as the criminality prevention application or organised events proved to be useful methods of connecting inhabitants or spark conversation.

As answer to the main research question:

'How can the development of an assessment tool increase community resilience and give decision makers insight in community specific difference in the level of resilience?'

Given that a toolkit as presented in this study did not exist yet, the process of development did indicate shortcoming of already existing methods. Moreover, the toolkit proved to give insight in indigenous knowledge, characteristics and indication in the level of resilience. This data provides decision makers with valuable information on the level of community resilience, and makes it possible to distinguish community specific differences or best practices. It is unclear if the toolkit directly increases community resilience, this is a subject for future research.

As presented in the introduction the problem statement defines the knowledge gap between academic research on community resilience and the actual shift towards more holistic, multi-facetted flood risk management. This study adds to this gap, as it generally expands the understanding of a resilience approach, while taking awareness raising, public perception and indigenous knowledge into account.

5.2 Recommendations

5.2.1 Application of Data
The development of a community resilience assessment tool can be a useful tool in identifying community specific differences. Adaptability of the toolkit is high as the dynamic framework used as foundation can be applied generally. Including the indigenous knowledge gained as result of toolkit is valuable source of community specific information, which can be used in tailor made policy, fund allocation or decision making. Information gained through the application of the toolkit also indentifies 'weak spots' within the resilience of a community, for example: low awareness on certain aspects, or wrong expectations considering responsibility. This information should be used in order to increase effects of informative campaigns organised by the municipality or other organisations.

5.2.2 Future Research
As it is difficult to conclude if the toolkit on its own strengthens community resilience, as this is difficult to measure through this approach. This could be subject for further research in order to discover if application of the toolkit does increase local awareness and participation in flood risk management and resilience related subjects. By implementing the toolkit in different moments of

time this can become clear. Moreover, the tool could be supplemented with a section on 'action perspectives' of the interviewee. This to identify in what way the respondent is aware of or motivated to take action considering the subject of the toolkit.

This study showed that due to the characteristics of the communities, especially Yerseke, it was difficult to reach the respondents. Further research should investigate if there are more effective approaches towards applying the toolkit. This can be done within the same pilot locations, to clearly identify differences in the effect. However, more time should be invested in researching (in-)effective ways of approaching such a community. This can be done in close cooperation with the municipality of Reimerswaal.

It would be interesting to investigate in future research if the design of the toolkit and process principles could also be used to address a complete different resilience casuistry. Such a study could be applied within the same pilot location and timeframe. However, essential to the casuistry is that it should be actual within the chosen pilot location.

The design of the toolkit and process principles are based on both academic literature and local experience and region specific data. Future research could identify if the toolkit can also be applied within a different geographical location or cultural situation. Adjustments could be made to the design and process principles of the toolkit in order to increase the general applicability.

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Appendix I: Community Resilience Assessment Toolkit

Inleiding

Voorliggend instrument is bedoeld om inzicht te krijgen in de veerkracht van wijken ten aanzien
van hevige regenval en overstromingsrisico.
Aan de hand van de onderwerpen – fysieke omgeving, economische ontwikkeling, sociaal kapitaal en bestuur –
worden vragen gesteld om inzicht te krijgen in de wijk en hoe men omgaat met bovengenoemde mogelijke verstoringen.
Per vraag zijn een aantal aanvullende factoren opgenomen die richtinggevend zijn voor vervolgvragen,
om zodoende scherper inzicht te krijgen in de kenmerken en activiteiten die bijdragen aan de veerkracht in de wijk.

De antwoorden worden gegeven vanuit de kennis van sleutelfiguren over de wijk.
In de bijlage is een kaart opgenomen met een beeld van de wijk, waarop het instrument is gericht.

Naast deze geografische wergave van de wijk, is er ruimte om aan te geven wat de respondent verstaat
onder 'Mijn wijk'. Hiervoor kan gebruik gemaakt worden van de kaart in de bijlage.

Fysieke Omgeving

1. De wijk is zo ingericht dat de inwoners veilig zijn in een situatie van wateroverlast door een hoosbui:
Eens, waarom;....................
Oneens, waarom;..............
Weet niet, waarom;...........

- Ligging: Hoogte

- Waterkeringen

- Ruimtelijke aanpassing:
  vitale en kwetsbare functies

2. De wijk is zo ingericht dat de inwoners veilig zijn in een situatie van overstroming door een dijkdoorbraak:
Eens, waarom;....................
Oneens, waarom;..............
Weet niet, waarom;...........

- Opvang en afvoer water

- Evacuatie:
  (horizontaal / verticaal / opvang)

3. De openbare ruimte in de wijk stimuleert ontmoeting tussen bewoners:
Eens, waarom;....................
Oneens, waarom;..............
Weet niet, waarom;...........

- Groen
- Recreatie
- Diversiteit: Activiteiten / voorzieningen
- Verkeer
- (On)Veilige plekken

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Economische Ontwikkeling

4. In een situatie van wateroverlast door een hoosbui is
de verstoring in de wijk groot:
Eens, waarom;...................
Oneens, waarom;..............
Weet niet, waarom;...........

- Materiele schade inwoners

- Schade Economische Activiteiten

- Infrastructuur

- Doorfunctioneren / herstel van
  Activiteiten

5. In een situatie van overstroming door een dijkdoorbraak is
de verstoring in de wijk groot:
Eens, waarom;...................
Oneens, waarom;..............
Weet niet, waarom;...........

- Indirecte gevolgen

6. In de wijk zijn er mogelijkheden voor nieuwe
economische activiteiten:
Eens, waarom;...................
Oneens, waarom;..............
Weet niet, waarom;...........

- Vestigingsklimaat
- Diversiteit: Aanbod & Gebruik
- Beleid: Stimulerend / Restrictief
- Aanwas bedrijven

Sociaal Kapitaal

7. In een situatie van wateroverlast door een hoosbui komt men
in actie om wijk genoten te helpen:
Eens, waarom;...................
Oneens, waarom;..............
Weet niet, waarom;...........

- Risicobewustzijn en perceptie
  (inschatting risico en gevolgen)

- Handelingsperspectieven
  (weet men wat te doen?)

- Motivatie tot handelen
  (Bereid zijn tot/overgaan tot handelen)

8. In een situatie van overstroming door een dijkdoorbraak komt men
in actie om wijk genoten te helpen:
Eens, waarom;...................
Oneens, waarom;..............
Weet niet, waarom;...........

- Kwetsbare groepen

- Voorbereidend - reactie - nazorg &
  herstel

9. Buurt bewoners kennen elkaar en verenigen zich om
gezamenlijk problemen aan te pakken:
Eens, waarom;...................
Oneens, waarom;..............
Weet niet, waarom;...........

- Veiligheid
Hoe/Wat/Wie/Wanneer/Hoevaak/(In)Formeel:
  - Netwerken
  - Samenwerking
  - Participatie

Bestuur

10. Instanties en overheden staan open voor initiatieven uit de buurt:
Eens, waarom;....................
Oneens, waarom;..............
Weet niet, waarom;...........

- Gemeente/Waterschap/Provincie/ Hulpverlening
- Samenwerking (faciliteert, stimuleert, doet mee,...)
- Transparantie/Verwachtingen
- Participatie en democratische legitimiteit

11. In een situatie van wateroverlast door een hoosbui is het duidelijk wie er verantwoordelijk is:
Eens, waarom;....................
Oneens, waarom;..............
Weet niet, waarom;...........

- Communicatie naar inwoners

- Evacuatie en opvang

- Schade huisvesting

- Nutsvoorzieningen

- Herstel leefbaarheid

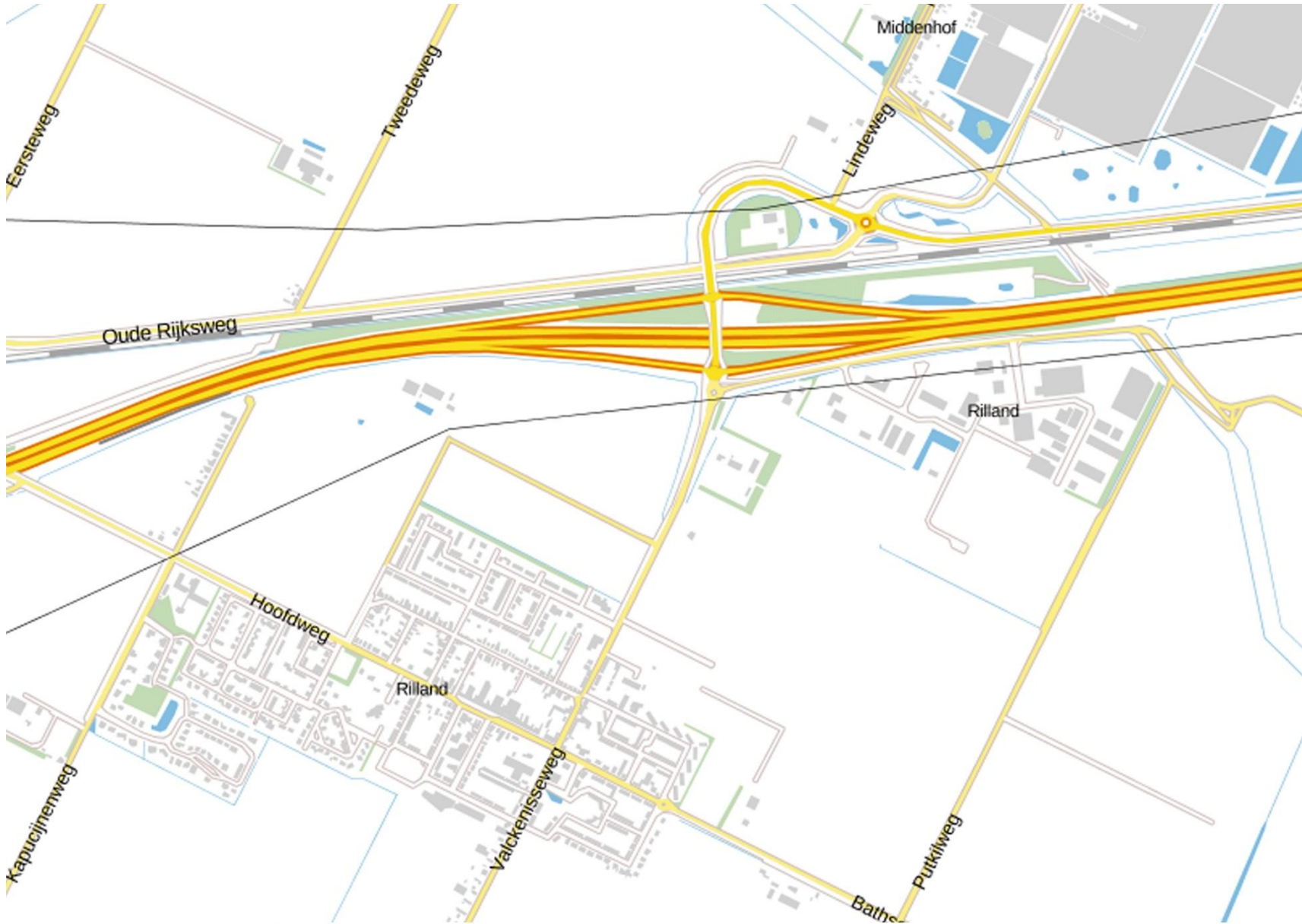**12. In een situatie van overstroming door een dijkdoorbraak is het duidelijk wie er verantwoordelijk is:**
Eens, waarom;....................
Oneens, waarom;..............
Weet niet, waarom;...........

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Appendix II: Dike rings the Netherlands.

Municipality of Reimerswaal

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Appendix III: Results per Respondent (in Dutch)

Rilland

Voortzitter Seniorenraad: Willem van Zon

Wat verstaat de respondent onder 'Mijn Wijk'?

Persoonlijke woonplek en omringende straten zie ik als mijn wijk vanuit persoonlijk oogpunt. Vanuit mijn functie als voorzitter van de seniorenraad heb ik vooral binding met 'dit gebied' (zie kaart: 'Senioren groep'), omdat hier vooral senioren wonen. Bijvoorbeeld met de nieuwere wijk heb ik minder binding, hier wonen vooral jonge mensen.

Fysieke Omgeving

1. *De wijk is zo ingericht dat de inwoners veilig zijn in een situatie van wateroverlast door een hoosbui:*
   Eens, Nieuw aangelegde wegen en riolering in deel van Rilland, gescheiden afval water en regenwater, wegen zijn aangelegd met een 'holle' vorm en lopen af naar een sloot/watergang buiten Rilland. Echter tot nu toe geen overlast in het dorp.

2. *De wijk is zo ingericht dat de inwoners veilig zijn in een situatie van overstroming door een dijkdoorbraak:*
   Visueel gezien: De dijk ligt vlak bij Rilland, als het daar doorbreekt dan heeft dat een enorme impact. Dan moet men zorgen dat men weg is, of hoog zit, hoger dan het dakraam. Evacuatie: ligging vlakbij de snelweg is gunstig, en die ligt een stuk hoger, dus dan ligt het eraan hoe hoog het water zal zijn en of het van tevoren aangekondigd is, dan is het een geode vluchtroute.

3. *De openbare ruimte in de wijk stimuleert ontmoeting tussen bewoners:*
   Er zijn faciliteiten in de fysieke omgeving en punten waar men activiteiten organiseert. Enkel voor de jeugd zijn er minder voorzieningen; dit is terug te zien in het aantal en overlast van hangjongeren. (on)veilige plekken: over het algemeen is alles redelijk verlicht, behalve de polder. Als voorbeeld: speeltuintje was eerst afgezet met hekken, dit belemmerde zicht op deze openplek, die zijn nu weg gehaald en daardoor is het veel overzichtelijker geworden.

Economische Ontwikkeling

4. *In een situatie van wateroverlast door een hoosbui is de verstoring in de wijk groot:*
   Niet noemenswaardig, er zal niet hele grote materiele schade voor inwoners zijn en economische activiteiten zullen over het algemeen gewoon door kunnen gaan. Voorzieningen zullen ook ongehinderd door functioneren.

5. *In een situatie van overstroming door een dijkdoorbraak is de verstoring in de wijk groot:*
   Ja, in deze situatie is de verstoring groot: materieel en hinder van het dagelijks leven. Dit hebben we ook gezien bij de ramp van 1953. Herstel: dit ligt heel erg aan de mate van materiele schade en aan het aantal slachtoffers. Mocht dit relatief meevallen, dan zullen mensen hun schouders eronder zetten en op die manier snel terug kunnen naar de normale gang van zaken. Is er veel leed, dan zal dit veel langer duren.

6. *In de wijk zijn er mogelijkheden voor nieuwe economische activiteiten:*
   Het heeft 2 kanten: Vestigingsklimaat is niet zo heel goed, omdat het lastig is om genoeg draagvlak te genereren, hierdoor is de diversiteit van activiteiten vrij laag en moeten ondernemers er erg hard aan trekken om iets van de grond te krijgen. Rillanders doen vaak buiten de kern inkopen. Gemeente Reimerswaal heeft een relatief steunende beleid, maar dit is vooral gericht op initiatieven vanuit de kern.

Sociaal Kapitaal

7. *In een situatie van wateroverlast door een hoosbui komt men in actie om wijk genoten te helpen:* van Zon verwacht van wel, echter zijn de bewoners van Rilland over het algemeen vrij individualistisch ingesteld: men gaat niet zomaar op de koffie bij iemand, maar we kennen elkaar wel. In een nood situatie zal men elkaar daardoor zeker komen helpen. Dit is ook te zien in de 'buurtpreventie-app', als er iets gebeurt dan zijn er gelijk ook andere mensen die ook informatie delen en is er motivatie tot handelen. Handelingsperspectieven: dat is lastig om te zeggen, maar men zal er van tevoren niet al te veel mee bezig zijn en in de noodsituatie zelf in actie komen om dan te bekijken of er iets gedaan kan worden.

8. *In een situatie van overstroming door een dijkdoorbraak komt men in actie om wijk genoten te helpen*: Als er nood aan de man is dan komt men elkaar zeker helpen.

9. *Buurt bewoners kennen elkaar en verenigen zich om gezamenlijk problemen aan te pakken:* Bewoners kennen elkaar zeker, maar onderlinge samenwerking verloopt over het algemeen vrij stug. Maar aan de andere kant, is het dorpshuis met verbonden instanties (seniorenraad, stichtingen etc.) wel een plek waarvan men weet dat men daar naartoe kan gaan. En in het geval van een geplande (informatie)avond dan is de opkomst ook groot. Activiteiten en informatie avonden komen sinds een jaar of 7 relatief vaak voor en zijn divers. Op deze meer formelere evenementen is dan ook de opkomst en participatie groot.

Bestuur

10. *Instanties en overheden staan open voor initiatieven uit de buurt:* Gemeente werkt relatief goed mee. Andere verenigingen en instanties tonen ook dat ze open staan voor initiatieven omdat zij ook gewoon graag willen dat er iets georganiseerd word. Voor het op poten zetten van initiatieven is het echter wel belangrijk dat de netwerken/lijntjes bekend zijn om contact te leggen en om financiering te regelen. Als een initiatief nemer vraagt naar participatie van andere bewoners dan is de inzet vaak groot en is iedereen welkom om mee te werken en te doen. Om nog even terug te komen op de georganiseerde activiteiten in Rilland, dit gaat eigenlijk sinds 7 jaar erg goed, daarvoor gebeurde er eigenlijk niks. Kantelpunt doordat de Rilland-Dag werd georganiseerd en toen hebben we met elkaar in de organisatie gezegd: zullen we nog meer dingen organiseren, dit heeft een proces opgang gezet van ontwikkelen en verdelen van verantwoordelijkheden voor het organiseren van activiteiten, korte lijntjes in de netwerken en duidelijkheid bij wie men waarvoor moet zijn, dit werkt!

11. *In een situatie van wateroverlast door een hoosbui is het duidelijk wie er verantwoordelijk is:* Nee dit is op dit moment niet expliciet duidelijk bij de bewoners.

12. *In een situatie van overstroming door een dijkdoorbraak is het duidelijk wie er verantwoordelijk is:* In deze situatie zullen vooral de officiële instanties verantwoordelijk zijn voor de communicatie, evacuatie en schade verwerking. Wederom is het wel zo dat bewoners zeer waarschijnlijk zelf dingen op pakken om te doen, maar dit is tot op heden niet bekend en vastgelegd bij de bewoners van Rilland.

Rilland
Voorzitter Klankbordgroep Rilland, Voorzitter Landbouw vereniging Rilland: Wim van Gorsel

Wat verstaat de respondent onder 'Mijn Wijk'?
Door de ligging van mijn huis, en familie bedrijf (landbouw bedrijf) en mijn positive als voorzitter van de landbouw vereniging Rilland identificeer ik 'mijn wijk' als het hele gebied binnen de Reigerbergse polder, dus niet alleen de bebouwde kom 'Rilland' ook het platteland daarom heen. Door heel de polder heb ik contacten met andere boeren die deel uit maken van de landbouw vereniging.

Fysieke Omgeving
13. De wijk is zo ingericht dat de inwoners veilig zijn in een situatie van wateroverlast door een hoosbui:
In een situatie van wateroverlast door een hoosbui zijn de mensen in princiepe veilig. De wegen zijn zo ontwikkeld dat het afloopt naar afwatering sloten en het riool is gescheiden.

14. De wijk is zo ingericht dat de inwoners veilig zijn in een situatie van overstroming door een dijkdoorbraak:
In deze situatie zijn mensen zeker niet veilig. Het is ook niet duidelijk hoe het zit met evacuatie, al heeft de gemeente daar ongetwijfeld plannen voor, dit is tot op heden niet over gecommuniceerd. Daarnaast is er relatief recent een dijkverzwaring geweest hier in de buurt, daar wordt men wel netjes over geinformeerd. Dit is natuurlijk belangrijk maar veel mensen zijn er niet mee bezig, ze hebben vertrouwen dat de overheid het goed op orde heeft.

15. De openbare ruimte in de wijk stimuleert ontmoeting tussen bewoners:
Rilland heeft in vergelijking met andere kernen in de gemeente Reimerswaal minder voorzieningen in de openbare ruimte. Toch zijn er enkele voorzieningen, een speeltuin, een 'praathuis' op de dijk waar vooral ouderen bij elkaar komen en het dorpshuis waar dingen georganiseerd worden. Daarnaast is de openbare ruimte vooral functioneel ingericht voor verkeersdoorstroom. Nu ligt er echter wel een mooi plan om het gebied rondom de oude kerk te herontwikkelen naar een park. Bij de ontwikkeling van dit plan is de klankbord groep ook zeer actief geweest.

Economische Ontwikkeling
16. In een situatie van wateroverlast door een hoosbui is de verstoring in de wijk groot:
Ik denk dat door de gevolgen van wateroverlast door hevige regen de verstoring van het dagelijks leven niet groot zal zijn, het zal vooral blijven bij materiele schade. Dit komt vooral doordat het water relatief snel weer weg zal zijn uit de huizen en straten, daardoor kan men in de dorpskern weer door met het dagelijks leven en werk, schade zal er wel degelijk zijn. Aan de andere kant zal de schade aan economische activiteiten voor de landbouw wel groot zijn. Hevige regenval zal er allereerst voor zorgen dat het water minder snel weg kan stromen en als landerijen dan langdurig onderwater staan kunnen de gewassen gaan rotten, dit kan grote economische schade toerichten en belemmerd ook de boer in zijn dagelijks leven. In 1998 is er een situatie van wateroverlast door een hoosbui geweest en dit heeft gezorgd voor veel economische schade. Toen was er heel erg duidelijk verschil: in de dorpskern had niemand er last van en daarbuiten hadden boeren er veel last van!

17. In een situatie van overstroming door een dijkdoorbraak is de verstoring in de wijk groot:
In deze situatie zal iedereen getroffen worden, zowel materiele schade maar ook belemmering van economische activiteiten, direct en indirect, omdat mensen niet naar hun werk kunnen. Achteraf als al het water weg is en huizen weer bewoonbaar zijn dan zullen boeren alsnog de effecten van de overstroming voelen doordat akkers nog lang onbruikbaar zullen zijn. Ook materiele schade aan huizen zal vele malen groter zijn en ook langduriger; door de overstroming van 1953 hebben veel huizen nog altijd last van zout in de muren.

18. In de wijk zijn er mogelijkheden voor nieuwe economische activiteiten:
Binnen het dorp is de bedrijvigheid niet heel actief en is het lastig voor nieuwe ondernemers om hier iets op te bouwen, doordat er ook niet heel veel draagkracht voor is. Buiten de bebouwde kern, bijvoorbeeld op het industrie gebied en in het kassengebied is er wel veel bedrijvigheid en is de locatie natuurlijk gunstig aan de snelweg.

Sociaal Kapitaal

19. In een situatie van wateroverlast door een hoosbui komt men in actie om wijk genoten te helpen:
Zeker! Men zal in deze situatie elkaar gaan helpen waar men kan. Dit komt ook doordat in deze situatie niet altijd iedereen getroffen zal zijn, dit kan ook enkel lokaal. Mensen die geen schade hebben zullen daardoor sneller bereid zijn andere te helpen.

20. In een situatie van overstroming door een dijkdoorbraak komt men in actie om wijk genoten te helpen:
In dit geval zal het wel moeilijker zijn om elkaar te helpen, omdat iedereen natuurlijk getroffen is, daardoor gaan mensen eerst zichzelf redden en dan komt op de tweede plaats de wijk. Men is op de hoogte van de aanwezigheid van kwetsbare groepen, lees: ouderen. Een grote groep ouderen woont in de Vliedberg, dit is een nieuwbouw faciliteit en heeft drie verdiepingen, dat maakt het dus mogelijk om naar hoger niveau te evacueren.

21. Buurt bewoners kennen elkaar en verenigen zich om gezamelijk problemen aan te pakken:
In Rilland is er niet heel erg actief verenigings leven, maar aan de andere kant is het wel zo dat als er problemen zich voordoen dat er dan wel groepjes zijn die dat aanpakken. Dit komt dus juist vaak door informele, nieuwe netwerken in plaats van de bestaande netwerken/verenigingen die reageren op een problem. Daarnaast zal men daarna wel zoeken welke verenigingen er zich vervolgens aan kunnen en willen sluiten. Initiatieven worden vaak breed gedragen door de bewoners, mits het een actueel onderwerp/probleem/ontwikkeling is.

Bestuur

22. Instanties en overheden staan open voor initiatieven uit de buurt:
Op dit moment, merk ik vanuit de klakbordgroep, dat de gemeent heel erg meedenkt en ons serieus neemt, de samenwerking is goed. Aan de andere kant komen initiatieven ook wel eens in de knel doordat het bij de gemeente allemaal veel langer duurt, 'de ambtelijke molen'. Verwachtingen vanuit het dorp liggen op dat gebied dus anders, bewoners willen dat er snel iets gaat gebeuren, aan de andere kant moet het natuurlijk bij de gemeente volgens de regels en kost het meer tijd.

23. In een situatie van wateroverlast door een hoosbui is het duidelijk wie er verantwoordelijk is:
Vaak zal er snel met de vinger naar de gemeente en het waterschap als verantwoordelijke gewezen worden. In het algemeen is de communicatie over dit soort onderwerpen vanuit de gemeente niet heel actief. Vanuit het waterschap komen er wel meer berichten, bijvoorbeeld ook na afronding van een dijkverzwaring.

24. In een situatie van overstroming door een dijkdoorbraak is het duidelijk wie er verantwoordelijk is:
Zie 11. De bewoners van Rilland gaan ervanuit dat het door de overheid gewoon goed geregeld is. Dat zal ook komen doordat een 'overstroming door een dijkdoorbraak' niet aan de orde is. Om een ander voorbeeld te geven: nu zie je dat men meer bezig is met risico's van de kerncentrale doordat er steeds geode is in de kerncentrale Doel. Bewustzijn van de bewoners is dus gelinkt aan of men er mee bezig is, of het in het nieuws komt etc.
Vroeger in mijn jeugd, was er verplicht een 'dijk leger', inwoners van het dorp zater hierin, daardoor kwam het automatisch ten sprake en bracht het besef over overstromings risico bij de inwoners. De

buurtpreventie-app Rilland is ook een goed voorbeeld van een methode om die bewustwording en communicatie op gang te brengen; maar dan in het geval van sociale veiligheid natuurlijk, dit werkt erg goed.

Rilland
Beheerder buurtpreventie-app Rilland: Jeroen Mentzel

Wat verstaat de respondent onder 'Mijn Wijk'?
Officieel heet Rilland natuurlijk Rilland-Bath. Het is een redelijk uitgestrekt gebied verbonden door agrarisch gebied. De kern zie ik wel als de bebouwde kom Rilland, maar hier kom je ook mensen tegen die niet in de kern zelf wonen, maar ook daarbuiten. Vanuit de buurt preventie app zien we Rilland dus ook altijd vanuit bredere zin, zowel de bebouwde kern Rilland, de omliggende landbouwgebieden en ook de stationsbuurt en Bath. Dit hebben we bewust zo gedaan omdat je dan natuurlijk meer mensen berijkt en ook bijvoorbeeld meer vluchtwegen dekt.

Fysieke Omgeving
25. De wijk is zo ingericht dat de inwoners veilig zijn in een situatie van wateroverlast door een hoosbui:
Het voordeel van Rilland is dat het tussen de weilanden ligt, hierdoor zal de kern minder snel getroffen worden doordat het water snel de bebouwde kern uit kan. Hierdoor zal er geen sprake zijn van een onveilige situatie door wateroverlast.

26. De wijk is zo ingericht dat de inwoners veilig zijn in een situatie van overstroming door een dijkdoorbraak:
Nee, vanuit het team van de buurtpreventie hebben we wel eens online gekeken (overstroomik.nl) en dat laat dus wel even de realiteit zien in een overstromings situatie; alles staat helemaal onder. Er is geen plek in het brede gebied van Rilland waar men veilig heen kan. Het waterpeil is zelfs hoger dan de meeste daken. Evacuatie is dus vooral horizontaal en daarvoor is de ligging van Rilland natuurlijk relatief gunstig; dicht bij de snelweg en dicht bij Bergen op Zoom, ik verwacht dus wel dat mensen bij een risico dreiging en een bericht vanuit de overheid hier snel op zullen reageren. Ook is het zo dat men nu natuurlijk heel erg afhankelijk is van energievoorzieningen en internet, als dit weg valt door een overstroming dan is het ineens een stuk moeilijker om te communiceren, uitval hierval zal fatale gevolgen hebben.

27. De openbare ruimte in de wijk stimuleert ontmoeting tussen bewoners:
Rilland blijft een relatief oud dorp, straten en de omgeving zijn niet meer van deze tijd. Parkeergelegenheden worden belemmerd door de smalle straten, hierdoor zijn er soms situaties waar het straatbeeld niet heel positief is of dat zelfs problemen zijn. Relatief nieuwere gedeeltes in Rilland is wel ruimer opgezet, dit is terug te zien in het betere straatbeeld.
(gemeente vooral actief om voor de jeugd dingen in de openbare ruimte te ontwikklen)

Economische Ontwikkeling
28. In een situatie van wateroverlast door een hoosbui is de verstroing in de wijk groot:
Door wateroverlast na een hoosbui zal het dorp niet lam komen te liggen. Materiele schade zal wel aan de orde zijn, afhankelijk van de mate van wateroverlast natuurlijk, maar het dagelijks leven en economische activiteiten zullen niet of nauwelijks worden belemmerd.

29. In een situatie van overstroming door een dijkdoorbraak is de verstoring in de wijk groot:
Zowel materiele schade als verstoring van het dagelijks leven zal enorm zijn. Men kan als het gebeurt is geen kant meer op. Vantevoren de uitvalswegen goed, maar tijdens een overstroming niet. Dit is ook onderzocht door de gemeente maar het lijkt alsof men daar niks mee doet. Ik verwacht wel het

herstel redelijk snel op gang zal komen, het is natuurlijk al eens eerder gebeurt in 1953 en toen zijn er gelukkig ook veel huizen blijven staan, Ook is het zo dat grote delen van de inwoners van de bebouwde kern overdag niet thuis zijn doordat zij buiten de kern werken, hierdoor kan het zo zijn dat daar vooral ouderen of thuiswerkende mensen slachtoffer zullen zijn in eerste instantie.

30. In de wijk zijn er mogelijkheden voor nieuwe economische activiteiten:
Het feit dat Rilland relatief klein is betekend ook dat er moeilijk lokaal een groot draagvlak zal zijn. Vroeger was de bedrijvigheid in het dorp veel groter, het feit dat men nu meer inkopen doet buiten het dorp heeft er toe geleid dat deze kleine bedrijfjes het niet meer vol konden houden. Het is een wisselwerking tussen het beperkte aantal gebruikers waardoor het aanbod en diversiteit van economische activiteiten niet heel hoog is in het dorp. Daarnaast is een groot deel van het dorp bestaat uit huurwoningen, van oudsher wonen hier havenarbeiders (gericht op Antwerpen), dit is ook een wat lagere sociale klasse die iets minder te besteden hebben.

Sociaal Kapitaal

31. In een situatie van wateroverlast door een hoosbui komt men in actie om wijk genoten te helpen:
Waarschijnlijk wel, aan de andere kant bestaan er wel relatief veel 'groepjes' binnen Rilland samenhangend door bijvoorbeeld naar welke school de kinderen gaan, welke vereniging men bijhoord. Daardoor is de bevolking redelijk opgedeeld, uiteindelijk zal men elkaar echt wel gaan helpen maar dan moet er echt wel wat ernstigs aan de hand zijn. Normaliter blijven mensen binnen het bepaalde groepje/vereniging. Het is nu wel zo dat door middle van de buurtpreventie-app mensen wel meer gaan communiceren buitenom de gevestigde groepen. Men zal echter niet echt nadenken over het risico wateroverlast door een hoosbui, omdat het niet echt relavant of aan de hand is geweest in de dorpskern van Rilland.

32. In een situatie van overstroming door een dijkdoorbraak komt men in actie om wijk genoten te helpen:
Iedereen weet eigenlijk wel hoe het zit met het risico, op overstroming, dit komt vooral door het verleden. En men zal in deze situatie zeker elkaar gaan helpen. Ookal bestaan er de verschillende groepen binnen het dorp, men kent elkaar toch, en in zo'n noodsituatie zal men elkaar gaan helpen. Over kwetsbare groepen weet sowieso iedereen waar het verzorgingstehuis is, daarnaast zijn er ook relatief veel ouderen die nog op zichzelf wonen, ik verwacht dat omwonende hiervan op de hoogte zijn en deze personen zullen helpen. De impact/heftigheid van de overstroming speelt wel een rol, omdat men natuurlijk ook heer zichzelf veilg zal stellen.

33. Buurt bewoners kennen elkaar en verenigen zich om gezamelijk problemen aan te pakken:
Veel bewoners van Rilland wonen er al heel hun leven, hierdoor zijn bepaalde dingen algemeen bekend, zoals het eerder genoemde feit dat in het geval van overstroming het overal onder water staat. Bewoners van Rilland kennen elkaar zeker, maar is het contact wel verdeeld in de eerder genoemde groepen. Ook in het nemen en organiseren van initiatieven of oplossen van problemen is dat terug te zien: een bepaalde vereniging vertegenwoordigd een bepaalde groep en communicatie tussen deze groepen is eigenlijk heel beperkt. Er zijn formele verenigingen aanwezig in Rilland; klankbord groep, oranje vereniging etc. Maar er zijn ook informele groepen die een idee initiëren, maar die zoeken wel contact bij een formele vereniging of de gemeente.
De verenigingen komen niet echt vaak bij elkaar, iedere groep gaat z'n eigen weg. Nogmaals is de buurtpreventie-app natuurlijk een overstijgende groep, omdat alle bewoners hier in kunnen ongeacht hun interesse of achtergrond, daardoor gebruiken we de app ook wel als instrument om die samenwerking en gesprek onderling te stimuleren.

Bestuur

34. Instanties en overheden staan open voor initiatieven uit de buurt:
In princiepe heeft de gemeente Reimerswaal een open houding naar initiatieven uit de buurt en zijn ze goed bereikbaar, maar merken we wel dat op financieel gebied de mogelijkheden beperkt zijn. Daarnaast moet de gemeente wel overtuigd zijn dat een initiatief positief is voor heel de buurt, in plaats van een selecte groep. Uiteraard word er ook vaak samenwerking gezocht met andere hulpinstanties.

35. In een situatie van wateroverlast door een hoosbui is het duidelijk wie er verantwoordelijk is:
Eens, de gemeente. Over communicatie gesproken is het wel zo dat doordat de sociale controle in de buurt vrij hoog is, men ook behoefte heeft aan officiële informatie vanuit de gemeente, als voorbeeld: als er aan een kant van het dorp wateroverlast is en mensen daar geinformeerd worden, dan heeft de rest van het dorp ook behoefte aan die informatie omdat ze zich betrokken voelen en willen weten wat era an de hand is in 'hun buurt'.

36. In een situatie van overstroming door een dijkdoorbraak is het duidelijk wie er verantwoordelijk is:
Natuurlijk is in deze situatie de impact van de overstroming veel groter en kan het natuurlijk zo zijn dat heel de gemeente plat licht, bewoners zullen geneigd zijn om de verantwoordelijkheid hogerop binnen de overheid te plaatsen.

In het algemeen is het zo dat de gemeente en overheden zeer waarschijnlijk wel plannen klaar hebben liggen om met dit soort nood situaties te kunnen dealen, alleen is het niet zo dat dit in samenwerking met bewoners word opgesteld of gecommuniceerd.

Yerseke
Journalist PZC: Joeri Wisse

Wat verstaat de respondent onder 'Mijn Wijk'?
Vanuit mijn werk en positie daardoor in de kern Yerseke zie ik mijn wijk of mijn gemeenschap niet als losse wijken maar meer als 1 grote wijk. Daarnaast is het persoonlijk wel zo dat ik meer contact heb met mensen in mijn directe omgeving, maar over het algemeen zie ik Yerseke op sociaal gebied als 1 kern.

Fysieke Omgeving

37. De wijk is zo ingericht dat de inwoners veilig zijn in een situatie van wateroverlast door een hoosbui:
Over het algemeen denk ik dat in deze situatie iedereen veilig is, maar er is natuurlijk wel overlast. Maar niet perse onveilig, ook niet in het geval dat er in heel Yerseke 10 cm water in huis staat. Ook na het overlast in 2016 is de gemeente meteen aan de slag gegaan om aanpassingen te doen in de opmgeving om te voorkomen dat het nog een keer zal gebeuren. Ik merk dat mensen hierdoor ook het gevoel krijgt dat er iets aan gedaan word en ze snappen ook waarvoor en waarom het nodig is. In alle getroffen straten zijn er maatregelen genomen.

38. De wijk is zo ingericht dat de inwoners veilig zijn in een situatie van overstroming door een dijkdoorbraak:
Nee dat denk ik niet, ondanks de relatieve hogere ligging van Yerseke, zijn de gevolgen van een overstroming door een dijkdoorbraak natuurlijk veel groter in vergelijking met wateroverlast door regenval, er komen dan veel meer problemen bij kijken en zal men niet veilig zijn. Ook is evacuatie dan een belangrijk issue en ik denk niet dat alle mensen op de hoogte zijn van de beste evacuatie routes, wat mensen concreet gaan doen zal heel erg afhangen van de mate van overstroming.

39. De openbare ruimte in de wijk stimuleert ontmoeting tussen bewoners:
Er zijn faciliteiten zoals speeltuinen, parkjes en bankjes waar het mogelijk is voor mensen om elkaar te ontmoeten. Maar zeker niet de gehele openbare ruimte, dit is geconcentreert op de plekken waar er iets te doen is of waar men kan zitten. De rest van de openbare ruimte lijkt meer enkel ingericht om functioneel te zijn voor verkeer of laag in onderhoud. In vergelijking met andere kernen denk ik wel dat er in yerseke meet focus ligt op doorstroom dan verkeer dan andere functies, al zijn er natuurlijk ook straten die ingericht zijn als woonerf.

Economische Ontwikkeling
40. In een situatie van wateroverlast door een hoosbui is de verstroing in de wijk groot:
In een situatie van wateroverlast door regen zal de verstoring vooral zijn doordat mensen materiele schade hebben aan huizen, daarnaast is er gebleken dat er niet zozeer verstoring optreed van de dagelijkse gang van zaken en zijn ook locale faciliteiten zoals winkels eigenlijk heel snel weer op gang gekomen nadat ze geraakt waren en zijn mensen de dag na de desbetreffende avond met wateroverlast gewoon weer aan het werk gegaan. Schade aan woningen daarintegen was in veel gevallen wel erg groot (materiele schade).

41. In een situatie van overstroming door een dijkdoorbraak is de verstoring in de wijk groot:
In deze situatie is het natuurlijk anders, zeker als het water hoog komt te staan, dat zal de gemeenschap en daardoor ook de economische activiteit wel lam leggen. Over het algemeen zal de mentaliteit in Yerseke wel zijn om snel de schouders er weer onder te zetten om ervoor te zorgen dat men gewoon weer de normale gang van zaken kan gaan volgen, maar in zo'n situatie zal het natuurlijk prioriteit zijn om mensen te voorzien van basale behoeften: slaapplaatsen etc.

42. In de wijk zijn er mogelijkheden voor nieuwe economische activiteiten:
Over het algemeen zijn er zeker mogelijkheden in Yerseke om nieuwe economische activiteiten te ontplooien, er komen ook nieuwe zaken bij. Het is ook zo dat er op dit moment maar 1 relatief kleinere supermarket aanwezig is in Yerseke dus de bewoners gaan voor deze boodschappen vaak naar winkels buiten de kern, wat dat betreft leid de lage diversiteit in deze sector niet tot lokaal inkopen doen in Yerseke. De gemeente is stimulerend voor de ontwikkeling van economische activiteiten in Yerseke doordat ze nu sinds kort nieuwe bedrijfskavels hebben uitgegeven, dit was lang niet mogelijk, aan de andere kant speelt de gemeente geen active rol in het aantrekken en ontwikkelen van bijvoorbeeld een grotere supermarkt.

Sociaal Kapitaal
43. In een situatie van wateroverlast door een hoosbui komt men in actie om wijk genoten te helpen:
Ja, absoluut. Mensen komen elkaar helpen met schoonmaken, spullen naar boven dragen, tijdelijk slaapplaatsen aanbieden. Vantevoren zal men er niet overnadenken, het is een reactie op een bepaalde situatie. Men is misschien wel op de hoogte van mensen die hulpbehoevend zijn, maar in een situatie van wateroverlast door regen, zal men vooral in de directe getroffen omgeving gaan helpen.

44. In een situatie van overstroming door een dijkdoorbraak komt men in actie om wijk genoten te helpen:
In deze situatie zullen meer mensen geraakt worden omdat de kans dan groot is dat iedereen er last van heeft, in plaats van een aantal straten/huizen. Daardoor zal het zeer waarschijnlijk zo zijn dat men er eerst voor zorgt dat de eigen zaakjes geregeld zijn alvorens andere te helpen.

45. Buurt bewoners kennen elkaar en verenigen zich om gezamelijk problemen aan te pakken:
Ja dat zou kunnen, maar dit is vooral op informele basis, men heeft zich nog niet officieel georganiseerd. Dat gebeurt nu wel d.m.v. oprichting dorpsraad, deze staat nog in de kinderschoenen.

Toch als er zich iets voordoet, calamiteit of andere ongewenste ontwikkeling, dan zal men wel proberen hier iets aan te veranderen e naan de bel trekken, maar niet zonder duielijke aanleiding. Wel is het zo dat de ontwikkeling van de dorpsraad voorkomt uit het feit dat er steeds meer voorzieningen uit Yerseke verdwijnen en er een gevoel onstaan is dat Yerseke wordt achtergesteld t.o.v. andere plaatsen in de gemeente Reimerswaal. Dit was de trigger voor het starten van de dorpsraad. De dorpsraad wordt bestuurd door een aantal individuen maar deze worden wel breeder gedragen door de gemeenschap. Informatie avonden die georganiseerd worden door de gemeente en gaan over actuele problemen of ontwikkelingen die worden vaak druk bezogd en komt iedereen die het aangaat. Door het behandelen van verschillende thema's komen er meer mensen.

Na de gebeurtenis in 2016 met wateroverlast in Yerseke heb ik ook zeker het idee dat de gemeente nu goed heeft doorgepakt met het aankaarten van dit problem en hier mee aan de slag is gegaan. Dit heeft verschillende redenen, allereerst was er deze keer vrij veel schade en zijn er veel mensen getroffen, daarnaast was het ook dat het niet de eerste keer was, het is vaker voorgekomen. Deze twee achterliggende feiten hebben e rook toegeleid dat er vanuit de bewoners zelf ook een sterker geluid kwam naar de gemeente toe om er iets aan te doen. Het is dus duidelijk dat je kan zeggen dat het meemaken van deze calamiteit heeft geleid tot aanpak op grotere schaal e nook op een kortere termijn.

Bestuur

46. Instanties en overheden staan open voor initiatieven uit de buurt:
Over het algemeen staat de gemeente open voor geluid uit de buurt, zeker op georganiseerde informatieavonden. Ook in de periode na de wateroverlast in 2016 is er zeker geluisterd naar de zorgen van mensen, ondanks dat het eigenlijk al duidelijk was waar het problem zat (riool). Gemeente is ook positief over de ontwikkeling van de dorpsraad, echter lastig te zeggen of de gemeente ook gaat samenwerken met de dorpsraad, omdat deze nog zo jong is. Wel is het zo dat in het geval van het verdwijnen van bepaalde voorzieningen uit Yerseke (bv. Verdwijnen van consultatiebureau) is het zo dat zowel bewoners als de dorpsraad alle mogelijke momenten van inspraak hebben benut en duidelijk gemaakt dat er geen draagvlak bestaat voor deze ontwikkeling en zelfs met alternatieven gekomen. Daar is niks mee gedaan door de gemeente.

47. In een situatie van wateroverlast door een hoosbui is het duidelijk wie er verantwoordelijk is:
Dit zal wel duidelijk zijn over het algemeen, maar men zal er niet meteen mee bezig zijn met de vraag 'wie is er verantwoordelijk'. Wel wordt er vaak snel gewezen naar de gemeente als verantwoordelijke partij die er iets aan moet doen. Om terug te komen op handelingsperspectief, dan is het wel weer zo dat mensen in de situatie zelf acties zullen ondernemen en als we het hebben over materiele schade dan weet men ook de verzekering te vinden.

48. In een situatie van overstroming door een dijkdoorbraak is het duidelijk wie er verantwoordelijk is:
In deze meer extreme situatie zal men waarschijnlijk meer een afwachtende houding hebben en wachten op officiele hulp of berichtgeving. Misschien omdat het wederom lastiger is om er zelf actie te ondernemen.