Impacts of environmental change on Dutch recreational waters, tourism and the Blue Flag Award

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MSc Thesis in Environmental Sciences

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Preface

Though I do not have much experience in either water quality or tourism, I ask myself how exactly I ended up pursuing this topic for six months! Despite my initial lack of knowledge (and my ongoing lack of mathematical skills!) I am very glad I happened upon this topic all those months ago. It has helped expand my horizons (and question whether I will ever swim in the sea again) as well as allowing me to meet my seven interview participants, without which I would not have been able to complete the majority of this project. So thank you to my interviewees, especially Participant 3 – my own Blue Flag hangs proudly in my flat.

I would like to give my utmost thanks to my supervisors, Nynke and Bas, for all the help they've given me over the last several months. I also appreciate the feedback and questions from Marijke Frielink who reviewed this thesis, as well as all the other students in the MSc office.

Contents

Summary

This integrated approach studied water quality by incorporating tourism aspects and the tourism eco-label "Blue Flag Award". The Blue Flag Award has three core criteria: water quality, amenities and environmental education. Water quality refers to the concentration of Escherichia coli (*E. coli*) and intestinal enterococci, which are both faecal indicator bacteria (FIB) and for the Blue Flag are limited to 250 cfu/100ml for *E. coli* and 100 cfu/100ml for intestinal enterococci. This research focused specifically on the Dutch southern province of Zeeland. Tourism is an important part of its economy and it is a popular destination for Dutch, German, Belgium and other foreign tourists.

This project aimed to analyse the impact of climate change on *E. coli* and intestinal enterococci concentrations in coastal Dutch recreational waters, and assess the impact on Blue Flag Award allocation and tourism. The research questions followed three major themes, firstly relating to the current state of water quality regarding faecal indicator bacteria concentrations within the study area. The second theme related specifically to stakeholder perceptions of three main issues; the current water quality, the Blue Flag Award and potential changes in the perception of the Award if it is removed. The final theme related to the future of Zeeland, with a focus on water quality, the Blue Flag and tourism in general.

Both quantitative and qualitative methods were used. A quantitative correlation analysis was conducted to establish relationships between FIB and three environmental variables: air temperature (^{o}C), salinity (g/kg) and precipitation (mm). Five qualitative semi-structured interviews that lasted approximately one hour were conducted with seven participants who originated from a variety of professional backgrounds such as beach management and policy (water and tourism). Though only five interviews were conducted, themes and topics were repeated across all interviews. This guarantees robustness.

The current state of water quality gives no cause for concern. The FIB bacteria did not exceed the Blue Flag Award criteria. No clear relationship between faecal indicator bacteria and the three additional variables was found. This result was un-expected because it differs from the pattern of similar studies. I expected a negative correlation between FIB and temperature and a positive correlation between FIB and precipitation. This lack of correlation can be explained by the overall lack of data, with FIB measurement only dating back to 2007 and only measured every two weeks during the 'official bathing season' (i.e. April/May to September). As a result, the impact of seasonality does not affect FIB concentrations in a pronounced way. The three other variable data sets were also incomplete.

All interviewees positively perceived current water quality. Additionally, water quality was considered universally important with respect to tourism. However, interviewees were un-concerned as they believed that future water quality would not decrease substantially. Rather, they presented an 'it will sort itself out' mentality. Reasons they presented for the excellent current quality included increased legislation and rising environmental awareness. Positive improvements in the Belgian sewage treatment system were also cited, given Zeeland's position at the mouth of several major Belgian rivers.

The Blue Flag Award was perceived as important to both management and tourism. From a management perspective, its importance was less related its required practices but more as a third party assurance of the work being done. Its importance to tourism focused mainly on the Blue Flag Award's status as a guarantee of quality. This was a response to the increasing demands of tourists and an overall trend in tightening standards. The Award was also considered a way for beaches to 'stand out' especially

from low-cost foreign holiday destinations that could (most of the time) guarantee excellent weather. In general, Award awareness was considered low with the exception of German tourists, who have a greater understanding and place greater importance on the Blue Flag.

No cases of Blue Flag loss were found in Zeeland, although the (hypothetical) impact of losing the award was considered greater if caused by deteriorating water quality. As an example, Katwijk beach (Noord Holland) was cited numerous times, with poor water quality the reason for award removal. Further research and stakeholder opinions showed a lack of impact from Blue Flag Award loss.

The future of the Blue Flag Award has a positive outlook as a result of rising public environmental awareness, its role as a tourist experience guarantee and increasing award applications. The award is only criticised on its more technical aspects, specifically regarding the robustness of the water quality criteria and the exclusion of other pollutants. Furthermore, the lack of awareness was considered the main stumbling block for future Blue Flag Award success.

Climate change will result in future changes to tourism and recreation in Zeeland. This is not from its impact on water quality but rather through its lengthening of the bathing season. The expected increase of summer temperatures will lead to increased beach use outside the official bathing season. This requires more water quality monitoring, as monitoring outside of the season is not currently required. Changes in water quality were not considered a major issue by stakeholders. This resulted in no relationship between water quality and Blue Flag perception (i.e. as a way to combat negative changes in quality). Rather, societal changes (including increasing environmental awareness) were the main factors influencing the award's perception.

My research results in two main conclusions. Firstly, the Blue Flag Award is important for the province of Zeeland, although water quality is not the main argument. Instead, the importance its role as a 'quality guarantee' is much more important due to the changing demands of tourists. these demands have increased as visitors now want more luxury and higher standards. Secondly, the overall lack of awareness of the Blue Flag Award is the key stumbling block to both its current and future success. Overall awareness of the award in Zeeland is low, and this is a key issue when reaping the potential benefits of the award. However, better understanding of the differences in awareness between Dutch and German visitors could help increase the benefits.

Chapter 1: Introduction

1.1 Background to the Problem & Overview

This section introduces the main issues at hand, presenting them within a wider context, specifically from a scientific and social view point; as well as an overview of the key aspects of this study.

1.1.1 Scientific Context

Climate change

When thinking of climate change, the images which spring to mind are often dramatic pictures of extreme heatwaves or floods which are splashed across global media outlets. The average global temperature has increased by approximately 0.8ºC since 1880, with two-thirds of this warming occurring since 1975 (Hansen et al. 2010). In The Netherlands specifically, an overall rise in temperature leading to milder winters and hotter summers is predicted; along with an increase in precipitation (and intensity of extreme rain events) and a rise in water temperatures (Koninklijk Nederlands Meteorologisch Instituut 2014).

However, less visible (although no less serious) impacts of the phenomenon, specifically changes in concentration of waterborne bacteria and pathogens are also an issue. Worldwide, many infectious diseases are apparently increasing, reflecting the combined impacts of a changing climate and rapid demographic, social and technological changes in modern life (World Health Organisation 2003).

Looking specifically at water-borne diseases, McMichael et al. (2003) note that the majority of observed climate and water-borne diseases are based on indirect evidence of seasonal variations. However, there are numerous studies which link such diseases with climatic factors specifically air temperature and precipitation (McMichael et al. 2003). One such study (Checkley et al. 2000) found that during the 1997-98 *El Niño* episode, where temperatures increased to 5ºC above normal levels; daily hospital admissions for Peruvian children (under 10 years of age increased) with diarrhoea 200% on the previous (non- *El Niño*) admission rate.

Increasing temperatures and changes in precipitation due to climate change has two key impacts on human-pathogenic microorganisms. Firstly, increased emissions to surface waters can lead to increases in microorganism concentration in water bodies. Secondly, the survival conditions of human-pathogenic microorganisms can be altered, with scientific attention increasingly turning to this point regarding coastal waters (Schernewski et al. 2014). As a result, the effects of these changes have an extremely high relevance to public health (Schernewski et al. 2014).

Water Quality and Bacteria

There are numerous bacterial indicators used to measure water quality around the world. As such, there is no overarching agreement as to which organism (or combination of organisms) is the most useful (Noble et al. 2003). Within Europe, *Escherichia coli* (*E. coli)* and intestinal enterococci are the only bacterial measures used to monitor compliance to the European Bathing Waters Directive (Directive 2006/7/EC). They are also widely used in water quality research due to their role as indicators of faecal contamination in surface waters.

Both *E. coli* and enterococci are found exclusively in the intestines of humans and other mammals (Ahmed et al. 2006). Therefore, their presence in surface waters is indicative of contamination by human and/or mammalian faeces which can be from a variety of sources. Non-point sources of contamination include pasture/agricultural land and urban surfaces, where faecal material may be washed into water sources (Calderon et al. 1991). Point sources, such as faulty septic tanks, sewage pipes transporting untreated waste and defective pipes are more associated with waste that is human in origin. In the case of The Netherlands, pollution usually originated from sewage and animal (both livestock and feral) waste (Groenendijk & Keuzenkamp 2014; Calderon et al. 1991; Hartz et al. 2008).

Given the link between bacteria concentrations in surface waters and climatic variables, increased levels of precipitation are often associated with increased levels of *E. coli* and enterococci for several reasons. Frequent (heavy) precipitation events lead to an increase in land runoff, as bacteria and other pathogens (from manure) are washed into water supplies. Secondly, there is a greater chance of sewage overflows if the infrastructure is unable to cope with the increased rainfall (Vermeulen & Hofstra 2014). An increase in the frequency of such events is likely to occur in the future due to climate change. Recent events in the UK serve as an example; as contributions from the *El Niño* weather phenomenon and anthropogenic climate change led to December 2015 being recorded as the wettest on record (Harrabin 2016).

A key difference between the two bacteria selected in this study (*E. coli* and enterococci) is the optimum water environment. *E. coli* is considered a more specific indicator of faecal contamination in freshwater whereas enterococci is considered more applicable in saltwater conditions, given its greater salt-tolerance (Jin et al. 2004; Edberg et al. 2000). Water temperature is a key factor affecting both indicators, with the colder the water the longer the expected lifespan (Edberg et al. 2000). This does not match the public perception that cold waters are unsuitable for bacterial survival (Sampson et al. 2006).

The issue of faecal water contamination is a global problem, mainly associated with drinking water sources. Adequate water treatment and sanitation methods greatly reduce the impact of associated illnesses; yet faecal contamination of recreation waters remains an issue. In the UK for example, significant investments continue to be made in the sewage infrastructure of coastal towns. Yet some (coastal) bathing sites still do not comply with the original water quality limits set by Council Directive 76/160/EEC (Crowther et al. 2001) nor current, tighter regulations. Significant increases in the amount of attention being paid to water contamination (and the associated desire to safeguard public health) are evidenced by the increase in associated research on the issue (Whitman & Nevers 2004).

High concentrations of these bacteria do not directly represent a risk of disease as *E. coli* and enterococci are merely indicators of faecal contamination. They may not be pathogenic themselves however they are *'plentiful in human and other animal waste products where pathogenic bacteria are found'* (Noble et al. 2003: 2109). As such, the levels of indicator bacteria have been shown to correlate with the incidences of illness in swimmers in a case study focusing on Santa Monica Bay, California (Noble et al. 2003); and increase in *E. coli* and enterococci may suggest an increase of pathogens in surface waters (Vermeulen & Hofstra 2014). Examples of such pathogenic microorganisms include *Shigella;* Norovirus, *Salmonella* and *Cryptosporidium*, many of which may lead to gastrointestinal and respiratory illnesses as a result of swimming in waters polluted by faeces (Thoe et al. 2015).

1.1.2 Social Context

Societal Importance of Water Quality

There is no denying the importance of water to the lives of every organism. Accessing clean water and sanitation is a fundamental human right, and an 'International Decade for Action' was declared for the years 2005-2015 (United Nations, 2010). However, the recreational aspect of water is also of great importance. Coastal waters have long been recognised around the world for the benefits they bring to communities (Bedri et al. 2016) which may be physical or psychological in nature (Liberatore et al. 2015). This is alongside the additional benefits rivers, lakes and seas provide in terms of transport and food production (Liberatore et al. 2015).

The importance of the recreational benefits is reflected in the increasing amount of legislation aimed at protecting (recreational) water quality. The first Europe-wide legislation focusing on the issue, the European Union Bathing Water Directive (76/160/EEC), laid out standards for designated bathing areas for all EU member states (Liberatore et al. 2015). This directive was updated in 2006 (2006/7/EC) to ensure a higher level of protection using on two monitoring parameters (*E. coli* and intestinal enterococci) rather than the 19 included in the original 1975 directive (EU 2006).

Importance of Beach Tourism

The tourism industry has become one of the largest businesses in the world economy (Nelson & Botterill 2002), with coastal areas representing a key destination for millions of tourists (Moreno & Becken 2009). Indeed, Leidner notes that, within the EU, approximately 60% of trips with a minimum of four overnight stays take place at the beach (Leridner, 2004 in Moreno & Becken 2009). Despite the importance of coastal areas to tourism and the global economy, these areas are some of the most vulnerable to climate change.

In the long term, rising sea levels are a key issue as it may lead to the loss or damage of areas important both ecologically and aesthetically which, naturally, draw tourists. These areas may also be damaged by an increase in the intensity and frequency of extreme weather events which is also a long-term product of climate change (Perch-Nielsen 2010). Such events are likely to reduce the appeal of the affected beach locations, pushing tourists away to other regions.

The inherent link between beach tourism and the weather is well stated (Moreno & Becken 2009; Moreno et al. 2008; Amelung et al. 2007), with many coastal tourists giving significant weight to climatic considerations when choosing their destination (Morgan et al. 2000). As stated in Moreno et al. *'sunshine and higher temperatures are correlated with more crowded beaches, whereas cold, rain, and wind cause low levels of beach use'* (Moreno et al. 2008 p. 111). Many of the activities associated with 'beach holidays' such as sunbathing and swimming, as well as more active outdoor pursuits such as surfing, sailing and kite surfing are climate dependent. However, episodes of bad weather often leading to cancelled trips as the comfort (and safety) of tourists may be seriously compromised (Moreno & Becken 2009). Of particular interest is Morgan et al.'s (2000) study, which created a '*user-based beach climate index*' to gain understanding of the importance of climatic aspects. Climate variables including bathing water temperature, precipitation, wind and overall thermal sensation were included, however water quality was not, despite its importance to the beach holiday 'experience'.

The Concept of Beach Awards

Given the rapid rate of tourism expansion, the need for sustainable tourism has become apparent in recent decades. Since the 1990s, there has been a marked increase in the creation and use of various awards, prizes, certificates and ecolabels which identify an area for its environmentally sustainable actions (Hamele 2002). The concept of eco-labelling is becoming increasingly common internationally with a large focus on tourism, hospitality and eco-tourism (Fairweather et al. 2005).

Regarding coastal areas, there are numerous national and international awards which beaches may qualify for. These include the Quality Coast Award (EU); Designated Bathing Areas (EU), the Green Coast Award (Wales and Ireland), Marine Conservation Society Recommended Beaches (the UK and Ireland) and the Blue Flag Award (48 countries worldwide), which is of key importance to this study. Though these awards may differ slightly in their standards, the general idea behind them is the same. In order to attain the award, beaches must meet all necessary criteria including (but not limited to) water quality limits, management techniques, available services (such as toilets or lifeguards).

The Blue Flag Award

The Blue Flag Award, created by the Foundation for Environmental Education (FEE) in 1985 is of central importance to this project (Blue Flag 2015a)**.** The award aims to promote sustainable development in both marine and freshwater environments by challenging local authorities (or beach managers) to meet the award's 'high standards' in the following four categories; water quality, environmental education, environmental management and safety (Blue Flag 2015a). Beaches (or marinas) must consistently comply with all 33 criteria set out by the award which are spread across the four categories. Once a beach receives accreditation, the Blue Flag must be flown at all times throughout the bathing season, representing both the programme itself but also as an '*indication of compliance*' (Blue Flag 2015a).

In the case of water quality, there are five dedicated criteria. These relate to sampling frequency and methods (at least every 30 days during the season); standards and requirements for analysis, whether any waste-water, sewage-related or industrial waste affects the area, compliance with various other physical parameters (e.g. no oil film or odour) and compliance *with E. coli* and intestinal enterococci limits. The bacteria parameters are given below in table 1 and must be maintained for the duration of the bathing season, usually from May to September (Groenendijk & Keuzenkamp 2014).

Table 1 Bacteria concentrations for the Blue Flag Award (Blue Flag 2015a)

Species	**Coastal and Transitional Waters Limit Values**	**Inland Waters Limit Values**
E. coli	250 colony forming units (cfu)/100ml	500 cfu/100ml
Intestinal enterococci	100 cfu/100ml	200 cfu/100ml

A beach with accreditation that does not comply with the official criteria is at risk of losing the award. There are three classifications of non-compliance; minor (a problem with only one criterion of minor consequence to beach user's health and safety), multiple (non-compliance with two to three criteria of minor consequence to beach user's health and safety) and major (non-compliance with any criteria which can impact health and safety or the environment) (Blue Flag 2015a). For minor and multiple non-compliance, the beach is given ten days to rectify the issue during which time the flag must be removed. However, in the event of a major non-compliance, the flag is withdrawn for the remainder of the season.

One may assume that beach awards such as the Blue Flag award play an important role in attracting tourists as well as being perceived as a way to raise the profile and popularity of a beach (McKenna et al. 2011). However, within the literature there appears to be no clear consensus on the benefits these awards may bring. Whilst they may be viewed as a symbol of 'clean; safe and environmentally-friendly managed coastal areas' (McKenna et al. 2011: 577), the sheer number of eco-labels available may be a hindrance. Font (2001, cited in Fairweather et al. 2005) notes that there are more than 70 schemes used throughout the world. However, some studies have found that the majority of holidaymakers are *'unaware of the existence of the environment certification schemes in the tourism sector'* (Hamele 2004: 3). McKenna et al.'s (2011) paper also reported that their findings did not support the belief that beach awards attract visitors which therefore *'begs the question whether they [awards] are worth having at all?'* (McKenna et al. 2011: 582).

1.2 Problem Statement

As argued above, climate change is a serious concern to future water quality. The latest IPCC synthesis report states that global surface temperatures are projected to rise over the 21st century under all emission scenarios (IPCC 2014). In the case of The Netherlands; by 2050 (compared to 1990) winters will be milder and wetter whereas summers will be warmer with less frequent, but more intensive showers (Roijackers & Lürling 2007). This ongoing trend of rising air and water temperatures may lead to significant changes in the concentrations of both *E. coli* and enterococci. If these concentrations were to increase, the negative consequences may be far reaching; not just for environmental reasons but also from a touristic standpoint.

In order to maintain their Blue Flag status, beaches must (as mentioned previously) maintain the levels of *E. coli* and enterococci below 250 cfu/100ml and 100 cfu/100ml (Blue Flag 2015b) respectively, for the duration of the bathing season (Groenendijk & Keuzenkamp 2014). In The Netherlands this season lasts from April/May to September. Failure to meet any of the 33 criteria may

lead to the suspension or removal of the award which may have a detrimental effect on tourism. For example, fewer people may choose to visit which would then have knock-on effects on the local economy as the award may have been viewed by tourists as a guarantee of beach quality (McKenna et al. 2011).

However, from the existing literature (see McKenna et al. 2011; Nelson & Botterill 2002; Phillips & House 2009) there appears to be little consensus on the importance of beach awards. The research of McKenna et al. (2011) indicated that beach awards were a relatively insignificant factor in beach visitor motivation, with factors such as cleanliness, proximity and scenery ranking significantly higher. Therefore, knowing the perception of relevant stakeholders have of the Blue Flag award is imperative in order to understand what any future impacts may be.

An additional point to consider is that beach tourism and weather are closely linked, with sunshine and higher temperatures correlated with crowded beaches and cold, unappealing weather leading to reduced beach use (Moreno et al. 2008). Therefore, warmer temperatures may result in a longer bathing season in The Netherlands. This would mean more people are using Dutch beaches for a longer period of time, therefore increasing the risk of exposure to harmful bacteria.

1.3 Purpose of the Study

The aim is to analyse the impact of climate change on Escherichia coli and intestinal enterococci concentrations in coastal Dutch recreational waters and to assess the impact on Blue Flag Award allocation and on tourism. This leads to the following research questions:

1. What is the current state of water quality in (coastal) Dutch recreational waters regarding the concentrations of Escherichia coli and intestinal enterococci?

2. a. How is recreational water quality perceived by relevant stakeholders?
   b. How is the Blue Flag Award perceived by relevant stakeholders?
   c. Do perceptions of Dutch recreational waters change if the Blue Flag Award is removed?

3. a. How may water quality change in the future?
   b. How may the status of the Blue Flag award change in the future?
   c. What impacts of future environmental changes can be foreseen for Dutch recreation and tourism at the coast?

1.4 Thesis Outline

This thesis is spread out over a total of eight chapters. Following this introduction (Chapter 1), details on the precise methodology and study are found in Chapter 2. The main body of results is presented across Chapters 3, 4 and 5 with each chapter focusing on a different research question.

The focus of Chapter 3 is the current status of the recreational water quality. The results from this chapter were un-expected, as they differ significantly from the results of other, similar studies. Chapter 4 looks at the perceptions of stakeholders on the topics of recreational water quality, the Blue Flag Award and how they think perceptions could change in the future. In contrast, Chapter 5 takes a much more integrated approach, in order to bring together both the qualitative and quantitative aspects of the thesis. This chapter also includes a brief discussion of future water quality due to the unusual results in Chapter 3. The discussion of these results is laid out in Chapter 6, with the conclusions presented in the seventh and final chapter.

Chapter 2: Methodology

2.1 Study Area

The study area is the province of Zeeland, located on the western coast of The Netherlands (Figure 1). The four beaches which make up the study area are Cadzand Badstrand, Banjaardstrand, Vlissingen Nollestrand and Westenschouwen, all of which are indicated in Figure 2. They are located in the municipalities of Sluis, Noord-Beveland, Vlissingen and Schouwen-Duiveland respectively. The beaches are distributed across the province, rather than being located on the same island or peninsula. The beaches differ in their size; Westenschouwen is the largest at 21km long (Blauwe Vlag n.d.) with Banjaardstrand the smallest at only 3km (Stichting Noord-Beveland n.d.). However, they are broadly similar in terms of appearance as they are all wide, sandy beaches with sand dunes.

Figure 1 Map of the Netherlands indicating the location of the Province of Zeeland

Figure 2 Location of Blue Flag Beaches used in this study

In addition to all four beaches holding the Blue Flag award, they are popular destinations not only for tourists but other beach users. Water sports such as kite surfing, sailing and surfing are popular activities on many of Zeeland's beaches, alongside the more typical beach activities of swimming and sunbathing. In keeping with the additional criteria of the Blue Flag Award, the beaches have numerous amenities including toilets, shower facilities and lifeguards (during the bathing season) whilst also maintaining a safe and clean environment (Blue Flag 2015a).

Tourism plays an important role in the province of Zeeland. The industry provides more than 17,000 jobs; with consumer spending contributing €552 million to the provincial economy, with more than €300 million providing an income for Zeeland residents (Kenniscentrum Kusttoerisme 2015). Overnight stays and day trips make up the majority of the leisure economy, accounting for 50% and 44% respectively. The remainder is a combination of multiple day business trips and purchasing leisure goods (Kenniscentrum Kusttoerisme 2015). On an individual level, a Dutch tourist to Zeeland spends and average of €31.10 per day (according to 2014 data), an increase from €29.40 in 2013 (Kenniscentrum Kusttoerisme 2015).

Unsurprisingly, visitors to Zeeland from other parts of The Netherlands make up the largest visitor group (1,276,000). The region is especially popular with German and Belgian tourists who account for 93% (955,000) of all foreign visitors. The remaining 7% travel from countries including Italy, the United Kingdom and France (Kenniscentrum Kusttoerisme 2015). Visiting the beach is the number one activity for all tourists in Zeeland. For Dutch tourists, activities involving the beach (swimming, walking and sunbathing) accounted for three of the top ten activities (Kenniscentrum Kusttoerisme 2015).

2.2 Quantitative Data and Methods

The quantitative aspect of the study used secondary data from a variety of sources, including the Rijkswaterstaat and the Royal Netherlands Meteorological Institute (KNMI). An overview of all data measurement points is presented in TABLE 2

Table 2 Overview of all data measurement points

Blue Flag Beach	Bacteria Measurement Site	Air Temperature Site	Precipitation Site	Salinity Site
Banjaardstrand	Kamperland De Banjaard badstrand	Vlissingen	Vrouwenpolder	Wissenkerke
Cadzand Bad	Cadzand badstrand	Vlissingen	Cadzand	Vlissingen boei SSVH
Vlissingen Nollestrand	Vlissingen Nollestrand	Vlissingen	Vlissingen	Vlissingen boei SSVH
Westeschouwen	Westerschouwen Rotonde badstrand	Vlissingen	Haamstede	Wissenkerke

2.2.1 *E. coli* and Intestinal Enterococci Data

E. coli and intestinal enterococci measurements were obtained from the Rijkswaterstaat Servicedesk Data for the Zeeland region, with the data received relating only to open water areas (as opposed to riverine locations). In total, the bacteria concentrations data for 65 separate sites was received. From this large selection, the four sites closest to the chosen Blue Flag beaches were selected for further analysis.

E. coli and intestinal enterococci were selected for two main reasons. As stated in the preceding chapter, they are the only indicator used by the Blue Flag Award to measure water quality. Secondly, all official bathing sites must be tested for both bacteria in accordance with the EU Bathing Waters Directive.

Measurements were taken bi-monthly, with samples taken in either April or May and continuing until mid-September. However, more measurements are taken if the Blue Flag limits are exceeded, as stated in the Award criteria, and continue until the measurements are back within the required range. The variation in the start date is likely due to differences in the start of the official bathing season. All sites began recording for the bathing season of 2007, using the measurement unit of colony-forming units per 100ml of water (cfu/100ml), however such a short time-span was not ideal.

The data was received in an Excel file, and there were no significant gaps present in the bacteria measurements. Irrelevant and empty data columns were removed in preparation for future statistical analysis. The measurement methods for the two bacteria types was the same as both utilised the membrane filtration method. Further analysis was done in accordance to NEN-EN-ISO 7899_2 for intestinal enterococci and ISO 9308-1 for *E. coli*, which specify the method for detection and numeration of the bacteria in question (International Organization for Standardization n.d.).

2.2.2 Additional Variables

Salinity

Salinity data was accessed (and downloaded) through the 'Historische waterkwantiteit en waterkwaliteitsgegevens' (Historical water quantity and quality data) section of the Rijkswaterstaat website, selecting the variable 'Saliniteit in oppervlaktewater' (surface water salinity). Salinity was included in the analysis as it is a key environmental factor influencing E. coli and intestinal enterococci. Changes in precipitation patterns may lead to changes in salinity, for example, increased rainfall may lead to greater river discharge impacting salinity by way of dilution (Sterk et al. 2015).

Durack et al. also note the link between climate change and salinity; with the paper concluding salinity patterns '*express an identifiable fingerprint of an intensifying water cycle'* (Durack et al. 2012: 455). This is a result of global warming (and lower atmosphere) which enables warmer air to hold and distribute more moisture (Durack et al. 2012). This in addition the reasons given in the preceding chapter which discussed how the two bacteria react differently to salinity concentrations.

There were some issues with the accessed salinity data. Many measurement sites had an incomplete data range, with measurements stopping abruptly many years prior to 2007 (the start year for *E. coli* and intestinal enterococci). The lack of overlap was a significant issue for the analysis, with Banjaardstrand and Cadzand the beaches most affected. For both of these beaches, the closest salinity sites stopped recording in the 1980s or 1990s for reasons unknown.

As a result, the data used were from stations which were further away. This was not ideal, as though the distances may not be very large, it may be enough to negate the impact of rivers flowing into the beach in question. This may have been the case in Cadzand, however this point will be discussed in more detail in the following chapters.

An additional problem encountered with this data set was that the measurement dates did not match those of the other variables used in the analysis. This was rectified using the statistical computing software R and is discussed further in Section 2.3.

Air temperature

Maximum air temperature data was obtained from the European Climate Assessment & Dataset project, part of the Koninklijk Nederlands Meteorologisch Instituut (KNMI). The dataset used in this study is 'non-blend'; meaning that the series used is the same as that provided by the participants, rather than 'blended' which incorporates data from other monitoring stations (Koninklijk Nederlands Meteorologisch Instituut n.d.).

There were some issues with the available temperature data. The first issue was that there were significantly fewer air temperature sites within the province than for other variables. Within Zeeland four stations are present however only the station located in Vlissingen was useable. Incomplete data records were a problem with stations in West-Souburg and Wilhelminadorp, and the site in Westdorpe was located too far from the study areas. Therefore, the analysis uses the same air temperature values which is not ideal.

Air temperature was not a first choice variable for this study. Water temperature would be much preferred however it became obvious that the values available were not useful. This was because the water temperature dates for measurement sites closest to the Blue Flag beaches stopped recording several years prior to 2007 (the first year of *E. coli* and intestinal enterococci data). After contacting the Rijkswaterstaat for more appropriate water temperature data, I was told that there was no possibility to '*retrieve more than one combination parameter-year at once'* (personal communications, 24th November 2015). Rather than exclude temperature altogether, air temperature was used as a proxy variable as it has a close correlation with the desired variable. Though almost all studies with a focus on *E. coli* and intestinal enterococci use water temperature as an independent variable, there are several

which include air temperature. This includes Thoe et al. (2015), which included it as a variable when developing their predictive model to understand swimmer risk at California beaches; and also Sterk et al. (2013).

Precipitation

As with air temperature, precipitation data was obtained from the European Climate Assessment & Dataset project in a non-blend format. Measurements were taken on a daily basis and there were no significant gaps within the data set which provided information for all available years (from around 1950 to present day).

As noted in the previous chapter, precipitation is a key variable to include when considering water quality. Precipitation events are often associated with elevated levels of faecal indicator bacteria as a result of increased runoff. As *E. coli* and intestinal enterococci are found in the faeces of mammals, livestock being of particular importance within the study area) the bacteria are transported into water supplies.

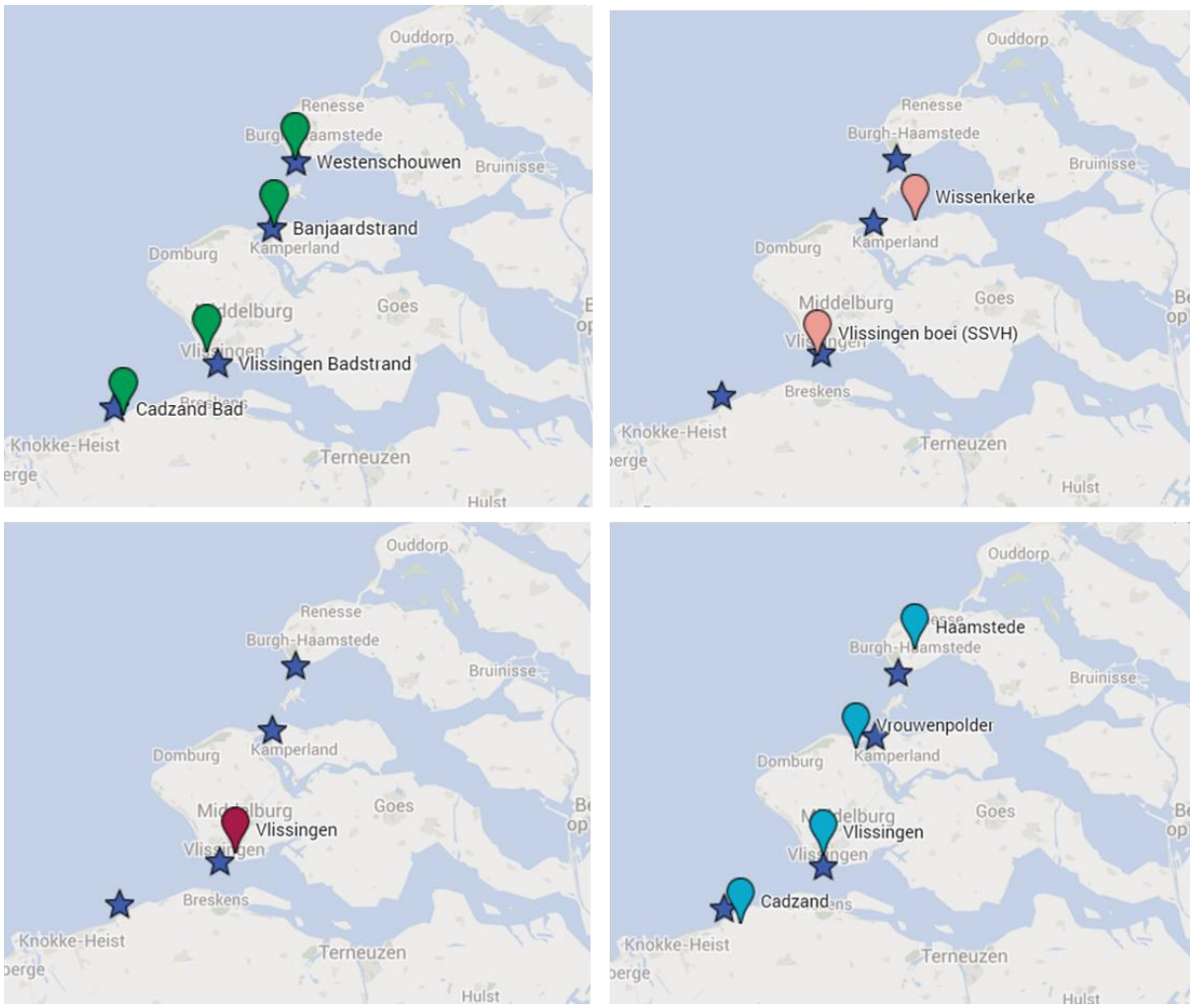

Figure 3 From top left: bacteria, salinity, air temperature and precipitation measurement location in relation to the chosen Blue Flag beaches (blue star)

Overflowing sewage systems during periods of heavy rainfall are also a potential source of these bacteria, noted in Vermeulen and Hofstra (2014), as is runoff from city surfaces (Schernewski et al. 2014). Though most papers concerning faecal indicator bacteria focus on rivers (see (Vermeulen & Hofstra 2014; Shehane et al. 2005) the variable is also included in the studies focusing on coastal and

estuary locations (Thoe et al. 2014; Thoe et al. 2015; Sterk et al. 2015). Maps showing the precise locations off all data measurement points are shown above in Figure 3 (pg. 16).

2.2.3 Quantitative Methods

Several steps were taken in order to prepare the necessary data for quantitative analysis. Firstly, the most accurate variable measurement site for each Blue Flag beach had to be identified. This was not only based on proximity to the Blue Flag beaches (which was identified by plotting all measurement points on a map) but also on the completeness of the data set at each measurement point, as not all sites had the same data range. For example, several sites had measurements recorded from the turn of the 20th century to 2015, whereas others had results which stopped many years before the necessary start year (2007).

The second data preparation step was to use 'R' (statistical computing software) to match the measurement dates of salinity; air temperature and precipitation to the measurement dates of the bacteria samples, in order for future statistical analysis to be representative. In order to complete this aim, an existing R script was adapted to fit the data set which would produce an output table of results. However, during this process an issue with the salinity samples was noted, as very few measurement dates matched that of the bacteria sample dates (n=<10) for all Blue Flag sites. To correct this, the R script was altered for salinity measurements, meaning that each value would be 'spread' across the seven days either side of this date. This greatly increased the n value for the salinity variable.

Correlation Analysis

Two types of correlation analysis were completed to understand the degree of relation between air temperature, salinity and precipitation with concentrations of E. coli and intestinal enterococci. Spearman's Rank was used when comparing bacteria concentrations with precipitation, and the Pearson product-moment correlation coefficient was used for air temperature and salinity.

The correlation analysis was undertaken using the statistical software SPSS. Prior to the analysis, a Q-Q test was completed to test for normal distribution of values. The bacteria values (both *E. coli* and enterococci) were not normally distributed, therefore the log10 transformed values were used for further analysis.

2.3 Qualitative Methods and Data Collection

In addition to the quantitative methods noted above, this thesis also utilised qualitative methods of data collection. A total of five semi-structured interviews were conducted with seven individuals from a variety of professional backgrounds, including beach management, water policy and tourism (Table 3).

Table 3 Overview of interviewees

Participant	Area of Expertise	Location
Participant 1	Beach Management	Walcheren
Participant 2	Water Policy	Province
Participant 3	Beach Management	Vlissingen
Participant 4	Business/Tourism Policy	Schouwen-Duiveland
Participant 5	Tourism Policy	Schouwen-Duiveland
Participant 6	Tourism Policy	Noord-Beveland
Participant 7	Tourism Policy	Noord-Beveland

2.3.1 Data Collection

Prior to the actual interviews, a detailed interview guide was written which contained all topics necessary to cover as well as numerous specific questions. One interviewee requested a copy of the

questions they would be asked in order to prepare themselves. However, in order to ensure that the responses would not be too 'perfect' or 'rehearsed' only a general topic list (consisting of brief bullet points) and a several specific questions.

Thought there were numerous interview techniques which could have been employed, a semi-structured approach was deemed most appropriate for these circumstances. One main alternative were structured interviews; where the interviewer asks each respondent the same set of questions, though there are usually very few open-ended questions included (Cohen & Crabtree 2006b). The restricted nature of this method meant it was not applicable, as the aim of the interviews was to gauge opinions and perceptions, which is difficult if there is little room for answer variation. Additionally, the differing professional backgrounds of the interviewees also meant that creating a list of questions relevant to such different backgrounds would be difficult as the resulting questions would likely be too general.

The second alternative was undertaking completely unstructured interviews. In this case, there is no list of predetermined questions created prior to the interviews. This method is more often used when the interviewer has already developed their own understanding of a setting or situation and have a clear agenda for the discussion (Cohen & Crabtree 2006c). However, in the case of this thesis, the understanding of the situation was not complete, as it was necessary to hear the points of view of individuals with differing backgrounds. Therefore, there was a need for slightly more structure than that offered by the unstructured interview technique. On a more personal or professional level, attending an interview without being sufficiently prepared may not give the best first impression of the interviewer. The interviewer may come across as unprofessional for example, if it appears they do not know exactly what topics or questions need to be addressed. Additionally, due to the lack of concrete framework, keeping the topic of the interview on track may be more difficult, as the interviewee may discuss at length things which may not be wholly relevant. If there was the possibility of follow-up interviews this may be less of an issue, however in this instance it one interview per person was all that was possible.

In general, semi-structured interviews allow for a greater exploration of opinions and perceptions of the topic at hand (Barriball & While 1994), as well as additional probing on interesting points leading to additional information. This method was a good way to include the best aspects of the aforementioned interview techniques. The use of the interview guide, for instance, provides enough structure for the interviewer to feel prepared, without being too limiting, as there is room to change the question order to accommodate topical trajectories which may occur (Cohen & Crabtree 2006a). The interview guide also ensured that the topic of conversation did not go too 'off track' when interviewees were talking, which was sometimes the case when discussing something they were particularity passionate about or interested in.

The interviews conducted in person and lasted between 45 – 60 minutes. Three interviews were one-on-one, with the others conducted with two participants at the same time. All interviews were recorded with a summary transcript produced, alongside the additional notes which were made by hand during the interviews.

Some problems were encountered during the preparation phase of the qualitative aspect. The largest issue was a lack of responses to the initial email which was sent out to a variety of individuals located in various municipalities within Zeeland. However, following the initial interview with Participant 1, I was put in contact with several other individuals who proved to be very helpful. Indeed, the first interview was the beginning of a 'snowball effect' in terms of potential interviewees. There was a small problem relating to language barriers, as the interviews were conducted in English rather than Dutch. Often there was an issue trying to find the correct translation of a word or phrase which may have made some interviewees feel a little uncomfortable, however this was not a major issue.

2.3.2 Analysis of the Interviews

Following every interview, the recording was transcribed to produce an accurate transcript of the session. These transcripts were then analysed using the coding method which is outlined in detail by Löfgren (2013) and Schmidt in Flick et al. (2004). The main aim of this analysis was to conceptualise the underlying patterns which are present in the answers of respondents, and in some case gain a description of certain aspects, such as current water quality.

The first step (prior to producing the necessary transcripts) is to determine the analytical categories, which is done by repeated reading of the transcripts. Relevant pieces of information were labelled; for example, is something surprising is said, a phrase or idea is repeated multiple times or if an interview states something is implicitly important. These pieces of relevant information are then organised into categories by combining several codes (which may be similar) into a single category or theme. Following the construction of the analytical categories it is then possible to draw connections between the categories/themes. These categories are therefore the main study results.

2.4 Overview of Methodology Per Research Question

In order to effectively summarise the information presented above, an overview table is presented below. This identifies both the data collection method and analysis method which has been used for each research question.

Table 4 Overview of the methodology used for each research question in this thesis

Research Question	**Data Collection Method**		**Data Analysis Method**		
	Interviews	Secondary Data	Statistical regression analysis	Literature Analysis	Coding
1: What is the current state of water quality in (coastal) Dutch recreational waters regarding the concentrations of Escherichia coli and intestinal enterococci?		X	X		
2a: How is recreational water quality perceived by relevant stakeholders?	X				X
2b: How is the Blue Flag Award perceived by relevant stakeholders?	X				X
2c: Do perceptions of Dutch recreational waters change if the Blue Flag Award is removed?	X				
3a: How may water quality change in the future?		X		X	
3b: How may the status of the Blue Flag Award change in the future?	X				X
3c: What impacts of future environmental changes can be foreseen for recreation and tourism at the Dutch coast?	X				X

Chapter 3: Current Quality of Recreational Waters

The quality of recreational waters is important, not only from a tourism stand point (the main focus of this study), but also for the environment and human health. It is important to note that 'water quality' does not refer solely to pathogens, but also additional to biological, chemical and physical characteristics (Diersing 2009). In this thesis we focus on faecal indicator bacteria (FIB) because of their relevance for the Blue Flag Award. As stated in the preceding chapter, numerous factors can influence water quality. In this thesis, we are interested in the relationship between FIB and concentrations and three variables; air temperature, salinity and precipitation.

The associated research question for this chapter is '*What is the current state of water quality in coastal Dutch recreational waters regarding the concentrations of Escherichia coli and intestinal enterococci?*'. Figure 2 in Chapter 2 shows the location of the Blue Flag beaches used as study locations, with figure 3 illustrating the location of measuring sites for all variables (including *E. coli* and enterococci). We first examine the faecal indicator bacteria data and then link these data to the air temperature, salinity and precipitation in a correlation analysis.

3.1 Current Water Quality

E. coli and intestinal enterococci data is presented in Tables 5 and 6 below (pg. 21). All measurements began on or around the 18th April 2007 and ended on or around 23rd September 2014. Minimum measurements for faecal indicator bacteria were 20cfu/100ml and a variety of maximum results were recorded, all of which exceed the criteria of the Blue Flag. The mode FIB value for all locations was 150cfu/100ml. For *E. coli* this is below the 250cfu/100ml limit set by the Blue Flag, however it slightly exceeds the 100cfu/100ml for intestinal enterococci.

Though there is evidence of exceedances of faecal indicator bacteria limits according to the criteria of the Blue Flag, each of these exceedances was followed by a reading in line with the necessary limits. As result, no action needs to be taken by either beach management or the Blue Flag. Reasons for this are discussed in more detail in Chapter 4.

3.2 Correlation Analysis Results

A correlation analysis was completed to understand what relationships exist between the variables in question. Spearman's Rank correlation was used when comparing bacteria concentrations with precipitation, and the Pearson product-moment correlation coefficient was used for air temperature and salinity (see Table 7 for data summary).

Given that the same surface air temperature site (Vlissingen) was used for all four beaches, the range of variables is the same across all sites. In all cases the maximum air temperature value was used. Precipitation values ranged from 0mm to 96.8mm per day. Salinity measurements ranged from 25 grams/kilogram(g/kg) to 35g/kg which is line with average levels of ocean salinity (Narragansett Bay Commission n.d.).

Table 5 Summary of E. coli concentrations

Measurement Location	Measurement Start Date	Measurement End Date	Number of Measurements	Min. *E. coli* (cfu/100ml)	Max. E. coli Measurement (cfu/100ml)	Average E. coli Measurement (cfu/100ml)	Std. Deviation (cfu/100ml)
Cadzand Badstrand	18.04.2007	23.09.2014	86	20	7730	519.29	1091.732
Kamperland De Banjaard badstrand	17.04.2007	23.09.2014	77	20	4190	313.42	554.955
Vlissingen Nollestrand	17.04.2007	23.09.2014	80	20	6270	348.00	736.278
Westerschouwen Rotonde badstrand	17.04.2007	22.09.2014	84	20	6100	478.57	973.641

Table 6 Summary of Intestinal Enterococci concentrations

Measurement Location	Measurement Start Date	Measurement End Date	Number of Measurements	Min. Enterococci measurement (cfu/100ml)	Max. Enterococci Measurement (cfu/100ml)	Average Enterococci Measurement (cfu/100ml)	Std. Deviation (cfu/100ml)
Cadzand Badstrand	18.04.2007	23.09.2014	83	20	3320	248.92	370.168
Kamperland De Banjaard badstrand	17.04.2007	23.09.2014	79	20	10500	330.00	1186.373
Vlissingen Nollestrand	17.04.2007	23.09.2014	78	20	7730	304.74	878.098
Westerschouwen Rotonde badstrand	17.04.2007	22.09.2014	65	20	1800	222.31	274.265

	Air Temperature			Precipitation			Salinity		
	Min. Measurement (ºC)	Max. Measurement (ºC)	No. of Measurements	Min. Measurement (mm)	Max. Measurement (mm)	No. of Measurements	Min. Measurement (g/kg)	Max. Measurement (g/kg)	No. of Measurements
Cadzand Badstrand	1	35.5	3549	1	86.4	3540	25	33	2629
Kamperland De Banjaard badstrand	1	35.5	3550	0	85.5	3541	28	35	2552
Vlissingen Nollestrand	1	35.5	3550	0	96.8	3556	25	33	2630
Westerschouwen Rotonde badstrand	1	35.5	3550	0	90.5	3541	28	35	2551

Table 7 Summary table of all climatic variables used in correlation analysis per Blue Flag Beach. Values are daily observations

3.2.1 Correlation Analysis Results

The results of the correlation for climatic variables and E. coli concentrations will be presented first, and enterococci results presented second. Though not relating to a potential bacteria and climatic variable relationship, a correlation between air temperature and salinity was found at both Cadzand Badstrand and Vlissingen Nollestrand. The Spearman's Rank correlation showed a weak positive correlation (r =.444) at both locations.

E. coli Correlation Results

The results of the correlation analysis between E. coli concentration and air temperature, precipitation and salinity are shown below (Table 8). No significant correlation, either positive or negative, was found between E. coli concentration and any climatic variable. Therefore, the null hypothesis, that there is no relation between the variables, is validated. This is illustrated in the example scatter plots provided for Cadzand badstrand in Figure 4

Table 8 Table summarising correlation analysis results for E. coli concentration at all four study areas

	***E. coli* Correlation Summary**								
	Variables								
	Air Temperature			Precipitation (Spearman)			Salinity		
Location	r	Sig.	n	r	Sig.	n	r	Sig.	n
Cadzand badstrand	0.024	0.825	86	0.066	0.547	86	0.105	0.343	83
Kamperland De Banjaard badstrand	0.115	0.318	77	-0.073	0.528	77	0.054	0.658	70
Vlissingen Nolle badstrand	-0.021	0.850	80	-0.051	0.654	80	0.164	0.150	78
Westerschouwen Rotonde badstrand	-0.009	0.933	84	-0.079	0.477	84	-0.039	0.737	77

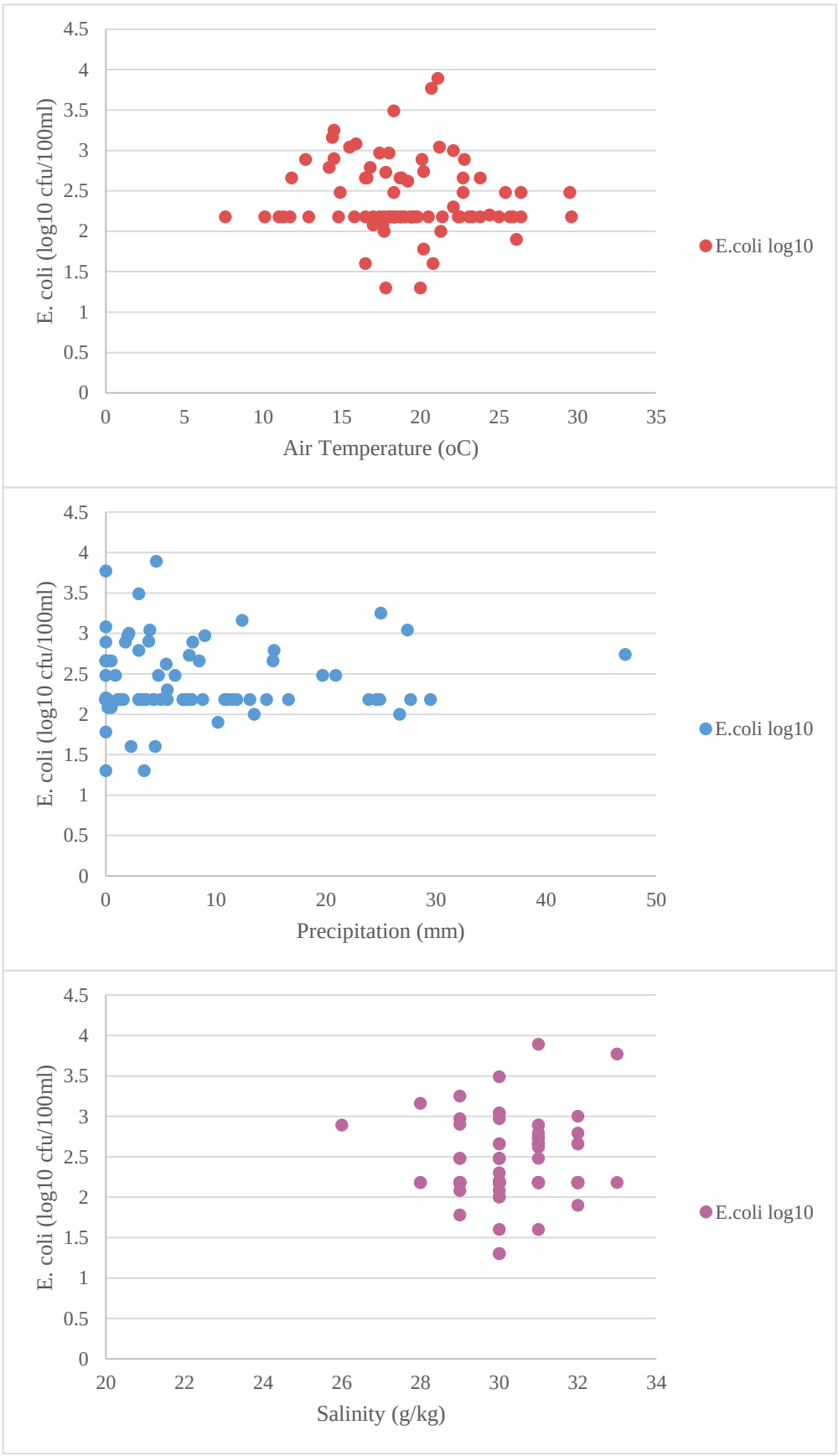

Figure 4 Scatter plots showing results of correlation analysis of E. coli with all air temperature, precipitation and salinity at Ccadzand badstrand

Intestinal Enterococci Correlation Results

The summary table of results is presented below (Table 9). As with the E. coli correlation results, no relationship was found between enterococci concentration and air temperature, salinity and precipitation. As for the E. coli results, scatter plots are given only for Cadzand badstrand (Figure 5).

Table 9 Summary table showing the results of the correlation analysis for intestinal enterococci concentration and climatic variables

	Enterococci Correlation Summary								
	Variables								
	Air Temperature			Precipitation (Spearman)			Salinity		
Location	r	Sig.	n	r	Sig.	n	r	Sig.	n
Cadzand badstrand	0.027	0.808	83	0.065	0.560	83	-0.151	0.180	80
Kamperland De Banjaard badstrand	-0.003	0.978	79	-0.120	0.913	79	-0.480	0.690	72
Vlissingen Nolle badstrand	0.030	0.795	78	-0.113	0.325	78	0.163	0.153	76
Westerschouwen Rotonde badstrand	-0.019	0.883	65	0.006	0.962	65	0.011	0.936	60

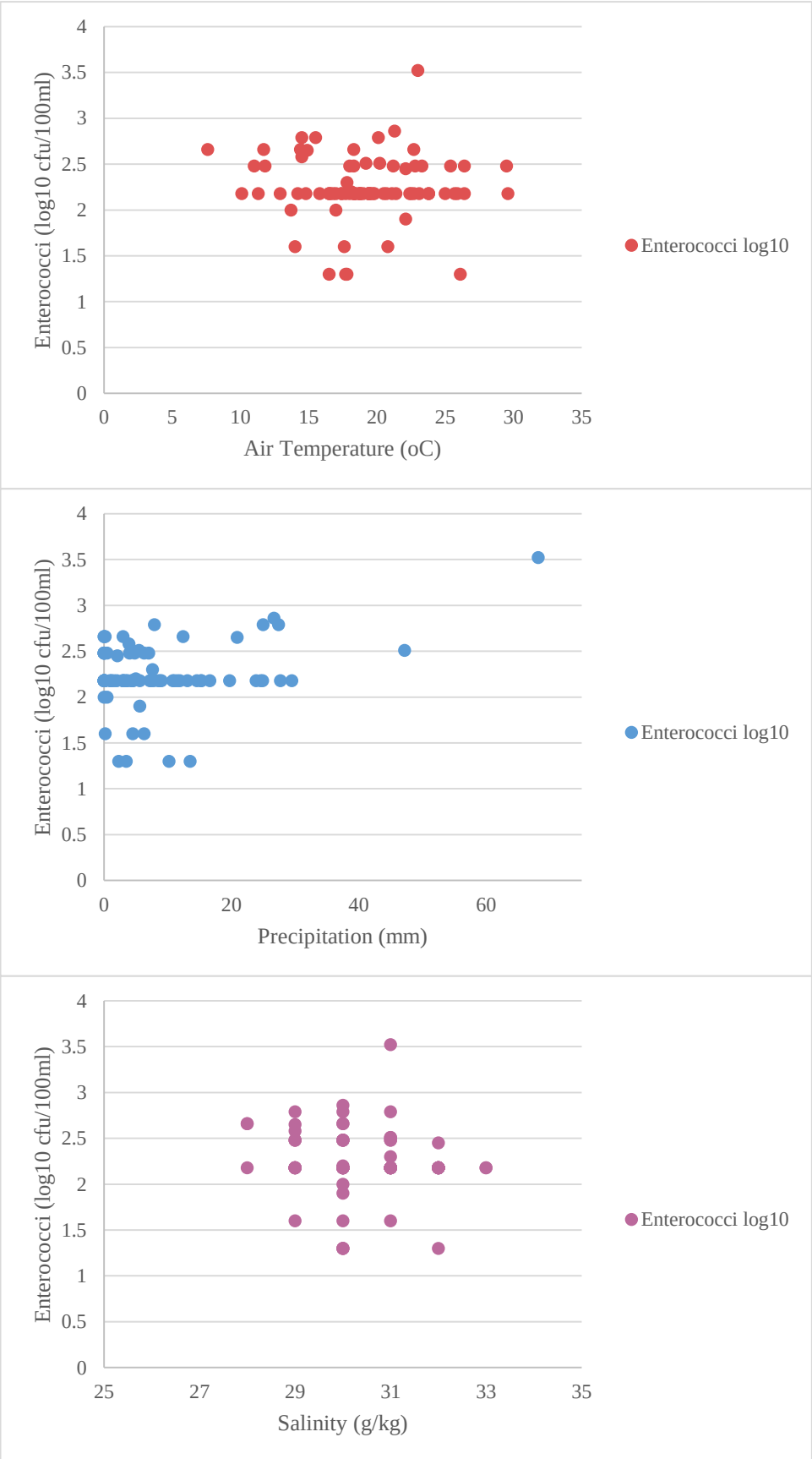

Figure 5 Scatter plots showing results of correlation analysis of intestinal enterococci with all air temperature, precipitation and salinity at Ccadzand badstrand

3.3 Concluding Remarks

This chapter focused on research question 1, which looks specifically at the current state of water quality in Zeeland in terms of E. coli and intestinal enterococci concentrations. The correlation analysis shows that there is no relationship between faecal indicator bacteria and air temperature, salinity or precipitation, from this data set. The lack of correlation between variables was surprising, when considering the findings of papers with a similar focus. As a result of the lack of correlation, the planned regression analysis and scenario analysis could not be completed (the envisioned analysis followed a similar line of investigation as in Vermeulen and Hofstra (2014)). Therefore, a brief literature analysis was completed to show how future water quality in Zeeland may change in future, which is discussed in Section 5.1.

The reasons behind this unexpected result lie with issues relating to data availability and timescale. Firstly, faecal indicator bacteria concentrations are only measures twice a month for five months. This not only restricts the amount of data available, but also the effect of seasonality, as measurements are taken only during the summer when temperatures are higher and precipitation is lower. Additionally, FIB data is only available from 2007 onwards, with data from only eight presented, which is not enough to draw reliable conclusions from. Incomplete data sets were also an issue, especially for salinity, as many measurement sites dis not have data for the necessary time frame. Therefore, data was taken from the closest measurement site with the most complete data set which may have impacted results. Finally, as water temperature data was not available, water temperature was used as a proxy. This was not ideal, as similar studies used the former variable. More detailed discussion of the reason for this result is presented in Chapter 6.

Chapter 4: Stakeholder Perceptions of Water Quality and the Blue Flag Award

This chapter focuses on research questions 2a – 2c (see Section 1.3 for the full version of the research questions). These questions focus on the perceptions of stakeholders on the topics of recreational water quality and the Blue Flag Award, and how opinions of the Award may change in the event of its removal.

As stated in Chapter 2, the qualitative data used in this chapter was collected through interviews with seven stakeholders, all of whom have a variety of professional backgrounds. These professions include water policy, tourism policy and beach management. To ensure anonymity the interviewees are referred to as Participant x, as outlined in the table of stakeholder profiles in Chapter Two (see Table 3, pg. 17). The full transcripts of all interviews are presented in Appendices I-V.

4.1 Stakeholder Perceptions of Water Quality

Of all participants included in this study, those working in beach management or water policy were significantly more knowledgeable on the issues of water quality than those with a tourism background. Answers from Participants 1, 2 and 3 were much more detailed and thorough than those given by the other interviewees who instead gave more general statements about the water quality being 'good'. Therefore, the majority of the results for this section came from the first three interviews conducted.

4.1.1 Perceptions of Current Water Quality

In each interview, the consensus amongst respondents was that the current recreational water quality in Zeeland was very good. However, the notion that water quality is something 'out of the hands' of interviewees was pervasive throughout all interviews. This was formulated in two ways, the first being that water quality is dependent on too many factors, with a sense of resignation that only so much can be done. Secondly, responsibility was often passed onto others, with the idea that responsibility lies with individuals higher up the chain or in other countries.

Several reasons were identified as to why the current water quality is in such a good state, with the first being an expansion in European legislation. The importance of this to stakeholders is twofold, firstly it meant improvements in the sewage systems of neighbouring Belgium which in turn led to improved water quality in Zeeland. Secondly, there is increased legislation regarding ship waste and where it should be deposited, as well as increased awareness of it from both a public and private perspective.

A general increase in environmental awareness amongst Dutch citizens and foreign tourists came out as an additional reason for (ongoing) improvements in water quality. Many participant answers were general in their response to this subject, however several main factors influencing awareness were identified from the interviews. Firstly, environmental changes have become much more visible to the public, with Participant 3 using the example of sperm whales which became beached in the North Sea in early 2016. The importance of awareness campaigns was raised by Participant 6, drawing comparison between Dutch and Surinamese beaches in terms of their cleanliness. Indeed, contrast between The Netherlands and less developed countries, in terms of environmental 'friendliness' was also drawn by Participant 4.

There was consensus between Participants 1, 2 and 3 that, in the event of increased bacteria levels, the problem would 'sort itself out' thereby requiring minimal action from management individuals. Only Participant 2 gave specific reasoning, stating that the high salinity levels in Zeeland were the main reason that *E. coli* and enterococci pollution events last '*no more than 24 hours…within 24 hours they are usually all killed*' (Province Interview: Appendix II). However, a point of contention for these participants were issues surrounding water quality measurements. One factor was the infrequency of

measurements, which occurs every two weeks during the bathing season, with cost presumed to be the limiting factor in this case (Vlissingen Interview: Appendix III).

Three main pollution sources were identified by interviewees. Sewage systems were deemed to have the largest impact on water quality and were considered in two ways: the 'excellence' of the Dutch system and the comparatively 'poor' systems of nearby countries, specifically France and Belgium. It is only in recent years that Belgium has begun to change to a more centralised sewage system, however many houses are not yet connected (Province Interview). However, though there have been improvements, Participant 3 noted the difference between the two national systems: '*more than half of the [Belgian] sewage that gets into the sewage system doesn't get to the treatment plants because there are so many leaks. In Holland, there are so many meters [i.e. big area/length of system] in the whole sewage system so if they measure the flow of the water in different places and if there is a difference then they investigate'* (Province Interview). In this interview, the idea that the Dutch had 'done their bit' and was now benefitting from improvements in other countries was particularly strong.

The issue of rainfall is linked with the above notion on sewage systems. Participants 2 and 3 were both aware of (likely) future changes in rainfall and the potential impact on water quality. Participant 3 was concerned of a return pollution events similar to those experienced in the 1970s or 1980s as a result of unfiltered waste entering the sea. Participant 2 stated 'more than 90% of the time it's [pollution] is due to heavy rainfall and our sewage system' (Province Interview), going on to outline how city sewage systems had been adjusted to cope with shorter, heavier rainfall.

Boats were also named as a main source of pollution, as a result of expelling waste directly into the sea as opposed to designated location in harbours, with Participant 2 believing that avoiding costs was a key reason. Other types of pollution, such as paraffin and oil were also linked to ships. Participant 2 stated however, that there had only been one bacteria exceedance in five years which was believed to be due to boat pollution.

Animals, specifically seabirds (seagulls) and dogs were also labelled as sources for increased *E. coli* and enterococci concentrations following DNA tests. In the case of seagulls, it was noted that water measurements taken by Rijkswaterstaat staff were completed where the majority of beach users are. However, the measurements are taken early in the morning when many seagulls are present leading to associated bacteria increases in the water samples (Province Interview). A case study for dog pollution at Veerse Meer was discussed by Participants 2 and 6. Individuals were walking their dogs on the beach during the bathing season without removing the faeces, which led to a higher bacteria concentration (Province Interview).

A final point on the perception of water quality which became apparent through the interview process was the tendency by participants to link water quality with visible pollution, such as litter or organic detritus, rather than bacteria concentrations. Participant 2 went a step further on the theme of cleanliness by raising the point that individual perceptions of cleanliness are not always the same. Drawing on the example of Greece, he stated '*If I talk to friends or family they say, wow, in Greece the water is really clean! Even when its 20 meters deep you can still see the bottom! But the visibility in the water has nothing to do with the quality of the water. Even if it has an intestinal enterococci value of 5000 you could still see the bottom*' (Province Interview). This highlights the lack of awareness and understanding of water quality as well as suggesting 'quality and cleanliness' are linked with visible pollution only, rather than bacteria.

4.1.2 Importance to tourism

There was universal agreement amongst interviewees that water quality was important for the area, with tourism cited as the main reason. Participant 2, who focuses on provincial water quality, stated '*we have 1-1.5 million Germans…that come mainly for the beaches. We think it is important for the tourism to make sure that the water quality is excellent*' (Province Interview).

The area is heavily reliant on the tourism industry, as within the municipality of Schouwen-Duiveland alone, '*more than €350million turnover…comes from tourism, directly or indirectly*' (Schouwen-Duiveland Interview: Appendix IV). The importance of seasonal jobs within tourism was also evident as Participant 4 stated '*I think there is no family in our municipality that hasn't one, two or three family members involved [in the tourism industry'* (Schouwen-Duiveland Interview), further expanding that 30% of working-age individuals in Schouwen-Duiveland are involved in some way.

Beaches were consistently referred to as the main pull factor for visitors and poor water quality was associated with visitors being unable to use the beaches fully. This was especially the case for Vlissingen as Participant 3 stated '*I think it's very important for Vlissingen because the tourists don't come to see old buildings in the centre they come for the beaches'* (Vlissingen Interview). Though other activies available to tourists were discussed, such as cycling and walking 'that's not what brings them [tourists] to Zeeland' (Noord-Beveland Interview: Appendix V) The fear of losing visitors over poor water quality, as a result of being disappointed was also well discussed with Participant 3 and is discussed in more detail in Section 4.4.1.

4.1.3 Perceptions of Future Water Quality

From all interviewees there was a positive outlook on future water quality. All participants stated that water quality (in their opinion) would either remain the same or increase, with a significant decrease not deemed a realistic future. Participant 1 stated '*I can't think of a situation where it would [get] worse*' (Walcheren Interview: Appendix I). Ongoing environmental awareness from both the public and companies was one reason given for the assumed positive trends as individuals now have a greater understanding of '*how important it is to have good housekeeping of our world'* (Vlissingen Interview). The idea of moving forward and not repeating mistakes of the past, such as beach exploitation and higher pollution levels was repeated in several interviews.

Continued cooperation on both a national and international scale was another reason cited for continued improvements in water quality. Ongoing compliance to existing EU legislation leading to improvements in neighbouring countries, specifically Belgium as discussed previously. Changes higher in the 'chain' support the thought of Zeeland as an '*endpoint'* for rivers including the Meuse and the Scheldt. This continues to support the point made above, that The Netherlands has 'done enough' and now it depends on other countries (Schouwen-Duiveland Interview).

4.2 Stakeholder Perceptions of the Blue Flag Award

This section looks at the different perceptions of the seven interviewees in regards to the Blue Flag Award. There were two main approaches taken by participants, and as such this section has been split into two parts. The first looks specifically at perceptions of the Blue Flag in terms of importance to tourism and the second looks at their perceptions of the flag in regards to beach management.

4.2.1 Importance to Tourism

In order to effectively explore the answers given by respondents this section will break down the themes which became apparent following transcript analysis. However, the themes should not be considered in isolation from each other, rather many of the concepts which came to light are interlinked. One such example is the concept of 'awareness' which is braided through almost every theme.

General Overview of Opinions

The general feeling towards the Blue Flag Award was positive, although not to the same degree. Participants 1 and 3, both of whom work directly in beach management were significantly more optimistic about the award, in terms of the benefits it brings to the local area. In contrast, Participant 2 had more of a negative outlook. That is not to say he considered the award to be a 'bad thing', rather that the importance to the province was not very significant. This was in part due to the lack of awareness amongst tourists leading him to state that '*I don't think it [the Blue Flag Award] is irrelevant, but I do think it's only relevant for a small amount of people'* (Province Interview).

The other participants with a tourism policy background were more general in their answers, stating that it was important for tourism from a quality guarantee standpoint, which will be discussed in more detail later in this section. What was clear from most interviews was that the demand for the Blue Flag Award came from the 'upper echelons' of the municipalities in question. This was especially the case from the Schouwen-Duiveland and Noord-Beveland interviews.

Interviewees were also given a table of factors and asked to rank them in order of importance from their own personal viewpoint, and also from the point of view of a tourist in their area. All respondents with the exception of Participant 2 completed this with the results displayed below in Tables 10 and 11. They received two tables in order to rank five beach factors in order of importance, one from their own point of view and the other from the point of view of a tourist. Participant 2 did not complete the question; however, all other interviewees did.

When considering their own opinion, all interviewees, with the exception of Participant 3 ranked the Blue Flag as the least important factor (5). All interviewees ranked the Award very low when considering the opinion of tourists. in contrast, safety and cleanliness were ranked consistently high with the exception of Participants 6 and 7, who stated that it was less important because people take care of their own safety because the sea is a dangerous place (Noord-Beveland Interview). Note that Participants 1, 4 and 5 stated that their own opinions were the same as from a tourist point of view. A key point which came out through this question was that safety and cleanliness were both 'covered' by the Blue Flag, meaning that the Blue Flag could be considered both number 1 and number 5, according to Participant 1.

Table 10 Ranking of factors based on interviewee's own opinion

	Beach Factor Ranking				
	Cleanliness	Safety	Blue Flag Award	Proximity	Scenery
Participant 1	2	1	5	4	3
Participant 2	*	*	*	*	*
Participant 3	3	1	2	5	4
Participants 4 & 5	1	2	5	4	3
Participants 6 & 7	2	5	5	3	1

Table 11 Ranking of factors by interviewees from a tourist perspective

	Beach Factor Ranking				
	Cleanliness	Safety	Blue Flag Award	Proximity	Scenery
Participant 1	2	1	5	4	3
Participant 2	*	*	*	*	*
Participant 3	1	2	5	4	3
Participants 4 & 5	1	2	5	4	3
Participants 6 & 7	2	4	4	3	1

Theme: *Competition*

The first theme which became apparent was competition. This came in several forms; namely competition from other Dutch beaches and competition from low-cost holiday destinations. The issue of cheap foreign holidays was discussed in depth with Participant 3 who considered it a concern for Vlissingen. The main issue revolved around keeping the existing tourists happy, in order for them to

make a return trip to the area. This was highlighted by his statement regarding how holiday makers in the past would return every year no matter what the weather had been like during their trip. However, given the wide availability of cheap flights to destinations where tourists could be guaranteed '*sun… and a beer while you're on the beach*' (Vlissingen Interview) ensuring a high beach standard has become necessary to ensure return visitors. This sentiment was also echoed by Participant 1 who stated that because people can now, very easily, go to destinations such as Spain and Turkey '*a decrease in water quality would be disastrous for our* tourists' (Walcheren Interview).

As such, the Blue Flag was seen by several interviewees as a way to stand out from other appealing destinations, given that factors such as the weather could not be guaranteed. Therefore, in several interviews, references were made to the Blue Flag as being 'something extra' (Province Interview) and as a way for an area to stand out. This sentiment was also given as a way to stand out, a '*uniqueness*' (Noord-Beveland Interview) from other Dutch beaches.

A key sticking point for interviewees was the desire to prove a certain 'standard' which would be present at beaches located within their areas. Therefore, the link between the high standards of the Blue Flag Award and 'guarantee of quality' (for tourists) was heard on numerous occasions as a way to encourage visitors. This point will be expanded upon in Section 4.3.1.3 which focuses specifically on the theme of quality.

Theme: *Quality*

The theme of quality and pride was strong throughout all interviews, and was discussed in two ways; the first being the specific quality of beaches and recreational waters, and secondly in the context of assuring a 'guarantee of quality' for visitors. Participants involved in beach management were especially keen to ensure a certain quality and cleanliness at the beaches. Participant 1 stated that his company now considered the tighter Blue Flag criteria as the minimum standard for all beaches under their control. Participant 2 was very enthusiastic about the importance of maintaining the quality of bathing waters in Zeeland, given the importance to tourism.

The Blue Flag was consistently referred to as a 'guarantee of quality' across all interviews. Often, this was made with specific reference to German tourists, who interviewees believe attach a greater importance to 'quality'. However, reasons behind these opinions were not especially clear. Participant 6 stated that these conclusions (about German tourists) are heard by the municipality from people working in close contact with the tourism industry, including beach and campsite workers, rather than asking tourists directly because 'as a municipality we don't ask the people these kinds of questions' (Noord-Beveland Interview).

Theme: *Awareness*

In terms of tourist awareness of the Blue Flag Award, not all interviewees had the same outlook. Differences in personal awareness was evident between those with a tourist policy background and those working in management positions, with the latter having a much deeper awareness and understanding. Although the former were aware of the award, there was not the same level of understanding. When the topic was pressed, the answers received were much more generic or general in nature.

However, one area in which there was universal agreement was that there was significantly more awareness of the award from German tourists, as opposed to Dutch or Belgian visitors. The reasons for this difference were mainly linked to the perceived notion that German tourists placed a much greater importance on factors such as certification and qualification. Though participants were unsure whether the presence of the Blue Flag Award was the defining factor in choosing which beach to visit, they believed it counted more in decisions than for visitors from other countries. This information is not based on local investigations, rather it is heard from other individuals working in close contact with tourists. As stated by Participant 6 when asked why German tourists know more about the Blue Flag

'*it's just from saying. The people that work on the beach. The people from the camping sites, they tell us'* (Noord-Beveland Interview). Though domestic awareness was considered low, it was generally accepted to be on the rise. Participant 5 attributed this to media attention, as the award is 'always in the media and people read about it' (Schouwen-Duiveland Interview).

Theme: *Confusion*

Following from awareness, the theme of confusion came through when considering perceptions of the Blue Flag. One key area was a lack of understanding from tourists about what exactly the Blue Flag stood for. Participant 1 discussed a small investigation carried out by his company on Domburg beach (northwest Walcheren coast) where visitors were asked what they thought the Blue Flag was and '*more than half thought it was a safety flag*' (Walcheren Interview). Confusion regarding the water quality aspects of the award were also raised, as Participant 1 discussed the issue that even if water quality were to decrease, the beaches are still safe to swim in. This is due to the higher standards of the Blue Flag Award (when compared to the EU bathing standards).

Multiple beach awards present was also deemed to be an area of confusion, especially for tourists. Schouwen-Duiveland beaches have up to four awards, however the Blue Flag is considered to be the most well-known. Participant 5 stated that these additional awards can be confusing for tourists and there was a lack of distinction between the awards by both interviewees.

Theme: *Tourist Demands*

Changes in various factors were discussed in all interviews. Changes in tourists, or more specifically, tourist demands were a key issue discussed by several participants. The main issue participants, and their municipalities, are faced with are the ever increasing demands of tourists. Participant 1, for example, stated that '*what I know is that tourists want quality and more guarantees of safety*' (Walcheren Interview). As such, the view of the Blue Flag Award as a guarantee of quality was present with each participant. A particular emphasis was placed on the importance of the safety aspect of the Blue Flag Award, with many interviewees holding the view that a 'safe' beach (one with lifeguards) would be highly sought after by tourists.

German tourists seemed to take the main brunt of these thoughts on demands. Given that they were always named as the group with the highest awareness of the Blue Flag, almost all interviewees gave this as a reason for the continuing importance of the award. The reasoning behind this, in all interviews, was that '*Germans really look if there is a Blue Flag and if yes, it means there is a certain quality'* (Walcheren Interview). While not all interviewees said these exact words, the sentiment was present in all interviews, alongside the presumed notion that German tourists attach more value to the Award than Dutch visitors.

As the Blue Flag is linked to a perceived higher beach quality, which matches other trends the wider context of tourism in Zeeland. Changes made in recent years to ensure visits are as comfortable as possible include increasing camping pitch sizes and hotel rooms, as well as general improvements to accommodations (Schouwen-Duiveland Interview).

4.2.2 Importance to Management

In addition to the perceived notion of the Blue Flag Award as a guarantee of quality for beaches, there was also idea of the award as a guarantee of the standard of work undertaken, especially by those in the beach management industry. The idea of a third party (the Blue Flag Organisation) acting as a quality control was considered a positive benefit of the Blue Flag Scheme. Further benefits were noted from the information gained through the annual beach inspections. Blue Flag inspectors passed on ideas and opinions, not only on the best way to meet award criteria, but also other areas for improvement or contact information for municipalities that experienced the same problems.

That is not to say that all participants were completely happy with inspections. Participant 6 suggested that inspectors could be excessive, citing an example where she had to visit the beach toilets three times to take a picture when they were perfectly clean to send to the Blue Flag Organisation, as the inspector had deemed them too dirty. '*It's a bit overdone'* (Noord-Beveland Interview) was her response, as the issue rested on simply being there at the right time to prove the cleanliness of the facilities.

4.3 Potential Blue Flag Award Removal

It is important to note that none of the respondents had been involved with a beach within the study area which had lost the Blue Flag for any reason. Therefore, the questions asked in this section were purely hypothetical. The Blue Flag has been removed from other beaches in The Netherlands for reasons which include water pollution, but this has not occurred within Zeeland. This became known through the interview process, as almost all respondents were aware that a beach in Katwijk (Noord Holland) no longer held the award due to pollution issues, even if the respondent was not able to recall the exact location name.

4.3.1 Opinions on Theoretical Loss

Opinions on the effects of the Blue Flag removal differed between interviewees. Participant 2 discussed the Katwijk case study directly, stating that he had read about a study which had been undertaken to assess the impact of the award loss and '*didn't find any…[and] there have been no complaints about the fact they don't have the flag anymore*' (Interview Province). Indeed, the main argument to support this view was that the awareness of the Blue Flag Award was not big enough to illicit a significant problem, it is '*only relevant for a small number of people'* (Interview Province).

The issue of water quality being the deciding factor in the removal of the award was central to answers in two interviews. Participant 1 initially reacted with general uncertainty as to what potential problems may come about. However, he stated that if there was a '*concrete reason like if the water quality wasn't good anymore…then I think people would go elsewhere'* (Walcheren Interview). As a side note, Participant 1 also discussed Blue Flag beaches located next to beaches with no environmental awards, stating that '*we don't see a trend in more people going to Zoutelande* [beach with Blue Flag Award] *that the other'* (Walcheren Interview), potentially calling into question the importance of the award. Participants 4 and 5 also echoed the notion that a concrete water quality issue would have a greater impact. Indeed, Participant 4 was especially sure that removing the Blue Flag would have an impact. This was due to a past misunderstanding regarding when to lower the flag (in this case it was because there were no lifeguards present on the beach); however, it was illustrated that beach users were aware that the flag was not present, leading them to ask '*why isn't there a flag'* (Schouwen-Duiveland Interview).

This interview also raised the point on the importance of other beach awards, as coastal locations in this municipality may have up to four different certificates (the Blue Flag, Eco 21, Green Deal and Quality Coasts). However, the cost of maintaining and applying for each of these awards has become excessive and the municipality is considering reducing or combining the awards more effectively. However, both participants believed that the Blue Flag was the most recognised of all the eco-labels for tourists. When asked about a future decision to keep the Blue Flag Award at the expense of the others, both respondents did not think there would be a significant impact on tourism.

The importance of the media in relation to the Blue Flag was only mentioned during the interview with Participants 6 and 7. In this case, they stated that losing the Blue Flag Award would lead to an impact as a result of bad press: '*everyone says getting the Blue Flag is one thing but what if you lose it and you get bad publicity. That's worse than not having it in the first place'* (Noord-Beveland Interview). However, she did not think it would cost many visitors to the beach. These participants made it clear that ensuring the continued presence of the Blue Flag was a key point of the municipality

in part because it is '*the most well-known one*' (Noord-Beveland Interview), and it is for this reason (as well as financial) that they do not chase additional awards for the beach located within the municipality. An additional point which was not mentioned in other interviews was the educational aspect of the Award. This was viewed as a very positive thing by Participants 6 and 7, who stated that if it were not for the Blue Flag then community involvement activities such as rock pooling (for children), lifeguard demonstrations and beach clean-up events for school children may not have taken place.

Participant 3, the interviewee most supportive and positive about the award scheme, had the most specific answers relating to issues which may occur as a result of a (hypothetical) award loss. Focusing on his area of Vlissingen, he argued that there would be no change in the quality of the water, rather the impact would be on the cleanliness of the beach: *'well, it won't change the quality of the water but it will change the cleanliness of the beach, so they will be dirtier because the city will save some money as they don't have to clean as frequently'* (Interview Vlissingen). Short term effects would include complaints from local people regarding the state of the beach.

However, in the longer term (between one to three years after the event), Participant 3 believes that '*you will see it that you get less tourism. And it will be very hard to bring them back to the city*' (Interview Vlissingen). This is in contrast to holidaymakers in the past when: '*German families… would come each year to the same beach… with the little children and you would see them get bigger and bigger. And they always come back, good weather or bad weather*' (Interview Vlissingen). The disappointment tourists may experience from the unkempt beaches may prevent them from returning to Vlissingen, instead choosing to visit another low-cost European holiday destination, a key factor noted in the preceding section of this chapter.

4.3.2 Summary of the Opinions

Answers from interviewees on the topic of losing the Blue Flag were fairly general. This is perhaps understandable given the hypothetical nature of the questions asked. Indeed, this was especially the case when conversing with individuals with a background in tourism policy, rather than those with positions in management. However, in several cases, opinions became stronger when considering water quality as the defining reason for such an even occurring.

A running theme throughout this section, however, is the awareness of the award amongst the public, and how this may influence public perceptions. In general, though the Blue Flag Award was labelled the most 'well known' by several participants, it was made clear in all interviews that the award itself is far from being universally recognised by tourists, domestic or foreign. Despite this, all interviewees were of the opinion that losing the flag would be a bad thing, though there was a lack of consensus on the degree of impact. Additionally, respondents did not really focus their answers on changing perceptions of the water. In a roundabout way, conclusions can be drawn however, the immediate focus of respondents was on the potential loss of tourists and associated revenues.

Chapter 5: Future Changes in Zeeland

This chapter uses data collected from both interviews and secondary literature sources. The main area of focus is on what the future may hold for Zeeland, specifically with regard to tourism in the province. Given that future tourism encompasses the additional factors, it must therefore be explored in light of expected developments (or trends) in water quality and Blue Flag appreciation.

This chapter is significantly more integrative in its nature than the preceding sections, rather than simply stating the opinions of interviewees. The concept of 'futures' is the overarching theme linking all sections of the chapter; with potential changes in future water quality discussed in Section 5.1 before transitioning to the future status of the Blue Flag Award in Section 5.2. Section 5.3 then provides a comprehensive overview of the impacts of future environmental changes by considering the linkages between the causes and impacts of the various factors which affect tourism in Zeeland.

5.1 Future Water Quality Changes

Changes in climate, land use and agricultural practices are the main drivers influencing future water quality. Specifically, changes in rainfall, temperature (both air and water) and salinity are considered to be central to affecting concentrations of E. coli and intestinal enterococci, with detailed reasoning presented in Chapter 1 for reference. In order to answer research question 3a, the development of a statistical regression model was envisioned. However, due to the lack of relevant correlations presented in Chapter 3 this was not possible. Although this study did not find significant relationships between the variables in question and E. coli and intestinal enterococci concentrations, this is not the case in similar investigations.

The paper by Vermeulen and Hofstra (2014) is one such study, focusing on the influence of climate variables on *E. coli* concentrations in the Rhine, Meuse and Drentse Aa. River discharge and precipitation were found to correlate positively with *E. coli* measurements, whilst water temperature was negatively correlated. For the River Meuse specifically, once *E. coli* and climatic variables were combined in a linear model, the study showed *'climate variables and location can account for a substantial part of observed variation in E. coli concentrations in surface water'* (Vermeulen & Hofstra 2014: 307). A key expectation from the study is that the projected increases in rainfall may lead to increased concentrations of *E. coli*, with other pathogens with a similar transmission affected potentially affected in the same way.

Sterk et al.'s (2015) paper on the effect of climate change on *Vibrio* Spp. also had similar conclusions. Though it did not consider E. coli or enterococci specifically, it did focus on coastal recreational waters in The Netherlands. *Vibrio* Spp. Concentrations were predicted as a function of water temperature, pH and salinity; with the resulting formula used to predict the effects of increased temperatures (sourced from KNMI scenarios) (Sterk et al. 2015). The regression analysis showed that Vibrio Spp. concentration was significantly determined by all environmental factors as well as enrichment method, whilst season was not a significant factor. Under the climate change scenarios, an increase in *Vibrio* Spp. concentration, thereby increasing swimmer risk of *Vibrio*-associated infections (Sterk et al. 2015). This study also found an increased risk of illness to swimmers in situations where water temperatures reached maximum values, concluding that '*If such extreme situations [i.e. temperature increase] occur more often during future summers, increased numbers of ill bathers or bathing-water-related illness outbreaks may be expected* (Sterk et al. 2015, p.1).

While both Vermeulen and Hofstra (2014) and Sterk et al. (2015) focus on Dutch examples, similar findings are also in other studies with a more international focus. The negative correlation between temperature and *E. coli* concentration was also found in Sampson et al.'s (2006) paper focusing on *E. coli* survival in Lake Winnebago, Oshkosh, WI. Study findings suggest that *E. coli* '*may persist in the environment in cooler water longer than in the warmer water encountered in late summer'* (Sampson et al. 2006, p.389). Additionally, the positive correlation between precipitation and microbiological

water contamination (using *enterococcus* as an indicator) was also seen in Semenza et al. (2012), which focused on climate change and water quality at Californian beaches. Therefore, it can be assumed that in Zeeland, that with increasing precipitation (in general and extreme events) that concentrations of FIB will increase, whereas an increase in temperature may see a reduction in the concentration of *E. coli* specifically.

5.2 Future Status of the Blue Flag Award

Research question 3b; '*How may the status of the Blue Flag Award change in the future?'* focuses very much on how current attitudes towards the Award may differ in the coming years. However, evolution in attitudes does not occur spontaneously, rather it is the result of changes in external factors, specifically social factors such as increasing environmental awareness and changes in tourist demands.

Interviewees were asked specifically about the future of the Blue Flag and responses were fairly mixed in their level of detail. Participants 1 and 3 (both of whom work in beach management) were much more specific in their answers whereas other respondents were more general. The general trend in answers was positive, with only Participant 2 noting negative aspects of the award. The main themes or reasons which became apparent from the interviews included the Blue Flag as a 'quality guarantee', increased societal and personal environmental awareness, the importance of the Award for future investment as well as a preference for the Blue Flag over other beach awards.

5.2.1 Positive Future

Environmental awareness is seen as the overarching theme which governed many responses. The Blue Flag could be considered as a facilitator to increasing awareness, as a result of the cleanliness criteria stated by Participant 2. Alternatively, the rising environmental awareness as a result of additional factors may lead to a greater understanding of the Blue Flag. This point is best illustrated by comments made by Participant 3 who drew a comparison between beach use and increasing consumption of organic foods; stating '*in the past we would just eat the cheapest one, but now people are changing. And when you are able to pay some more you will have a good feeling about it so we do it'* before stating *'a BF award for your beaches that are clean will be important in the future as well'* (Vlissingen Interview). Participant 3 used this reasoning when explaining why so many more beaches and harbours (in his opinion) were applying for, and achieving, the Blue Flag.

Using the Blue Flag as a means to placate tourists and ensure the Province's commitment to quality vacation experiences is an additional point of view for the future of the Award. Participant 1 considered tourist demands to be the defining factor determining the continued use of the Award in the area as he states '*if they [tourists] think it's important then for me as the director of the organisation it becomes important'* (Walcheren Interview). He made specific reference to the 'quality guarantees' that tourists demand, further stating that '*tourists want quality and more guarantees of quality and in that sense I think it's [the Blue Flag Award] getting more important'* (Walcheren Interview). Rising standards was linked with the inability to '*exploit our beaches like we did ten years ago*' stating that if the Blue Flag can help prevent such degradation then it will become more important in the future.

Participants 6 and 7 focused their answers more on the 'back and forth' notion of benefits and payment to justify the future of the Blue Flag, suggesting that tangible benefits from the Award would ensure its future. Given that the beach in question in this municipality (Banjaardstrand) had no facilities and was '*a blank canvas*' (Noord-Beveland Interview) prior to gaining the Award, significant monetary investments had been made. As a result, Participant 6 stated that for the municipality to secure future finances to continue providing Blue Flag-associated management and services, the benefits from holding the Award must be visible.

Participants 4 and 5 did not think the importance of the award would change in the future, either the municipality or to tourists, as they stated '*the importance is still there'* (Schouwen-Duiveland Interview). Participant 5 stated that the more important thing to consider was increasing promotion of

the Award so more people were aware of it. Participant 4 expanded on this point, stating that promoting the equal nature of the award (i.e. that all beaches are measured to the same standards) was important, as the public could draw their own conclusions if they could see that standards do not always appear to be the same in different countries. When asked about the best way to promote the Award, two main approaches were discussed. Firstly, advertising on television, taking inspiration from the national awards for the cleanest beach. Secondly, utilising free advertisements on social media was mentioned by Participant 5.

5.2.2 Negative Future

Participant 2 was the only respondent to voice criticism of the Award, and was significantly less positive about its current and future importance. One main area of criticism related to the water quality criteria, namely that blue-green algae (cyanobacteria) are not included in the Award guidelines. Participant 2 made it clear on several occasions that he considered blue-green algae the main threat to safety as; '*you can get really sick. Of course you can get a bit of a tummy bug from the bacteria* [*E. coli* and enterococci] *but it's not much of a problem I think'* (Province Interview). However, he conceded that this was not a significant problem for Zeeland, given the lack of fresh water bathing sites where the algae can survive, instead he drew on knowledge of water exceedances in the province of Zuid-Holland which '*99% [of the time] is because of the blue* algae' (Province Interview).

A further critique concerned the robustness of the water quality criteria. The interviewee stated '*I would rather see them [the Blue Flag] come with criteria with a strong backing'* (Province Interview) before going on to state that this may potentially leave the Blue Flag open to criticism (of their criteria) from members of the public. Though he was of the opinion that was unlikely, Participant 2 did consider retirees the main source of such questions; *'I don't think civilians would, but what if people get interested [in the Award]? You have these people who are pensioners and they ask difficult questions to government and companies and also these sorts of organisations'* (Province Interview).

A final point centred on the lack of general awareness of the Award; which was reiterated numerous times, with the exception of German tourists. Regarding contrasting awareness levels, he stated '*I know that 90% don't know what it [the Blue Flag] is, but the 10% that do, really understand it very well'* (Province Interview). When asked if the award was 'worth the trouble' (in terms of costs and management efforts) the response was no, with the participant further stating '*I think it's too much hassle for something that's only gives a little bit of extra'* (Province Interview), whilst accepting that city councils do not share his personal view point.

5.3 Impacts of Future Environmental Changes

In order to fully explore research question 3c, '*What impacts of future environmental changes can be foreseen for recreation and tourism at the Dutch coast?'* an integrative approach must be taken. Though water quality and the Blue Flag may be important, changes to them occur within a societal context. Therefore, the main components of this societal system have been captured, based on interviews, literature and logical inference (see figure 6).

Tourism in Zeeland will be considered as the 'end point' in this web, as it is the factor which can be considered as encompassing all others, given its reliance on external factors as driving forces of change. There are therefore three main 'changes' which impact tourism (identified by the light blue boxes in Figure 6), climate change, infrastructure change and societal change (which encompasses changing environmental awareness).

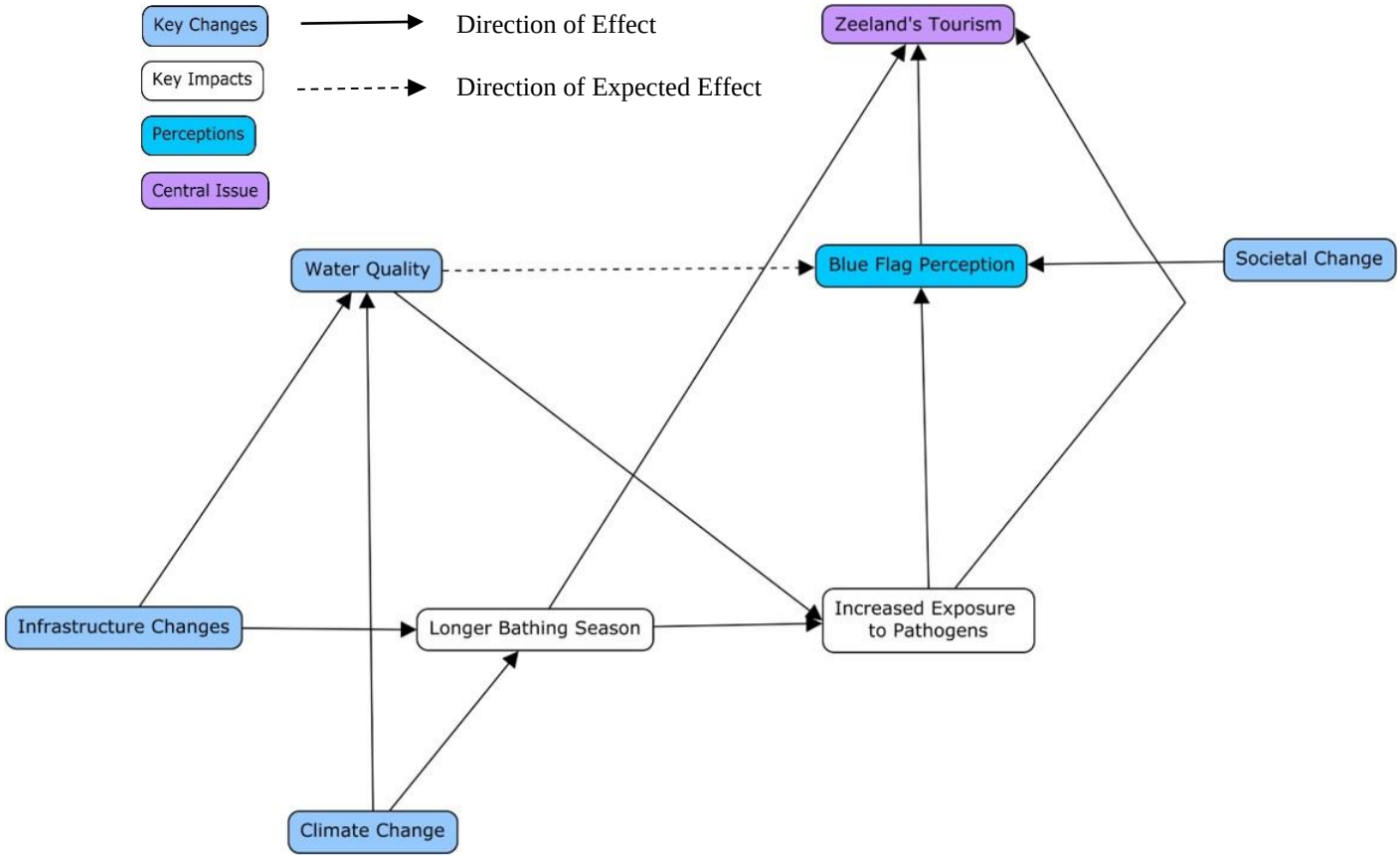

Figure 6 Summary diagram of the main factors influencing water quality and the Blue Flag Award as identified in this study. The diagram key is shown in the top left-hand corner.

From the figure above, climate change can be considered as the main influence on tourism in Zeeland, from both a water quality stand point and its impact on the length of the bathing season. To start with the water quality aspect, numerous papers (as discussed in Section 5.1) have stated the impact changes in climate may have on water quality. Participants 2 and 3 also stated their thoughts on how increased rainfall may lead to sewage problems whereby '*unfiltered waste [goes] into the sea'* (Vlissingen Interview). With the Netherlands likely to experience an increase in precipitation and wetter winters, as discussed in the KNMI Scenarios (Koninklijk Nederlands Meteorologisch Instituut 2014) additional secondary changes will also lead to changes in water quality.

Climate change is also the main driving force for the potential increase of the bathing season length in the study area. As noted in Chapter 3, a transition from the traditional summer holiday period in July and August to tourists visiting the area from May to October has already been seen (Schouwen-Duiveland Interview). With milder winters and hotter summers expected in the coming decades for The Netherlands (Koninklijk Nederlands Meteorologisch Instituut 2014), the extension to the beach use period seems likely to continue, and become more pronounced given the link between temperature and beach visitor numbers discussed in Moreno et al. (2008). This would therefore impact Zeeland's tourism industry positively, as there is a greater change of an increase in visitor numbers if the weather is 'good'. The unpredictable nature of weather in the study area was a key point of concern for many interviewees, who stated that the high chance of rain would drive visitors to cheap, foreign destinations where sunshine could be a more solid guarantee.

Additionally, given that the 'official bathing season' extends only from April/May to September. It is highly likely that no water quality measurements will be taken outside this period, even if the beaches are still in heavy use. This was mentioned specifically in the interview with Participant 2, who

stated (in regards to extending the monitoring of beaches) '*I would like to have extra measurements but Rijkswaterstaat says no, there's no bathing season anymore so no more measurements'* (Province Interview). Therefore, exposure to pathogens may be increased, but only if the period of time (i.e. when swimming takes place) is also exposed to increased pathogens, through climate change for example. However, it is not possible to know this as there is no monitoring for the entire period of use. Such exposure (to beachgoers) may lead to an increase in associated illnesses (such as gastroenteritis, respiratory diseases and wound infections) which could negatively affect tourism in the study area.

It is not possible to say that climate change is the only factor influencing the length of the bathing season in Zeeland. Infrastructure factors such as improved public transport links, road infrastructure and the construction of the Westerscheldetunnel in 2003 significantly decreased travel times to Zeeland for Belgian tourists, with Participant 4 stating that the journey was now '*50 to 60km shorter*' (Schouwen-Duiveland Interview).

Infrastructure factors, specifically sewage system infrastructure, also plays a significant part in determining water quality. As noted in Chapter 3, Participant 2 discussed at length, the role that the 'sub-par' Belgian sewage system played in the water quality of Zeeland. This factor may continue to influence water quality, as a complete system overhaul overnight is neither possible nor feasible, however Participant 2 was very positive about the future. Progress has been made in this area, especially in the last decade. Brussels did not have its own sewage plant until 2001, with waste deposited directly into the Senne river prior to its construction (Robinson 2011). The country also received a warning in 2004 from the European Court of Justice due to its failure to comply with the Urban Waste Water Treatment Directive, as 174 Belgian settlements did not have sufficient waste water treatment (European Commission 2007).

Perceptions of the Blue Flag Award are therefore affected by both water quality and exposure to pathogens, along with the additional (external) factor of social change. Water quality was expected to have a significant impact on Blue Flag perceptions, however following interviews this was found not to be the case. Numerous interviewees stated that, while water quality was important, it was not considered the most important aspect of the Award to them, rather the focus on services such as lifeguards, toilets and showers, was more pressing. As stated in previous chapters, water quality is definitely considered important by interviewees to the tourism industry, however there was a sense from interviews that it was not something to be overly concerned with because the water in Zeeland is 'always good'. Perception of the Blue Flag Award may be increased due to the potential increase in exposure to pathogens. Increased awareness of the problem, perhaps through higher incidences of illness due to the lack of monitoring, could increase and improve awareness and opinions of the Award due to its status as a 'quality guarantee'.

Societal change was discussed many times as a key influencing factor on the perception of the Blue Flag Award. This was mainly in the context of ever increasing environmental awareness of the general public. Whist awareness has been growing for the last century, with momentum increasing in the last decade (Cohen 2015). Sypsas et al. (2013) state that the process of people becoming '*become more environmentally responsible and cultivate an environmental awareness*' (Sypsas et al. 2013 p.1) should be enhanced by the media, through its roles of risk communicator, data promoter and information source. The increased visibility of environmental issues in the media, as discussed with Participant 3 is one such reason. Taking the example of the spate of beached sperm wales along North Sea coastlines in 2016 (Gani 2016), images of the animals were spread almost immediately. Television shows which discuss environmental problems or changes are also key sources of information for individuals, with programmes such as 'Vroege Vogels' (in the Netherlands), 'Countryfile' and 'Springwatch' (both from the UK) highlighting changes in the local or national environment.

Environmental campaigns at a variety of scales including national and local initiatives also play a role. Participant 6 drew on her own experiences of plastic pollution in Suriname, stating that she

believed the campaigns run in the Netherlands (though they were not specified) were the reason behind the more positive environmental situation. 'Verlos de Zee', a voluntary organisation is an additional example, also discussed with Participants 4 and 5. Such campaigns increase the visibility of the issue and are therefore a tool for increasing environmental awareness.

The visibility of many environmental organisations is also on the rise. Many organisations have become more mainstream, with Greenpeace making the transition from a strategy focusing on civil disobedience to a more moderate movement (Susanto 2007). This relates also the food industry, with eco-labels such as 'Rainforest Alliance Certified' or 'MSC Certified Sustainable Seafood' on products a common sight in supermarkets. Increasing consumer consciousness in regards to the environment has been well documented, with a 2008 European Commission survey showing that 75% of Europeans are willing to buy environmentally friendly products even if they cost more, a 44% increase from 2003 (European Commission 2008 in Zhang et al. 2015). This reflects the sentiment of Participant 3 who discussed that people now have a greater understanding of how their own decisions impacts the environment.

Whilst perceptions of the Blue Flag may impact tourism in Zeeland in the future, it is difficult to assess to what extent. This is due to the ambiguous nature of respondents when discussing the importance of the award, with many opinions considering the Award to be a guarantee of their own work (Vlissingen Interview; Walcheren Interview). It was clear through responses that a lack of awareness of the Award is a problem at the moment, as discussed above, though this may change in the future. The importance of the Award as a quality guarantee for tourists, which has become more pronounced due to changes in demands (which is also a societal change factor itself) would likely remain a key motivator for tourism industry stakeholders.

Through this integrated approach, it has become clear that considering these factors in isolation is not useful, given the amount of interlinkages between the key components. One finding is that climate change is one of the main factors affecting tourism in Zeeland, mainly through its impacts on the bathing season. Changes in temperature and precipitation which will likely lead to increased numbers of beach users for a longer period of time, and will undoubtedly have an impact, including increased revenue and ensuring the continued importance of the tourism industry. The knock on impacts of this on water quality monitoring have been discussed above, with conflict (between when to stop testing) being the main source of potential tension between continued benefits to tourism and potential problems as a result of pathogen exposure.

However, in terms of impacts on future water quality it seems unlikely that there will be significant changes in the water quality of Zeeland for two main reasons. Firstly, the continued improvement of waste water treatment and sewage systems in Belgium will continue to benefit 'end of the line' Zeeland. Secondly, though climate change may increase concentrations of *E. coli* and enterococci through increased rainfall, concern for this from the interviews appears to be minimal. This is mainly due to the excellent water quality levels, as even when water quality levels do dip, 'it is still…good and healthy to swim' (Walcheren Interview).

Chapter 6: Discussion

Following the previous three chapters, which focused on presentation of the results of both statistical analysis and interviews, these findings must be discussed within the context of additional literature. The chapter first discusses potential reasons behind the unexpected results presented in Chapter 3, before moving on to a discussion of the more qualitative aspects of project.

6.1 Current Water Quality

The lack of relationship between faecal indicator bacteria (FIB) concentrations and climatic variables was not expected, due to the results of other studies which analysed similar climatic variables. Although the results were un-expected, the data used were the best available and the lack of relationship is still a finding in itself. The main reason for the discrepancy between the expected and actual results lies with data availability and measurement period. An additional explanation lies with the volume of water analysed. Coastal waters are a much larger body of water, meaning that pollution is much more diluted than in rivers or other water bodies. As a result, higher FIB concentrations as a result of increased precipitation (which would be expected) could be missed.

Relating to the issue of data availability, *E. coli* and intestinal enterococci concentration measurements are taken every two weeks (as per the EU Bathing Waters Directive and Blue Flag Award) only during the bathing season (May to September) meaning that only around twenty readings are available each year. Given the lack of incentive to take measurements outside of the official bathing season (as discussed by Participant 2 in Chapter 3) these are therefore the only data set available. As a result of monitoring only in the summer months (when temperatures are relatively high and stable and rainfall is lower), the impact of seasonality such as changing temperature, changes in rainfall etc. are not shown within the data set. Noble et al.'s (2003) study measured water quality at California beaches during both winter and summer months, and also after a major storm event. By including contrasting dry and wet measurement periods, the influence of precipitation was more evident (Noble et al. 2003).

A second key critique on this data is that *E. coli* and enterococci measurement dates began on or around the 5th May 2007. This means that data from only seven summers has been included in the analysis which is far from ideal. It does not allow much time for potential trends in either FIB concentration or climatic variables to become evident, and reduces the reliability of conclusions drawn from the data set. From communications with Rijkswaterstaat (data provider), data prior to this point was simply not available. Participant 2 gave his opinion that that this was due to a change in laboratory, however Rijkswaterstaat did not state a specific reason for this. Similar studies such as Vermeulen and Hofstra (2014) utilised significantly longer data sets, in this case from 1985 to 2010. However, given that the focus of this paper was concentrations of *E. coli* in rivers, measurement criteria may differ for fresh water which may be a reason for the longer period of data availability. An additional reason behind the lack of FIB data may be due to an amendment to the EU Bathing Water Directive which occurred in 2008. Prior to this, the indicator bacteria used were total coliforms, faecal coliforms, faecal streptococci, *Salmonella* and enteroviruses (European Commission 1975), whereas now it is only faecal enterococci and *E. coli.*

The use of air temperature instead of water temperature (as discussed in Chapter 2) differs from other projects, though it is not likely to have influenced results. Studies which provided the basis to this project, namely; Vermeulen and Hofstra (2014) and Sterk et al. (2015) all included water temperature as a key variable. Water temperature is likely to vary less than air temperature, especially given the large body of water analysed, therefore an even smaller relationship between variables would be expected. If this is the case the correlation would also be expected with air temperature, given its effect on water temperature which makes this study's finding all the more unexpected. The use of only one air temperature monitoring site may be a compounding variable to this issue. However, this was

unavoidable as, although there were three separate monitoring stations, they were not eligible for inclusion due to incomplete data series.

6.1.2 Perceptions of Water Quality

The inclusion of interviews in this project provided the ability to take a more qualitative approach to the issue of water quality, as opposed to the solely quantitative method undertaken in the abovementioned studies. Though numerous tourism-centred papers have also taken this qualitative approach, many focus only on the viewpoints of tourists rather than additional stakeholders, such as McKenna et al. (2011). The inclusion of professionals working with both beach or water management as well as tourism policy also provided an interesting range of views on all topics. Rather than only gaining a technical viewpoint, as may have been the case if only beach managers had been interviewed, a more integrated response was had. Though only five interviews were conducted for this thesis; the fact that many themes and ideas were present in all interviews (for example, the comments about German tourist awareness of the Blue Flag) is evidence of the robustness of the findings, despite the shortfall in terms of numbers.

This approach has an additional benefit over the one taken in Lucrezi et al. (2015). Though this study did include opinions from both tourists and Blue Flag managers (a definite advantage) it utilised only online questionnaires rather than in-person interviews. interviews provide greater opportunity to probe answers and gain additional information which participants may not think to include in online questionnaires. Though an interview with a Blue Flag employee was not done in this study, interviewing individuals involved in the Award in a less direct way may mean their answers are less biased than those working for the Blue Flag organisation. Gaining insight from a Blue Flag official may have shed more light on the robustness of the water quality criteria, which were critiqued by Participant 2 in Chapter 4. There is a definite lack of information available as to the reasons behind the *E. coli* and enterococci concentration targets, with no data available on potential benefits, such as a reduced infection rate for relevant illnesses. Shortcomings of the Award in relation to geomorphological and natural system characteristics (Lucrezi et al. 2015) can be found in the literature, but analysis of the criteria is not present.

The 'blanket' nature of the Blue Flag criteria could be considered an additional critique of the Award (Lucrezi & Saayman 2015). Whilst holding all beaches to the same criteria increase comparability, it may make them appear that they are all 'the same', which is not the case (building on the point by Lucrezi et al. 2015 stated above). Given the high possibility for changing water quality as a result of climate change (discussed throughout the previous chapters), there could be potential issues for beaches in the future when attempting to meet Blue Flag criteria. If water quality becomes more variable in the future (as suggested in Sterk et al., 2015 and Vermeulen and Hofstra, 2014) it will become harder and harder to meet the strict limits of the Blue Flag.

This is especially problematic when considering the lack of influence beach managers on controlling water quality, thereby '*rendering the task of assuring water quality more arduous'* (Lucrezi et al. 2015, p.212). This then raises the question of how the water quality criteria may need to be adapted in the future to account for potential changes in water quality, for example, raising the FIB limit levels, becoming more flexible on FIB levels or introducing a 'strike system' instead of the current policy of one exceedance resulting in the lowering of the flag. Given the very low *E. coli* and intestinal enterococci limits of the Blue Flag Award, swimming in water with slightly higher concentrations, as laid out in the EU Bathing Standards is still safe, as beaches are able to reach bacteria concentrations of 800cfu/100ml before action has to be taken(see (EU 2006). Although this may negate the appeal of the Blue Flag as the water quality standards are not as high.

One limitation to the interviews undertaken was that there were no concrete water quality statistical results to discuss with respondents due to the lack of correlation between bacteria and climatic variables

(and therefore lack of further analysis). As a result, questions regarding future status of water quality as a result of climate change was based on assumptions gained from the literature, as the original aim had been to discuss potential future water quality scenarios with interviewees to gain their insights. Despite this set back, there was by no means a lack of discussion, one of the benefits of the semi-structured approach.

The inability to include tourists in this thesis is somewhat of a limitation, however the results of are still valid without the inclusion of this particular stakeholder. This study's focus on professionals sets it apart from the existing literature, especially through its use of interviews (as opposed to questionnaires). If data collection aspect of this study had been conducted during the bathing season, the inclusion of interviews with tourists would allow for the opinions of visitors would be heard 'first hand' rather than as hearsay from interviewees.

Indeed, many points relating specifically to German tourists which could provide useful information for the future of the Blue Flag Award in the Netherlands would benefit significantly from interviews with that specific visitor group. The inclusion of this additional level of data collection and analysis which is not present in studies such as Geldenhuys & Merwe (2014), Lucrezi et al. (2015) and McKenna et al. (2011), (all of which have a heavy reliance on questionnaires as a data source) would be very useful for future research on the topic.

6.2 The Blue Flag Award and Tourism

The main area of discussion concerning the Blue Flag is the extent to which it influences or affects tourism in Zeeland, however there is no simple answer. From Chapter 5, it appears that the Blue Flag is less impactful on tourism than first thought, with the key reason being a lack of awareness. Though it is not true to say that beach users are oblivious to the Award, as 74% of beachgoers surveyed stated that they had heard of the award, only 35% understood its meaning (Lucrezi & Saayman 2015). This 'shallow knowledge' is also confirmed by Lucrezi & Saayman (Lucrezi et al., 2015) after noting that tourists interviewed believed the Blue Flag to be something beneficial to beach health.

The identification of German tourists as holding the Blue Flag Award in relatively high regard is an important finding of this study, with the linking between certain nationalities and preference for the Award not seen in other studies. One such reason for this may not even relate to the assumed higher level of environmental awareness of German visitors, it may simply be that they put more time into researching their holiday destination, given the significantly longer distances travelled, compared to their Dutch counterparts. Beach information (including the presence of a Blue Flag) is available through a variety of forms, most commonly in tourist guides and websites, and it can be assumed that the importance of such guides has increased in recent years when choosing a holiday destination (Zillinger 2006). Awareness of the Award may come through this personal research, given the findings by Zillinger (2006), which state that the extent to which German tourists are influenced by guide books increases with distance from home.

Alternatively, the Blue Flag Award may simply be marketed to the public in a more effective way in Germany. However, without further research, through interviews with German tourists in Zeeland or the German arm of the Blue Flag Organisation, it is not possible to say for certain. This research could provide useful information as to effective ways to increase Dutch awareness of the Award which was found to be lacking. This finding of a general lack of awareness amongst visitors is also supported by the findings of numerous studies (see Geldenhuys & Merwe 2014; McKenna et al. 2011). It is therefore interesting that Zeeland municipalities are aware of this, yet continue to invest such significant amounts of money into achieving and maintaining the Award, with estimated additional costs per season around €40,000 (McKenna et al. 2011). That is not to say that the Blue Flag is infallible in its status to municipalities, with Participant 3 stating it was at risk of being cut due to financial shortfall in the

Gemeente Vlissingen budget. Protecting the Award from such cuts is likely to be problematic, given the difficulty in quantifying the benefits it provides (Capacci et al. 2015).

As a result, there is the need for effective communication throughout the Blue Flag 'chain' which is important given the top-down nature of the Award (Lucrezi & Saayman 2015). As demand for the Award appears to come from higher levels within the municipality, those working directly in the implementation, maintenance and management aspects of the Blue Flag must be adequately heard. Given the desire for quantifiable benefits of such eco-labels (Capacci et al. 2015), ensuring that unusual or less noticeable benefits are discussed between beach managers and decision makers is important. The tendency to focus on short term benefits of removing the Award, namely to save money quickly, may be outweighed in the long term for reasons which may not be noticeable by decision makers, as noted by Participant 3 in Chapter 4.

Despite the issues mentioned above, demand for the Blue Flag is on the rise, as noted by Participant 3. In 2015, a total of 4,154 beaches and marinas (in a total of 49 countries) held the Award, a significant increase from the 452 (located in 10 countries) which were awarded in 1987, the first year of operation (Blue Flag 2016) with more countries exploring options to join the scheme (Radchenko & Aleyev 2011). Respondents suggested that the importance of the award would at least remain the same or increase, with three main reasons identified; the concept of the Blue flag as a guarantee of quality, as a guarantee of management and as a way for Zeeland to stand out within the competitive tourism industry.

The first two reasons appear to be in response to an increasingly demanding clientele. A growing trend towards an experience economy is occurring; whereby consumers are searching for unique and exclusive products and services, with tourism an industry in which its development is particularly marked (Center for the Promotion of Imports 2015). In addition, the expansion of target groups is also driving increased demands, specifically within the older generation (65+) as today's seniors are healthier and wealthier than ever before and are increasing their travel horizons (Center for the Promotion of Imports 2015). The higher standards being demanded by tourists mean that the quality of the experience as well as the work that ensures it, must be guaranteed. This also enables the Blue Flag to be used as a marketing tool, in addition to its main role as a management tool, which may have the additional benefit of stimulating additional investment (Lucrezi et al. 2015).

Utilising the Blue Flag certification as a way for Zeeland's beaches to stand out can be linked to this point. The popularity of low-cost, foreign holiday destinations was cited as a key concern. Economic and cultural changes since the 1960s has made it significantly easier for individuals to travel abroad for their holiday, with cheap package holidays opening up many destinations (Aguiló et al. 2003). The main draw of such package deals in places such as the Balearic Islands, mainland Spain and Turkey is the ability of these locations to guarantee excellent weather, something beach tourists seek (Morgan et al. 2000). However, the variability of Zeeland's climate does not allow for such guarantees, therefore the Blue Flag is considered, once again, as a 'seal of quality' which may not be present in other locations. However, future climate change may lead to changes in such holiday patterns, though this point will be explored in more detail later.

Despite the use of the Blue Flag in this way, this issue of awareness once again becomes relevant, as does the question 'is it worth it?'. Though these (expected and recognised) benefits of the Award have been discussed in this study and others (especially in Lucrezi & Saayman, 2015 and Lucrezi et al. 2015) the high levels of awareness necessary to make this a reality are not yet there in Zeeland. Lucrezi & Saayman (2015) summarise this point well, stating *'If the potential benefits of the Blue Flag award are to become actual benefits, education, promotion, and managerial efforts need to be flawless'* (Lucrezi & Saayman 2015, p.1486). McKenna et al. (2011) argues that ongoing, continuous environmental education is the main way to increase Blue Flag awareness. Interestingly, the Blue Flag does contain an 'environmental education' criteria, although it may be this very aspect which may put

off beach managers from applying or continuing with the award due to the time-consuming nature of such programmes (Lucrezi et al. 2015).

An additional interesting point of discussion stems from the section of interviews focusing on the potential loss of the Blue Flag Award. Interviewees working in tourism policy were more concerned about the loss and knock on impacts as a result of negative press. Though seemingly a rare occurrence in the Netherlands, the Blue Flag Award has been removed from Katwijk, a popular beach in the province of Noord Holland. Despite the location of this beach being outside the study area for this research project, speaking with individuals in Katwijk would have provided a more concrete understanding of the impacts of award loss, as the stakeholders interviewed based their answers solely on a hypothetical situation. Unfortunately this was not possible, but it provides an interesting location for a potential Dutch case study which would stand out from the numerous examples of Award loss in the UK (McKenna et al. 2011). Despite not having this interview opportunity, it does not detract from the findings of this thesis as the water quality within Zeeland was not found to be an issue at the moment, or considered cause for concern in the future.

Further investigation into Katwijk would also prove interesting, given the apparent lack of effect the Award removal has had. Stefan van As, chairman of pavilion holders in Katwijk has stated that visitors to the area should not be '*prejudicial to the absence of the flag… [I've] never really noticed that tourists avoid Katwijk because we do not have the Blue Flag'* (Omroepwest 2015). However, since the removal of the Blue Flag, Katwijk has been awarded the Silver Quality Coast Award (Gemeente Katwijk 2016). This award is very similar to the Blue Flag (especially in its focus on amenities and services) but does not require a specific water quality level, only that the water must be monitored and the results made available to the public (Quality Coast 2013). Given that poor water quality was the key issue behind the removal of the Blue Flag, it would appear that having a beach award of any kind is preferable over none at all, despite the apparent lack of impact. Decisions such as this may only add to the potential confusion for visitors on the topic of beach awards. This was discussed in interviews on the case of beaches in Schouwen-Duiveland, which have up to four separate awards per beach, as well as on a much larger scale within the tourism industry (Fairweather et al. 2005).

6.3 Climate Change and Tourism

Following the analysis in Chapter 5 the main factor influencing tourism in Zeeland is apparently climate change, though not through its impact on water quality. Rather, the impact is through changes to seasonality and the lengthening of the bathing season as a result. Therefore, there are more visitors using the beaches for a longer period of time. The importance of good weather for visitors has already been discussed, and it is of particular importance to German tourists, who rank it third, after landscape and price, when considering important holiday destination characteristics (Amelung et al. 2007).

However, changing climate in the Netherlands is not the only way this factor may influence tourism in Zeeland. Rising temperatures in popular destinations, such as the southern Mediterranean, may lead to conditions becoming too hot for visitors, resulting in more favourable climatic conditions in northern Europe (Barrios & Ibañez 2015). Such changes may lead to a reduction of tourism revenues of -0.45% of GDP per year for such destinations, but for northern locations, a modest gain of up to 0.32% of GDP per year could be expected (using expected climate condition of 2100) (Barrios & Ibañez 2015). As a result, north European coastal destinations such as Zeeland may benefit from changes such as environmental degradation and rising temperatures, in other parts of Europe which make then less appealing as a holiday destination (Moreno & Becken 2009). Furthermore, this shift in temperature is likely to exceed the optimum temperatures for beach users, as discussed in Morgan et al. (2000), though these preferences are neither constant over time nor across countries (Perch-Nielsen 2010). Zeeland may also benefit through the shifting of peak seasons (to the current shoulder seasons) of southern Mediterranean destinations (Amelung et al. 2007). Beachgoers may simply prefer to vacation during

the traditional ‘summer holiday’ months (rather than the ‘new’ peak times) and therefore switch holiday destination to northern Europe.

Though climate change may be a significant driver, it is by no means the only factor affecting tourism in Zeeland with social impacts, such as changing holiday patterns, as a result of increasingly busy lives (Bennet & Knowles 2013), also playing a major role. Research shows that a single, annual summer holiday is quickly becoming a thing of the past with many individuals now taking foreign holidays between two and five times per year; as well as allowing themselves several shorter breaks throughout the year (Portman Building Society 2006). Research into vacation patterns of British tourists showed that 70% would prefer series of three to four night breaks rather than a single, two week holiday (Bennet & Knowles 2013). This is particularly relevant to Zeeland, given its excellent transport links to cities across the Netherlands, as well as further afield with the Westerscheldetunnel cutting journey times from the south which is especially beneficial for visitors from Belgium. Therefore, it remains an attractive destination for beach holidays.

6.4 Potential for Future Research

Following this discussion, it becomes clear that there is potential for future research, with three main areas identified. Firstly, additional investigation into the discrepancies between Dutch and German tourists may prove interesting, given the apparently high regard the Award enjoys with visitors from Germany. Potential reasons for this have been examined in Chapter 6 however additional interviews with this specific visitor group would shed light on the actual reason, whether it be better marketing or greater awareness through holiday planning, for example.

Secondly, greater exploration of the impacts of the loss of the Blue Flag at Katwijk would produce a case study with a Dutch focus. Though numerous beaches in the UK have lost the Award, this is the only beach in the Netherlands to do so. Given the contrasting statements from both the chairman of pavilion holders and Participant 2 (that there has not been an impact) and what may be expect, it would be an interesting aspect to explore in more detail.

Finally, investigation into the robustness of the Blue Flag water quality criteria may prove useful. This is due to the lack of information available on the reasons for and also the potential benefits bathing in water with lower concentrations of E. coli and intestinal enterococci has. Comparing this with EU Bathing Standards for locations identified as ‘sufficient’ and above would be interesting as all these locations would be considered safe to swim in. Potential for flexibility in Blue Flag criteria as a response to expected changes in water quality may also be an area for further research. In response to the finding that climate change is likely to be the main cause of change to tourism through changes to the bathing season, research into optimum dates for the bathing season will be necessary.

Chapter 7: Conclusion

From the research, it can be concluded that there is no relationship between *E. coli* and intestinal enterococci concentrations and air temperature, salinity or precipitation. This finding goes against similar research projects (see Vermeulen and Hofstra 2014 and Sterk et al. 2015, as discussed in Chapter 6). Due to the lack of significant correlation results, the envisioned regression and scenario analysis could not be completed, with expected changes in water quality based on a literature analysis. Additionally, current water quality was not found to be an issue within Zeeland.

From the literature, there may be a decrease in concentrations of FIB as a result of rising temperatures, following the finding of a negative correlation between concentration and air temperature in Vermeulen & Hofstra (2014). However, in the case of The Netherlands, future climate change is likely to also bring increased precipitation across all seasons (Koninklijk Nederlands Meteorologisch Instituut 2014), with a positive correlation between FIB and precipitation also found in Vermeulen & Hofstra (2014). Similar findings were also shown in Sterk et al.'s (2015), investigation into climate change and *Vibrio* Spp. This study also reported an increased risk of illness to swimmers when water temperatures reached maximum values (Sterk et al. 2015). Both papers are Netherlands-specific, however, studies with an international outlook also drew the same conclusions (see Sampson et al., 2006; Semenza et al., 2012). Sterk et al. (2015)

Water quality is perceived by stakeholders in a very positive way, both in its current state and its importance to tourism. The overall picture of water quality painted by interviewees was positive, with many not able to think of a situation which would result in a significant decrease. The main reasons for the positive view of current water quality is due to changing levels of environmental awareness (for the public) as well as legislation. Legislation relating specifically to improvements is sewage systems was cited as a particularly important reason, given the high impacts of foreign sewage (especially from Belgium) has in Zeeland as a result of its position at the end of several major rivers. Indeed, there seemed to be somewhat of a 'blame game' when discussing Belgian water treatment, although this critique is accurate as Belgium has only recently gone through a spate of industry improvements (Robinson 2011).

In regards to the tourism industry, there is universal agreement across the stakeholders that water quality is important, especially to tourism in the area. This is due to the importance of beaches as a pull factor for visitors, as many holidaymakers spend significant amounts of time on the beaches and in the sea during their stay. However, water quality in terms of pathogens was not thought to be particularly high on the awareness radar of visitors due to the lack of visibility and understanding. Visible pollution, such as litter and organic detritus was considered more of a concern for tourists.

Despite the numerous statements on the topic of water quality importance, stakeholders did not identify with the notion of holding responsibility for it, stating that this responsibility lies further up the chain. This argument has good reason, given the highly variable nature of water quality, and the numerous factors which can influence it. There was also the overarching notion that water quality will always 'sort itself out', with exceedances often blamed on issues such as seabirds congregating near testing sites or dog walkers not clearing up waste.

In contrast, the stakeholder perceptions of the Blue Flag were less 'clear cut'. The main areas of importance identified for the Blue Flag were its benefits to tourism and management. For the management aspect, it was deemed to be a good method of guaranteeing the work of those involved (namely beach managers) due to the annual inspections. In some cases, the Blue Flag was considered more as a third party quality control organisation, as municipalities could receive information on a range of topics which could improve the quality of the beaches in question. This did not go down positively will all stakeholders, especially those working in tourism policy, as some thought that certain aspects of the Blue Flag quality control done by inspectors was excessive and slightly pedantic in nature.

In terms of its importance to tourism, five main themes were identified from the answers of interviewees. Firstly, the role of the Blue Flag as a way to compete with both international and other Dutch beaches was stated, with low-cost holiday destinations in countries such as Spain and Turkey considered a large threat to Zeeland's tourism industry. As such, beaches holding the Blue Flag were considered to have something 'extra' which made them stand out from the crowd, though this may not be the case in the future due to the increasing number of sites achieving the Award. Quality was also discussed as a major theme, with the Award considered a 'guarantee of quality' for tourists. The reason behind the importance of this issue is an increase in the demands placed by tourists on holiday destinations, with stakeholders identifying features such as lifeguards, clean beaches and amenities (e.g. beach toilets and showers) as key examples.

Despite the identification of these positive aspects, a lack of awareness amongst Dutch citizens has been noted. Though this was considered to be on the rise as a result of increased environmental awareness from a variety of sources. it is in direct contrast, however, with the apparently high awareness of German tourists. Specific reasons behind this difference were not given, and opinions of stakeholders on the topic were often based on hearsay or preconceived (often stereotypical) notions of the importance of certifications and awards to German tourists. Confusion was also considered important firstly relating to what exactly the Blue Flag stands for, as some tourists often think it is only focused on safety. Tourist confusion as a result of the numerous beach awards held by beaches was also cited as a concern, an issue widely discussed in pre-existing studies (Hamele 2002).

No Blue Flag Award was removed from a Zeeland beach for any reason. As a result, discussions of the impacts of Award were hypothetical. However, a case in Katwijk, Noord Holland, was discussed and could provide an interesting case study for impacts of Award loss within the context of coastal Dutch tourism. However, the overall impact of Award loss was not considered too severe due to the general lack of awareness of the Blue Flag, and what it stands for.

Losing the Award as a result of water quality violations was considered to have more of a negative impact than for any other reason, with tourism policy stakeholders particularly concerned with the impact of 'bad press'. One participant stated that this was a key concern for Gemeente Noord Beveland when deciding whether to proceed with the Blue Flag application as it had been said that '*it is better not to have it than to lose it*' (Noord-Beveland Interview). It was also thought that Award loss would not impact water quality, however beach cleanliness would be affected which could have knock-on impacts for the area. Additionally, there were contrasting opinions on whether visitors would visit a beach simply because it had Blue Flag status (see Walcheren and Schouwen-Duiveland interviews), though this reflects the differences of personal preferences discussed in Lucrezi et al. (2015).

The majority of stakeholders were positive about the future status of the Blue Flag. They cited increasing numbers of beaches and harbour application, increasing environmental awareness driving a demand for a 'healthy' environment, continued investment in the tourism industry (in Zeeland) and the aforementioned point regarding quality guarantees as the main reasons for future success. However, the main critiques were of a more technical nature, with concern for the robustness of the water quality criteria potentially opening the Award for criticism a key area of concern. Lack of Blue Flag awareness was, once again, also raised as a potential stumbling block for the future.

In terms of how future water quality may change recreation and tourism in Zeeland, the result was not as expected. Though water quality may change in future, it is not likely that such changes will be drastic enough to lead to major issues regarding beach use (such as closures). Rather, climate change, which is also a key driver of water quality, was found to be the key force of change through alteration of the bathing season. Considering future climate in The Netherlands (see Koninklijk Nederlands Meteorologisch Instituut, 2014), summers are likely to become warmer, meaning that there will be beach users present for a longer amount of time. This then raises additional points on the topic of water quality measurements, as changes to the dates of the official bathing season (and consequently start and

end dates of measurements) must be considered in order to take into account the extended period of use. However, this issue of impacts to tourism is far from a clear cut issue, as figure 6 in Chapter 5 shows, it is more of a web of interactions. Societal factors are a key consideration in relation to perceptions of the Blue Flag, although the impact of the Award on tourism was found to be less than expected as a result of low awareness levels.

The overall conclusions of this project are encapsulated in the following paragraph. Prior to completing this study, it was expected that climate change would influence water quality, which could then (as a knock-on impact) influence the Award status of Blue Flag beaches. However, water quality was not found to be influenced by climate change through this research, which is inconsistent with the findings of Vermeulen and Hofstra (2014) and Sterk et al. (2015), which also reported an increased illness risk to swimmers in the future. A reduction in water quality will indeed result in the removal of the Blue Flag, as seen in the case of Katwijk, though this has not occurred in Zeeland. However, the influence that this removal will have on tourism is debateable, given that stakeholders view the award as important, but the overall public awareness level is deemed to be low. Additionally, a pathway linking climate change to tourism via the lengthening of the bathing season was found. This pathway has implications for both tourism and the Blue Flag in that water quality may have deteriorated, however, it is not measured outside of the May to September bathing season period. The link between water quality, climate change and tourism is by no means a clear cut issue. However, despite the lack of importance from a water quality stand point, it is clear the Blue Flag Award plays an important role within Zeeland's tourism industry.

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Appendices

In order to endure participant anonymity, all names have been removed from the transcripts. In the event that an individual's name or the name of their business was mentioned, it is indicated in the transcript by a line (i.e. _____).

Appendix I

Walcheren Interview Transcript: Participant 1 08.02.2016

I – Interviewer

P – Participant 1

37:01 minutes recording

START

I: Could you say a little bit about you and your position?

P: I work for_____, we work for the municipality Gemeente Veere. They have the beaches; you know the island Walcheren? So you have municipalities of Vlissingen, Veere and Middelburg. Now we are in Middelburg. Veer has most of the coastline so we are responsible for approx. 30 km of beach, you might know Domburg and Westkapelle. We are responsible for the safety of the beaches and we rent the parts of the beach the pavilions are built on. We build up the beach from March until October, we have toilets, showers, wooden boards for walking – everything that goes on the beach is what we're responsible for.

I: So all the beach infrastructure?

P: Yea, all the beach infrastructure. And during the season also the safety of swimmers.

I: So you hire the lifeguards as well?

P: Yep, yep. And we have our own lifeguards. Year round we have 16 employees and in the season we hire approx. 100-150 lifeguards.

I: So, does your job rely on water quality? Do you have any dealings with it?

P: Yeah, we have 7 main beaches and on 5 of them we raise the BF. As you know the BF demands proper water quality and if it's not good then we remove the flag. And then we have a problem. Because last year we had something in Zoutelande, we had some pollution, we don't know where it came from. And then they come to check it again – the Rijkswaterstaat does it – and if the results would be positive so there would be more pollution then we have to remove the flag. Then we have to explain something as well to the public as to our municipality the Gemeente Veere.

I: Was the flag removed for a long time?

P: No, it wasn't removed

I: Ahh ok

P: after the first investigation, they found some pollution. Then they went back for a second time and didn't find any pollution

I: That's interesting as I emailed the BF and asked if any beach had ever had the flag taken away and they said no. I can't remember if it was in Zeeland or for The Netherlands in general bit they said none had had it taken.

P: That's not true

I: It isn't?! [surprised]

P: In Zeeland we've never had to move the flag but in Holland, South Holland, in Katwijk they have removed the flag once because there you have a problem with water pollution.

I: Do you consider the water quality at the beaches important?

P: Yes, I do

I: Why would you say it is?

P: Beaches are important for the municipality, not only for Veere but also in summer we have over 3 million overnighting tourists that come for the beaches so it is important that the WQ and the water is good. For safety, for health and in Domburg they have… I don't know the English… the Badstatus. It's very important for the German tourists. German tourists are fond of these kinds of qualifications

I: Could you explain a bit more about it?

P: The German tourists want to have wellness and luxury, and Domburg has the Badstatus and that's very important in Germany as it says something about the health of the environment. The water has to be clean, it has to be healthy, entrepreneurs have… how do you call it… they have to give their guests wellness…

I: A good all-round experience?

P: Yeah, yeah.

I: So it's like a guarantee of quality?

P: Yes. So the water quality is not good you cannot have the Badstatus. [spells it out]. And Domburg, and the municipality of Sluis are the only 2 municipalities in Holland that have the Badstatus.

I: So is this something that is on another level than the BF? Is it better?

P: No its more. The BF is about the safety of the beaches, the safety of the water. The Badstaus is also about healthy living and healthy tourism. It goes further than the BF. [pause] And the BF is only for the beaches, the Badstatus is for Domburg as a whole. So the beaches are only a part of it.

I: So are you aware of general trends in the water quality in your area?

P: Trends?

I: Is it good or bad? Is it is getting better or worse? It is staying the same?

P: I think it's getting a bit better because there is more attention for it. We have here, we are near the Westerschelde and it is crowded with vessels and things. We know about legislation that… how do you call it… you have legislation for the ships and they put their garbage in the harbour not in the sea. So it's getting better the water quality but I don't think it's a big change.

I: So it's more that people are becoming more aware of the legislation?

P: Yes, yes

I: Is that awareness from the public or companies?

P: The public and companies also

I: Do you think this positive trend will continue in the future?

P: I do think so yes. The world as a whole is getting more interested in a healthy environment.

I: Do you think there is anything that could make it go the other way? Go back to what it used to be like?

P: I can't imagine why it would go worse… no. We are very fond of good water quality. All the things we have on the beach – the pavilions, the beach huts all have to be connected to the sewer. 10 or 20 years ago they didn't have to be but now it's not allowed any more. We have a lot of beach cleaning actions and those kinds of things. So there is much more awareness of the subject

I: But if, hypothetically, the water quality was to go down what do you think would be most affected?

P: Tourism! Because now people can easily go to Spain or Turkey… though Turkey might be a bit less popular now. So we have to be different than those kind of countries that offer cheap holidays and always sun. We have to do different things and bad water quality would be disastrous for our tourists I think. [pause] Not only for the tourists but also the inhabitants of course.

I: Yes, I suppose that if become less nice to live maybe things like house prices could also be affected.

P: The beach and the water plays and important role, yeah

I: Do you think that the importance everyone places on the beaches and the water will stay the same in the future? Or will it change?

P: It won't decrease. It will stay the same or increase. I think it's getting more and more important, because of the awareness and because we… how do you say… have to be different than the countries such as Spain and Turkey. Onderscheiding [*differentiate*] And be better.

I: You have to excel?

P: Yes. We don't always have the sun so we have to excel in other things and the quality of the beaches, its health and the things on it are important to us. We can't win it from Spain and Turkey with the sun.

I: Not just on the weather (laughs)

P: No, not the weather (laughs)

I: Right… now the BF questions. Are you aware of the BF Award?

P: Of course! (laughs)

I: Do you know of any other eco-awards or labels for beaches?

P: You have the Green Key, Quality Coasts. The Stichting De Noordzee also has some things. There will be more I assume

I: Yeah, I also know of the Green Coasts award, but that might just be in the UK. So the BF… is it important to you in your role as director?

P: Yes, because it is an independent organisation who is looking into our activities so it keeps us sharp. And for us it is a basic standard. We try to do better than the BF standard. For us I think it is interesting that an independent organisation checks our activities and we can learn from it. And we do learn from it. So we can improve ourselves and our product.

I: So it is a quality assurance of both the beach and you as an organisation

P: Yeah, yeah

I: So are you a private company?

P: We are an independent company but we only work for the Gemeente Veere. We have our own structure but we are not part of the municipality. We are quite unique in Holland.

I: Ahh, because I found that there was also another Stichting in north Holland

P: Yes, Den Helder. Stichting Noordkop, I know it.

I: So, is it an easy award to get and hold onto? Or is it more bureaucratic with lots of hoops to jump through?

P: Its not so difficult to get it. But I think it can be difficult to keep it. But we have the BF on Domburg for example, since the beginning - more than 25 years. So it's not that difficult for us to keep it because it is the basic standard and all the beaches we do, do better than the BF prescribes.

I: Would you say the hardest part about keeping the flag is the water quality aspect or…?

P: The problem is the water quality is… I think… we can't do anything about the water quality. That's the only thing we don't have in our hands. So if there is a pollution, that is something that is out of our hands. We can't do anything about it and that then is a problem.

I: Do you think it's fair then, if say the water quality was to decrease as a result of a farm releasing pollution, that you could have your flag taken away?

P: These are the rules. You have to look from the eyes of the guest and he doesn't mind if we can't do anything about the water quality. If it's bad its bad.

I: do you think there might be a way to include other stakeholders in the award so that the people that may influence the water quality know how important they are to the award?

P: Its quite difficult because the water quality could be affected by some seagulls for example. They all defecate in one place and then there is an inspection at that moment then it's quite a problem. I think all the stakeholders are working together a lot to prevent something like that happening. Some things…yeah… like a ship leaking oil then it is quite difficult to track and trace who is responsible. But we are working together with the pavilions and the other entreuproneres on the beach as much as possible.

I: I think you've already answered it, but would you say the award is important to the area in general?

P: Yeah, yep. Although sometimes I question myself whether everyone is familiar with the BF. We did a small investigation at the beach in Domburg, and Domburg is known by a lot of German people because if you go there in July or August more than half the visitors are German. We asked them if they knew what the BF meant and more than half thought it was a safety flag. I don't know how important they think it is, but our municipality the Gemeente Veere, they want to have the BF.

I: So the municipality think its worth… they think it's important enough to put their funds into getting it and keeping it?

P: Yeah. They are demanding the BF and we make sure that they get it.

I: Do you think that it raises the profile of the local beach? I know you said that the German tourists didn't know what it meant, but do you think it's well known amongst the Dutch?

P: Ummm... it's not that well known, no. I think it is more important for a German than a Dutch tourist.

I: Why is that, do you think?

P: They like these more quality certificate things.

I: *shows quote from McKenna about raising beach profiles* Do you think this is true?

P: I think it can be true, yes. Because I am familiar with the BF now, when I go to beaches abroad, I look to see if there is a BF – it's also because of my profession. That way I know that it's safe, its clean.

I: So you yourself if you went on holiday or to another beach in The Netherlands, you would…

P: I wouldn't choose a beach because it has a BF. When it has a BF I know that it has a minimal standard of safety and cleanliness and things. But I wouldn't base my trip on it. I know that German tourists, for them it's important and they choose beaches which have the BF or other quality certificate.

I: If I ask you to just look at this table. These are all reasons other papers that have looked into the importance of beach awards have used *gives paper*. Could you rank them?

P: Which is the most important?

I: 1 is the most and 5 is the least

P: What does proximity mean?

I: How close it is to your house

P: … and scenery?

I: Is it a nice beach. Is it nice to look at.

P: [pause] I think my own opinion is the same as a tourist going to the beach [pause]. It's a little bit difficult because if you have the BF it means that the beach is safe and clean, so you could put the BF as 1. For me it is important that it is safe and clean. But it doesn't have to be a BF, it could be another quality certificate or guarantee. Do you know what I mean?

I: Yeah, yeah

P: So now I put it on 5 but I could also put it on 1. For me, clean and safety are the most important.

I: So you think any kind of award is good enough to know.

P: To assure me that its safe and clean? Yes. Especially because I have children so it especially important to me. And if they don't have an award but they have lifeguards and I see with my eyes the beach is clean then it doesn't have to be a BF, no.

I: So do you think the importance of the award in general will change in the future?

P: [pause] it depends all on what tourists want. If they think that it will be more important then for me as the director of the organisation it becomes more important. It depends on what they want. And what I know is that the tourists want quality and more guarantees of safety and in that sense I think its getting more important.

I: So people know what they want?

P: Yes, and their standards are getting higher. [Pause] we can't exploit our beaches like we did 10 years ago. We have a higher standard, and if the BF can help us with that then yes, it becomes more important.

I: So in an ideal world, the tourist standards would go up, there would be more awards and then there would be more tourists?

P: I don't know if there would be more tourists. I think the tourists we have now, they get more and more demanding.

I: So if one of the beaches had the flag taken away for whatever reason, water quality say, what do you think would be affected specifically? Not just tourism in general but local businesses…

P: It depends because luckily, we didn't have that situation yet. I'm not sure what would happen if we had to remove a flag from one of our particular beaches. Would it mean less tourists come to the beach? I don't know. We'd have to examine it… try it (laughs). I really don't know. Do they think it's really that important that if we remove the flag they have to go to another beach? I don't know.

I: True, and if not that many people really know that it's a thing…

P: it would be different if you had a concrete reason like if the water quality wasn't good anymore. But… the water quality… if it decreases in quality it's still quite good and healthy to swim. But the standards of the BF for the water quality are very high. So if people… or tourists know that the water quality is really bad then I think that the people would go elsewhere. And then the local entrepreneurs would be affected of course. Not only at the beach but also at the towns behind the beach.

I: What would be the general response to a hypothetical award loss would be?

P: It would really depend on the reason. In Zoutelande, we have a BF and on the beach next to it we don't have the BF. But we don't see a trend in more people going to Zoutelande than the other. So then you can question the importance of the BF.

I: I also saw that on the map on the BF that some of the beaches have a BF but the ones next to it don't. Or that half a beach has the award like at Caricole.

P: It's because you have to have some kind of post on the beach from which you guard the people and if they don't have this post then you don't have the BF. But it doesn't mean that the quality of the beach or all the things on it is any less.

I: Ahhh ok. Do you think there would be any impact on your specifically if the flag was taken away?

P: It depends on the reason. If we as an organisation are to blame, then I have to explain it to the municipality Veere. But if its water quality and something we can't do anything about it, then no, it would not change my role. If it's because we didn't do our work then yes, I would have to explain but that isn't the case and never will be. Because as I said, for us the BF is just a basic, just a minimum.

I: When I was looking at the data I was surprised that so many of the results were low. I've done my analysis first because I wanted to be able to talk about the results in the interviews but I don't really see very much correlation between the variables I've used. But some papers expect that water quality would get worse in the future.

P: How come?

I: Because there will likely be more rain in the future, so more of the bacteria will end up in water ways and work its way to the beaches. But I was also wondering if the BF would ever change their standards if the limits become impossible to achieve? And in the end no one can have the flag.

P: That's quite a thing because the BF is international but you can't compare one beach with another and that's quite difficult. And they only have one standard and they're quite… how do you say… rigid

I: There's no leeway

P: Yes, it has to be this or that. And that can be quite difficult because we can't compare the beaches in Holland with somewhere in South America.

I: So do you think there should be more flexibility?

P: Yes. Because you can't compare, like I said, one beach to another, because of local circumstances. [pause] Although on the other hand it's clear that it shouldn't matter if you go to a BF beach in Holland

or South America because the level of service… or the level of service and the quality should be the same.

END

Appendix II

Province Interview Transcript: Participant 2 17.02.2016 (a)

I – Interviewer

P – Participant 2

56:59

START

I: Could you just tell me a little bit about what you do? I had trouble trying to work out your exact job title!

P: I'm assistant policy maker for Zeeland. Especially I am the coordinator of everything to do with swimming water in Zeeland. In Holland the law is that the provinces are the main government. If we have a new swimming place, we are the ones that need to check if everything is all right. We do all the physical safety assessments to see what kind of risks there are for people. At every official site there is a sign that tells you about what there is at the beach like facilities, what the dangers or risks are, whether it is a BF. In the old times there used to be BF signs on every official BF beach but we made an agreement that all the information they would usually put on their signs, like where is the recycling, where are the litter boxes, where is the first aid, where is the safety people, telephone numbers, lifeguards. All this information is now on our sign, otherwise all there would be two signs saying the same thing. I also make sure that all these signs are on the official beaches and that they are in good order. So that's a little bit about what I do, I do other things that have to do with water quality but swimming water is around 40% of my job. And besides that, in Holland we have a central website www.zewmwater.nl I am the one that made it possible for it to be built. I made all the technical stuff, at least I helped someone who knew lots about building websites. Have you ever looked at it?

I: Yes, I have

P: I think it's the best source of information for everything. It has all the profiles, everything you want to know about the swimming places, all the maps, signs, pictures and of course during the season you can see all the water quality information. I do that for all provinces. I only maintain the part for Zeeland but I made the entire site for the whole country. And I am still the spokesman between the people in the city councils that use it, the water boards, Rijkswaterstaat, that also do the measurements, and we have the group of people that are in the ministry. I am the spider in the web for all the different parties for things to do with swim water. So if anything changes in the European law or the Dutch law, they contact me and it's all implemented in the website. I think that's about it.

I: When you were talking about the sign, does all that information come under the heading of Zeeland province?

P: On the BF beaches, of course you see the BF on the pole there but besides that, on all the beaches with the BF we have an extra little bit in the sign about the award and a bit more information about the BF.

I: [discussion of my thesis topic] … I didn't find any correlation between the variables I used which were salinity, temperature and precipitation

P: There definitely is a correlation! It has to do with the sewage system in Holland as if we have very much precipitation, like 10 or 20mm in a couple of hours our sewage system can't handle it. That means in some spots the sewage water is discharged on local ecosystems and because we live below sea level here, all the water goes very quickly to the sea and you get your intestinal enterococci and *E. coli* as you say. If we ever have problems here in Zeeland, it's always after heavy rain. There's also a

correlation between those two bacteria and salinity because they can't stand salt. If we have a problem its usually not longer than 24 hours. Within 24 hours there usually all killed because they can't survive in a salty system. So the more salty the area is, where the swimming water is the less long the problem is. We only have salt water swimming places; we have 2 what we would call brackish, in Holland we say if its above 300mg/l its salt there about 1500mg/l. we call it brackish but for the rest of Holland its very salty (laughs). We only have 2…no 3 inland swimming sites and the rest are all at the coast. So really sea water then you're at 24000mg/l. but also between the temperature and the bacteria there is a correlation. At least, I hear that they survive better in colder water.

I: The problem I had was that I only had 5 months of data from 2007 to now

P: Yes, in Holland there is never any measurements done at all outside those months. I don't know why but they don't see any reason. I know for other reasons, not or swimming water, but for other reasons, they have done measurements in more the winter months. I heard that I think from one of the water boards a couple of weeks ago. I never knew that, I always thought that because its bacteria, the warmer it is the longer they would survive but that's not right. They said they could show that in the stats they had, but they didn't do that for swim water.

I: I know that other studies that look at bacteria in rivers, there's often data available all year, but for the beaches it obviously just in the bathing season. Do you think they should have measurements all year round?

P: No I don't see the reason – there's no risk because no one is swimming. I do like see that on some occasions they do a little bit longer at the end of the season because in April when they bathing season starts. Of course in Holland we have one bathing season that starts 1st May to 30st September. But last year because of the climate change, what we see is, for instance, I think the year before on the 16th and 17th of October, we still had 25°C and the water was still almost 20°C so we still had full beaches. On that occasion, I would like to have extra measurements but Rijkswaterstaat says no, there's no bathing season anymore so no more measurements. Some of the water boards, some of them do more measurements at the end of the season if it's still busy. And there are other occasions where they do extra swimming water measurements behind the season but that sonly for blue algae as the safety risk is much higher and you can get really [emphasis] sick. Of course you can get a bit of a tummy bug from the bacteria but it's not much of a problem I think. And if we have one measurement above the… I think our average is… umm… we have 54 official bathing spots in Zeeland and we only have one time per year where the signal value is exceeded. You know the signal values we have in Holland?

I: Well, I know the BF bacteria limits

P: But for me the BF is not interesting because it isn't policy you see. It's all depending on the European system they have. *Shows EU Bathing Standards table* In Holland this is the signal value – if its above 400 for intestinal enterococci or 1800 for *E. coli* we have to do something, according to our law. So what we do if one is exceeded, we only sometimes have a problem if there is a heavy rain. If there is one time we have a value above these two what we do is, on the day we get the result, we make sure that the Rijkswaterstaat takes a new sample because it's all salt water and from experience we know, we have never had an exceedance again. According to studies we've done, we know it's only within the first 12-24 hours that you can have an exceedance of one of these values. I don't know if you know, but it takes at least 48, sometimes longer, sometimes 72 hours, to get the result. So normally when we have the results the problem is already solved. So in Holland, all the provinces made an agreement that we don't do anything when we get the first exceedance. We do a second sample. And if this still has an exceedance, then we do something. But we are not like a normal province because we have everything in the sea, so for us they don't survive, even in the brackish waters, for more than 24 hours. So only if the second result is exceeding do we do something like put signs up and make the public aware of the water quality. Most of our water quality are 'excellent' and a couple that are 'good'. I do have to say

that the couple we have rated 'good' is because, in the past four years – because it's an average of four years – 99% of these goods it's based on one exceedance we've had. You probably know, that when they go to the beach to take the sample, they go to the places where most of the people were during the day. Rijkswaterstaat does the testing early in the morning when there are many birds. So if the take a sample and there is a bird dropping only a couple of meters from there… that's what know for sure because in the last couple of years when we had an exceedance, we also did a DNA research because we were curious as to what happened there. Most of the time it's because of bird droppings. We had one beach that didn't count, because on that beach a lot of people walk their dogs and we saw a correlation in the DNA test that matched the dogs. So then we told the local council to be stricter.

I: Like telling people to pick up after their dogs more?

P: Yeah, and it's not even allowed to walk your dogs on the beach in the season. So the council go there more often to have a look to see if people are walking their dogs. They get a warning first time and the second time they get a fine. So if you see, most of our bathing spots are good and excellent. We do have one that is 'acceptable' and we don't know the exact reason, but it is close to the discharge point of our biggest sewage system. We have tried to look into that but we didn't find much human DNA in the E. coli there so we're still not sure what's happening there. The water boards are the owners of the sewage centres and in the places where we thought that they (the sewage centres) were having an effect on the water quality, we made sure they discharged the water at other times. For example, at the beginning of the evening till halfway in the night so it matches the tide. Then within 1 or 2 hours it is completely dissolved in the 1billion litres of water that's coming in and out of the estuary every day. This normally solved the problem. Of course there are occasions where it's been raining so hard for a couple of days that they have to discharge the water otherwise out lands would be flooded.

I: So what do you think are the general trends in water quality in Zeeland? Are they getting better?

P: Yeah, they're getting better

I: What do you think are the main reasons for that?

P: It mainly has to do with other countries. The sewage system we have in Holland… I think we have the best sewage system of all over Europe. I think 99% of all the houses are connected to the sewage system. Of course, its European law since 2012 that this has to be 95% or more, only some very remote houses have septic tanks. For instance, in Belgium, its only in the last couple of years that they are really changing the sewage system and the big river that empties into the sea at Vlissingen. But that river is coming from Antwerp, Brussels and a big part of France. The Scheldt River. Here in the south of Zeeland we have the Scheldt estuary, and in the north at the border with north Holland we have the Meuse and the Rhine estuaries. 3 out of 4 of the biggest rivers in Europe end up in our region.

draws diagram of Zeeland

What we have is a coastal river that, depending on the current goes up or down. So that means all the water that's coming from the big rivers stays around the coast for a little bit. So all the big rivers go past big cities in Germany – their sewers are pretty good, but also France and Belgium which are very much behind. The most problematic is Brussels, till 2 years ago they had 4million inhabitants equivalent with sewage that was discharged into the small river that ends up with us. So when I did my water quality study, the part of the river around Antwerp was completely black and stinking.

I: They were discharging raw sewage?!

P: Yes, it's only been a couple of years since Brussels connected to the sewage system, and then still the big problem in Belgium now is they have the sewage treatment centres now but lots of the houses are still not connected to the system. So because they're doing a lot of work in this area now, its

improving our quality. I think in Holland we've done our bit so now were getting because the other countries around us are trying to get everything done according to the law.

I: So it's less of a local or national issue in terms of the quality.

P: Yes, it because of the European legislation that's making it much better for us

I: And it will continue to do so?

P: Yes, I think so, as in Belgium they still have to do a lot. I recently read an article that said in Belgium, more than half of the sewage that gets into the sewage system doesn't get to the treatment plants because there are so many leaks. In Holland there are so many meters *[i.e. big area/length of system]* in the whole sewage system so if they measure the flow of the water in different places and if there is a difference then they investigate. We have trawls [?] that go through the system checking for leaks. So in the future it will definitely get better, yes

I: So systems will just get more robust?

P: Yeah, yeah

I: So if, say, the bathing waters would decrease how would your role be impacted?

P: That will mean that we have a lot more work to do. As I said, if there is an exceeding, we take a second sample, if there still an exceeding we have to go to the beach and put a sign, contact the press to notify people. We have to go to zwem water website to make sure there is a warning there. We are very strict on maintaining the water quality that we have, so whenever the quality gets less *shows document* here you can see the difference between 2014 and 2015, you see there are 3 places went from 'excellent' to 'good'. Even though it's not necessary we will investigate how this is possible – we do DNA testing we do other… well we don't but we make sure the Rijkswaterstaat do. We are not obliged to do anything at this point because it's still good but we want excellent everywhere. People come to this part of Holland for the beaches. We have 1 – 1.5 million Germans, some French and Belgians too, but mainly Germans that come, mainly for the beaches. We think it important for the tourism to make sure the water quality is excellent. So we will investigate, even though the law says you only have to do that when it gets to 'acceptable'

I: So would you say tourism is the main driving force behind maintaining the water quality?

P: Tourism and agriculture

I: Why agriculture?

P: Because its below sea level. Its salty clay that's perfect for sugar beets, onions, potatoes that's worth more than wheat and barley harvests. A good field of potatoes could be 50-60,000 quid instead of 10,000 for the wheat and barley. But on the other hand, it needs more manure and pesticides so it's not as good for the water quality. But we have strict laws in Europe about how much nitrogen and phosphorus you can add to the land, and a lot of people use, like, the chemical particles are not like manure. It makes it… we've never had any problems where we found that agriculture is the big problem behind it.

I: So it's mainly sewage problems?

P: Yes, and boats

I: Boats, do you mean from dropping waste?

P: In Holland, if it's possible on the boat, they have to have a sewage tank and they can only discharge in the harbours. But we know from our experience that not all boats have them and still a lot of boats discharge in the water, because otherwise they have to pay. So Rijkswaterstaat was the one that needs

to control that, be stricter on that, and we are looking into the laws again to make sure that this problem isn't getting bigger. But in the 5 years I've been doing swimming water, only one time we had an exceedance where we had a feeling that the pollution came from a boat… well from a marina where there are a lot of boats and they discharged and that caused the exceedance. But like I said, more than 90% of the time its due to heavy rainfall and our sewage system. If you look here in the streets, the sewage pipes here are much bigger than in England, they are so big you can walk in them – 1.5m is normal diameter, we cannot make them bigger. But due to the climate changes you have shorter, heavier rainfall. So here in the streets, all the water goes to the pits so you don't have only the sewage from the houses but also the from the rainfall. So in Holland what you see now is that city councils will make sure the water that falls on the streets infiltrates into the soil because it isn't dirty, or that it goes to one of the local water sources instead of going into the system. We call it afkoppelen, that means that these streets are cut off from the sewage system so the water is locally infiltrated in surface or ground water because it is clean enough to do that. And this means that the sewage system is for sewage water and not clean rain water.

I: Right, as the rain water would just fill the system up fast

P: Yes, and another reason is that in the sewage treatment centres, the bacteria get lazy if there is too much clean water. So it's also not good for the treatment plants if there's too much clean water.

(brief chat about learning new things through the thesis) in Zeeland we are lucky because we mainly have salty water. With swimming water in Holland, the main problem with water quality is the blue algae. But blue algae can't survive in salt water, but like I said if we have one exceedance every year where we have to put a sign out, that is already a lot. Most of the years we don't have to do anything. But for instance, in the province above us there is basically one big city conglomeration. They also have a lot of inland swimming water locations, and in the bathing season, in south Holland, they usually have 30 warnings at any one time. But 99% is normally because of blue algae because of the fresh water, but we don't have that because we are below the sea level.

I: (Discussion about the BF) the water quality limits for the BF are stricter than the 'excellent' EU bathing category

P: Ahhh they are even lower?

I: Yes, I spoke to _____ and at his organisation they use the BF criteria as the minimum standards for the beaches they are in charge of managing. So they keep all the beaches to the BF standard even if they don't have it.

RECORDING PAUSE AT 35:06

P: (discussing the table question) I don't think most of the people know what the BF is

I: Yes, I understand a lot think it is only to do with safety.

P: and of course, cleanliness is just a perception, everyone's is different. If I talk to friends or family they say, wow, in Greece the water is really clean! Even when its 20m deep you can still see the bottom! But the visibility in the water has nothing to do with the quality of the water. Even if it has an intestinal enterococci value of 5000 you could still see the bottom, and I know from experience that the water quality in Greece is not as good as most people think. In Greece it used to be particularly bad in the west, and also in Chania, on Crete, there was a big rubbish tip near the sewage treatment plant and there was a big problem with the water quality. The issue with the water quality wasn't even to do with the bacteria but with heavy metals and stuff like that. Its getting a lot better there, in terms of the water, in the last couple of years because of the young people, but in the past… Plus lots of little towns don't always have septic tanks. In the big cities, of course they have sewage systems but this isn't always the case. It can be just discharged into the ground water.

I: In Zeeland, do you think the BF is important to the area?

P: I don't think so, personally but the city councils think differently. But I know that 90% don't know what it is but the 10% that do, really understand it very well. And the German people tend to go more to BF beaches because they like punctuality and certificates. If it has a Blue Flag they are assured that the water quality is good and the safety is good. I don't think it's irrelevant but I do think it's relevant for only a small amount of people.

I: Do you think it's worth all the trouble then? If it's only impressing a small number of people

P: No, personal opinion of course, but I don't think it does

I: A lot of papers argue that it can raise the profile of the beaches, so do you think that's the case especially with the German tourists.

P: Yes, I think that the case with a small number of German tourists, but I think it's too much hassle for something that's only gives a little bit of extra

I: So you don't think the overall benefits outweigh all the inputs like water testing, maintenance etc.

- 'what I say about the BF please keep it between us. Like I said I don't think it's something very important but I do think it's good that it is there. But I would like to see that its more… really proven

P: Since they have the BF the city councils take a lot more effort to make sure the beaches are visibly clean of litter. So for that I think it's really good – city councils clean every morning and every night the beaches so this litter isn't getting into the environment. So of course it's very good, but some of the criteria, especially the water quality, I would rather see them come with criteria with a strong backing. What if people asked the BF how they came to these figures? I don't think civilians would, but what if people get interested? You have these people who are pensioners and they ask difficult questions to government and companies and also these sorts of organisations. I think if it ever gets to the media there is no proof that can do the BF a lot of harm. Like I said I'm not a big supporter of the BF but I don't want it to disappear. It's just an extra thing that not many people know about. When I go abroad to a beach, I tend to go more to BFs because I like to compare beaches with each other and to ours. But it's just this little bit of extra that shows the beaches are clean and safe. I focus on that because of my personal interest, and I would like to see that more people know about what's better for the environment, but also the safety aspect of the BF is also very important. On the BF here in Zeeland, they have a very strict lifeguard regime. They have degrees and know CPR and all that. They go by the ISLA system – defines how many and what qualifications they should have. I think that's very important and I think the BF makes that possible too – that if you go to beach like that, I don't have kids but I know that some who do, like to go to a beach with lifeguards because they think you don't have to watch your kids. Of course you do, but there is chance that if anything happens on a BF there are more eyes. I think that _____ has done a good job here in this area in terms of safety, I think the last drowning was in 2012. If you see the amount of people on the beaches – millions every day in the province, and only every 5 years we have one drowning… I think that's very good. That's also something that came out through the BF – that city councils get more involved in the safety. The only problem is that it cost a lot of money. On _____'s beaches, they have a maximum of 2.5 km either side of the lifeguard post and they have to have at least 4 lifeguards, and when its good weather they have to have min. 8. That's costs a lot, when you consider all the boats and equipment. So if anything does happen, they have trained staff with the right equipment that can sort it out quickly. That's why I think it's a good thing, because it makes you more aware of the environment because of the cleanliness and also because of the safety. Like I said the provinces are the main government when it comes to safety on the beach – every year we have to do a physical safety check (currents, sharp objects, strong tides, big waves) that all things

we have to take into account. Of we find something we go to the local council or to companies like _____'s and say it has to be changed.

I: If you think it's not irrelevant but only relevant to a few, do you think that if it got taken away, for whatever reason, what do you think would be the impact?

P: You can find that they did a study in Katwijk, they have beaches that have 50,000 people on them. But due to the sewage system…you have Rotterdam, The Hague and Amsterdam… so if we have heavy rain we have such a big sewage system here it all goes into a canal that empties near Katwijk. So due to the European system, its classed as 'acceptable' but that's because only a few times a year the water quality is not so good. But they lost their BF and they did a study on the impact and they didn't find any. They still had the same number of people going there. There have been no complaints about the fact they don't have the flag anymore. So I don't think there would be a big impact because there is not much awareness about what the BF really is. But because Katwijk is such a big beach it might be a good case study. But like I said, most of the awareness is from the German tourists.

I: There's not much domestic awareness at all

P: No I don't think so. But when you enter Vlissingen by car there is a sign that says welcome to Vlissingen, holder of the BF! It's everywhere! But people don't know really what it is

END

Appendix III

Vlissingen Interview Transcript: Participant 3 17.02.2016 (b)

I – Interviewer

P – Participant 3

45:08 minutes recording

START

I: Do you deal very much with the water quality?

P: Well… it was once in 2 weeks now its once a month that we get the results of the water quality. And as the beach manager I have to fill in the papers because it's the BF, so the visitors can see how the water quality is at the moment.

I: So the levels are displayed on the beach

P: Yes. We also have a Facebook and a website from the city of Vlissingen where people can see the results of the water quality. If it's not good, then they do a second opinion… test. But in Vlissingen the last years each time they do a test it is good.

I: So you only record once a month?

P: Yes. That's since 2 years now. This is the second year. Before that it was each 2 weeks, but I think it took too much money. So we have the results 6 times a year – only in the summer time

I: So do you think they should extend the monitoring throughout the whole year, or just keep it in the summer months?

P: Well, I think for the whole year it's not so much important for people on the beach as just a few are swimming in the sea. But also in the summer time, just measuring once a month may be… it might be bad one day and ok the next. So I think it's important that you can see the water quality in the long term.

I: So if money was no object you would say do it more often?

P: Oh yes, once a week.

I: So do you know what the general trend in the water quality has been in the last few years? I know you said it was particularly bad in the 70s and 80s.

P: Yes, then it was very bad. We wanted people on the beach to not go in the water or to swim when it was low tide because the pollution. There were plates [*signs*] on the beach. Everyone knew that, when it was low tide, not to swim because the water was bad.

I: Was this pollution from the ship building?

P: No, it was also from Belgium but also from the harbours. In those years you had more pollution from ships like oil and biofine [*Participant means paraffin*]. I don't know the English name – they clean ships with it. You would find it very frequently on the beach but not anymore. That's because it's easier now to find the ship that released the oil because of planes.

I: So, what do you think the water quality will be like in the future?

P: I think it will stay as it is now, maybe get a little bit better. I think the main problem now is the plastics. I think the plastics will be in the sea for over 100 years. I do volunteering with sea mammals, and I think in 20-30% of the dead animals had plastics in their stomachs.

I: So you think that plastics are a bigger issue than the bacteria?

P: Yes, I do. I think the problem is bigger than we all think. If you took one handful of sand, you would find pieces of plastic. Birds and fish eat it. I think that is a very big problem. The quality of the sea water… maybe it will be some better but I think we are on the right track.

I: Why do you think it will continue to be the same, if not better?

P: The most important thing is that in the 70s you have… the water from the city wasn't… how do you say… they just dumped it in the Scheldt.

I: Ahh it wasn't treated

P: Yes, it wasn't treated. And now it's been treated so you have only clean water being released back. So the pollution from the 1970s simply isn't there anymore, or not so much anymore. And its forbidden – if you do something like that the company will get a massive fine.

I: So if we were to say, hypothetically, the water quality of these beaches were to go down, what do you think would be the main problems of that?

P: I think that because of changes in the climate – the heating up of the world – you also have more rain. We always protect our country from the North Sea but now the danger comes from the others side. When you have a lot of rainfall in a very short time then you have the same situation as in the 70s or 80s when unfiltered waste went into the sea. Maybe that will be a problem. Like in Katwijk they don't have the BF. That's because of the same reason. There is too much pollution over there in the North Sea so the BF organisation, I think 2 years ago, decided that Katwijk should not have the flag for at least 3 years.

I: Do you think that the importance of the water quality will stay the same, considering how reliant this town is on tourism?

P: I think that it is very important for tourism, yes. Especially for Germans who come here. But as a beach manager, it is not in my hands to make it cleaner or worse. But I think that it is very important. I will not say that the BF brings more tourism to Vlissingen but I know that Domburg… there is its very important.

I: Yes, I heard they have Badstatus in Domburg

P: Yeah. And also in Cadzand as well. So people ask me – why not Vlissingen! (laughs)

I: *general chat* SO would you say that the beaches here are marketed in a way to promote swimming? Because the beaches near my home in the UK don't really do it that way. Its more portrayed as just a nice way to spend the day, not really to swim.

P: Well it depends. We have people that swim each day – they come to the beach just to swim and then they leave the beach. And other people just come for the sun and the most important thing for them is to go brown. But children they always play in the water of course. And what we do each day, because from Vlissingen to Dishoek we have the most zeewier [*seaweed*] on the beach. It washes on the shore over here and sometimes there are dead birds and we pick it up each day. So when we find it we pick it up.

I: So I guess if the water quality stays good it only means good things for you! Less work…

P: Oh yes

I: So if the water quality went down, would it be on your back?

P: I work for the city of Vlissingen and we have the BF and a lot of things to do like showers, toilets, disabled toilets, and also for the clean water. But the water quality is not for the city of Vlissingen – we cannot handle it or manage it. That is the province. They are responsible for the quality of the water, not the city of Vlissingen. So we are happy that the water is always clean. So in Katwijk, the beach manager can do what he wanted, he can take care of clean beaches, there are lifeguards etcetera, etcetera. But of the water quality…

I: I guess it isn't just one person's problem.

P: Exactly – it's a bigger problem. There is the main problem where many times they have over-flooding so the water goes unfiltered into the North Sea. That gives the poor quality of the water over there. Over here, I cannot remember when it happened… it can also happen here when there is a lot of rainfall… but I cannot remember the last time. So I think we're doing okay.

I: What do you think about the bacteria limits set by the BF? Should there be more flexibility?

P: The BF is a higher limit than the EU limit… its stricter. For us it's not a problem. But I can imagine that for some other beaches that have the BF, where the water quality is not so good that they will have a problem with it.

I: So, what do you think of the BF? Is it an important part of your role, making sure it stays?

P: For me it is, yeah. Because we have a high level of things on the beaches. The beaches are clean, we have showers, we have toilets, we have lifeguards. So the beaches are clean and safe and that's because of the BF. But now the city of Vlissingen is running out of money so now it became an article 12 gemeente, which means that The Netherlands… they…. Let me say it this way. The city of Vlissingen has 260 million euros too less

I: Ahhh the budget isn't enough?

P: Yes, the budget isn't enough. So also not for the beaches. Now there are discussions on should we handle the BF or not. If they make a discussion to stop with the BF then it's not so necessary to have showers on the beach., and then you can have a shorter period with lifeguards. That's a discussion that will start in a few months in Vlissingen. So I hope they will continue with the BF and that means we keep going further on the good path we're already on.

I: What do you think would happen if they were to decide it was cheaper to get rid of the flag?

P: I think less people will visit the beach, because when you have lots of garbage on your beach and when it's not so safe anymore then people will go to another beach of course! I would do the same, when I am on holiday I always go to the ocean. If you go somewhere and it's not clean, then you'd turn around and go somewhere else. That's how it works. So I think it's very important for Vlissingen because the tourists don't come to see old buildings in the centre they come for the beaches.

I: So you think if there was something else that was a tourists draw; it wouldn't be so bad? But because Vlissingen doesn't have this then they would feel the effects more.

P: I think so. I do think so.

INTERRUPTION – DOOR BELL

P: Yeah I think it's very important for Vlissingen. If they say we will stop it because we will save 100,000 euros but I think it will bring less tourism to Vlissingen. Yeah…

I: So they might save in the short term, but loose out in the coming years

P: Yeah. yeah

I: So you think for the area is important?

P: Yes, I think it's good.

I: There are lots of papers that say that there isn't so much evidence of the benefits of having the award, but you say you see the benefits here?

P: Yeah. It's also, for me, because now we have the BF and the beaches are inspected each year and when something is going wrong, they have good reason to say – 'Albert that's not good what you're doing now'. So I think it's very good to have the BF. I don't know a German family that is making the decision, in Germany, about where to go on holiday this year that they look at the BF site and say 'they have the BF lets go to Vlissingen'. But I do think that when they come into Vlissingen and the beaches are not clean or are not safe then they will turn around and go somewhere else.

I: There's lots of papers that suggest the idea that beach awards can raise the profile of a beach and enhance its popularity. Do you think that's the case?

P: Yeah I think so

I: Is it used a lot in the tourism adverts for the area? Is it an important part of the campaigns, do you know?

P: Hmm I don't know. For me it's important and if I spoke with the people who have a restaurant or a hotel on the boulevard they all say it's important for us. So I think time by time they've got feedback from guests and, what I heard from people who visit Vlissingen, is that they are always saying it was clean, the people were friendly, it was safe, there were enough lifeguards and the quality of the beaches was good. I think that's important because then, hopefully they make a decision to come back. It's the same as I do if I go on holiday! You go back to places where you have good memories. How is the BF in England? Do you have a lot of BFs over there?

I: Yes, we do, we have so many beach awards!

P: Many different awards? You also have the Green Key award?

I: Yes. I think we have that one, and also the Green Coast and more. There are some interesting articles about whether having too many awards do people become oblivious to all of them. But in my hometown, we don't have the BF. Maybe its because we're close to big cities like Manchester and Liverpool. On the south coast lots of beaches have it but I think the awareness here [The Netherlands] is higher than back home. Well, from what I've heard I think that Germans seem to be the most aware out of everyone.

P: I think so. You always heard about the Germans of course.

I: *table question* If you yourself were to go to a beach how would you rank these factors?

P: Well, for me safety is the most important because one of my jobs is to prevent people from drowning. That's the most important thing. And… I think clean second because otherwise you don't go to the beach… I think scenery is 3… no wait. This is my opinion as a beach manager of course, I would do safety first. Second, in my opinion which is very important at this moment, is the BF. Then… 3,4, 5. Yeah, that is my opinion. And then my opinion as a tourist is… I think… I think the first thing a tourist is looking to is cleanliness. And then… I think safety is second… 3…4… and then I think the BF last. Because I think the most tourists that I see, a lot from Belgium, I never hear them speak about the BF. So then I think that this would be my choice. We have here a lot of people from Belgium, from the region of Antwerp because it's just 45 minutes to come over here. If I ask them why are you coming over here and not to the Belgian coast they always say that the Belgian coast is very expensive, so that's an important reason for a lot of tourism, that it's about money. Here you sit on the beach wherever you like, you can bring your own beach chair or towel with you and its free to go. But in Belgium, Knokke

and Blankenberge, you have rows of beach chairs and each 2 hours they come back and collect money. And of course you have to drink something and so the people complain about the high cost over there. I think they make a lot of money (laughs)! Here [Netherlands] you pay €4 or €5 for the whole day but in Belgium you pay the same for 2 hours. €4, €5 or €6 for two hours, at least. So that's also an important reason why people from the region of Brabant and Belgium, that they come over here. Because of the cost. It's cheaper.

I: So you think the award is important now. Do you think this could change in the future?

P: Well we see a trend the last year that more harbours and beaches go for the BF so it's still rising, the BF in The Netherlands, and I think that's good.

I: Why do you think there's so many new beaches and harbours chasing it? Is it because everyone else has it so they think they'd be at a disadvantage if they didn't have it?

P: Well… I think that the harbours must be clean of course and safe. People are changing. We now see, more and more, how important it is to have good housekeeping of our world. Also younger people. So… I think that because of the changing… you see the same with food now. In the past we would just eat the cheapest one, but now people are changing. And when you are able to pay some more but you have a good feeling about it we do it. So I think a BF award for your beaches that are clean, will be important in the future as well.

I: So you think people just care more about the environment now?

P: Yeah.

I: I've heard similar things from other people, that there is just more awareness of the rules, the impacts our actions are having that we didn't realise 20, 30 years ago.

P: Yeah, true. And now you see more and more the changes in the world. I do volunteer work with sea mammals and the last half year we had a humpback whale, an orca… a pilot whale… we had a common dolphin over here – it's really, really crazy. I had a sperm whale over here just swimming by! And so… that's not normal. That is not a normal place to live for these animals, they can't get the food over here. So, there's something wrong because it's not one accident, each year we more and more sea mammals that normally don't have to live over here.

I: I heard on the news that in the UK there were several sperm whales that beached themselves a few weeks ago

P: Yes, in the North Sea there were 29. Germany, The Netherlands and the UK. I was able two times to save a sperm whale. One swam in the wrong direction and I managed to turn it and the other was stranded but it wasn't completely dry. He had 2.5 meters of water beneath him, and we used water jets to blast away the sand so he had more room and could swim away.

I: Well… one more thing about the award then. If Vlissingen lost its BF, what do you think would be impacted the most.

P: Well...hmmm…

I: Or maybe, do you think it would be different if say they lost it because the water quality was bad rather than any other reason?

P: Well, it won't change the quality of the water but it will change the cleanliness of the beach, so they will be dirtier because the city will save some money as they don't have to clean as frequently.

I: Well then I suppose the local people will also be affected. Are these flats over here?

P: Yes, they are

I: Well then they have to look out over a dirty or untidy beach

P: Yes, they will start to complain because no one likes it when its dirty. I think that will be the biggest effect in the short term. And I think later on from 1, 2 or 3 years later you will see it that you get less tourism. And it will be very hard to bring them back to the city. 20 years ago you saw, for example, German families, and they would come each year to the same beach over here with the little children and you would see them get bigger and bigger. And they always come back, good weather or bad weather! And now… as you said before you flew back to UK for €25. It's the same to Turkey, or Egypt or the Canary Islands it becomes payable for a lot of people to take the airplane and go to a warm resort for a few hundred euros. And its guaranteed that you have sun and guarantee they bring you beer while you're on the beach! So you have to fight to bring the people back to Zeeland and give them a good time, good memories. And hopefully they come back another time.

I: So the one thing you have is the beach because you don't always have the weather

P: For someone who lives in Germany between the factories where the air is not clean and they live there the whole year. They see the North Sea; it's the first thing I do when I've been away for a few weeks and come back, it must be beautiful! I always go to the sea when I'm on holiday. I go for diving. So I think it will be very difficult to bring someone back to the city if they have been disappointed

I: I suppose if they're disappointed once, there's that many options out there it's easy to just ehh we'll go somewhere else next year

P: Yes, and you'll never see them back. And for this region it brings millions for the thousands of people working in the tourism industry. It's the cafes and restaurants and hotels. Its everything. In summertime if you go in the Albert Heijn, it's like you're in Germany! (laughs). And that's good! It brings money for everyone who is working over here!

I: So would you be affected if the award was lost or they chose to not continue with it?

P: Well… now we the BF for this year normally and in April we will find out for sure but u think we have. But it can be that the council says that for this year or the years after this were not hanging the flag because it costs too much money. I hope they're not doing that but there is a chance that they make that decision, which is not good I think.

END

Appendix IV

Schouwen-Duiveland Interview Transcript: Participants 4 and 5 08.03.2016 (a)

I – Interviewer

P1 – Participant 4

P2 – Participant 5

52:34 minutes recording

START

I: Could you tell me a bit about the province and your roles?

P1: Here you have the map of our province and we have 2 isles and the rest is mainland so to say, and we are on the top island of the province. We have approx. 33,500 inhabitants and more than 4.3million touristic stays a year

I: Overnight stays?

P1: Overnight stays, yes. So we're one of the biggest let say… yeah well Amsterdam and Rotterdam have more overnight stays because they are very large cities and they have more hotels and places to be. But we have… how many camping sites do we have… I think 130 and a lot of houses and hotels. But we're in the top 10 touristic overnight places.

I: So where are they mainly from, the tourists?

P1: Germany

P2: Germany, yeah. And Holland

P1: Belgium also and our own Dutch inhabitants from the rest of Holland. It's very busy in the summer here. Have you never been here in the summer?

I: No not yet!

P1: Ahh but you came by car, yes?

I: no, train and bus

P1: Well then, you probably saw the infrastructure here. It's a little bit smaller than the rest of Holland

I: Yes, it's a little bit rural

P1: Ah ha yes, it is a rural area. That means that there is a lot of pressure on uhh…

I: On the services?

P1: Yes, on the roads and also on the beaches of course in the summer

I: Sorry, could you just tell me a little bit about your job (P1)

P1: I work at the economics department (*bedrijfscontactfunctionaris*). When businesses want to get settled here, they want to buy pieces of land to build their businesses on or they have questions then they come to me and I am the one that listens to them and hears the problem, then sends them to the right person. Then businesses only have 1 person to talk to.

I: And you (P2), what is your role?

P2: Tourism, especially the beaches and routes for walking, mountain biking and horse riding. Things like that

I: So do either of you deal with water quality, or know anything much about it?

P1: Not much. P2 is also responsible for beaches like she said, and BF, and she has with the province… I don't know his name, but the province also takes water samples and looks after the quality of the water. Also the province is responsible for closing down beaches when it's too risk to go into the water. So we don't know much about e. coli and that kind of stuff but we do know when it's dangerous to go into the water.

I: Well it's more like opinions I'm interested in. would you consider water quality, in both your municipality and the province to be important?

P2: Yes, very.

I: Why is that? Just from a tourism perspective or something else?

P2: Also for our own health. Also for the inhabitants.

P1: And there is a lot of nature around us so tourists come for, of course for water and for the beach. But they also come to enjoy the environment. And when it's not safe to go swimming… for instance two years ago we had a major problem in Ouwerkerk. There is a lake which was contaminated with algae and it was very dangerous for humans but also the wildlife. And it has a negative effect on our municipality in the sense that people are a little hesitant to come to our municipality and enjoy our environment. So it is important that the water quality is good.

P2: I think it happened twice or something, that people couldn't swim

I: Ahh because they had to close the beach?

P2: Yes

I: Do you know what beach that was? With the BF being taken down, Katwijk is the only example I've heard of, because they had a pollution problem a couple of years ago

P1: Well they have the problem that the water comes out from the Rhine and it goes up to the north. And… well… the water quality of the Rhine isn't always that good

P2: Its mostly from boats I think, the pollution

P1: We have sometimes oil… (speaking in Dutch). They have… how do you call it… paraffine… uhhhh its when tankers clean their big oil tanks and then something comes free… paraffine (paraffin)

I: Is that like biofine? Someone said that to me but I can't work out what it is. I think it's something to do with cleaning ships or maybe I just misheard

P1: Yes, paraffine (*Participant means paraffin)*, its little white balls and they keep floating and they end up at the beach and then people won't go swimming. But we have the Rijkswaterstaat, that's our governmental…

I: The water guys

P1: Yes, the water guys – you know them? Well they have to clean when there is a problem at the beach. When its small then it's our municipality that has to clean it but when it's a big [illegible] of I don't know what, then they come in and clean everything up. But that has been many years ago once, that was necessary and it was for oil pollution on the beach

I: So do you think the water quality will change in the future? Do you think it's on a path to improvement or that it will stay as it is?

P1: I hope it will improve but I think it will stay the same

I: Why do you think it would stay as it is?

P2: It depends on the other countries and what they do. And they don't do much I think, or not enough

P1: Nee, not enough. I've been to Africa and when you see what they throw overboard or just throw it in the river and once you can't see it, it isn't there anymore. You can do a lot but… well there is a Dutch guy, a young guy, that wants to clean up the plastic sea… how do you call it

P2: Plastic soup

P1: Yes, plastic soup. And I do think a lot of people throw things away, maybe not in Holland or western Europe but I don't think the rest of the world is as environmental loving as we are

P2: But we do a lot with 'Verlos de Zee' it's a Dutch… and on several places…

P1: They have bins along the coastal site and you can throw the garbage you find when you are walking, you can throw it in there

P2: For plastic. A lot of people do that

P1: So they clean up by themselves

I: So you don't have to pay so many people to do it?

P1: Yeah, well they do it when they walk along so it stays clean the whole time. And when the municipality does it, they do it on a certain week or date and then its cleaned and it will take 1 month to do it again. So when you look outside it is sometimes clean and sometimes polluted. But when the people who are walking along the coastal lines take it with them it stays clean all the time

I: … maintaining it

P1: Yes, they maintain it

I: If, hypothetically; the water quality, the bacteria and stuff, would go down – so the bacteria levels would go up, what would be the impacts for tourism and businesses?

P1: When you look at our municipality, we have a turnover of about €1.4bn and ¼ of that is due to tourism. So we have more than €350 turnover which comes from tourism or indirectly tourism. So when there are less tourists here we have a problem

I: Is there a lot of seasonal jobs that rely on it?

P1: Yes

P2: Yes

P1: I think there is no family in our municipality that hasn't 1, 2 or 3 family member involved

P2: Yes, 30%

P1: 30% are involved direct or indirect. We have more than 30,000 people living here but not all are working. There are a lot of older people here. I think we have 10 or 12,000 people working here

I: So there's lots of retirees here then

P1: Yep. The big wave so to say are living here, that are over 60. The big grey wave

I: (laughs) we call them the Blue Rinse Brigade at home

P1: (laughs) well they have a lot of money to spend

I: So…seeing as the tourism is so important at the moment, will it continue to be important? Is there a lot of investment being made in the sector and the beaches?

P1: They will. Not only in the beaches but private businesses are also spending a lot of money now too. And what you see is in the last 20 or 30 years, July and August were completely booked, so you couldn't get enough space to get the land. It was always full. And now the world is very easy to access, so what they do now is they have more 'luxes' in the tourist stays, so hotels are improving, camping sites are improving, the size of the rooms in a hotel or the camping pitches you can hire are increasing. In the early days you would have a site that could have 200 tents, but what they do now is they put less people in the same area. Each one has a bigger site to stay on. And what you see is that the seasons before and after July and august, there are more people in our municipality. The summer is spreading now – shoulder seasons. You have July and August – that's the main body and September, October, May and June are the shoulder seasons.

I: From speaking to someone at the Province, I know that they don't measure for the bacteria after the bathing season ends. But last year, or the year before, the beaches were still full way into October but no testing.

P1: Do you think it's necessary to test?

I: I think if the beaches are going to be full of people, then I think they should personally. If its empty and no one is using the beach, then I personally don't think it's necessary. But if they did there would be better data sets

P1: Well, they won't do it all year round. There are not so many people going to the beach to swim now, there are a few but not many

P2: They do in October, when its warm

P1: But what is the main reason the water gets polluted do you think?

I: With these bacteria its mainly leaky sewers or boats releasing waste outside marinas, or run off from agricultural land because they put manure on the land which can get washed off. But in Zeeland I think the boats and the sewers are the main problem, but not the sewers here, the ones in Belgium, because their waste comes into the Meuse and the Scheldt

P1: The Maas (Meuse) and Scheldt, yes. They don't clean up their waste water very good?

I: No, the Dutch system is better than the Belgian and French system but then you end up with the out put

P1: Yes, when you are at the end of the pipe, which we are in the delta. So a lot of pollution comes to us

I: So what you said earlier about other countries is super important especially in this region. But everyone seems to blame the Belgians and want the German tourists (laughs)

P1: Oh we have a lot of Belgian tourists too nowadays. Maybe that's because… Belgians come because they have a good feeling about the surroundings and now we have the Westerscheldetunnel, so for Belgians it is very easy to come to Zeeland and our municipality. When they come from Blankenberge or Knokke, that's the coastal side of Belgium, first they had to go over Antwerp and then drive to us. And now it's about 50-60km shorter so they come more often to us

P2: And they appreciate our beaches because they know there are no buildings on the beach

I: So the Belgian beaches are more built up? I've never been to a Belgian beach

P1: You should! You've got the beach and then they have a concrete wall, then the road and then start the buildings. They don't have low buildings but they have apartment sites and flats all very close to the coastal site. They're not like the beaches we have which are open wide

P2: No chairs and no parasols, that kind of thing. Not much sport

P1: There are places on our beach when, in the summer you rarely see someone. You have to walk a little bit further, its mostly where the new beaches are. We have some very nice sports you can sit and relax when you don't want to see a lot of people

I: I have some questions about the BF now. Are you both aware of the BF Award?

P1: Yes

P2: Yes

I: Is it important to your role within the municipality?

P2: It's important for the tourists, especially the German tourists

I: When you say you work in tourism; do you work in marketing or is it more policy stuff?

P2: More the cleaning and the safety

I: Why is it important to the tourists do you think

P2: When you have it, that you have a good beach, its clean, it's safe and it's important that they know it

I: For the guarantee

P2: Yes. And also for ourselves, to be sharp and to maintain the quality. It's an extra thing to work for a good beach and safe beach. And they help us to reach the high standard. They give us advice, how to do things, how to clean, how to be more safe. We learn from it

I: Is the organisation quite hands on? Do you get a lot of feedback from the BF?

P2: Yeah. They come here for 1 or 2 days and we look together at where it can be better, what we can do more. It helps us also

I: So it's a guarantee for the tourists and also of your work as well

P2: Yeah, yeah

P1: And along with the guarantee they give advice how to improve your standard

P2: Yeah

P1: So when they go to the beaches they take with them the people responsible for cleaning and safety. And together they go and look

P2: And we get a report on what we can do to be…

I: Ahh so where you're doing okay and where could be improved

P1: Yep. And he gives… of course he goes to many different places and he sees where other municipalities have struggled with the same problem, and he has good practices so he can say where it went better or good so we can go to them or contact them

P2: It's not always necessary for the BF… sometimes only for ourselves

I: Do you know if they're very… do they enforce the standards well?

P1: I think they do. I've been with 2 inspections I went with them, and the man there was very driven to do the right thing so to say

I: I've heard that in some other countries it might not be as strict as it is in The Netherlands. But I know in Katwijk, I don't know how long the pollution went on for them to take it down, but they took it down quite quickly and they can't have it for a number of years, or maybe they decided to not try and get it

P1: When you have one standard, it can be different, but it shouldn't be different in Italy or Spain

P2: But it is

P1: But it will happen I think, because it has to do with economics. Because when you have the BF foreigners know the importance of the BF and what municipalities have to do with it to get one. So when you have to take it down it means there is something wrong. When all the campsites are full on the coast of Venice and the beach flag goes down then there must be a problem

I: But you think awareness from the public about the award is high?

P1: I don't know with all the tourists, but for instance Germans really look if there is a BF and if yes it means there is a certain quality.

I: What about the Dutch tourists?

P1: I don't know

P2: I think more and more, most people know it now

I: So you say the awareness is on the up? Why do you think that it is growing?

P2: Umm… yeah... because of the media and attention. And you've got the BF always in the media and people read about it. It's not only about the BF but also the elections for the cleanest beach in The Netherlands (*organised by Stichting Nederland Schoon*). And they have (unintelligible) now because most municipalities want to win it

I: They want to be in the top 10

P2: Yeah

I: I know you said you deal with sports, but does that include water sports? Do you think they would go somewhere else if the BF was taken away?

P1:

P2: I think so, it's the same with swimming or sporting – it's important. It's the same with the Olympic games

P1: Yes, in Brazil!

P2: They don't want to sport because it's so…

P1: The water is so polluted

I: They don't have much time to sort it out

P2: I don't think it will happen here, that it is so bad they don't come…

I: *quote question* do you think that's the case in Zeeland

P1: What do they mean with public profile? They make people think about…

I: To make people more aware of the beach itself, so it's more well known

P1: I don't know if that's the case. Can I read it one more time? I think the BF stands for a clean beach and I don't know if it raises the public profile… maybe I don't understand this quote the right way. Well… the popularity of the beach is raised of course when there is a BF because then they know that it is well maintained or better cleaned than other beaches. So when people can choose to go left or right and right is BF and the distance is the same, I think they will choose the BF because of the fact they know that there is… how do you call it…

P2: Safety

I: Lifeguards?

P1: Yes, lifeguards. They know that the water is checked, they know the sand is clean so you don't see a lot of broken bottles lying around. Then I think the public… the popularity of the beach is higher with a BF

I: So if you had the choice between 2 beaches and one had the BF and the other didn't, which would you go to?

P1: When I was in an area for the first time, I would go to the BF

P2: And we have other awards also, not just the BF – Quality Coasts and Eco21

P1: That's a little bit our problem. We do have all those quality… awards and we all apply for all these quality awards and we have to pay for all of them and… well… we were talking isn't it possible to blend it in each other and have one award, so you don't have to apply for all those different awards. So we have have 4… 3 or 4

P2: We have the Green Deal also

P1: Every award you have to put in a lot of time to get it, it also costs money. Not only in ours from the… my colleagues, but also in money to get one. So it would be better to let them (*unintelligible maybe 'mail' or 'be all'*) together

P2: It's all about the same so…

I: So are you saying there are some beaches here that have 2, 3, 4 awards all on the same beach?

P1: Yes, we've got 21km of beach and we have 4 awards huh?

P2: Yes

P1: So it's the same water (laughs)

P2: But Quality Coast and Eco21 are a bit bigger, it's the whole line not just the beach

I: It's for the area?

P2: Yes, it's what we do for the whole area

I: So do you mean you would just apply for one award that would cover all the bases rather than the 4 separate?

P2: Yes

I: Do you think that having so many awards can be confusing for tourists?

P2: Also, yes. I don't think… I think they know what the BF is but the others… I don't think its… most people don't know it I think. There's a flag hanging on the beach, but that's the only thing, I don't think they know what it means

I: The BF?

P2: Nee the others

I: So the BF is the one where people would say ahh yes I know it but the rest they would not know

P2: I don't think so, no

I: So do you think, if say you decided to keep the BF because it covers the water quality and it covers the safety and it covers the services, if you decided to not have the Quality Coast or the Eco 21, do you think losing those awards would have an impact?

P1: Not…

P2: Not on tourism, no

I: But do you think if the BF was removed from a beach for a water quality violation that would have more of an impact?

P1: I think so yes

P2: Yeah

P1: I know for sure

I: Why?

P1: Because when the flag is not on top, people ask why isn't the flag there? Sometimes it was because there was no security on the beach, the flag couldn't be raised, and that's then the reason.

P2: Ahh but we found out that isn't the case. That you can hang the BF also when there isn't a lifeguard

P1: Now we know it but a few years ago we didn't. And when there wasn't a flag people asked hey, why isn't there a flag!

I: And so people were actually like, where did it go?

P1: Yeah, or why isn't it there?

I: But that was just because you thought you had to take it down. *hands out table question* These are all factors that have been included in other studies on beach awards on the BF and these are the top 5 I took from a study. So in your own opinion how would you rate them with 1 being the most important and 5 being the least. Then do the same thinking as a tourist

P2: I think it's the same, ranking as yourself and ranking as a tourist

P1: So we can give 1, 2, 3, 4 or 5. We can't give safety a 5 and cleanliness a 5

I: No, so each one has a different value, so most important is 1 then 2…

P1: *Speaking Dutch* What does proximity mean?

I: How close it is to your house or holiday home

P1: Ahh then that's 5

P1: *Speaking Dutch: ~ 44:01 *

P2: *Speaking Dutch* hmm less important I think

P1: And then as a tourist

P2: I think the same

I: You think it's the same?

P2: I am a tourist in my own…

I: So why do you rank the BF at the bottom then?

P1: Because when you have a clean…

P2: And its safe and its clean

P1: It is also a BF would you rather have BF on 1?

I: I hadn't really thought about it as I took this from an article where they handed this questionnaire out on a beach, and cleanliness and safety are both part of the BF so the BF is technically number 1

P1: Yeah

P2: Yeah, ok

I: But it's whether the award itself is enough of a draw. But then it makes no sense to go to a dirty beach. Do you think the importance of the award might change in the future? As in the value it has to the municipality or the tourists

P1: I don't think it will change. The importance is still there

P2: I think it's important to promote it more so everyone knows about it

I:

P1: And I think it's good to let everyone know that the standards are the same wherever this BF is. So when the public know that in Italy they have the same standard but they do other thingies with it

P2: It's not good for the BF

P1: Yeah, it's not good for the BF is what I wanted to say. And they make their own agenda about the BF, it's not a good sign

P2:

I: Yes, it's supposed to make all the beaches comparable but if some are stricter than others…

P1: Maybe a Dutchman has to go to Italy and an Italian has to come to here. Then we would see the difference

I: Do you know how the BF is promoted at the moment? I know you said it's in the media but where would people hear? Is it advertised anywhere in the town? Someone told me that in Vlissingen they have it on the sign when you're driving into the town, I think they're very proud of it

P2: We don't do that. Its only on the signs on the beaches and the beach magazine we have that says where the BF spots are. And on the website

I: How do you think they could improve it so more people know about it?

P1:

P2: Like the elections, they are on the television. For advertisement on the television, that works but it is expensive

P1: Maybe more free adverts on Facebook or I don't know what

I: Ahh so use social media more?

P1: Yes, social media

I: So do you know... if you deal with businesses do you think businesses are positively affected by having the Award?

P1: Yeah

P2: It's not especially because of the award, it's because the beaches are beautiful and clean and safe. That's the most important I think – it's not all about the BF because we have some very nice beaches that don't have the BF because there's no lifeguard. They are still very beautiful and important to us

I: It's the same as in the UK, as from Wales up, there are no BF beaches. But I'm sure the beaches by the Lake District in Cumbria are perfectly fine but they don't have that award. They might have another one because it doesn't need a lifeguard or so and its cheaper to maintain

P1: You're not from around Sheffield?

P2:

I: No, but around Liverpool I can see why they don't have it if I'm honest. I went to Crosby beach at Christmas which is right near the mouth of the Mersey and the water is not… blue

P1: It's the same colour as the beer?! With foam!

I: I think it is probably fine to swim but they don't have any awards. I think that's it!

END

Appendix V

Noord-Beveland Interview Transcript: Participants 6 and 7 08.03.2016 (b)

I – Interviewer

P1 – Participant 6

P2 – Participant 7

36:56 minutes recording

Note - problem with recording at the start

START

I:

P1: Here we have 5 municipalities called de Bevelanden. This is north Beveland and in south Beveland you have Goes, Borsele, Reimerswaal and Kapelle. And with the 5 municipalities we try to make policy on tourism as well, do it together. Our municipality is the coordinator

I: And you are the assistant policy person?

P2: Yes, yes

I: Well, my thesis is looking at the impacts of climate change on *E. coli* and enterococci which are 2 of the bacteria used for gaging whether a beach can have the BF. I was going to model the bacteria in future scenarios but the data I got from the Rijkswaterstaat didn't really go back far enough so I wasn't able to do that. The other part is to look into how important the BF is at the moment and how this might change in the future. The first few things are about water quality, I don't know if you many dealings with it

P1: Not much, we get the grades

I: The EU bathing ones?

P1: Yeah, and I always send it to a few people here that do environmental policy and to the one at the beach. Then he has to hang them, that's the sort of thing. But I don't look… always I look to see if its ok, and if its ok its ok (laughs)

I: Well its more whether you think the water quality is important in the area. Would you say having low bacteria and clean beach water is important for your municipality and the 5 municipalities together

P1: I think no one wants to swim in dirty water

P2:

I: Is the tourism a big part for this municipality? I know it was in Zierikzee

P1: We are small, like an island, and we only have 3km of North Sea beach, but we have the Oosterschelde and the Veerse Meer. Most tourists that come here also come for the beach. When they really want to go to the beach they go to Domburg, Renesse

I: Do you know what the general state of the water is at the moment?

P1: I think it's' always good. I never had any signs that it was not ok. I think once at Veerse Meer. The Province does tests in Veerse Meer and we had a problem that people walked their dogs on the grass and that could have been a problem. But with warning signs we solved that

I: Yeah, I think they fined people a bit more and the problem seemed to go away. What do you think… it's not a test when I ask you about the water quality! If the water quality were to go down, what do you think would be impacted in this area specifically do you think?

P1: I think if the quality is not good at the beach, we cannot put on the flags, the BF, and I think that might be in the newspaper. That would not be very good

I: So bad press

P1: Yeah

P2: Yeah

I: So you think that if a beach lost the flag, then the tourists would hear about it and not want to go to that beach

P1: Yeah

I: What do you think of the BF in general? What do you think it brings to the beaches?

P1: Do you want to say something about it? Had you heard of the BF before you came to work here?

P2: No. But I think most of the people who came from Germany, they look to it

I: Bingo, every interview I've had has said that German tourists know about it

P2: I think the people here not really look to the BF

I: So you think it's definitely more well known in Germany? Do you think the tourists specifically look for beaches that have it?

P2: I think it counts, but I don't know if they specifically look for the BF

I: Why do you think they know it more?

P1: It's just from saying, the people that work on the beach, the people from the camping sites, they tell us. That's all we know. As a municipality we don't ask the people these kinds of questions. Maybe when we want to know why you come to Beveland and why do you like out beaches, maybe we could ask that. But so far we haven't done that

I: So what kind of dealings do you have with the BF in your job?

P2: What I do now? I fill in the form for the application

I: Is it easy to get the award do you think?

P2: This is my first year so I don't know much, but I think there are many points that they look to. When I came last year here there was a… ermmm… inspectie

P1: Uhh… the inspector of the BF…

I: They came for the yearly inspections?

P2: Yes, they look for very much points

I: Oh, the 33 criteria?

P1: Yes, but not only that. They also had a lot of other remarks and we asked ourselves if that was relevant

I: Remarks like what?

P1: Remarks like the uhh… how do you say… strandpaviljoen

I: Beach cafes?

P1: Yes. The man that works at our beach café, of course we only have the 3km so we only have 1 contract. He cleans the beach for us, he does everything. Another party that we have to deal with is the rescue boats… the lifeguards. The inspector was saying at the beginning of the season you should put those 2 parties together and you should have a celebration of the start of the season, that kind of things. What is also difficult is that he said that the toilets in the parking place were not clean. Well, it was not clean at that moment but half a day later they are clean. But we have to upload a picture of a clean, you know. It took me three times going there to be there at the right moment to make a picture and upload it. It's a bit overdone you know. But to gain the BF in the beginning, I did that, I think more than 10 years ago. That was really hard because we didn't have a rescue brigade, we didn't have a sewage pipe

I: Oh, so you started from scratch, just a blank beach

P1: yes, so we had to do a lot of investments

I: So do you think all the money they've put in, all these investments, do you think it's worth it for the award?

P1: Yeah. Because now… because we had to make the investments, our city council, they had to give the money. So we can show them every year what we do on the beach, but also what the beach brings us, how important the beach is for our municipality and that's the great gain I think

I: So for them to keep funding the management of everything, you have to prove that its getting you something, and it is because they keep paying

P1: Yes

I: Have there been more visitors since you've had the toilets and everything on the beach and lifeguards? Since the 10 years or so

P1: I don't think so; I call them the manager of the beach. He tells that what we see for ourselves on the really hot days now the parking place is not even totally full, which it was in the earlier days. But people come more spreaded and what I hear is that it's about the same amount of people but they come over a longer period

I: Why do you think… the people I just spoke to said that summer used to just be July and August but now its June all the way through to October. Is it just because its warmer longer?

P1: Yeah maybe. But also because people go shorter on vacation and more often to more different places.

I: Another thing I've heard is the draw of cheap foreign holidays. What do you do to try and keep people coming back to Zeeland?

P1: Well, we hear from everybody is that people come for the quality, so we have to have a high quality standard and that's what we have to work on now. That's also what the inspector tells us, they are going to look more to the… how do you call it… *ovehange…* through the dunes to get to the beach

I: The paths?

P1: Yes, the paths and everything, it's getting more important. The things you offer like the toilets, the showers, the playing things, that sort of thing is getting more important. So when people come and they experience that it is good, that would be a reason to come back

I: Do you think the tourists are getting more demanding?

P1: Yes. Much more (laughs)

I: So if you say they come for the quality, would you say that the BF is a kind of quality assurance for them?

P1: I think so, because right now we are working on a vision for the beach and its surroundings and what we tell the city council and everybody, so we can get the money, the first thing we say is we don't want to lose the BF, we want to stay the most beautiful beach in Holland. That's what helps, yeah

I: So you don't think… do you have any other awards on the beach?

P1: No, just the BF

P2: And the cleanest beach

P1: But that's an election once a year

I: There are some beaches that have 4 different awards, so then it ends up costing a lot of money

P1: Yeah, that's why we don't do that

I: So it's a cost-effective thing to just have the one. Is it because it covers so many areas?

P1: Yeah, and it's the most well-known one. And since we only have this small beach the costs we could make from the Quality Coast Award, we can better invest in things on the beach

I: I didn't realise there would be 2 of you. This is just a table with values I took from another study that looked at pull factors for going to a beach

P1: What is proximity?

I: How close it is to your house

P1:

P2: And scenery?

I: The landscape, is it in a nice area

P1: Well… this is what we say in our promotions… that we are the cleanest beach

19:47 - 21:36 *Speaking Dutch*

P2: Now we look like a tourist

I: Oh so this is what you were thinking with tourist brain

21:43 – 22:20 *Speaking Dutch*

I: So how come you put the BF at the bottom?

P1: Uhhh because for ourselves… for me it's not very important. When I go abroad I also don't look at if there's a BF. Yeah I do now because…

I: Ahh everyone says that because of their job they check now. You would just look and if the beach looks nice you would go?

P1: Yes. And you forgot one, what's very important for people is if they have to pay for the parking. The beaches where you don't have to pay like near the big dam you crossed between Schouwen-Duiveland and here. In the middle there is a big beach and you don't have to pay, and that's the beach that people from here first go to

I: But then you also put safety as 4. How come you rank it so low?

P1: Well with safety, personally I care for my own safety. I would never go far into the sea

I: I think a lot of people think that it's safer if they have children, but you think people are pretty self-aware and they're not going to put themselves in danger

P1: Yes. Of course the sea for most people is frightening so then I think they will take care. I think it's important if you have little children that you know you have a back-up, like when they get lost there is someone you can turn to. In that sense I think that safety is important

I: So would you say right now that the award is important to the area?

P1: I think it's important when you can say that the whole area is a BF area, more for the area than for our own little beach

I: So if you can say all these beaches are all BF it's more of a draw. Do you think in the future it will stay important or get more or less important?

P1: That's a very difficult question. I don't know

I: Well, is the municipality continuing to invest in tourism and trying to bring new tourists in

P1: I think they see more and more the importance of beaches in Zeeland to get people here. Because when they are here they like to ride the bicycle or walk or whatever, but that's not what brings them to Zeeland

I: So the beaches are number 1?

P1: Yes, the image is the beaches

I: Have you ever heard of a beach having the BF taken away?

P1: Maybe, I don't know. Maybe the last year or the year before one beach in Holland lost it. Yes, I know… also they couldn't help it… something came out in the sea… pollution

I: So if the beach here lost it, do you think there'd be any impact?

P1: Yeah I think so

P2: Yes, when you lose BF

P1: I know that when we first started the BF that was really a big thing. Everyone says getting the BF is one thing but what if you lose it and you get bad publicity. That's worse than not having it in the first place

I: But if the award isn't so well known, do you think it would have an impact on people coming? The thing is if it got taken away because of the bacteria, in all likelihood it's still safe to swim, it's just that their standards are slightly stricter than the EU ones. So do you think people would still look at the beach and say oh well, it looks fine and still go if the awareness is not so big

P1: I the end I think so, but after the publicity it will have a short effect I think

I: Oh, so maybe the season after it gets taken away there would be bad press but then after that it would be forgotten about

P1: Not totally, but I don't think it would cost many visitors. Have you spoken to the people that manage the beach (gives contact information)? We have a contract with them, they rent the beach from us and

they clean the beach from us. And they are very keen on keeping it very, very clean and they don't like the inspector of the BF and what he says, but I think they are very happy with the BF status

I: So they think it's a good thing?

P1: I think so

P2:

I: Do you have anything else to add about the flag and tourism?

P1: I think it's a very good thing that there is also a piece of education part of the BF because now… we organise that and maybe if it was not asked for maybe we wouldn't do that. I think it's always nice to get the public engaged in these things

I: What do you mean education?

P1: Like schools who clean the beach, or children who can go get little things from the sea… sea lessons.

I: Oh like in the rock pools?

P1: Yeah

P2: Yeah

P1: And demonstrations of the guards… the lifeguards

I: So by getting people involved and interested, there can only be good things I suppose

P1: That's not only for the beaches, but I just came back from Suriname and if see how much plastic there is in the rivers and the beaches and on the streets everywhere. Nobody thinks about cleaning up, and here it is very common to clean. Because I think it's the result of years and years of campaigns and everything, so it does work

I: Oh, one more thing. I don't know if you know, but is the BF used a lot in marketing campaigns of the area?

P1: The VVV have a guide online I think, and still in a book, where all the beaches are in and they describe the quality of the beaches and the awards they have. We ourselves explore more the fact that we have the cleanest beach award. We've had it a lot of years in a row so we think that is more important

END