Construction of a new ring road in the southern part of Groningen: How are potential social impacts managed?

Colophon

Title:	Construction of a new ring road in the southern part of Groningen: How are potential social impacts managed?
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Abstract

Groningen's construction of the southern ring road must ensure that the flow of traffic in the Northern part of the Netherlands will go smoothly, without major delays. Also, it creates a new green public space that connects several parts of the city. The megaproject has had an eventful history in which various technical and financial problems arose. This resulted in an increase in expenses and a delay in completion. In addition, social issues for stakeholders aggravated. In this thesis, a two-sided mixed-method approach researched how potential social issues for the local residents were managed throughout the project. Although a Social Impact Assessment (SIA) was never fully undertaken, aspects of this process that are in line with Dutch legislation were implemented to efficiently solve social issues. Semi-structured interviews with experts stressed the importance of communication. Via a questionnaire, the perception of the local residents about the communication towards them was asked. Good communication disseminated through various means towards local residents is seen as a key element for the management of social issues.

1. Introduction

1.1 Background

In an era where vehicles are intensively used, the importance of good sustainable infrastructure is emphasized (ACEA, 2021; Silvius et al., 2014). The quality and density of infrastructure directly influence the economic development and competitiveness of a region or country (Ivanová et al., 2013; Younis, 2016). Therefore, the development of infrastructure is crucial as well. However, there are also disadvantages involved in infrastructure development. Road development impacts the lives of local citizens. Whereas, the management of social issues that result from infrastructure development is often complex (Antonson et al., 2020).

The current construction of the southern ring road in Groningen is a good illustration of this complexity. This infrastructural project (figure 1) involves an important thoroughfare on the national level. It includes the A7, which connects the western parts of the Netherlands with Germany, the most important trading partner of the Netherlands. In addition, the A7 together with the A28 fulfill a crucial role for the commuting people in the region. In the last decades, the southern ring road experienced an excessed capacity in terms of traffic, causing longer travelling times for car-users and congestions.

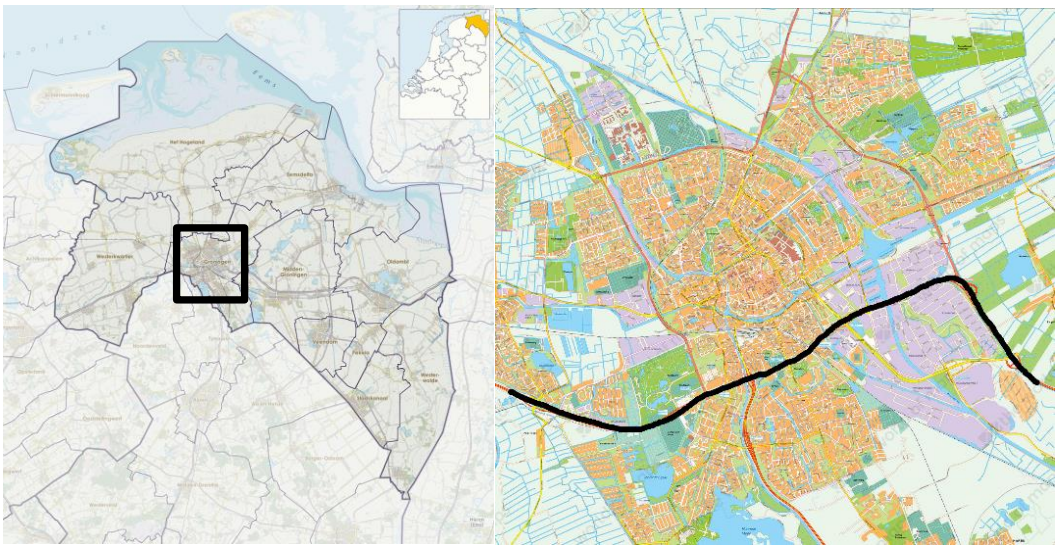

Figure 1: Groningen and the construction area of Aanpak Ring Zuid
(Wikipedia and theworldofmaps.com edited by author, 2021)

Therefore, the Ministry of Infrastructure and Environment, the province of Groningen, and the municipality of Groningen initiated an infrastructural megaproject[1] to develop the city of Groningen and especially the road network of the city. From 1992 onwards, researchers have been conducted to investigate the most efficient way is to solve the traffic problems in Groningen (ARZ Bedrijfsinformatie, 2014). From this moment onwards several important events happened to realize the construction of the ring road. These are illustrated in figure 2. Although it seems like a flowing process, setbacks have occurred along the process. For example, with several technical problems, such as cracks in the poured concrete and protests regarding the felling of trees, the project was delayed (DvhN, 2021). In addition, the delay caused an extra nuisance for the project's immediate residents (DvhN, 2019).

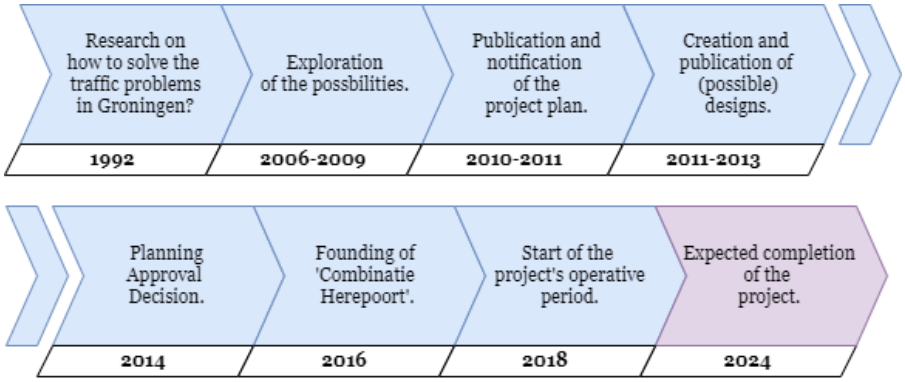

Figure 2: Timeline of Aanpak Ring Zuid, including important events (Author, 2021)

1.2 Societal and scientific relevance

This thesis will investigate how the social impacts of the project are managed throughout the process. This gives an insight into the project and therefore it might clarify whether and to what extent an assessment has been beneficial and give recommendations on how to deal with the social impact of similar infrastructural projects in the future. Since the Dutch law does not require the SIA process before a project (Mottee et al., 2020; VerkeersNet, n.d.), this Dutch case study is likely to differ from case studies about the application of SIA in other countries. This research will be relevant by gaining a better understanding of social issues in Dutch megaprojects. Especially, the management of the social aspects that result from the project will be interesting. This study will help to increase the understanding of the management process of social issues in infrastructure projects.

[1] The concept of a megaproject will be substantiated in the theoretical framework.

1.3 Main research question and sub-questions

To research how the social aspects are dealt with in an infrastructural project in the Netherlands, the main research question is stated as follows:

> *How are social issues managed concerning the infrastructural project of the southern ring road in Groningen?*

Consequently, the questions that arise from the main research question, to answer this question as good as possible are:

1. *How are the mitigation measures to the potential social issues of the project prepared?*
2. *How are social issues during the project attempted to be solved?*
3. *How are the monitoring programs designed and implemented?*
4. *How did the local residents experience the management of social issues?*

1.4 Hypotheses

This research aims to find an answer to the research question(s) as stated in the previous section. Hypothetically, the interviews with experts that are employed by this infrastructural project will argue the (potential) social issues are managed properly and sufficiently. It is to be expected that the mitigation measures are prepared according to the requirements of the Dutch Law. In addition, hypothetically, the social problems that occurred during the project will be collaboratively solved with the aggrieved residents.

To answer the fourth sub-question, a survey will be distributed. The data from the respondents will be tested upon the following hypothesis:

> (i) The local residents are satisfied with the means of communication.

2. Theoretical Framework

2.1 Theories and concepts

2.1.1 |Social Impact Assessment|

In the academic literature, the process of Social Impact Assessment (SIA) is widely discussed and is, in international terms, accredited for infrastructural projects. It is adopted by financial institutions, such as banks, in the Equator Principles as a framework for social and environmental risk management in (infrastructural) projects. The process of SIA is a result of Environmental Impact Assessment (EIA), which emerged in the 1960s as a consequence of increasing environmental awareness. The International Association for Impact Assessment adopted the definition of EIA and made adjustments to create a new definition for SIA in 2009 (Glasson et al., 2019). It now focused more on the social impacts and consequences of projects and how these should be managed. Thus, a paradigm shift occurred in which the SIA became a management tool instead of a regulatory tool (Vanclay, 2019).

To conclude and define, SIA is a process in which social issues of projects are managed and identified. It includes engagement of affected communities and assessment of social impacts (Vanclay et al., 2015). SIA is a process where the goal is to help individuals, communities, private and public-sector organizations to better understand and prepare for possible social impacts for human populations and communities, which result from planned or unplanned social change coming from plans, policies, programs, and projects (Burdge, 2003).

In order to define SIA, it is important to make distinguish between SIA and public participation. SIA is a process to manage a project, whereas public participation is merely a means to include the public in activities. Thus, SIA is ongoing whereas different levels of public participation are created to gain support (Vanclay et al., 2015). The establishment of a steering committee is another example to create public support and can be seen as part of SIA. In a case study about the importance of cultural aspects in SIA, Hanna et al. (2016) researched the social impacts to the Indigenous Xerente Indigenous Group after the development of a hydroelectric dam in Brazil. To compensate the affected residents, an agreement between the licensing institutions and the Xerente Indigenous Group was set up. This agreement ended up with the steering committee which should stand up for them.

To use SIA to its full extent and capacity, management and coordination is a key element. This means that if there is an absence of a municipality or province who fills in this role as manager and as a communicator, there is a need for external organizations that are involved in (E)SIA (Antonson et al., 2018). In order to analyze how social issues are handled during an infrastructural project, eighteen projects in Sweden were researched and tested according to the Swedish SIA standards. It was concluded that social issues were not sufficiently handled, despite Sweden's high standards of welfare. Just as the Netherlands, Sweden is known for its social concern towards its inhabitants. Consequently, high standards do not automatically result in a successful execution of social issues. This was also highlighted by Mottee et al. (2020), during the construction of Amsterdam's North South Metro line (NZL), there was no SIA conducted which resulted in unresolved social issues.

2.1.2 |Infrastructural (mega)projects: implementation of SIA by Dutch Law|

In the introduction, the project of the southern ring road is indicated as a megaproject. These projects tend to have a major influence on the environment with, over a longer period of time, impact millions of people. In addition, megaprojects can cost up to a billion dollars (Flyvbjerg, 2014). However, the project's complexity is an important feature in defining megaprojects. How to govern and manage the involved stakeholders and communication to the committed organizations are important aspects to make a megaproject successful (Pitsis et al., 2018). In other words, a good performed SIA can guide the course of a megaproject. This is also acknowledged by a conducted research about another Dutch megaproject: the development of the NZL in Amsterdam. During this infrastructural project, several incidents occurred which caused financial problems and a delay in delivery. Also, local residents started to doubt the success of the project. Mottee et al. (2020) argue that these incidents could have been diminished if an SIA was conducted in advance of the project.

As previously described, in the Dutch context it is not mandatory to conduct an SIA. However, some criteria must be met before an infrastructure project starts. The four phases which are described by Vanclay et al. (2015) are analyzed in this section based on the Dutch legal system. The four phases include 26 steps that must be completed for an SIA. The phases are presented in table 1.

The phase of the SIA process	Dutch legislation in projects
1: Understanding	• Stakeholders are indicated • Stakeholders are informed • Stakeholder participation is limited
2: Predicting	• Social impacts considered through SCBA • Limited determination on responses from affected communities
3: Implementing	• Limited implementation of feedback • Lack of drafting an Impacts & Benefits Agreement • Drafting an Environmental Impact Study (MER)
4: Monitoring	• Drafting a completion test • Evaluation and periodic reviews are limited

Table 1: *Overview of phases and steps of the SIA process and how this is executed through Dutch legislation* (Author, 2021)

In the first phase, potential problems and issues of the project are identified and stakeholders are brought together to come to an agreement with the proponents of the project. According to the Dutch Environmental Act,[2] there is little room for stakeholders to participate in the exploration phase of the project. The law refers exclusively to the possibility of organizing information meetings for stakeholders (Rijkswaterstaat, 2021). This indicates that it is only informing the stakeholders rather than participating. The Dutch Environmental Act consists of seven steps and prescribes how the procedure of an infrastructural project proceeds.

In the second phase of the SIA process, as described by Vanclay et al. (2015), the (social) impacts of the project are projected and predicted. What comes closest in the Dutch context to this, is the Social Cost-Benefit Analysis (SCBA) which is often implemented in Dutch infrastructural projects (Beukers et al., 2011). This analysis considers potential social and environmental impacts on a range of aspects. Despite the often good intentions of the analysis, implementation often faces disadvantages. Mouter (2012) claims that the SCBA fails to quantify the social costs and benefits, this leads to an overvaluation of the actual financial costs and benefits and an understanding of the potential social issues. Therefore, often misleading results are obtained from the analysis. Besides, SCBA does not take into account the regional/local social impact but provides an analysis on a national scale (Mouter, 2012). Also, there is no legal requirement stating the SCBA should be publicly available.

In order to minimize the (un)expected social impacts, mitigation strategies need to be developed. One of the steps of the SIA process prescribes that there should be an agreement-making process which leads to a draft of an Impact & Benefits Agreement (Vanclay et al., 2015). The General Administrative Law Act[3] presents the availability and time period of the decision-

[2] Tracéwet
[3] Algemene wet bestuursrecht artikel 3.11 en 3.12

making process where public participation is possible through the access of information. The Infrastructure Act also covers aspects of public participation, since stakeholders are according to this law able to react on the documents that are at least six weeks available at several locations. This includes the assisting of stakeholders which are covered in the third phase of the SIA process.

Another important document is the Environmental effect rapport[4]. This is often conducted in (infrastructural) megaprojects in order to take into account the environmental impact of a project. However, it also includes social impacts as well. It covers, among others, accessibility, construction nuisance, noise, air quality, and social safety (Rijkswaterstaat, 2013).

In the fourth phase of the SIA process, the designing and implementation of monitoring programs are prescribed (Vanclay et al., 2015). This includes, among others. the monitoring of the change over time and the undertaking of evaluation and periodic review. These programs can identify unanticipated social impacts. This phase is, compared to the other phases of the process, the least exposed in Dutch legislation since. Only the seventh and last step of the process of the Dutch Infrastructure Act prescribes that a completion test is carried out after the project is delivered. However, this step prioritizes the environmental impacts instead of the social impacts. The Dutch Infrastructure Act consists of seven steps, the construction can start after all steps have been completed (Rijkswaterstaat, N.D.).

2.1.3 |Social License to Operate|

The economic impact that is caused by infrastructural projects and investments is significantly large. In developed countries, national competitiveness is influenced by the presence and quality of infrastructure (Palei, 2015). Apart from the positive economic impact, infrastructural projects create negative social impacts. The academic literature is covering these impacts by focusing on different aspects. Access to the labor market, the distance of commuting, accessibility to the project area, and barrier effects are mentioned as possible social impacts (Antonson et al., 2018). Social impacts can create social issues if the projects are not managed adequately. This might have a negative consequence on the project's Social License to Operate (SLO). Over the last decades, this concept has become an important part of project management.

Often, SLO leads to more stakeholder engagement (Mercer-Mapstone et al., 2017), whereas stakeholder engagement is, in turn, crucial to creating SLO. This concept is in the literature defined as an unwritten social contract between the operators and the involved stakeholders

[4] Milieueffectenrapportage (MER)

(Gehman et al., 2017). This goes beyond legal and governmental accountability. Vanclay et al. (2015), state that SLO refers to a level of social acceptance of organizational activities by impacted communities.

The planning and(re)construction of a highway have advantages such as strengthening the position of the region in a national context (Flyvbjerg, 2014). However, it can create potential social problems for local residents. Therefore it is important to gain the trust of the local residents who are faced with long-term construction work.

It is important to realize that SLO has no fixed value. At the start of the project, there may be more support from the local residents in comparison to the support during the project. SLO is a continuum, this can identify a various number of levels: withheld, acceptance, approval, and physiological identification (Jijelava, 2019). This is also to be seen in the model that is created by Thomson and Boutilier (2011) in which the two outer levels are opposites. The lowest level of a project's social license is ''withheld'' in which there is a lack of support for the project. Acceptance is hereafter the next highest level of SLO, here the local residents and communities do accept the project are not actively opposed to it. The third-highest level is approval, where there is active and positive support for the project. Lastly, the highest SLO level there is to gain is physiological identification. Here the local residents strongly value and welcome the project (Thomson et al., 2011; Parsons et al., 2014; Jijelava, 2019).

Thomson and Boutilier (2011) discuss that there is a blurred boundary between the different levels of SLO. To achieve acceptance from local residents, legitimacy in legal, social, and economic terms needs to be established. To achieve approval, communication and relevant information will lead to credibility to the local communities. To achieve the highest level of social license, trustworthiness is considerable. Here the project developer and local communities consider each other as partners (Jijelava and Vanclay, 2017; Jijelava, 2019).

2.2 Conceptual Model

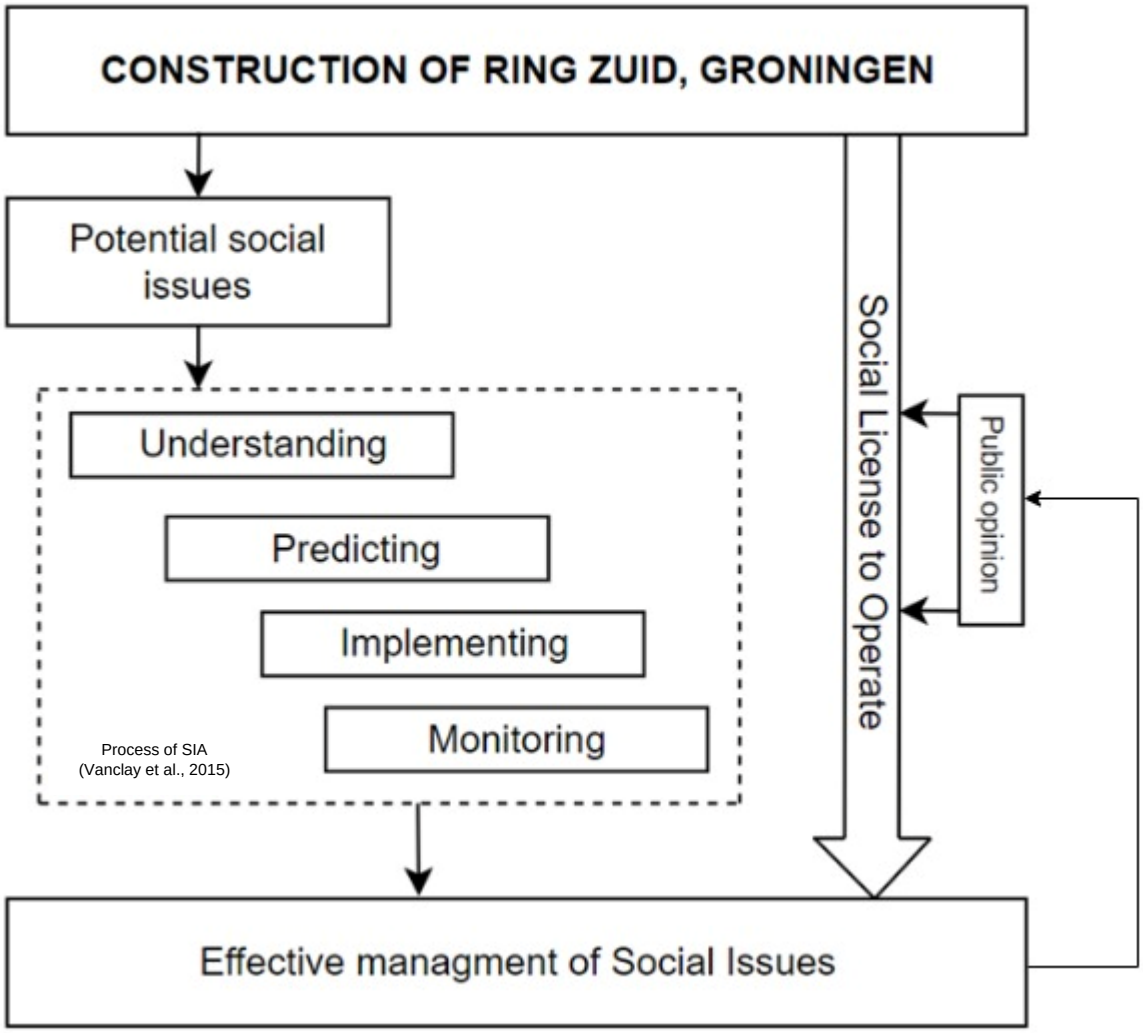

Figure 3: Conceptual model (Author, 2022)

The conceptual model (figure 3) shows how the main theories and concepts that are of the relevance of this thesis are interrelated to each other. The starting point of the model is the infrastructural project and the aim of this research is to investigate if the potential social issues are managed effectively. It will be researched through the four phases of the SIA process as developed by Vanclay et al. (2015). To pressure for social issues to be managed properly, the Social License to Operate plays a key role. SLO is in turn affected by public opinion through for example news articles. This effect can be both positive and negative.

3. Methodology

3.1 Single case study

For this research, an intrinsic case study is conducted to better understand the specific case of the construction of the southern ring road in Groningen. To answer the research questions as accurately as possible, a two-sided mixed methods approach is used in this research. By using this way of triangulation, the strengths of both qualitative and quantitative research will be brought together (Punch, 2014).

3.2 Data collection

3.2.1 |Literature review|

First of all, literature research has been conducted. The literature on concepts and theories that are valuable for this research will give a deeper understanding as well as a different perspective on the topic (Punch, 2014). The literature review has been elaborated in the theoretical framework.

3.2.2 |Interviews|

Second of all, three semi-structured interviews were conducted with employees of Aanpak Ring Zuid to gain an in-depth understanding of the project and the social impacts that are related to it. With this type of interview, the interviewer allows flexibility in the conversation and can deviate from the predetermined interview questions. An interview guide was drafted and can be found in Appendix 1. Table 2 shows the interviewees and the date of the interviews.

	Interviewee	**Function**	**Date**
R1	Cor Staal	Environmental Manager Aanpak Ring Zuid	3-11-2021
R2	Joost van de Beek	Projectmanager Aanpak Ring Zuid	8-11-2021
R3	Interviewee 3	Employee Information Centre Aanpak Ring Zuid	22-11-2021

Table 2: An overview of the interviewees

The interviews were carried out with employees of Aanpak Ring Zuid, the client of the infrastructural project. The governmental bodies that are represented in this project are the Municipality of Groningen, the province of Groningen, and the Ministry of Infrastructure and

Environment. The project is executed by a combination of different contractors: 'Combinatie Herepoort'. Four Dutch companies and two German companies are the involved contractors. These are presented in table 3.

Contractors
Max Bögl Nederland BV
Züblin Nederland BV
Oosterhof Holman Infra BV (Grijpskerk)
Koninklijke Sjouke Dijkstra BV (Leek)
Roelofs Wegenbouw BV (Den Ham)
Jansma Drachten BV

Table 3: List of contractors of 'Combinatie Heerepoort'

The employees that were interviewed, all have different areas of expertise. In this way, a broad understanding of the project was gained. Questions were asked on what way the social impacts were understood, predicted, implemented, and monitored. These key SIA pillars are based on the phases of the SIA process (Vanclay et al., 2015) and will help to answer sub-question 1, 2, and 3.

3.2.3 |Questionnaire|

Third of all, quantitative data has been gathered. Based on the interviews, a questionnaire was drafted. The answers given in the interviews clarified the first three sub-questions. To answer the fourth sub-question, a questionnaire was designed. In this way, the answers given during the interviews on how the (potential) social problems/issues were managed were adjusted to be included in the questionnaire. A Likert scale was used in the questions on communication satisfaction to generate nominal data. The questionnaire included questions to determine whether the respondent lives in Groningen or not, as well as if they live within a 1000 meters range of the construction area of the southern ring road.

The 1000-meter boundary is created to indicate a difference between residents who live close to and those who live further away from the project area. In this way, the results can be compared between the two groups. Despite the number of indicators that reflect when a resident lives close to a highway, such as accessibility, and the quantity and quality of highways (Van Wee, 2013); the 1000-meter boundary was based on the research of a research which indicated the residential satisfaction of living near a (planned) highway for residents that live within a 1000-meter boundary. Noise and air quality were mentioned as variables that influence residential satisfaction (Hamersma et al., 2014). The case study area can be seen in figure 4.

Figure 4: Case study area (Author, 2022)

Since it was expected that most residents would speak Dutch, it was decided to formulate the questions in Dutch. Through digital means, the survey was distributed. To ensure that sufficient respondents live within the 1000-meter boundary, the survey was targeted distributed using area sampling.

3.3 Analysis and ethical considerations

The interviews have been recorded to ensure an accurate transcript. The recordings were deleted after the transcripts were made. The transcripts were stored on a password-protected laptop. An agreement of participation was also signed by the interviewees, this can be found in Appendix 3.

For the questionnaires, the software Qualtrics was used. The data is stored in this password-protected program. The respondents are anonymous. No personal information is asked in the questionnaire. The quantitative data has been converted into SPSS to analyze the data.

4. Results

4.1 Analyzing interviews

Literature has shown that to manage the potential social issues, two key factors influence to what extent this happens in an efficient and sufficient manner. First of all, according to the four phases strategy of SIA of Vanclay et al (2015), (understanding, predicting, implementation of strategies, and monitoring social issues) increase the probability of social issues being managed efficiently. Second of all, the Social License to Operate is essential for an infrastructural project to be successfully received by the local communities and local residents. Good management of social issues leads to a higher level of SLO.

4.1.1 |Preparing the management of social issues|

During the interviews with the employees, questions were asked regarding the social issues for the local residents. All interviewees considered nuisance as the biggest social issue. However, this broad term contains multiple facets. Noise nuisance and vibration nuisance are social issues that stand out. The blockage of traffic and traffic of construction trucks are mentioned as well. In the preparatory phase of the project, a stakeholder analysis was conducted in which these were identified. The local residents were represented by neighborhood committees and the road users were represented by 'Groningen Bereikbaar'. The identification of stakeholders and the communication towards them are important features of the first phase of the SIA process by Vanclay et al. (2015).

For this research, the local residents and the local communities are the stakeholders of most interest. Public opinion is influenced by the quality and quantity of public participation and hence plays a key role in the management of social issues. Therefore, the importance of different means of public participation is stressed throughout the whole process of the project and therefore walk-in moments are organized by the developer. The local residents are invited to share opinions on design and time planning. According to R1 and 2R, these evenings were intensively visited in the preparatory phase of the project. Interestingly, when the project was at a more developed stage, the number of visitors to these participation evenings declined. This is denoted by the participation paradox.

> ''A paradox is, the more we are at work the less response we get and the fewer residents visit the public evenings. That's also in the fact that people see the progress I think. (…) If it's more positive, and it's going well and people see that we're working, there are more noises that people are bothered by it but understand that it has to be done anyway so let's just move on. (R1, 2021)"

4.1.2 |Management of social issues through communication|

Communication towards the local residents and communities seem by all the interviewees as key in informing and hence in minimalizing social issues. Residents are informed by various means. Post and mails are the key means for the local residents, in which targeted information for the specific community is shared. Especially, the time periods in which the constructor is building and possible alternative routes are highlighted (R1, R2).

Also, the website and the different platforms of social media (Facebook and Instagram) are sources to share information. The main difference with the above is that this is more general information about the project, which is accessible to everyone. For example, videos of the project are shared on social media, and policy documents can be found on the website of the project[5].

> ‘’I think we offer as many ways as possible of communicating to local residents as sufficient as possible and I don't know how we can make the information more effective (R3, 2021)”

Another means of communication in this infrastructural project is the existence of an information center. This is open three afternoons a week for the public. Here information on the project and specific questions can be asked. Interestingly, according to R3, the visitors of the information center are not an accurate reflection of the local residents, since only people that have extensive interest in the project visit this information center. It is to say that the information center misses its initial purpose. However, due to the changed opening hours of the information center, the local residents have more possibilities to visit it (R3). Also, building site excursions are organized for learning objectives for schools and other interested people. For the local residents, these excursions were planned as well throughout the project, however, the COVID-19 pandemic changed the scheduling for the excursions. It is hoped that after the regulations, excursions for the local residents can be hosted since this is an important means of communication towards them (R2).

The local newspaper is another source of information. This is on a larger scale than the other means. However, this can create negative information about the project as well, since ‘Het Dagblad van het Noorden’ also highlights the opponents and critics.

> ‘’ (…)which, in a way, also plays a role in information. But they also do journalism. We give them information, but they also get information from other sides, such as Groningen Deserves Better [Groningen Verdient Beter] so that is not always cooperative for the project. (R1, 2021)”

4.1.3 | Customized solutions for social issues |

[5] aanpakringzuid.nl

Good communication was by all the interviewees indicated as the most efficient way to manage (potential) social issues. In the preparatory phase of the project a risk assessment was conducted (R2), in which potential issues were discussed and mitigation measures be determined. However, it is not always possible to foresee all potential social issues and it is, therefore, crucial to be flexible in the management of these. R2 stressed the impact of the COVID-19 pandemic for the local residents. On the one hand, the situation ensured that the number of cars on the ring road reduced, through which the constructors could build with less traffic. On the other hand, the local residents were often home with their families, as the regulations prescribed. This might have caused tension and it's not conducive if there's still a lot of construction nuisance (R2).

As described above, it is impossible to identify all potential problems in advance. That is why it is important, during the project, to have a good discussion with the affected people in order to alleviate the distress. During the interviews, three customized solutions were highlighted as mitigations measures for the affected local residents. First of all, several WhatsApp groups were created which residents could sign up for. These groups were created as an extra communication mean, with the main purpose of communicating deviating construction times (R1).

Second of all, custom-made earplugs were mentioned as a customized solution that reduces the stress for a particular group of local residents (R1, R2). An excessive amount of noise pollutions was experienced by the residents who live next to a steel construction that acted as a temporary viaduct. According to the regulations, this was not out of proportion. However, several local residents suffered from it. Hence, Aanpak Ring Zuid offered custom-made earplugs to reduce noise pollution and thereby the social problems.

> '' For some people, custom-made earplugs have proven to be a great solution. Then we think, it's a shame we didn't think of this sooner. We are happy to spend €120 on these earplugs if that would help people. That is not a problem. But it took a while before we came up with that idea. (R1, 2021)''

Another example of customized solutions was shown at a situation within this project where sheet piles were vibrated into the ground with the help of big vibratory hammers. This was executed in a period of six weeks. There was a clear time-frame set for the construction activities: 7 AM- 7 PM, however, several local residents significantly suffered from the noise pollution and vibrations. Aanpak Ring Zuid offered a hotel stay for the residents in order for them to sleep without any pollution. In the beginning, there were clear boundaries set for residents who could demand this solution. However, during the six weeks, other residents

asked for this solution as well. Therefore, a hardship clause was added to be more flexible and cooperative towards the residents.

> '' If someone says, I happen to fall just outside of that contour but I have to work at the hospital the next morning and I really can't sleep with this noise or I just work at night and have to sleep during the day we also want to deviate from the clause, but it has to be motivated. There must be a plausible burden of underlying suffering. (R1, 2021)"

4.2 Analyzing questionnaire data

As is stated various times, good and efficient communication towards the local residents is seen by the interviewees as the most effective way to tackle uncertainties and therefore reduce or solve social issues. The questions asked in the questionnaire are therefore targeted upon the different means of communication. The satisfaction about three different means of communication was asked to the respondents: personalized post/mail, participating in information meetings and/or visiting the information center, and visiting the social media channels/website on a regular basis (see appendix 2).

4.2.1 |Comparing research groups|

In the second question of the questionnaire, the respondents were asked if they live within (group 1) or outside (group 2) of 1000 meters of the southern ring road in Groningen. The respondents who are living within a 1000 meter, are in this research indicated as the local residents. In figure 4, pie charts with satisfaction on the communication of the project between the two groups can be found. Interestingly, the dissatisfaction (somewhat dissatisfied and very dissatisfied) of group 2 is higher than group 1 as can be seen in the charts in figure 4. This can be explained by the fact that group 1 is getting information about the project on a more regular basis by personalized post and/or mail. (R2). Also, this group is living relatively close to the construction site, thus is hypothetically feeling more attached to the project since it is affecting them in terms of social problems.

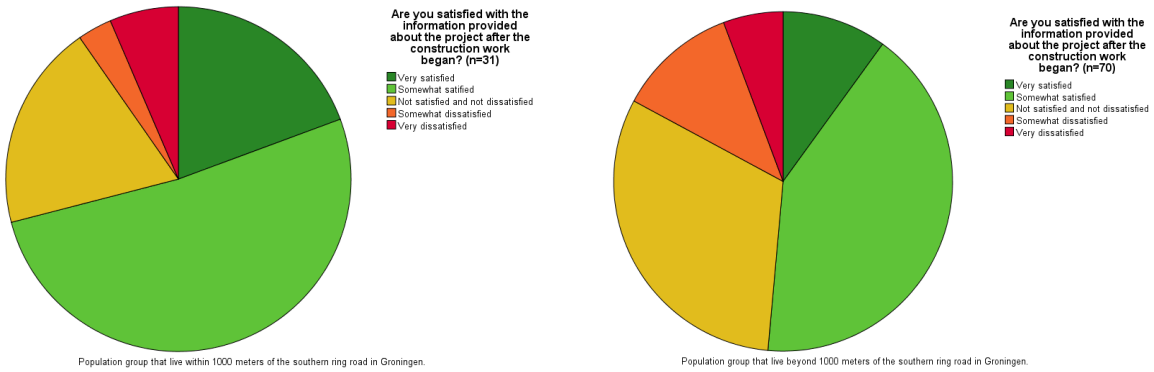

Figure 5: Satisfaction about the communication of the project (Author, 2022)

4.2.2 |Different provisions of information|

All the respondents of the questionnaire were asked if they are being informed about the project. Three specific means of communication were highlighted. In questions 6, 8, and 10 the respondents were asked if they were informed by different means of communication. In the succeeding questions (7, 9, and 11) the satisfaction of the means of communication was asked.

Are you kept informed of the construction work through personalized emails and/or mails?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	19	18,8	18,8	18,8
	No	82	81,2	81,2	100,0
	Total	101	100,0	100,0	

Are you satisfied with the quality of this communication?

		Frequency	Percent
Valid		82	81,2
	Very satisfied	6	5,9
	Somewhat satisfied	12	11,9
	Not satisfied and not dissatisfied	1	1,0
	Total	101	100,0

Table 4.1 and 4.2: Satisfaction of personalized information (Author, 2022)

Do you use / Have you used information evenings and/or the information center 'Paviljoen Ring Zuid' (Muntinglaan)?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	10	9,9	9,9	9,9
	No	91	90,1	90,1	100,0
	Total	101	100,0	100,0	

Are you satisfied with these means of communication?

		Frequency	Percent	Valid Percent
Valid		91	90,1	90,1
	Very satisfied	4	4,0	4,0
	Somewhat satisfied	6	5,9	5,9
	Total	101	100,0	100,0

Table 5.1 and 5.2: Satisfaction of information meetings and information center (Author, 2022)

Do you regularly visit the website of Aanpak Ring Zuid and/or the social channels of Aanpak Ring Zuid?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	39	38,6	38,6	38,6
	No	62	61,4	61,4	100,0
	Total	101	100,0	100,0	

Are you satisfied with these means of communication?

		Frequency	Percent	Valid Percent
Valid		62	61,4	61,4
	Very satisfied	13	12,9	12,9
	Somewhat satisfied	20	19,8	19,8
	Not satisfied and not dissatisfied	3	3,0	3,0
	Somewhat dissatisfied	2	2,0	2,0
	Very dissatisfied	1	1,0	1,0
	Total	101	100,0	100,0

Table 6.1 and 6.2: Satisfaction information on website and social media (Author, 2022)

The interviews revealed that the mentioned means of communication in this project are the most important paths to reach local residents. As can be seen in tables 4.1 and 4.2, less than 20 percent of the respondents are being informed through personalized emails/mails. It is highly plausible that these respondents are part of group 1 since this means of communication is targeted by Aanpak Ring Zuid to give specific information about what the consequences are for them. The respondents seem to be satisfied with this information provision.

The information meetings and information center were in the participatory phase of the project mentioned as something unique for this project. 9.9% of the respondents participated in one of the information meetings and/or visited the information center of the project (table 5.2). Interviewee 3 mentioned that the visitors of the information center are interested in the project, this can be seen in the satisfaction of this provision of communication since the respondents are satisfied. Interestingly, this information provision has the lowest amount of respondents that are making use of it.

The provision of information via the website and/or the social media channels of Aanpak Ring Zuid is the most used among the respondents. 38.6% regularly visit the online channels of Aanpak Ring Zuid, of which 84% are satisfied with these means of communication (table 6.1 and table 6.2). Hypothetically, the number of users is higher since it is easier approachable compared to, for example, visiting the information center.

5. Conclusion

This research sought to identify the management of potential social problems concerning the construction of the southern ring road. The local residents are the stakeholders who are most vulnerable to these social problems. Good and effective communication to the local residents was seen as the most suitable solution to manage the social problems. In the preparatory phase of the project, the residents were indicated and informed. However, the public participation of the residents was severely limited. This is in full agreement with Dutch law and is also visible in other Dutch infrastructural projects. In addition, there seems to be a consultation fatigue; when the construction works are in progress, the attendance of residents at information evenings is lower than in the preparatory phase.

Successful completion of a project also requires public support. In Thomas and Boutilier's (2011) model, four levels are proposed that measure the SLO of a project. Based on the results, it is likely that, in the southern ring road project, the level of approval was reached. To reach this level, communication and dissemination of relevant information are the criteria. This leads to credibility among local residents and will contribute positively to public support.

Public opinion can also have positive and negative impacts on the SLO. Negative perceptions about the project that are shared among local residents can be counterproductive and therefore not always conducive to the project. On the other hand, site excursions, information evenings and visits to the information center contribute to a positive feeling about the project. However, this is often the case with people who are already interested in the project.

Good communication is a key in managing potential social problems. At the front end of the project, various ways of informing local residents were developed. Gradually, with the help of customized solutions, mitigation measures and consultation strategies were identified that had not been considered at the preparation stage. This shows that the management of social problems must be adaptive and strives for solutions. All in all, the developer of the southern ring road in Groningen prevented potential issues through preparations and adaptive management. As a final note it is desirable that social issues in the continuation of the project are managed as they have been resolved so far.

6. Discussion and future research recommendations

This research has contributed to the knowledge of how social problems are dealt with in a large and long-term infrastructural project. Mainly the communicative solutions offered to the local residents were examined. Based on the Social Impact Assessment process of Vanclay et al. (2015), the research examined the extent to which these occur in the Dutch context and how they were implemented in the project in question. The process is based on four phases, with the first two (understanding and predicting) being the most evident in this research. The third phase is also discussed to some extent but could have been made even clearer by doing a more intensive document analysis in the preparatory phase. This would have allowed some interview questions to be added about the Environmental Impact Study and an Impact & Benefit Assessment.

Because the project is still ongoing, potential monitoring tools have not yet been fully utilized. The fourth stage of the process by Vanclay et al. (2015), emphasizes that this is essential for fully conducting an SIA. Therefore, for a follow-up study, it might be of interest how the potential social problems that are still to emerge are managed and evaluated

For the qualitative part of the study, three experts were interviewed. This type of interviewees influenced the outcomes of the study. All interviewees were employed by the South Ring Road Authorities. If other stakeholders would have been interviewed as well, this would have led to other answers to the sub-questions. However, this research was about the management of social problems and the selection of experts was based on that.

The questions drafted in the questionnaire were based on the interviews with the experts. In this way, they have been influenced and a different set of questions may have been drawn up when the interviewees are not only employees of the client of the infrastructural project.

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Appendix 1: Interview guide

Introduction

0. *Get acquainted / thanking for their time / asking to record the interview / singing and explaining the interview contract / explaining the structure of the interview / introducing myself and my research*

1. Can you introduce yourself and the organization where you are working for?
    a. What is your role in the organization?
    b. What is the structure of the organization?
    c. Is there any dedicated department to conduct stakeholder engagement?
    d. How does your organization deals with social aspects?

2. Can you elaborate on the project of the 'Aanpak Ring Zuid'?
    a. What is the complexity of this infrastructural project?

Preparing the project and the social issues

3. How were the potential social issues of the project identified?
    a. What methods were used?
    b. To what extent are the 'best practices' of other infrastructural projects used?

4. What are, according to you, the potential social issues of this project?

Stakeholder engagement & public participation

5. Can you elaborate on how the different stakeholders are engaged in this preparation?
    a. Who are the stakeholders that are involved in this project?
    b. How is the communication between stakeholders executed?
    c. How are stakeholders reached?

6. How are the immediate neighbors informed about the project?
    a. How is decided which persons are informed?
    b. To what extent is public participation used in the communication towards the community?

Management of social issues

7. How are the social issues, so far, handled?
    a. What are the most addressed issues for this project?
    b. What are the biggest challenges so far?
    c. How are you overcoming it?

8. What role does your organization play in the management of social issues?
    a. What other parties are involved in the management of social issues?

9. How are the social issues evaluated?
    a. How are different stakeholders included in this process?
    b. What would recommend similar future projects to do differently?

Conclusion

10. So, to conclude, … (summarize the most important points).

11. Is there anything you would like to add concerning the interview?

12. Do you have any contacts that might help me in researching this topic?

13. *Thanking them for their time and expertise / would you like a final version of this thesis? / contact me for further questions / asking if I can contact them if necessary*

Appendix 2: Questionnaire

Since the questionnaire is distributed in Dutch, this is how it is presented in this appendix. An English version can be found underneath this version.

---

1. Woont u in Groningen?
    - Ja
    - Nee
2. Woont u binnen een straal van 1000 meter van de zuidelijke ringweg?
    - Ja
    - Nee
3. Bent u bekend met de grootschalige ombouw van de zuidelijke ringweg van Groningen?
    - Ja
    - Nee
4. Bent u tevreden met de informatievoorziening over het project voordat de werkzaamheden begonnen?
    - Zeer tevreden
    - Enigszins tevreden
    - Niet tevreden en niet ontevreden
    - Enigszins ontevreden
    - Zeer ontevreden
5. Bent u tevreden met de informatievoorziening over het project nadat de werkzaamheden begonnen?
    - Zeer tevreden
    - Enigszins tevreden
    - Niet tevreden en niet ontevreden
    - Enigszins ontevreden
    - Zeer ontevreden
6. Wordt u op de hoogte gehouden van de werkzaamheden via gepersonaliseerde mails en/of post?
    - Ja
    - Nee
7. Wanner [Ja] bij vraag 5: Bent u tevreden met de kwaliteit van deze informatie?
    - Zeer tevreden
    - Enigszins tevreden
    - Niet tevreden en niet ontevreden

- Enigszins ontevreden
- Zeer ontevreden

8. Maakt u gebruik / Heeft u gebruik gemaakt van informatie avonden en/of het informatiecentrum ‘Paviljoen Ring Zuid’ (Muntinglaan)?
    - Ja
    - Nee
9. Wanneer [Ja] bij vraag 7: Bent u tevreden met deze communicatiemiddelen?
    - Zeer tevreden
    - Enigszins tevreden
    - Niet tevreden en niet ontevreden
    - Enigszins ontevreden
    - Zeer ontevreden
10. Bezoekt u de website van Aanpak Ring Zuid en/of de sociale kanalen van Aanpak Ring Zuid regelmatig?
    - Ja
    - Nee
11. Wanneer [Ja] bij vraag 10: Bent u tevreden met deze communicatiemiddelen?
    - Zeer tevreden
    - Enigszins tevreden
    - Niet tevreden en niet ontevreden
    - Enigszins ontevreden
    - Zeer ontevreden
12. Zijn er zaken die beter hadden kunnen verlopen in de informatievoorziening en/of communicatie over het zuidelijke ringweg project?

---

1. Do you live in Groningen?
    - Yes
    - No
2. Do you live within 1000 meters of the southern in road?
    - Yes
    - No
3. Are you familiar with the large-scale reconstruction of the southern ring road in Groningen?
    - Yes
    - No

4. Are you satisfied with the provision of information about the project before the construction started?
    - Very satisfied
    - Somewhat satisfied
    - Not satisfied and not dissatisfied
    - Somewhat dissatisfied
    - Very dissatisfied
5. Are you satisfied with the provision of information about the project after the construction started?
    - Very satisfied
    - Somewhat satisfied
    - Not satisfied and not dissatisfied
    - Somewhat dissatisfied
    - Very dissatisfied
6. Are you kept informed of the construction work through personalized emails and/or mails?
    - Yes
    - No
7. When [Yes] to question 6: Are you satisfied with the quality of this information?
    - Very satisfied
    - Somewhat satisfied
    - Not satisfied and not dissatisfied
    - Somewhat dissatisfied
    - Very dissatisfied
8. Do you use / Have you used information evenings and/or the information center 'Paviljoen Ring Zuid' (Muntinglaan)?
    - Yes
    - No
9. When [Yes] to question 7: Are you satisfied with these means of communication?
    - Very satisfied
    - Somewhat satisfied
    - Not satisfied and not dissatisfied
    - Somewhat dissatisfied
    - Very dissatisfied
10. Do you regularly visit the website of Aanpak Ring Zuid and/or the social channels of Aanpak Ring Zuid?
    - Yes

- No

11. When [Yes] to question 10: Are you satisfied with these means of communication?
    - Very satisfied
    - Somewhat satisfied
    - Not satisfied and not dissatisfied
    - Somewhat dissatisfied
    - Very dissatisfied
12. Are there things that could have been done more effectively in the provision of information and/or communication about the southern ring road project?

Appendix 3- Agreement of participation

Overeenkomst van deelname

Betreft: Bachelor scriptie project Human Geography & Planning
Instelling: Rijksuniversiteit Groningen
Titel: "Construction of a new ring road in the southern part of Groningen: how are potential social impacts managed?"

Geachte heer/mevrouw,

Om te beginnen wil ik u hartelijk bedanken dat u mij wilt helpen met mijn onderzoek. Dit gaat over de management van de sociale impact die het gevolg zijn van de constructie van de zuidelijke ringweg in Groningen. Met deze overeenkomst wil ik u graag informeren over het (verloop van het) interview.

Het interview zal ongeveer 45 minuten gaan duren. Er is voor u de ruimte om het interview op elk moment te laten stoppen. Ook kunt u aangeven een vraag niet te willen beantwoorden. De structuur van het interview staat niet vast. Er kan dus worden afgeweken van de opgestelde vragen om bijvoorbeeld extra toelichtingen te geven.

Omdat het interview naderhand getranscribeerd wordt, zal het worden opgenomen met een audiorecorder. Naderhand krijgt u de mogelijkheid het transcript te ontvangen en waar nodig aan te passen op feitelijke onjuistheden. Het transcript zal worden gebruikt om de onderzoeksvragen te beantwoorden. Na het transcriberen zal het audiobestand van het interview worden verwijderd. Tot die tijd zal er zorgvuldig mee worden om gegaan. De gegevens het en transcript zullen enkel gedeeld worden met mijn begeleider Philippe Hanna. Het transcript zal ook niet worden opgenomen in de laatste versie van deze scriptie. Deze versie zal overigens wel worden opgenomen in het archief van de Rijksuniversiteit Groningen. U heeft de mogelijkheid anoniem te blijven indien u dit wenselijk acht.

Met het ondertekenen van deze overeenkomst verklaar ik dat:

- Het mij duidelijk is waar dit onderzoek over gaat.
- Ik begrijp dat deelname aan dit onderzoek vrijwillig is en ik het recht heb om individuele vragen niet te beantwoorden.
- Ik begrijp dat mijn deelname aan het onderzoek vertrouwelijk is en dat, zonder mijn schriftelijk bezwaar hiertegen, materiaal (algemeen of in de vorm van quotes) in de rapportage kan worden gebruikt.
- Ik begrijp dat alle informatie die wordt verkregen vertrouwelijk zal worden bewaard, zij het op een met wachtwoord beveiligde computer of bestand.

- Ik begrijp dat de data die voortkomt uit het interview gebruikt kan worden in artikelen, hoofdstukken van boeken, gepubliceerd en ongepubliceerd werk en in presentaties.
- Ik begrijp dat ik na afloop van het interview mijn antwoorden slechts kan aanpassen op feitelijke onjuistheden.

Als er (achteraf) onduidelijkheden zijn kunt u contact opnemen met:

Gijs Homans (student) en Philippe Hanna (begeleider)
g.w.s.homans@student.rug.nl p.hanna@rug.nl

Wanneer u akkoord gaat met het bovengenoemde graag invullen:

Ik geef toestemming tot het opnemen van het interview voor verwerkings- en coderingsdoeleinden JA/NEE

Ik wens anoniem te blijven in dit onderzoek JA/NEE

Wanneer NEE:
Mijn voornaam kan worden gebruikt binnen dit onderzoek JA/NEE

Wanneer JA:
Er kan een pseudoniem naar mijn keuze worden gebruikt JA/NEE

Naam deelnemer interview.....

Datum.....

Email.....
(*indien u wenst een transcript van dit interview te ontvangen om te checken op feitelijke onjuistheden)*

Handtekening.....