

A study of reasons for living in the high-risk community Old Coronation in South Africa

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Abstract:

Reasons for living in the high-risk community Old Coronation, in South Africa, were investigated in a study based on grounded theory. The community is situated in an old mining area with many hazards, including a constant risk of collapsing sink-holes. Information was mainly collected through semi-structured interviews with the residents. An analysis of the reasons for living in Old Coronation were based on descriptions of a) why they moved to Old Coronation, b) factors that residents value in a community and c) residents' relation to hazards in the area. The logic for settling in the community is complex but could be structured into five main reasons: nearby jobs, lack of suitable land, established community, family, and institutional issues. Risk awareness is unexpectedly high, and people know about risks associated with the sink-holes but consider the benefits of living in Old Coronation to be more important. A local descriptive analysis of reasons for settling is necessary to facilitate future preventive measures.

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Summary

South Africa was in 2010 ranked 28th country on the world gross domestic product list and has impressive access to resources and a well-developed infrastructure. But the country is segregated which is clearly visible on the human development index list from which South Africa in 2011 was only ranked as the 123rd country. Previous race-division, the great number of poor and the movement of people to larger metropolitan areas have formed many informal settlements. A big number of people live in informal settlements, which are often situated on land unsuitable for habitation resulting in a wide range of hazards. The informal settlement Old Coronation has around 3000 units (shack and houses) situated on an old abandoned mining area. The land is undermined with a constant risk of collapsing sink-holes making the area extremely dangerous for the residents.

The purpose of this study is to improve the understanding of why people live in high-risk communities, such as Old Coronation. People are still moving to high-risk communities around the world and the dynamics regarding this are complex. Hence, it is important to do an analysis of the reasons why people decide to live in high-risk areas. There is often a general view that people, especially the poor, decide to live in hazardous areas because they do not have any other choice or because they have a poor perception of the hazards.

A general literature study on different methodologies, how to perform interviews and other necessary background information initiated the study. This was followed by a field study where semi-structured interviews with the residents of Old Coronation were used to explore the situation in the community. The structure of the interviews and the interpretation of the results were performed with a grounded theory approach. This means that the transcribed interviews were made into codes and later concepts and categories. The results were then analysed together with previous studies within the same research field as well as interviews with municipality officials.

The study indicates that people have rational arguments for living in the community and that they are aware of the hazards. The study also indicates that the benefits with living in the area outweigh the risks. The identified reasons for living in Old Coronation are:

- **Nearby jobs.** Most residents have migrated to Old Coronation from areas with high unemployment rates. The area around eMalahleni is well known for its job opportunities and Old Coronation is located with a walking distance to many of them. This is highly valued since most residents cannot afford transportation to distant jobs.
- **Lack of suitable land.** It is difficult to find free land in and around eMalahleni where people can take residence because of the rapid population growth, undermined land and because much land is occupied by mining companies. Many residents in Old Coronation cannot afford living in a formal settlement where they have to pay rent.
- **Established community.** It is important for residents to live in an established community with services nearby. Services could for example be schools, clinics, access to water, shops or other established businesses in the community. Old Coronation is often the only established alternative for poor people who cannot pay rent but need jobs and services nearby.
- **Family.** Relatives are not only a fairly strong reason why many people move to Old Coronation, it also occurs as a factor that the residents value in a community. Residents living with their families tend to be much more rooted and much more dependent on the services that are established in the community.

- **Institutional issues.** Another area has to be developed since Old Coronation is unsuitable for habitation. This process takes long time because there is inertia within the municipality due to the lack of resources and the problem finding land suitable for habitation. The continuing migration to Old Coronation is another problem for the municipality to solve.

The situation in Old Coronation is complex and most people live in the area because of a number of combined reasons. Many of the reasons are based on social processes governed by the context of South Africa. It is important to clarify that the reasons found are specific for Old Coronation and the results do not reflect all hazardous settlements.

Sammanfattning

Sydafrika rankades 2010 som 28:e land på världens bruttonationalprodukt-lista och har imponerande tillgångar till resurser samt en väl utvecklad infrastruktur. Men landet är segregerat vilket syns tydligt på human development index där Sydafrika endast hamnar på 123:e plats av världens länder. Tidigare rasdelning, den stora andelen fattiga och inflyttning till städer har skapat många informella bosättningar. En stor del av befolkningen bor i informella bosättningar vilka ofta är placerade på land som är olämpliga att bo på och som medför ett stort antal olika risker. Den informella bosättningen Old Coronation består av cirka 3000 enheter (skjul och hus) som är placerade på ett övergivet gruvområde. Marken är underminerad med en konstant risk för kollapsande gruvhål (sink-holes), vilket gör området extremt farligt att bo på.

Syftet med studien är att utöka förståelsen för varför människor bor på farliga platser som Old Coronation. Fler människor flyttar hela tiden in till farliga områden världen över och dynamiken kring detta är komplex. Därför är det viktigt att göra en analys av anledningarna till att människor väljer att bosätta sig på farliga platser. Det finns ofta en generell syn att människor, framförallt fattiga, väljer att bo på farliga platser för att de inte har något annat alternativ eller för att de har en dålig uppfattning om riskerna.

En generell litteraturstudie om olika metoder, hur man utför intervjuer och annan nödvändig bakgrundsinformation inledde arbetet. Detta följdes av en fältstudie där semi-strukturerade intervjuer med invånarna i Old Coronation utfördes för att utforska situationen i området. Intervjuernas genomförande och analysen av resultaten har utförts med en grounded theory approach. Detta innebär att de transkriberade intervjuerna gjordes till koder följt av koncept och kategorier. Resultaten analyserades sedan tillsammans med andra studier inom samma forskningsområde samt med intervjuer från kommuntjänstemän.

Studien indikerar att människorna har rationella argument för att bo i området och att de inte är omedvetna om farorna. Studien indikerar också att fördelarna med att bo i området överväger riskerna. De identifierade anledningarna för att bo i Old Coronation är:

- **Närhet till jobb.** De flesta boende har flyttat till Old Coronation från områden med hög arbetslöshet. Området kring eMalaheni är känt för sina goda jobbförutsättningar och från Old Coronation är det gångavstånd till många av dem. Detta värderas högt eftersom de flesta invånarna inte har råd med transport till avlägsna jobb.
- **Ont om lämpligt land.** Det är svårt att hitta ledigt land i och omkring eMalaheni där folk kan bosätta sig på grund av snabb befolkningsökning, underminerad mark och eftersom mycket mark är ockuperad av gruvindustri. Många invånare i Old Coronation har inte råd att bo i formella bosättningar där de måste betala hyra.
- **Etablerat samhälle.** Det är viktigt för invånarna att bo i ett etablerat samhälle med närhet till service. Service kan till exempel vara skolor, hälsokliniker, tillgång till rinnande vatten, affärer eller andra etablerade verksamheter i området. Old Coronation är ofta det enda etablerade alternativet för fattiga människor som inte har råd att betala hyra, men som behöver jobb och service i närheten.
- **Familj.** Släktingar är inte bara en relativt stark anledning till varför många flyttar till Old Coronation, utan de är också en viktig faktor i vad invånarna värdesätter att ha i området.

Invånare som bor med sina familjer tenderar att vara mycket mer rotade och mycket mer beroende av servicen som finns etablerad i samhället.

- **Institutionella problem.** Ett annat område har utvecklats eftersom Old Coronation är ett olämpligt område att bo i. Den processen tar lång tid eftersom det finns en tröghet inom kommunen på grund av brist på resurser och problemen med att hitta mark som är passande för bebyggelse. Den fortsatta inflyttningen till Old Coronation är ett annat problem för kommunen att lösa.

Situationen i Old Coronation är komplex och de flesta människor bor i området på grund av en kombination av anledningar. Många anledningar grundar sig på sociala processer, vilka har formats ur den sydafrikanska kontexten. Det är viktigt att klargöra att anledningarna som hittats är specifika för Old Coronation och inte nödvändigtvis reflekterar alla farliga boplatser.

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Stockholm, May 2012.

Andreas Ljungberg & Martin Wier

Table of contents

CHAPTER 1 – INTRODUCTION	1
1.1 Purpose	1
1.2 Research Question	1
1.3 Report Arrangement	2
CHAPTER 2 - METHODOLOGY AND METHODS	3
2.1 Grounded theory.....	3
2.2 Data collection methods.....	4
2.3 Data analysis.....	7
2.4 Sources of errors and biases	9
CHAPTER 3 – THEORETICAL FOUNDATION.....	11
3.1 Causes of disasters	11
3.2 Vulnerability	15
3.3 Risk perception and decision-making.....	15
CHAPTER 4 – THE SOUTH AFRICAN CONTEXT	18
4.1 Introduction.....	18
4.2 Urbanisation	18
4.3 Disaster Risk Management in South Africa.....	19
4.4 Mpumalanga Province.....	21
CHAPTER 5- RESULTS AND ANALYSIS.....	24
5.1 Why they moved to Old Coronation	24
5.2 Factors that residents value in a community.....	26
5.3 Residents relation to hazards	29
CHAPTER 6 – SYNTHESIS AND DISCUSSION.....	34
6.1 Perception of hazards.....	34
6.2 Nearby jobs.....	35
6.3 Lack of suitable land.....	36
6.4 Established community	37
6.5 Family	38
6.6 Institutional issues	38
6.7 Reflection	40
CHAPTER 7 - CONCLUSION.....	42
REFERENCES.....	44
APPENDIX A – MAPS.....	50

APPENDIX B – PHOTOS	52
APPENDIX C – INTERVIEW GUIDE.....	54
a, Residents	54
b, Governmental Authorities.....	55
APPENDIX D – FACTORS THAT INCREASE AND DECREASE RISK PERCEPTION.....	56
APPENDIX E - COMMON ERRORS IN INTERVIEWS.....	58

Chapter 1 – Introduction

South Africa is a complex and dynamic country with a great access to resources. However, the resources are unequally distributed and the richest 10 % earns almost 150 times more than the poorest 10 % (Tissington, 2010). In the footsteps of apartheid and with a great number of poor and unemployed many informal settlements have been formed in the country (Berrisford, 2010). In 2007, 14 % lived in an informal settlement (Statistics South Africa, 2008) and these are often unplanned with buildings of low quality and often on land that is unsuitable for habitation (DiMP, 2008; UN/ISDR, 2009). The informal settlement Old Coronation in eMalahleni is not an exception and it is situated above an old mine with a constant risk of collapsing sink-holes (eMalahleni local municipality, 2008).

Settlements on hazardous areas are often seen as a “behaviour” fault with a poor perception of the hazards from both authorities and victims (Smith 2001). There is also a general view that people, especially the poor, decide to live in hazardous areas simply because they have no other choice. According to Wisner et al. (2004) the choice of habitat is to a great degree involuntary for the poor but they still have rational arguments which can be that they only can afford to live in dangerous slums or that the closeness to the job outweigh the risks.

The number of settlements on hazardous areas around the world is increasing and half of the people on the planet are now found in cities (UN/ISDR 2004). South Africa is no exception with a rapidly increasing urbanisation level (UN, 2011). The informal settlement Imizamo Yethu in Cape Town is a good example with an uncontrolled community growth despite that the community is affected by multiple risks (Roth, 2011). The problem with growing high-risk communities is complex and the dynamics behind it are difficult to understand. Hence, it is important to do an analysis of why people decide to live in such areas.

This study is done to highlight whether people have rational reasons for settling down in an obvious hazardous area and do so not just because of a poor perception of hazards. Their rational arguments for living in a high-risk community probably vary between different places around the world and their choice of habitat may not be due to variations in how they interpret the risks or value life. Old Coronation is a good example of an obvious high-risk community where the local municipality is having plans of moving the residents to another safer area because of the great hazards in the community.

1.1 Purpose

The main purpose of the study is to receive a better understanding of the reasons for people living in the high-risk community Old Coronation. The results from the study may form the basis of risk reduction measures and will hopefully be part of a greater context when it is compared with results from other similar studies around the world. It

1.2 Research Question

The research is based on one specific research question:

- What reasons do the residents express for living in Old Coronation?

1.3 Report Arrangement

The report is arranged in seven chapters; introduction, methodology and methods, theoretical foundation, The South African context, results and analysis, synthesis and discussion and finally conclusion. The introduction presents the dynamics behind the problem and the purpose of the study. In the methodology and methods the grounded theory is explained as well as the semi-structured interviews, which were the method used during the field study. This chapter also presents the demography of the respondents and possible errors and biases. The third chapter is a general literature study where the concepts of hazards, disasters, vulnerability and risk perception are explained. In the fourth chapter the context of South Africa is presented in terms of the country's economic situation, urbanisation and the disaster risk management. In this chapter the contexts of Mpumalanga province and the city eMalahleni are presented as well.

Chapter five presents the findings from the interviews with the residents. The results from the interviews are analysed according to the grounded theory and presented in the chapter. Chapter six is the synthesis and discussion where the research question is answered and the theory is formed. This is done by analysing the three themes together with the information gained from the interviews with governmental authorities and previous studies. The seventh and last chapter presents the conclusions from the study.

Chapter 2 - Methodology and methods

This report is based on an empirical methodology called grounded theory. The data is gathered from a variety of sources, mostly through semi-structural interviews and field observations. The interviews are similar for both residents and governmental authorities. According to the grounded theory very little specific research is done before the field study. However, a general literature study is done on the principles of grounded theory, how to perform interviews and other necessary background information. No deeper analysis is done to avoid being influenced by previous researchers' results and theories.

The research question will be answered through two descriptive steps described in figure 1. In the first step the three themes: a) Why they moved to Old Coronation, b) factors that residents value in a community and c) residents relation to hazards, will be described through analysing the residential interviews and field observations. This will lead to the second step, presented in the synthesis, which is an understanding of the reasons for people living in the community. In the second step, information from the former step will be evaluated and compared with earlier studies and with information from the governmental interviews.

A natural continuation of the study is a normative analysis, shown in figure 1 as the third step. The third step is not performed in this report. It is hoped that the descriptive analysis can be used for future risk reduction measures in the area.

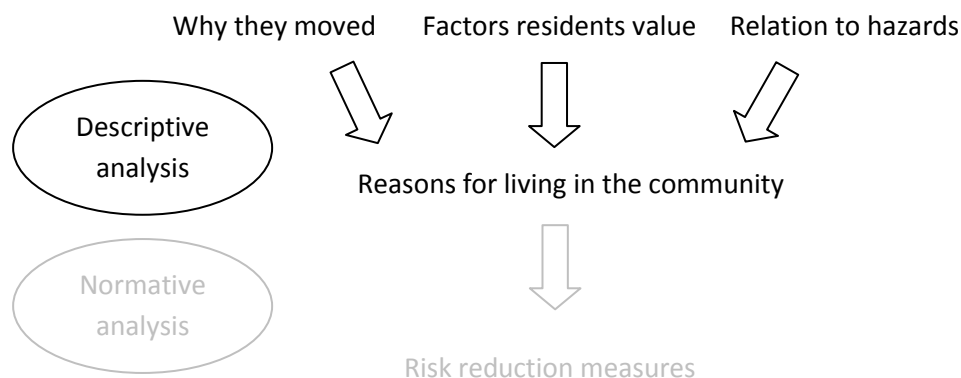


Figure 1. A model of how the study will be proceeding. In this report the descriptive analysis is studied. The normative analysis is a natural continuation but is not studied in this report.

2.1 Grounded theory

Grounded theory is a qualitative methodology which works in a different order than traditional scientific methodologies. Rather than beginning the study with a theory and a literature study, the first step is to collect data through different research methods. The analysis of the data will later form the theory (Charmaz, 2006).

Grounded theory was developed by sociologists Barney Glaser and Anselm Strauss and first mentioned in the book *Awareness of dying*, but explained in more detail in the book *The discovery of grounded theory* (Glaser & Strauss, 1967). Strauss would later revise the methodology and Glaser would instead develop the Classic Grounded Theory, a similar methodology that includes aspects of a

quantitative analysis. The grounded theory is a methodology where preconceived ideas have little or no influence on the study. According to the theory the observation by the researchers is the only source of information; existing theories and hypotheses should be ignored in the beginning of the study (Charmaz, 2006).

According to Charmaz (2006) the grounded theory should be seen as a set of principles and not as a ready-made recipe. Instead of detailed rules, the study relies on the creativity of the researcher. However, the methodology has a clear framework for data collection and analysis. The first analytical step is a *qualitative coding*, which is an interpretive process where each segment of the collected data is labelled (Corbin & Strauss, 1990). The labels are preferably associated with a problem and how to resolve it, so called *open coding* (Charmaz, 2006). The purpose of the qualitative coding is to identify key points and similarities in the collected data (Charmaz, 2006; Corbin & Strauss, 1990). In this way, the researcher tries to discover latent patterns in the data.

The second step is to assembly similar codes into *concepts*. Data collection and analysis are interrelated processes in the grounded theory and the comparisons of codes, followed by the construction of concepts, occur throughout the data collection (Corbin & Strauss, 1990). Concepts that include the same phenomena are grouped into *categories*. Through analysing the categories the *theory* is formed (Charmaz, 2006). The grounded theory's principal four steps are portrayed in figure 2.

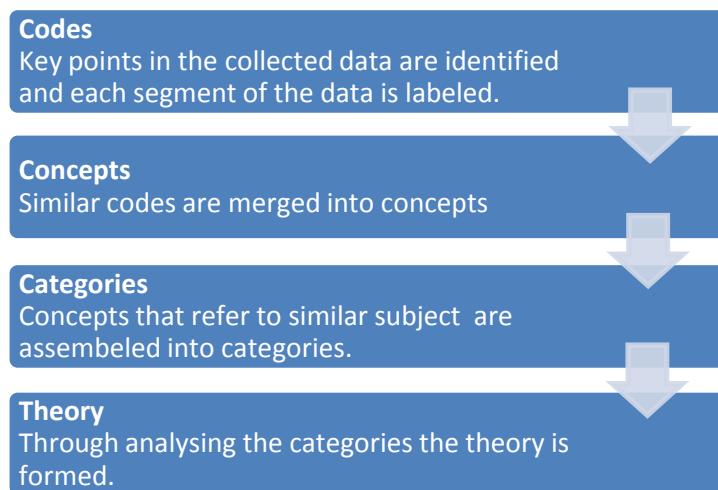


Figure 2. The four principal steps in the grounded theory.

The grounded theory was decided to be the methodology best suitable for the study because of its wide perspective and loose framework. Using the grounded theory enable the study to be done with an open mind.

2.2 Data collection methods

The field study was initially planned in Sweden in a meeting together with Mr. Mmaphaka Tau, senior manager at National Disaster Management Centre in South Africa, and assistant professor Marcus Abrahamsson. To get a general understanding of the South African context, literature was reviewed in terms of the economic situation, health issues, urbanisation and how the country's governmental structure and disaster risk management is structured. A two month visit in South Africa gave an insight into the culture and challenges of the country.

A general understanding of the settlement in Old Coronation was obtained through a meeting with eMalahleni municipality officials, people from the Nkangala district and Mr. Mmaphaka Tau. It was decided that a guide and interpreter from the municipality would come along during the interviews in Old Coronation as well as a representative from the African Centre of Disaster Studies (ACDS).

Data was collected through interviews. Researchers have gathered information through interviews for a long time. It is widely accepted as a cost-efficient way to collect data of people's behaviour and experiences, actions and motives, as well as beliefs, values and attitudes (Foddy, 1993). The interviews with residents and municipality officials were semi-structural, which is further explained below. Common errors in interviews are presented in appendix E and more information on how to construct an interview can be read in Foddy (1993), Bird (2009), Oppenheim (1992) and Belson (1986).

The result in the report is based on the interviews with the residents. The interviews with the municipality officials are primarily used when the synthesis is formed. The primary objective of the interviews with the municipality officials was to get their perspective of the problem and to get useful information for the synthesis.

Semi-structured interviews

A semi-structured interview is a qualitative method with open-ended questions. It is a flexible method, usually allowing new questions to be brought up during the interview based on what the respondent answers. The objective of a semi-structured interview is to understand the respondents point rather than making generalisations (Sociology Central, 2011).

A semi-structural interview usually follows the benefits and disadvantages of open questions. The main claimed advantages are compiled by Foddy (1993) and presented in table 1. The result from the interview is depending on the skill of the interviewer since it is easy to get side-tracked. However, a well-performed semi-structured interview is a good method to discuss the respondent's opinions in detail and depth (Sociology Central, 2011).

The debate between open and closed questions has been going on since the development of modern social survey techniques (Foddy, 1993). A closed question is one where the respondents are given different alternatives to choose from and open questions are free-response questions (Oppenheim, 1992). There are advantages and disadvantages with both types of questions. The results from an interview study based on closed questions are easier to compare and analyse (Foddy, 1993). Open questions are instead said to be easy to ask, difficult to answer, and still more difficult to analyse (Oppenheim, 1992). However, an open question gives the respondents a whole other level of freedom. Once the question is understood, it gives the respondents a chance to really say what is on their minds without being influenced by the alternatives suggested by the researcher.

Table 1. Advantages with open and closed questions. Source: (Foddy, 1993)

Open questions	Closed questions
<ul style="list-style-type: none"> ✓ Allow respondents to express themselves in their own words. ✓ Do not suggest answers <ul style="list-style-type: none"> - indicate respondent's level of information - indicate what is salient in the respondent's mind - indicate strength of respondent's feelings. ✓ Avoid format effects. ✓ Allow complex motivational influences and frames of reference to be identified. ✓ Aid in the interpretation of deviant responses to closed questions. 	<ul style="list-style-type: none"> ✓ Allow respondents to answer the same question so that answers can be meaningfully compared. ✓ Produce less variable answers. ✓ Present a recognition, as opposed to a recall, task to respondents and for this reason respondents find them much easier to answer. ✓ Produce answers that are much easier to computerize and analyse.

The interviews

The interviews were carried out during one week in the beginning of February 2012 in the city eMalahleni. To get access to the Old Coronation area, help was obtained from the ward councillor as well as from a municipality official working at the department of disaster risk management in eMalahleni. In cases when the residents did not speak English these officials interpreted the interviews. All the interviews were recorded and then transcribed.

Residents to interview were chosen at different places throughout the community. In hope of getting a variation among the respondents the interviews were carried out in the mornings and in the afternoons on weekdays and also on a Saturday. The interviews were held with both men and women as well as with young and old people. A total of 19 interviews were performed in Old Coronation, but the total number of residents interviewed was 26 since four of the interviews were group interviews. Because of the grounded theory approach and the use of semi-structured interviews the aim was to have conversations with comprehensive answers. For that reason group interviews and interviews with English-speaking residents were preferred, since they give more substance to the research.

With help from people working at the ACDS it was decided to use the word danger instead of hazard in the interviews with the residents, since it will ask for a broader perspective about risks. The word danger was used in hope to better capture all kinds of hazards in the community.

The interviews with people working in the eMalahleni local municipality (governmental authorities) were carried out during one day at the eMalahleni city council. With the help from one municipality official working at the department of disaster risk management four interviews with people from different departments were conducted; Town planning, Social development, Public safety and Housing development. The officials all had a position where they were working with the Old Coronation community.

Field observations

Apart from the interviews, information about the area was collected through field observations. Through field observations the life in the community was studied and how the community has developed. Photos from the area were taken, some of which can be seen in appendix B.

2.3 Data analysis

The information from the interviews and the field observations were analysed according to the grounded theory methodology. The 19 residential interviews were transcribed and analysed in order to find key points and form codes. The codes were filtered through two themes: a) *Why the residents moved to Old Coronation* and b) *factors that the residents value in a community*. Similar codes were assembled into concepts. Figure 3 below is an attempt to clarify the process.

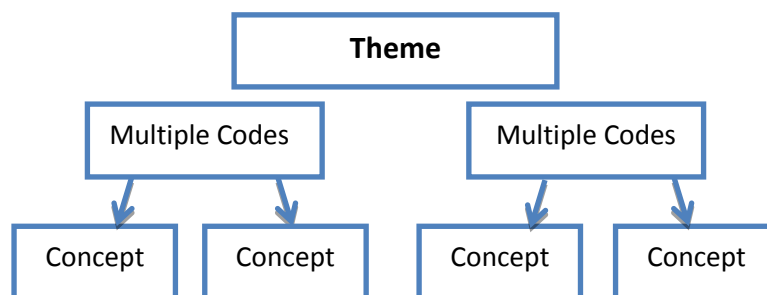


Figure 3. Schematic figure of how the concepts were formed.

Categories consisting of similar and related concepts were formed by once again filtering the information through the two themes. As an example, the concepts *Running water*, *Provision of electricity*, *Scavenging*, *Provision of sewerage*, *Nearby school* and *Close to services in town* formed the category *Access to services* under the theme *Factors that residents value in a community*.

It was judged that valuable and interesting information would be lost if concepts were formed under the theme c) *Residents relation to hazards* because most codes was very different from one another. There were a total of seven hazards mentioned (i.e. sink-holes, crime, lack of water etc.) with little connection to each other. Forming weak concepts out of diverse codes would not make the information easier to understand or present. Instead the results under the theme are presented without assembling the result into concepts (and later categories).

The categories and other analysed results from the field study are presented in chapter 5. In chapter 5 example of codes are presented as well as all the concepts in order to more clearly show how the categories were formed.

The categories were then filtered through the research question *What reasons do the residents express for living in Old Coronation?* and merged into reasons in the synthesis in chapter 6.

Selection of respondents

To understand the distribution of the respondents it is essential to present the demographic results. The number of answers does not always add up to the number of interviews, simply because all interviews did not reveal all demographic information. These results should be used with great caution to explain the general demography in Old Coronation since the result is too statistically weak for that purpose. The main purpose for these demographic results is to use it as partial explanations

to the answers among respondents. A study is dependent on the demographic selection and it is relevant to note that a different selection could result in other findings.

A total of 26 residents were interviewed, 18 were men and 8 were women. All group interviews were with men, which is the main reason for the uneven numbers.

The ages were well spread among the respondents. There were, however, a majority of respondents between the age 21 and 40 years and only one person over 51 years old. The age among the respondents is displayed in figure 4. The youngest respondent was 19 and the oldest 60 years old.

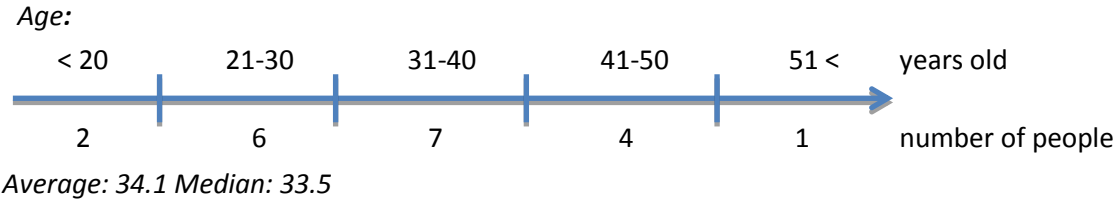


Figure 4. The age among respondents in the study. The result is presented in intervals of 10 years with the number of respondents in each group.

The majority of the respondents have lived in Old Coronation ten years or less, which can be seen in figure 5. The shortest residential time among the respondents was 4 month and the longest 21 years.

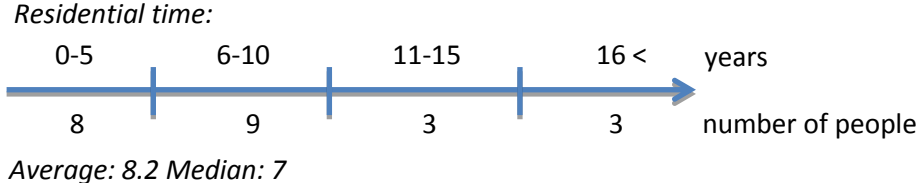


Figure 5. The residential time among respondents. The result is presented in intervals of 5 years with the number of respondents in each group.

Most respondents, a total of eight people, lived with their partner and children. Four respondents, who were all young men, lived alone. Only two people lived with their parents. This should be related to the fact that most respondents were over 30 years old and none less than 19 years old. A different age distribution might give other results.

It was indicated in a couple of interviews that many men temporarily leave their wife and children to come to Old Coronation for work. However, among the people being interviewed, only two men lived that way. A summary of the respondent's household situation is presented in the figure 6.

Household situation summary:	
Together with their partner and children	8
Alone	4
Alone, partner and children in other area	2
Together with parents	2

Figure 6. The residents household situation.

2.4 Sources of errors and biases

The study is based on the discussions with 26 people. It would be desirable to have more respondents but, unfortunately, the time available for the field study limited the number of interviews. However, the responds in the discussions was rather uniform. The people in the study mentioned many of the same reasons for living in Old Coronation and they usually experienced the same hazards. It is therefore reasonable to think that the number of interviews is sufficient. With this said, more interviews would still have given more reliable results.

It is difficult, not to say impossible, to conduct an interview without biases. One possible source of error is that similar words might mean different things to different people. To avoid steering the respondents in a specific direction it was important to find the most neutral word to describe hazards. It was assessed that the word hazard might be associated with bigger disasters or natural hazards. Instead the word danger was chosen for all interviews. An interpreter was used in many of the interviews. In these cases the choice of words might have little effect since the interpreter decided what the words would be translated to. There are other sources of errors connected to the interpreter as well. It is difficult to know if everything was translated correctly or if the interpreter forwarded all essential information.

It is not only the answers mentioned by most respondents that are important for the study. In the process of analysing the interviews it is possible that weaker results disappeared when the answers were assembled into concepts and categories. In an attempt to counter this, weak information that was considered important was later picked out and presented in the results. It is also interesting to note information that was not mentioned and the reasons for this. An example is the missing discussion of HIV/AIDS that is further discussed in the reflection.

Chapter 3 – Theoretical foundation

This chapter presents various approaches of hazards and different underlying causes of disasters. Of the underlying causes, the social processes as well as people's vulnerability play an important role, especially for the poor. The chapter also presents earlier studies of risk perception and how people react to risks, which is depending on how they experience them. To deal with risks that affect a society it is important to understand people's risk perception.

It is essential to understand the underlying processes which affect a society like Old Coronation, both for the reader and as basis for the study. The comprehensive factors that may affect the results and explain the situation are complex but a general theoretical foundation of hazards, vulnerability and risk perception will facilitate the work.

3.1 Causes of disasters

People's everyday life is always affected by different hazards. It can be anything from smoking and road accidents to earthquakes (Smith, 2001). A hazard is a potential threat to humans and their welfare and becomes a disaster when lives and livelihoods are swept away (UN/ISDR, 2004). It is the vulnerability of people that determines whether a hazard becomes a disaster or not (Smith, 2001; UN/ISDR, 2004; Wisner *et al.*, 2004).

The difference between environmental hazards and environmental resources are small and depend on the context (Smith 2001; Wisner *et al.*, 2004). The environment is considered pleasant when you enjoy "holiday sunshine" but considered dangerous when it creates damaging storms. The environment cannot be considered benign or hostile. It is "neutral" and considered a resource or a hazard depending on human location, needs and perception (Smith, 2001).

Human sensitivity to environmental hazards depends on both physical exposure and human vulnerability. Physical exposure reflects the variability of damaging events that may affect a location. Human vulnerability is the social and economic tolerance to hazardous events at the same site. If the physical events go beyond the tolerance level at a location, then they are perceived as environmental hazards instead of environmental resources (Smith, 2001).

Quarantelli (1998) claims that disasters now often are seen as something that occurs due to the society instead of as "Acts of God". Having this approach is according to Smith (2001) preferable in disaster studies because the "Acts of God" approach focus on the "surprise-factor", when common disasters in reality to some extent can be predicted in hazard-prone areas. A flood-affected area is an example of an area where you can predict that floods will happen again because of the recurrence in the event. The "Act of God" approach suggests that humans do not have any part in creating disasters and that they have little opportunity of mitigating them, which is wrong. Wisner *et al.* (2004) believe that it is needed to know what types of hazards which can affect people, as well as knowing people's different levels of vulnerability, to be able to understand disasters. People's vulnerability is determined by economic and political systems.

Hazard approaches

There are many reasons why disasters occur. The reasons can be summarized according to two distinct views, which differ from each other. But a joint compromise of the two views gives,

suggested by Smith (2001), a complete description of the underlying causes of disasters. The two approaches are consisting of the behavioural paradigm and the structural paradigm.

The behavioural paradigm is an approach which started to evolve through environmental engineering during the 1930s with a scientific explanation to what causes and cures hazards. The approach claims that disasters occur because of geophysical processes and they can be prevented with a development of advanced technical tools. Settlements on hazardous areas are seen as a “behaviour” fault with a poor perception of the hazards from both authorities and victims (Smith 2001).

The structural paradigm is less hazard-specific than the behavioural paradigm with the belief that disasters in less developed countries occur because of the global economy, the spreading capitalism and the marginalization of poor people. The structural paradigm started to evolve in the mid-1970s and explains that disasters occur because of social processes rather than geophysical processes (Smith, 2001).

Both views have been criticized. The behavioural paradigm has been criticized for being a view that originates from western countries with a materialistic thinking which is putting too much belief in technology. It has also been criticized for emphasizing the role of individual choices in hazards, both of decision makers and victims. The structural approach has been criticized for just being a call for social revolution and for denying all kinds of technical risk reduction measures, even simple ones such as flood banks (Smith, 2001).

A hazard approach combination

Smith (2001) argues that a combination of the behaviour paradigm and the structural paradigm is preferable when an interpretation of what causes and cures disasters is done. Hence, a compromise between an environmental and technocratic explanation as well as a political and economic explanation is worth striving for. With a balanced interpretation, the criticism for each view can be reduced with the structural paradigm working outside the Third World and the behavioural paradigm working outside more developed countries (Smith, 2001).

There will always be a need for physical protection and a use of technology as well as an understanding of the social and institutional dependency in areas highly vulnerable to the loss of life and property (Smith, 2001). Despite the need for physical protection, UN/ISDR (2004) highlights the limitations of science and technology. If too much focus is on technical abilities instead of the social processes it can even worsen the problem, especially in less developed countries where limited financial resources are an important condition to take into account. Smith (2001) and Wisner *et al.* (2004) describe that the structure of societies is dependent of different factors worldwide. Individuals are dependent on social and institutional circumstances and institutions are in turn dependent on macro-scale economic and political processes.

Environmental hazards can therefore be described as a combination of both natural and human causes (Oliver-Smith, 1999; Smith, 2001; Wisner *et al.*, 2004). Combinations of the two factors often make hazards hybrid events which evolve through environmental, technological and social processes (Jones, 1993). Flooding is often a good example of a hybrid event. It can happen because of fluctuations in the atmosphere, which increases storm frequency as well as human activities like land drainage and deforestation (Smith, 2001). UN/ISDR (2004) also argues that environmental hazards

often are hybrid events. A movement to cities, where now half of the people on the planet live, changes the outcome of a hazard. Interventions in nature like drained wetlands for new housing, changes in rivers' natural roots and cleared hillsides for building materials are all factors which make hazards more likely to occur and also give a more devastating outcome. Smith (2001) and Wisner *et al.* (2004) describe that the interactions between the two aspects - nature and humans - make it impossible to separate them from each other for an understanding of environmental hazards. Because of the interaction between the two aspects, disasters cannot be seen as a "natural" event.

Studies have shown that there is a need for an understanding of local conditions when disaster reduction studies are made as they vary around the world (UN/ISDR, 2004). A good example when local conditions were not taken into account is from Great Britain in the 1970s, when flood studies there were based on work from North America. The North American conclusions were made with a behavioural view that explains causes as of poor hazard perception and is therefore individualizing the problem. But in England and Wales land use control is made by local authorities and individuals have little opportunity to influence these decisions. The example illustrates the complexity of the problem and that institutional inertia and self-interests, both at national and local levels have to be recognized in all environmental hazard assessments (Smith, 2001).

The social causation of disasters

When disasters occur, focus in science analysis and media are often on the physical processes that causes the phenomena. However, it is not the physical process itself that causes the disaster. Instead more attention should be on the people living in hazardous areas and what can be done to reduce their vulnerability (Oliver-Smith, 1999; Wisner *et al.*, 2004). Focusing on the physical processes gives an incomplete and inaccurate analysis of the problem because disasters often depend on social, economic and environmental factors (Wisner *et al.*, 2004).

Wisner *et al.* (2004) describes how the social processes (including economic and political processes) are an important factor to consider in disaster reduction studies. Figure 7 shows how the natural environment offers opportunities but also provides hazards, depending on the context (see box 1 and 2). Opportunities are for example resources for production and work (see box 3) and example of hazards are floods, earthquakes and diseases (see box 4). Humans are not equally distributed when it comes to access to the resources or their exposure to the hazards. How people have access to the opportunities and how they are affected by the hazards are determined by social factors. Where people live and work, their level of hazard protection, preparedness, information, wealth and health etc. are governed by society (see box 5). It follows that peoples exposure to risks is determined by which social group they belong to: class (which includes their income, how they live and where they work) gender, ethnicity, possible disability, etc. (see box 6). Furthermore, human exposure is governed by how the social system and the power relations impact on the different social groups (see box 7). To be able to get a holistic view of disasters, it is required to understand the different levels of vulnerability in different groups of people. This has to be understood in the context of political and economic systems that are governed on national and international levels (see box 8).

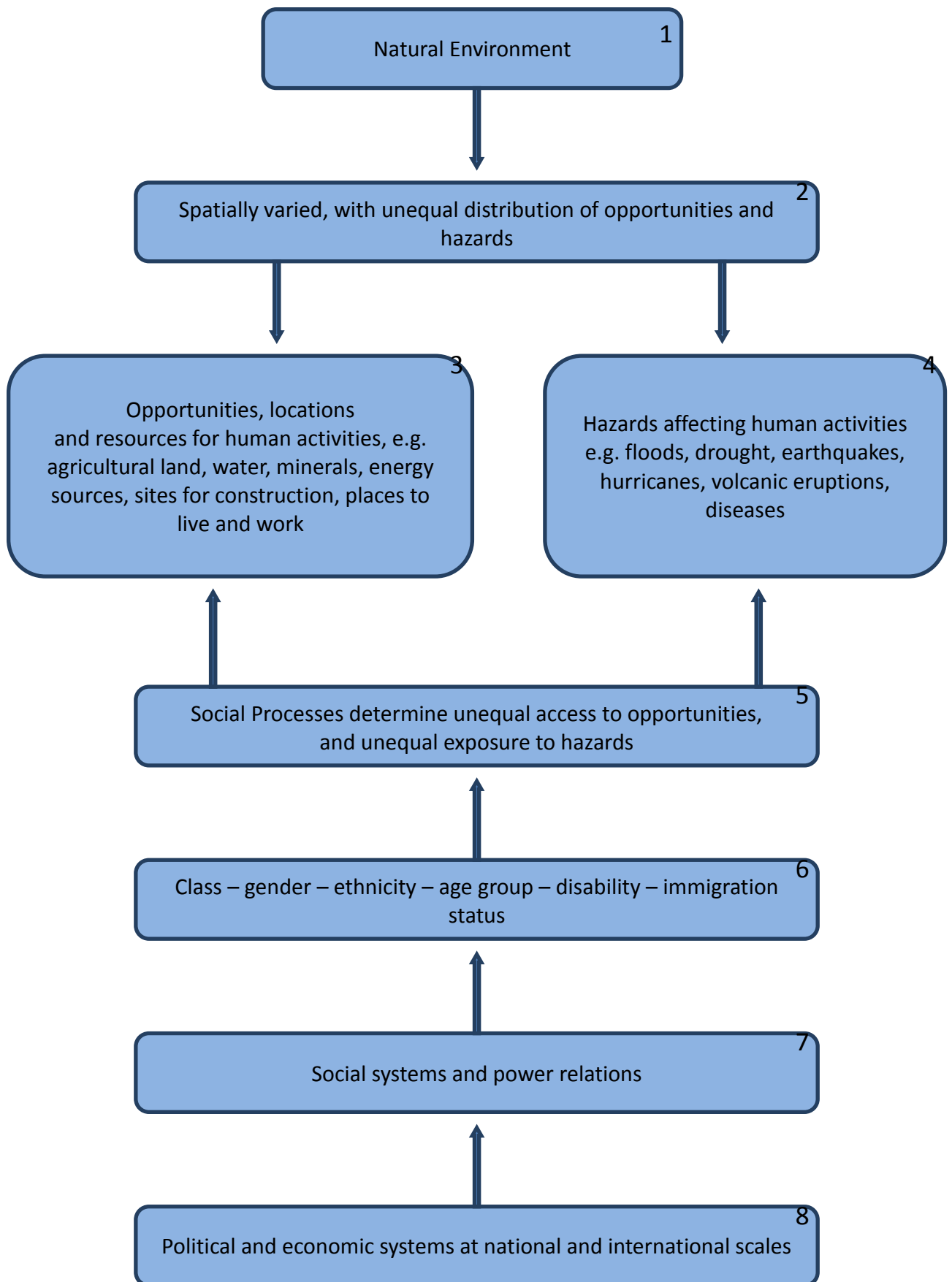


Figure 7. The social causation of disaster (Wisner *et al.*, 2004 p. 8).

3.2 Vulnerability

The social processes are an important contributing factor of causing disasters because they are leading to different degree of human vulnerability (Wisner *et al.*, 2004). The risk of a disaster to occur is dependent on the interaction between the hazard affecting a number of people and their different degree of vulnerability. The compound disaster-function between hazards and peoples vulnerability can be written as:

$$\mathbf{R} = \mathbf{H} \times \mathbf{V} \quad (\text{Wisner } et \text{ al.}, 2004 \text{ p. } 49)$$

where R is risk (disaster), H is hazard and V is vulnerability (UN/ISDR, 2004; Wisner *et al.*, 2004).

People's vulnerability is a state that evolves in a historical context, dependent on the location, the infrastructure, the sociopolitical structure, the production patterns and ideology, which all are factors that characterizes a society (Oliver-Smith, 1998). Hewitt (1998) argues that these circumstances all produce different levels of vulnerability or undermine people's ability to avoid or recover from disasters.

The concept of vulnerability has political significance because politics is part of the social process. Gilbert (1998) states that this creates opportunities and responsibilities for political actors, or in other words, for decision-makers to control critical situations. The poor are often the most vulnerable and often have least ability to influence decisions about their settlement responses to future threats (Smith, 2001).

3.3 Risk perception and decision-making

Early theories about risk perception emerged in the 1960's when the use of nuclear technologies rapidly increased (Douglas, 1985). A pioneer in the field was Sowby (1965) who compared different risks and how people reacted to them. In his research Sowby studied why people did not accept risk associated with nuclear power when they had no problem accepting far greater risks like driving or smoking (Sowby, 1965). Through his study Sowby laid a cornerstone for risk perception. Starr (1969) followed and published a study where he compared and analysed risk judgments. Starr divided risks into *voluntary* risks and *forced* risks and concluded that the forced risks were considered more serious than voluntary risks, although the risks were similar in probability and consequence. Even though Starr's choice of data was criticized (Otway & Cohen, 1975) his research was an early intimation that a strict probability/consequence-based risk analysis is not sufficient to understand how people deal with risks and hazardous situations.

In the years that followed risk perception was explored by many researchers with different background. The current understanding of risk perception derives from several different scientific fields like psychology, economy and engineering. People's risk perception depends on a variety of individual factors like attitude, knowledge, feelings and experience. But perception is also a social and cultural construct, reflecting values, symbols, history, ideology and other shared factors (Pidgeon, 1998).

It is common to distinguish between "objective statistical" risk and "subjective perceived" risk. Objective risk is in some cases called technical risk and it is often considered to be used by technical experts. The public judgment is based on peoples' experience, social context and other factors *as well as* the expert's analysis. The public takes the experts' opinion into account, interpreted it, and

incorporates it when it forms its risk perception. The public risk perception is therefore the only relevant risk perception for people in a society (Smith, 2001).

The public's risk perception is controlled by many individual factors and does not follow the technical approach based strictly on probability and consequence. However, it includes *evaluations* of the probability and the consequences of hazardous situations (Sjöberg *et al.*, 2004). The evaluation is in some cases similar to the technical approach, in other cases it differs much. Through numerous studies, several factors have emerged that explains why the public's risk perception sometimes differs from the objective statistical risk (Smith, 2001). For example do most people overestimate highly publicized, large-scale technological risks and underestimate routine risks with low catastrophic potentials (Renn, 1998). This is part of the explanation to Snowby's issue why people in the 60's were willing to accept the risks of smoking and not the risks of nuclear power (Sowby, 1965). Added to the explanation is the time until the consequence occurs. Consequences that are affecting people further ahead in time, like cancer due to smoking or sunbathing, are generally seen as less risky than consequences that could occur within short time (Riskkollegiet, 1993). Risk perception is complex and there are many other factors that should be added to the equation, some of them are presented in table 4 in appendix D.

It is difficult to include the public's risk perception in a study of hazards. How much and in what way the public's risk perception should be included in the risk analysis depends on what type of risk approach is chosen: objective statistical risk or subjective perceived risk. Problems usually occur when technical experts expect their conclusions to be accepted because they are objective whilst the public reject them because they ignore individual concerns and fears (Smith, 2001). Hence, it would be in society's interest to find solutions adapted to both risk assessments.

Many models that integrates society's risk perception in the risk assessment are based on averages and consequently do not cover the entire spectrum of opinions (Sjöberg, 2000). This and other simplifications do not really liberate the researchers from a dilemma in the strict technical approach. There still has to be someone entitled to determine the preferences and values of a collective decision. This is no simple matter when people's health or life might be at stake. Renn (1998) instead suggest integrating society perception through open democratic discussion between all parties involved. This should increase the spectra of opinions. For best effect, however, the discussions should continue to run throughout the risk management process, particularly if the parties really disagree, could be a very slow process.

Risk perception and awareness among people in hazardous settlement

There are different theories why people decide to live in hazardous areas and the reasons stretch from desperation to strategic motivations (Couburn *et al.*, 1994). Regardless of why, the rapid population growth in many African countries will likely concentrate even greater number of people in hazardous settlements (UN/ISDR, 2004).

Assuming the subjective risk approach, it is essential to incorporate people's risk perception in the identification of risk scenarios and put it in relation to the socio-economic and environmental context where they live (UN/ISDR, 2004). However, it is difficult to fully understand whether a person's hazardous behaviour is due lack of education, lack of consideration or lack of options. Many people living in hazardous areas tend to lower their perception of the risks associated with the area. There are many explanations to this, many of which are mentioned in table 5 in appendix D. People living

on river banks might for example be familiar with flooding and understand what causes the disaster; both these factors are mentioned in the table as factors that decrease risk perception.

Education for dealing with risk and disaster preparedness is important to increase the awareness and risk perception in hazardous areas. The education must represent a long-term goal since changing the cultural norms and values, as well as related risk perception, is a process which cannot happen overnight (UN/ISDR, 2004). Media plays an important role as educators in the society. An interesting study was done by Kpanake *et al.* (2008) where they compared risk perception among African villagers without access to media, African city-dwellers with access to the media, and French residents with access to media. The participants were asked to rate a great number of risks. The overall mean risk judgment was the lowest among African villagers without access to media and the highest among the French residents. The researchers concluded that the impact of media on risk perception was estimated to be an increase of about 15 % of the overall mean ratings (Kpanake *et al.*, 2008).

Chapter 4 – The South African context

To obtain an overall understanding of the dynamics governing the situation in Old Coronation, knowledge of the South African context is needed. In this chapter the context of South Africa is presented in terms of the economic situation, health issues, urbanisation and how the country's disaster risk management is structured. Furthermore, the contexts of the Mpumalanga province as well as the city eMalahleni with its township Old Coronation are presented. The information is gathered from previous research and literature.

4.1 Introduction

South Africa is a complex and dynamic country with eleven official languages. English is the language used in official and commercial life but it is only the sixth most spoken home language (Big media Publisher, 2012). South Africa is divided into nine provinces, each with its own legislature councils (GCIS, 2009). The country was in 2010 ranked 28th on the world gross domestic product list (Worldbank, 2011) and has impressive access to resources and a well-developed infrastructure (Tissington, 2010). However, the country is segregated and access to resources is unequally distributed, where the richest 10 % earn almost 150 times more than the poorest 10 % (Tissington, 2010). Such conditions are clearly visible on the human development index list from which South Africa in 2011 was only ranked as the 123rd country (UNDP, 2011).

South Africa is a market driven economy within a welfare state but does not have a comprehensive welfare like the countries in Northern Europe. The state provides small welfare grants, all under 120 \$/month, for poor, disabled and child care. The state hospitals and primary health care clinics are for free but are often under-resourced and under-staffed. This makes it difficult to provide adequate health care to millions of poor South Africans who suffer from tuberculosis, HIV and malnutrition (Bolnick, 2009). HIV is a major problem in South Africa with a great number infected. Statistics from 2011 show that the HIV prevalence is 10,6 % for the whole population and as high as 16,6 % of the population aged 15-49 years (Statistics South Africa, 2011).

4.2 Urbanisation

The inequalities and the way communities are built up in South Africa must be seen in a historical context starting from the late nineteenth century, when urban areas reserved for white people started to evolve (Berrisford, 2010). This process continued during apartheid when movement of black people to cities was restricted and the apartheid policies forced the black population to move and live in their "homeland" areas. However, in mid 1980s, the apartheid policy could not prevent the black population from leaving the "homeland" areas and people started migrating in great numbers into the cities. Even though apartheid ended in 1994, the segregation between areas where large numbers of black people live and places of growth and employment is to a large extent persistent (Todes *et al.*, 2010).

South Africa had an urbanisation level of around 43 % in the 1950s, around 57 % in the year 2000 and is expected to have an urbanisation level of 73,5 % in 2030 (UN, 2011). However, the difference between what is rural and what is urban is hard to tell and if the dense rural settlements created during apartheid are taken into account, the urbanisation level is higher (Todes *et al.*, 2010). Post-apartheid urbanisation has mainly taken place from rural sectors to larger metropolitan areas with economic growth, but not all migration is to these areas. Movement in rural areas, small towns and

cities is sometimes caused by a search for housing (Cross, 2001) and it is not always a movement from areas with high levels of poverty, unemployment or a lack of services (Kok *et al.*, 2003). People in many mining areas are moving to nearby towns, even though the outlook for a job there is low. One of the reasons is reduced income for rural households due to employment declines in the mining business (Todes *et al.*, 2010). Many people working on commercial farms have been evicted because of a decrease in jobs and are therefore often settling down in and around small towns. Other reasons for farm workers moving to a town can be that more accessible facilities and autonomy outweigh the higher costs (Atkinson, 2007).

Informal Settlements

The movement to larger metropolitan areas where people are searching for jobs, housing or accessible facilities etc. has formed many informal settlements in South Africa. In 2007 around 14 % lived in informal settlements (Statistics South Africa, 2008), which are unauthorised and located on land that has not been announced for residential use (DiMP, 2008.) They are mostly unplanned with buildings of low quality and often on land that is unsuitable for habitation (DiMP, 2008; UN/ISDR, 2009). The locations are often characterised by high population densities, limited service deliveries (Wisner *et al.*, 2004; DiMP, 2008) and a lack of effective government management (DiMP, 2008). Wisner *et al.* (2004) claim that a growth of these squatter settlements put more people at risk and increase the people's vulnerability for both natural hazards and health risks.

Misselhorn (2008) states that many informal settlements are well located since the alternative for the residents are often worse (e.g. continuing to remain at a traditional rural homestead). Informal settlements often function as "holding places" where the residents can get access to the urban environment at low costs, which is not the situation in the rural areas. Some residents remain permanently and gain access to formal housing whilst others just stay in the area temporarily for specific purposes and leave once they are fulfilled (Misselhorn, 2008). Informal settlements are often risky environments with a constant risk of flooding, fires and health risks (DiMP, 2008). Misselhorn (2008) mentions further challenges being poor sanitation, poor water supplies and poor service facilities such as schools and clinics.

4.3 Disaster Risk Management in South Africa

This part presents background information on how disaster risks are managed in South Africa. It aims at giving a better understanding of the structure of the South African government and how it affects the disaster risk management.

The South African disaster risk management structure follows the South African government structure to a large extent. Therefore, it is essential with a short introduction to the different governmental levels and how the different governmental units interact.

The South African government is structured into three levels: national government, provincial government and local government. The structure is portrayed in figure 8. The three different levels are autonomous but also interlocked with each other. The levels are interlocked equally and do not follow the more strict hierarchical concept that is found in many unitary states. Under the 9 provincial governments, local government consists of 6 metropolitan municipalities and 47 district municipalities. The larger cities, i.e. Cape Town, Johannesburg, Durban, are metropolitan

municipalities, while the rest of the country is divided into district municipalities. The metropolitan municipalities are single units while the district municipalities consist of a total of 231 local municipalities (Van Niekerk, 2005).

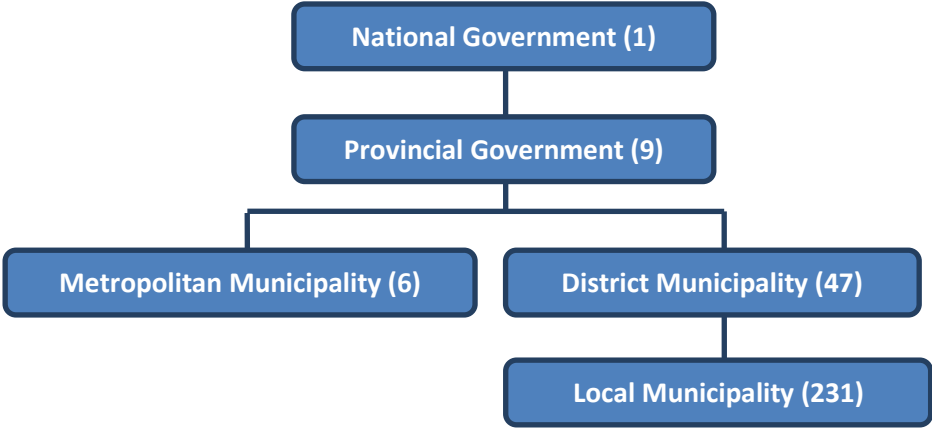


Figure 8. The South African government structure.

South Africa’s disaster risk management is based on the policies and strategies formed in the *Disaster Management Act (57 of 2002)*, which was empowered the 15th of January 2003. “The Act” was developed when the former *White Paper on Disaster Management* proved to be insufficient during the severe flooding of Cape Flats in 1994. The former White Paper had shifted focus from previously more common relief and post-disaster recovery to a more proactive approach. The Act is more or less a development of the White Paper and includes the missing parts of how disaster risk management can be implemented and how the success can be ensured (Van Niekerk, 2005).

The disaster risk management in South Africa is roughly divided into the same levels as the South African government system. The Disaster Management Act suggests organizations on national, provincial and local level that co-operate to solve issues. On the national level, National Disaster Management Centre (NDMC) is the central functional unit. The NDMC’s main responsibility is to develop guidelines, frame-works and policies for the disaster risk management, monitor their implementation and suggest improvements for cross-functional disaster risk management activities (NDMC, 2005). Underneath NDMC are 37 national departments and agencies known as the National Organ of State (NETaRNRA, 2011). They are functioning within the national sphere of government and provide NDMC with information as well as coordinate disaster risk actions and planning, making sure that they follow the National Disaster Management Framework (NDMC, 2005).

Provincial disaster management centres (PDMC) are central units for disaster risk management in each province. PDMCs’ main responsibilities are to offer support to the NDMC and the local and metropolitan disaster management centres as well as provide a link between the national objectives and the provincial and local priorities and activities (NDMC, 2005). Municipal disaster management centres (MDMC) are the units for disaster risk management on the district and metropolitan level. The council in the municipality is responsible for establishing the centre. Its primary function is to implement the disaster risk policies and ensure that the national and provincial objectives are achieved. In the case of a disaster emergency the MDMC should assist and co-operate with relevant sub-administrative units as well as the national and provincial disaster management centres (NDMC, 2005).

4.4 Mpumalanga Province

Mpumalanga means “Place where the sun rises” (GCIS, 2009) and is the second-smallest province, situated in the north-eastern part of South Africa, with 7 % of the country’s population (Big Media Publisher, 2012). The capital of the province is Nelspruit (GCIS, 2009). The geographical position of the province and the capital is shown in figure 12-14 in appendix A.

Mpumalanga has great coal reserves where eMalahleni is the centre of the coal-mining industry. The country’s three biggest power plants are also situated in the area. Other industries in the province include paper mills and production industries of steel and vanadium. Tourism also provides substantial income to the province (GCIS, 2009).

As in many other provinces in South Africa, Mpumalanga is struggling with high poverty rates, inequalities in the distribution of income and unemployment (Elsenburg, 2005). The unemployment rate was 25,4 % in 2007 (Elsenburg, 2009a) and is together with poverty particularly a problem in agricultural areas where the inhabitants are making a living mainly through farming (Elsenburg, 2005). Statistics from 2007 of inequalities and distribution of income shows that the black population in the agricultural areas is disadvantaged and that the inequality rate has not shown any decline since 2000 (Elsenburg, 2009a).

In 2007, about 12 % of the population in Mpumalanga lived in informal settlements, which is a little bit under the average of 14 % in South Africa (Statistics South Africa, 2008).

eMalahleni

eMalahleni or Witbank as the city was called earlier, is situated around 100 km east of Pretoria close to densely populated areas in the Guateng Province. It was established in the 1890s and at that time around 20 coal-mines were operating in the area. When a railroad to the city was established, the mining business really started to expand as well as the city itself (Witbank info, 2012). Today the city is governed by the eMalahleni local municipality, which is one of six different local municipalities in the Nkangala District. The geographical position of eMalahleni local municipality is shown in figure 14 in appendix A.

The area is today known as “the energy Mecca of South Africa” since it contains great coal reserves and many power plant stations (eMalahleni local municipality, 2008). The population in the area is growing rapidly. With a population of around 276 000 people in 2001 (Census, 2001), growth indicators from 2007 show that the population now probably has exceeded 430 000 (Statistics South Africa, 2008). The eMalahleni local municipality consists of both urban and rural areas where eMalahleni city is the main urban centre (eMalahleni local municipality, 2008).

eMalahleni has a lot of people living in informal settlements with a percentage of approximately 31 % (Statistics South Africa, 2008). Because of previous race division, three different communities are built separate from eMalahleni city on the eastern side. These communities are separated from the rest of the city because of the mining rights and undermined land in the area. There are also floodplains and marshland that prohibit physical interaction with the city. Old Coronation belongs to one of these communities where around 35 % of the structures are informal (eMalahleni local municipality, 2008).

Old Coronation

There is uncertainty of when Old Coronation first started to be established as a community. Municipality officials from the eMalahleni municipality thought people had taken residence in the area for about 15-20 years. Today around 3000 units (shacks and houses) are found in the area (eMalahleni local municipality, 2008). Old Coronation is an informal settlement and they exist because urbanisation has grown faster than the ability of government to provide land, infrastructure and homes (DiMP, 2008).

What distinguishes Old Coronation from many other informal settlements is that it is situated above an old abandoned mining area (eMalahleni local municipality, 2008). The land is undermined, sink-holes occur and it is an obvious high-risk area.

The former mining activity has caused major environmental and social impact on the area with land degradation and water pollution. The underground mine workings have collapsed in many places leading to physical hazards (EO-Miners, 2012). This makes the area extremely dangerous for people living there. The continuous risks to the community are collapsing sink-holes and spontaneously combusted underground fires reaching the surface (eMalahleni local municipality, 2008). How the sink-holes are affecting the community can be seen in figure 15-17 in appendix B. There is also a gas-pipe passing underground thorough the community, which can be seen in figure 18 in appendix B, but it is only affecting a few people.

The eMalahleni municipality has established that urgent action is needed because of the risky environment. Old Coronation is an area where an upgrade of the situation is not an option and families have to be relocated (eMalahleni local municipality, 2008).

eMalahleni local municipality is together with Mpumalanga Department of Human Settlements, Department of Energy and ABSA bank creating a housing project in an area called Klarinet. It is an integrated housing project where an area with a total of 11 969 mixed housing units will be built. The people who will benefit from the Klarinet project will be those who are currently living in some of the informal settlements found in eMalahleni (eMalahleni local municipality, 2012). A few families in Old Coronation have already been relocated to the Klarinet area as part of the housing project (eMalahleni local municipality, 2008). A photo from the Klarinet-area can be seen figure 19 in appendix B.

Chapter 5– Results and analysis

The results and analysis are presented in this chapter which follows the same structure as the interviews with three different themes: *Why they moved to Old Coronation*, *Factors that residents value in a community* and *Residents' relation to hazards*. The themes are then linked together in chapter 6 to answer the specific research question. The interview guide used to find the results is displayed in appendix C.

5.1 Why they moved to Old Coronation

Analysing the interview data has formed an understanding of why people moved to the area. By coding the interviews, concepts have been found which later was assembled into categories explaining the situation. Why residents decided to move to the area is explained by four categories: *Jobs*, *Access to services*, *Lack of suitable land* and *Family*. As can be seen in figure 9, the categories are different in size. The aim is to qualitatively show the most common reason for moving to Old Coronation. The size of the circles is estimated depending on how many codes they include but they cannot be measured or be quantitatively compared with each other. They can neither be quantitatively compared with the circles in figure 11. The largest circles represent the most common reasons for the people to move to the area.

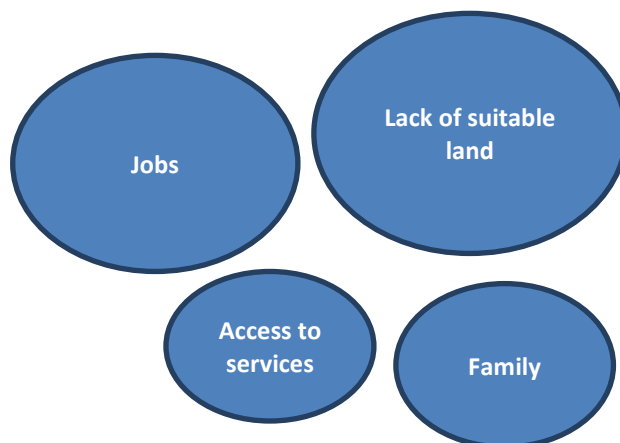


Figure 9. The four categories showing why people decided to move to Old Coronation. The largest circles are the most common reasons.

Jobs

A very common reason why residents move to eMalahleni is finding employment. The area is, as mentioned in section 4.4, well-known throughout the country for its job opportunities in the mines and other industries. Most respondents who came searching for jobs are from rural areas east or north-east of eMalahleni, where they found it difficult to find employment. Thus, most residents moved to the area in hope of getting a job. Codes related to this subject were assembled into the concept *Moved to the area to find employment*. Two respondents however, actually had a job in eMalahleni before moving. These two codes were included in the concept *Job caused people to move*. Another example of a code in this concept was from one respondent who was living in a house provided for mine workers but had to move when the job disappeared. Together these concepts formed the category *Jobs*.

Access to services

The employment opportunities in the area explain why many people moved to eMalahleni but they do not necessarily explain why they decided to move to Old Coronation. This is partly explained by the category *Access to services*. As mentioned in section 4.3 Old Coronation has the advantage of being *close to town* and that there are *schools nearby*. These two concepts were formed out of multiple codes. There were for example some codes in the school-concept that related to the fact that no schools existed in the area where people moved from and some codes that related to the fact that living closer to school made every-day life easier.

Many residents moved from rural areas where the distance to schools, hospitals and other services is great. They often explained the advantage of Old Coronation being that there is walking distance to a mobile clinic, small shops, barbers and other services. The cost of transportation is too high for many of the residents, which is why closeness to services is an important factor when they choose where to live. These codes were assembled into a general concept simply called *Close to services*. It was found that well-established taxi businesses are operating in the area. This is a fairly cheap way to travel short distances and something the residents valued. Codes relating to this subject were assembled under the concept *Affordable transportation*.

Lack of suitable land

There are many areas within eMalahleni with the advantage of being close to jobs and services, but there are few other areas than Old Coronation where people also can live for free. The economic situation of the residents simply forces them to decide not to move to formal neighbourhoods. There is, according to the respondents, no other undeveloped land close to town where they can build their shacks. People in the community often explained the advantage of living in a place where no rents have to be paid. Many respondents said that “there is no other place to go”. The context behind all these codes forms the category *Lack of suitable land* which simply contains all answers suggesting that people do not have any similar alternatives close to eMalahleni.

Lack of suitable land is a combination of the strong concepts *Free rent* and *Lack of land*. It is a strong category and explains much of why people end up in Old Coronation.

Family

The last category is related to family. Six codes were related to the fact that respondents followed their family when they decided to move to the area. In most cases they were too young at the time to decide for themselves. These codes formed the concept *Accompanied family*. Other codes were associated to other family-related reasons for moving to the area. A few responded were recommended to move to Old Coronation by relatives who were already living in the area. These codes formed the concept *Relatives recommended*. Additional reasons were that they moved to live with a partner or moved to live with their sibling, which formed the category *Moved to live with family*.

Where people moved from

It is not only interesting to study why people moved to Old Coronation but also their origin. A clear pattern was found when the respondents were asked about their origins. 18 out of the 23 respondents who discussed their origin came from the Limpopo-province or the eastern part of the Mpumalanga-province (in or around Bushbuckridge or Nelspruit). Figure 10 clearly shows the

dominance of respondents from the north-eastern parts of the country. Most of the people from these parts moved from rural areas with, according to the respondents, few job opportunities.

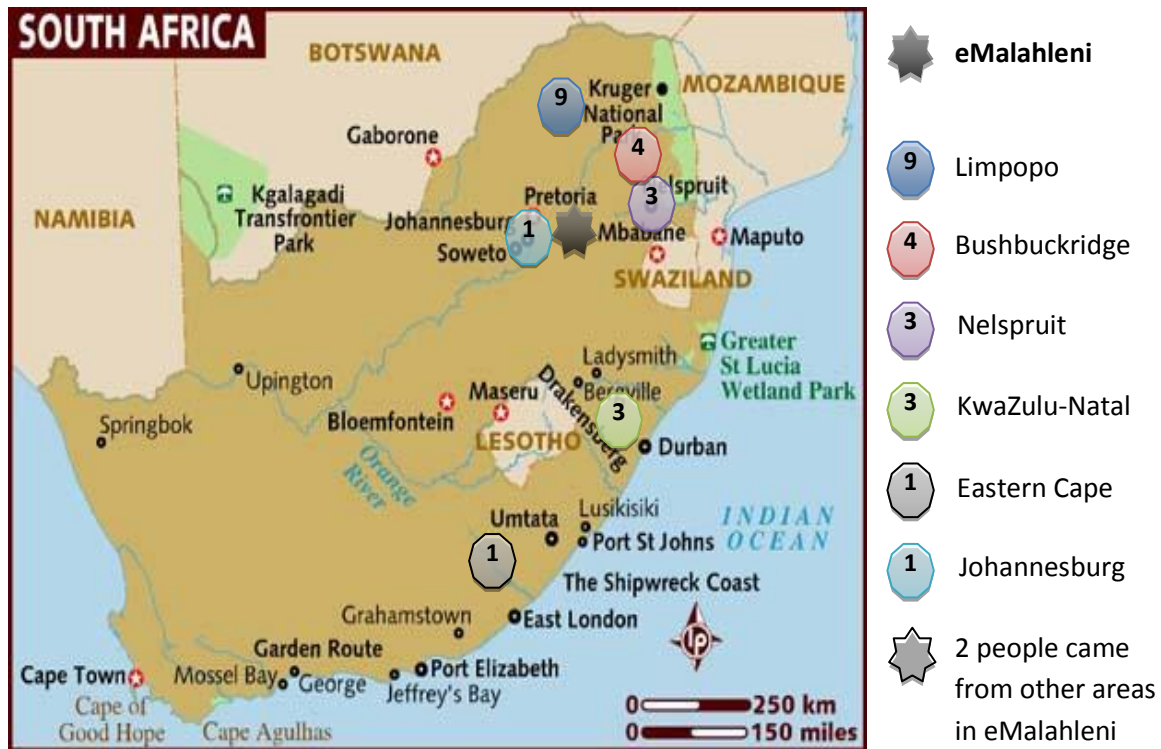


Figure 10. A map showing the respondents origin. The number in the circles are showing the number of people from the area.

Only three people moved from other provinces than Limpopo and Mmupalanga; one from nearby Johannesburg in the Gauteng-province, one from the province of KwaZulu-Natal and one from the province of Eastern Cape. No person participating in the study was born and raised in Old Coronation. However, two respondents moved to Old Coronation from hostels in other parts of eMalahleni. Hostels in this context are houses developed for workers during apartheid.

As seen in figure 10 most people moved from areas not far from eMalahleni. In this context the respondents from Eastern Cape and KwaZulu-Natal stand out. However, no information in the interviews provides any suggestion that they differ from the others. Their main reason for moving, like many others, was to find employment in the eMalahleni-area. No people participating in the study moved from the distant central or western parts of the country and no respondents were immigrants.

5.2 Factors that residents value in a community

Information about what the residents need and what they value the most was provided in the interviews. When discussing this theme the conversations often drifted into what initiative they need for moving to another area and what challenges they are facing in Old Coronation. Since almost every respondent wanted to move to a safer area, discussions often were about what they need in the new area before they can move. Knowing what challenges they are facing in Old Coronation and what they need in the new area before moving gives an explanation of what they value in a community.

Analysing the interview data has formed an understanding of what is valuable for the residents. Five categories have been found: *Access to services*, *Close to jobs*, *Institutional issues*, *Provision of stand or house* and *Family*. The categories are shown in figure 11 and, as mentioned before, the aim is to qualitatively show the most important factor.

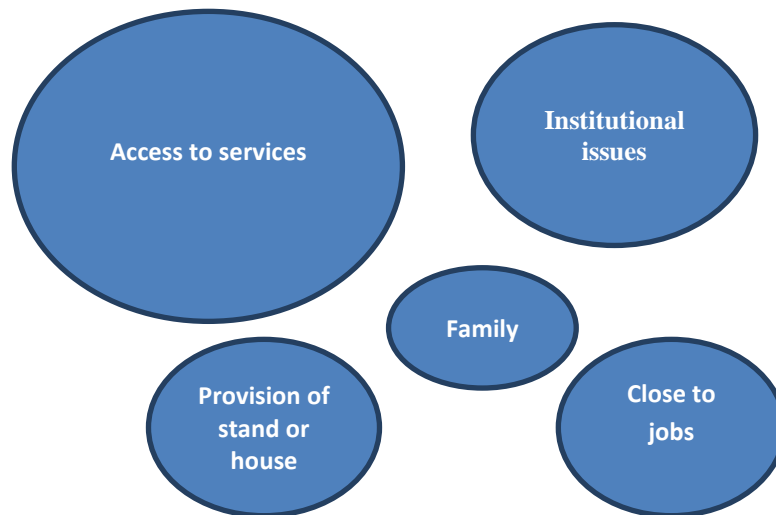


Figure 11. The factors residents value in a community. The most common responses are presented with the largest circles.

Access to services

The most important category, assembled from codes in almost all interviews, is the need of having access to services. This category was formed out of two groups of concepts. The first group related to the need of basic services and included four concepts: *Running water*, *Provision of electricity*, *Scavenging* and *Provision of sewerage*. The second group related to general services. The service most mentioned in this group was school for their children followed by a general wish for closeness to services in town. Codes related to these two subjects were merged into the concepts *Nearby school* and *Close to services in town*. The different concepts appeared clearly when the residents' demands for accepting to move to another area were discussed.

Even though some residents demanded all basic services in a new community, most people were satisfied with just running water as many were of the opinion that electricity and a working sewerage will be installed later on. Supply of water and the absence of electricity are major challenges in Old Coronation and the residents are valuing having a better supply of basic services very high.

On a more detailed level the water supply was considered to be the most important basic service in Old Coronation as well as in a possible new location. When the water supply system in Old Coronation failed, water was collected at an adjacent location, with a walking distance of an estimated 3-4 km.

Close to jobs

When discussing advantages of the area, codes relating to the employment opportunities in the area emerged. Some codes were strengthened and some new codes emerged in the discussion of what a possible new area needs to provide. The concept *Keeping employment* was formed out of codes relating to the fact that residents with jobs in eMalahleni in general did not want to move to an area

outside eMalahleni because of the risk of losing their current employment. Old Coronation has the benefit of being within a walking distance to many jobs. Many employed residents would struggle if they would have to pay for transportation back and forth to their job.

Unemployed residents seemed less reluctant to move to areas outside of eMalahleni but emphasized the importance of nearby jobs in the new area. When they are living in Old Coronation it is possible to go looking for jobs without having to pay for expensive transportation. In Old Coronation many people work on a contract, meaning that they work only when their manpower is needed. The concept *Jobs in the area* was assembled from codes that highlighted the benefits of having a job in the same area as you live. Even though many people in Old Coronation do not have a job at the moment most of them are of the opinion that a great advantage with eMalahleni is the many jobs the area provides. The job opportunities in rural areas, where many residents originate, are few.

The concept *Better economic situation* has emerged from codes relating to poverty and high unemployment rates. This concept is closely linked to the number of nearby jobs, and it consequently falls under the same category. A big challenge for most people in the community is striving for a better economic situation, and poverty is a major problem in the community.

Institutional issues

Many residents seem to have little faith in the municipality's work. Frequently recurring in the interviews are complaints that nothing happens from the municipality's side. These codes form the concept *Lack of trust in the municipality*. Most people are aware of the plans of relocating them to Klarinet and some residents have even been promised a new place. However, the commonly held view is that it takes very long time for the plans and promises to come into action, which forms the concept *Non-efficient municipality*. It is desirable with a fast pre-response from the municipality's side and not only inspections after accidents have occurred.

Most of the residents are of the opinion that the municipality should assist them with the relocation to another, safer area. The impression from the field study was that people are waiting for the municipality to offer them another residential area before moving, even though most people are scared of living in a sink-hole affected area. A more general concept was formed, called *General municipality problems*, to capture codes that did not fit the other concepts. For example, isolated interview responses pointed out the problem with many municipality representatives being replaced too frequently. A more vigorous municipality is a big challenge for the area and something the residents' value widely.

There have been allegations by some residents that there are people living in Old Coronation because it is easy to hide from the police. The allegations do not only regard criminals in general but illegal immigrants as well. Obviously it is difficult to confirm this since no respondent, unsurprisingly, confirmed that they belonged to any of these groups. Another strong reason for illegal immigrants to live in Old Coronation is that they usually do not qualify for the programs that provide houses in formal settlements. These programs will be further discussed in the synthesis. Another allegation that emerged in the study is that some people who have been provided with formal houses move back to the informal settlement and rent their formal house illegally to someone else. Although this provides many families with a steady income, it prevents the actions set out by the municipality to provide the most exposed families with a proper house in a safer area. Like other rumours and allegations, this has been difficult to study further partly because of the short time available.

Provision of stand or house

In the discussions of what the residents would demand if they were relocated, the category *Provision of a stand or a house* was formed. The residents are aware of that Old Coronation is not a suitable place to live in and most of them want to move when they have the opportunity. Opportunity in this context means that the municipality arranges a safe area to move to. Some residents just want a piece of land, a stand, where they can build their own shack. Codes relating to this formed the concept *Provision of a stand*. Other codes associated to the wish for a RTP which formed the concept *Provision of a house*. RTP is a formal house provided by the government for residents who meet the requirements. The main reason for only demanding a stand was that those residents were of the opinion that waiting for the municipality to build a house would take too long – they want to move as soon as possible.

Family

Finally, a few people talked about family-related subjects when discussing demands for moving. These codes were assembled into the concept *Family*, which later was converted into the category with the same name. A little more than half of the interviewed residents lived with their family and the codes were, with only one exception, found within this group. The results from the interviews did not indicate that friends, more distant relatives or other social networks were valued as an especially important factor by the residents. In the interviews where social networks were brought up and discussed, the opinion was that it would be easy to find new friends in a possible new area. Overall, the results from the interviews show that people in the community do not rely on help from friends and neighbours.

5.3 Residents relation to hazards

As mentioned in the data analysis, residents relation to hazards does not follow the four analytical steps described in chapter 2. Instead the results are presented without merging the result into categories.

Three main hazards, that most residents mentioned, are presented in table 2. Sink-holes is one of them and it is the one that distinguishes Old Coronation from many other townships. That sink-holes was an important subject was clearly shown during the case study where almost all respondents were eager talking about the sink-hole-problem. Focus is therefore on presenting the sink-hole-problem; other hazards in the community will be presented more briefly. Crime and a lack of water were also hazards that many people in the community were worried about. These hazards might not be specific for Old Coronation. Other potential incidents that only a few respondents mentioned as a hazard are presented in table 2. These hazards are only briefly presented.

Table 2. Hazards mentioned by respondents.

Main hazards	Other hazards
✓ Sink-holes	✓ Underground fires
✓ Crime	✓ No electricity
✓ Lack of water	✓ No sewerage
	✓ Fires
	✓ Pipeline

Sink-holes

According to municipality officials, sink-holes have emerged in and around the area for a long time, even before Old Coronation started to develop. However, the number of sink-holes is escalating, making the area even more dangerous. Most residents were not aware of the sink-hole problem when they moved to the area. However, the residents seemed to be well informed a while after taking residence since almost all residents mentioned the sink-holes as the greatest hazard in the area.

Observations made during the field study were that almost everyone living in the area was affected by the sink-holes in some way. The sink-holes were mostly not on their own grounds but some big holes divide the settlement into different areas and some affected the dirt roads. Some residents have to move their shack to another, at the moment, more secure place within the area since the number of holes increases and many already existing holes are growing in size. As a consequence, the increasing number of holes has made less land available for housing, which is a big problem in and around eMalahleni where little undeveloped land remains that is suitable for habitation.

In addition to the holes' impact on almost the whole community, which make the residents well aware of the hazards, municipality officials have informed about risks linked to sink-holes. These informing municipality officials are either working at the department of disaster risk management or are ward councillors in the area. Information about the sink-hole-hazards was also to a large extent spread mouth to mouth between the residents. The obvious hazards in the area made almost all residents express their concerns and fears about the sink-holes. Not only were they worried that their house or shack suddenly would fall into a sink-hole, but they were also afraid of falling into an already existing sink-hole during the night. Many residents were also worried that their children would fall into an already existing hole while playing in the area.

Most people living in Old Coronation knew that the settlement was situated above an old mine and that the holes occur because of the undermined ground. Many people also explained that there is an increased frequency of new sink-holes during heavy rainfall. Most residents had been informed about the sink-holes and their increasing numbers either from municipality officials or from other residents. Only a few in the community did not know why the holes occur.

All interviewed residents were eager to talk about the sink-hole problem and most of them also explained how they cope with the hazard. It is hard, and most likely impossible, for the residents to cope with the hazards in terms of preventing them from happening but the community still have some solutions for preventing accidents and to recover from an incident. Most residents believe that there is nothing to do to stop sink-holes from occurring or to stop them from growing in size. They pointed out that they always have to be vigilant and to keep extra attention during heavy rainfall.

The community cope with the already existing holes by filling some of them up with soil and rubbish to prevent people from falling into the holes. This is primarily a risk during night-time, when it becomes dark in the area due to no electricity. The holes on the dirt-roads are not only filled up to prevent people from falling in but also to make the roads drivable.

If a house or a shack is affected by a sink-hole most respondents claim that they simply will rebuild their shack in some way. It will be done either by themselves or with help from people in the community. Mostly people get help rebuilding their shack from family or friends but also from neighbours.

Whether affected residents will report a sink-hole incident to the municipality and how they will report it differs to a large extent. Reporting the incident is mostly done just to inform officials about a new sink-hole or in hope of getting a new RTP-house in the Klarinet-area. The hopes of getting help rebuilding their shack seem low. Reporting can be done directly at the eMalahleni local municipality, on community meetings (every Sunday) or to the ward councillor who passes the issue further to the local municipality. Some residents have lost faith in the municipality and consequently see no point in reporting an incident to them. One disappointed resident said: "They just come here, ask me about the holes, and take some pictures. That's it. They promise about RTP-houses, but nothing happens".

Crime

Criminality was, second to sink-holes, the greatest hazard perceived by the residents. It is common with theft and robbery in the area and some also mentioned violence and a risk of rape. To cope with criminality residents are staying inside after darkness and try to look after their belongings. Some respondents ask their neighbours to look after their belongings when leaving the house. If they have to go outside when it is dark, many residents avoid entering some areas in the community due to the risk of being robbed. According to the residents, robbery and theft are usually linked to gangs dwelling in the community and is often also drug-related. A problem with the criminality issue is that many people are afraid of revenge from the criminals and therefore they cannot rely on help from neighbours or other friends in the community when affected by crime.

Robberies and theft happen mostly after dark. According to the residents, a solution to many of these problems is to establish electricity in the area. They believe that enlightening the settlement would reduce theft and robbery and it would make it possible for the residents to stroll around without being scared at night.

Lack of water

Lack of water was often a problem in the area and many residents mentioned it as a hazard. The residents have shared drinking water facilities spread out in different places in the community but these often fail to deliver water. In these cases the residents have to walk to a central location situated 3-4 km from Old Coronation. One of the respondents explained the water problem as: "Water is the source of life. You can't live without water, you see. And here you sometimes have to walk very far to get water. It is no good here."

People in the community often mentioned a worry about their children related to the water-problem. If they have to leave their children home alone when they are collecting water far away, the risk of the children getting hurt inside the shack or house increases. Another option is letting the children collect the water but that also worries them because of the long distance and the risk of them falling into a sink-hole.

The residents do not cope with the water-problem in any way themselves. Instead, they think the problem lies with the municipality since functioning water facilities are seen as a basic service no one

should be without. In the interviews, no information is found of individuals gathering large quantities of water on the property to be less dependent on functioning facilities.

Other hazards

Other hazards mentioned were *fires, a pipeline, underground fires, no sewerage and no electricity*.

Some residents mentioned fire as a hazard. The risk of a fire in a shack or a house is high since no electricity is installed in the area and people have to use candles for lighting and open fires for cooking. A solution that would decrease the risk of fires is to establish electricity in the area.

Only one respondent mentioned the pipeline as a hazard. She is living just above it but was not aware of the pipeline when she first moved to the community. It was later when people from the municipality told her about the hazards that she became aware of it. Knowing that the pipeline is just underneath her property makes her worried, but she does not cope with the hazard in any way. The pipeline is situated just on the edge of the study area and is therefore not affecting the whole community.

One respondent mentioned underground fires in the mine as a hazard. The underground fires increase the risk of sink-holes to occur. No ideas were given of how the residents could cope with the hazard.

Health issues like bad smell and flies caused by the lack of sewerage was mentioned as a hazard. However, it was only a single response and no depth in the analysis of the problem was given.

The hazard of no electricity is linked to the risk of fire and the risk of crime. According to many respondents, electricity would help to reduce both the criminality and the risk of fire in the community.

Chapter 6 – Synthesis and discussion

The reasons for people to locate their homes in hazardous areas, and their degree of vulnerability, vary around the world. There is often a distinct difference between why rich and poor people decide to place their homes at risk. Reasons why poor people decide to live in hazardous areas could be that the soil in flood-affected areas gives good income or that they only can afford to live in dangerous slums. Rich people often voluntarily decide to live in hazardous areas and cope with the hazards through risk reducing technology (Wisner *et al.*, 2004). According to Oliver-Smith (1999) the choice of habitat is for instance determined by social processes in relation to the inhabitants' class, gender, ethnicity, age, etc. Finally, the choice of habitat is controlled by political, cultural and economic factors. The vulnerability varies between different groups in society. In general one could argue that people with little knowledge about the risks are the most vulnerable. One must also have in mind that settlements often become more hazardous because of the settlement itself. The human impact on nature, as deforestation and rapidly growing cities with densely populated areas, makes hazards more likely to occur and people more vulnerable (UN/ISDR, 2004).

The reasons why people live in an obvious hazardous place like Old Coronation are complex and governed by a variety of factors. By analysing the results from the case study the reasons appear more clearly and a theory can be formed. As mentioned in chapter 2, this process of analysing the results is a holistic process with the research question in focus. In the synthesis factors belonging to the themes are used to form reasons which explain why people live in Old Coronation.

6.1 Perception of hazards

After analysing the theme *Residents relation to hazards* it is safe to say that the lack of risk awareness is not a reason for people to live in Old Coronation. There was a consensus among both the residents and the governmental officials that the main risks in the area are the hazards related to the sink-holes. Because of their awareness most of the people want to move to a safer area but different circumstances keep them from leaving the community.

According to the behavioural paradigm settlements on hazardous areas are a “behaviour” fault where residents have poor perception of the hazards (Smith, 2001). This is not the reason why people live in Old Coronation. The results deny that residents live there because of irrational behaviour or because they are unaware of the risks. Even though many of the residents did not know about the sink-holes when they moved to the area, they are all well aware about them today. The way the residents cope with the hazards with both prevention and recovery are also behaviours indicative of risk awareness.

The poorest people do not often have much choice than to locate in hazardous areas (Smith, 2001) and according to UN/ISDR (2004) the rapid population growth in many African countries will likely concentrate even greater number in hazardous settlements. The poor peoples' choice of habitat is to a greater degree involuntary than it is for the rich (Wisner *et al.*, 2004). This is also the situation in Old Coronation where the involuntary situation for the residents is expressed in terms of, e.g., lack of land and a requirement of closeness to jobs and services. Wisner *et al* (2004) claims that one reason for people to live in hazardous areas can be that the closeness of jobs outweighs the risks. This is also one reason for people living in Old Coronation, where many advantages in the area outweigh the risks.

Another reason for people staying in the hazardous community is, according to a municipality official from the department of town planning, that some people have been living in the area for a long time without being affected. Until now no one has been seriously hurt and only a few houses have been destroyed. He claimed that before someone gets seriously hurt or even dies the residents will not leave the area without some form of economic assistance from the municipality. According to the municipality official, some residents might be well aware of the risks with the sink-holes but do not take them seriously since no one has been severely injured. This argument is partially supported by Smith (2001) who states that the public judgment is based on peoples' experience and social context. Table 5 in Appendix D mentions many factors which would increase the public risk perception and the seriousness of the hazards. For example would serious injuries or deaths caused by the sink-holes gain more media attention, which is a factor that tends to increase peoples' risk perception. This is also a good example of the importance of using media as a disseminator. By getting the media's attention it is possible to increase peoples' perception of a specific hazard when it is found necessary. According to the interviews the residents have received much information about the sink-holes from the ward councillor and at community meetings. As mentioned in chapter 3, it is important that the spread of information continues to keep a high level of risk awareness in the community.

There are many other hazards than the sink-holes which affect the residents in Old Coronation; crime, lack of water, underground fires, no electricity, no sewerage and a pipe line. The underground fires are considered being directly related to the sink-holes, which is affecting the reasons for people living in Old Coronation as explained above. The pipeline is an isolated hazard and is situated just on the edge of the study area and is therefore not affecting the whole community. Hence, the pipeline is not considered to generally influence the reasons why people live in Old Coronation.

Misselhorn (2008) explains that major challenges in informal settlements are poor sanitation, bad water supplies, no access to electricity, the high number of shack fires and the safety due to high criminality rates. Misselhorn's compilation of challenges and hazards is well in accordance with the hazards mentioned by the residents in Old Coronation and do not distinguish Old Coronation from other informal settlements. Hence, they do not affect the reasons why people live in a high-risk community like Old Coronation.

6.2 Nearby jobs

Analysing the results lead to the conclusion that one main reason for people living in Old Coronation is the closeness to jobs. *Nearby jobs* is an important reason which has emerged from the category *Jobs* in the theme *Why they moved to Old Coronation* and in the category *Close to jobs* in the theme *Factors that residents value in a community*.

Elsenburg (2005) states that unemployment and poverty particularly is a problem in agricultural areas. As a result, post-apartheid urbanisation often takes place from rural sectors to larger metropolitan areas with economic growth (Cross, 2001). The demographic findings indicate that most people moved from nearby areas, where the Limpopo province and other areas in the Mpumalanga province are overrepresented. There has according to Atkinson (2007) been a decrease in jobs in commercial farms, which has forced many to settle down in and around small towns. Several residents lived in rural areas, with few job opportunities, before moving to Old Coronation.

Limpopo had an unemployment rate of 32.5 % in 2007 and when looking at income per capita Limpopo is the poorest province in South Africa (Elsenburg, 2009b).

There was consensus among all interviewed municipality officials that an important reason for people to live in Old Coronation is the job opportunities in the mines, as well as job opportunities in other companies in eMalahleni. Great numbers of people continue to migrate to the eMalahleni area and a municipality official pointed out that “Witbank is called the squatter-mecca of Mmpalanga” and that “people are flocking in here” because of the jobs. Statistics show that eMalahleni municipality is growing rapidly. With a population of around 276 000 people in 2001 (Census, 2001), growth indicators from 2007 show that the population now probably has exceeded 430 000 (Statistics South Africa, 2008). About 31 % live in informal settlements in eMalahleni, which is slightly more than twice as many compared to the average percentage in South Africa.

One important reason for people to live in Old Coronation is that residents are not dependent on transportation when searching for jobs. They can many times walk to the different mines and companies that are spread out in the area. One municipality official said that transportation is too expensive for many of the residents and that the possibility of walking to jobs is an important reason for people living there.

A similar example can be found in Dhaka in Bangladesh. Poor and landless people in the densely populated country had few alternatives to settling down in an area close to Dhaka’s vegetable market where they saw economic opportunities. The problem was that it was a low-lying area often affected by floods. Because of the extreme poverty, the settlement and its resident were very vulnerable. This contributed to the fact that the floods in 1988 became a disaster (Wisner *et al.*, 2004).

6.3 Lack of suitable land

Most residents living in Old Coronation are aware of the risks with sink-holes and want to move to another place in the eMalahleni-area. However, the *lack of suitable land* results in a sense of hopelessness among many residents and comments like “we want to move, but there is no place to go” are common. The category appears strongly in the interviews when the reasons for the residents moving to Old Coronation were discussed, but also in the discussion of why residents do not rebuild their shacks in another place. The problem with lack of land is confirmed by the person from the Department of Town Planning: “You know, the people we moved away from nearby sinkholes, tomorrow there will be someone else there. It is issues of access to land. It makes it hard.”

The eMalahleni community has a rapid population growth (Census, 2001; Statistics South Africa, 2008), which is one of the reasons for the problem with lack of land. According to the governmental interviews, the municipality lacks the resources of establishing formal settlements at the same rate as people are moving in. Additionally, it is difficult to find affordable land suitable for habitation around town. These issues are explained in the interview with the Department of Town Planning: “Most of the land we have is undermined or under other ownerships. We have been trying to buy pieces of land and when that happens we are trying to relocate people. But once again, when you move a thousand another thousand moves in. There is one thing that attracts them to Witbank, job-opportunities. They come as farmers from all provinces because they know that here is where the mines are.”

Poverty and lack of suitable land are closely related (Dayton-Johnson, 2004). The residents in Old Coronation cannot afford buying land or pay expensive rents to land owners. Instead they are dependent on finding undeveloped land where they can build their shack and live for free. Once they are settled it is difficult to make them move. The *Prevention of Illegal Eviction from and Unlawful Occupation of Land Act (No. 19 of 1998)* states that “no one may be evicted from their home, or have their home demolished without an order of court made after considering all of the relevant circumstances.” (Act 19 of 1998). The main reasons for the act being created were to prevent the arbitrary evictions common during the Apartheid-era as well as protect land-owners from squatting in their property. In many cases the act makes it laborious to prevent the growth of informal settlements (Kahanovitz, 2007).

According to the interviews with the residents there are no unused grounds close to town where they can rebuild their shack. If the residents would have to be relocated they would be dependent on the municipality to provide them with land. According to the municipality officials, land is expensive in the area and the price of land close to town is likely to increase when the population continue to grow. Most urbanisation in South Africa is by people with poor finances (UN/ISDR, 2009). Consequently, the largest growths of cities are in settlements with low quality of construction and on land that is not suitable for habitation. Old Coronation is a typical example of this.

One interesting fact that emerged through the field study was the allegation of an illegal property market in Old Coronation, which was further explained by one of the municipality officials: “There have been a lot of allegations in terms of people selling stands through each other. Maybe one guy has claimed a piece of land as his. ... When the real landowner comes you can’t just say that you bought the land, because he is the actual owner. That is just the allegations all around and there have been allegations that people are selling pieces of land in Coronation as well”. It is difficult to study these allegations further since the market is illegal and, therefore, nothing the residents are keen on discussing. However, it is safe to say that two reasons behind the alleged illegal market in Old Coronation is the lack of land and the fact that Old Coronation is an established community. If the allegation is true, people with little money who want to live close to town with access to water and other services have no choice but to enter the illegal property market. This would tie people to Old Coronation and contribute to the challenges of moving the residents.

6.4 Established community

The category *Access to services* that is found in two themes forms the one reason for living in Old Coronation to be the reason that it is an *Established community*. The change of the name of the reason was decided after analysing the results with the research question in focus as well as comparing the findings with the answers from the governmental interviews. According to one of the municipality officials, the community started to develop around 20 years ago and it is observed during the field study that Old Coronation today is well established with all kinds of services.

The community is not formalized and it is missing a lot of basic services, for example no electricity or sewerage. However, years of development have created an area with access to water, nearby schools, a mobile clinic, small shops, barbers and other businesses spread throughout the community. Transport by taxi is also well established in the area and when people in the community fill up the taxis they will travel cheaper. It is important to point out that most residents cannot afford taxi on an everyday basis. Atkinson (2007) says that people sometimes move from rural areas to

towns since there are accessible facilities. This agrees with our study where some residents mentioned schools and other services as a reason for moving from rural areas to Old Coronation.

The established community with all the nearby services both makes people stay in Old Coronation and makes more people move to the community. Most of the municipality officials mentioned that people are still migrating to the area. Because of the reasons *Nearby jobs* and *Lack of suitable land*, Old Coronation is often the only established alternative for poor people who cannot pay rent but need jobs and nearby services.

6.5 Family

It is obvious that the *Family* is an important reason why people live in Old Coronation. It is not only a fairly strong reason why many people move there, it also occurs as a factor that the residents value in a community. Family relationships are central to human existence, health and happiness (Berscheid & Peplau, 1983) and it is not surprising that the reason appears in the study. However, compared to the other reasons for living in Old Coronation the connection to the specific area is weaker since the community has only been established for 15-20 years. It is natural that people want to live close to their family and the reason would probably be just as strong in any area around eMalahleni.

It is more difficult for families to move from the community than for people living in single households. A majority of the respondents lived with their family and the study shows that they are more reluctant to moving. A reasonable assumption is that families are much more rooted in the community and much more dependent on the services offered by an established community (school, health clinic and reliable water source for young children etc).

Family is the reason why many respondents end up in Old Coronation. When one family-member moves to Old Coronation it is common that other family members follow. This is shown in the study where fairly common reasons for moving to Old Coronation were to live with your sister, husband, father etc. Similar reasons appear in many migration-studies in Europe and North America, which indicates that family based migration has replaced the former dominating labour migration (Boyd, 1989).

The study also shows that the residents value living with their family. If residents would have to leave the area, none of the respondents said it was an option to split families. In several cases, the respondent instead distinctly pointed out the importance of moving as a family.

6.6 Institutional issues

The category *Provision of stand or house* merges together with the category *Institutional issues* into a reason for people living in Old Coronation, or rather a reason for people not moving, being *Institutional issues*. The South African Government Policy tries to ensure that no citizen lives in poor housing and that all informal settlements should be eliminated and provided with basic services (Statistics South Africa, 2008). The problem with Old Coronation is that the area is not suitable for habitation and cannot be developed. Therefore it is decided that the residents in the community should be moved to Klarinet, but this process will take a long time since around 3000 units is found in Old Coronation (eMalahleni local municipality, 2008).

The planning and development of new residential areas should follow the principles, rules and standards described in the National Housing Code 2009. It is based on the statement of the South African Constitution in 1996 that everybody should have access to adequate housing. The State should through legislative changes and other measures achieve the progressive realisation of this right (DHS, 2009).

There is resignation within the municipality because of the lack of resources and the problem with finding suitable land to buy for the residents. One municipality official explained that they are trying to buy pieces of land for the residents but much land around eMalahleni is undermined. It will also take a long time to rebuild an area for all the residents, especially since the new area has to be a dynamic and integrated settlement with residential stands for low, middle and high income groups. This aim of creating integrated settlements in South Africa is presented in the *Integrated Residential Development Programme (IRDP)*. IRDP was formed as a part of the National Housing Code with the clear purpose of creating social cohesion. Included in the IRDP is also providing non-residential stands for certain services like churches, schools and clinics (DHS, 2009). Not all residents in South Africa qualify for the IRDP though; a selection of requirements is listed in table 3.

Table 3. Selection of qualification requirements for the IRDP. Source: (DHS, 2009)

Selection of qualification requirements for the IRDP:	
✓	South African resident or on a permanent residence permit.
✓	Legally competent to contract (i.e. over 18 years old).
✓	Must be married, habitually cohabit or have financial dependents (special rules apply for disabled, veterans and aged persons).
✓	Household must earn a monthly income in the range that is annually approved.
✓	Has not owned fixed residential property (otherwise the person may only qualify for the purchase of vacant services site).

Many residents in Old Coronation are waiting for the municipality to offer them a place to move to. Some residents are of the opinion that the municipality already has promised them a house in Klarinet. When nothing is happening, or things move very slowly, many residents lose faith in the municipality, with few residents showing up at the community meetings. The ward councillor pointed out the importance of residents showing up on such meetings to describe their situation. The ward councillor’s opinion is in accordance with the *Informal Settlement Upgrading Program (ISUP)*, which encourages involvement of the residents in the upgrading process (DHS, 2009). ISUP is another program in the National Housing Code and it seeks to upgrade the living conditions for the millions of people living in informal settlements by providing secure tenure and access to basic services and housing (DHS, 2009).

ISUP is meant for all existing informal settlements in South Africa; however, if the area is not suitable for human settlement (due to undermining or flooding etc.) residents will be relocated elsewhere. The program is meant to include all residents in all informal settlements, see table 4, and differs in that way from IRDP (DHS, 2009).

Table 4. Example of residents included in ISUP. Source: (DHS, 2009)

Example of residents included in ISUP:	
✓	Immigrants whose residence status is uncertain (applications are considered on a case-by-case basis).
✓	Households headed by minors.
✓	Persons without dependents.
✓	Persons that are not first-time house owners.

Another problem in the process of establishing a formal settlement in Klarinet is the continuing migration to Old Coronation. A municipality official explained the situation saying that if you move away one family from Old Coronation, someone else will be there the next day because of the lack of land in the area. This migration makes it hard to prevent Old Coronation from growing further. According to Kahanovitz (2007) it is hard to prevent the growth of an informal settlement since no people can be evicted from their homes without an order of court. It should be noted that during the Apartheid-era forced removals were common and the act of prevention of illegal eviction was established partly because of this (Kahanovitz, 2007). Until now the municipality has only moved people who have been directly affected by a sink-hole or people living really close to a growing sink-hole. There is a rumour mentioned by both municipality officials and residents that some people are intentionally moving close to a sink-hole ignoring the risks in hope of being relocated to a house in Klarinet.

6.7 Reflection

The overall reason for people to live in Old Coronation is complex and based on combinations of many factors. This report tries to sort out the main reasons and information on why the reasons exist. However, it can be dangerous to generalize. It is important to bear in mind that there are just as many unique combination of factors as there are residents.

The results from the field study reveal many rather expected factors. Several of the reasons for living in Old Coronation are probably strong in other areas in South Africa as well. There are for example countless of other residential areas in South Africa (and the rest of the world) which have arisen and evolved because they provide good job opportunities. Other reasons might be more specific for Old Coronation; i.e. the land-situation and many of the institutional reasons.

The reasons for living in Old Coronation must be analysed together with the residents' risk awareness and perception of hazards. It is interesting that people are living in the area despite the hazards. One suggestion could be that the residents simply do not appreciate the hazards as a big threat. However, this study has shown that this is not the case. The residents are much aware of the growing risks with the sink-holes and they feel very unsafe. Another explanation for defying the risks could be that the residents in some way benefit from them. There are examples of this in other parts of the world where, for example, regularly flooded areas are good for farming. This explanation might be partially true in Old Coronation. There are unconfirmed allegations that some people are settling close to a sink-hole to receive a house from the government. However, according to the study most people are living in the area for other reasons.

The risk awareness and perception of the hazards among the residents lead to the conclusion that the reasons for living in Old Coronation somehow outweigh the risks. The nearby jobs, lack of land and the access of services the area provide simply make most residents defy the hazards. It needs to be said that most people do this unwillingly (at least to some extent) and they feel that they have no other reasonable choice. Many residents come from very poor parts of the country where they struggle just to find food for the day.

It came as a surprise that no respondents mentioned HIV/AIDS or any other disease as a challenge or something that threatens their life in the area. As mentioned in chapter 4 South Africa has one of the highest HIV-prevalence in the world and the disease is most widely spread in the townships. One reason might be that the respondents thought the interview was about threats in terms of natural hazards. This explanation contradicts itself since crime and lack of water were two of the most common answers. A more likely explanation is that people prefer not to talk about the disease. When discussing this matter with representatives from the ACDS, it was clear that HIV/AIDS was something you would not always talk about openly. In fact, according to the representatives from the ACDS, many relatives to an HIV victim make up stories of why the person has passed away.

The people participating in the study were in general well informed about the risks in the area. This probably affected the results a great deal and a study in the area ten years earlier might have given completely different results. It is important to bear this in mind when the results are compared with results from similar studies in other areas. Another thing that probably affected the results was that the municipality had already decided that the residents would have to move away from the area. Most residents had already been promised a new better place to stay in and just waited for the announcement from the municipality. This is probably one of the explanations of why many residents found it unnecessary with risk reduction measures in Old Coronation.

Chapter 7 - Conclusion

So why do people live in Old Coronation? There is no easy answer to that question but this study indicates that there are five major reasons:

- **Nearby jobs.** Most residents have migrated to Old Coronation from areas with high unemployment rates. The area around eMalahleni is famous for its job opportunities and Old Coronation is located with a walking distance to many of them. This is highly valued since most residents cannot afford transportation to distant jobs.
- **Lack of suitable land.** It is difficult to find free land in and around eMalahleni where people can take residence because of rapid population growth, undermined land and because much land is occupied by mining companies. Many residents in Old Coronation cannot afford living in a formal settlement where they have to pay rent.
- **Established community.** It is important for residents to live in an established community with services nearby. Services could for example be schools, clinics, access to water, shops or other established businesses in the community. Old Coronation is often the only established alternative for poor people who cannot pay rent but need jobs and nearby services.
- **Family.** Relatives are not only a fairly strong reason why many people move to Old Coronation, it also occurs as a factor that the residents value in a community. Residents living with their families tend to be much more rooted and much more dependent on the services that are established in the community.
- **Institutional issues.** Another area, Klarinet, has to be developed since Old Coronation is unsuitable for habitation. This process takes long time because there is inertia within the municipality due to the lack of resources and the problem finding land suitable for habitation. The continuing migration to Old Coronation is another problem for municipality to solve.

People do not live in Old Coronation because they are unaware of the risks with the sink-holes. There was a consensus among both the residents and the governmental officials that the main risks in the area are hazards related to the sink-holes. One of the reasons for still remaining in the area is because the benefits outweigh the risks. It is not only free rent; it is also an established community with jobs and services a walking distance away. There are also indications that residents don't take the risks as serious as the municipality think they should since no one so far have been severely injured. Institutional issues play an important part. Very few of the respondents would hesitate to move if the municipality would provide a new safe settlement with similar benefits. It is difficult for the municipality to find enough resources for moving all the residents. However, it is the plan of the government to move people to a safer area and some of the worst affected families have already been moved.

Family and employment are strong reasons for many people to move to the eMalahleni-area. However, they don't necessary explain why people end up in Old Coronation. One of the main reasons for this is the lack of space in other similar settlements around eMalahleni. Poverty and unemployment is a problem in Old Coronation and most resident cannot afford living in a formal settlement where they have to pay rent. Instead they are forced to live in an informal settlement. There are other informal settlements in the area as well but it can be difficult to find space.

It is important to say that the situation in Old Coronation is complex. Most people live in Old Coronation because of a number of combined reasons which makes the problem more difficult to solve. In addition, many of the reasons are based on greater national and international social problems. However, in the process of making the situation better it is fundamental to understand the reasons why people decide to live in the area. The result can for example be used when planning alternative areas like Klarinet, where it is important to include the residents' views and values to obtain a viable area. In this case it is vital that the new area can offer an established community with affordable housing. It is also important that the new area is close to jobs and services, and to take into account that the residents value living close to their family. The remaining problems are on an institutional level where the lack of resources and the difficulties of finding land suitable for habitation are tough tasks to solve.

The residents have ended up in the community because of different social processes governed by the context of South Africa. The many poor living on undermined grounds in weakly built houses have made the residents vulnerable. Therefore it is important to move the residents to another safer area before the hazardous settlement becomes a disaster.

A broader perspective

People are continually moving to different hazardous places around the world and it is therefore important to analyse why people decide to live in such areas. For example indicates the study by Roth (2011) that a community outside Cape Town has problems with a rapid community growth even though the community is affected by multiple risks. Roth has not studied the underlying reasons for people living in the area. It would be difficult to transmit the result from this study to that area or to other hazardous communities since there are indications that the results are very specific for Old Coronation. It would be interesting to conduct similar studies in other areas around the world and compare the results. Hopefully future research can be compared with the findings in Old Coronation so the similarities and differences can be analysed.

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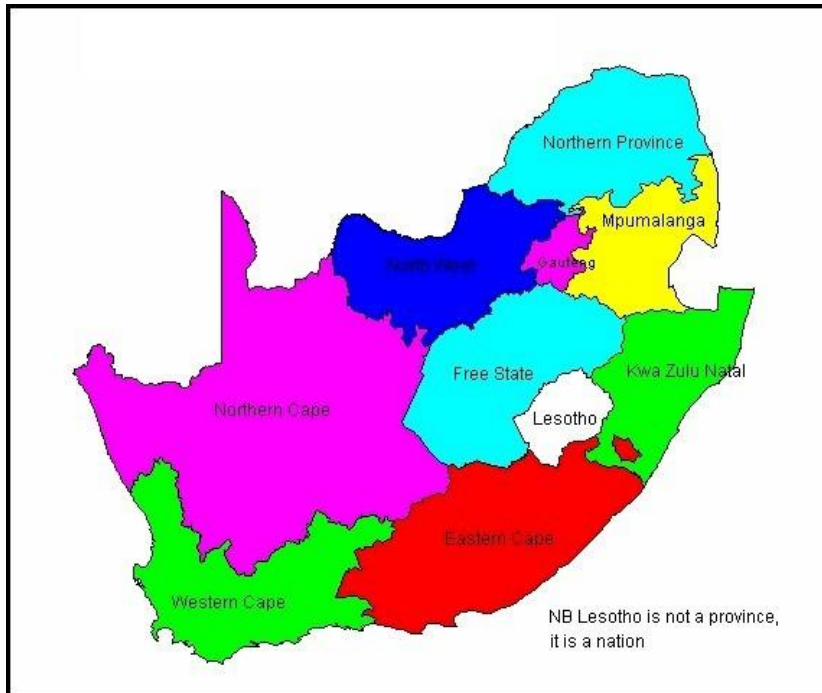
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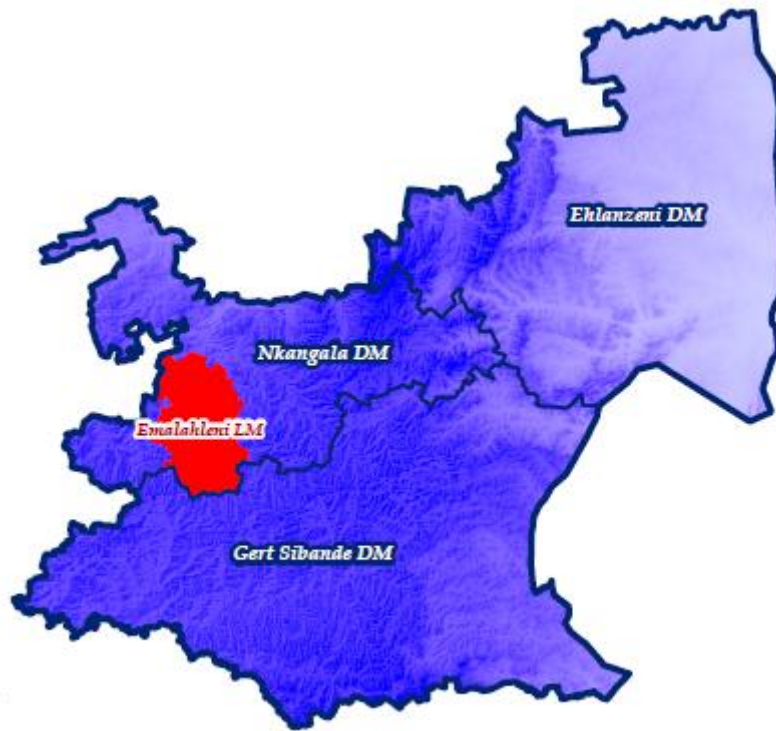
Appendix A – Maps



Figur 12. A map over the provinces of South Africa. The Mpumalanga province is situated in the northeast. Source: Water Rapsody (2010).



Figur13. A map showing the Mpumalanga province. Witbank (eMalahleni) is situated in the west. Source: Rainbow Nation (2012).



Figur 14. The map is showing the districts municipalities in the Mpumalanga province. The local municipality of Emalahleni is filled with red. Source: DWA (2011).

Appendix B – Photos

Photos from the field study are presented in this section. The reason is to present additional information to the reader to gain a better understanding of the situation in Old Coronation.



Figure 15. Sink-hole with a shack in the background.



Figure 16. Sink-hole close to shacks.



Figure 17. The sink holes varied in size. This sink-hole was one of the bigger ones.



Figure 18. Sign explaining that a gas pipe was buried underneath.



Figure 19. Picture of the Klarinet-area.

Appendix C – Interview guide

The interviews started with an introduction to get demographic information about the respondent. Then the interviews were divided into three themes: why people moved to Old Coronation, what hazards people perceive in Old Coronation and factors resident value in the community. According to the grounded theory approach the interviews were more of a conversation around the themes than strict questions with answers. The questions under the themes were used as support if the conversation didn't float.

a, Residents

Introduction: Demography

1. Gender?
2. What is your age?
3. Where do you come from?
4. How long have you lived in Old Coronation?
5. What is your household situation? Do you live by yourself/family/friends/partner/children?
6. Do you have a job, what is your occupation?

Theme 1: Why did you move to Old Coronation?

7. How come that you moved to Old Coronation? Where did you move from?
8. Did you want to move or didn't you have any choice?
9. Did you move here by yourself? Who helped you move?
10. What factors are valuable for you in Old Coronation? Are these factors the reason you moved to Old Coronation?

Theme 2: Perceived hazards in the Old Coronation

11. What dangers do you experience in Old Coronation?
12. In what way do they affect your daily life? Why?
13. Where you aware of the dangers when you moved here? How did that affect your decision of moving here?
14. How do you cope with the dangers?
15. What do you think causes the dangers?
16. When did the dangers start to appear? Has it gotten better/worse?
17. Has anybody explained to you what causes the dangers and how you can protect yourself?
18. Which of the dangers concerns you the most? Grade them from 1-5. Why?

Theme 3: What's valuable for you?

19. If you would have to move what would you miss in Old Coronation?
20. What does a potentially new place have to provide? Who should provide that for you?
21. What is good with Old Coronation, what is bad?
22. What was better in the area you moved from, what was less good?
23. What challenges, except the dangers, do you face living in Old Coronation?

b, Governmental Authorities

Introduction: Demography

1. Gender?
2. What is your position?
3. How long have you worked in your position?
4. How long have you been working with Old Coronation?
5. What is your involvement in Old Coronation?

Theme 1: Why do people move to Old Coronation?

1. How come people move to Old Coronation? Where do they move from?
2. What factors do you think people value in Old Coronation? Are these factors the reason people move to Old Coronation?
3. Do you want people to move to Old Coronation? Why/why not? How do you stop people from coming?

Theme 2: Perceived hazards in the Old Coronation

4. What dangers do you think people experience in Old Coronation?
5. In what way does it affect their daily life? Why?
6. Do you think people were aware of the dangers when you moved here? How does it affect their decision to move here?
7. How do people cope with the dangers? What do you do to help them from the municipality's side?
8. What do you think causes the dangers? Do people know?
9. When did the dangers start to appear? Has it gotten better/worse?
10. Has anybody explained to you what causes the dangers and how you can protect yourself? Who?
11. Which of the dangers concerns you the most? Grade them from 1-5. Why?

Theme 3: What's valuable for the residents?

12. If people would have to move what would you think they would miss in Old Coronation?
13. What does a potentially new place have to provide? Who should provide that?
14. What is good with Old Coronation, what is bad?
15. What challenges, except the dangers, do people face living in Old Coronation? What do you do from the municipality's side to help them?

Appendix D – Factors that increase and decrease risk perception

Table 5. Example on factors that increase and decrease the public's risk perception (Smith, 2001, p. 72).

Factors tending to <i>increase</i> risk perception	Factors tending to <i>decrease</i> risk perception
Involuntary hazard (radioactive fallout)	Voluntary hazard (mountaineering)
Immediate impact (wildfire)	Delayed impact (drought)
Direct impact (earthquake)	Indirect impact (drought)
Dreaded hazard (cancer)	Common hazard (road accident)
Many fatalities per event (air crash)	Few fatalities per event (car crash)
Deaths grouped in space/time (avalanche)	Deaths random in space/time (drought)
Identifiable victims (chemical plant workers)	Statistical victims (cigarette smokers)
Process not well understood (nuclear accident)	Process well understood (snowstorm)
Uncontrollable hazard (tropical cyclone)	Controllable hazard (ice on highways)
Unfamiliar hazard (tsunami)	Familiar hazard (river flood)
Lack of belief in authority (private industrialist)	Belief in authority (university scientist)
Much media attention (nuclear plant)	Little media attention (chemical plant)

Appendix E - Common errors in interviews

It is difficult, not to say impossible, to construct and perform a perfect interview without any errors, and it is important to be aware of the common sources of mistakes, misunderstandings, and other errors. Foddy (1993) has compiled reasons to why many interviews in the past have gone wrong. Some of the reasons are presented in table X together with explanations and examples.

Table 6. Common errors in interviews.

<p>The relationship between what they say they do and what they actually do is not always very strong.</p>	<p>This topic was early studied by LaPerie (1934) who travelled around the USA with a Chinese couple in the 1930's and studied the response the couple received at different hotels and restaurants. One of the 250 establishment refused the couple service. Six month later LaPerie wrote the hotels and restaurants and asked if they would accept Chinese customers. 50 % answered and 90 % of them said no.</p>
<p>Small changes in wording sometimes produce major changes in the distribution of responses.</p>	<p>Even simple questions can be answered different when the wording is changed. Peterson (1984) studied the difference in the two questions "What is your age?" and "How old are you?". The first question produced a 3.2 per cent non-response rate and the second a 9.7 per cent non-response rate when they were placed in a similar content with a similar sample of respondents.</p>
<p>Respondents commonly misinterpret questions.</p>	<p>Belson (1981) studied respondents' interpretation of different common words and concluded that words like "usually", "generally", "people", "children" and "weekday" means different things to different people.</p>
<p>Respondents' answer is sometimes affected by the question format <i>per se</i>.</p>	<p>Open question often produces different results than similar closed questions (Foddy, 1993). See separate paragraphs on <i>open and closed questions</i> and <i>semi-structured</i> in questions in chapter 2.</p>
<p>Respondents often answer questions even when it appears that they know very little about the topic.</p>	<p>Smith (1984) has compiled literature discussing the subject. According to his research up to 30 per cent of the respondents answer question with a fictive topic as if the topic was familiar to them.</p>
<p>Respondents answer wrong on factual questions.</p>	<p>A study by Parry and Crossley (1950) revealed that 5-17 per cent of a random sample of residents in Denver gave incorrect answers to factual questions like if they had voted in various elections, if they possessed a library card and details of their car ownership.</p>
<p>Answer to earlier questions can affect respondents' answer to later questions.</p>	<p>The answer to the initial question <i>how often the respondent preys</i> tend to affect how the respondent answers the later question <i>how religious they are</i>. If the prior question is <i>how happy the respondent is at work</i> followed by <i>how happy the respondent is in general</i>, the respondents tend to exclude consideration of work when answering the second question (Foddy, 1993).</p>
<p>Changing the order in which response options are presented sometimes affects respondents' answer.</p>	<p>Respondents are more likely to choose the first option of the possible answers when they read the alternatives themselves, and more likely to choose the last option when the alternatives are read out aloud to them (Krosnick & Alwin, 1987).</p>