

**Community perceptions of mining:
The rural South African experience**

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EXECUTIVE SUMMARY

Globally private companies and multi-nationals, including mining companies, have recently, in the current and post financial crises environment, seen their public image badly scarred, fermenting a negative image towards business in general, but also specifically towards the mining industry. This negative perception can also be seen in the South African mining industry, as reflected in various media reports on high profile, and often violent, community protests and labour disputes in the mining industry. Communities feel that they are not benefiting sufficiently from the proceeds and wealth generated from resources that belong to them. Communities are, therefore, exerting more pressure on governments and mining companies to allow them to have a greater say in the operations and subsequent benefits derived from minerals extracted from resources within such communities.

This leads to the problem statement of this particular study wherein an exploration company wants to establish the perceptions of a rural farming community in the western part of the North West Province of South Africa with regard to possible mining operations in the area. The aim of the research is to establish what the perceptions are of a rural farming community in South Africa with regard to mining and the possible establishment of a mine within their community by the exploration company, resulting in a better understanding and management of such perceptions. The study will look at the perceptions of community members towards mining within a 30 km radius of the actual position of the possible future mine.

Perception is defined as “an interpretation or impression based on one’s understanding of something”. Perception is a balance of simultaneously seeing (senses) and understanding (cognitive). Understanding also involves a process of evaluating and then acting. Perception can also change over time and people’s negative perceptions towards mining can, therefore, be undone. The outward symptom of tensions between companies and communities manifest in the form of conflicts. Conflicts can be the cause of large financial losses for the mining companies involved. Conflicts are mainly caused by the

negative impacts of mining on local communities, but can also be the result of disputes between local factions competing for a share in the rewards from the mining activities. Mines have many positive impacts and provide key socio-economic infrastructure such as roads, clinics, schools, housing, water and electricity. Negative impacts of mining can be anything from forced relocations, crime and the loss of a sense of community to environmental impacts such as erosion, acid mine drainage, noise and dust pollution, landform changes and ecological impacts. Corporate Social Responsibility (CSR) specifically calls on mining companies to also respond to their other stakeholders (employees, customers, affected communities and the general public) with regard to issues such as climate change, human rights and employee welfare and not only to its shareholders. To encourage the mining industry to address issues relating to CSR the South African Government included elements of CSR in legislation. The two main portions of legislation dealing with the language of CSR, whilst impacting on mining, are the Broad-based Black Economic Empowerment Act and the Mineral and Petroleum Resources Development Act.

The socio-economic conditions of the community indicate that the levels of education and income are low with high levels of unemployment. The community is generally very poor and much has to be done to provide many community members with basic services. Crime levels are, however, low with most crime of a less serious nature.

The methodology followed in the study is based on a qualitative study in the form of individual interviews using purposive (criterion based) sampling. To enhance the outcomes of this study it was deemed appropriate to also use quantitative methods to compliment the qualitative approach. The structured interview used in this study was designed to access the perceptions of community members with regards to possible mining operations in the area. Forty-eight individual interviews were used for the study from a population of 70 (N). The sampling frame selected for the study is composed of farmers directly affected by possible mining (group 1), other farmers from the study area (group 2), local business people (group 3) and residents from the local

town (group 4). The data analysis is structured logically according to the sub-sections (main-themes) of the interview to explore each of these main-themes in detail. Sub-themes were developed by using coding (open, axial and selective) to identify words, phrases or sentences that reflect single, specific thoughts to open up the text to reflect the various core concepts ('perceptions').

The interview results indicate that the community has a positive perception towards mining in general. Responses from farmers who stood to be directly affected by a possible mine are still highly positive, but are significantly less so when compared to the entire sample population. Negative perceptions highlighted by respondents include the increase of crime, the pollution of groundwater, the reduced availability of groundwater, the loss of productive farmland, the increased cost of housing and the increased incidence of diseases. The mining industry will, therefore, have to take more time to listen to local communities and become more responsive to their needs and expectations. Every time a mining company breaks its promises to community members, every time that a mining company is dishonest, every time senior executives are seen to be rewarded undeservingly and excessively, the negative perceptions towards mining companies are reinforced and entrenched. Social and labour plans should be developed with genuine community involvement, determining the real needs and communicating clearly what the mining company can and cannot do. It is further important to manage and develop and/or adjust these plans on a continuous basis in conjunction with the community. Mining companies should market themselves better and advertise to the community and the country as a whole what good they are doing within and for communities.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Globally private companies and multi-nationals have recently, in the current and post financial crises environment, seen their public image badly scarred (McKinsey Global Survey, 2009:1-2; Edelman Trust Barometer, 2009:2). This situation is hardly surprising as the implosion of Enron and other prominent firms ushered in the new century and, most recently, the credit crunch all but plunged the world into depression. While preaching austerity to their workers, corporation bosses pay themselves large bonuses. This practice has left even pro-capitalist world citizens with a bad 'aftertaste' in their mouths and with some serious concerns about 'greedy' self-serving private corporations. This criticism also applies to mining companies who are more often seen as the enemy who cares only about profit and who has a high degree of disregard towards the communities and the environment within which they operate.

The BP oil spill catastrophe has blasted the extractive industry even further into news headlines for all the wrong reasons, a situation exacerbated by the CEO of BP's apparent disregard for public concerns (he went yachting in the midst of the crises). The BP stock price has since fallen sharply and by 5 May 2010 its capitalisation had fallen by 16% or \$30 billion (Anon, 2010:69). This just indicates the real monetary damage that public perception can inflict on companies. In a newspaper article by Kellaway (2010) in the *Irish Times*, the author reflects on how the average person relates to the whole BP crises. She relates a conversation she had had with a neighbour (a middle-aged, middle class British woman). When after referring to the whole event this woman said: "I really do hate BP". This comment is more profound than the simple

words initially imply; it speaks of how normal people (not just leftists and environmentalists) view large corporations. Hating companies and the people who lead them has become a favourite pastime of the general public, a situation that is assisted greatly by the ability of the Internet to spread bad news because it is now possible to hate BP on You Tube, Twitter, Facebook and various 'blog' sites.

The South African Mining Industry also has not always endeared itself to the average man on the street through a myriad of environmental, health, safety, social and other issues as will be discussed later in more detail. As with most other things in life, the good news rarely gets told while highly publicised environmental disasters, disregard for community rights and mine related injuries and deaths unfortunately do capture the headlines and, consequently, inform public view and perception. Some support on grassroots level for the nationalisation of the mines has also emerged in certain sections of South African society and is nurtured by the perceptions noted above and are frequently, amplified by the actions or non-actions of mining companies and their bosses (Cohen, 2011).

At a local community level these broad national and global perceptions, in addition to local issues, such as the need for job creation, better education and health, sensitive ecosystems and security, all informs the individual's attitude towards mining.

1.2 Background to the study (motivation)

Recent high profile community driven protests in South Africa reported in the media (Masondo & Lekotjolo, 2010; Naidoo, 2011; Swanepoel, 2011) took specific aim at mining companies accusing them of, among other issues, not employing staff locally and reneging on promises made before mining rights were issued. Joblessness, poverty and desperation aggravates the belief within communities that mining companies are perceived to have limitless resources and are not doing enough to improve the lives of people within whose communities they operate. Over recent years there has also been a

growing global awareness and assertion of people's right to a more direct and greater participation in the decision-making process where it affects them, their communities and their environments (Tempelhoff, 2010; Masondo, 2010; Kockott, 2008; Presence, 2010; Traveltsitsikamma, 2009; Coumans, 2010; Vargas-Hernández, 2007:328-330). In the economic space, regions and communities are also flexing their muscle to exert greater control over the financial benefits derived from activities taking place within their region. Mining companies are not immune to these currents, whatever their legal position, and a failure to recognise and adapt will, at some stage, lead to time and effort-consuming conflicts with costly outcomes, reflecting negatively on the company's bottom line. Such behaviour could even lead, in extreme cases, to mine closure as happened in Papua New Guinea with the closure of the Bougainville Copper Mine (Humphreys, 2000:126-127). A further worldwide change in social values has been a growing awareness and concern about the natural environment. Environmental impacts of the mining industry are normally experienced locally, making them community issues which should, therefore, be dealt with locally and with community involvement.

In light of the above comments and with growing calls for the nationalisation of South African mines it is imperative that South African mining companies start taking note of the concerns and expectations of the communities in which they operate. Mining companies should 're-brand' themselves as honest partners with the best interest of the communities at heart, dispelling the shroud of suspicion they are normally viewed through. To do this it is important for mining companies to better understand how community members think mining will impact on their daily lives. Will they obtain employment? Will mining damage their environment? Will the company procure provisions locally? Will the company look after their roads? Will crime increase? These are some of the questions they will ask together with a legion of other concerns and expectations. Prior knowledge of these concerns, expectations and perceptions can be of great value to the mining company going forward, perhaps averting unnecessary work stoppages with the resulting loss in income.

1.3 Problem statement

A junior exploration company, henceforth referred to as the company, is currently in the process of completing a bankable feasibility study (BFS) with the aim of establishing a mine in a rural farming community in the western part of the North West Province of South Africa (henceforth referred to as the community). At the moment the company holds a prospecting right on the area and will apply for a mining right if the feasibility study proves positive. A comprehensive environmental impact assessment will only be completed as part of the mining right application, as required by law. The company wants to establish the perceptions of the community with regard to possible mining operations in the area.

1.4 Objectives of the study

1.4.1 Primary objective

The aim of the research is to establish the perceptions of a rural farming community in South Africa with regard to mining and the possible establishment of a mine by a mining company within their community, resulting in a better understanding and management of such perceptions.

1.4.2 Secondary objectives

- ❖ To develop the outcomes of the research into a management tool for possible incorporation into the company's social and labour plan that will form part of the mining right application.
- ❖ To gain more insight with regards to general perceptions of the populous towards mining companies in South Africa and the possible reasons for widespread negative feelings, often very emotive, towards mining and mining companies.

1.5 Scope of the study

Knowledge of the proposed mine is still limited at present because the mine is not yet in operation and the study will, therefore, only look at the perceptions of community members towards mining within a 30 km radius from the actual position of the possible future mine. This area includes the farmers directly affected, other farmers within the 30km radius, the local town and Black Township (approximately 45km by road from the proposed mining area). Going beyond this population size would reduce the significance of the study and the quality of the community responses to the interview questions because knowledge of the proposed mine will be very limited or completely non-existent.

1.6 Research methodology

The methodology to be followed will be a literature review and a qualitative study in the form of individual interviews using purposive (criterion based) sampling to achieve the best results from the study.

1.6.1 Literature/theoretical study

The literature study will seek to contextualise the study and frame the perceptions people have with regards to business and mining in particular with the use of the following key concepts:

- ❖ Perception
- ❖ Conflicts in mining communities
- ❖ The impact of mining development
- ❖ Other similar studies
- ❖ Legislative framework and corporate and social responsibility

1.6.2 Qualitative research

The empirical study will be based on interviews with opinion formers within the community.

The current study uses primarily a qualitative approach to study the perceptions of the local community to possible mining in the area. To enhance the outcomes of this study it was deemed appropriate to also use quantitative methods to compliment the qualitative approach.

The structured interview used in this study was designed to access the perceptions of community members with regard to possible mining operations in the area.

Predetermined themes were used for each of the sub-sections of the interview to structure the interviews logically and to effectively explore the study topic. Sub-section A looks at the general perception towards mining, sub-sections B, C and D (*the crux of the interview*) measures the perceived economic (B), social (C) and environmental (D) impacts of a possible mine on the local community, sub-section E endeavours to garner information regarding community development, community expectations and sustainability and, finally, sub-section F gathers some insight with regards to company-community co-existence relationships.

1.7 Limitations of the study

The study will be limited to include only the community, which as already indicated above under 1.5, is defined as, everyone living within a 30 km radius from the actual position of the proposed mining area.

The community can be further delineated as follows:

- ❖ Commerce and business – small in extent, providing only basic products at high prices. Agriculture (main industry) comprises cattle and crop farming.
- ❖ Most employment is provided in the agricultural sector where only basic skills are needed and developed. Living standard is generally very low.
- ❖ Infrastructure such as roads and housing are poorly developed and of a low and degenerating standard.
- ❖ Education and health facilities and services are poorly developed and community members have to travel great distances to access such facilities.
- ❖ General security is relatively good with crime mostly confined to petty crime.
- ❖ The environment is generally healthy with very little pollution.

1.8 Layout of the study

Chapter 1: Introduction and problem statement

This chapter is intended to sketch the background of the study, introduce the problem statement, the objectives and scope of the study, the research methodology to be used and state the limitations of the study.

Chapter 2: Literature Study

Chapter 2 will look at the context of the study and frame the perceptions people have with regards to business, and mining in particular, with the use of a number of key concepts, namely perception, conflicts in mining communities, the impact of mining development, other similar studies, legislative framework and corporate and social responsibility. As perceptions towards mining are normally a result of the *impact* (real or perceived) that mining operations have on the local communities, this latter concept forms a large part of the literature review. People form an opinion with regards to what

has previously happened or what they have 'heard' when mining operations enters a specific area.

Chapter 3: Discussion of the research methodology and results

This chapter describes and discusses the methods employed in collecting and analysing the data, and provides the results of the study. The chapter starts by setting the stage, as it were, with a socio-economic baseline to allow the reader a better understanding of the 'community' as it is now and to allow for future assessment and comparison. The chapter then briefly discusses the theoretical underpinnings of the methods employed in the empirical study to better understand the perceptions that the local community has towards mining in the area. The information gathered from the empirical study is then discussed and interpreted.

Chapter 4: Conclusions of the research project

In this final chapter, conclusions and recommendations are made relating to the objectives of the study and based on information from the literature review and the findings of the qualitative investigation emanating from 48 interviews with key informants from the local community.

1.9 Conclusion

Globally private companies and multinationals, including mining companies, have in the current and post-financial crises environment seen their public image badly scarred. While preaching austerity to their workers corporation bosses have not always lead by example in this regard. This has left many people perceiving private corporations as 'greedy' and 'self-serving', with the sole purpose being to make profits at all costs. This opinion also applies to mining companies that are more often seen as the enemy who cares only about profit with a high degree of disregard towards the communities and the environment within which they operate.

The South African mining industry has not always endeared itself to the average citizen in terms of a myriad of environmental, health, safety, social and other issues as will be discussed later in this study in more detail. As with most other things in life the good news rarely gets told and highly publicised environmental disasters, disregard for community rights and mine related injuries and deaths, unfortunately capture the headlines and, consequently inform the public's views and perceptions. Some support on grassroots level for the nationalisation of the mines has also emerged in certain sections of South African society. In light of these factors it is imperative that South African mining companies start taking note of the concerns and expectations of the communities that they operate in. Mining companies should 're-brand' themselves as honest partners with the best interest of the communities at heart, dispelling the shroud of suspicion through which they are normally viewed. To achieve this it is important for mining companies to better understand how community members think mining will impact on their daily lives. Knowledge of the people's concerns, expectations and perceptions can be of great value to the mining company going forward, and perhaps averting unnecessary work stoppages with the resulting loss in income.

1.10 Chapter summary

Chapter 1 introduces the background to the study, focussing on the negative image that currently exists towards business in general, but specifically towards the mining industry. The chapter further shows that this negative perception can also be seen in the South African mining industry, as reflected in various media reports on high profile and often violent community protests and labour disputes in the mining industry. Communities feel that they are not benefiting sufficiently from the proceeds and wealth generated from resources that belong to them. This grievance and feeling of disenfranchisement has also fuelled the opinion that South African mines should be nationalised. Communities are, therefore, exerting more pressure on governments and mining companies to have a greater say in the operations and subsequent benefits derived from minerals extracted from mines within such communities. Mining companies will, therefore, in the future, have to be more understanding

and inclusive of the communities within which they operate, which means conducting their activities with the deliberate intention that mining should also benefit the said communities. Knowledge of the concerns, expectations and perceptions of local communities can be of great value to mining companies going forward, perhaps averting unnecessary work stoppages with the resulting loss in income.

Chapter 1 also introduces the problem statement wherein an exploration company wants to establish the perceptions of a rural farming community in the western part of the North West Province of South Africa with regard to possible mining operations in the area. It further introduces the aim of the research, which is to establish the perceptions of a rural farming community in South Africa with regard to mining and the possible establishment of a mine within their community by the exploration company, resulting in a better understanding and management of such perceptions.

With regard to the scope and limitations of the study, the study will look at the perceptions of community members towards mining within a 30 km radius from the actual position of the possible future mine.

Chapter 1 further indicates that the study methodology to be followed will be a literature review and a qualitative study in the form of individual interviews.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The following literature review addresses current debates on the impact of resource extraction by mines on resource communities. By exploring the current issues, impacts and conflicts, a case will be made for the importance of considering community perceptions in the extractive industry. This chapter will look at the context of the study and frame the perceptions people have with regard to business and mining in particular with the use of a number of key concepts. This chapter will look at *conflicts* that arise in mining communities as a result of the impact mines have on the local communities in which they operate. Conflicts are, therefore, an outward symptom of tensions between companies and communities which manifest from the impact of mining on communities. This normally happens after tensions have been festering for some time and should have been mitigated long before the situation reaches the point of overt confrontation. As perceptions towards mining are normally a result of the *impact* (real or imagined) that mining has on the communities in which they operate, this concept forms a substantial part of the literature review. People form an opinion with regard to what has previously happened or what they have 'heard' when a mining operation enters a specific area. In an attempt to gain insight into community perception with regard to the impact of mining in local communities *other similar studies* were also reviewed. Governments, as part of their responsibility towards their citizens establish *legislation* to regulate the mining sector and its impact on residents and the environment. Legislation in South Africa has the specific aim of protecting local communities and the environment. It further seeks to

ensure that local communities benefit from mining activities through social and labour plans and endeavours to address past imbalances.

This study specifically explores the *perceptions* of people towards mining and it is, therefore, very important firstly to explore various definitions of the concept “perception”.

2.2 Perception

According to the OED (1995, 9:1014) the meaning of perception is “an interpretation or impression based on one’s understanding of something; the ability of the mind to refer sensory information to an external object as its cause”.

Humans still do not completely understand how they sense things in the environment and interact with them, but although they do not fully understand perception, perceiving is something that occurs almost effortlessly to most people, it ‘just happens’ (Goldstein, 2010:4).

Thomas Reid suggests the following three stages with regard to the theories of immediacy in relation to perception. “Firstly, some conception or notion of the object perceived; secondly, a strong and irresistible conviction and belief of its present existence; and thirdly that this conviction and belief are immediate, and not the effect of reasoning” (Reid, 2004:24-29). An immediate experience of an object is, therefore, created by sensing and recognising an object as existing in its immediate form. Most of these immediate perceptions rely mainly on the five senses. For example, a person sees a heap of rocks and perceives it as a mine dump. He sees it and, hence, is convinced that it is real. This process happens instantaneously without his trying to decide or reason if it is a natural hill or a mine dump. The object is identified immediately and effortlessly as indicated above.

Gibson (2004:77-79) believes that the perceptual systems required by the theory of information pickup, rather than the senses are key to perception. Information regarding a person’s surroundings is accepted by the cognitive

processes and sensation, therefore, cannot be separated from what is perceived. It is, therefore, a person's understanding through information acquired previously that leads him to believe that he sees the heap of rocks as a mine dump, and not just a stimulus of the receptors that line the back of the eye.

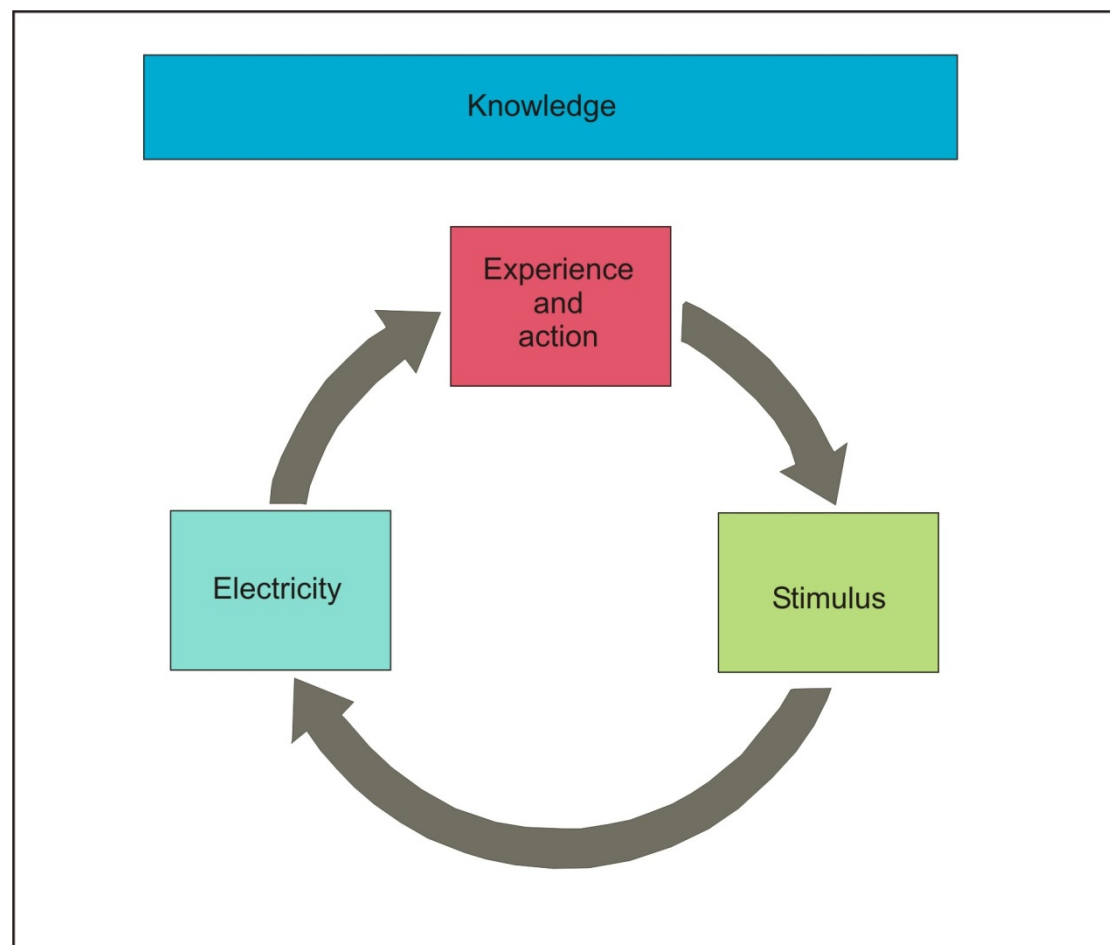
Although perception in its most basic form relates to the senses and what is being sensed, it also goes further than that to the interpretation of the mind. It is, consequently, a balance of simultaneously seeing and understanding. There is also a component of evaluation that follows the initial perception (Dewey, 2005:36-59). The eyes see the shape, colour and texture of the heap of rocks and perception interprets it as a mine dump. A person could, subsequently, also evaluate the dump as an eyesore and with the assistance of information pickup (for example acid mine drainage) perceive it as generally bad for the environment. This impression could also further strengthen that person's current perception towards mining.

Perception also changes over time as historical circumstances change, and given a set of existing truths, a person's perception of them can be interfered with and change over time. Better mine dump rehabilitation and management can, therefore, interfere with existing truths and change some people's perception with regards to mine dumps and mining (Steiner & Winkler, 2010: 115-126).

The perceptual process, as shown in Figure 2.1 below, is a sequence of processes that work together in a supplementary fashion to determine people's experience of and reaction to stimuli in the environment around them. This process starts with a specific *stimulus* and refers to what currently exists in the environment. It relates to what stimulates people's receptors and what they actually pay attention to. This is followed by electrical signals (*electricity*) that are created by the receptors and transmitted to the brain where these signals are processed. Finally everything is transformed into an *experience and action* of perceiving and actually recognising something and then taking action, such as going closer to the stimulus to get a better look.

Recognition is a person's ability to place an object into a category, such as, 'mine dump', that gives it a particular meaning to that person. A very important final component of Figure 2.1 is *knowledge*, which is placed above the circle as it can influence any of the steps in the perceptual process. Knowledge is information that a person brings to a specific situation and can be things learned years ago, such as when the person learned to tell the difference between a natural hill or a mine dump or that acid mine drainage is bad for the environment (Goldstein, 2010: 5-11).

Figure 2.1: The Perceptual Process



(Adapted: Goldstein, 2010: 6)

Based upon the above explanation of human perception, it can be safely assumed that people have pre-existing expectations that can transform what they see, smell, taste, feel and, even more importantly in the context of the

current study, hear. Perception is created by a complex system in the brain as a response to stimulus that passes through levels of the preconscious and the unconscious. People's perception of various elements is rather a belief than a truth and is influenced by a legion of conscious and unconscious elements, such as their experiences, cultural norms and values and the positive or negative impact of these elements on them. Perception is also not a fixed or constant entity and can be interfered with.

With regard to negative perceptions towards mining, the last sentence above also suggests that it is possible to change or interfere with established perceptions and create new and more positive ones.

Frequently perceptions are formed as a result of information pickup, as indicated above, and people, therefore, regularly form perceptions as a result of what they read or hear in the media. Protests and other conflicts in the mining industry are regularly reported and headlined in the local South African media and, hence, are very important in informing people's perception towards the mining industry.

2.3 Conflicts in Mining Communities

The outward symptom of tension between companies and communities manifests itself in the form of conflicts. This normally happens after disagreements have been festering for some time and should have been mitigated long before a situation reaches the point of explicit confrontation.

Conflicts may arise from a myriad of mostly local issues, from land use to environmental problems to salary disputes. Land use in the South African context has specific importance due to the unequal distribution and use of this resource before 1994. The redistribution of this resource to previously disadvantaged South Africans is, consequently, a very important topic in South Africa, contributing to the current nationalisation debate. During recent well reported protests in Ogies and Balfour against mining companies (namely BHP Billiton and Burnstone) local communities took to the streets claiming

that both companies were not employing local residents (Masondo & Lekotjolo, 2010; The Star, 2010). In another recent dispute, a miner was stoned to death, when the mini bus transporting mining personnel home from the Smokey Hills Mine in South Africa's Limpopo Province, was stopped and stoned by a crowd of aggrieved community members (Swanepoel, 2011). Members of a Cape West Coast farming community also took to the streets recently to protest against proposed mining in their area saying it would have a devastating effect on their region, where wine production and associated tourism relies heavily on the preservation of historic wine farms and the natural beauty of the environment (Presence, 2010). Conservation groups and non-governmental organisations also recently commenced legal action against Coal of Africa's plan to mine in the Mapungubwe world heritage area, claiming that mining in the area will destroy Mapungubwe ecologically, archaeologically and culturally (Tempelhoff, 2010). Another anti-mining protest relates to the contentious practice of hydrofracking to extract underground natural gas from large shale deposits from South Africa's Karoo region. Opposition, spearheaded by the 'Treasure the Karoo Action Group' (TKAG), is growing amid concern that fracking will deplete and pollute the area's scarce water supplies (Fakir, 2011; Pitock, 2011). Further afield a recent protest against one of Bolivia's largest mines, San Cristobal (sixth largest producer of zinc and third-largest producer of silver in the world), cost the company and the country millions of dollars. Protesters blockaded the railway-line and stopped exports; they also seized control of containers full of ore and overturned them, spilling the contents. The protesters complained that the mine was stealing their natural resources and demanded compensation and assistance with local development, as well as drinking water and electricity for their communities (Garcia & Ore, 2010).

Examples of protests such as these described above are endless and are the cause of huge financial losses to the companies involved and could normally have been avoided through the mining companies' committed and honest involvement with local communities. To illustrate the aforementioned, recent unrest that closed down Northam Platinum's Zondereinde Mine for 12 days cost the company R108 million (Seccombe, 2010). Unrest at Platmin's

Pilanesberg Platinum Mines mine in South Africa's North West Province recently cost the company 17 days of lost production and damage to property estimated at approximately R98 million (Naidoo, 2011). A further extreme example is that of Bougainville Copper which lost approximately US\$1.5 billion in market value when the local community forced the mine to close its doors in Papua New Guinea in 1989 (Humphreys, 2000:128). Community, American and world anger towards BP have forced the company to undertake a huge clean-up and compensation campaign. Much of the anger was directed towards BP's seemingly uncaring, nonchalant response to the disaster. The company has spent in excess of US\$10 billion, for containing and cleaning up the oil spill, with many billions still to be expended. BP was also forced to set up a US\$20 billion compensation fund after the Deepwater Horizon disaster (Kollewe, 2010).

Conflicts in the mining industry are, therefore, a very common event in South Africa and throughout the world leading to large financial losses in the mining industry. Conflicts are mostly the result of the impact that mines have on people's lives within the communities in which they operate.

2.4 The Impact of Mining Development

The development and history of mankind over the last million years have been inextricably linked to man's ability to identify and use mineral and energy resources of one kind or another. Over the last two thousand years, and specifically since the Industrial Revolution, civilisation has changed to one that uses a diverse range of energy and mineral resources.

The significant exploitation of South Africa's mineral resources started in the mid-1800's with copper mining in Namaqualand. After the discovery of diamonds near Kimberley in 1867 and gold on the Witwatersrand in 1886, the mining industry of South Africa grew rapidly and today the cities of Johannesburg and Kimberley are a legacy of the impact mining can have on the development of a country. The mining industry expanded further with the discovery of the mineral deposits of the Transvaal Supergroup, the Bushveld

Complex and the opening of the South African coal fields (Wilson & Anhaeusser, 1998: 5). Today South Africa is established as one of the world's most richly endowed countries with regard to mineral resources. The table below (Table 2.1) from the South African Chamber of Mine's 2009 Annual Report bears testimony to this (Chamber of Mines of South Africa, 2009: 20). The report further highlights the importance of the mining industry to the South African economy by indicating what South Africa's economic status would be without mining.

If the mining industry were removed from the South African economy the country would lose:

- ❖ *approximately 18% of GDP*
- ❖ *approximately 1 million jobs*
- ❖ *approximately 18% of gross investment*
- ❖ *over 50% of merchandise exports*
- ❖ *approximately 30% of capital inflows into the economy via the financial account of the balance of payments*
- ❖ *approximately 30% of the country's liquid fuel supply*
- ❖ *approximately 35% of the market capitalisation of the Johannesburg Securities Exchange (JSE)*
- ❖ *93% of the country's electricity generating capacity*
- ❖ *approximately 20% of direct corporate tax receipts (R33-billion in 2008)*
- ❖ *the largest contribution by value to black economic empowerment in the economy (Chamber of Mines of South Africa, 2009: 19).*

Table 2.1: Mine production, sales and employment

Mineral	Mine production, sales and employment	Local sales	Local beneficiation
PGMs	304 tons (R78 billion sales, 186 000 employees, etc.)	-46 tons valued at R12.4 billion	Manufacture & export of 16.2 million platinum catalytic converters (15% of world share), 4000-5000 jobs and R22 billion in export value
Coal	248 mt (R44.2 billion sales, 60 439 workers)	183 mt local sales valued at R20 billion 120 mt to Eskom 43 mt Sasol 0.672 mt Steel fabrication	Final product – 201 929 GWh of electricity (86% of SA's electricity supply), value created R40 billion, 30000 jobs (in Eskom). Final products • Synfuels 7.3 mt valued at R29 billion • Gas sales 112.9MGJ at R2.7 billion • Polymers 1.73 mt at R9.4 billion • Solvents 1.72 mt at R13.8 billion • Olefins & surfactants 2.2mt at R22.6 billion • Other (waxes, fertilisers, etc) • R13 billion 31 860 jobs, R98 billion in sales, R17 billion in taxes
Gold	254 tons (R38 billion in sales, 169 057 employees)	13.2 tons valued at R2 billion	~400 tons refined at Rand Refinery (490 jobs), 7.4 tons of jewellery fabricated employing 2800 people, 8.4 tons of coins fabricated employing 100 people & 4300 people employed in wholesale & retail of gold jewellery.
Iron ore	42.1 mt (R13.4 billion in sales, 13 858 employees)	12.4 mt sold locally valued at R1.7 billion	~6.4 mt of local steel production (4.2 mt flats & 2.1 mt long products). 4.4 mt local sales & 1.4 mt exported with total revenue of R29 billion and 10 000 employees.
Diamonds	15.25 mc (R10 billion, 20 000 workers)	Local sales – R4.9 billion	1.2 mc imported (cost R14.9 billion), 13.9 mc exported (value R13.2 billion), local sales valued at R4.9 billion (value of cut diamonds valued at R 6.3 billion), 2000 cutters
Nickel	37.9kt (valued at R9 billion)	11.7kt valued at R2.8 billion	Stainless steel production, ~650 kt stainless produces worth R12 billion. About 150kt used locally.
Copper	117.1 kt (valued at R5.8 billion)	76.6kt valued at R4 billion	Tubing and wire industry
	6 mt (valued at R3.6 billion)	-2mt local sales valued at R934	Manganese alloys- • 1mt produced. 0.2mt sold locally&0.8mt

		million	exported, total sales value R6.5 billion. (jobs=2000) Chemical products
Industrial minerals	Total sales value of R7.5 billion	Local sales R6.7 billion	Cement industry, 14.2 million tons of local production of cement +/- R20 billion industry Fertilizer industry (600kt of fertiliser consumed locally – potash, phosphates, limestone)
Chrome	9.7mt (valued at R3 billion)	7.4mt local sales valued at R2.3 billion	Chrome alloys – 3.5mt produced, 0.4mt sold locally, 3mt exported, total sales R17.5 billion Chemicals and refractories
TOTALS	About R213 billion- about 450 000 workers	-R58 billion local sales	Rough sales value created of about R157 billion (conservative)

(Chamber of Mines of South Africa, 2009: 20)

Mining can have both positive and negative impacts in and on local communities (Hilson, 2002:66-67; Aubynn, 2003:7; Pegg, 2006:376-382; Hilson & Murck, 2000: 229-230; Stilwell, Minett, Monson & Kuhn, 2000: 17-19; Kitula, 2006: 408-412; Ivanova, Rolfe, Lockie & Timmer, 2007:219; Von Schirnding, Mathee, Kibel, Robertson, Strauss & Blignaut, 2003:259-262; Tutu, McCarthy & Cukrowska, 2008:3682-3683; Vivier & Cyrus, 1999:309-312; Demissie, 1998: 445).

On the positive side, mines provide key socio-economic infrastructure such as roads, clinics, schools, housing, water and electricity. Mines also serve as a major source of employment for local people, increasing the general standard of living and the buying power of community members. Mines also trigger the establishment and/or growth of a wide range of small businesses such restaurants, transport services and bed and breakfast establishments (Hilson, 2002:66-67; Aubynn, 2003:7). The World Bank for instance estimates that between 2 and 25 jobs with contractors, vendors, suppliers and others are created for each large-scale mining job created by the mining industry leading to poverty reduction (Weber-Fahr, Strongman, Kunanayagam, McMahon & Shelton, 2001:4). New skills (for example doctors) also enter the community to

provide better services to the community which results in the general upliftment of such communities.

Revenues received by governments through taxes and royalties can also be used by governments to reduce poverty and for developmental purposes (Weber-Fahr *et al*, 2001:9). However, in many cases, too little of this income is ploughed back into the communities where the mining revenue is actually generated by central governments (Humphreys, 2000:8).

Mining also contributes to exports and foreign exchange earnings. In South Africa almost half of the foreign-exchange earnings are from mineral-export sales. The contribution to foreign earnings increases even more when the various processed mineral products, such as steel, are included (Wilson & Anhaeusser, 1998:5; Hilson, 2002: 66).

Technological advances and the transfer of these skills to other industries, such as manufacturing, is another positive element brought about by mining, as was the case in the United States where mining was the 'national learning experience' (De Ferranti, Perry, Lederman & Maloney, 2002:4). However, problems often arise when multinational companies provide and control the knowledge and technology in developing countries and these vital aspects are no longer developed indigenously (Power, 2002: 27).

A study conducted in the Geita District of Tanzania shows there is a complementary relationship between mining and agriculture when non-miners in mining communities also increase their income (see Table 2.2 below) through various economic activities, such as sales from food crops and other menial business activities. This is highlighted by the growth in total income in mining communities when compared to non-mining communities, even though income from mining and agriculture is comparable in the respective communities (Kitula, 2006:409). This study further shows the community perceives, in order of importance, employment, improved infrastructure, the selling of food crops and other businesses as the main benefits from mining activities in their community (Kitula, 2006:409).

Table 2.2: Contribution of economic activities to total household annual income

Sources of Income	Mining Communities		Non-mining Communities	
	Average Income		Average Income	
	USD	%	USD	%
Agriculture	88.31846	16.17	358.8947	74.99
Mining	361.4686	66.18	15.04335	3.14
Other activities	96.42643	17.65	104.6724	21.87
Total	516.21379	100	478.61045	100

(Kitula, 2006: 409)

In another study from the Bowen Basin in Queensland, Australia, stakeholders indicated that mines are the main source of income and that there are also many indirect work opportunities. More than 70% of the people surveyed agreed with the statement that mining creates a good environment for investment in other businesses (Ivanova *et al*, 2007: 219).

Mines also have various negative socio-economic and environmental impacts on the communities they operate in.

Examples of negative socio-economic impacts are forced relocations, crime and the loss of a sense of community, morals and norms. Demographic shifts as a result of mining can, for instance, create a widening of disparity among local communities and lead to increased prices for local goods. In South Africa, migrancy and the legacy of 'hostel' accommodation for the mainly male workforce have created a whole host of social ills, such as crime, alcohol and drug abuse and the destruction of family structures (Demissie, 1998:445-467). With mass resettlement, one of the biggest concerns is the spread of diseases such as tuberculosis, HIV and yellow fever. An example of this latter problem is the introduction of malaria amongst the Yanomami people of Venezuela by migrating artisanal gold miners. During the period between 1991 and 1995, 25% of the Yanomami people died of malaria (De Castro Lobo, 1996:50).

The environmental impact of mining makes headline news far too often and is one of the main drivers of the general negative perception towards mining. Impacts can be anything from acid mine drainage (Tutu *et al*, 2008:3682-3683) to deforestation to the negative impact of dune mining on the Zoobenthic community in the Nhlabane Estuary in South Africa (Vivier & Cyrus, 1999:308-314). The common environmental impacts from mining operations are summarised in Table 2.3 below.

Table 2.3: Common environmental impacts from mining operations

Activity	Environmental Impacts
Mineral Extraction	Vegetation and habitat destruction
	Erosion
	Landform changes
	Alteration of water tables
	Dust
	Aesthetics
Water Discharge	Heavy metals overloading
	Acid Mine Drainage
Dewatering	Sediment runoff
	Effluent contamination
	Ecological impacts
	Impacts on water resources
Smelting	Acid deposition
	Air pollution
	Heavy metals contamination
Transportation	Dust and sediment pollution
	Noise pollution
	Gaseous emissions
	Oil and fuel spills
	Soil contamination

(Hilson & Murck, 2000: 229)

Respondents from the study conducted in the Geita District of Tanzania indicated that alcoholism, drugs and prostitution impact them most negatively. Other forms of negative impacts included (from the most negative) displacement of people, deforestation, reduced household labour, injuries and

crop theft. Respondents also noted the negative impacts on their health such as HIV, water/air borne diseases, malaria, worms and bilharzias (Kitula, 2006: 411-412).

In study from the Bowen Basin in Queensland, Australia stakeholders indicated various physical forms of negative impacts such as coal dust, vibrations from blasting and the noise from trains. Furthermore respondents also indicated that businesses find it difficult to hire and retain employees as they earn better salaries on the mines. Housing also became very scarce and expensive. Stakeholders were also concerned about more traffic accidents and the fact that town could lose its sense of community (Ivanova *et al*, 2007: 219).

From the two examples from Tanzania and Australia outlined above it is clear that the issues affecting communities are normally very localised. On the positive side employment and the economic injection that comes with mining will generally be common denominators. This very localised nature of the impact of mining companies on the communities within which they operate makes the current study all the more pertinent, because it is impossible to just use the perceptions indicated in one community as a blueprint for all other mining communities. Perceptions of the impact of mining in one rural farming community will differ from any other.

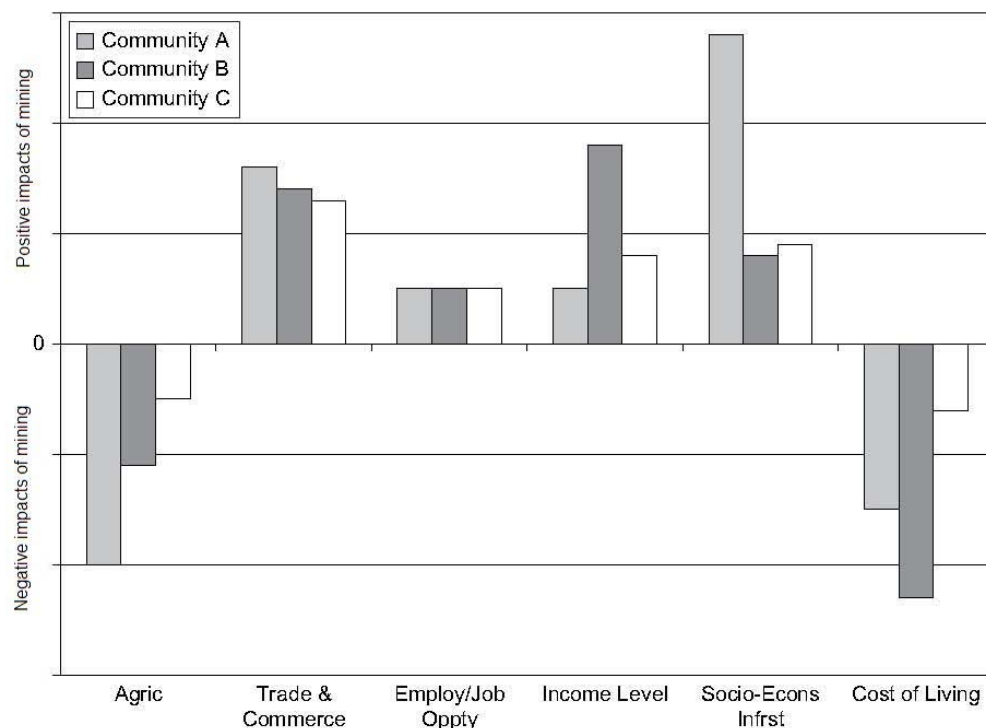
2.5 Other Similar Studies

The reviewed literature did not indicate any documented cases of community perceptions of mining in the South African context. With regard to developing countries reviewed literature did indicate one similar comprehensive study that looked at community perceptions of mining in Western Ghana (Aubynn, 2003). Some of this work was also later incorporated into an article in the Journal of Environmental Management (Garvin, McGee, Smoyer-Tomic & Aubynn, 2009:571-586). Some of the key findings of this work will be discussed below.

Humphreys (2000:8) indicated that there is still much to be learned from the relationships between mining companies and their communities because there are relatively few case studies studying these relationships.

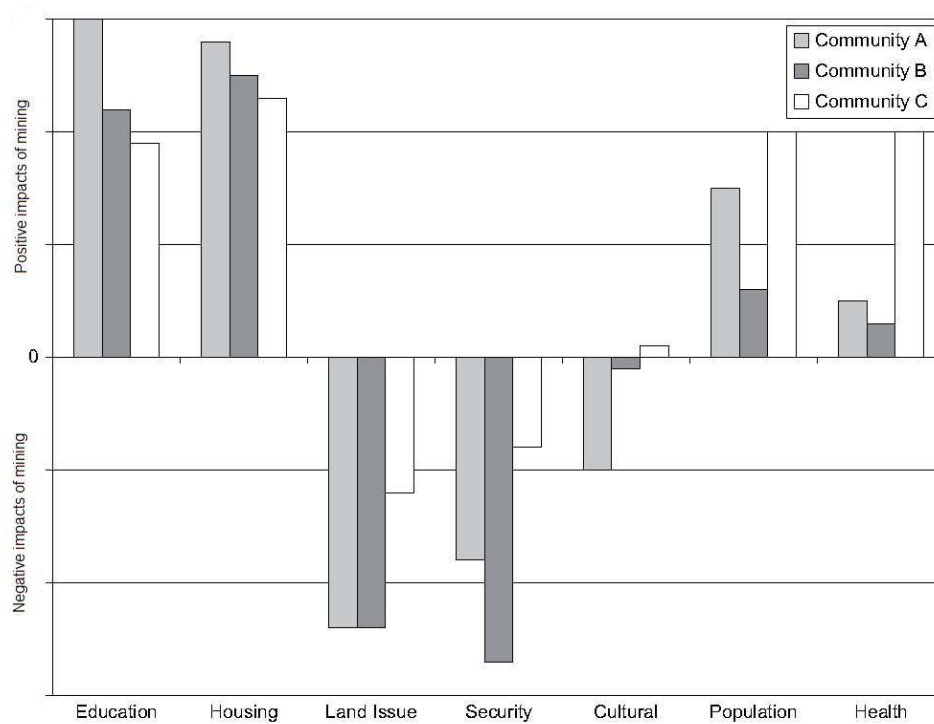
The study, indicated above, looked at the mining company and community members' perceived economic, social and environmental impacts of mining (Garvin *et al*, 2009:576-581). Three different communities were evaluated. It further looked at the differing expectations of the mining company's contributions to development from the community and the company's perceptive (Garvin *et al*, 2009:581-583). The main outcome of this study can be summarised with the use of the figures below (Figures 2.2, 2.3 and 2.4), which clearly show the community's perceptions towards the impact of mining. It is important to note (as is probably to be expected) that the most negative perceptions are towards environmental impacts and the most positive perceptions are towards the economic impact of mining. In the context of the current study the figures only show community perception.

Figure 2.2: Perceived net economic impacts of mining



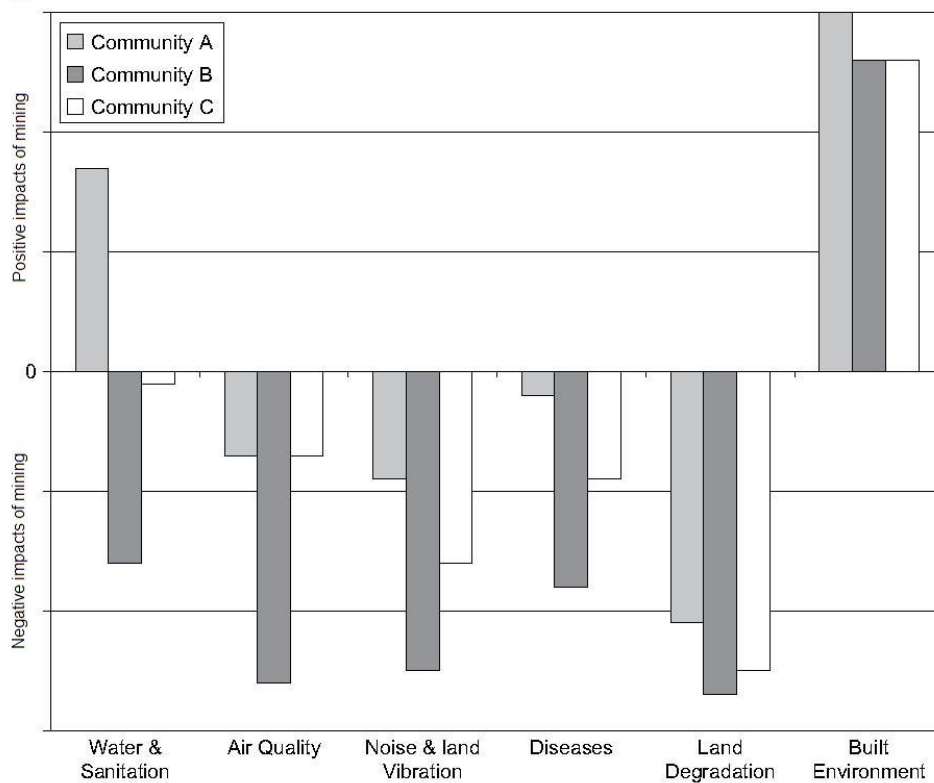
(Garvin *et al*, 2009:576)

Figure 2.3: Perceived net socio-cultural impacts of mining



(Garvin *et al*, 2009:577)

Figure 2.4: Perceived net environmental impacts of mining



(Garvin *et al*, 2009:578)

With regard to community expectations, the study found that the community members expected considerable development and that they felt they were entitled to be compensated as they experienced most of the negative impacts of mining operations. Community members further indicated that the mineral resources belonged to them and they, therefore, expected to share in the mining profits. Community members also commented that they have been disillusioned and that they had lost trust in the mining company because the company did not fulfil its promises regarding development and employment.

An important comment in the study with regard to company promises is that companies must be sure that they will be able to fulfil promises made at the beginning of projects, and that head offices, often far removed from the mining operations, do not make promises that the company cannot fulfil, leaving local company representatives to deal with the subsequent public relations landfall (Garvin *et al*, 2009:581-582).

2.6 Legislative Framework and Corporate and Social Responsibility

It is important to look at the corporate and social responsibility (CSR) that mining companies have towards the communities in which they operate and how the South African legislative framework promotes CSR.

Recently the McKinsey Global Survey indicated that 85% of business executives believed that trust in business has fallen (McKinsey Global Survey, 2009:1-2). The 2009 Edelman Trust Barometer confirms these perceptions amongst business executives with 62% of respondents surveyed in 20 different countries, saying they “trust corporations less now than they did a year ago” (Edelman Trust Barometer, 2009:2). Perceptions of mistrust amongst ordinary citizens should encourage corporations to place more emphasis on their CSR to eventually restore the public’s faith in business.

The concept of CSR has continuously been developing over the years, and there is no single, universally accepted definition for CSR. Initially CSR was conceptualised in terms of the obligation on business to contribute to a

healthier and more just society (Wood & Logsdon, 2001:84). Deetz (2003: 610) subsequently described CSR as “being responsive to the needs of the wider society”. David, Kline & Dai (2005:293) describe CSR as “a citizenship function with moral, ethical and social obligations”. It is further important to take note that the definition of CSR in a developed country might not necessarily be the same as in a developing country where legislation could be used to encourage companies to deliver on developmental and social responsibilities. In the developed country scenario the European Commission’s definition of CSR could be sufficient, where companies voluntarily decide to contribute to a better society. The European Commission is of the opinion that companies should *go beyond* mere compliance with regulation to give effect to the meaning of being socially responsible (European Commission, 2001:5-8). This definition can perhaps hold true for the private sector in developed countries where an understanding of its social responsibility has been established firmly. The World Bank’s definition of CSR is, however, perhaps more pertinent for the developing world. It reads as follows: “the commitment of business to contribute to sustainable economic development – working with employees, their families, the local community and society at large, to improve the quality of life, in ways that are both good for business and good for development” (Ward, 2004:3). When the private sector, however, does not partake as honest partners in this sustainable developmental approach, government regulation, is one of the most important tools to forward the CSR agenda in developing countries (Hamann & Acutt, 2003:255-270).

In South Africa, the mining companies’ role in sustainable development has been under scrutiny for some time now, spurred on by criticism from various quarters that mining companies have little regard for the environment and the communities within which they operate. This criticism has reached a new height lately with calls from the ANC Youth League to nationalise the industry as a whole. The perception is that mining companies have not contributed enough to sustainable development in South Africa by minimising negative environmental and social impacts while maintaining profits. In South Africa, with its past record of generally excluding the largest portion of the population

from partaking in the economic benefits of this industry, it is specifically pertinent that CSR calls on mining companies to respond also to their other stakeholders (employees, customers, affected communities and the general public) and not only to its shareholders with regard to issues such as climate change, human rights and employee welfare (Hamann, 2003:238). To encourage the mining industry to address issues relating to CSR, the South African Government has included elements of CSR in legislation.

The two main portions of legislation dealing with the language of CSR, which impact directly on mining, are the Broad-based Black Economic Empowerment Act (BEE Act, 53/2003) and the Mineral and Petroleum Resources Development Act (MPRDA, 28/2002).

The BEE Act does not just deal with increasing the levels of black ownership but also deals with the development of previously disadvantaged individuals through skills and human resource development, thereby taking on the agenda of CSR (BEE Act, 53/2003). This is highlighted further in terms of a scorecard (Table 2.4 below), finalised in the Codes of Good Practice on Black Economic Empowerment, to measure businesses as to the degree to which they comply with the BEE Act (SA, 2007: 112). The BEE status will also be one of the determining criteria before a mining right is issued to a business.

Table 2.4: BEE Scorecard

Indicator	Weighting
Ownership	20 points
Management control	10 points
Employment equity	15 points
Skills development	15 points
Preferential procurement	20 points
Enterprise development	15 points
Socio-economic development initiatives	5 points

(Adapted: SA, 2007: 112)

The MPRDA in its preamble to the Act highlights, in CSR language, the fact that government needs to promote the social uplifting and the local and rural development of communities affected by mining. The Act further acknowledges mining company's obligation to the socio-economic development of not only the communities within which they operate, but also communities that, for example, supply labour to the mining operations. There are specifically two mechanisms with which the MPRDA strives to achieve its CSR objectives. Before mining rights can be granted companies need to submit an environmental management plan (EMP) and a social and labour plan. These plans need to be approved by the Department of Minerals and Energy before the rights are issued (only EMP for Prospecting Right, MPRDA, 28/2002).

The main objective of the EMP is to assess the impact that the mining operations will have on the environment as well as the socio-economic conditions of any person (or community) that could be directly affected by the mining operation. The EMP further proposes measures of mitigating any negative impacts (MPRDA, 28/2002).

The aim of social and labour plans is to promote the social and economic welfare of all South Africans and to provide employment opportunities. It further strives to ensure that the holders of mining rights contribute towards the socio-economic development of the areas in which they operate (MPRDA, 28/2002). Included in the social and labour plan is a human resources development programme (including a skills development plan) and a local economic programme that must, for instance, indicate the poverty eradication and infrastructure projects the mine would support. These plans are valid until a mine closure certificate has been issued, and can only be amended by the Minister of Mineral Resources (MPRDA, 28/2002).

2.7 Conclusion

The literature review in this chapter addressed current debates and perceptions with regard to the impact of resource extraction by mines on resource communities. It is clear from the literature that mining has profound and diverse impacts specifically on the people who live in close proximity to such mining operations. The myriad of protest actions resulting from disputes with regard to the beneficiaries of employment, infrastructure, other financial rewards and environmental concerns, bear testimony to this. Mining can have positive and negative impacts on local communities and countries as a whole. It is, however, mostly the negative impacts, such as the impact of acid mine drainage on peoples' water supplies and the associated health concerns that are reported in the media, that fuel the general negative perception towards mining. These concerns, however, do not only play themselves out in the media, but have real impacts on real people, sometimes leading to devastating outcomes. Government legislation and the successful regulation and "policing" of mines and mining companies are, therefore, very important to minimise these negative impacts and to punish any offending companies.

It is, however, also important to recognise the positive impacts that mines have on people's lives, providing a source of often desperately needed employment and uplifting entire communities through better housing, health facilities and services, roads, infrastructure and skills development. The real beneficiaries of mining are frequently second generation adults who have been offered better education and bursaries that have enabled them to break the barriers of poverty and become successful professionals.

Mining companies will have to adjust to changing community and environmental demands and become much more responsive corporate citizens if they want to avoid or at least minimise confrontation with communities and the general public. This approach, if addressed in an open and genuine manner, could potentially save mining companies much money and future effort.

2.8 Chapter summary

This chapter looked at the context of the study and framed the perceptions people have with regards to business, and mining in particular, with the use of a number of key concepts in the form of a literature review.

Perception is defined as “an interpretation or impression based on ones understanding of something”. It is something that just happens as we observe and accumulate “data” from the world we live in. Perception relates to our immediate experiences of things that surround us as observed by our senses. Another important theory concerning our perception relates to information pickup as accepted by the cognitive, i.e. our understanding of our surroundings shaped by information received. Perception is, therefore, a balance of simultaneously seeing (senses) and understanding (cognitive). Understanding also involves a process of evaluation. Perception can also lead to an action. People can, for instance, after forming a perception with regard to something, voice their concerns in the form of protests. It is further important to note that our perception of issues can change over time and mining companies can, therefore, change people’s negative perceptions towards mining by better environmental management. Finally our perception of issues is rather a belief than a truth and is influenced by a legion of conscious and unconscious elements, such as our experiences, cultural norms and values and the positive or negative impacts of various entities on us. It is also not fixed or constant and can be interfered with.

The outward symptoms of tension between companies and communities manifest in the form of conflicts. This tension is many times driven by people’s perceptions and poor communication from mining companies. Conflicts normally happen after tension has been festering for some time and should have been mitigated long before a situation reaches the point of direct confrontation. Conflicts, such as protest action can be the cause of large financial losses for the mining companies’ involved. Conflicts are mainly caused by the negative impacts of mining on local communities, but can also be the result of disputes between local factions competing for a share in the

rewards from mining activities. Mines have considerable positive impacts and provide key socio-economic infrastructure such as roads, clinics, schools, housing, water and electricity. Mines also serve as a major source of employment for local people, increasing the general standard of living and the buying power of community members. Mining also contributes to export and leads to technological advances and the transfer of skills to other industries. The negative impacts of mining can be anything from forced relocations, crime and the loss of a sense of community to environmental impacts such as erosion, acid mine drainage, noise and dust pollution, landform changes and ecological impacts.

One similar study that looked at community perceptions with regard to mining in Western Ghana noted that the most negative perceptions of communities were towards the environmental impacts of mining and the most positive perceptions were towards its economic impact. Community members expected considerable development from mining ventures and they were of the opinion that they were entitled to be compensated because they experienced mainly the negative impacts of mining operations. The study further noted the importance of fulfilling promises made by mining companies at the beginning of projects.

Corporate Social Responsibility (CSR) programmes specifically call on mining companies to respond to their other stakeholders (employees, customers, affected communities and the general public) with regard to issues such as climate change, human rights and employee welfare and not only to their shareholders. To encourage the mining industry to address issues relating to CSR, the South African Government has included elements of CSR in legislation. The two main portions of legislation dealing with the language of CSR, whilst impacting on mining, is the Broad-based Black Economic Empowerment Act (BEE Act, 53/2003) and the Mineral and Petroleum Resources Development Act (MPRDA, 28/2002).

CHAPTER 3

RESEARCH FINDINGS AND DISCUSSION

3.1 Introduction

The impact of mining and mining companies on the environment in general and, more specifically, on local communities within which they are active is becoming a very important issue as communities become more and more aware of their rights, accentuated by social and economic aspirations, and as companies strive to become more receptive and responsive to the role they play within communities. Slowly companies are making a paradigm shift to become organisations that care and want to invest and develop locally, in order to leave behind a developmental legacy. To better understand the hearts and minds of communities and the individuals who constitute these communities, it is important to listen to what community members have to say with regard to mining in general and how they perceive the impact of mining on their lives and on their community. Far too often the approach from mining companies is that of assuming local issues, needs and aspirations without taking the time to ask, and then, even more importantly, to listen carefully to the answers given. This approach of trying to hear the voices from within the community, through the method of personal interviews, was, therefore, adopted as the basis of this study.

With the above interactive approach in mind, this chapter describes and discusses the methods employed in collecting and analysing the data. The chapter starts by setting the stage, as it were, with a socio-economic baseline description to allow the reader a better understanding of the community as it is now and to allow for future assessment and comparison. The chapter then briefly discusses the theoretical underpinnings of the methods employed in

the empirical study to facilitate a better understanding of the perceptions that the local community have towards mining in the area. The information gathered from the empirical study will then be discussed and interpreted.

3.2 Socio-economic baseline

As a starting point this section seeks to provide an overview of the socio-economic conditions of the community and its people as a whole, referenced against the sub-region and the province. This section could have been included in Chapter 2 (Literature Review), but as it has direct application with regard to the socio-economic conditions related to the specific community that is the subject of this study, it was deemed more appropriate to include it in this chapter. The socio-economic baseline provides a “definition” of the local community referred to here as the Local Municipality, before progressing to the study itself. It is also important to look at all aspects of the community, although sections such as gender or language might not find specific meaning in the study. Most of the data comes from the last census completed in 2001 and the Community Survey conducted in 2007, but is still highly relevant with little real change having taken place in the community since then.

The proposed mining area is situated in a rural farming community in the western part of the North West Province in which no other significant industries currently operate. Most of the area is covered in natural vegetation used for cattle grazing. Changes in, for instance, the level of air pollution and water quality (which is known to be brackish and often high in calcium) will consequently be easily identified and attributed to mining because it will be the only significant change within the community.

3.2.1 Socio-Economic Description

The figures used for the socio-economic description were sourced from Census 2001, the most recent source of population figures and the results of the Community Survey 2007 undertaken by STATS SA. In instances where more recent estimates were used this has been indicated in the description.

To ensure consistency, pseudonyms have been given to the district and local municipalities (one of each) within whose jurisdiction the proposed development falls. The district municipality will be referred to as DM and the local municipality as LM in this study. The Municipalities can be affected in terms of infrastructure expectations as well as their Integrated Development Plans and Local Economic Development Initiatives.

3.2.2 Population

The North West Province has an estimated population of 3 200 900 with an annual growth rate of 0.52% (Stats SA, 2010). This estimate is taken from the Mid-Year Population Estimates 2010 and is based on the 2001 Census population and grown annually with the Stats SA population growth formula. The annual growth rate is based on Stats SA population estimates between 2004 and 2005 calculated from community level. From the Community Survey 2007 (CS2007) the district has an estimated 911 120 households with an annual growth rate of 0.48% and an average size of 3.7 people (Stats SA, 2007).

The DM has an estimated population of 354 554 (CS2007) with an annual growth rate of 0.44%. The DM further has an estimated 102 518 households with an annual growth rate of 0.36% and an average size of 4.1 people (Stats SA, 2007). This makes it the DM with the second lowest household growth rate and the second highest household size in the province.

The LM has an estimated population of 57 934 (CS2007) with an annual growth rate of 0.41%, the second lowest in the district. There are an estimated 14 968 households in the LM area with an annual growth rate of 0.74%, more than double the average for the district and also the highest in the district. The households have an average size of 3.8, the second lowest in the district (Stats SA, 2007). The big difference between the population growth rate and the household growth rate suggests that the households in

the area have become smaller in size. Table 3.1 below shows the population composition for the areas under discussion:

Table 3.1: Population distribution (shown in percentage)

	North West Province	DM	LM
Black African	91.52	92.29	74.39
Coloured	1.56	3.45	13.32
Indian/Asian	0.27	0.22	1.04
White	6.65	4.04	11.25

(Stats SA, 2001)

The population compositions shows that the LM has a much smaller proportion of Black Africans and a much greater proportion of Whites compared to the province as well as to the DM. This indicates that the LM area will be culturally more diverse than the other areas.

3.2.3 Age

In 2001 the average age of people in the North West Province was 27 years (Table 3.2). A third or more of the people in the areas under discussion were younger than 14 years of age. The profile for the LM is very similar to that of the North West Province (Stats SA, 2001). As these figures reflect the situation in 2001, it must be kept in mind that many people in the younger than 14 years age group have since entered the economically active age, or will be entering that age soon. This suggests that there will be many people in the area seeking employment, especially because employment opportunities in the area are relatively scarce.

Table 3.2: Age distribution (shown in percentage)

	North West Province	DM	LM
0-14	31.29	36.89	32.41
15-24	19.94	20.61	19.11
25-34	16.39	13.18	16.35
35-49	21.34	16.87	20.99
50-64	8.88	8.77	9.28
65+	5.00	5.59	4.39
Approximate average age (in years)	27	26	27

(Stats SA, 2001)

3.2.4 Gender

The gender distribution data (Table 3.3) shows an equal distribution for males and females in the province, but with a slight bias towards females in the areas under discussion. The study did not look at specific perceptions as experienced by males contrasted by those by females, but this could be addressed in subsequent work.

Table 3.3: Gender distribution (shown in percentage)

	North West Province	DM	LM
Male	49.64	47.85	48.65
Female	50.36	52.15	51.36

(Stats SA, 2001)

3.2.5 Language

More than two thirds of the people in the North West Province have Setswana as home language. As shown in Table 3.4, the proportion of people with Setswana as home language for the area under discussion is much higher

than for the province (Stats SA, 2001). Almost a quarter of the people in the LM have Afrikaans as their home language, a much greater proportion than in any of the other areas, indicating once again that the composition of the municipality is likely to be culturally very different from the other areas in the region. It is important for mining companies to communicate to communities in their own languages because this minimizes confusion and shows that the mining company respects the cultural diversity of the local community.

Table 3.4: Language distribution (shown in percentage)

	North West Province	DM	LM
Afrikaans	7.52	7.02	23.83
English	1.17	0.53	1.61
IsiNdebele	1.33	0.17	0.13
IsiXhosa	5.84	1.96	1.11
IsiZulu	2.52	0.29	0.34
Sepedi	4.17	0.31	0.26
Sesotho	5.71	1.95	0.73
Setswana	65.36	86.80	71.64
SiSwati	0.63	0.16	0.13
Tshivenda	0.46	0.04	0.04
Xitsonga	4.70	0.06	0.03
Other	0.59	0.72	0.16

(Stats SA, 2001)

3.2.6 Education

Education remains a priority for the North West Province. The Province allocates almost a third of its available budget to education and aims to provide 10 years of compulsory education for basic numeracy, literacy and writing skills (North West Government, 2011). Table 3.5 shows that in the areas under discussion almost a quarter of the people older than 5 years have received no schooling at all. The proportions for the areas under discussion

are much larger than for the province as a whole, making it very difficult for people in this area to find employment (Stats SA, 2001).

Table 3.5: Highest education level (shown in percentage)

	North West Province	DM	LM
No schooling	15.83	27.87	26.90
Some primary	29.93	36.90	29.98
Complete primary	6.96	6.40	6.15
Some secondary	27.93	19.59	22.65
Grade 12	13.93	6.82	10.64
Higher	5.42	2.41	3.68

(Stats SA, 2001)

3.2.7 Income

Approximately a quarter of the households in the North West Province had no annual household income in 2001 (Table 3.6). The proportion of people in the LM with no income is much lower than for the other areas under discussion (Stats SA, 2001). This can be attributed mainly to the agricultural nature of the area. Many people live on farms with at least one member of the household being employed by the farmer. There are also very few informal settlements in the area. Although members from the LM are seemingly better off when compared to the North West Province and the DM, approximately 55% of households still earn less than R9,600 per year, which is an extremely low income and results in abject poverty and a sense of hopelessness amongst the inhabitants.

Table 3.6: Annual Household Income distribution (shown in percentage)

	North West Province	DM	LM
No income	24.29	27.96	13.43
R1-R4 800	9.11	13.81	16.47
R4 801-R9 600	19.43	24.92	24.53
R 9 601-R19 200	18.22	15.88	18.37
R19 201-R38 400	14.69	8.61	12.08
R38 401-R76 800	7.69	4.74	7.44
R76 801-R 153 600	4.11	2.58	4.75
R153 601 and more	2.46	1.49	2.92

(Stats SA, 2001)

3.2.8 Industries and Employment

The employment figure for the LM area is higher than for the other areas, which can possibly be ascribed to the agricultural nature of the area. Relatively speaking, the LM area is in a much better socio-economic position than the other areas under discussion (Table 3.7).

Table 3.7: Employment distribution (shown in percentage)

	North West Province	DM	LM
Employed	31.83	23.02	38.47
Unemployed	24.78	21.58	20.95
Scholar or student	16.43	18.56	13.13
Home-maker or housewife	5.12	7.18	6.23
Pensioner or retired person/too old to work	4.71	5.64	5.53
Unable to work due to illness or disability	2.54	3.43	2.85
Seasonal worker not working presently	0.63	0.95	0.78
Does not choose to work	5.07	7.17	5.11
Could not find work	8.88	12.48	6.95

(Stats SA, 2001)

More than 40% of the employed people in the LM are in elementary occupations. This category includes agricultural labourers as well as domestic helpers. The farmers are included in the category 'skilled agricultural workers'. There are also proportionately less plant and machine operators and assemblers in the areas under discussion than in the province, which suggests that it may not be easy to find this type of employee for the mine within the immediate area (Stats SA, 2001).

The employment profile for the areas under discussion (LM and DM) looks very different from that of the province (Table 3.8). The main employment sectors in the North West Province are Community, Social and Personal Services, followed by Mining and Quarrying. Community, Social and Personal Services include education and health. For the areas under discussion the main sectors of employment are Agriculture, Hunting, Forestry and Fishing, followed by Community, Social and Personal Services, followed by the Wholesale and Retail Trade Industry (Table 3.9). Mining and Quarrying is one

of the smallest employment sectors in the area, which suggests that although the proposed development will bring employment opportunities, most people will need to be skilled as they do not currently possess the skill or experience to fill most positions that will be available (Stats SA, 2001).

Table 3.8: Occupation distribution of the employed (shown in percentage)

	North West Province	DM	LM
Legislators, senior officials and managers	3.87	3.51	3.94
Professionals	5.10	3.69	4.16
Technicians and associate professionals	8.29	9.50	7.11
Clerks	9.22	7.40	9.01
Service workers, shop and market sales workers	9.19	7.15	8.95
Skilled agricultural and fishery workers	3.52	10.24	10.34
Craft and related trades workers	17.00	8.27	6.26
Plant and machine operators and assemblers	12.86	8.74	5.41
Elementary occupations	27.27	37.59	40.59
Undetermined	3.68	3.90	4.22

(Stats SA, 2001)

Table 3.9: Industry distribution the employed (shown in percentage)

	North West Province	DM	LM
Agriculture, hunting; forestry and fishing	10.82	27.05	27.97
Mining and quarrying	17.62	5.19	0.47
Manufacturing	9.26	4.91	6.46
Electricity; gas and water supply	0.59	0.57	0.53
Construction	4.71	3.61	2.55
Wholesale and retail trade	14.00	12.33	16.78
Transport; storage and communication	3.60	2.47	2.70
Financial, insurance, real estate and business services	5.15	3.47	5.20
Community, social and personal services	19.13	20.61	18.48
Private Households	10.61	15.22	13.62
Undetermined	4.5	4.55	5.25

(Stats SA, 2001)

3.2.9 Services: Water Sanitation, Electricity and Refuse Removal

Most people in the LM area have access to piped water – either inside their dwellings or inside the yard (Table 3.10). This is much higher than the figure for the province where about half of the people have access to piped water inside their dwelling or inside the yard. For the DM under discussion around 40% have the same level of access to water (Stats SA, 2001).

Table 3.10: Distribution of water supply (shown in percentage)

	North West Province	DM	LM
Piped water inside dwelling	18.14	11.53	31.60
Piped water inside yard	36.27	25.90	48.44
Piped water on community stand: distance less than 200m from dwelling	16.03	24.6	12.97
Piped water on community stand: distance greater than 200m from dwelling	16.29	26.28	5.57
Borehole	5.86	7.79	0.75
Spring	0.24	0.94	
Rain-water tank	0.35	0.23	0.09
Dam/pool/stagnant water	0.43	0.35	0.06
River/stream	0.45	0.22	0.02
Water vendor	2.51	0.27	0.08
Other	3.42	1.90	0.42

(Stats SA, 2001)

According to the Department of Water Affairs and Forestry (DWAF) there was an estimated backlog of 14 490 households that had no access to any form of formal water infrastructure in April 2011 in the DM. Of these none were situated in the LM. There were an estimated 21 549 households in the area with access to water below RDP service levels, none of them in the LM (DWAF, 2011).

Although the access to water infrastructure in the area is very high, the availability of water remains problematic. Groundwater is of vital importance in the district, because it is in many instances the only source of water for the rural population, particularly in the more arid western regions of the district. The district has substantial groundwater resources in the form of dolomite compartments and fractured aquifers. Groundwater is, however, negatively impacted upon by two main factors: groundwater depletion and quality

deterioration. Climate, agriculture, mining, population growth, urbanization, policy and legislation all impact on these factors. The low rainfall levels in the area are a further constraint. Another challenge is that a large percentage of the households within the DM earn very little and few people pay taxes. This has an impact on the water services affordability.

Almost two thirds of the people in the LM area had access to a flush toilet that was connected to a sewerage system in 2001 (Stats SA, 2001). This is almost double the provincial figure (Table 3.11).

Table 3.11: Sanitation distribution (households, shown in percentage)

	North West Province	DM	LM
Flush toilet (connected to sewerage system)	35.14	22.64	61.50
Flush toilet (with septic tank)	1.94	2.96	5.99
Chemical toilet	0.94	0.58	0.16
Pit latrine with ventilation (VIP)	10.57	22.84	7.96
Pit latrine without ventilation	37.66	27.26	5.12
Bucket latrine	4.28	6.18	2.35
None	9.46	17.53	16.91

(Stats SA, 2001)

The DM had a sanitation backlog of 27 920 households with sanitation below RDP service levels in April 2011 with none of these being in the LM (DWAF, 2011). Proportionately less people in the DM use electricity as an energy source for lighting than in the North West Province (Table 3.12). The second main source used for lighting by all households is candles (Stats SA, 2001).

Table 3.12: Distribution of energy source for lighting (households, shown in percentage)

	North West Province	DM	LM
Electricity	71.22	60.03	65.05
Gas	0.11	0.15	0.26
Paraffin	2.89	4.29	4.78
Candles	25.41	35.02	29.43
Solar	0.14	0.16	0.18
Other	0.22	0.35	0.30

(Stats SA, 2001)

Almost two thirds of the people in the LM had their refuse removed by a local authority at least once a week (Table 3.13). This is almost double the proportion for the province and the highest in the areas under discussion (Stats SA, 2001).

Table 3.13: Refuse removal distribution (households, shown in percentage)

	North West Province	DM	LM
Removed by local authority at least once a week	37.32	26.45	62.81
Removed by local authority less often	1.13	0.55	0.35
Communal refuse dump	1.90	2.33	1.01
Own refuse dump	51.38	62.95	33.75
No rubbish disposal	8.27	7.72	2.08

(Stats SA, 2001)

From the discussion above it is clear that the LM has superior infrastructure to the rest of the areas under discussion.

3.2.10 Roads and Transport

Although most people in the North West Province travel mainly on foot, the figure for the province is much lower than for the other areas under discussion (Table 3.14). In the LM about three quarters of the people travel by foot. The incidence of people in the LM who travel by car, either as driver or passenger, mirrors that of the province and is much higher than for the DM. The proportion of people using minibus taxis in the LM is lower than the provincial figure (Stats SA, 2001). Although this may change should the proposed mine be established, transport is something that needs to be taken into consideration in the planning of the mine, if their prospective employees live in the surrounding settlements.

Table 3.14: Mode of travel distribution (shown in percentage)

	North West Province	DM	LM
On foot	59.42	82.22	73.10
By bicycle	0.85	1.10	1.41
By motorcycle	0.43	0.23	0.22
By car as driver	9.89	4.02	10.00
By car as a passenger	8.66	4.29	7.40
By minibus/taxi	11.52	4.66	5.57
By bus	6.01	3.04	1.99
By train	2.51	0.18	0.09
Other	0.70	0.26	0.23

(Stats SA, 2001)

The proposed site for the mine is only reachable by un-tarred roads. These roads are currently maintained by local farmers. There is a definite need for the maintenance of roads in the LM as well as in the other surrounding areas. Although it is an objective of the LM to maintain the existing road networks in the areas that fall within its jurisdiction, it is not clear whether these roads have been included in its forward planning because it only has a limited budget available.

3.2.11 Crime

The crime statistics produced by the SAPS are not grouped according to district municipalities, but according to SAPS' regions. The LM police station (the police station closest to the proposed development) falls within a larger sub-region (not comparable with the DM). For this reason the statistics will be reviewed for the North West Province and for the LM police station. The crime statistics for the LM police station are low, so movement in the figures for some crimes should be interpreted with care. The most common crimes in the areas under discussion are assault, theft and burglary (Table 3.15).

Table 3.15: Most frequent crimes in 2010/2011 reporting period (shown in order with most frequent on top)

North West Province	LM Police Station
All theft not mentioned elsewhere	Stock-theft
Burglary at residential premises	Assault with intent to inflict grievous bodily harm
Assault with intent to inflict grievous bodily harm	Burglary at residential premises
Common assault	Drug-related crime

(SAPS, 2011)

In all the areas under discussion there was an increase in drug-related crimes (Table 3.16) since the 2003/2004 reporting period. The crimes that have shown an increase in the LM police station are non-violent, which may be a result of the relatively better socio-economic climate in the LM as indicated by the higher employment figures.

Table 3.16: Crimes that have shown an increase since the 2003/2004 reporting period and the 2010/2011 reporting period (shown in no particular order)

North West Province	LM Police Station
Drug-related crime	Drug-related crime
Burglary at non-residential premises	

(SAPS, 2011)

3.3 Research Design

3.3.1 Methodological and Theoretical Approach

It has been observed that data can be viewed as a link between the researchers' inquiring mind and absolute truth and that the collected data are in an unrefined state and thus contains only pieces of truth. The researcher, therefore, makes use of what is commonly called research methodology to extract meaning from the data. The data to be used and the methodology to be followed are inextricably interdependent and, as such, it is imperative that the researcher always take into account the nature of the data when deciding on the methodology to be used for a particular research problem. To a certain degree, the data dictates the research method (Leedy & Ormrod, 2001:100).

There are many methods that can lead the researcher to a better understanding of the unknown and which accommodate the numerous different forms that data are likely to take. Researches have, however, categorised research studies into two broad categories, namely qualitative and quantitative research. Loosely speaking, the difference between qualitative and quantitative research (data) is basically the distinction between non-numerical and numerical data. To be more precise, quantitative research endeavours to answer questions about the relationships between measured values with the objective of predicting and explaining phenomena through deductive logic. This type of research has its foundation in the positivism paradigm, through which it is believed that society can be observed objectively and then explained rationally and logically, and that sociology can

be as scientific as chemistry or biology. Qualitative research, on the other hand, typically seeks to answer questions about the complex nature of phenomena, often trying to understand and describe the phenomena from the participants' point of view using inductive logic. A key strength of qualitative research in particular is that it can explore unanticipated issues as they emerge. The qualitative approach is closely associated with the postmodernist and constructivist paradigms that seek to question the objectivity of researchers and people in general, at best creating an "objective" reality where human beings demonstrate an extensive and robust ability to establish agreements as to what is "real" (Babbie, 2010:10-44; Baxter & Eyles, 1997:505-525; Guba & Lincoln, 1994:105-117; Leedy & Ormrod, 2001:100; Ritchie & Lewis, 2003:47-55).

It is from the above paradigms (postmodernism and constructivism) that the present researcher has engaged in the current study using primarily a qualitative approach to study the perceptions of the local community to possible mining in their area. Local people are 'experts' in terms of their surrounding community and, hence, have superior insight into the effect that mining operations have/will have on their lives, aspirations and values. The researcher also chose to use a qualitative approach by means of structured interviews because affected communities are in the best position to contribute to an understanding of the impacts of project development on their lives (Vanclay, 2002:183-211).

To enhance the outcomes of this study, the researcher deemed it appropriate to also use quantitative methods to compliment the qualitative approach. Numerical testing can often enhance and verify the findings of qualitative studies (Aubynn, 2003:36; Babbie, 2010:436).

3.3.2 Construction of structured interview

The structured interview used in this study was designed to access the perceptions of community members with regards to possible mining operations in their area. Before conducting the interviews, two test interviews

were undertaken to check for problem areas and ambiguous questions or questions that could not be answered due to the respondent's lack of knowledge about the subject. Minor adjustments were then made to the interviews before compiling the final version (Babbie, 2010:267). The interview was structured in two sections, with section 2 comprising of six sub-sections:

Section 1: Demographical information

In this section respondents were asked to indicate personal characteristics such as their age and gender.

Section 2: Assessment of perceptions towards mining

Predetermined themes were used for each of the sub-sections to structure the interviews logically and to effectively explore the study topic. In this section community members were first asked a number of general questions relating to the broader mining industry to gauge their overall perceived image of mining (sub-section A). Each question consisted of initial 'yes', 'no' or 'uncertain' tick boxes (quantitative) followed by a request to justify or explain their selection (qualitative).

Subsequently in sub-sections B, C and D (*the crux of the interview*) respondents were asked questions in relation to what they thought the economic (B), social (C) and environmental impact (D) would be on the local community if a mining operation was to be developed in the area. Each section starts with an impact matrix consisting of impact indicators (Table 3.17 below) to be rated on a perception scale of impact, -1 to -5 representing negative impacts, zero representing no impact, and +1 to +5 indicating positive impacts, with +5 or -5 representing maximum impact and +1 or -1 representing minimum impact (quantitative). The impact matrixes were then followed by a request that respondents justify their selection on the perception scale for each of the impact indicators (qualitative). The selection of economic, social and environmental indicators was used as these represent the three pillars of sustainability and, to understand any major community intervention, one needs to examine a matrix representing these three pillars (Richards, 2002:12; Veiga, Scoble & McAllister, 2001:191-202). Although

similar variables, as applied in the matrixes presented in sections B, C and D, have been used in other studies, additional relevant variables were added or omitted according to the principles of face validity, uni-dimensionality and variance (Aubynn, 2003:45; Babbie, 2010:164-165).

Table 3.17: Impact Indicators

Economic	Social	Environmental
Agriculture	Education	Water Quality
Trade & Commerce	Housing	Air Quality
Employment/Job Opportunity	Security/Crime	Noise & Land Vibration
Personal Income Level	Cultural Values	Diseases
Socio-economic Infrastructure	Population	Land Pollution
Cost of Living	Health	

Sub-section E endeavours to garner information regarding community development, community expectations and sustainability and sub-section F follows with the purpose of obtaining some insight with regard to company-community co-existence relations. Both these sections consist mainly of in-depth questions and are therefore primarily qualitative in nature. The structured interview form is attached in Appendix A.

3.3.3 Participant Selection

Qualitative samples involving interviews are usually relatively small in size because quality, rather than quantity, should be the essential determinant of the number of samples. It has further been established that there is a point of diminishing return where increasing the sample size, which is costly and time consuming, no longer contributes to new evidence (Ritchie & Lewis, 2003:83-84; Oppenheim, 1992:68-69).

Knowledge of the proposed mine is still limited at present because the mine is not currently in operation and the study will, hence, only look at community members' perceptions towards mining within a 30 km radius of the possible

location of the proposed mine. This area includes the farmers directly affected, other farmers within the 30km radius, businesses and residents from the local town and Black township (approximately 45km by road from the proposed mining area). Most of the general populace from this area, (the parent population described above) however, have low levels of education and are thus not generally well informed about mining related issues. The researcher used *purposive (criterion based) sampling* to get the best results from the study. In criterion based or purposive sampling the selection of participants, setting or other sampling units is purposive or criterion based. 'Key informants' or 'opinion formers', are chosen as participants because they have particular characteristics or features which will enable better exploration and understanding of the study matter (Ritchie & Lewis, 2003:77-97). The researcher thus decided to only use 'key informants' or 'opinion formers' from the parent population as the sample population (Babbie, 2010:195; Ritchie & Lewis, 2003:77-97; Oppenheim, 1992:68-69). These 'key informants' and 'opinion formers' are community leaders (political, religious and social), business people and farmers (specifically farmers directly affected) and are, therefore, not only able to provide insight, but are also residents and, as such, are part of the relevant sample. In the study area there are approximately 70 such key informants and opinion formers (N) which form the study population **70 (N)**. This number was derived from inquiries made through various organisations such as political parties, the local municipality agricultural and woman's organizations, local schools and religious organisations.

3.3.4 Sample Strategy

Sampling, in general terms, refers to the process of identifying and selecting a relatively small number of elements known as the sample (n) from a larger delineated or defined group of elements known as the population (N) so that the information collected from the smaller selection of elements allows the researcher to understand and make judgements about the larger population. This is also described as stratified sampling (Leedy & Ormrod, 2001:210-219). The reason for using stratified sampling is because it is usually impossible to sample entire populations.

The sampling frame is a list or quasi list of elements from which the sample is selected. The sampling frame selected for the study is made up of farmers directly affected by possible mining (group 1), other farmers from the study area (group 2), local business people (group 3) and residents from the local town (group 4; Babbie, 2010:208-209; Lewis & Ritchie, 2003:88-90). These groups, represented by their key informants and opinion formers, form a microcosm of the parent population of the study area.

It is important to note here the special importance of one of the elements from the sampling frame, namely the farmers who stand to be directly affected in the event that a mine is established. These farmers have had a long association with mineral exploration on their properties with various companies looking at the possibility of establishing a mine on their land. Over time these farmers have frequently had to confront the reality of possible mining and evaluating the impact it would have on their lives. This experience makes them very knowledgeable 'key informants' compared to the other elements of the sampling frame. For this reason all of these farmers were interviewed, thus giving them, as a subpopulation, a larger representation when compared to the other elements (subpopulations) of the sampling frame (Babbie, 2010:222-223; Ritchie & Lewis, 2003:84).

3.3.5 Data Collection Process

The interviews were conducted over a period of three months during the latter part of 2010. Interviews were arranged and confirmed well in advance and each interview ranged from one to three hours, depending on situational factors such as available time and knowledge about the subject matter. Due cognisance was given to appropriate interview guidelines such as appearance, demeanour and familiarity with the questionnaire (Babbie, 2010: 275-277). The approach used was to try not to intimidate or influence the interviewees in order to achieve a balanced power relationship between the interviewer and the interviewee. This was further achieved by using mainly independent interviewers with no relationship to the company. In some

instances, due to low levels of education and/or prior knowledge of possible mining in the area and mining in general, specific questions had to be explained more fully to interviewees.

Participant anonymity was stated prior to arranging the interviews and maintained throughout the process.

Fifty-two interviews in total were conducted during the period mentioned above, of which **48 (n)** individual interviews were used for the study from a population of 70 (N). Four interviews were subsequently discarded as they could not be used due to the interviewees' insufficient levels of education and/or knowledge of possible mining in the area and mining in general.

3.3.6 Data Analysis

As stated earlier in this chapter, to enhance the outcomes of this study it was deemed appropriate to also use quantitative methods to compliment the mainly qualitative approach (Aubynn, 2003:36; Babbie, 2010:436). Data analysis, therefore, focused on qualitative data analysis supported by quantitative data analysis where possible and/or appropriate.

The interview format was designed logically, with the use of predetermined sub-sections, to explore the perceptions of community members towards possible mining in their area. During qualitative analysis these sub-sections were embraced as the main themes, with sub-themes identified within each of these main themes. The sub-themes were developed by using coding (open, axial and selective) to identify words, phrases or sentences that reflect single, specific thoughts thus opening up the text to reflect the various core concepts ('perceptions') as it is experienced (Babbie, 2010:400-404; Leedy & Ormrod, 2001:148-157). During quantitative analysis of the data the main aim was to make better sense of the collected data by using numbers that are summarized and interpreted through the use of various statistical techniques. The results (analysis) will be discussed under the main themes (sub-sections) qualitatively and strengthened, where applicable, with quantitative analysis.

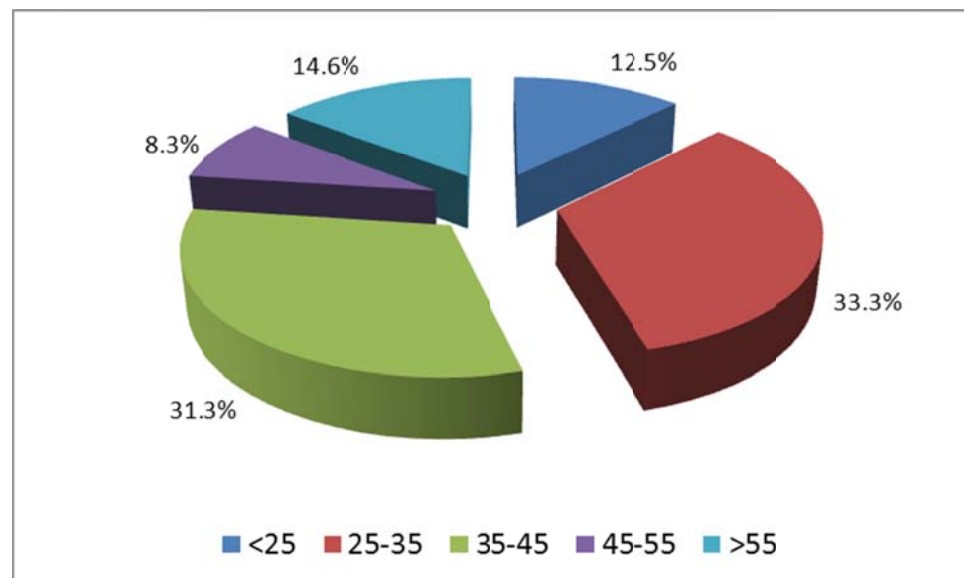
3.4 Results of Demographical Information

The socio-demographical analysis of the sample (n=48) is discussed in this section. The variables examined consist of age, gender, population group and the number of years living in the community.

3.4.1 Age Distribution

Figure 3.1 below shows the age distribution of the interviewees and indicates a relatively well represented spread of the different age groups with almost 65% of the respondents falling within the 25 to 45 year old age group. This is to be expected as key formants and opinion formers within a community would be active and influential in this age group. It was, however, also important to get the view from the younger generation (less than 25 years), with the youngest interviewee being 17 years old (the head boy from one of the local schools).

Figure 3.1: Age Distribution

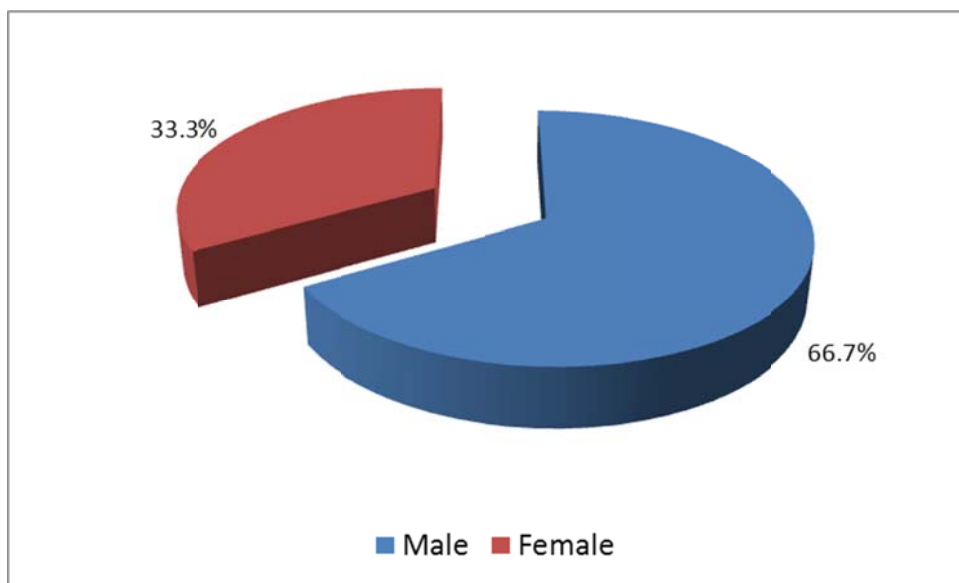


(Perception interview, Appendix A, Section 1)

3.4.2 Gender Distribution

Figure 3.2 below shows the gender distribution of the interviewees who participated in the study. Two thirds of the respondents were male and one third female. Although gender equality was not achieved the number of female respondents is in fact significant, taking into account the conservative, rural nature of the local community.

Figure 3.2: Gender Distribution

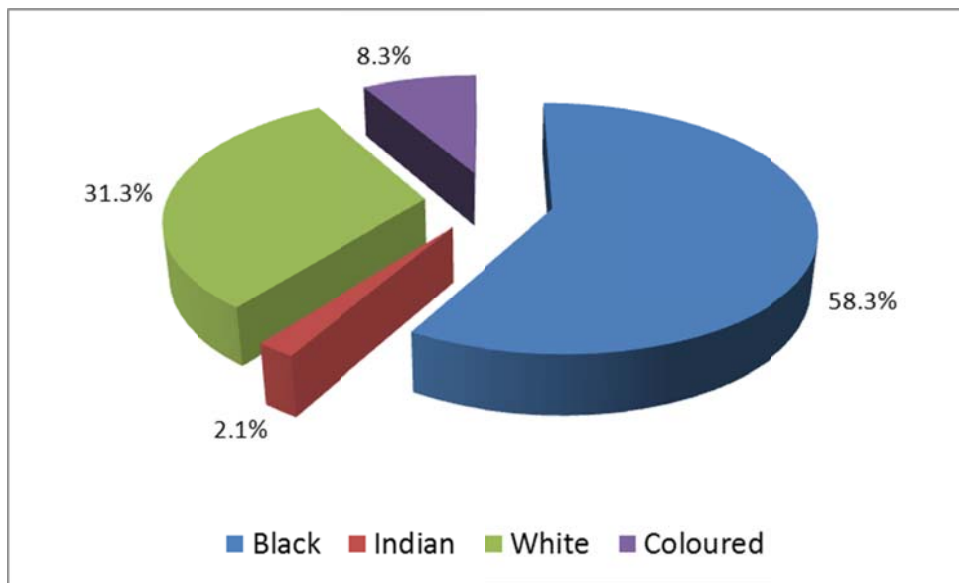


(Perception interview, Appendix A, Section 1)

3.4.3 Population Groups

Figure 3.3 below reveals the distribution of the various population groups interviewed. This dissemination reflects the overall population distribution fairly well, with some bias towards the white population. This 'partiality' is mainly because all the farmers who stood to be affected directly by possible mining in the area are white and were all interviewed, due to reasons supplied above.

Figure 3.3: Population Groups

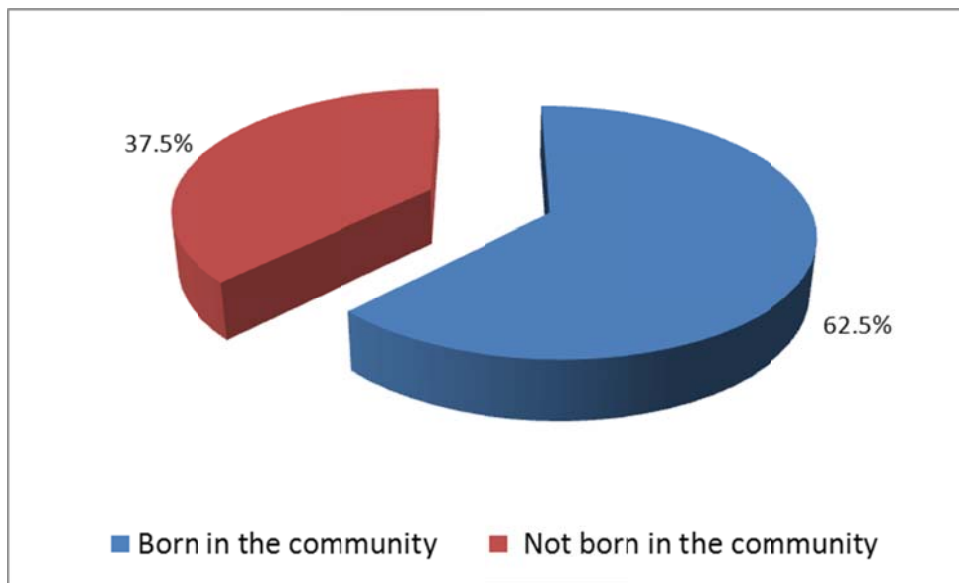


(Perception interview, Appendix A, Section 1)

3.4.4 Time Residing in the Community

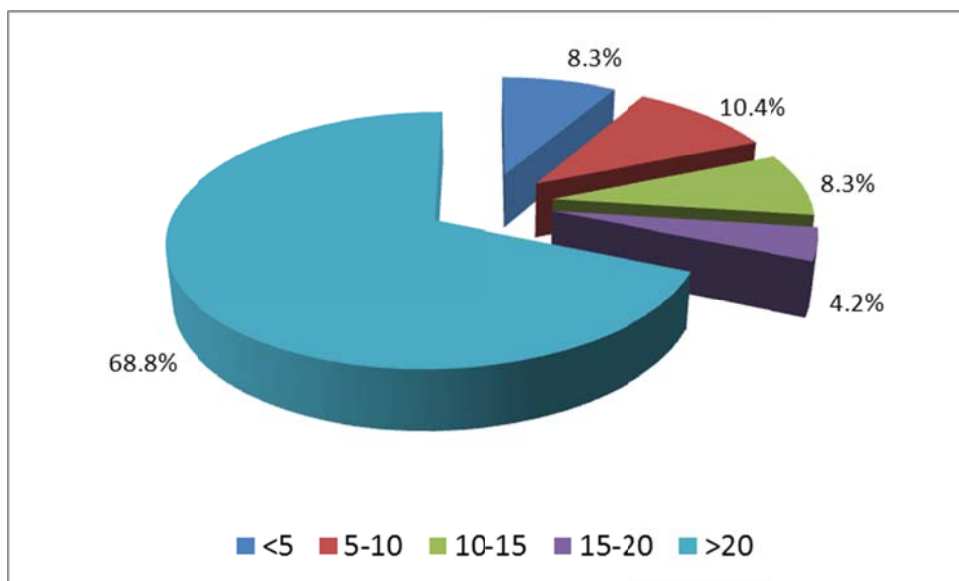
Figure 3.4 and Figure 3.5 below give a measure of the interviewee's knowledge and understanding of the community by way of the number of years that the individual have been living in the area. Figure 3.4 shows that almost two thirds of the people interviewed were born in the community. Figure 3.5 further shows that more than 90% of the interviewees have been staying in the area for longer than five years. This is important because people who have lived within the community for longer are more likely to understand local issues and aspirations, imparting credibility to the selected respondents.

Figure 3.4: Born/Not Born in the Community



(Perception interview, Appendix A, Section 1)

Figure 3.5: Time Residing in the Community



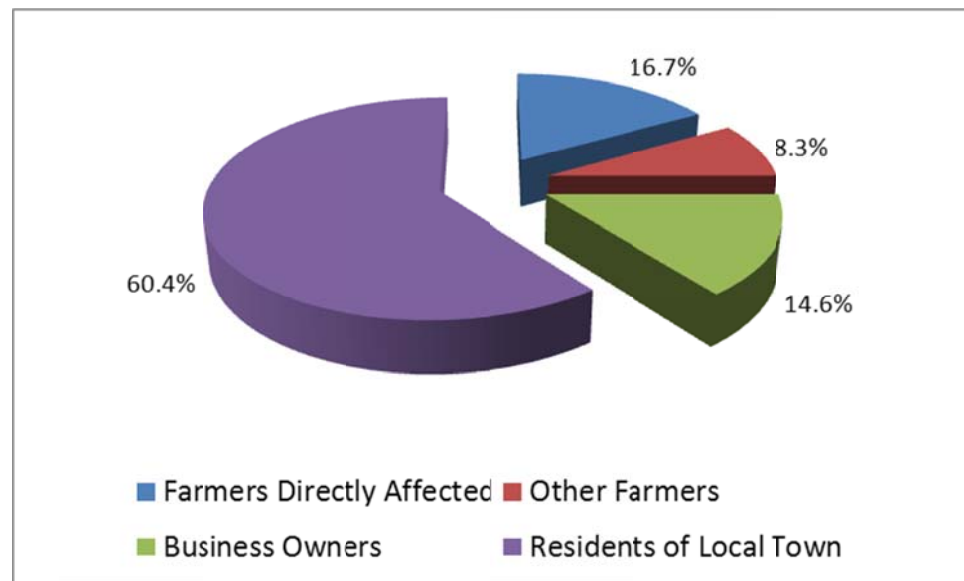
(Perception interview, Appendix A, Section 1)

3.4.5 Sampling Frame Distribution

Figure 3.6 below indicates the distribution of the sampling frame. As has been indicated above, farmers who could be directly affected by the development of a mine were all interviewed due to their special position as key informants. More than 60% of the key informants interviewed are from the local town. This

is to be expected because the largest majority of the local community's population reside in the town. These key informants include political, religious and community leaders, local government employees, social workers, developmental workers and people from the teaching, healthcare and policing sectors.

Figure 3.6: Sampling Frame Distribution



(Perception interview, Appendix A, Section 1)

3.5 Data Analysis - Results

As mentioned earlier in this chapter, data analysis was focused on qualitative data analysis supported by quantitative data analysis where appropriate. The analysis below is structured logically according to the sub-sections (main themes) of the interview in order to explore each of these main themes in detail. Sub-themes were developed by using coding (open, axial and selective) to identify words, phrases or sentences that reflect single, specific thoughts in order to 'open up' the text to reflect the various core concepts ('perceptions') as it is experienced (Babbie, 2010:400-404; Leedy & Ormrod, 2001:148-157).

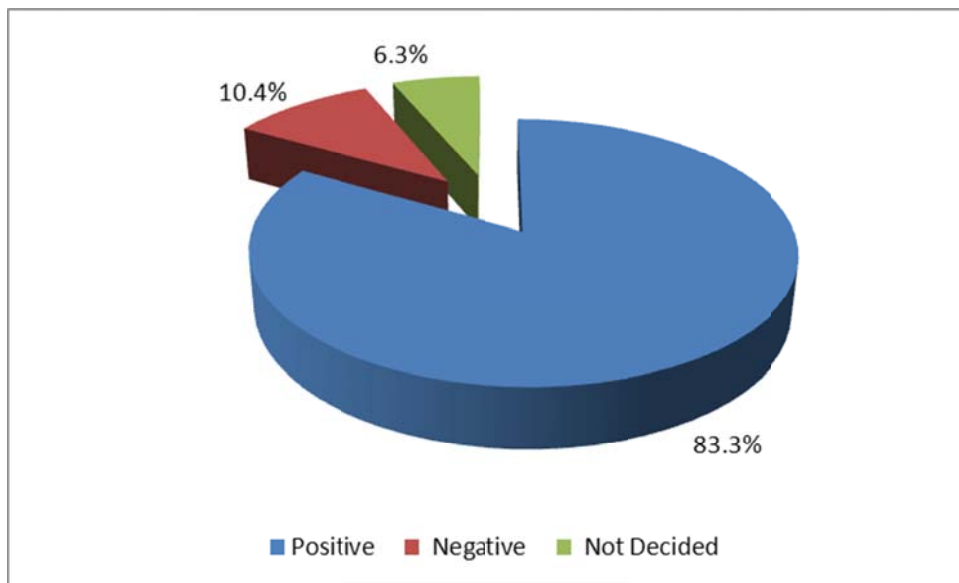
3.5.1 Community Perception of the Mining Industry in General

In this section of the interview respondents were asked a number of questions relating to the mining industry in general. Questions dealt with general perceptions towards mining, specifically the impact of mining, the corporate responsibility of mining companies, trust and the profits of mining companies. These topics are among the most publicised and discussed issues that people talk about and are of general concern to them.

Most questions in this section were structured to allow for an initial 'yes', 'no' or 'uncertain' response followed by a request to explain the initial response. It is important to obtain the initial responses, because many people do not have an in-depth knowledge of the mining industry but they do have a 'gut feeling' towards the industry. This 'feeling' sometimes cannot be explained or substantiated properly, but remains a positive, negative or indifferent predisposition that will filter most of people's responses and actions towards the mining industry and mining in their community, now and in the future.

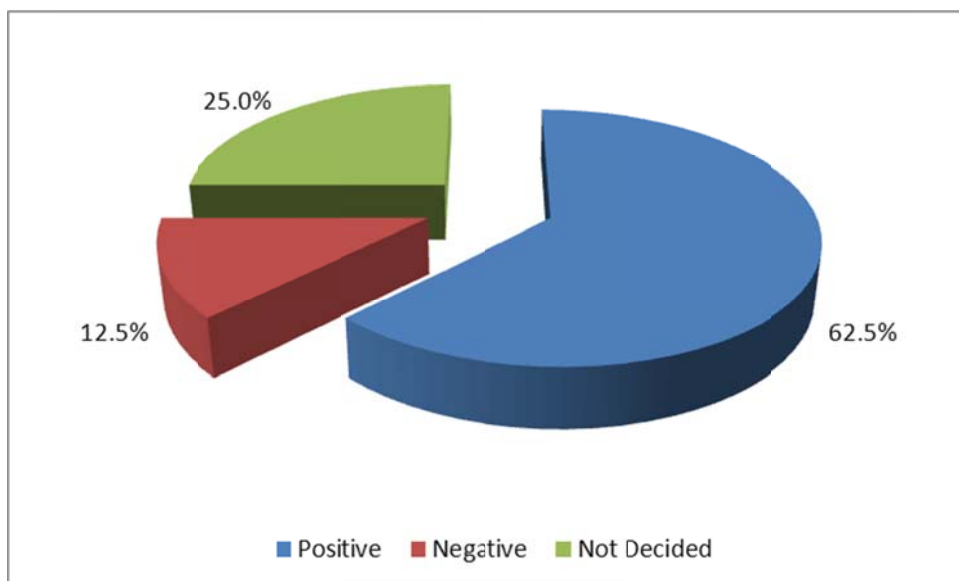
The first question, *'Do you have a positive attitude towards the mining industry and mines in general?'* specifically tests this 'feeling' or predisposition towards mining in general. Respondents overwhelmingly replied in the positive towards this question (Figure 3.7 below). This answer is very significant considering all the negative publicity the mining industry has received in recent times, and can indicate the dire need for any form of economic development in the area. It is however important to also take note of the responses from the farmers who could be directly affected by a possible mine (Figure 3.8 below). Positive responses from this important group are still high at more than 60%, but are significantly lower when compared to the entire sample population where more than 80% of the respondents said they held a positive inclination towards the mining industry. This outcome is naturally understandable because these farmers constitute the only group that could see its current way of life being negatively affected by the development of a mine and is also the group that has comprehensively contemplated this possibility.

Figure 3.7: Perception Towards the Mining Industry and Mines in General



(Perception interview, Appendix A, Section 2)

Figure 3.8: Perception Towards the Mining Industry and Mines in General – Farmers Directly Affected



(Perception interview, Appendix A, Section 2)

The most abundant sub-theme that was distinguished qualitatively with the use of coding during the interviews was that of *job creation and economic growth*:

There will be job creation for our people in all aspects (key informant – Group 4).

It will generate wealth and lead to the development of the area (key informant – Group 1).

The mine will provide lots of jobs and economic growth (key informant – Group 3).

Another sub-theme that was identified was that of *community development* which relates more to the social upliftment and local benefits of mining. Respondents felt that if mineral wealth is extracted from within their community they should be compensated for that privilege:

Yes, because I think they can improve the lives of our community (key informant – Group 4).

Mines stole from our forefathers many years ago, now they must give back to the communities (key informant – Group 4).

Yes, but only if the community benefits (key informant – Group 4).

A final sub-theme that was identified relates to fears regarding *pollution*:

Mines deplete our natural resources, disturb the natural environment and can create health problems (key informant – Group 3).

Mines lead to water pollution as is evident from all the problems with acid mine drainage (key informant – Group 1).

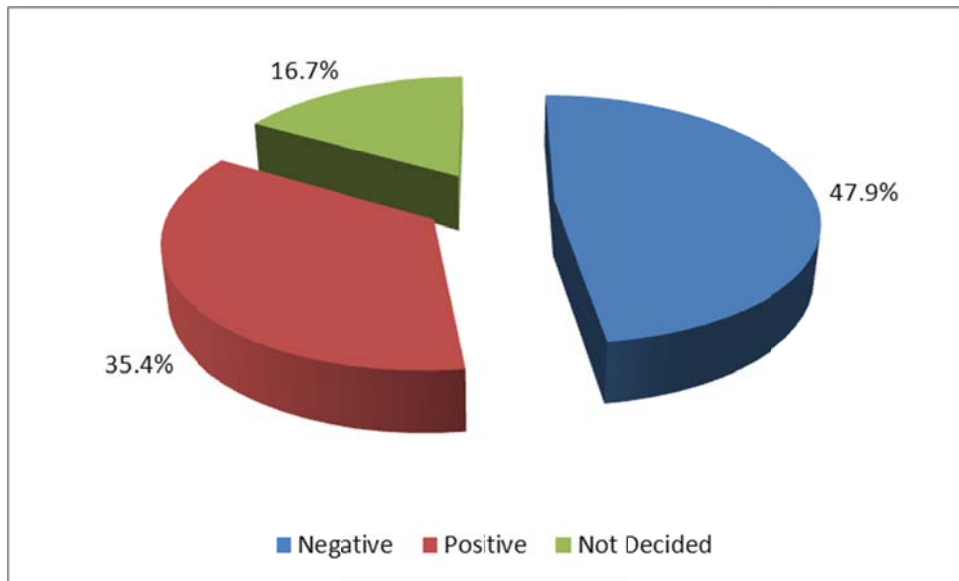
Although many respondents recognise the negative impact mines have on the environment, (see section 3.6.1.1 below) job creation and economic growth take president over this possible negative impacts.

3.5.1.1 Environmental Impact – General Perception

This question asked respondents if they believed mining has a negative impact on the environment. Whilst most respondents (almost 48%) replied that they do feel that mining has a negative impact on the environment, a considerable number (more that 35%) felt that mines generally do not have a negative impact on the environment (Figure 3.9 below). The group that believes mines do not have a negative environmental impact substantiated the view by saying that there are effective regulations in place to prevent negative environmental damage, that the minerals to be extracted locally will not be hazardous and, lastly, that any environmental impact is not a personal concern because employment is the most important issue.

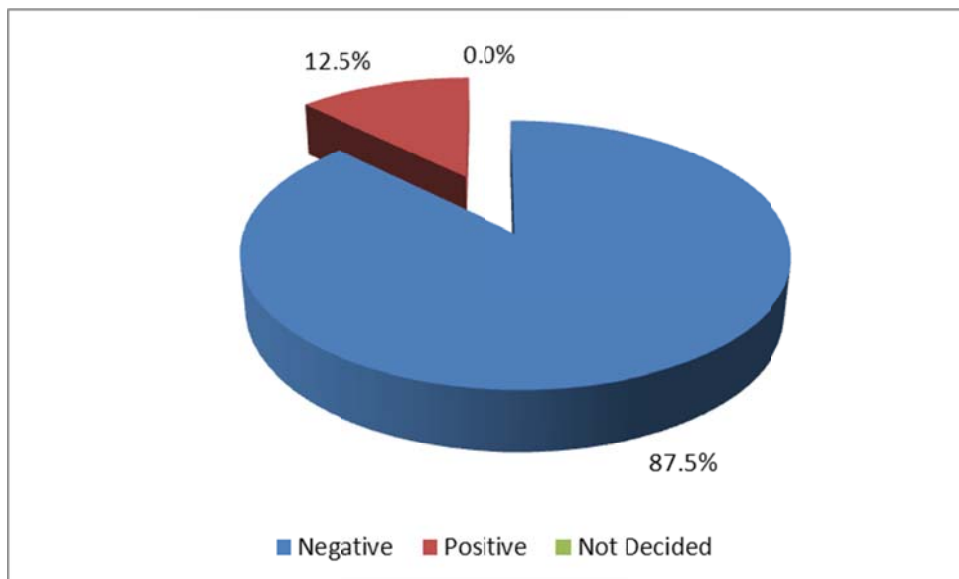
It is again important to take note that the farmers who stood to be directly affected if a mine was developed on their properties are almost unanimous in their assessment that mining does, in fact, have a negative impact on the environment (Figure 3.10 below). This unenthusiastic response is naturally understandable because these are the people who will see the waste dumps and inhale the dust from a possible mine on their doorstep.

Figure 3.9: Perception Towards the Environmental Impact of Mining in General



(Perception interview, Appendix A, Section 2)

Figure 3.10: Perception Towards the Environmental Impact of Mining in General – Farmers Directly Affected



(Perception interview, Appendix A, Section 2)

The main sub-theme that was identified in this section of the interview can be grouped together as *negative environmental impacts* ranging from general pollution to air and water pollution to the depletion of the underground water supply to land degradation and to earth vibrations:

I am mainly concerned about the use of farm water which is our source of live and also about pollution (key informant – Group 1).

During the operation of the mine there will be a lot of air pollution that will lead to diseases (key informant – Group 4).

Mines disrupt the ecosystems of the natural environment and acid mine drainage can also pollute water sources (key informant – Group 3).

A second sub-theme identified was *good government regulation* that will prevent or mitigate any negative impacts that a mine could have on the environment:

I don't think so because there are rules that they will have to follow (key informant – Group 4).

A third sub-theme relates to the *type of mineral mined* and these responses stress that any negative impacts on the environment is subject to the type of mine and the minerals mined. Respondents further believe that the minerals to be mined in the community will not be hazardous to the environment:

Since the mineral to be mined is not hazardous to our health the environment is safe (key informant – Group 4).

Another sub-theme identified holds that *job creation is more important than the environment*:

I do not care about what happens to the environment, the community needs employment (key informant – Group 4).

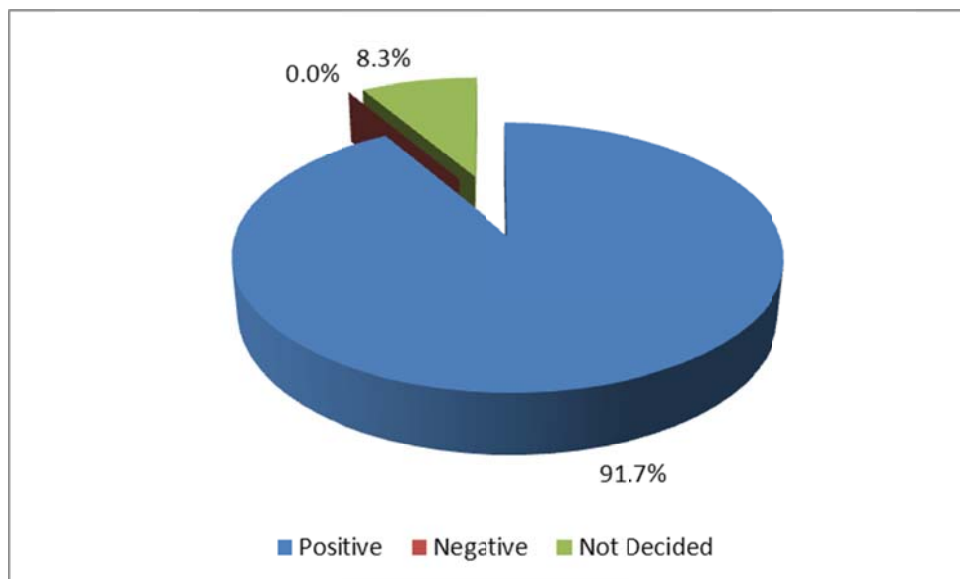
A lack of understanding and knowledge with regard to the environmental impacts that mines could have is also evident in some of the interviewees' responses:

Before we were born mining already was a global industry, but mankind and the natural environment still exists today. If mining have such a negative impact on the environment we should have died a long time ago (key informant – Group 4).

3.5.1.2 *Economic Impact – General Perception*

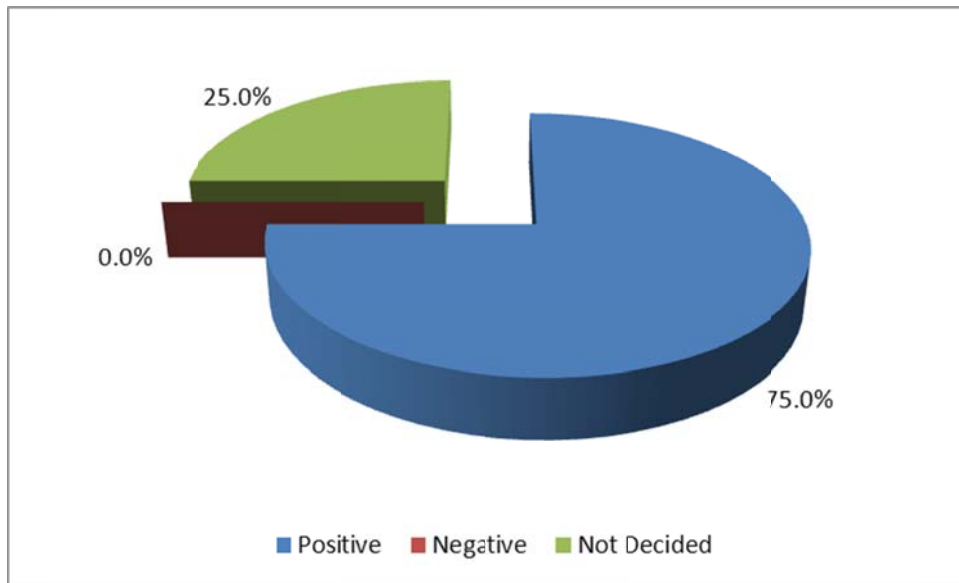
In response to the question 'Do mines generally have a positive impact on the economy and the development of local communities?', most respondents (even the farmers directly affected) replied in the affirmative (Figures 3.11 and 3.12 below).

Figure 3.11: Perception Towards the Economic Impact of Mining in General



(Perception interview, Appendix A, Section 2)

Figure 3.12: Perception Towards the Economic Impact of Mining in General – Farmers Directly Affected



(Perception interview, Appendix A, Section 2)

The overwhelming sub-theme in this section of the interview is *job creation and economic prosperity*:

Mines bring more job opportunities and better economic conditions and will improve shops and schools (key informant – Group 1).

Since the 19th century mines have played a major part in driving the economy of South Africa (key informant – Group 4).

Another sub-theme relates more to *community development* such as skills and youth development and the investment in local infrastructure:

It is important that the local community is developed by creating sustainable things like a stadium for the benefit of the community (key informant – Group 4).

3.5.1.3 Corporate Citizenship – General Perception

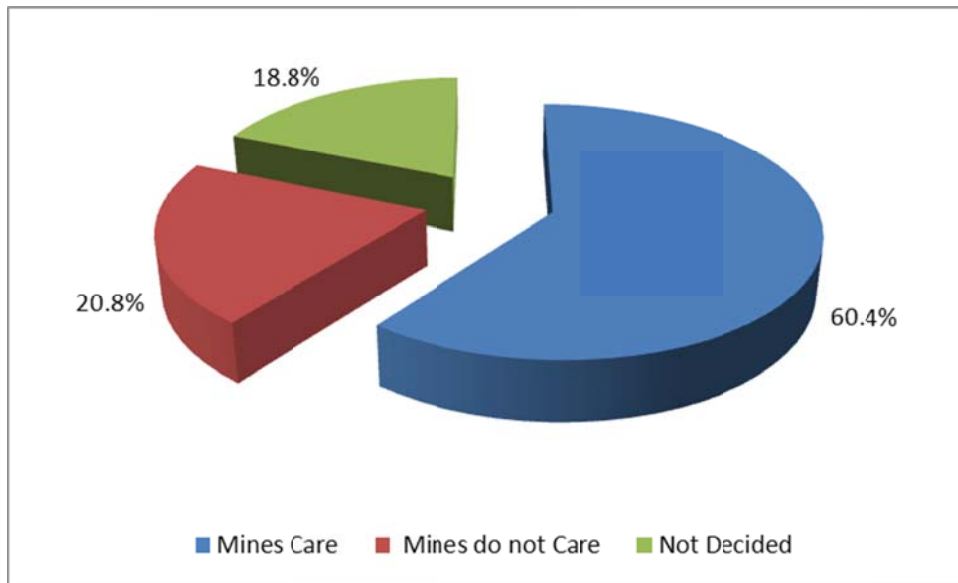
This section of the interview tries to establish the general perception of the community with regard to the mining industry's Corporate Social Responsibility (CSR) performance as well as trust and corporate greed. The World Bank's definition of CSR reads as follows: 'the commitment of business to contribute to sustainable economic development – working with employees, their families, the local community and society at large to improve the quality of life, in ways that are both good for business and good for development' (Ward, 2004:3). The private sector is required, therefore, to partake as *honest partners* in the sustainable development of local communities. With South Africa's past history of generally excluding the largest portion of the population from partaking in the economic benefits of this industry, it is specifically pertinent that CSR calls on mining companies to respond not only to its shareholders but also to their other stakeholders (employees, customers, affected communities and the general public) with regard to issues such as climate change, human rights and employee welfare (Hamann, 2003:238).

- ❖ Social investment (do mining companies really care about local communities?):

This interview question asks respondents if they think mines care for the communities in which they operate and also if they believe mines make positive socio and cultural contributions towards these communities.

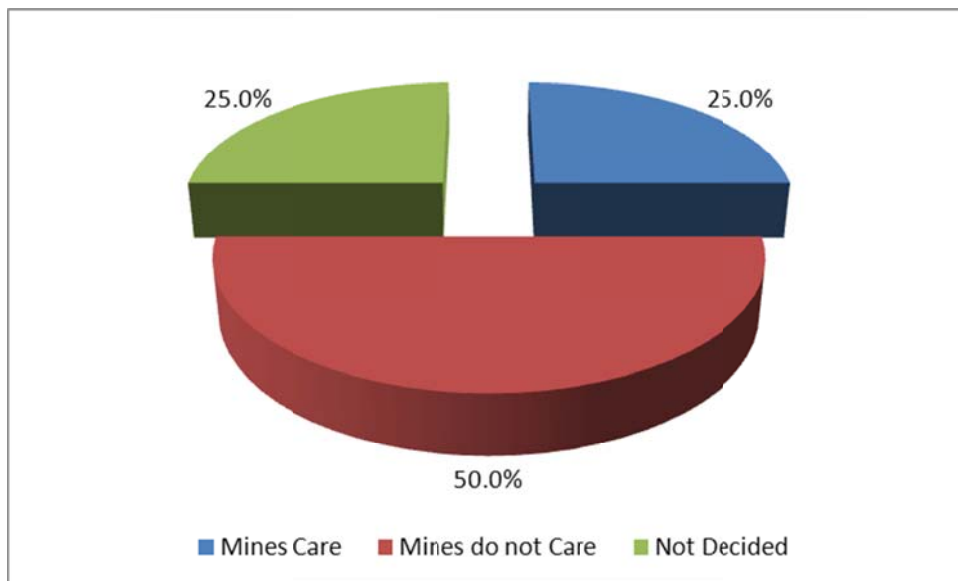
Generally respondents (more than 60%) were of the opinion that mines do care and make positive contributions towards the communities within which they operate (Figure 3.13 below). Respondents from the sub-group, 'farmers directly affected' were, however, less optimistic with only about 21% agreeing that mines care and invest socially and culturally in the local community (Figure 3.14 below).

Figure 3.13: Perception Towards the Sincerity and Caring Nature of Mining Companies in General



(Perception interview, Appendix A, Section 2)

Figure 3.14: Perception Towards the Sincerity and Caring Nature of Mining Companies in General – Farmers Directly Affected



(Perception interview, Appendix A, Section 2)

The main sub-theme identified here relates to *positive developmental contributions* from mines:

We will stand a chance to gain so many things from mining (key informant – Group 4).

There is a drastic change and development in an area where there is a mine (key informant – Group 4).

I have seen for example Anglo Platinum contributing to education in the communities where they mine (key informant – Group 1).

If the community demands reasonable things from a mining company, without bribes and corruption, then the company will care for the people and be able to cater for all sorts of things (key informant – Group 4).

Another sub-theme that was identified was that mines are *forced to contribute through regulation*:

According to the agreement the mine has to care and take responsibility for social investment (key informant – Group 4).

The last sub-theme identified under this question is that *mining companies only have self-interest at heart*:

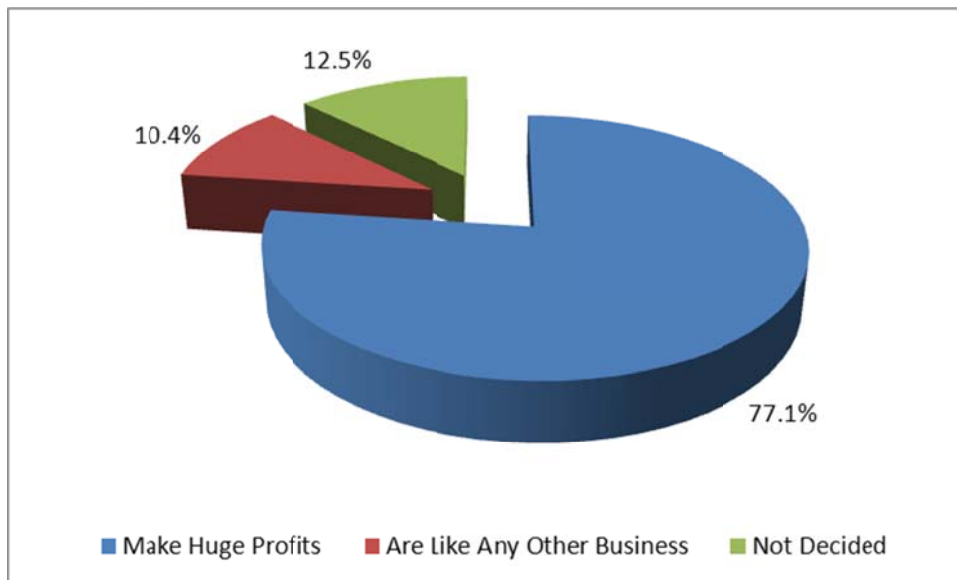
Mining companies used to care in the past, but not so much anymore. Now they only care about how much money they can make (key informant – Group 1).

Mining companies for example only use the roads, but do not ensure that they are maintained (key informant – Group 3).

❖ Mining Profits – General Perception

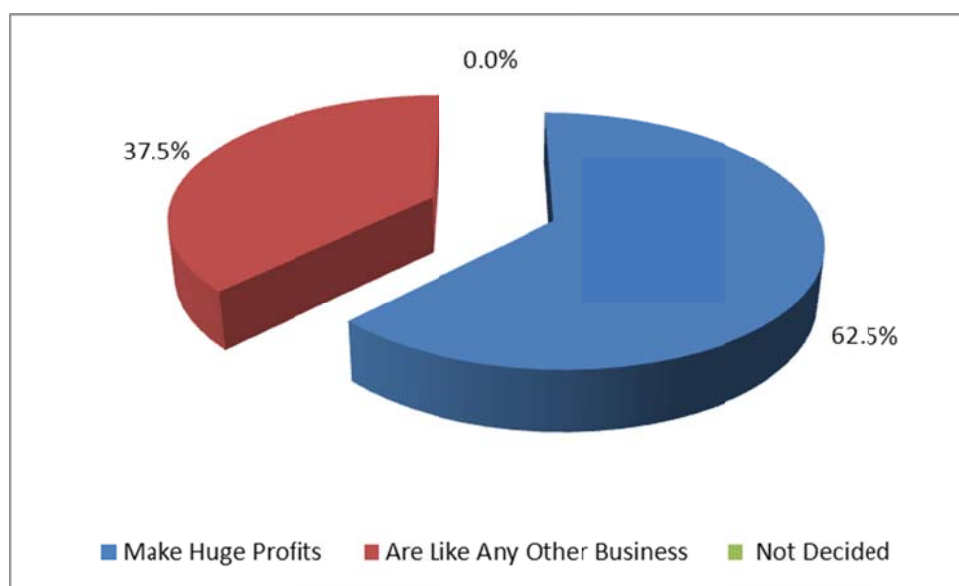
This question asked respondents if they think mining companies are excessively wealthy and make huge profits, or if they are similar to other businesses. Most respondents replied that they thought mining companies do make lots of money (Figures 3.15 and 3.16 below). This confirms the often voiced perception that mining companies make excessive profits and, consequently, should be able to resolve all the ills in local communities.

Figure 3.15: Perception Towards Mining Profits (“Greed”)



(Perception interview, Appendix A, Section 2)

Figure 3.16: Perception Towards Mining Profits (“Greed”) – Farmers Directly Affected



(Perception interview, Appendix A, Section 2)

The main sub-theme identified here is that mining companies *have lots of money*:

As an outsider it does look, on face value, as if mining companies have lots of money and that they do make huge profits (key informant – Group 3).

Definitely, top management earn massive salaries as can be seen clearly from their lavish living standards (key informant – Group 1).

Another lessor sub-theme recognised in the answers of interviewees holds that *mining companies are just like any other business*:

Mining companies are like any other business. To make big profits you must be able to know how to make it (key informant – Group 4).

I think it is like any other business, it depends on the management of the company (key informant – Group 1).

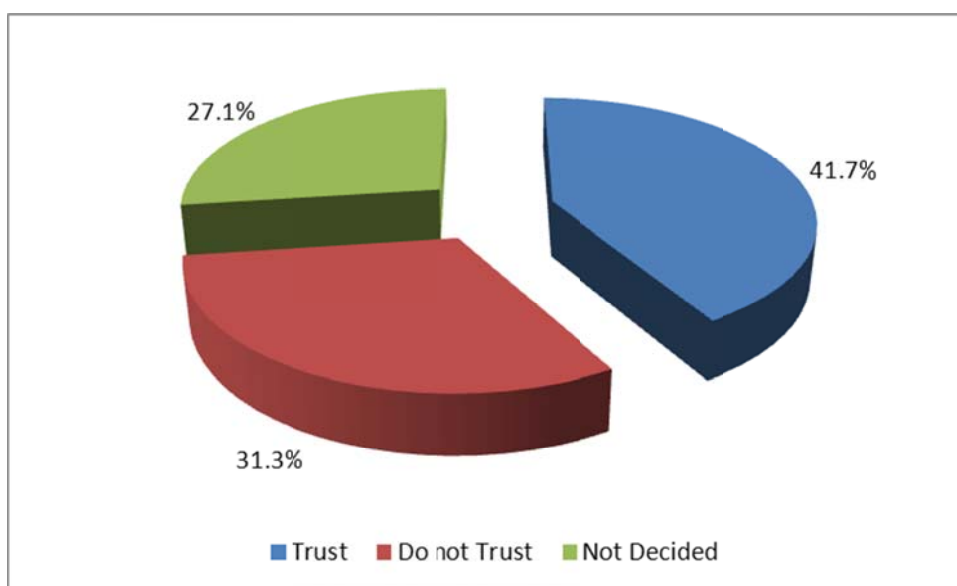
The profits that a mining company makes depend on the mineral resource and on the production rate of the mine (key informant – Group 4).

❖ Trust towards mining companies:

This question simply asked respondents if they trust mining companies in general. It is very important to get a sense of the trust or mistrust that people have in mining companies because this would play an important role in understanding the nature of future interactions between the company and the community. It was indicated earlier that people's trust in corporations, worldwide, are on the decline (Edelman Trust Barometer, 2009:2; McKinsey Global Survey, 2009:1-2).

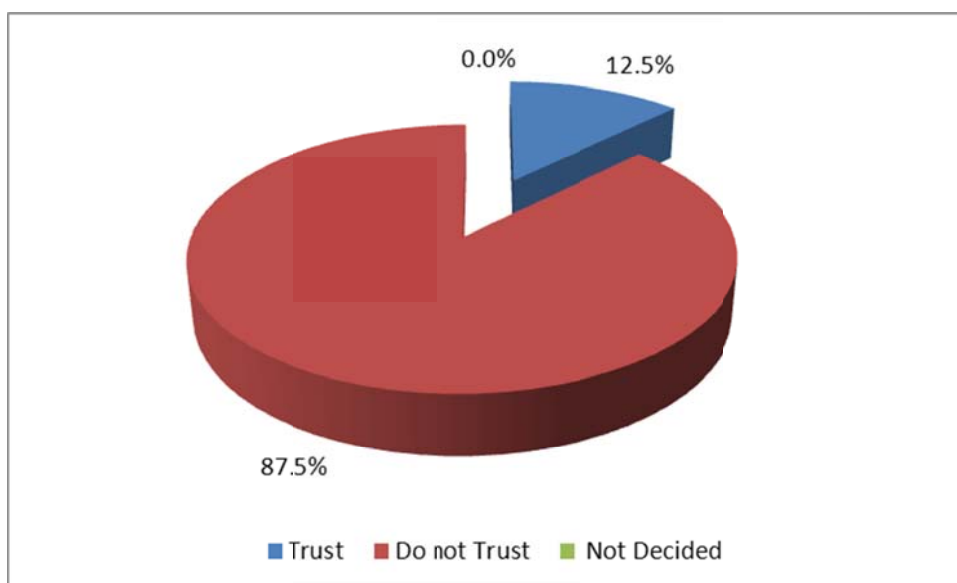
Figure 3.17 below indicates that although most respondents have trust in mining companies (almost 48%) there is also substantial mistrust (approximately 31%) among community members. This sense of mistrust or suspicion increases substantially (almost 88%) when looking at only the responses from Group 1, the farmers who could be directly affected if a mine was developed in the area (Figure 3.18 below). This mistrust must be taken into account whenever the company interacts with this particular within the community, and care must be taken to rebuild a sense of trust. Sincerity and honesty will go a long way to establishing this trust-relationship.

Figure 3.17: Perception Regarding Trust Towards Mining Companies in General



(Perception interview, Appendix A, Section 2)

Figure 3.18: Perception Regarding Trust Towards Mining Companies in General – Farmers Directly Affected



(Perception interview, Appendix A, Section 2)

The main sub-theme identified from the answers of the respondents to this question has to do with a *wait-and-see approach (depending on what the mine does)*. Community members will reserve judgement depending on *whether the company delivers on promises made*:

It also depends on what we agree upon. If the company do not deliver on the promises made, it means that they are not to be trusted. Trust is if we keep our promises (key informant – Group 4).

It all depends on what they do (key informant – Group 4).

Another prominent sub-theme identified from the answers of the respondents to this question relates to the issue that mining companies *are not transparent and have only self-interest at heart*:

Mining companies are not completely open with you, they tell you what you want to hear (key informant – Group 1).

Many times mining companies just make empty promises. They only look after their own interests at the expense of local residents and the environment (key informant – Group 3).

They are business people and they know how to manipulate people's minds (key informant – Group 4).

The last sub-theme identified in this section of the interview is that good *regulation that will protect the community* against any possible untrustworthy companies:

They (mining companies) do not operate without an agreement and a permit and all the issues are then in the open (key informant – Group 4).

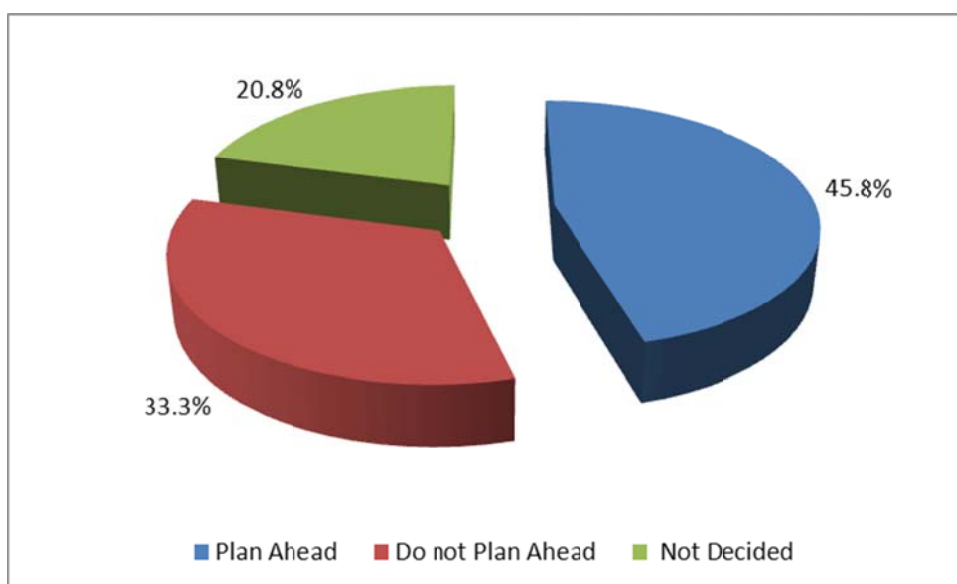
❖ Mine closure planning and sustainability

The issue of creating sustainability through mining operations is a difficult and thorny problem because mining by its nature is a non-renewable resource and a business that will eventually be “mined out” regardless of the location. Any mining venture, therefore, will close down some time in the future. Sustainability, however, is something that always enters the debate when mining companies and local communities look to the future and try to minimise the impact on local economies and people’s lives when mines close and mining companies move on.

The level of knowledge and understanding and, perhaps, also the lack of any real solutions with regard to this question concerning mine closure and sustainability, were low within the group interviewed. This response is not surprising because many experts within the mining industry battle with this same challenge.

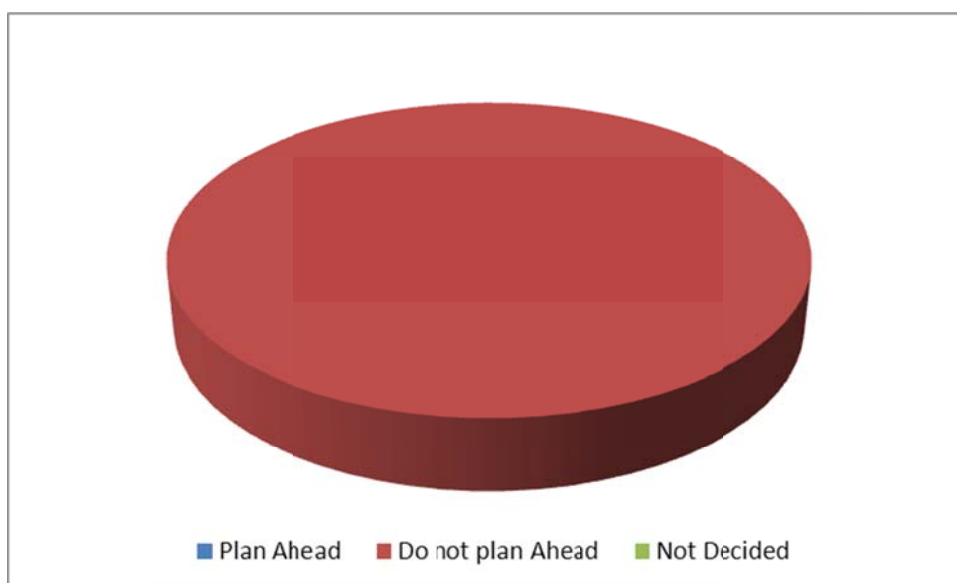
Figure 3.19 below shows that most key informants (almost 46%) felt that mining companies do plan ahead, whilst approximately 33% felt that mining companies do not plan for mine closure. The group of farmers who could be directly affected by a possible mine closure felt that mines do not plan for closure (Figure 3.20 below).

Figure 3.19: Perception Towards Mine Closure and Sustainability in General



(Perception interview, Appendix A, Section 2)

Figure 3.20: Perception Towards Mine Closure and Sustainability in General – Farmers Directly Affected



(Perception interview, Appendix A, Section 2)

In this section of the interview, the main sub-theme identified relates to peoples' hopeful belief that a mine *would leave some source of income behind*, sometimes with the involvement of the local community:

Investments by the mine in education, housing and other sustainable projects will keep the community going (key informant – Group 4).

The mine will invest in developing people's skills, which will help them when the mine is gone (key informant – Group 4).

Mining will leave retirement funds for our people to sustain us economically (key informant – Group 4).

Maybe a mine can create (leave behind) something for us, such as a park or a dam (key informant – Group 4).

The re-working of the old mine dumps by local residents may be a way to create money and work once the mine is gone (key informant – Group 4).

The community (with the mining company) have to plan for the creation of sustainable projects so that there are other sources of income when the mine closes (key informant – Group 4).

Another sub-theme identified by interviewees is that mines *just look after their own interests, make their money and leave*:

One just hears about mines that close and workers that are retrenched (key informant – Group 1).

Normally when a mine closes people move as well, following job opportunities elsewhere. In this way rural areas depopulate further becoming ghost towns (key informant – Group 1).

Mines only exploit resources to the maximum and do not inform their workers in time that the mine is closing down (key informant – Group 3).

Other answers to this question include the following:

Mines are required by law to plan ahead for closure (key informant – Group 3).

There is no guarantee for sustainability in business (key informant – Group 4).
It might happen that closure is reached before the local economy becomes self-sustaining. Therefore only the mineral resource can determine if there will be enough time to develop the local economy (key informant – Group 4).

Mineral resources take a long time before they are mined out and this will lead to the achievement of economic development (key informant – Group 4).

When mining is completed they should not leave behind any hazardous waste that could be harmful to the people of the local community (key informant – Group 4).

3.5.2 The Economic Impacts of Mining on the Community

Before considering the economic impact indicators from the impact matrix (Table 3.17) two general questions relating to employment were put to the respondents.

The first question asks respondents how they think mining operations would affect employment in their community. This question was asked to attain a sense of people's expectations regarding employment opportunities in the event of a mine being established in their community. The overwhelming response was that *mining would reduce unemployment* in the local community:

Mining will definitely give the local employment market a big boost and create many new job opportunities (key informant – Group 3).

A much less popular but important theme identified in the farming community relates to the concern that a mine could perhaps *lure away their best labourers* due to better salaries:

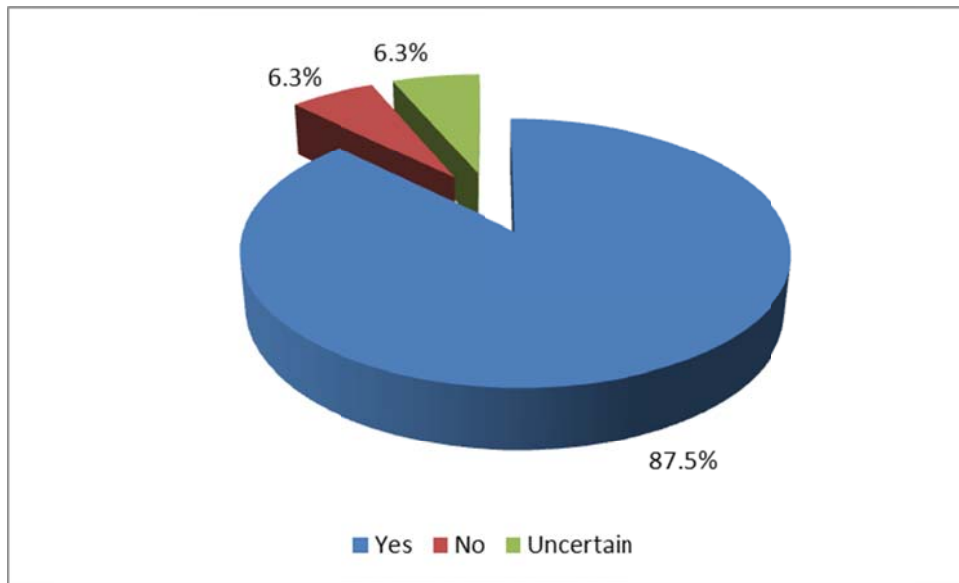
The more educated labourers will go and work on the mine at the expense of agriculture (key informant – Group 1).

A final minor theme identified by respondents relates to answers stating that there is so much unemployment in the area that a new mine will only be able to *give work to a portion of the people* from the community:

The mine can maybe hire 40% of the community, but only maybe (key informant – Group 4).

The second general question relating to employment asks respondents if they thought the company would employ people from the local community. Figure 3.21 below shows that almost 90% of the respondents indicated that local people should be employed on any possible new mining development in their community. The local procurement of labour will definitely be an important issue, requiring specific attention and careful management from the company.

Figure 3.21: Perception Towards Local Employment - (should local people be employed by a possible new mine)



(Perception interview, Appendix A, Section 2)

As is evident from the above, the main theme recognized here is that the company *must employ locally*:

Employing people must be the main focus of any agreement before a mine is allowed to start operating within the community (key informant – Group 4).

The company will have to employ people from the community. I know that they will still have to bring their own technical people, but it should be the minimum, as they should also develop our people for those jobs (key informant – Group 4).

Another theme identified relates to people's observation that the company will probably *employ un-skilled workers locally and import the rest* of the labour force:

The company will employ locally, basic jobs, but will bring in skilled people for other tasks (key informant – Group 1).

The main focus of sub-section B in the interview, was the economic impact of a possible mine on the impact indicators as identified in the impact matrix

(Appendix A; Table 3.17). Interviewees are asked to rate each of the impact indicators (*agriculture, trade and commerce, employment/job opportunity, personal income level, socio-economic infrastructure and cost of living*) in the impact matrix on a perception scale of impact, -1 to -5 representing negative impacts, zero representing no impact, and +1 to +5 indicating positive impacts, with +5 or -5 representing maximum impact and +1 or -1 representing minimum impact. Subsequently respondents were asked to justify their selection on the perception scale for each of the impact indicators.

A graphical summary of the net economic impacts is shown in Figure 3.22 below, calculated as the sum of all positive values (benefits), minus the sum of all negative values (social cost) that respondents placed on the impact indicators scale. This shows that interviewees' perception towards the impact indicators *trade and commerce, employment/job opportunity, personal income level* and *socio-economic infrastructure* is extremely positive, and that their perception towards *agriculture* and *cost of living* is slightly negative.

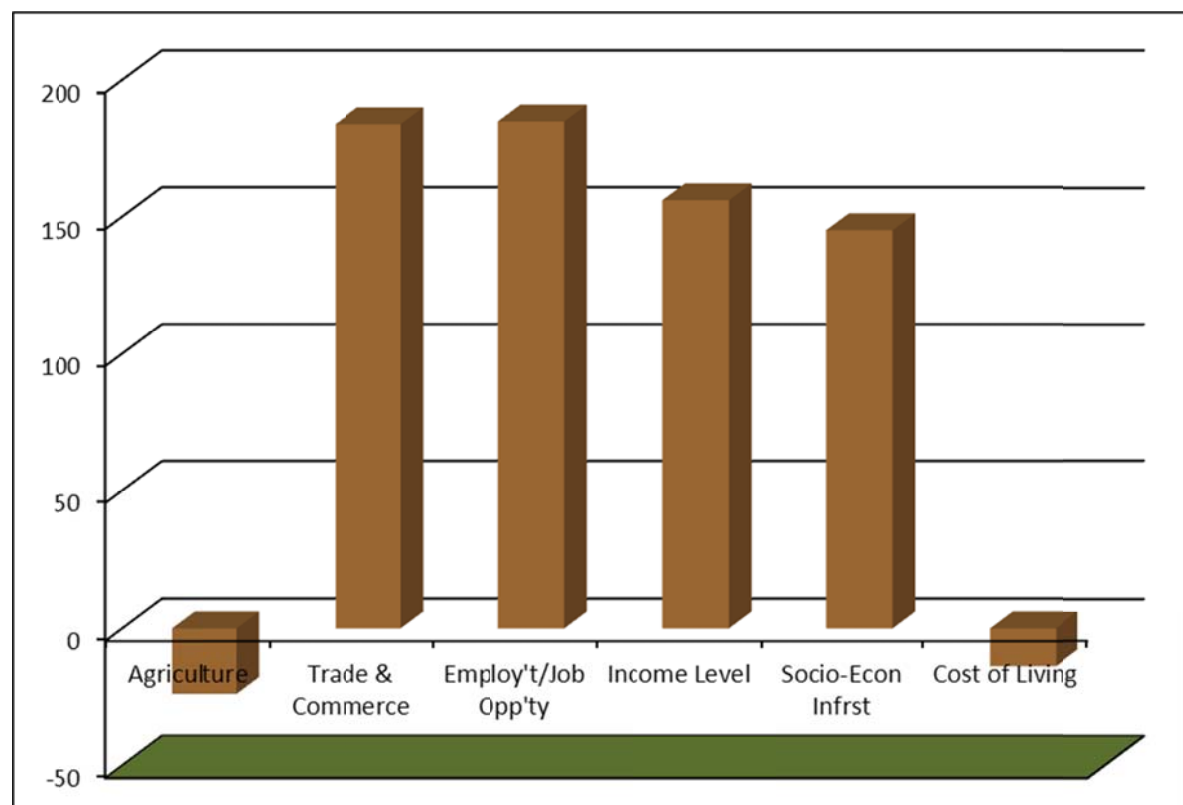
There are, with regard to the positive perceptions, some minor concerns amongst the farmers who could be directly affected if a mine was developed. These concerns relate mainly to the observation that farmers would not benefit directly (*personal income level*) and the concern that road infrastructure may deteriorate (*socio-economic infrastructure*).

The perception that the net impact on agriculture will be negative is due to a substantial number of interviewees stating that the impact would be zero and a large number of the remaining respondents being concerned about water quality and availability, the loss of productive land and increased labour cost. Positive perceptions towards the impact of mining on agriculture included that farmers would receive ample compensation for their land and that a mine could fund agricultural projects and assist with expertise.

The '*cost of living*' impact indicator (concept) was not always understood properly with many respondents not being able to substantiate their answer. The slightly negative perception towards this particular impact indicator is

mainly attributed to a balance between the concern that items such as housing will be more expensive and the view that people will earn more money and will still be better off even if the cost of living goes up. This perception indicates that there is such a high level of desperation and need for economic development in the area that ‘anything and everything’ will be better when compared to present circumstances.

Figure 3.22: Communities’ Percieved Net Economic Impacts of Mining



(Perception interview, Appendix A, Section 2)

The main sub-theme identified under the theme ‘the economic impacts of mining on the community’ relates to a general expectation of *better economic conditions* within the community, which include *more employment opportunities, higher per capita income, more trade and commerce and better infrastructure*. Some interviewees within the farming community have, however, expressed their doubts as to whether they would share in any of the economic benefits.

Concerns relating to the *loss of productive farmland* and the *depletion of groundwater and the quality thereof* were also identified as a sub-theme, specifically amongst members of Groups 1 and 2 (farming community).

Another sub-theme identified relates to *labour* (employment), namely that some respondents expect *only un-skilled* and perhaps *semi-skilled job opportunities* to be created. Other interviewees worry that they could *lose some of their best employees* to the company due to better salaries.

Yet another sub-theme identified concerns itself with the possibility that *housing might become very expensive* if a mine were to be developed within the community.

A final sub-theme worth noting relates to the opinion of a small number of respondents that *agriculture does not benefit the people* and that it just takes up space. A mine, therefore, would be more beneficial to these respondents:

Agriculture does nothing with the land that benefits the people; give the mine a chance to operate on the land (key informant – Group 4).

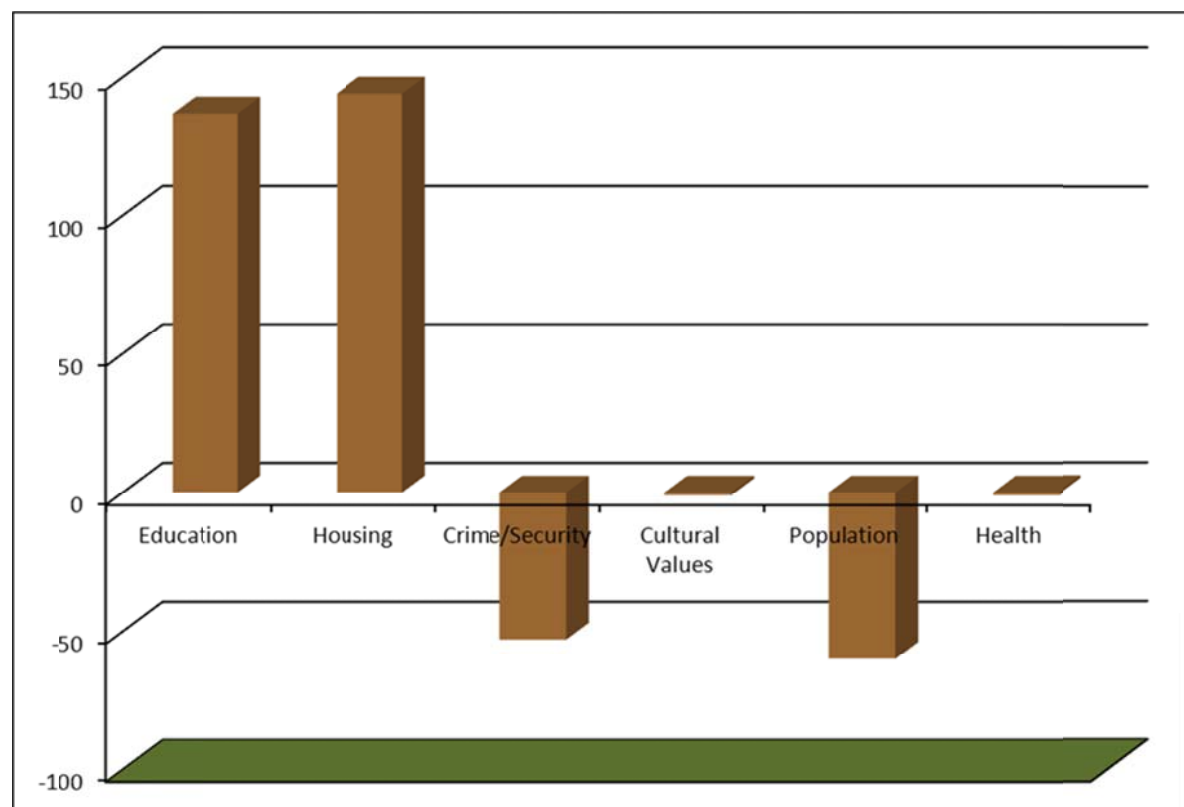
3.5.3 The Socio-Cultural Impacts of Mining on the Community

Sub-section C in the interview relates to the *socio-cultural* impact of a possible mine on the impact indicators as identified in the impact matrix (Appendix A; Table 3.17). Interviewees are asked to rate each of the impact indicators (*education, housing, crime/security, cultural values, population* and *health*) in the impact matrix on a perception scale of impact, -1 to -5 representing negative impacts, zero representing no impact, and +1 to +5 indicating positive impacts, with +5 or -5 representing maximum impact and +1 or -1 representing minimum impact. Subsequently, respondents were asked to justify their selection on the perception scale for each of the impact indicators.

A graphical summary of the net *socio-cultural* impacts is shown in Figure 3.23 below, calculated as the sum of all positive values, minus the sum of all

negative values that respondents placed on the impact indicators scale. This shows that interviewees' perception towards the impact indicators *education* and *housing* are highly positive, and that their perception towards *crime/security* and *population* are meaningfully negative. Interviewees' perception towards *cultural values* and *health* are basically neutral (evens out).

Figure 3.23: Communities' Percieved Net Socio-Cultural Impacts of Mining



(Perception interview, Appendix A, Section 2)

Under the **education** impact indicator the first sub-theme identified relates to the sentiment that *a mine would bring more learners to the schools*, which would in turn hopefully lead to *more skilled teachers* and *better quality education*. Some interviewees also stated that if they were able to earn more money they would be able to *send their children to better schools*.

Another abundant sub-theme identified with regard to education relates to the hope that a new mine in the area would *assist local community members with bursaries* and *skills development*.

A less abundant sub-theme expresses the hope that a mine within the community could perhaps *create interest in mining as a subject* among learners and inspire them to study mining.

The only negative sub-theme identified with regards to education relates to concerns that a mine might induce learners *to leave school earlier* to work on the mine, and therefore *not complete their schooling*.

Respondents' perception towards the **housing** impact indicator was even more positive when compared to education. The main sub-theme identified simply relates to the prospect of *better housing* that will be available if a mine is established. Some of the interviewees also expressed the hope that they would then be able to, with the help of the mine, acquire accommodation of their own choice and not just identical RDP houses:

We will also be able to build nice looking houses with many rooms, not just RDP houses (key informant – Group 4).

Another much less abundant sub-theme identified was the concern that *house prices will rise* significantly, which will make it difficult for local people who are not employed by the mine to afford housing in the community.

One interviewee also raised the concern that the community might see a *proliferation of informal settlements*.

A significant number of interviewees perceived the impact of mining on **crime** as very negative. This concern is highlighted by the fact that the average selection from the group of respondents who chose a negative impact on the perception scale was minus three (-3).

The main sub-theme identified from the impact indicator crime was that a mine would *attract more people* to the community and *more people will lead to more crime*. Related to this is the response that there generally will be *more money* in circulation which will attract more criminals. From within Group 1

(farmers who could be directly affected by a possible mine) it was also requested that *recruitment should not be done at the mine site* because it would lead to a constant influx of aspiring job seekers to the area where the farmers live, with the related security concerns.

The above concern was countered by the sub-theme that the company (mine) will actually *increase the security* by investing resources into the security of the community with the resultant decline of crime.

A finale sub-theme identified under crime states that because of the mine there *will be more work* available which will lead *less* people to resort to *crime*.

In a similar vein, respondents' perceptions toward the impact indicator **population** were mainly negative. Respondents equated more people with more problems.

The overwhelming sub-theme identified from the impact indicator population was that a mine would *attract more people* to the community and *more people will lead to more problems and overcrowding*.

A minor sub-theme highlighted by respondents relates to the *positive impact* of newcomers *on the school* and the possibility of *investment* in the local community.

Generally respondents were of the opinion that a new mine in the community would not have a big impact on the **cultural values** of the community, hence 37 of the 48 people interviewed indicated that the impact on cultural values will be zero (0).

Two sub-themes in this section were identified on the positive side. The first sub-theme expresses the hope that a mine would lead to *more cultural events* and *more entertainment* for locals:

A mine will bring more shows to our town (key informant – Group 1).

The second sub-theme relays the opinion that people might *re-connect to their cultural roots* as some of the new-comers could still have strong ties to their cultural heritage:

Most of the people that will come to work on the mine are still strict in practicing their culture, and this will force us to go back to our roots (key informant – Group 4).

Maybe by seeing some of the strangers who are practicing their culture we can still turn back and seek for our sense of belonging and culture (key informant – Group 4).

On the negative side people were *worried about a moral decline* (last sub-theme under cultural values) brought about by the integration of newcomers in the community:

Our values will decline as people will adopt the newcomer's values and culture (key informant – Group 4).

The final impact indicator investigated under the socio-cultural impacts of mining on the community is **health**. Figure 3.23 above gives the impression that the impact on health is also perceived to be basically zero. The graphic display, however, has more to do with positive and negative views balancing each other out. Perceptions basically boil down to respondents who feel the impact will be positive because it will lead to better health infrastructure and respondents who, on the negative side, believe mining will lead to more disease.

The first sub-theme, therefore, is related to *more and better health infrastructure, equipment and services*. These respondents are of the view that a possible new mine in the local community will invest in the health of the local community:

There is a hospital here; it must just be upgraded. Perhaps we can then get a pharmacy (key informant – Group 3).

A mine will provide us with better equipment such as an ambulance to transport patients (key informant – Group 4).

The second sub-theme, as already referred to above, relates to the concern that mining would *lead to the increase of diseases* amongst members of the local community. This sub-theme is basically as abundant as the more positive indicated above:

More people will die of communicable diseases such as TB and Aids (key informant – Group 4).

A third and final sub-theme linked to the one directly above communicates the concern from some respondents that mining will lead to an *increase in prostitution*:

Prostitution will be a big business leading to more disease as people will ignore their HIV status (key informant – Group 4)..

3.5.4 The Environmental Impacts of Mining on the Community

Sub-section D in the interview relates to the environmental impact of a possible mine on the impact indicators as identified in the impact matrix (Appendix A; Table 3.17). Interviewees are asked to rate each of the impact indicators (*water quality, air quality, noise and vibration, diseases and land pollution*) in the impact matrix on a perception scale of impact, -1 to -5 representing negative impacts, zero representing no impact, and +1 to +5

indicating positive impacts, with +5 or -5 representing maximum impact and +1 or -1 representing minimum impact. Once again respondents were asked to justify their selection on the perception scale for each of the impact indicators.

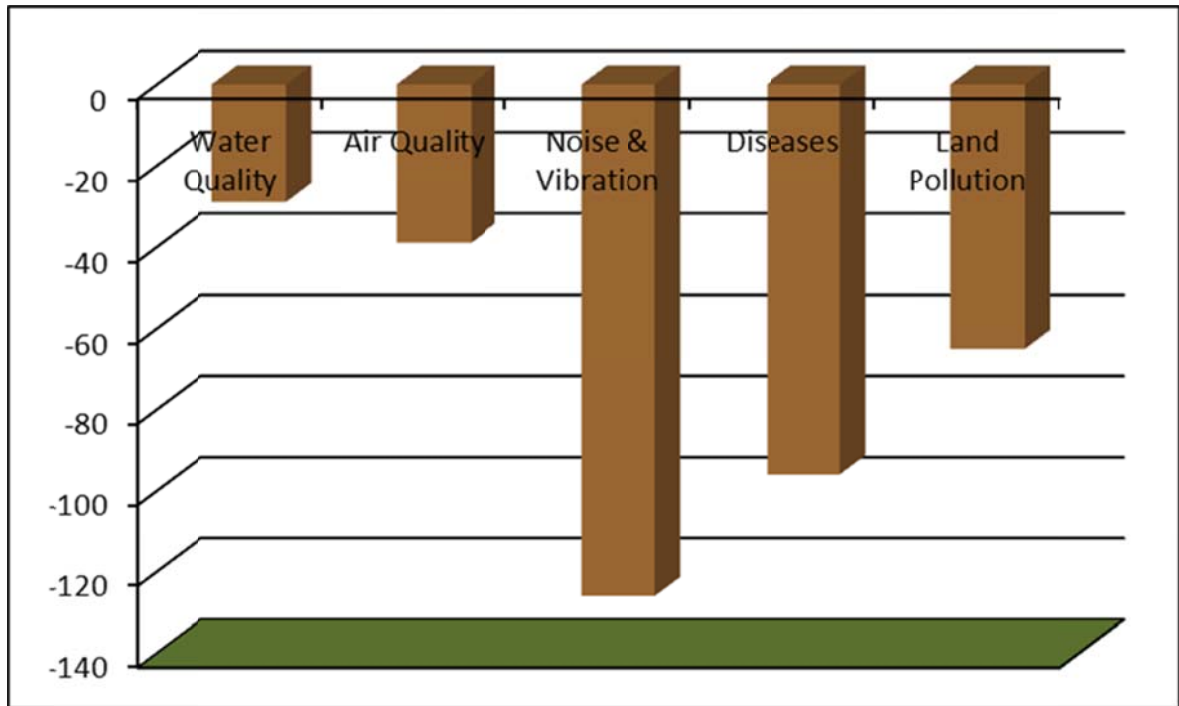
It must be noted here that the general understanding and knowledge of the impact of mining on the above mentioned impact indicators was not very high, as is evident from the number of time interviewees could not substantiate their score of an impact indicator and from answers such as; 'blasting may lead to earthquakes'. *It was clear that people's general perception is that mining 'should' have a negative impact on the environment, but that they were not always sure why and what would be negatively affected.* It was also clear that interviewees were not able to distinguish how different types of mines and different processing methods would differently impact on the five impact indicators assessed. However, regardless of the above observation, this study's aim and focus is to measure people's perceptions. It, therefore, must treat the interviewees' perceptions towards the environmental impacts of mining as important, however, misguided they might appear to be to the researcher and mining experts.

It was further also noted that farmers who stood to be directly affected by mining in their area showed a much better understanding of the said impact indicators and how they personally will be affected by the specific mine (see Figure 3.25 below). This fact is evident in the higher negative scores allocated to *water quality*, *air quality* and *land pollution* when compared to the overall scores of the same impact indicators (Figure 3.24). The reason for this is due most probably to the fact that these farmers have been more involved with and confronted by the prospects of mining for a number of years.

A graphical summary of the net *environmental* impacts is shown in Figure 3.24 below, calculated as the sum of all positive values, minus the sum of all negative values that respondents placed on the impact indicators scale. This summary shows that interviewees' perception towards all the impact

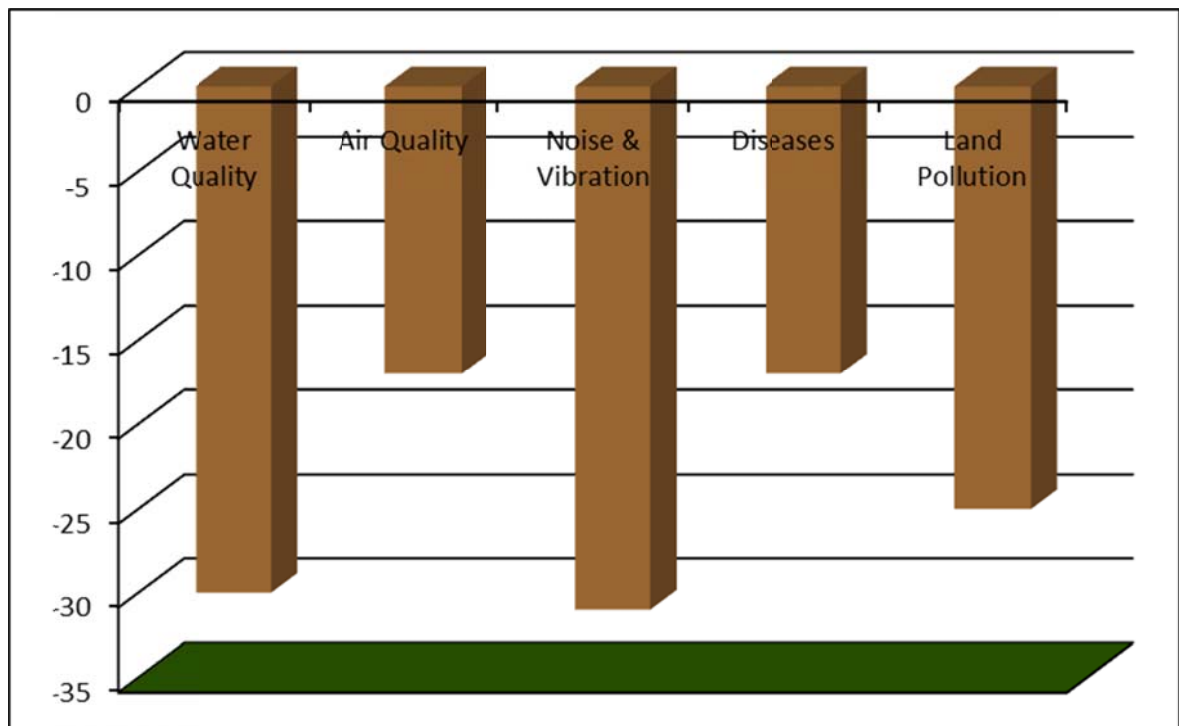
indicators is negative with specific emphasis on the impact indicators *noise and vibration*, *diseases* and *land pollution*.

Figure 3.24: Communities' (all interviewees) Percieved Net Environmental Impacts of Mining



(Perception interview, Appendix A, Section 2)

Figure 3.25: Communities' (farmers directly affected) Percieved Net Environmental Impacts of Mining



(Perception interview, Appendix A, Section 2)

Most of the interviewees were of the opinion that a mine would have no impact on **water quality** (63%, excluding members of group 1). This stands in stark contrast when compared to members of group 1 (farmers directly affected) who were of the opinion that mining will have a very negative impact on water quality (88% of group 1).

The main sub-theme identified under water quality expresses the view that mining would *reduce the availability of water*, specifically that of *ground water*:

A mine would lead to water pollution and reduce the amount of available underground water that could have been used for farming activities (key informant – Group 1).

Another sub-theme identified with regards to water quality relates to the concern that a mine *would pollute the ground water*:

Chemicals from the mine will be detrimental to the wellbeing of our livestock (key informant Group 4).

Acid mine drainage could potentially pollute our water resources (key informant Group 3).

Respondents' perception towards the **air quality** impact indicator was also that a mine would not have a significant impact on the local air quality. Reasons for this view (when given) was that the mine is too far away from where they farm and/or live to have an impact on the air quality and also that interviewees believed that the specific type of mine would not have a negative impact on the air quality. The negative perception towards air quality, however, is meaningfully higher amongst members of group 1 (Figure 3.25), where the main concern was related to dust from the mine.

The main sub-theme identified by this group, therefore, relates to the concern that the mine will give rise to poorer air quality due to *dust*. Some of the interviewees also believed that air will also be *contaminated* due to *smoke* and the *use of hazardous chemicals* on the mine.

The impact indicator **noise and vibration** scored the highest negative marks in both the entire sample and from the farmers who stood to be directly affected by a possible mine (see Figures 3.24 and 3.25 above).

The main sub-theme identified in this section is concerned with the possible *damage to infrastructure* such as farmers' *houses* and *dams*. Understandably, this view is specifically dominant amongst the farmers who operate close to the proposed project and all the key informants from group 1 allocated a high negative score for the noise and vibration impact indicator:

Blasting on a mine so close to us will definitely lead to the cracking of our house's walls and that of our dam wall (key informant – Group 1).

Another sub-theme recognised relates to the *noise* created by mining activities:

Large vehicles and machines will increase the noise during day and night, and vibrations will also increase in the area (key informant – Group 1).

The last sub-theme identified under noise and vibration is the concern that *blasting may lead to earthquakes*:

During blasting the rocks will vibrate and this will lead to earthquakes, this is a fact (key informant – Group 4).

The impact indicator **diseases** also achieved a very negative score. The majority of the interviewees felt that there would be more diseases, but were unable to give reasons for their answer. Some respondents said that there will be more diseases simply because there will be more people living and working in the community than before the advent of mining.

Apart from just stating that diseases will be more prevalent, the only other sub-theme that could be identified was related to people's expectation that the development of a *mine would also bring better health facilities and services* and consequently reduce the incidence of diseases:

A mine would build more clinics and provide more nurses and doctors that will reduce diseases and other illness (key informant – Group 1).

One interviewee also expressed concern over *the quality of drinking water for his livestock*, and yet another voiced uneasiness regarding the *pressure of more people on existing health facilities and services*:

Due to the population and birth rate we will experience shortages of equipment and services as the number of patients will be increasing daily (key informant Group 4).

The impact indicator **land pollution** shows a meaningful difference between the perceptions of the entire sample (Figure 3.24) and the perceptions from group 1 in which the perception is considerably more negative (Figure 3.25). This is quite understandable intuitively because the key informants from group 1 would be living in close proximity to a possible future mine and would be able to visually see the mine dumps.

The main sub-theme identified under land pollution expresses the view that *more people will lead to the creation of more waste* that will have to be discarded somewhere:

There will be a lot of people from everywhere and they will dump their waste anywhere they want (key informant – Group 4).

A second sub-theme recognised under land pollution relates to the perception that land pollution *will be managed by the mine* as there are strict regulations regarding this:

A mine will make a plan with land pollution, as they cannot operate in a polluted environment (key informant – Group 4).

I think people from mines do not tolerate pollution on their sites, and I therefore do not expect any land pollution (key informant – Group 4).

Another sub-theme highlights issues (mainly from group 1) *regarding the visual impact* of a possible mine, specifically related to *mine dumps*.

3.5.5 Community development, expectations and sustainability

In section E of the interview respondents were asked questions regarding their expectations if a mine were to be built within their community. The first question asks whether a mine should also invest in the local community. The second question asks the respondents to identify the development benefits the community could derive from such a mine and the third question asks if

these development benefits could be achieved by other means. The fourth question asks respondents to rate their pre-mining development expectations and the final question tries to elicit suggestions with regard to sustainability, if and when, a possible mine were to close.

In response to the first question, '*Do you expect the mining company to invest in your community other than into the mine itself*', interviewees definitively responded that it is the obligation of the mining company to invest in the local community. All four groups of key informants felt similarly strong about this social onus on the company. It was specifically stressed that it is the *company's responsibility to give back to the community* because they would benefit from extracting mineral wealth from the community:

The mine must invest in the community as the community is the owners of the raw minerals and our soil is our wealth (key informant – Group 4).

Yes, a mine must invest in the local community. This will show that the mine is not just here to make profits, but also cares for the people of the community (key informant – Group 3).

The second question, '*What development benefits do you think your community can derive from the presence (direct and indirect) of a mine in the area*', is basically asking respondents to compile a wish list of what they would like a mine to do for the community. Responses here are diverse and only the main themes are highlighted below.

The most abundant development benefit that respondents mentioned relates generally to *infrastructure investment*. This includes investment in anything from new houses to sport facilities, clinics and roads:

A mine should invest in the infrastructure of the local town and not in other larger towns that already have the necessary infrastructure. This will ensure that the local community and its people will benefit from the mining activities and it

will not just be the negative impacts on the community (key informant – Group 1).

Another very important development benefit highlighted by interviewees is *education*. This includes the hope that the general level of education and skills development will increase, as well as the provision of bursaries for learners and investment in the local library.

A third important development benefit that respondents would like to derive from the presence of a mine in the community relates to *health* (facilities and services).

A fourth development benefit noted by respondents has to do with *reducing unemployment and creating permanent jobs*.

Another development benefit highlighted by interviewees relates to *sport development and recreation*:

A mine should provide the community with sport facilities to develop our people's minds (key informant – Group 4).

Respondents also hope that a possible mine in the area would assist with the *funding of NGOs and SMMEs*.

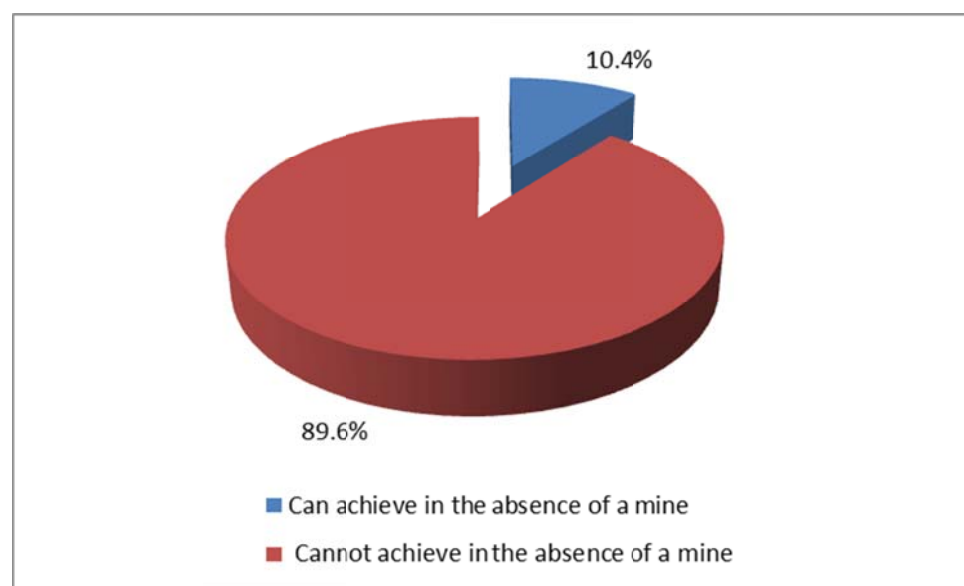
Finally other diverse expectations include the following: one interviewee hopes a mine would invest in a recreational centre for children because '*there in nowhere nice for them to go at the moment*'; another hoped for support for the old age home and yet another would like a mine to invest in the upkeep of the local graveyard.

In response to the third question, '*How can your community achieve these benefits in the absence of a mine, or will it not be possible*', almost 90% of the interviewees responded that it would not be possible to achieve the above mentioned development benefits in the absence of a mine, and that there is no alternative means to develop the local community (see Figure 3.26 below).

The small number of respondents who indicated that the community could achieve similar developments without a mine was unable to provide any alternatives, apart from one interviewee who was of the opinion that the government will do it:

The community will develop very slowly, if ever, without the development of a mine (key informant – Group 1).

Figure 3.26: Perception Towards Achieving Development Benefits in the Absence of a Mine



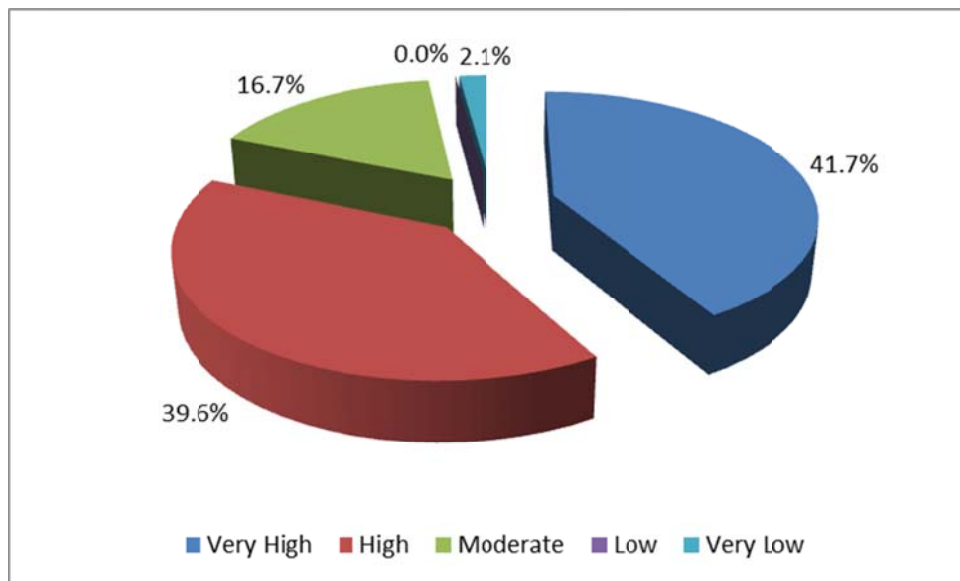
(Perception interview, Appendix A, Section 2)

The fourth question in section E of the interview asks respondents to rate their and the community's development expectations with regard to a possible future mine in terms of 'very high', 'high', 'moderate', 'low' and 'very low' (see Figure 3.27 below). More than 80% of the respondents said that their expectations were 'very high' and 'high'.

The only sub-theme identified from the responses to question 4 relates to respondents' view that *a possible mine was their only hope*:

Our people are without any hope at the moment, as there is nothing else (key informant – Group 1).

Figure 3.27: Development Expectations as Rated by Interviewees



(Perception interview, Appendix A, Section 2)

The final question in section E, *'Although it is way ahead in the future, what do you think (any suggestions) could be done to sustain your community after the closure of a possible mine'*, is a very difficult question because it is extremely challenging to sustain a community once the economic driver of such a community is removed. It is a question that many mining companies also struggle with.

The main sub-theme that emerged from this difficult question relates to the view that even if a mine does close down in the future the community will be left with *investment in infrastructure such as roads, schools, people with better skills and other facilities*:

This can only happen if the mine keep their promises and empower people with skills (key informant – Group 4).

The community will be sustained by the improvements done by the mine in for example roads and schools (key informant – Group 4).

A second sub-theme identified from the respondents conveys the view that there is in fact *nothing that could be done to sustain the community* when a possible mine closes down:

This is a good question. How do you get people to stay in the community when the job opportunities are gone and without good salaries (key informant – Group 1).

A final sub-theme identified relates to the *development of sustainable projects within the community*, such as vegetable gardening and leaving the pits filled with water and fish in them:

A mine could create projects such as greenhouses for vegetables that will continue to sustain the community (key informant – Group 1).

3.5.6 Company-community co-existence relations

In the final section F of the interview, respondents were asked about the issues that they thought could create conflict or friction between the community and a possible future mine and the issues that would make a mine more acceptable within the local community.

The first question asks respondents what **sources of friction or conflict they could foresee between their community and** a possible future **mining company**.

The main sub-theme identified in the responses to the above question relates to key informants' view that there could be problems between the community and the company if *the company do not keep their promises* and/or are *not honest with the community and go back on promises made*.

Respondents are of the view that a company should rather promise less and deliver more, and that any non-performance on promises made would be seen as an act of dishonesty on the part of the company and would lead to a major breakdown of the relationship between the community and the company:

The community will definitely be unhappy if there is dishonesty and promises are not delivered (key informant – Group 4).

There will be conflict if the mine does not keep to what they agreed upon. For example if the mine does not employ people like they promised they would (key informant – Group 4).

The second most abundant sub-theme that interviewees indicated as being a possible cause of conflict is if a potential future mine *does not employ (or employ enough) local people*.

A third sub-theme indicated by respondents as being a possible cause of conflict is if a mine *causes damage to the environment*. Specifically highlighted here is a concern about *water pollution*:

There could be conflict if the mining company does not do everything possible to protect the environment and make all efforts to minimise all kinds of pollution (key informant – Group 1).

Other sources of possible conflict highlighted by respondents include that the *mine should not have an arrogant approach* when dealing with local people, that *local people should not make unreasonable demands*, the influx of more people leading to *more crime*, the *deterioration of local roads* and *poor communication from the mine* for example not informing local people with regard to their operations.

The final question, building on to the first question above, asks respondents **what they think would enhance the receptivity/acceptability of mining** in their community.

By far the most prominent sub-theme indicated by respondents to this question relates to a mining company *investing in the local community* (infrastructure, community and skills development, job creation and sponsorships). People want to see that the extraction of raw materials from within the community will also benefit them and make a difference to their lives.

Another sub-theme that respondents feel will make community members more receptive to mining is if the *company involved are honest and transparent when dealing with local people and keep them informed*.

3.6 Conclusion

The socio-economic conditions of the community revealed that the levels of education and income are low with high levels of unemployment. The community is generally very poor and much has to be done to provide many community members with basic services. Crime levels are low, however, with most crime being of a less serious nature. Results from the interviews confirmed the above facts with key informants indicating that there is a desperate need for development within the community. They also indicated that one of their greatest concerns regarding the establishment of a mine is that crime would increase.

The results from the interviews are summarized in Table 4.1 that indicates the main sub-themes which were identified from each section in the interview. From the interviews it can be seen that the community has a positive perception towards mining in general because they feel it would lead to better economic and social conditions within the community. This is a very significant response in view of all the negative publicity the industry has received in recent times, and can indicate the dire need for any form of economic

development in the area. It is important also to pay attention to the responses from the farmers who could be directly affected by a possible mine (Figure 3.8), because they are very critical of a possible mine being established close to where they live and farm. This apprehensive attitude is understandable because these farmers constitute the only group whose members could see their current way of life being negatively affected by the development of a mine and who have carefully considered this possibility.

A very important aspect that also arises from the interviewees' perception towards general mining is one that relates to the social responsibility of mines. Community members feel that *mining should give back to the community* because the mining company is extracting something of value from within the borders of the community. The most important means of giving back to the community, as highlighted by interviewees, is through *infrastructure investment, better education and health, reducing unemployment and creating permanent jobs, sport development, recreational facilities and funding for SMMEs and NGOs* (in that order). This process of giving back to the community, furthermore, should be seen to be *an honest, transparent attempt from the mining company* to 'give back to the community', and should be implemented from the start.

The main concerns (fears) raised by community members relate to the anticipated influx of more people to the area, "more people more problems". The *increase of crime* is furthermore highlighted as one of the main fears that respondents have. Community members, specifically farmers, fear that the influx of 'outsiders' will significantly compromise their security and safety. Respondents were also of the general view that a mine would negatively affect the environment.

3.7 Chapter summary

The focus of this chapter has been to discuss the research design and methodology used in the empirical study, in support of the literature review, in order to meet the research objectives as set out in Chapter 1. Specific

attention was given to concepts such as the research instrument or interview design, participant selection, sample strategy, data collection and data analysis.

The chapter starts by providing a socio-economic baseline of the local community used in the study. This baseline revealed that the levels of education and income in the community are generally low and that unemployment is high. Those people who do find themselves employed are mainly employed in elementary occupations (more than 40%). Groundwater is of vital importance in the district, because in many instances it is the only source of water for the rural population. The distribution of sanitation and refuse removal in the Local Municipality (LM) is high (above 60%) when compared to the District Municipality (DM) (below 30%) and the distribution of electricity in both Municipalities is above 60%. The mode of transport for most people in the LM (above 70%) is still on foot while only 10% of the people drive by car (as driver). Crime at the LM level is mostly related to crimes such as stock-theft, burglaries and drug abuse and the area is not normally prone to more serious crimes such as murder.

The methodology followed in this study is based on a qualitative study in the form of individual interviews, using purposive (criterion based) sampling. To enhance the outcomes of this study it was deemed appropriate also to use quantitative methods to compliment the qualitative approach. The structured interview used in this study was designed to access the perceptions of community members with regard to possible mining operations in the area. The interview focussed on community perceptions towards mining in general, perceptions towards the *economic, socio-cultural and environmental* impact of mining on the community, *community expectations* and *company-community co-existence relations*.

Purposive (criterion based) sampling was used for the study, and the target population 70 (N) consisted of 'key informants' or 'opinion formers' from the parent population. Fifty-two interviews, in total, were conducted during the period mentioned above, of which 48 (n) individual interviews were used for

the study. The sampling frame selected for the study is made up by farmers directly affected by possible mining (group 1), other farmers from the study area (group 2), local business people (group 3) and residents from the local town (group 4).

Data analysis was focused on qualitative data analysis supported by quantitative data analysis where appropriate. The analysis is structured logically according to the sub-sections (main themes) of the interview in order to explore each of these main themes in detail. Sub-themes were developed by using coding (open, axial and selective) to identify words, phrases or sentences that reflect single, specific thoughts thus 'opening up' the text to reflect the various core concepts ('perceptions'). Table 4.1, as indicated above, provides a summary of the main sub-themes identified under each of the main-themes. Interviewees indicated that they generally perceive mining in a positive light because it provides people with job opportunities and because mining companies usually invest in the infrastructure of the communities in which they operate. Mining in the local community, therefore, would reduce unemployment and lead to better living conditions for community members through infrastructure development. Respondents also perceive that mining would lead to better education and skills development. The two main concerns raised by interviewees relate to the perceived increase of crime in the area and the reduced availability and quality of groundwater. Community members were also concerned about the environmental impacts that a mine would have on the community, specifically with regards to noise and vibration and diseases.

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

4.1 Introduction

In this final chapter, conclusions and recommendations are made relating to the objectives of the study and based on information from the literature review and the findings of the qualitative investigation emanating from 48 interviews with key informants from the local community.

4.2 Study Motivation

The failure of mining companies to better understand the communities within which they operate is frequently translated into large losses in revenue and time consuming processes to remedy problems that could have been avoided.

High profile community driven protests in South Africa reported in the media (Masondo & Lekotjolo, 2010; Naidoo, 2011; Swanepoel, 2011) were specifically aimed at mining companies, accusing them of, among other issues of not employing locally and going back on promises made before mining rights were issued. Joblessness, poverty and desperation aggravates the sense in communities that mining companies with perceived limitless resources are not doing enough to improve the lives of people within whose communities they operate. Over recent years there has also been a growing awareness and assertion everywhere of people's right to more direct and greater participation in decision-making processes where the outcome of these decisions affects them, their communities and their environments (Tempelhoff, 2010; Masondo, 2010; Kockott, 2008; Presence, 2010; Anon, 2010; Coumans, 2010; Vargas-Hernández, 2007:328-330). Economically,

regions and communities are also exerting greater control over the financial benefits derived from activities taking place within their area. Mining companies are not immune to these currents, whatever their legal position, and a failure to recognise and adapt to them will at some stage lead to time and effort-consuming conflicts with costly outcomes, reflecting negatively on the company's 'bottom line'. A further worldwide change in social values is a growing awareness and concern about the natural environment. The environmental impacts of the mining industry are normally experienced locally, making them community issues. The various aspects of these impacts, therefore, should be dealt with locally with community involvement.

In light of the issues outlined above, together with growing calls for the nationalisation of South African mines, it is important for mining companies to better understand how community members perceive mining would impact on their daily lives. These perceptions include the following questions, amongst a wide range of concerns and expectations: Will they get employment? Will mining damage their environment? Will the mining company procure locally? Will the mining company look after their roads? Will crime increase? Prior knowledge of these concerns, expectations and perceptions can be of great value to mining companies.

4.3 Overview of Research Objectives

The aim of this research project is to establish the perceptions of a rural farming community in South Africa with regard to mining and the possible establishment of a mine within their community by a mining company, in an attempt to achieve a better understanding and management of such perceptions.

Secondary objectives were to:

1. Develop the outcomes of the research into a management tool for possible incorporation into the mining company's social and labour plan that will form part of the company's application for mining rights.

2. Gain more insight with regard to general perceptions of the populous towards mining companies in South Africa and the possible reasons for widespread negative feelings, which are often very emotive, towards mining and mining companies.

The above mentioned research objectives were thoroughly addressed through a qualitative approach using structured interviews divided into 6 sections to access the perceptions of community members towards mining in general, the impacts of mining on the community, community members' expectations and company-community co-existence relations.

4.4 Conclusions

4.4.1 Literature findings

A comprehensive literature review indicated that mining impacts greatly, both positively and negatively, on the lives of the communities within which mining companies operate. Mining plays a positive role by employing people and creating infrastructure such as roads, clinics and schools. Mining further also induces the creation of other industries and small businesses such as transport services, catering and accommodation establishments. The mining industry also contributes to the foreign exchange earnings of countries and adds to technological advances and the development and transfer of skills. On the negative side, mining can lead to forced relocations, more crime, and a negative environmental impact which includes such problems as dust, erosion, and noise and acid mine drainage.

Many of the above mentioned impacts can lead to discontent amongst the members of local communities, which sometimes results in conflict within communities and also between communities and mining companies. Conflict, in turn, leads to the disruption of mining operations, damage to mining equipment and infrastructure which, subsequently, has an adverse impact on the profitability of the operation and the continuation of such operations. The closure or suspension of mining operations could again have grave

consequences for the local community due to the loss of wages, the closure of small businesses and the general contraction of economic activities. Understanding the elements that drive the above mentioned conflict, therefore, is important in order to ensure the running of profitable and socially responsible mining companies. Although literature and the media to a large extent comment negatively on the impacts that the mining industry has on local communities, results from the empirical study of the perceptions of the members of the local community in the specified study area do not reflect similar sentiments. While there are concerns with regard to crime and the environment, the vast majority of the respondents interviewed believe that mining would have a positive impact on their local community. It is probably important to note that a large proportion of the community are desperately poor and, thus, any form of business activity would be better than what they presently have, no matter what the cost is to the environment. Concerns raised by more wealthy and informed respondents more closely match the negative perceptions raised in literature and the media.

The findings of this study confirmed many of the findings from the Ghana study, (discussed in section 2.5 of this dissertation) by showing similar trends. It is important, however, to note that the Ghana study looked at three different communities that showed different net results. The general trends were, nevertheless, similar to the current study. It is also important to keep in mind that the Ghana study was conducted after several years of continued mining operations within the communities. With regards to the net *economic impacts* from the Ghana study, respondents showed similar positive perceptions towards trade and commerce, employment and job opportunities, income level and socio-economic infrastructure as those in the current study. Negative perceptions towards the impact on agriculture and the cost of living were also confirmed, albeit to a lesser degree. Similar results were also received for education, housing, crime/security and cultural values under the net *socio-cultural impacts* of mining. Respondents in the current study, however, perceived the impact of mining on population as negative and on health as neutral, whereas the perception towards these two impact indicators were

both positive in the Ghana study. Perceptions towards the *environmental impact* of mining were similarly negative.

The business community, in general, have accepted, through the concept of corporate and social responsibility (CSR), that they do need to study and manage the 'drivers' of discontent among the broad populace. This practice also holds true for mining companies. To encourage mining companies to address issues relating to CSR and the imbalances of the past, the South African government has adopted legislation with strong emphasis on community involvement, specifically through a mandatory social and labour plan. Companies do sometimes, however, still see this process as a 'box ticking' exercise where the ethos, purpose and benefits of the regulation are not grasped fully.

4.4.2 Community perceptions of mining: rural South African experience

4.4.2.1 Socio-economic baseline

A study of the socio-economic conditions of the community revealed that the levels of education and income are low with high levels of unemployment. Those people who do find themselves employment are mainly employed in elementary occupations (more than 40%) and do not possess the skills needed in the mining industry.

Although the access to water infrastructure in the area is very high, the availability of water remains problematic. Groundwater is of vital importance in the district, because it is, in many instances, the only source of water for the rural population.

The distribution of sanitation and refuse removal in the LM (above 60%) is high when compared to the DM (below 30%) and the distribution of electricity in both the DM and LM is above 60%. If it is taken into account that these are basic services, it must be accepted that these levels are still very low.

The mode of transport of most people in the LM (above 70%) is still on foot with only 10% of the people drive by car (as driver).

Crime at the LM level is mostly related crimes such as stock-theft, burglaries and drug abuse and the area is not normally prone to more serious crimes such as murder.

4.4.2.2 *Interview conclusions*

The results from the interviews can be summarized as shown in Table 4.1 below that indicates the main sub-themes as identified from each section in the interview.

From the interviews it can be seen that the community has a positive perception towards mining in general because respondents feel it would lead to better economic and social conditions within the community. This is a very significant factor considering all the negative publicity the mining industry has received in recent times, and can indicate that there is a dire need for some form of economic development in the area.

It is important to also pay attention to the responses from the farmers who could be directly affected by a possible mine (Figure 3.8). Responses from this important group are still mainly positive at more than 60%, but are significantly less so when compared to the entire sample population where more than 80% of the respondents said they held a positive inclination towards the mining industry. This difference is naturally understandable because these farmers constitute the only group that could see its current way of life being negatively affected by the development of a mine and is also the group that has carefully considered this possibility.

A very important aspect that is revealed through the interviewees' perception towards general mining relates to the social responsibility of mines. Community members feel that *mining should give back to the community* because the mining company is extracting something of value from within the

borders of the community. This construct is expressed again and again in subsequent sections of the interview in various guises, and includes such statements as 'the mining company must employ locally', 'the mining company must provide bursaries to local students' and 'the mining company must invest in local infrastructure'. The most important means of giving back to the community, as highlighted by interviewees, is through infrastructure investment, better education and health, reducing unemployment and creating permanent jobs, sports development, recreational facilities and funding for SMMEs and NGOs (in that order). This process of giving back should furthermore be seen to be *an honest, transparent attempt from the mining company* to 'give back to the community'.

This honest and transparent approach should be also be taken from the start of the mining project because respondents were very clear that a possible future mining company should *not make empty promises or promises that it is not able to keep* just to gain the goodwill of community members at the beginning of the project or when the mining company needs 'buy-in' from community members. Good communication from the company as well as keeping community members informed will contribute to an honest and transparent approach.

The main concerns and fears raised by community members mostly relate to the anticipated influx of people into the area as expressed in the phrase "more people, more problems". The *increase of crime*, furthermore, is highlighted as one of the main fears that respondents have. Community members, specifically farmers, fear that the influx of 'outsiders' will significantly compromise their security and safety. Respondents also feel that the influx of people could erode the moral values of the community.

Another main concern relates to respondents' view that mining *would reduce the availability of water (specifically groundwater)* and could also lead to the *pollution of groundwater*. This view is again specifically prominent under the farmers who could be directly affected by a possible mine, where 88% of this

group perceive that mining will have a very negative impact on water availability and quality of water.

Other concerns raised during the interviews were that mining would lead to the loss of productive farmland, that it would significantly increase the cost of housing in the community and could lead to the increased incidence of diseases.

Interviewees' general understanding and knowledge of the impact of mining on the environment was not very high. It was clear that people's overall perception is that mining 'should' have a negative impact on the environment, but that they were not always sure why and did not know what would be negatively affected. Farmers who stood to be directly affected by mining in the area showed a much better understanding of the environmental impacts of mining and how they and their farms will be affected by the specific mine (evident in the higher negative scores allocated to water quality, air quality and land pollution when compared to the overall scores of the same impact indicators).

Table 4.1: Main sub-themes as identified from each section of the interview

Community perception of the mining industry in general	Economic impacts on the community	Socio-cultural impacts on the community	Environmental impacts on the community	Community development, expectations and sustainability	Company-community co-existence relations
• Leads to job creation and economic growth • Local community should be developed – mining should give back • Environmental concerns –water, air, depletion of underground water supply • Mines do generally care for the community where they operate • Mining companies make huge profits • Trust – depends on what a mining company does not do (compared to what they promised) – large % also feels that mining companies look only after self-interest • Sustainability – hopeful that some good will remain after closure – large % also feels that mines make their money and leave	• Mining would reduce unemployment within the local community • Mining company must employ locally • Mining would lead to better economic conditions within the local community – more employment, higher income, more trade and commerce and better infrastructure • Loss of productive farmland • Depletion of groundwater and reduced level of groundwater • Mining to employ only semi- or unskilled labour locally – bring skilled labour in. • Farmers to lose best labour to mine. • Cost of living – housing would become more expensive	• Mining would lead to better education • Bursaries for local pupils and skills development • Better housing (cost could go up) • Crime would increase – recruitment should not be done at the mine site • Crime would decrease – mine would invest in security and more work less crime • Mine will attract more people, and more people would lead to more problems for local people • Lead to more cultural events and entertainment and people could reconnect with their cultural roots • Lead to moral decline • More and better health facilities and services • Will lead to the increase of diseases and prostitution	• Mining would reduce the availability of water – specifically groundwater • Mining would pollute the groundwater • Mine will give rise to poorer air quality due to dust • Could lead to possible damage to infrastructure such as farmers' houses and dams • Increased noise from the mine • Vibrations could lead to earthquakes • Diseases would be more prevalent • Mining would bring better health facilities and services, and therefore reduce the incidence of diseases • Mining would lead to more waste generated locally • Mine dumps would be unsightly	• It is the company's responsibility to give back to the community • Development benefits – infrastructure investment, better education and health, reducing unemployment and creating permanent jobs, sports development, recreational facilities and funding for SMMEs and NGOs (in that order) • Only mining could create the above development needs • Mining will leave behind better infrastructure and skills • Sustainability is not achievable since mining is finite	• For good relations the mining company should keep to the promises made in the beginning • Investing locally will assist mining greatly, leading to much goodwill from community members • A mining company must be honest • A mining company should employ local people • Mining should not damage the environment unnecessarily • Arrogance from the mining company will cause friction • Good communication with the community in a honest and transparent fashion • The deterioration of roads and more crime will also induce more friction

4.5 Recommendations

In this section recommendations are made in response to the results and conclusions of the qualitative study as set out above, followed by the suggestions for future research.

4.5.1 Improving perceptions towards mining

Mining companies firstly need to understand and accept that improving the public's perception towards mining involves wholesale changes within the mining industry and that there are no short cuts or 'quick-fix' solutions. Community members are acutely aware of what happens within their communities, especially when these happenings relate to mining activities. On the whole, they are well informed and have a realistic understanding of the advantages and disadvantages that a mining intervention can bring to their community. Every time a mining company breaks its promises to community members; every time that a mining company is dishonest or not transparent, every time senior mining executives are seen to be rewarded undeservingly and excessively, the negative perceptions towards mining companies are reinforced and entrenched. Wholesale changes will not take effect if new attitudes towards the communities where the mining companies operate are not initiated and enforced by senior structures within the company.

These changes relate to taking ownership and believing that the company has a corporate social responsibility (CSR) towards local communities. The expression of CSR in the South African mining industry is in the form of social and labour plans. Social and labour plans should not be something that is just 'contracted-out' for the purpose of getting a mining right approved and then forgotten about. Social and labour plans should be developed with genuine community involvement, determining the real needs and communicating clearly what the mining company can and cannot do. It is not enough for the mining company to decide that the community needs a clinic or a soccer pitch because all communities need that. A specific community might feel that a recreational area where children can play is a priority. It is further important to manage and develop and/or adjust this plan on a continuous basis, in

conjunction with the community. It is essential that mining companies do not make promises that they cannot keep because this will break the trust relationship with the community and entrench a sense of suspicion towards the mining operations. It is further recommended that mining companies market themselves better and advertise to the community and the country the benefits they are implementing within and for communities, because there are numerous positive actions being implemented by many companies in the mining industry.

It is further recommended, in relation to the specific study area, that the company should address concerns raised by the community with regard to fears about crime, the decline of water supply, the pollution of groundwater and the anticipated deterioration of local roads. The company should further inform and educate community members with regard to environmental damage that could occur as a result of the type of mining operations envisaged. Good communication, in general, is also recommended. The company should also review the entire section 3.5 (data analysis) to attain a better understanding of the community and could further use Table 4.1 as a management tool.

4.5.2 Study evaluation

The primary research objective of this study was to establish the perceptions of members of a rural farming community in South Africa with regard to mining and the possible establishment of a mine within their community by a mining company, in order to achieve a better understanding and management of such perceptions.

The community's perceptions towards mining in general, a total of 17 impact indicators, expectations and sustainability and company-community co-existence relations were explored comprehensively to achieve the said objective. This investigation resulted in the identification and consolidation of numerous views on each of the main-themes and impact indicators in the form of sub-themes which are summarised in Table 4.1. Quantitative analysis, in the form of pie and bar charts, was further used to investigate, highlight and confirm community perceptions identified from the main-themes. Answers to interview questions (indicated in italics in the text)

in conjunction with the identified sub-themes give a clear picture of the prevailing community perceptions towards a possible mine within the local community.

Secondary objectives to develop the outcomes of the research into a management tool for possible incorporation into the company's social and labour plan that could form part of its mining right application, and to gain more insight with regard to general perceptions towards mining companies in South Africa were also achieved. The company will be able to use the study and its findings to attain a better understanding of the local community. This knowledge will enable the company, to more efficiently plan and manage its responses to the specific needs, expectations and aspirations of the local community, as set out in its social and labour plan.

The study will also assist the broader mining industry in South Africa to better comprehend the perceptions communities have of mining, hopefully feeding into the national debate regarding the role that mining should, or is able to play, with regard to its economic contribution.

4.6 Future research

Future research should be undertaken subsequent to the establishment of mining operations within the community to once again access and compare the community's perceptions of mining.

Research should also be undertaken in other parts of South Africa to add to this study and to build on the understanding of people's perception towards mining.

In order to grasp the company's perceptions better and to assist in changing mining companies' culture and interactions with local communities, it is important that the perceptions of the company's employees are also tested with regard to how the company deals with local communities together with their perceptions towards the communities in which the company is active.

4.7 Conclusion

This study revealed that the local community has an overall positive perception towards mining because the members feel it would lead to more employment and investment in the community, although farmers who could be directly affected by a possible mine are more critical of mining. Community members feel that mining companies should give back to the community in order to compensate the community for the use of their natural resources. The mining company should, furthermore, be honest and transparent when dealing with the local community. The main concerns raised by community members relate to the perceived increase of crime and the fact that a mine would negatively affect the environment, specifically the availability and quality of underground water supplies.

4.8 Chapter summary

This chapter was dedicated to the conclusions and recommendations emanating from the theoretical and empirical research.

The first section of the chapter focussed on the reason why the study was conducted and the theoretical findings underpinning the key concepts and current issues relating to people's perception of the mining industry. A comparison with the findings of a similar study in Ghana was also discussed. This discussion was followed by key observations relating to the current socio-economic position of the community and findings from the interviews conducted with community members. The interview results indicate that the community has a positive perception towards mining in general. Responses from farmers who stood to be directly affected by a possible mine were still highly positive, but were significantly less when compared to the entire sample population. Negative perceptions highlighted by respondents include the increase of crime, the pollution of groundwater, the reduced availability of groundwater, the loss of productive farmland, the increased the cost of housing and the increased incidence of diseases.

The chapter concluded with recommendations to improve the perceptions that exist towards mining, followed by confirmation that the research objectives set out in the study were achieved and ends with proposals for potential future research.

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APPENDIX A – PERCEPTION INTERVIEW

Interview Schedule for Community Residents

COMMUNITY PERCEPTIONS OF MINING: RURAL SOUTH AFRICAN EXPERIENCE

An Interview Schedule to elicit information from residents regarding their attitude to mining in general and towards the possibility of mining in their community

PURPOSE OF THIS SURVEY IS TO GATHER INFORMATION ON THE ABOVE SUBJECT MATTER. THIS IS PURELY AN ACADEMIC EXERCISE AND ANY INFORMATION PROVIDED WILL BE ACCORDED CONFIDENTIAL TREATMENT. THE RESEARCHER IS CURRENTLY BUSY WITH HIS MASTERS DEGREE IN BUSINESS ADMINISTRATION AT THE NORTH-WEST UNIVERSITY AND ACT IN THIS CAPACITY AND NOT AS AN EMPLOYEE OF THE COMPANY INVOLVED. THE STUDY WILL ALSO REMAIN ANONYMOUS IN ITS TREATMENT OF THE AREA WITHIN SOUTH AFRICA AND ANY STAKEHOLDERS.

PERSONAL CHARACTERISTICS OF INTERVIEWEE

- Age:
- Sex: Male [] Female []
- Occupation (e.g. business owner, farmer ...):
- Population Group: Black [] Indian [] White [] Coloured []
- Were you born in this town/village Yes [] No []
- If no, when did you come to live and what brought you here:

A. COMMUNITY PERCEPTION OF THE MINING INDUSTRY IN GENERAL

- A1 Do you have a positive attitude towards the mining industry and mines in general? Yes [] No [] Uncertain []

Please justify your response – do you perhaps have a specific reason for your response above:

- A2 Do you think mines in general have a negative impact on the environment? Yes [] No [] Uncertain []

Please explain why you think so?

- A3 Do you think mines in general have a positive impact on the economy and development of local communities? Yes [] No [] Uncertain []

Please explain why you think so?

- A4 Do you think mines, in general, care for the communities where they operate and make positive socio and cultural contributions in, for example, things like education, housing, roads, security and cultural enrichment? Yes [☐] No [☐] Uncertain [☐]

Please explain why you think so?

- A5 Do you trust mining companies? Yes [☐] No [☐] Uncertain [☐]

Please explain why you do or do not?

- A6 Mining activities do not continue forever as the resource is not renewable, do you think mines in general plan ahead for mine closure to leave sustainable economic activities? Yes [☐] No [☐] Uncertain [☐]

Please explain why you think so?

- A7 Do you think mining companies have a lot of money and make huge profits, or are they like any other business?

Please explain why you think so?

B. ECONOMIC IMPACTS ON THE COMMUNITY

- B1 How do you think mining operations will affect employment in your community?

- B2 Do you think the mining company will employ people from the community?

B3 What do you think will be the impact of a mine on some economic indicators/structures in your community?
On a scale where (-5) is very negative, 0 is no impact, and +5 is very positive, please tell me what **you** think the effect of a possible future mine will be on:

THE IMPACT OF A MINE ON ECONOMIC INDICATORS/STRUCTURES.

	Negative Impacts	Zero Impacts	Positive Impacts
Indicators	-5 -4 -3 -2 -1	0	+1 +2 +3 +4 +5
Agriculture			
Trade & Commerce (businesses)			
Employ't/Job Opp'ty			
Personal Income level			
Socio-Econs Infrast. (e.g. roads)			
Cost of Living			

Please justify your responses:

Agriculture	
Trade & Commerce (businesses)	
Employ't/Job Opp'ty	
Personal Income level	
Socio-Economic Infrastructure	
Cost of Living	

C. SOCIO-CULTURAL IMPACT ON THE COMMUNITY

C1 What do you think will be the impact of a mine on some socio-cultural indicators/structures in your community? On a scale where –5 is very negative, 0 is no impact, and +5 is very positive, please tell me what **you** think the effect of a possible future mine will be on:

IMPACT OF A MINE ON SOCIO-CULTURAL STRUCTURES

	Negative Impacts	Zero Impacts	Positive Impacts
Indicators	-5 -4 -3 -2 -1	0	+1 +2 +3 +4 +5
Education			
Housing *			
Security/Crime			
Cultural Values			
Population			
Health			

* Also think about the type, availability and quality aspects of housing

Please justify your responses:

Education	
Housing	
Security/Crime	
Cultural Values	
Population	
Health	

D. ENVIRONMENTAL IMPACTS ON THE COMMUNITY

D1 What do you think will be the impact of a mine on some of the environmental elements in your community?
On a scale where -5 is very negative, 0 is no impact, and +5 is very positive, please tell me what **you** think
the effect of a possible future mine will be on:

IMPACT OF A MINE ON ENVIRONMENTAL ELEMENTS

	Negative Impacts	Zero Impacts	Positive Impacts
Elements	-5 -4 -3 -2 -1	0	+1 +2 +3 +4 +5
Water Quality			
Air Quality			
Noise & Land Vibration			
Diseases			
Land Pollution			

Please justify your responses:

Water Quality	
Air Quality	
Noise & Land Vibration	
Diseases	
Land Pollution	

E. COMMUNITY DEVELOPMENT, EXPECTATIONS AND SUSTAINABILITY

E1 Do you expect the mining company to invest in your community other than into the mine itself?

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E2 What development benefits do you think your community can derive from the **presence** (direct and indirect) of a mine in the area? In what and how should a mine **also** invest?

E3 How can your community achieve these benefits in the absence of a mine, or will it not be possible? That is to say can you foresee any replacements to achieve these benefits?

E4 How would you rate the **development expectations** of your community with regards to a possible future mine?

- Very High
- High
- Moderate
- Low
- Very low

Please justify your response:

E5 Although it is way ahead in the future, what do you think (any suggestions) could be done to sustain your community after the closure of a possible mine?

F. COMPANY-COMMUNITY CO-EXISTENCE RELATIONS.

F1 What are the sources of friction or conflict that you can foresee between your community and a possible future mining company?

F2 In your opinion, what factors can enhance the receptivity/acceptability of mining in your community?

ARE THERE ANY OTHER IMPACTS THAT A MINE WOULD HAVE ON YOUR COMMUNITY THAT YOU WOULD LIKE TO MENTION?

Thank you for time and co-operation. Do you have any questions for me?