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FACULTY OF SCIENCE

SCHOOL OF GEOGRAPHY, ARCHAEOLOGY AND ENVIRONMENTAL STUDIES (GAES)

Master of Science (Dissertation)

Title: Theorizing the Relations between Space and Waste: Residents' Insights on Recycling Practices and Waste Pickers in Vaalpark, Sasolburg

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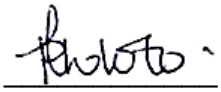
September, 2018

A dissertation submitted to the Faculty of Science, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Master of Science (Geography and Environmental Studies).

DECLARATION

I declare that this thesis is my own, unaided work. It is being submitted for the Degree of Master of Science at the University of the Witwatersrand, Johannesburg. I further declare that it has not been submitted before for any degree or examination at any other University.



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ABSTRACT

Separation at source has emerged as the method of choice for municipal recycling programmes, both in South Africa and around the world. At the same time, many local governments are seeking to engage and integrate waste pickers into the municipal waste and recycling systems. While a number of studies analyse the experiences of waste pickers in these processes, scant attention has been paid to residents. Yet the success of separation at source is dependent on resident participation, and such participation is notoriously difficult to secure. Given the generalised stigmatisation of waste pickers around the world, it is important to understand how including waste pickers in separation at source could affect resident participation. This research project therefore sought to understand the role of relations between residents and waste pickers in the implementation of a separation-at-source programme run by the Ikageng-Ditamating cooperative of waste pickers in the upmarket, historically white Vaalpark neighbourhood of Sasolburg, South Africa. Based on participant observation, observation, focus groups, semi-structured interviews and documentary analysis, this dissertation establishes that although the semi-formalised cooperative members based at the Vaalpark Recycling Centre are the only waste pickers who are meant to collect recyclables from the residents, independent informal street pickers still collect from the same homes, and informal landfill pickers also salvage materials sent the landfill. The dissertation argues that the ways the residents relate to the Ikageng-Ditamating cooperative of semi-formalised waste pickers and how they participate in the separation at source programme are informed by their relationships with and understandings of landfill and street waste pickers, as well as with their direction engagements with the cooperative waste pickers. The spaces that waste pickers work in play a crucial role in shaping the ways in which they work and relate to residents, the ways they are seen and understood, and how residents participate in separation at source. So do articulations of race, class, and space. Existing literature does not sufficiently explore how the spaces where waste pickers work contribute to the development of different kinds of waste pickers and their relations with residents. By engaging with Henry Lefebvre's theory of the production of space, this dissertation contributes to literatures both on resident participation in separation at source and the relationship between residents and waste pickers. This understanding provide insights into how integration of waste pickers into separation-at-source programmes should be designed to maximize resident participation.

Keywords: waste pickers; separation at source; residents; space; waste management systems; recycling.

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ABBREVIATIONS

CSIR - Council for Scientific and Industrial Research

DEA - Department of Environmental Affairs

DEAT - Department of Environmental Affairs and Tourism

DST - Department of Science and Technology

IDP - Integrated Development Plan

IWMP- Integrated Waste Management Plan

KKPKP- Kagad Kach Patra Kashtakari Panchayat

MLM - Metsimaholo Local Municipality

MSW - Municipal Solid Waste

MSWM - Municipal Solid Waste Management

NWMS - National Waste Management Strategy

PACSA-SA - Packaging Council of South Africa

PETCO - PET Recycling Company

S@S - Separation at Source

SACN - South African Cities Network

SAWPA - South African Waste Pickers Association

SWaCH - Solid Waste Collection and Handling

SWM - Solid Waste Management

WIEGO - Women in Informal Employment: Globalising and Organising

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CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION TO THE STUDY

Since the late 19th century, the generation of mounting volumes of waste has posed a continual challenge to the environment and human health, especially in cities of the developing world. South Africa is not exempted from these challenges as the country produces approximately 1.8 million tonnes of waste annually which local municipalities are mandated to manage (Department of Environmental Affairs 2011; Godfrey *et al*. 2016). Most of the waste gets generated at household level and it continues to grow with an increase in population and consumption rates (Ramukhwatho *et al*. 2014: Wilson & Velis 2014). Studies on waste management maintain that all these constitute the consequences of industrialisation, urbanisation and modernisation particularly in developing cities where adequate infrastructures are deficient (Achankeng 2003; Gutberlet 2013; Masood and Barlow 2014).

Until recently, the most common method used to manage Municipal Solid Waste (MSW) in South Africa entailed collection and disposal at landfills where most of MSW gets discarded (Godfrey *et al*. 2016; Ramukhwatho *et al*. 2014). Apparently, this heavily dependable method has been exhausted in most of the country's metropolitan municipalities as numerous landfills' airspace has run out (Godfrey *et al*. 2016; Troschinetz and Mihelcic 2009; Wilson & Velis 2014). In this regard, alternative sustainable measures which have already been documented in the country's waste legislation ought to be put into practice.

After the apartheid era in South Africa, legislation on waste management has evolved remarkably. Waste minimisation through strengthened sustainable recycling practices continues to be primarily emphasised throughout the legislation (DEA 2011). The waste legislation repeatedly quotes the principles of the waste management hierarchy and sees that execution of these strategies at municipal level can facilitate participation in recycling by all citizens (Wiechers *et al*. 2002). In this regard, the amount of waste produced at source and diverted to landfills will ultimately be reduced. A number of challenges pertaining to waste management faced by municipalities persist regardless, and the aspiration to stabilise waste generation by 2012, as noted in the National Waste Management Strategy (NWMS) of the Polokwane Waste Summit in 2001, has not yet been attained (DEA 2011. Understanding the waste service delivery

challenges faced by South African municipalities and unravelling their interrelationships is considered a daunting challenge but an important one to address (Godfrey and Oelofse 2008).

The country has embarked on a journey to establish recycling-related programmes not only in metropolitan municipalities but in all sorts of municipalities (local, district, etc.), such as Metsimaholo Local Municipality (MLM), as a way to address sustainable waste management (DEA 2011). In most cases where recycling initiatives are underway, identifiable relations have mostly been instituted between municipalities and residents or between municipalities and waste pickers. As such, an establishment of a defined relationship between municipalities, the informal waste sector and local residents should be considered in the quest to attain the "zero waste" state by 2022 as the country envisions (DEA 2012; Wiechers *et al*. 2002).

Informal waste pickers collect waste from residential and commercial areas, kerbsides and also landfill sites as a solid source of livelihood. Although their informal recycling activities were previously considered backward, unhygienic and incompatible with the formal waste management systems (Masood and Barlow 2013), it has recently been acknowledged that they contribute remarkably in managing MSW in most cities. Thus integrating the highly effective informal waste pickers into municipal systems is considered a viable option for addressing the challenge faced within the waste management sector (Chikarmane 2012; Gupta 2012; Marello and Helwege 2014, 2018; Samson 2008). According to Godfrey *et al*. (2016), in South Africa the informal waste sector has been active for longer than two decades and plays a vital role in diverting waste from landfills towards recycling. Informal waste pickers are even considered waste recycling experts who possess skills and potential to help municipalities in changing residents' behaviours and perceptions of household waste (Schenck *et al*. 2012).

Bringing residents' or household participation into waste management spaces presents an additional solution to the MSW challenges being faced. Numerous studies suggest that recycling of waste by householders is a strategy municipalities should enforce in order to minimise waste generation at source (Guerrero *et al*. 2013; Miezah *et al*. 2015: Schoeman 2016; Zhuang *et al*. 2008). This is widely done through the implementation of separation-at-source (S@S) programmes which have been underway in some developing cities. In South Africa, S@S is regarded as an excellent

example of waste management thus far as it has been proved to increase resource recovery and material reuse, which essentially reduce the amount of MSW going to landfills (Schenck *et al*. 2012; Tai *et al*. 2011). Participation by residents is crucial to the success of S@S; however, it is notoriously difficult to secure. Surprisingly scant attention has been paid to how the involvement of reclaimers in S@S influences residents' participation.

Sasolburg, in South Africa's Metsimaholo Local Municipality (MLM), provides an ideal site to interrogate these relations, as S@S has been driven from below by a cooperative of waste pickers. These waste pickers previously worked at the municipality's landfill. As members of the South Africa Waste Pickers Association (SAWPA), they collaborated with industry and provincial government to establish a semi-formal S@S programme operated by a waste-picker cooperative called Ikageng Ditamating. The cooperative services households in the middle-high income, historically white, neighbourhood of Vaalpark. With informal waste sector integration gaining dominance throughout the country, Metsimaholo Local Municipality has embarked on a journey to consider informal waste pickers in its waste management systems (MLM 2016). While most integration initiatives in the country are driven by local government, the initiative in Metsimaholo has been primarily bottom-up. As waste pickers have been central to the design and implementation of the S@S programme, they necessarily relate to the residents. Examining these proactively forged relations between waste pickers and residents can therefore provide useful insight into key aspects of these relations and participation in S@S.

1.2 PROBLEM STATEMENT AND RATIONALE

There are ongoing processes of readjusting and restructuring waste management systems in the quest to address the challenge of amplified volumes of waste generated by residents in South Africa and across the world. When identifying solutions, studies on S@S pay more attention to the relationships between the municipalities and residents, pointing out, amongst other things, the lack of education on recycling as one of the factors contributing to minimal participation by residents in S@S (Colon and Fawcett 2006; Trois and Matete 2007; Zhuang *et al*. 2008). On the other hand, scholarly work on integration contributes significantly to understanding the

relationships between informal waste pickers and municipalities, where often the municipalities fail to appropriately integrate informal waste pickers (Godfrey *et al*. 2016; Gupta 2012; Marello and Helwege 2014; Medina 2007b; Samson 2007, 2009, 2010a, 2016; Schenck *et al*. 2012). In the absence of studies analysing the relations between reclaimers and residents in S@S, it is not possible to discern how reworking these relations could help to strengthen the success of S@S in both increasing resident participation and improving the conditions of waste pickers.

This study considers the notion of informal waste pickers' ability to establish a relationship with the municipality to an extent where plans to formally integrate them into the municipal waste management systems as S@S service deliverers are being considered.

This study focused on identifying and understanding different ways in which residents and waste pickers relate, the spaces and times of the relationship, and how they perceive and work with each other. These factors are important to study as they contribute towards uncovering some of the underlying issues which may enable or hinder participation in S@S and recycling at large. Furthermore, light is shed on whether the municipal plans to curb some of the waste going to the landfill through residents' participation in recycling can be attained through a defined relationship between waste pickers and householders. These essentially provide a clearer understanding of the relationships between residents and waste pickers resulting from the process of municipal integration of the informal waste sector, to which most scholarly work has paid scant or no attention.

1.3 RESEARCH QUESTION

This research study sought to answer this overarching question:

> ***What does an assessment of the relationship between waste pickers and residents in the Vaalpark S@S programme contribute to understandings of residents' participation in S@S?***

The following subsidiary questions, derived from the overarching question, further guided this study:

a) How do residents identify and perceive different waste pickers and the work they do?

b) How has waste picker integration into delivering S@S and household recycling transformed the relationship between residents and different waste pickers?

c) What changes in residents' understandings of household waste have occurred since the inception of the S@S project?

d) How, where and when do residents and different waste pickers relate and which aspects mediate the relationship?

e) What other factors shape the relationship between residents and waste pickers?

1.4 ARGUMENT

As elaborated in the methodology chapter, this dissertation draws on participant observation, observation, focus groups, semi-structured interviews and documentary analysis to answer these research questions. It establishes that although the semi-formalised cooperative members based at the Vaalpark Recycling Centre are the only waste pickers who are meant to collect recyclables from the residents, independent informal street pickers still collect from the same homes, and informal landfill pickers also salvage materials sent the landfill. The dissertation argues that the ways the residents relate to the Ikageng-Ditamating cooperative semi-formalised waste pickers and how they participate in the S@S programme are informed by their relationships with and understandings of landfill and street waste pickers, as well as by their direction engagements with the cooperative waste pickers. The spaces that waste pickers work in play a crucial role in shaping the ways in which they work and relate to residents, the ways they are seen and understood, and how residents participate in separation at source. So do articulations of race, class and space. Existing literature does not sufficiently explore how the spaces where waste pickers work contribute to the development of different kinds of waste pickers and their relation with residents. By engaging with Lefebvre's theory of the production of space, this dissertation

contributes to literatures both on resident participation in S@S and on the relationship between residents and waste pickers.

1.5 PREVIEW OF THESIS ORGANISATION/STRUCTURE

In order to develop the argument presented above, this thesis is divided into ten chapters with each serving a specific purpose. This **introductory** chapter has presented the problem statement and the importance of investigating such a problem. In order to ground the study, the introductory chapter has also provided background and the status quo on municipal solid waste management (MSWM) and recycling in South Africa. This yields an understanding of how the relationship between informal waste pickers and residents in Sasolburg has developed and how such relationships are important in curbing the amount of waste generated by households which goes to landfills.

The second chapter entails a **review of relevant literature** on waste conceptualisations by different people. It reviews works on MSWM; recycling and S@S as sustainable solid waste management (SWM) practices; the role of the informal waste sector and its integration into formal waste management systems; householders' participation in recycling; and lastly the impact of the relationship between waste pickers and residents. Subsequently, the **conceptual framework** chapter provides a background on key concepts adopted throughout this research study. This helps in grounding the thesis theoretically.

Chapter four on **methodology** outlines the different methods employed to answer the research question, highlighting limitations encountered in the research process. This chapter also presents the geographical context of the study.

Chapter five discusses **national waste management policy and legislation, local policies, and the residential services** offered by the MLM. It traces the evolution of the country's waste legislation between 1996 and 2011. It also outlines the extent to which the municipality has executed some of the principles of the waste management hierarchy in addressing sustainable MSWM.

Chapter six presents findings pertaining to **waste picker spaces and the recycling/S@S activities** studied in Sasolburg. It outlines duties carried out by waste

pickers at the Sasolburg landfill site and the Vaalpark Recycling Centre, and also by informal street waste pickers.

Subsequently, findings on **participation in the S@S project by Vaalpark residents** are presented and discussed in chapter seven. Chapter eight describes the experiences of, interactions with and identifications of the different waste pickers of residents, which are utilised to reflect on the **relationship between residents and different types of waste pickers**.

Chapter nine entails the **overall analysis** of themes covered in this thesis. In Chapter 10, **conclusions and recommendations** are made. These chapters are succeeded by **references** and **appendices**.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter critically engages literature relevant to my exploration of the relationship between residents and waste pickers within waste and recycling spaces. It starts by engaging academic debates which focus on how waste is conceptualised or perceived by people from differentiated societal standpoints. Next, I review literature on how municipalities have attempted to manage solid waste produced by residents based on such conceptualisations, particularly in developing countries. In this chapter I further engage academic works on the role of waste pickers and community residents' participation in recycling from household level. Lastly, I address the history and development of relationships between residents and waste pickers and how such relationships have been essential in attaining sustainable waste management structures in developing countries.

2.2 WHAT IS WASTE? TO WHOM?

There is no one clear definition and understanding of waste. "Waste" as a concept is understood differently by different experts, as well as by people from different social backgrounds. As Drackner (2005) notes, waste eludes any objective definition owing to its subjective nature. This affirms Strasser's (2000) view that "what counts as trash or waste depends on who is counting". Throughout the scholarly works engaged for this study, there are three dominant ways in which waste is perceived and conceptualised: waste as an aesthetic inconvenience (Drackner 2005: Sembiring and Nitivattananon 2010); waste as an ecological/environmental hazard (Gutberlet 2013); and waste a valuable resource or a commodity (Whitson 2011).

Waste as an aesthetic inconvenience

Waste as an aesthetic inconvenience can be regarded as a more generalised understanding of waste held by most of contemporary humankind. Here, waste is associated with material or objects whose lifecycle is considered to have ceased and which serve no further significant purpose to the primary user (Bontoux & Leone 1997; Drackner 2005; Gutberlet 2013). Therefore, waste is regarded as filth, trash, leftovers or garbage which the producer wants to disassociate from (Moore 2012). As abject as

waste appears to be from this viewpoint, producers of waste do not want it in their spaces of residence or work. It therefore tends to be discarded and then forgotten.

In some cases, the producer of waste is even oblivious to where the waste they discards goes. Therefore, the passiveness and valuelessness associated with waste reassure producers to overlook and disregard the processes of recycling and reusing all that constitutes waste (Drackner 2005). Thus modern societies which fail to find any significance for waste tend to produce a great deal of it through increased consumption, which amplifies with population growth. Marello and Helwege (2014) argue that such behaviours make the disposal of waste challenging and problematic to the same environment which society inhabits.

Waste as an ecological/environmental hazard and threat to human health

Gutberlet (2013) argues that after waste has been regarded a nuisance or an aesthetic inconvenience and gets disposed of in large volumes into the environment, it becomes challenging to manage, especially in developing countries. In the early days, disposal of waste did not pose much of a problem to the environment or inhabitants as residential areas were dispersed, population levels were lower and land was abundant (Gutberlet 2013; Shafiul and Mansoor 2003). This has changed remarkably with time. Developing countries are known to have insufficient infrastructure, which cannot cater to growing modern populations, hence deficiencies in proper waste treatment and disposal are experienced (Marello and Helwege 2014). In some instances, sustainable strategies that address waste minimisation and recycling are also absent (Shafiul and Mansoor 2003). As a result, serious challenges arise for local municipalities as the environment inhabited by local residents becomes risky and threatening to human health and well-being (Sembiring and Nitivattananon 2010). When waste is perceived as a relentless risk factor and a lurking threat, its polluting, degrading and destructive nature to the environment is recognised by ecologists, and identification of measures to address physical detachment becomes crucial (Drackner 2005).

Waste as a valuable socio-economic resource and commodity

Finally, most developing cities have a number of people who perceive waste as a solid and valid source of livelihood (Masood and Barlow 2013). Such perceptions of waste usually derive from and encompass the informal waste sector and waste industry to

whom waste gets commoditised and generates an income (Godfrey *et al*. 2016; Moore 2012; Samson 2010b).

Waste pickers make a living by collecting and selling recyclable material from what has been discarded as trash, garbage or filth (Marello and Helwege 2018). Although they work in different spaces of urban communities to address their socio-economic disparities in society, they ultimately contribute significantly to managing the increased volumes of waste threatening human health and the environment (Schenck and Blaauw 2011; Marello and Helwege 2018; Medina 2007a; Samson 2010b). By recovering and recycling waste, waste pickers and waste industries insert waste back into the value chain where it goes through several phases and becomes deconstructed, reconstructed and transformed into new consumables (Davies 2012).

The different ways in which waste is conceptualised highlight the manner in which what inconveniences one aspect of society can disrupt the ecological system as well as be treasured by another individual. In this regard, waste remains a highly contested term whose varied definitions continue to influence the decisions taken in society related to how to properly manage it (Davies 2012). Waste studies in developing countries which note that waste is a part of every individual's everyday life continuously point out the pressing need to implement sustainable strategies (Davies 2012; Shafiul and Mansoor 2003; Sharholy *et al*. 2008). Such studies have accepted both the pros and cons associated with and embedded in the definitions of waste, and address measures to reduce, reuse and recover waste (Blaauw *et al*. 2011; Medina 2007a).

2.3 MUNICIPAL SOLID WASTE MANAGEMENT IN DEVELOPING COUNTRIES

In any given time and place, most of what is understood to be waste mentioned above eventually forms part of municipal solid waste (MSW) which local governments have been assigned a responsibility to manage (Marello and Helwege 2018). Hoornweg and Bhada-Tata (2012) elucidate the huge responsibility municipal solid waste managers are tasked with as they are required to collect and remove all waste generated in the most socially, economically and environmentally viable manner possible. On the other hand, Zhang *et al*. (2010) highlight the limited budget usually allocated to local municipalities and municipal solid waste managers to deliver adequate MSW services to their residents, particularly in developing countries. This

constraining factor increases the scope and complexity of MSW, resulting in it being not only challenging and problematic to manage but also the most pernicious local pollutant (Hoornweg and Bhada-Tata 2012).

Based on their study about challenges pertaining to MSW in developing countries, Zhang *et al*. (2010) argue that residents or households contribute the highest quantity to MSW. However, the quantity of MSW generated in developing cities is lower when compared with developed cities (Medina 2007b). In both worlds, the economically well-off residents are known to generate and discard greater quantities of waste amongst all residents, contends Gutberlet (2013). These assertions affirm several studies on MSW which clarify that waste in urban communities of the developing countries has become overburdening and problematic (Dias 2012; Guerrero *et al*. 2013; Marello and Helwege 2018). This is owing to the inadequate manner in which waste is handled and managed.

Numerous studies point out a number of other factors which hinder sustainable SWM in the developing countries, but the one factor which stands out is the poor environmental and waste awareness of the general public (Aja *et al*. 2014; Guerrero *et al*. 2013; Troschinetz and Mihelcic 2009). According to Sembiring & Nitivattananon (2012), if residents in cities in developing countries were provided enough environmental education, the increasing volumes of MSW generated would not present as much of a problem and waste would to some extent be viewed differently and managed appropriately.

In response, municipal solid waste management (MSWM) strategies were developed in most urban societies to fulfil the purposes of waste collection, resource/material recovery, treatment, reuse, transfer and recycling (Henry *et al*. 2006). The fundamental purpose of developing decent MSWM strategies is to attain socio-economic stability in the process of addressing environmental development and sustainability. Medina (2007a) maintains that the development of effective MSWM strategies should also consider establishing defined relationships between the formal and informal waste sectors and also bring in the general public. Encouragement of such collaborations between different sectors has risen in the past decade in developing countries (Imam *et al*. 2008; Trois and Matete 2007).

2.4 RECYCLING AS A SUSTAINABLE SOLID WASTE MANAGEMENT STRATEGY

According to Hoornweg and Bhada-Tata (2012, p.20), the exercise of "throwing away" waste is non-existent in SWM. However, this applies to those who understand the far-reaching implications of discarding amplified volumes of waste recklessly into the environment. Municipal solid waste managers in various localities depend on practices such as landfilling and incineration to dispose of waste generated by residential households and other areas. While such methods may have presented solutions to some developing countries' waste challenges, eventually, awareness of the associated problems have increased in scope and complexity (Hoornweg and Bhada-Tata 2012). The practice of landfilling requires enough land (which is in short supply in many urban areas), while incineration necessitates sufficient finances (Godfrey *et al*. 2016; Sembiring & Nitivattananon 2010). When other methods like composting are adopted, additional social and environmental complications when it is over-used in managing MSW become prominent (Imam *et al*. 2008).

Recycling in the context of this study refers to the process whereby discarded materials from households, commercial areas and other places are reclaimed, reprocessed and subsequently converted into new or different products (Hoornweg and Bhada-Tata 2012). Troschinetz and Mihelcic (2009) recognise recycling of MSW as the most environmentally sound method since it encompasses the source-reduction and reuse strategies. On the other hand, Troschinetz and Mihelcic (2009) point out the economic advantages associated with recycling which developing countries can benefit from. In areas where recycling of MSW has been implemented and is being practiced extensively, an increase in materials recovered from households through separation at source has been recorded (Hoornweg and Bhada-Tata, 2012; Troschinetz and Mihelcic, 2009). In this regard, more waste gets diverted away from landfills and incinerators, resulting in environmental, economic and social benefits (Troschinetz and Mihelcic 2009).

As various studies depict, numerous factors influence recycling of MSW in developing countries where recycling is underway. Troschinetz and Mihelcic (2009) state that amongst others, these factors include government policy, government finances, waste characterization, waste collection and segregation, household education, household economics, MSWM administration, MSWM personnel education, the MSWM plan, local recycled-material market, technological and human resources, and land

availability (Troschinetz and Mihelcic 2009, p.915). Palatnik *et al*. (2014) and Skinner (1993) maintain that when integrating appropriate public environmental awareness, recovering waste through recycling and separation at source are the most sustainable practices for the developing countries. Guerrero *et al*. (2013) emphasise the centrality of decent relationships between all involved and affected parties to the success of these initiatives.

2.5 THE ROLE OF WASTE PICKERS AND THEIR INTEGRATION INTO RECYCLING PROCESSES

A wide body of literature on waste pickers establishes that they form a crucial part of the informal recycling economy. They are generally identified as informal workers who are poor, socially marginalised and politically disenfranchised (Marello and Helwege 2014, 2018; Samson, 2010a; Viljoen *et al*. 2015). As an informal activity, waste picking in most developing cities is unregulated or unregistered (Gunsilius *et al*. 2011). Waste pickers have irregular income, little recognition and high vulnerability, as well as simple equipment to work with (Gunsilius *et al*. 2011). In addition to the challenges faced by waste pickers as they conduct their work, they face exploitation by middlemen, lack work security, are treated with indifference or contempt, work informally and are subject to ongoing harassment (Marello and Helwege 2014; Medina 2007a, 2008, 2009; Schenck *et al*. 2012; Samson 2008, 2009, 2010a; Viljoen *et al*. 2015).

In South Africa, various terms are used in different parts of the country to refer to waste pickers. In Samson (2008) the term "reclaimers" is employed to refer to waste pickers and this is because their work entails "reclaiming" value out of what society regards as waste. It is also the official English name given to people who perform this labour in the city. In Cape Town, the term "*skarrelling*"[1]is used to the actual activity of recycling (Benson and Vanga-Mgijimi 2010) while in Johannesburg terms like "*Bakgeresi*"[2], "*Baya-Hlupheka*"[3] and "recyclers" are used to identify them (Dias 2016). In some areas, waste pickers are referred to as "scavengers". A further discussion on conceptualisation of waste pickers will be engaged in next chapter.

[1] Skarrelling | Afrikaans word "skarrel" means to "rummage".
[2] Bakgeresi | a word from IsiZulu which means "hustlers" "labourers" or "workers".
[3] Baya-hlupheka | a word from IsiZulu meaning "they are struggling" and is used to refer to waste pickers.

According to Marello and Helwege (2014), the appeal of waste picking derives from low barriers to entry and the capacity to generate income and because waste is easy to access and has value. Waste picking is regarded by some as an entrepreneurial activity (Dias 2010; Godfrey *et al*. 2016; Moore 2012). Owing to the fact that waste pickers rarely achieve economic mobility through this practice, Marello and Helwege (2014) see waste picking as not prosperous. Dias (2010) perceives waste picking as a labour intensive activity as the "waste", which can sometimes be heavy, requires individuals to carry and move it over long distances.

The enlarged size of the informal waste sector is a result of unemployment, underemployment, poverty, and the pressing need to sustain the high demanding standards of urban livelihoods, mainly in low-income countries (Ahmed and Ali 2004; Dias 2010; Godfrey *et al*. 2016; Gupta 2010; Medina 2007a). Wilson *et al*. (2005) point out the significant contribution made by waste pickers in developing countries, regardless of the undesirable conditions associated with their work. In most developing countries, waste pickers have directly or indirectly impacted on formal waste systems. They recover and recycle more materials from waste than the formal sector (Velis *et al*. 2012). In South Africa, informal waste pickers are estimated to have saved the formal waste management systems between R309.2 million and R748.8 million in landfill airspace in the year 2014 without any form of compensation (Godfrey *et al*. 2016). Approximately 25 tonnes of recyclables get recovered and diverted away from landfill by one waste picker annually (Godfrey *et al*. 2016, p.1). Yet, their work remains largely unacknowledged (Velis *et al*. 2012).

In recent years, a wide body of literature has focused on the need for formal municipal waste systems to officially integrate waste pickers (Annepu and Mitchell, 2013; Ezeah *et al*. 2013; Godfrey *et al*. 2016; Gupta 2010; Marello and Helwege, 2018; Samson, 2010a). In all of these studies, integrating waste pickers entails a variety of things inclusive of mainly the social and economic features (Godfrey *et al*. 2016; Marello and Helwege 2018). However, it is mainly established that integration should start as a process of acknowledging the work and contribution made by the informal sector through its significant recycling activities (Annepu and Mitchell, 2013; Gupta 2010).

Samson (2010a) contends that in South Africa, integration initiatives that are currently underway result mainly from the process of waste pickers organising. The formation of the South African Waste Pickers Association (SAWPA) is a product of organised

waste pickers in different parts of the country who pressed municipalities to consider their significance within the waste management chain (Samson 2010a). Marello and Helwege (2018) argue that the informal waste sector is deserving of integrative strategies and projects in developing countries. Hence a number of integrative programmes considerate of waste pickers have been implemented in different parts of South Africa.

From a more social approach, Marello and Helwege (2018) point out that recognition, empowerment and job security are key facets which formal systems need to consider as part of integration. Formalisation through policy implementation is suggested by Kashyap and Visvanathan (2014). Institutionalisation via waste picker cooperatives is another way integration is being considered in developing countries, including South Africa (Marello and Helwege 2018). Once waste pickers are organised into cooperatives, they are more likely to secure support and assistance from different organisations - private, public and NGOs (Godfrey *et al*. 2016; Kashyap & Visvanathan 2014; Marello and Helwege 2018).

In other developing cities such as Belo Horizonte, Brazil, and Bogota, Colombia, the use of cooperatives to integrate the informal sector has been considered a success (Annepu and Mitchell 2013; Samson 2016). The cooperative model has also been promoted in South Africa. However, a study on waste picker cooperatives in South Africa identified a 91.8% failure rate for waste and recycling cooperatives (Godfrey *et al*. 2016, p.3). Similarly, Thaba and Mbohwa (2015) note that the increased rate of cooperatives' failure in South Africa - not only waste picker cooperatives stems from an understanding that the idea of cooperative formation usually emerges from external entities as opposed to being entirely the idea of involved members. In this sense, cooperatives in South Africa do not usually emerge naturally (Thaba and Mbohwa 2015). Moreover, emphasis is put on the fact that it is substantial for members and all those involved to understand the basic principles, definition, and rights and responsibilities of the cooperative (Thaba and Mbohwa 2015).

The steps being taken to integrate the informal waste sector are in accordance with the reality that the challenges encountered in MSWM have expanded in scope and complexity (Ahmed and Ali 2004). However, it is imperative for projects addressing the socio-economic needs of waste pickers to not overlook the autonomous nature of waste pickers and salvaging as a job (Samson 2010a). Godfrey *et al*. (2016) argue

that the failure of the cooperative model in South Africa arises from the top-down approach to waste picker integration. Sekhwela (2017) argues that in Johannesburg, the municipality has established recycling and S@S programmes without critically assessing the needs of informal waste pickers. The autonomous nature of informal waste pickers was overlooked as the municipality's projects were prescriptive of how, when and where waste pickers should conduct their work. This was found to not be aligned with what waste pickers had envisioned integration to be and thus they left the cooperatives and went back to their informal conditions (Sekhwela 2017).

According to Samson (2010a), alternative ways of integrating the informal sector in such cities need to be considered, as partnerships between both sectors offer a great deal of advantages. These entail dynamism, access to finance, knowledge of technologies, managerial efficiency, entrepreneurial spirit, social responsibility, environmental awareness, local knowledge and job generation, which all together are the concerns of the public sector (Ahmed and Ali 2004, p.471). Therefore, capitalising on the strengths of each sector will yield improved outcomes in managing municipal waste.

2.6 PARTICIPATION IN RECYCLING AND SEPARATION AT SOURCE BY HOUSEHOLDS

Colon and Fawcett (2006) argue that recycling and separation at source are becoming seemingly inseparable as separation at source is a way to increase recycling rates (Omran *et al*. 2009). Australia's Waste Authority (2014) defines separation at source as a process that involves segregating waste into common material streams or groupings in preparation for separate collection. S@S may be attained through providing separate bins or garbage bags or through direct delivery of specific waste to drop-off facilities (Omran *et al*. 2009).This confirms why S@S is frequently used as a tool to facilitate recycling practices, encouraging a reduction in the total amount of waste generated at consumption level which in most cases goes to landfills (Schenck *et al*. 2012). In developed countries, increased rates of residents' participation in household waste separation and recycling have been recorded and this activity impacts positively on the overall waste systems (Colon and Fawcett, 2006). In developing countries, the adoption of S@S is at the early stages of development due

to low levels of economic development and long histories of mixed collection of household waste (Zhuang *et al*. 2008).

Literature on separation and recycling of household waste in developing countries is centred predominantly on the practical and direct factors (Troschinetz and Mihelcic 2009; Ukpong and Udofia 2011; Zhuang *et al*. 2008). Limited attention is paid to understanding the indirect factors influencing individual attitudes and motives towards participation in recycling by communities. However, research conducted by Corral-Verdugo (1997) analysed the indirect factors influencing community residents' participation in such programmes. Corral-Verdugo (1997) argues that environmental education and awareness play a vital role in recycling. Individuals are more likely to participate when aware and understanding of how to separate household waste and the reasons to recycle (Troschinetz and Mihelcic 2009). Thøgersen (1994) also outlines the consumer's waste handling behaviour in terms of one's motivation and ability and the opportunities presented to participate in the S@S programme. For the goal of increasing recycling rates in developing cities to be attained, householders and consumers should be provided with alternative waste handling activities as opposed to just one method (Buenrostro *et al*. 2014). These household recycling activities should consider householders' motives, beliefs and household economics for effectiveness (Troschinetz and Mihelcic 2009).

According to Burn (2006) there are particular psychologies behind every individual's recycling behaviours. People are more likely to recycle waste from their households when they are encouraged to do so through provision of items associated with recycling such as bags, bins or even recycling guides (Buenrostro *et al*. 2014). Moreover, positive recycling reinforcement strategies are emphasized by Burn (2006). She argues that offering residents incentives to recycle creates environmentally responsible behaviours as residents perceive them as encouragement to continue doing something positive (Burn 2006). By contrast, in the Saldanha Bay municipality, South Africa, the separation at source project instituted shows residents' positive attitudes towards recycling without being offered any form of incentive (GreenEdge 2017). In this instance, residents voluntarily participate in S@S after understating their contribution to environmental and social betterment (GreenEdge 2017).

Coupling some residents' perceptions of the environment and waste to motives to participate in recycling through separation at source can be closely linked to social

benefits from participating (Guerrero *et al*. 2013; Troschinetz and Mihelcic 2009). Aspects such as gender, age and household income are usually among the factors affecting participation in the urban areas of developing countries (Troschinetz and Mihelcic 2009). As a key aspect of gender is forged through the different roles played in households, communities and workplace by different genders (Samson 2003), the performance of recycling duties by women becomes constitutive of gender itself.

2.7 THE IMPACTS OF RELATIONSHIPS BETWEEN RESIDENTS AND WASTE PICKERS ON RECYCLING

Sustainability and effectiveness in recycling has transitioned to incorporate various actors in society where each group performs varied interrelated activities (Hayami *et al*. 2006). Thus capturing the scope of relations that emerge between waste pickers and community residents within waste networks has become relevant. Within urban communities or residential spaces of developing countries, waste pickers conduct their job of recycling and the majority have managed to forge social interactions with residents (Adama 2012; Samson 2008). Although there is limited literature on the relationship between waste pickers and residents, the relationship between informal street waste pickers and households has been assessed by Adama (2012) to some extent. This is because street waste pickers operate in close proximity with residents as opposed to landfill-based waste pickers (Hayami *et al*. 2006).

In the study conducted by Onyanta Adama (2012) in Kaduna, Nigeria, relationships between waste pickers and households or residents were more prevalent in low-income high-density areas. This is usually owing to easy accessibility in such areas and the fact that waste pickers' informal appearance is usually associated with crime in more affluent areas (Webster *et al*. 2008). In these areas, residents tend to participate in household recycling and separation at source activities and usually wait in anticipation of visits by waste pickers as service providers since such areas are known to be underserved, especially in the developing countries (Adama 2012).

According to Marello and Helwege (2014) in most middle-high-income communities, the relationship between residents and waste pickers is affected by the general perceptions of waste pickers and the perception that the work they do is dirty. Waste pickers are criminalised by local residents due to their appearances of informality (Hunt

1996). Hayami *et al*. (2006) explore relations in communities in which waste pickers were accommodated in some manner. In their study in Delhi, India, waste pickers who operated within residential spaces were divided into two categories, “pickers” and “collectors”, where pickers were the most informal. Collectors had better relations with residents as they purchased waste from them and approached residents in a more formal manner whereas pickers earned a living by picking recyclables from public spaces (Hayami *et al*. 2006). Clearly, in such instances, the relations that some waste pickers manage to establish with residents are based on monetary exchanges and bartering of household items for recyclables (Hayami *et al*. 2006; Adama 2012).

It is evident that some residents are willing to participate in household recycling and have established relationships with waste pickers provided they are offered something in return. On the other hand, as much as residents want to discard unwanted materials from their premises, they realise the value of such materials and become open for social relations which allows negotiations for both groups to earn an income. This further confirms that decent social interactions between community residents and waste pickers do exist in different spaces (Adama 2012).

Chikarmane (2012) perceives local governments as authorities that should mediate the recycling relations between waste pickers and residents. Municipalities are tasked with the duty of delivering refuse removal services to households, they understand the challenges faced by informal waste pickers, and they seek to maximise recycling rates (Chikarmane 2012).To some extent, this puts municipalities in a central and well-suited position to convene good relationships between residents and waste pickers.

The situation of organised waste pickers in Pune, India, (organised in KKPKP-SWaCH) who later became integrated into the municipal waste systems to deliver household recycling and encourage residents to separate at source, offers an example of a municipality’s intervention between residents and waste pickers (Chikarmane 2012). Moreover, the likelihood that residents would easily associate or relate with formalised waste pickers operating in communities under municipal authorisations is contended by (Adama 2012). When the KKPKP waste pickers approached residential households in decent work uniforms and presented identity cards, residents perceived them as legalised service providers and the relationship between them matured (Chikarmane 2012). This resulted in increased recycling and separation at source rates and better municipal, residential, waste-picker and environmental returns.

2.8 CONCLUSION

This literature review engaged debates on theories related to waste conceptualisation, MSWM, recycling as a strategy to manage MSW in developing countries, the role of waste pickers in recycling, and their need to be legitimately considered and integrated into formal waste systems. It also reviewed works on the role played by community residents in recycling projects and the effects of the relationships between waste pickers and residents on waste management systems. Essentially, the literature acknowledges that residents produce high volumes of municipal solid waste which waste pickers work with daily to recover recyclable materials from.

The different ways in which different people perceive and understand waste tend to influence attitudes, behaviours and decisions about what they do with the waste. In most cases, this ultimately impacts on the waste management systems, the environment they inhabit, and their own health and wellbeing. However, the literature on waste conceptualisations overlooks the producer's level of knowledge and awareness on the ultimate impacts regarding waste. Thus waste as an "aesthetic inconvenience" can be a consequence of the producer's (resident's) lack of awareness on sustainable ways to handle waste, which is an aspect the literature ignores. This study considers how waste is conceptualised and what decisions are taken in the presence of sustainable waste handling practices. The literature engaged argues that informal waste pickers' primary decisions towards waste entail making a solid livelihood, as waste is a valuable resource. However, the literature fails to elucidate that the impacts of their activities on the environment, municipal waste management systems and human health are, in a way, coincidental. This is because waste pickers were "pushed" into waste picking by their socio-economic characteristics and differences in society as opposed to willingly managing the environment. Thus waste picking, in essence, is an activity motivated purely by personal economic needs. The informal activities of waste pickers are, it seems, getting justified integration through recycling programmes which residents are part of. As this puts both residents and waste pickers in a common space of waste management, the emergent relationship ought to be evaluated.

This is important owing to the fact that the literature engaged reveals that more

emphasis has been placed on understanding the practical and direct factors pertaining to residents' decisions to recycle and less has been done to understand the indirect dynamics. This study contributes to these bodies of literature by bringing forth external and indirect factors pertaining to the ultimate effects of relationships between waste pickers and residents in the quest to attain sustainable MSWM through recycling.

Drawing insights from these bodies of literature has been beneficial as it also helped this research study to reveal, to some extent, the manner in which literature on integration commonly focuses on relationships between municipalities and waste pickers, while scant attention is paid to the external relations emerging on the ground and how such relations can improve household recycling and S@S. Moreover, the literature reviewed elucidates how municipalities can play a vital role in mediating such relationships.

In the following chapter, key concepts adopted to ground this study theoretically are presented.

CHAPTER 3: CONCEPTUAL FRAMEWORK

3.1 INTRODUCTION

The conceptual framework section engages key concepts applied in this study to investigate the relationship between residents and different types of waste pickers. These concepts help to provide a theoretical basis for this dissertation. The chapter details the way in which the concept of space is applied throughout this study. In addition, it provides the background and context in which the concepts “waste pickers”, “social relations”, “social closeness and intimacy” and “intersectionality” were incorporated into this study.

3.2 SPACE

Working within a Lefebvrian understanding of the production of space, Merrifield (1993) argues that space becomes a social phenomenon once individuals and collectives use and transform it by creating boundaries and attaching meanings to it. In its ordinary state, space retains a complex character and enters social relations undoubtedly at any given point (Gottdiener 1993). At one point, it refers to the physical environment that we perceive, then the corporate (conceived) space of planners and technocrats or rather, outstandingly, a medium through which a body lives in relation to other bodies: lived space (Merrifield 1993).

When embarking on the process of generating an understanding of the environment they find themselves in, various societies have seemingly particularised the form and meaning of space, producing a space which is understood to be accommodative to them (Merrifield 1993). When compared to abstract space (Merrifield 1993), social space is rooted in the practice of the everyday lived experiences that are usually expressed and materialised through action by members of society (Gottdiener 1993). Articulations of abstract space frequently apply supremacy on and try to control social space along with the everyday interactions between individuals with their continuous changes (Gottdiener 1993). On the other hand, social space constantly transcends conceived boundaries and regulated forms (Harvey 1993). The production and construction of space in the context of waste can similarly be perceived as a by-product of effective interactions between varied stakeholders and this sense of space is the one referred to throughout this research study.

3.3 WASTE PICKERS

Waste pickers, reclaimers and informal recyclers are terms used interchangeably in various regions of South Africa to refer to individuals who collect, sort and sell recyclable material recovered from waste as a way to maintain their livelihood (Theron 2010). Internationally, words like *cartoneros* or scavengers (in Buenos Aires, Argentina) and *catadors* (in Belo Horizonte, Brazil) are used (Dias 2016; Whitson 2011). The term "waste picker" was agreed upon by participating waste picker organisations and supporting nongovernmental organisations at the First World Conference of Waste Pickers in 2008 in Bogota Colombia for global commonality purposes (Samson 2009). This was found to be a less derogatory name since it denotes the actual activity waste pickers do, as opposed to terms like "scavenger".

The variations in the terminology around "waste picker" fundamentally depict the impacts of "space" and "place" when apprehended from a geographic standpoint (Whitson 2011). In addition, waste pickers conduct their work in different spaces: landfills, streets, households and currently in semi-formal waste recycling facilities which elucidate how their activities constitute social structures and social space. Economic, environmental and social waste experts have particularised most the identities, potentials and capabilities, and the socio-economic profiles which help understand the impacts of waste pickers' activities on formal waste management systems (Cosacov and Perelman 2015; Viljoen 2014). For the purpose of this study, three groups of waste pickers in Sasolburg were identified and considered in the context of the spaces they inhabit and in which they conduct their work: "landfill" waste pickers; "street" waste pickers; and semi-formal "recycling centre" waste pickers. This is done as a way to illuminate how the space where they conduct their work influences the form their work takes, the constraints that they work under, and ultimately the social interactions or relations they are each able forge with society.

3.4 SOCIAL RELATIONS

Social relations are frequently conceptualised in terms of social action or social interaction. Janusz Mucha (2003) defines social relations from Max Weber's work, as relationships which are commonly characterised by a mutual positioning of the action

of one body to that of the other(s). In this regard, the content of the relation between parties may be varied in nature, encompassing conflict, hostility, loyalty, friendship or even economic exchange (Mucha 2003, p.4). Meagher (2005) argues that associations of ethnicity, kinship, and mutual activities are central to social relations within urban networks. Although unified entities usually possess social relations that can be strong, the relations are likely to be effectively and effortlessly understood and maintained when such bodies exist in close proximities (Mashek and Aron 2004). Samson (2009) notes that in waste and recycling spaces, social relations which in some instances can portray hostility or conflict between bodies also exist and should, equally, be considered. In the case of this study, there are a number of parties who share a common interest in the recycling of waste. However, they do not share a common understanding of how this should be done. The primary relation explored in the thesis is that between the residents of Vaalpark and the semi-formalised Ikageng-Ditamating waste pickers. However, it also explores the historical and present relations between waste pickers operating in different spatial proximities from the Vaalpark residents and how the level of intimacy may potentially impact the social relations that emerge within waste and recycling spaces.

When exploring ways to address profound subjects such as stigmatisation, marginalisation and exclusion, scholarly work frequently identifies “social distance” as a key factor (Mashek and Aron 2004). As part of scholarship on relationships, social closeness or proximity stipulates public attitudes or the willingness to engage in relations of varying intimacy with the usually disregarded group in social spaces. Definitions and meanings of intimacy and social closeness differ across relation types. Throughout waste studies, waste pickers (particularly the ones in the informal recycling sector) undergo experiences of profound marginalisation and stigmatisation (Samson 2010; Whitson 2011) arising from the dominant stereotype that most of them are from poor backgrounds, as well as the cultural association of their work with filth (Marelo and Helwege 2014; Medina 2007a). As a result, few people want to form intimate relations with them. As the process of integration in Sasolburg has placed reclaimers physically close to residents in places typically considered to be private, the concepts of social closeness and intimacy are central to analysis of the forms of relationships that develop between different kinds of waste pickers and residents in different spaces.

3.5 INTERSECTIONALITY AND RACIALIZATION OF SPACE

Intersectionality signifies the concepts of race, gender and class all together, within which lie the social relations and ideological practices of difference and power (Bannerji 2005). Liberal discourses consider how these intersecting categories of identity (including race, gender and class) are residues of prejudice or discrimination within society and ultimately bears effects as negative as the way in which social power functions to exclude and marginalise those who are different (Crenshaw 1991). Considering race in a spatial context permits comprehension of how inequality is spatially organised and how spaces become comprehended and utilised in a racialized way (Neely and Samura 2011). This is because both space and race are co-constituted across location, at first glance, when one refers to space and race and, they are inevitably thinking racially about space and the implications get defined through the subsequent social relations and interactions which frequently comprise racialized orders (Neely and Samura 2011).

According to Bannerji (2005), what embodies race equally signifies gender, class and other aspects featured as facets of identity. Therefore, in the same sense, gendered spaces are particularised and equated to racialized spaces. This study was conducted in the white-dominated, middle-high income neighbourhood of Vaalpark in Sasolburg, where different groups of waste pickers (who derive from amongst the socially marginalised and economically excluded category in society) conduct waste recycling activities. As they move along and between different waste spaces/conditions, it becomes significant to consider the relations they establish with residents, particularly those inhabiting an economically and racially varied community.

3.6 CONCLUSION

The conceptual framework chapter presented key concepts and theories that, at a more concrete level, consolidate the different concepts and theories central to this study. These main concepts, which yield an understanding of various subjects, further informed the analysis of findings in order to impart theoretical meaning to the results. The following chapter provides the geographical context of this study and the methodological approach employed.

CHAPTER 4: METHODOLOGY

4.1 INTRODUCTION

Methodology describes the approach to or the manner in which information pertaining to a research study is collected (Mouton, 1996). This chapter details the methodology

applied to achieve the outcomes of this research study. The remainder of the chapter is divided into six sections: 1) a brief outline of the research sites; 2) support received for this study; 3) data collection and research methods; 4) data analysis; 5) ethical consideration; and 6) limitations encountered in this research study.

4.2 RESEARCH STUDY SITES

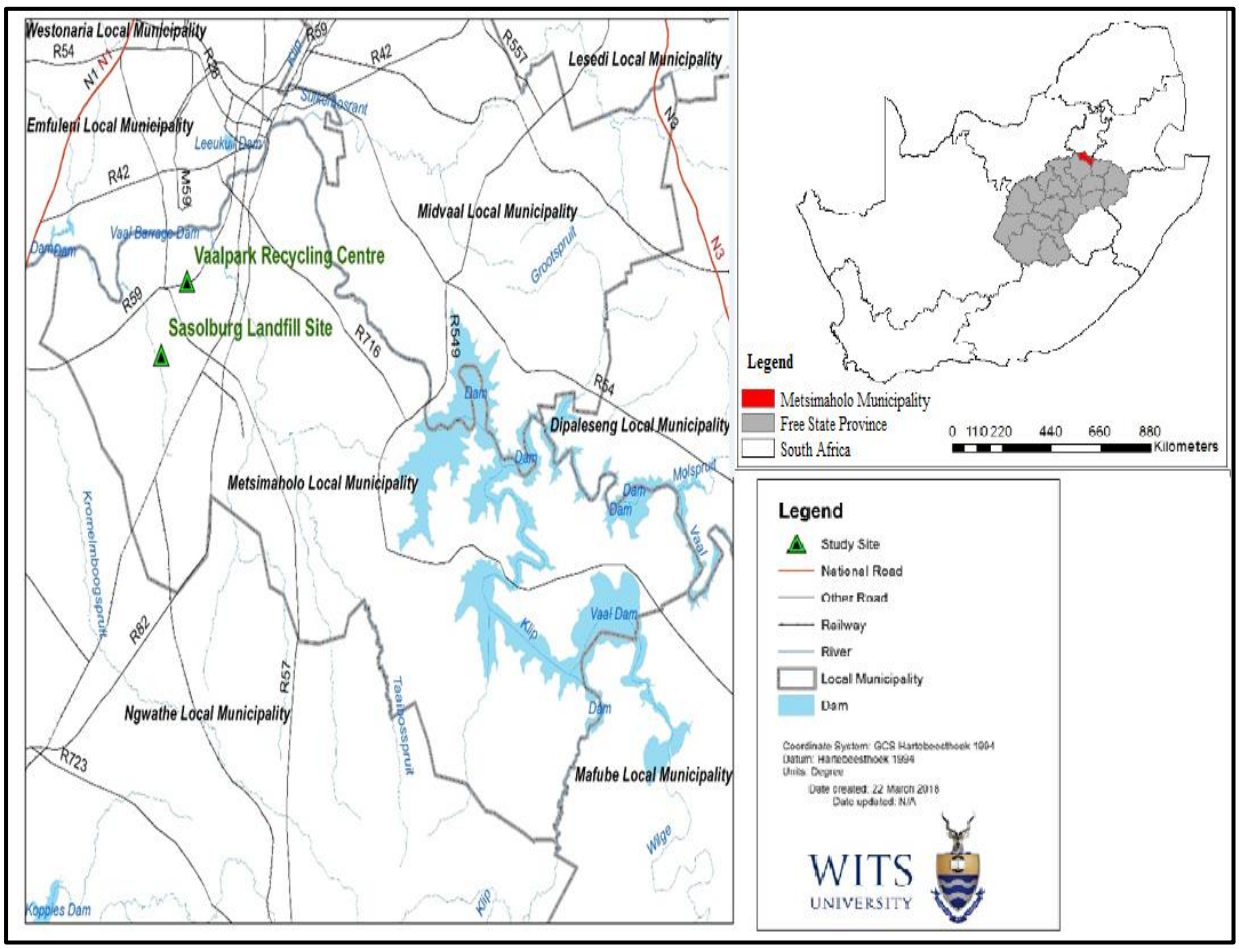

Figure 1: Study Sites Map

Source: Map by Researcher

This study was carried out in three sites: Vaalpark community, Vaalpark Recycling Centre, and the Sasolburg Landfill Site. All the sites are situated within Sasolburg town in the northern Free State province of South Africa. Sasolburg was established as an industrial town in 1954 and owes its existence to the petro-chemical industry company, SASOL (South African Coal, Oil and Gas). According to Sparks (2012), prior to

massive industrialisation brought by the company, the majority of Sasolburg's early residents were rural "Afrikaaners" who mostly became SASOL employees. With modernisation, housing and other essential facilities were provided to residents in communities such as Vaalpark (Sparks 2012).

Sasolburg attained its official town status in 1967 and its refinery is known to be one of the only two viable coal-derived oil refineries globally (MLM 2016/2017). Metsimaholo municipality is the local municipality within which the study sites fall. The municipality has a total population of 154 658, with households estimated to have increased from 32 360 in 2001 to 37 320 in 2016 (MLM 2016/2017). Metsimaholo Local Municipality consists of Sasolburg, as a bigger town, and Deneysville and Oranjeville as smaller towns in this municipality. Sasolburg takes up 58.56km² of the 1717.0680km² municipal geographical area, with a population of approximately 153 038 (MLM 2018).

4.2.1 Vaalpark

Vaalpark is considered one of the affluent urban neighbourhoods within the municipality, and it is situated five kilometres north of Sasolburg town (MLM, 2018). Remarkably, the one Vaalpark resident who provided detailed descriptions of the neighbourhood's history noted that before 1948, the community did not belong to any municipality and this resulted in them formulating a small committee. According to the resident, all residents were required to pay a levy to the committee to take care of basic services (Interview, Resident #3, 13/09/2017). From 1954, Vaalpark was considered part of the municipality called Metsimaholo Local Municipality (MLM 2016/2017). It is known to be an economically prosperous urbanised area with the total population of 10 682 inhabiting 3 175 households (Statistics South Africa 2011). The population includes people previously classified Africans, Coloured, Asian/Indian, but Whites constitute majority of Vaalpark residents (Statistics South Africa 2011).

Owing to these racial characteristics, 79.33% of Vaalpark residents speak Afrikaans as their first language with Sesotho being the second most spoken language (Statistics South Africa 2011). It is further indicated in the 2016 Integrated Development Plan (IDP) that the majority of Vaalpark residents are Eskom and Sasol employees and retired older people; others work in the public and private sectors (MLM 2016/2017). Most of the early households in Vaalpark were built to accommodate Eskom and Sasol

workers (Interview, Resident #3, 13/09/201). In the Vaalpark study site, residents, semi-formal waste pickers and informal street waste pickers were the focus of this study.

4.2.2 Vaalpark Recycling Centre

The Vaalpark Recycling Centre is located along the R59 road within the Vaalpark community. The Recycling Centre was established in November 2014 and it serves the purpose of delivering separation at source or household recycling services to the Vaalpark community. The recycling centre is operated mainly by a waste picker cooperative (Ikageng-Ditamating) which consists of waste pickers who formerly worked at the Sasolburg landfill site reclaiming recyclable material. Thus the centre also serves as evidence of how waste pickers are capable of bringing recycling activities into the community, creating more secure livelihoods, and improving the environment (WIEGO 2016). To date, the waste pickers running this recycling centre have invested great effort to rehabilitate the site, which is alleged to have previously been an illegal dumping spot for the Vaalpark community residents (Interview, waste picker #1, 08/08/2017). For the purpose of this study, the Vaalpark Recycling Center was a site that allowed for semi-formal waste pickers, some residents and the S@S project to be studied.

4.2.3 Sasolburg Landfill Site

The Sasolburg landfill site was established in 1951 and is situated 3.6km from the Sasolburg town within Metsimaholo Local Municipality (Samson, 2008). Waste at the landfill site is obtained from households, commercial and industrial areas around the Sasolburg town; it is comprised of both recyclable and non-recyclable materials (MLM 2015). The waste disposed of at the landfill averaged 90 tonnes a day in 2008 (Samson 2008). In 2015, the total tonnage of waste disposed of at the landfill has increased with an increase in population and urbanisation, and the trend is expected by the local municipality to continue (MLM 2017). Due to such increased waste disposal rates, the Sasolburg landfill is allegedly reaching its lifespan as the airspace is running out and the process for identification of a replacement disposal site is underway (MLM, 2015). The landfill consists of approximately fifty informal waste pickers. Both male and female waste pickers based at the site work on a full time basis. The age of waste pickers at the landfill site is between 23 and 65 years. Most of those

found on site during this study spoke seSotho as a home language and were South African citizens.

4.3 SUPPORT FOR THE RESEARCH STUDY

This research study forms part of a project titled “Lessons from Waste Picker integration Initiatives: Development of Evidence-based Guidelines to Integrate Waste Pickers into South African Municipal Waste Management Systems,” coordinated by Dr Melanie Samson with CSIR-DST-DEA as funders. Dr Melanie Samson secured permission from the municipality for the research to be conducted.

In Sasolburg, the overall project included three master’s research projects: this research on residents, another project focused on waste pickers, and another focused on the municipality. Since all the students were from Johannesburg and unfamiliar with Sasolburg, conducting fieldwork together eased concerns related to travelling and staying alone in an unknown place. In addition, we were all contributing towards one broader project and we all understood the next person’s work. This helped in the sense that none of us had to feel as though important data was being overlooked. The procedure of working as a group also allowed for diversified academic support as we are from different fields of study and thus we have varied academic perspectives and backgrounds. Most interviews and important functions pertaining to this research study were attended and completed collectively.

Furthermore, conducting fieldwork simultaneously also assisted in overcoming some challenges related to interviewing residents. For my project, approaching residents at their homes and in their neighbourhood as a black female student was quite a challenging task, especially in a white dominated residential area like Vaalpark. This was one part where completing fieldwork collectively came in handy. Initially, when the researcher approached residents individually, they would make racial comments and state that they were not interested in participating in the study although they participated in the source separation project. In some instances, a complete sense of disinterest in engaging with the researcher prevailed and this was in cases where relevant data for this research study could be extracted. From such lessons, as a team of research students, we developed the idea of supporting each other by sitting in each other’s interviews. This approach succeeded in securing increased participation from

residents, providing me with a larger sample and enabling me to gather data on a wider range of themes and to extract worthwhile information.

4.4 METHODOLOGICAL RESEARCH APPROACH

This study employed a qualitative research methodology. According to Weiss (1994), qualitative research is comprised of extensive descriptions and assimilates numerous viewpoints while its flexibility offers room for probing if responses require further clarity. Corbetta (2003) affirms that adopting a qualitative approach in a research study that aims to obtain insight into situations and challenges is worthwhile. It offers in-depth descriptions of procedures and knowledge related to the issues at hand and allows for the opinions of respondents to contribute to the outcome or results of the research (Corbetta 2003). This methodology was well-suited for this study as it is researcher-oriented and treats the participants as subjects and not objects (Mouton 2009). This enabled the researcher to gather relevant information pertaining to the situation that residents and waste pickers in Vaalpark find themselves in.

The primary aim of this research was to conduct a critical analysis of relationships between Vaalpark residents and waste pickers operating throughout this geographic space since the inception of integration. Thus, a qualitative approach was relevant as the study had to probe processes, changes in waste pickers' working space and residential space, as well as transformations in relationships between waste pickers and residents.

4.5 DATA COLLECTION AND RESEARCH METHODS

In qualitative research, the meaningfulness and reliability of the research is emphasised (Taylor *et al*. 2015). Qualitative research methods and tools permit the above-mentioned as they offer a sense of proximity to the empirical world (Taylor *et al*. 2015) and allow for unfiltered first-hand knowledge obtained from participants to be presented. In this study, application of diverse research methods including semi-structured interviews, focus groups, mapping and observations ensured the validity in this study (Mouton 1996). The methods were selected based on their appropriateness to answer the overarching research question and the subsidiary questions for the

study. Further, an analysis of various policy documents was incorporated to provide necessary insight. The use of all these methods facilitated comprehension of the state of the relationship between Vaalpark residents, the partially formalised waste pickers at the recycling centre and the informal street waste pickers. Figure 2 below shows how each method was engaged and contributed to answering the overall research questions.

Research Question	Targeted Participants	Research Methods
How do residents identify and perceive different waste pickers and their work?	Residents and different waste pickers	Interviews, observation, mapping
How has waste picker integration into delivering S@S transformed the relationship between different waste pickers and residents?	Semi-formal waste pickers delivering S@S and residents	Interviews, mapping
What change in residents' understandings of household waste has occurred since the S@S project started?	Residents	Documentary analysis, interviews
How, where and when do residents and different waste pickers relate and what aspects mediate the relations?	Residents and different types of waste pickers	Observations, interviews, mapping, focus groups

Figure 2: Research Methods Table

4.5.1 Sampling

For a study that is concerned with investigating human histories and process within a community, sampling, as a part of the qualitative research method, is of key importance. It generates credibility on the information or data collected in the field. Leedy and Ormrod (2013) note that as an initial step that every research should consider, sampling helps in overcoming the danger of the researcher carrying out a biased study. Katz (2006) defines sampling as a means of selecting sets of units within a population in an area and this assists in collecting information that enables interpretations to be made. Sampling can be divided into two types: probability and non-probability sampling. Probability sampling requires that samples are selected at random or by chance, and assumptions are made that the sample is a representation of the overall population it came from (Katz 2006), whereas non-probability sampling is subjective and purposive. For the purpose of this study, the latter was found to be a more suitable framework, within which purposive and snowball sampling techniques were derived.

Tongco (2007) defines purposive or judgement sampling as the deliberate selection of an informant based on their known qualities or level of expertise in a specific domain. In this regard, the key informant was recommended by Dr Melanie Samson, who, as the supervisor and a waste research expert, had established relations with a number of individuals in Sasolburg and Vaalpark who could provide worthwhile information for this study. As a point of departure, purposive sampling necessitates that the researcher searches for specific cases with a certain purpose in mind while conducting field research (Neuman 2000). Integrating purposive sampling into this study was effective as it helped the sample to grow. The technique led straight into the snowball technique and aided recruitment of varied subjects from amongst their acquaintances, which yielded constructive outcomes from the research field. Snowball sampling also helps in instances where subjects of the study are difficult to access or when the research is being conducted in foreign neighbourhoods. In the case of this study, initial introductions at the Metsimaholo Local Municipality and the Vaalpark Recycling Centre by Dr Samson played a significant role. After Dr Samson introduced the researcher to Mr Abraham Tumaeletsi of the Vaalpark Recycling Centre, the snowball then grew as Mr Tumaeletsi knew some of the residents participating in the S@S project and street

waste pickers. He introduced me to some of these individuals who later became participants in the study.

4.5.2 Semi-structured Interviews

According to Wengraf (2001), semi-structured interviews entail question and answer sessions between the participant and the researcher on a one-to-one basis within the informants' natural setting. Such interviews possess high potential for increasing informants' level of confidence when giving responses to questions asked by the researcher. Unlike structured interviews, this type of interview is comprised of open-ended questions in order to allow unlimited responses to be made by respondents since they are not rigid, while at the same time probing for clarity on matters that may not be clear enough (Weiss 1994). In return, the quality of information obtained through these interviews is maintained and enriched as the researcher-participant interaction creates room to capture subjectivities through careful pacing and sequencing (Wengraf 2001). In this study, the researcher stands a good chance of being well-informed in terms of the subject so that relevant questions can be asked of relevant informants.

For the purpose of this research study, a total of thirty-five semi-structured interviews were conducted. Fifteen of the interviews were with waste pickers and twenty with residents. The fifteen interviews with waste pickers included seven with the semi-formal waste pickers at Vaalpark Recycling Centre, and eight with informal street waste pickers who were mostly black males aged between 25 and 62. All interviews with waste pickers were conducted in seSotho as their home language. Only one semi-structured interview included a female waste picker who worked at the Vaalpark Recycling Centre. Twenty interviews were conducted with residents; twelve were female and eight were male. The racial breakdown of the residents included ten white (six females and four males); five African (three females, two males) and five coloured (three females and two male) participants. All interviews were completed between July and October 2017.

Interviews with the white and coloured residents of Vaalpark were conducted in English while those with Africans were conducted in seSotho and English in some instances.

With most waste pickers, especially the ones operating at the Vaalpark Recycling

Centre, follow-up interviews were carried out as the fieldwork proceeded for clarity on some matters since the researcher transcribed some interviews while completing fieldwork. The assistance and support from a fellow student researcher during the interviews was also beneficial as she would bring up other relevant questions since she was conducting a similar study. Additionally, informal interviews were conducted in some cases, especially with landfill waste pickers. Although they were not this study's planned focus, their information became pertinent during the data collection stage; insightful conversations which are regarded informal interviews were conducted with them. In this instance, there were no set guiding question generated by the researcher during proposal writing but the field data was significant in directing the conversations.

4.5.3 Observations and Participant Observation

Participant observation is defined by Kawulich (2005) as a method used in qualitative research in which the researcher participates in the daily activities, interaction or events of the group of research interest. By engaging with the group, the researcher learns the explicit aspects of their culture and better understands their everyday life through being part of it. Participant observation is viewed as a core fieldwork method in ethnography (Kawulich 2005) as it places the researcher in the midst of action and interactions and allows for first-hand data to be gathered. Atkinson and Hammersley (1994) state that in participant observation, the researcher can make overt observation by clarifying the intentions of the research study to the group being studied, or covert observation which implies the opposite. In the case of study, participant observations made were overt.

The initial intent of the study was to conduct basic observations which entailed no participation in activities of the groups being studied. However, as fieldwork proceeded, it became pertinent to participate in certain activities. The researcher planned to make trips on the recycling truck with waste pickers who collect recyclables from households in order to get a clearer sense of the neighbourhood and observe the average number of households that participated in the S@S project as a method. As noted above, when I made attempts to introduce myself as a research student to residents I encountered, the majority showed and mentioned their disinterest in being interviewed or even to be spoken to. They were generally dismissive without knowing my intention. As it was important for this study to interview residents who participated

in the S@S project, I introduced participant observation as an additional method. It became sensible to start dressing in a similar manner to the semi-formal recycling centre waste pickers from the Vaalpark Recycling Centre and helping out with collection from households. It was only at this stage that the residents became more welcoming and interested in sharing their insights pertaining to their relationships with the semi-formal waste pickers. In this regard, participating in waste collection of recyclables helped the researcher to gather important data from residents as opposed to merely observing.

Additionally, some of the findings or responses from residents necessitated further probing for clarity before incorporating such data into the study for validity purposes. As most residents who participated in the S@S project at the time of this study indicated that they cleaned up the recyclables before putting them in the recycling bin, the researcher felt it was essential to participate in the sorting of recyclables which is carried out by female workers employed by the cooperative at the Vaalpark Recycling Centre. The researcher conducted two days of sorting to observe and validate the legitimacy of the claims made by the residents.

4.5.4 Focus groups

Focus group discussions as a qualitative method are particularly beneficial especially when the researcher desires to study how matters are addressed or spoken about amongst the group of research interest. Mouton (2012) affirms that focus groups are crucial when employed to understand key social and cultural aspects of a group as important issues can be identified and discussed collectively. They range between eight and twelve members with the researcher as the facilitator of the discussion (Secor 2010).

Two focus groups were conducted for this study, one with waste pickers working at the Vaalpark Recycling Centre and the other with the informal street waste pickers. The former consisted of eight female waste pickers whose duty is to sort recyclables collected from Vaalpark households and Sasolburg commercial areas, while the latter was conducted with ten male street waste pickers as they came to sell their recyclables at the Vaalpark Recycling Centre. During the discussions, the researcher verified that each and every participant had an opportunity to voice their views on every topic covered in the session so that varied standpoints could be identified. The topics covered in both sessions centred on the relationships they as waste pickers have with

Vaalpark residents and how they feel about conducting their work in such residents' space.

4.5.5 Documents and Documentary Analysis

Bowen (2009) explicates that document analysis is a systematic procedure which encompasses reviewing and evaluation of relevant electronic or printed documents. This required the researcher to examine and interpret the documents carefully in order to elicit meaning, gain understanding and develop empirical knowledge (Corbin and Strauss 2008) For the purpose of this study, it was important to consult various policy documents on waste management and recycling. The Metsimaholo Local Municipality's Integrated Development Plan (MLM 2016/2017) and the Integrated Waste Management Plan (MLM 2017) were analysed in relation to the South African National Environmental Management Waste Act (Act No. 59 of 2008). Such documents provided an insight on the guidelines informing waste management and recycling practices within the municipality in which the study area falls. Moreover, documents attained from the Vaalpark Recycling Centre detailing the household recycling project's motive and functioning structure in the community were reviewed. Altogether, the documents served as useful tools of reference given that the study necessitated some context on the background of the waste management and recycling systems which were later contested or attested to by the findings of this research project.

4.5.6 Reflexivity Method: Research Diary and Maps

As Nadin and Cassell (2006) contend, a research diary can be employed in qualitative research as a tool or method which aids reflexivity throughout the research process. As a valuable tool, the research diary promoted insights which informed a myriad of methodological and theoretical decisions relating to and shaping the study (Nadin and Cassell 2006). During the entire research process, the researcher carried a research diary where she noted down important information and ideas from the events that occurred. Having a research diary assisted in tracking the changes that occurred from the inception (writing the research proposal) up to the final documentation of this thesis. It was found very helpful to also carry the diary to meetings, interviews and other gatherings where important information pertaining to this research could be quickly noted.

In addition, when trying to navigate and getting to understand the overall areas of study interest, maps played an essential role as the researcher was completely unfamiliar with Vaalpark and Sasolburg. Maps presented visualisations and depicted aspects of space and place which were crucial for consideration in positioning this study (Gomez and Jones 2010). During a preliminary visit, I was able to view a map of the entire municipality hung in one municipal office which included the research area. An additional map was obtained and printed out from Google Maps and I marked areas of interest and carried this map with me throughout fieldwork. This assisted me in navigating around the neighbourhood and made it easier for me to ask residents and people in the research area for information on what may be happening at specific points portrayed on the map.

Since the core focus of this study was to understand relationships between residents and waste pickers, it was noteworthy to consider mapping as Lefebvre (1991) affirms that spaces are socially produced and how they are perceived is embedded in how they are experienced. Therefore, the use of maps shed light on some social aspects of the community which the researcher may not have taken note of. These included things such as the routes used by waste pickers as they conducted their daily/weekly duties and the reasons behind such decisions. Thus the use of maps in understanding Vaalpark further raised the researcher's desire to comprehend the kind of relationships waste pickers had along the routes they preferred taking around the neighbourhood. Furthermore, mapping helped in noting and tracking streets' names where the researcher could go next as the study proceeded; hence carrying a copy of map of the study area throughout fieldwork was useful.

4.6 DATA ANALYSIS: THEMATIC CONTENT ANALYSIS

For the purpose of this research, thematic content analysis was employed to analyse the data. This analysis approach is defined by Braun and Clarke (2006) as a theoretically flexible approach to analysing qualitative data by examining themes or patterns in relation to different epistemological and ontological assumptions. The application of thematic analysis in research arises from its capacity for providing rich and detailed accounts of data. After data collection, all the data collected are called

the data corpus and divided into data sets for a particular analysis such as interviews within a category or particular topic as well as data items such as individual interviews.

The data set is organised and described in detail including the interpretation of various aspects of the research topic (Braun and Clarke 2006). For this to be a success, the data, research questions and overall research topic were formulated in such a manner that they correlate with each other, allowing the final write up to convince the reader as it is anticipated that it will contain sufficient evidence. One key advantage of employing the thematic content analysis method within this study is its flexibility while the shortcomings include the inability to present data in discussions in a more succinct manner as a result of comprehensive options in terms of analysis (Braun & Clarke 2006).

In the process of analysing data for this study, I initially created a folder whereby all the necessary data, both from the field and from different documents analysed was included. After this, I then surfed through with the purpose of obtaining data that could generate themes in line with research questions and aims. Under every theme, I grouped the data that concurred so that, later, such data helped generate arguments for this thesis.

4.7 ETHICAL CONSIDERATIONS

It is mandatory for every data collection process of research which is inclusive of humans as key informants to address the ethics aspect (Crow *et al*. 2006). This research study was carried out in compliance with the University of the Witwatersrand's Human Research Ethics Committee (HREC) requirements through which ethical clearance was granted. In this regard, the researcher applied for ethical clearance at the university's HREC board and was granted an ethics certificate (number H17/06/19) in order to conduct fieldwork for the study.

As authorised by the university's HREC board, human participants in this research study were provided detailed information prior to their participation. During the fieldwork phase, participants were provided with an information sheet which clearly outlined the research title, research aim, objectives and the envisioned outcomes thereof. Additionally, the information was clarified verbally (and in the preferred language) in assuring mutuality with participants, particularly in cases where limited

understanding of the subject matter and command of English language was experienced (Babbie 2013). All respondents were informed about their participation in the study being voluntary and that they could withdraw at any stage or refrain from answering questions they felt uncomfortable with.

This study sought to attain consent from all residents and waste picker participants, and addressing matters pertaining to confidentiality and anonymity was central (Babbie, 2013). In this regard, it was clarified that identifiable information regarding participants would not be disclosed without their consent, and their identity would not be revealed (Crow *et al.* 2006). Keeping the information provided by participants private was prioritised. Thus any subjective, confidential and sensitive information was treated as high rank and kept safely away from accessible areas throughout the course of this study. Inherently, no names and addressed were revealed without participants' consent. In cases where participants knew one another, for example in the focus group discussions, the researcher clarified that participants needed to respect each other's identity and keep information revealed by other members confidential (Crow *et al*. 2006). Moreover, it was clarified to participants that there was no sort of incentive that would be gained from participating in the study. All participants were aged above 20 years; thus no minors participated.

4.8 LIMITATIONS

Being a young black female student conducting research in a white dominated community posed several limitations to this study which were not envisioned. I had planned to conduct data collection particularly from residents by going through the community alone and engaging them. As noted above, this did not work. Residents were not willing to speak to me. The majority of the white residents assumed I was looking for a housekeeping job or begging for financial help as I approached them. To them, a black person walking through their community and trying to initiate communication meant these two things, which were not the case. Such dismissal occurred in several cases, posing limitations to this study as these were mostly residents that participated in the S@S project and could provide valuable information. In addressing this limitation, my supervisor arranged for a skilled white researcher, Jennifer van der Bussche to accompany me to assist in getting residents to participate. It was only at this stage where most white residents were open to participate. My

supervisor also arranged for a skilled black male researcher, Andries Mkhatshwa, to support the development of my skills in negotiating these spaces as a black researcher, as well as in interviewing waste pickers. Both forms of support were very useful and facilitated the gathering of data.

Moreover, the researcher found it difficult to intervene in focus groups sessions. Data gathered from the focus group discussions were not as insightful as envisioned or hoped during the fieldwork plan process. In this regard, I had to conduct one-on-one interviews with some of the participants who were part of the focus groups. This became very helpful because the participants were now freer to answer questions important to the study.

Limitations were also posed to this study in cases where scheduled interviews were cancelled by potential respondents. As a result, alternative participants had to be found. In the case of interviewing street waste pickers, difficulties were experienced as they did not have cell phones and could not be contacted for further probing of particular subjects as interviews had to be conducted there and then. Thus further clarification on some matters raised by this group of participants remains a limitation to date.

4.9 CONCLUSION

This chapter has presented the methodology and various methods applied in preparation and presentation of this research study. In any empirical research study, the use of various data collection methods is important as a means to enable data triangulation. This chapter also depicted the areas where this study was carried out and detailed the demographics of these sites. The way in which data from these areas was analysed has also been detailed. The importance of considering ethical matters in a research study on human participants was also highlighted. Also, the support received throughout the study as well as limitations encountered and how they were addressed was outlined in this section.

The following chapter looks at the legislation on waste in the country and how the Metsimaholo municipality has interpreted and implemented this legislation in managing municipal solid waste.

CHAPTER 5: NATIONAL WASTE MANAGEMENT LEGISLATION AND METSIMAHOLO'S RESIDENTIAL SERVICES

5.1 INTRODUCTION

This chapter discusses how the South African national waste management legislation addresses SWM challenges in the country. It considers the key aspects of the evolution of the national legislation between 1996 and 2011. The influence that the waste management hierarchy has had on the evolution of the national waste legislation is incorporated. This chapter also outlines the extent to which the Metsimaholo Local Municipality (MLM) has implemented its waste management strategies in accordance to the national legislation. The chapter provides a background on how municipal waste is managed within the study area and gives detail on how the idea of recycling and separation at source in Vaalpark came into existence. This discussion helps us understand how the municipality has tackled its duties of keeping the environment inhabited by its residents clean and safe for survival as far as sustainable waste management is concerned.

5.2 EVOLUTION OF THE NATIONAL WASTE MANAGEMENT LEGISLATION

The South African legislation on waste management is informed by Section 24 of the Constitution of South Africa (Act No 108 of 1996). Although the Constitution does not consider recycling and waste picking specifically, it stipulates that every citizen has a right to an environment that does not threaten or harm their health and wellbeing (The Constitution of RSA 1996). Within the Constitution (1996), it is also clarified that removal of household waste and refuse is a function of the local government through municipalities. In addressing effective and sustainable waste management, South Africa's route can be traced back to the foundation of the White Paper on Integrated Pollution and Waste Management in 1999. This was a policy focusing on pollution prevention, waste minimisation, impact management and remediation after the realisation of increased rates at which waste was being generated (Department of Environmental Affairs and Tourism 2000).

Subsequently, in 2001, the country held its first National Waste Summit in Polokwane, which addressed the challenges facing waste management in South Africa. The Department of Environmental Affairs and Tourism (DEAT) states that the vision of this

summit was to implement a viable waste management system which contributes to sustainable development by reducing waste generation and disposal remarkably by 2012 (DEAT 2005). The summit also agreed to attain a zero waste state by 2025 (Wiechers *et al*. 2002). This also implied that the country realise the need to improve the quality of life threatened by waste volumes. For this objective to be attained, participation and commitment from all residents in waste reduction, re-use and recycling activities was seen as a precondition (Wiechers *et al.* 2002). Therefore, the summit recognised the pressing need for all South Africans to contribute to waste minimisation, particularly at source.

In 2008, in the National Environmental Management Waste Bill represented the first time that waste pickers were mentioned in national legislation. This followed groundWork and allies' intervention on the need to acknowledge waste pickers' contribution in waste recycling activities and that such recognition ought to be stipulated in the country's legislation (Samson 2010).

Also in 2008, through the establishment of the National Environmental Management: Waste Act (NEMWA) No 59 of 2008, the state recognised the threats presented to its citizens by the ever-increasing volumes of waste in the country. Thus the development of the Waste Act puts in place measures that seek to reduce the amount of waste generated by ensuring that waste is re-used, recycled and recovered in an environmentally sound manner before being safely treated or disposed of (RSA 2014). In this regard, the primary and most vital steps for protecting the health and wellbeing of the people and also the environment were the state's responsibility. Aspects of the NEMWA essentially added on to the already established plans which the National Waste Summit stressed.

The National Waste Management Strategy (NWMS) was established in 2011 to facilitate and enforce implementation and attain the objectives of the NEMWA (RSA 2014). The NWMS binds all organs of the state including municipalities, and encourages sustainable actions in all spheres of government and by residents of the country (DEA, 2011). The approach included in the NWMS outlines the establishment of programmes at local levels that target re-use, reduction, recovery and prevention of waste in areas where waste is produced (DEA 2011), particularly households. In this regard, separation at source was established in various metropolitan municipalities as one of the programmes that not only addresses environmental and health aspects but

also generates job opportunities for the urban poor (Godfrey *et al.* 2016). The quest to attain an unpolluted environment and not threaten the health of the people, through implementing sustainable strategies, is informed by the pressing need to curb some of the 1.8 million tonnes of waste produced nationally on an annual basis (DEA 2012).

5.3 THE WASTE MANAGEMENT HIERARCHY

Generally, the evolution in the South African national waste legislation and management presented above has been based on the principles of the waste hierarchy (DEAT 2000). According to DEA (2012), the waste hierarchy offers a holistic approach and provides a systematic method for managing waste throughout its lifecycle (DEA 2012). As depicted in figure 4.1 below, the waste hierarchy promotes the actions of waste avoidance; reduction, re-use, recycling, recovery, treatment; and safe disposal as a last option. The waste hierarchy has been emphasized in all of the waste legislation and policy discussed in the previous section. In this regard, more materials from what is regarded as waste should be recovered and recycled with the least being safely disposed of. The waste management strategies put forth at the national level are drawn from the waste hierarchy which is a method also considered internationally in the waste sector (DEAT 2000).

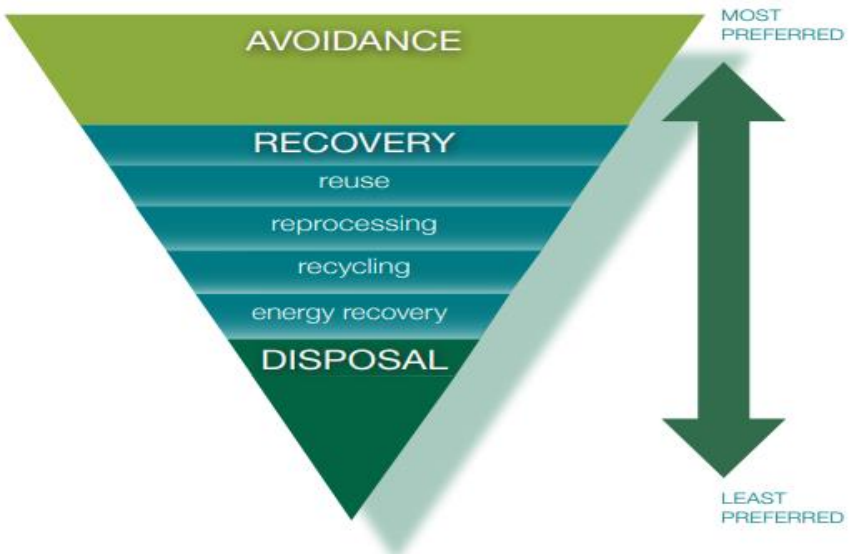

Figure 3: The Waste Management Hierarchy

Source: The Waste Authority (Australia) 2014

As part of the local government's responsibility for SWM, municipalities in South Africa are encouraged to put in practice the principles emphasised by the waste hierarchy (DEA 2012). Municipalities in the country are expected to set standards for avoidance and minimisation of generation, re-use, recycling and recovery of solid waste (DEA 2011). In response, some municipalities have introduced the idea of separating waste at source which in turn affirms the principles of the waste hierarchy. By separating recyclables from waste at household level, the amount of waste municipalities divert to landfills essentially decreases. This intensifies the recovery and re-use of materials and further addresses the environmental and socio-economic challenges posed by increased volumes of waste.

5.4 LOCAL WASTE MANAGEMENT STRATEGIES

Every municipality in the country is mandated to have effective and feasible waste management policies and by-laws (DEA 2012). As the sphere of government closest to communities, municipalities have a particular responsibility to deliver and improve basic services including waste management (The Constitution of RSA 1996). However, the Constitution does not include recycling as a municipal responsibility as the need for the country to recycle waste only emerged later. Metsimaholo Local Municipality is tasked to manage waste produced by its local residents. In this regard, the municipality realises the importance of developing and structuring its goals and objectives in accordance with national strategies to minimise waste (MLM 2015). The objective developed by the municipality pertaining to waste management entails the provision of affordable, effective, efficient, economical and accessible waste management services to all its communities (MLM 2016/2017).

Historically, the total tonnes of MSW generated throughout MLM, of which most goes to landfill sites, has increased gradually (MLM 2016/2017). This is the case in most municipalities across the country. Figure 4 below shows the total tonnes of waste generated in different areas of MLM that was recorded in the year 2015, which was mostly disposed of at the Sasolburg landfill site. Both recyclable and non-recyclable materials are included in MSW. It has been recorded that recyclable materials, which included plastic bottles, plastic film, paper, glass, and metal cans, made up about 65 percent of the waste disposed of at the landfill site (IDP, 2016). Discarding such recyclable materials has become problematic as the Sasolburg landfill's airspace is

alleged to be running out and alternative measures have to be considered by the local municipality (MLM 2017).

AREA	2008 POPULATION	*PER CAPITA* WASTE GENERATION	GENERATED WASTE (TONS/DAY)	GENERATED WASTE (TONS/ANNUM)
Sasolburg	26 513	0.8	21	5515
Zamdela	99 389	0.3	30	7752
Deneysville	22 948	0.6	14	3580
Oranjeville	3 703	0.5	2	481
Rural	20 895	0.2	4	1087
TOTAL	**173 448**		**71**	**18 415**

Figure 4: Waste Generation in Metsimaholo Local Municipality

Source: MLM (2015/2016)

During the time of this study, the municipality utilised its five year IDP as the principal strategic planning tool to address all areas necessitating efficient management and sustainable development, including waste management (MLM 2017). Within the IDP (MLM 2017), the forthcoming compilation of an Integrated Waste Management Plan (IWMP) is stated. This is a separate policy document within which municipalities detail all the plans to address challenges pertaining to waste management. It is also noted that the current lack of an IWMP as a municipality posed difficulties when addressing waste challenges (MLM 2017). Currently, the core functions and strategies aligned with waste management include general refuse collection to households and business areas, street cleansing and landfill/transfer sites (MLM 2015).

Prior to 2015, the municipality included in its Draft IDP (MLM 2015) a section covering an IWMP. In this section, it is stated that basic refuse removal services are provided to about 40 000 residential households and 800 businesses in its urban areas ranging from medium to high income (MLM 2015). Rural and industrial areas are excluded from the municipal waste management service with the latter being serviced by relevant private contractors. Figure 5 below depicts the status quo of areas of focus

and activities pertaining to formal waste management in MLM.

SERVICE CATEGORY	SERVICE ASPECTS CONSIDERED
Refuse removal	Waste generation, collection system, collection equipment, personnel, residential, commercial, garden refuse and builders' rubble, medical and hazardous waste, mining industry, obvious
Street Cleansing	Regularity of service, equipment, personnel, obvious needs
Landfill Sites, Transfer Stations and Bulk Containers	Waste generation, collection and transportation, personnel, equipment, landfill operation, transfer stations, garden refuse sites, obvious needs

Figure 5: Municipal Waste Management Focus Areas

Source: MLM Draft IDP (2015/2016)

As pointed out in the IDP (2015), approximately 78.9% of households in 2011 had their waste removed at least once a week, which increased by 18.7% as compared to 2001 (MLM 2015). As a socio-economic aspect, the total tonnage of waste generated by households inhabiting this local municipality vary respectively, with the affluent regions contributing more which is the case in any other local municipality in the country. For the purpose of household waste management, the municipality uses a black bag system in which the residents are required to purchase bags and store their weekly generated waste (MLM 2015). This is unlike in other urbanised towns where bags and receptacles to store household waste and recyclables are provided to residents by the local municipality or insourced waste management companies. The municipal refuse removal personnel have no maximum number of black bags and receptacles that it collects from individual households and every household is expected to place such bags and bins on the curb outside the premise.

Due to the realisation that most waste from urban areas also contains a significant amount of garden waste, the municipality has established a garden waste facility as an additional strategy to manage municipal waste (MLM 2015). This facility is situated in Vaalpark and residents from anywhere within the municipality are expected to drop-off garden waste. The waste is at a later stage transported to the Sasolburg landfill for disposal (MLM 2015). As highlighted in the IDP, separation of garden waste is conducted after the realisation that mixing organic waste with general refuse waste

was problematic and the market for such waste is currently inaccessible (MLM 2015) It is estimated that 15% (2 762 tonnes) of the total annual waste stream in the municipality is organic refuse (MLM 2015). The garden waste is dumped along with household refuse at the landfill sites. Specific waste records ought to be documented by the municipality as a way to help develop strategies around waste management going forth.

As depicted in Figure 5 above, formally, the municipality only renders basic waste collection services which do not encourage recycling or re-use by residents. Although the municipality outlines the importance of having waste minimisation strategies in place, they are currently not implemented via the formal waste management system. Thus the process of integrating the semi-formal waste picker cooperative which runs the Vaalpark S@S project is under consideration by the municipality (Interview, waste picker #1, 08/08/2017). The two members of the cooperative interviewed maintained that integration into the municipal waste systems has been on verbal terms as opposed to being documented legally in the municipal IWMP (Interview, waste picker #1, 08/08/2017).

The Vaalpark Recycling Centre (which will be fully discussed in the next chapter) was established by former landfill waste pickers in MLM who were members of the South African Waste Pickers' Association (SAWPA). It runs as a SAWPA pilot project that delivers S@S services to the Vaalpark community. The municipality mentioned this project and other waste picking activities as strategies accessible to and introduced by the informal sector (MLM Draft IDP, 2015/2016). The idea of integrating informal waste pickers into municipal waste management systems is currently at peak throughout the country; thus the informal sector in MLM is gaining recognition to some level. Their informal activities supplement the municipality's strategies aimed to reduce, recover, re-use and recycle waste and this essentially addresses the national waste legislation. Such informal activities do not only present sustainable waste management practices but also contribute to job creation and poverty eradication within municipalities (Blaauw *et al.* 2015). It can be argued that integration in MLM is being approached from a bottom-up angle as the informal waste sector has introduced programmes which left the municipality with no option but to include them formally. In some municipalities, integration has entailed the local government developing programmes (such as

Jozi@work introduced in the City of Johannesburg) and bringing in the informal sector to participate in the projects (Sekhwela 2017).

5.5 CONCLUSION

This chapter presented the extent to which Metsimaholo Local Municipality has adopted the national legislation on sustainable waste management. As the national waste legislation evolves, it continues to highlight the importance of waste minimisation and how this can be attained by adopting the principles entailed within the waste hierarchy. On its own grounds, the Metsimaholo local municipality has only focused on delivering general refuse removal services to its local residents and has barely incorporated these principles. The basic municipal service whereby waste is merely collected from households and diverted to landfilling tends to overlook environmental and socio-economic sustainability. Over time, this becomes problematic and calls for alternative waste strategies which ought to be sustainable. This chapter showed how the municipality has worked and continues working with the informal sector to pursue waste minimisation through recycling activities. The chapter also discussed that the informal waste pickers are gaining recognition throughout the municipality since their contribution to managing MSW has been integrated.

In the following chapter, recycling and separation at source activities studied throughout the study area are discussed.

CHAPTER 6: WASTE PICKER SPACES AND ACTIVITIES IN SASOLBURG

6.1 INTRODUCTION

This chapter focuses on the spaces where different waste pickers are found and where they conduct their activities pertaining to municipal waste recycling. The chapter also depicts that although these activities are operational within the municipality, the informal waste sector has been central to the establishment of these functioning structures. Recycling activities carried out by informal waste pickers at the Sasolburg landfill site are presented. Secondly, recycling activities studied in the streets of Vaalpark conducted by informal street waste pickers are presented. Lastly, recycling and S@S activities conducted by semi-formal waste pickers at the Vaalpark Recycling Centre are presented.

6.2 RECYCLING BY INFORMAL WASTE PICKERS AT SASOLBURG LANDFILL SITE



Figure 6: Waste Pickers at the Sasolburg Landfill Site

Image by: Researcher

Sasolburg landfill is one of the three landfills found within the Metsimaholo Local Municipality. The other two which are smaller in size are Deneysville and Oranjeville/Metsimaholo landfills (MLM 2016/2017). The Sasolburg landfill has been functional for the past 67 years (Samson 2008). As depicted in the previous chapter in Figure 5, most of the domestic and industrial waste generated across the Sasolburg town gets diverted to the Sasolburg landfill site. The quantity of waste being disposed of is alleged to have increased drastically in the past years (MLM 2015). As discussed in the earlier chapters, continuous disposal of increased waste quantities becomes a challenge to the environment and ultimately a threat to human health when merely discarded by the municipality and left unattended (Sembiring and Nativattananon 2010; Shafiul and Mansoor 2003).

A number of informal waste pickers are present at the Sasolburg landfill site recovering and recycling some of the waste disposed of as a way to address their livelihoods (Schenck *et al*. 2012, Samson 2008). Studies on informal waste picking/reclaiming frequently point out urban poverty and high unemployment rates in developing countries as a reason for an increased number of waste pickers (Marello and Helwege 2018; Medina 2008; Samson 2008, 2010a; Schenck and Blaauw 2011). Informal waste pickers also stated these economic factors as a push into recycling waste at the landfill (Informal interviews with waste pickers at the landfill, 18/07/2017). Coincidentally, their activities have provided benefits to the local MWMS and the environment as their recycling activities help to reduce waste. The quantities of waste recovered by waste pickers working on landfills have increased the lifespan of most landfills. As Dias puts it, local authorities tend to “reap a lot of benefits from the informal waste sector actively without paying for them” (Dias 2016, p.377).

Materials being reclaimed and recycled by waste pickers on the landfill included paper, plastic, cardboard, metal cans and scrap, which at the end amount to a large quantity. This affirms their significant contribution to the municipal waste management system. On average, waste pickers mentioned that they recovered and sold enough materials to sustain their families. Both female and male waste pickers were present on site, gathering all sorts of recyclables.

As a way to integrate waste pickers and safeguard their livelihoods through formalisation of their work, organising waste pickers into cooperatives has been gaining ground in the country. The initial steps of organising consisted of groundwork's visits to several landfills throughout South Africa to map out the number of waste pickers in the country (groundwork 2014). Waste pickers at the Sasolburg landfill were also encouraged to organise into cooperatives (Samson, 2008). At this stage, waste picking was barely legalised in the country and relationships amongst waste pickers, and between them and municipalities, were generally hostile (Samson 2008). This was also the case for waste pickers at this landfill.

Before 2008, informal waste pickers on the landfill organised into groups and formed cooperatives, namely Ikageng and Ditamating (Samson 2008, Interview Semi-formal waste picker #1, 08/08/2017). Each group reclaimed different materials: Ikageng dealt with scrap metal while Ditamating collected paper, plastic and glass (Samson 2008, 2010). The cooperatives collapsed as a result of conflicts amongst members, but in 2008 reconciliation was found when a 21 member cooperative called Ikageng-Ditamating was formed (groundwork 2014). This cooperative was the leading force driving the S@S pilot project. In 2011, members of the cooperative moved from the landfill site to operate at the Vaalpark Recycling Centre following an idea of formalisation of waste picking (Interview, Semi-formal waste picker #1, 08/08/2017). Municipal officials were involved in negotiations pertaining to the move (Interview, Semi-formal waste picker #1, 08/08/2017).

This study conducted observations and informal interviews at the landfill site where some waste pickers who remained still conduct their recycling duties informally. Some of the waste pickers found on the landfill site stated they had left Ikageng-Ditamating cooperative and came back to work informally at the landfill. Reasons for this included financial dissatisfaction when operating as a cooperative and preference for working individually which permits autonomy.

During fieldwork for this study, there was no formal recycling project from the municipality or any infrastructure available for the waste pickers working at the landfill. This is the same finding as that from the study conducted at the landfill by Samson (2008). Apart from the fact that recycling by waste pickers at the landfill is no longer

prohibited, recycling activities are absolutely informal and seemingly not supported in any way by the local municipality. The only municipal involvements entailed municipal trucks as they came to dispose of the waste, visits by the supervisor, and one person who did administration on vehicles coming to the landfill site. Informal waste pickers used small shacks which they built on site to store their reclaimed materials in preparation to go and sell them. Various middlemen frequently visited the site to buy recyclables from waste pickers, while some stated that they collectively organise their own transportation to go and sell recyclables elsewhere (Informal Interview, 18/07/2017). While criticisms are raised of reclaimers' behaviour at the dump, the way that they work and engage with municipal workers and the community is shaped by the lack of support from the local municipality and the absence of any process for the waste pickers to access waste in a more organised way (Samson 2009; Schenck et al. 2012). As discussed in the methods chapter, the current everyday of the landfill waste pickers was not explored as they were not the primary focus of this study. No formal interviews with them were conducted.

6.3 RECYCLING BY INFORMAL STREET WASTE PICKERS IN VAALPARK

Recycling of waste by different informal street waste pickers is known to be a consequence of poverty and scarcity of formal work opportunities in developing urban areas; thus scavenging recyclables from kerbsides is no surprise nowadays (Schenck *et al*. 2012: Schenck and Blaauw. 2011). Informal street waste pickers are small-scale, self-employed agents, usually seen pulling their trolleys packed with recyclables along the streets in most cities (Schenck and Blaauw. 2011). Throughout the data collection phase of this research study, street waste pickers included in such descriptions were spotted in Vaalpark. Their continued existence even after the S@S project was established demonstrate that there is not hundred percent participation by community residents. Thus the street waste pickers serve the residents with scant knowledge about the project in the community and amongst those who decided they are not interested in participating in S@S.

Although there exist a number of street waste pickers in Vaalpark, this study managed to conduct interviews with eight street waste pickers, whose responses are incorporated here. Those interviewed all salvage recyclables from the kerbside and

some have established relationships with specific households whereby residents keep recycled material for them. All of them indicated they have been working in this area for longer than ten years. For these years, they have been coming to salvage in Vaalpark every Wednesday. This is because they follow the municipal refuse removal and on other days they go to different communities when municipal collection occurs (Interview, Street waste picker #4, 03/10/2017). Even though this indicates they are not an everyday sight, all Vaalpark residents interviewed also substantiated that street waste pickers have long existed in their vicinity.

Informal street waste pickers in Vaalpark studied recovered materials from the garbage bins and bags where they collected, amongst others, paper, plastic, glass and metal cans. Their continued collection of such materials also contributes to environmental sustainability as the amount of waste going to landfills gets reduced (Samson 2010). Medina (2008) points out that materials recovered by street waste pickers tend to be preferable in the waste market to materials recovered at landfills. Since kerbside salvaging is conducted at source or closest to where it was produced, the recyclables are mostly still in a better condition when sold to middlemen (Medina 2008). However, one street waste picker indicated that the quality of recyclables is usually not considered by middlemen as they get the same money regardless of the material condition (Interview, Street waste picker #4, 03/10/2017).

Materials recovered by street waste pickers are usually sold to recycling buyback centres or, in some instances, are retained for personal use (Samson 2010). In Vaalpark, some of the street waste pickers were observed selling recyclables to the Vaalpark Recycling Centre. In this case, street waste pickers collect recyclables from Vaalpark households which do not participate in the S@S project and sell them to the semi-formal waste pickers running the S@S project. Interestingly, this depicts how street waste picking still remains an informal activity in the area whereas waste pickers from the landfill site have moved a few steps up the value chain. When asked how they felt about selling to other waste pickers, one street waste picker responded:

> *I really do not mind selling the stuff here, we have to support each other as waste pickers and this also helps with not having push my trolley very far where I will get paid slightly more…so it not worth it, I am okay with selling here…* Street waste picker #7, 04/10/2017.

According to the street waste picker quoted above, he has previously been offered an opportunity by members of the waste picker cooperative running the Recycling Centre to come and work with them. However, the street waste picker declined because this meant that he would be regarded as an "employee" who gets an income from the cooperative instead of being a "waste picker" who determines his own daily/monthly earnings (Interview, Street waste picker #7, 04/10/2017). This finding aligns to other studies which reveal that waste pickers prefer to conduct their work flexibly as autonomous individuals (Medina 2008; Sekhwela 2017; Millar 2014). On the other hand, the data collected from interviews with other street waste pickers revealed that they were not aware of the opportunity to work for the cooperative.

Some street waste pickers appeared to not be happy with the S@S project in Vaalpark. These street waste pickers pointed out that although the project is a form of formalisation of waste picking as a livelihood activity, the project should have started by incorporating them as street waste pickers first (Interview, Street Waste #6, 04/10/2017). By pointing out their long history of salvaging materials in Vaalpark, street waste pickers noted that they had better, established relationships with the residents, as opposed to waste pickers from the landfill currently delivering S@S (Interview, Street waste picker #7, 04/10/2017). As a result, these street waste pickers decided that they would not sell materials they recover in Vaalpark to the cooperative but rather walk long distances to go and sell elsewhere. One street waste picker made the following statement:

> *…the people who started the project were a bit unfair to us as street waste pickers…they could have included us in the plans before considering waste pickers from the dump, I mean we have been working here longer…yes they did try to invite me to come work there after the project had already started but I refused because I cannot have another waste picker as my boss…I would rather work the way I always did and go sell my things elsewhere…the project has even reduced the amount of recyclables we recover and so we do not make as much money like before.* Street Waste Picker #6, 04/10/2017.

Clearly, some street waste pickers feel that project has negatively impacted on their source of livelihood and has altered the relationships they had with some of the Vaalpark residents. As the street waste picker quoted above indicates, considering the

fact that they (as street waste pickers) were already working in Vaalpark before the project came, the plans to establish S@S in the community could have considered them first. In this sense, the relationship that the informal street waste pickers who were interviewed have with the communities they recycle from is very crucial. It allows for efficient collection of recyclables and saves them time, but now the S@S project has to some extent altered this aspect.

However as Marello and Helwege (2014) and Medina (2008) elucidate, integration and formalisation plans are more likely to consider informal waste pickers organised in cooperatives as opposed to individuals. Street waste pickers in Vaalpark work as individuals and this has always been the case since they started (Street Waste Picker #4, 04/10/2017).

As a result, the S@S project has seemingly invaded the spaces where street waste pickers work as they now recover less recyclables. This is because they now only have access to waste from households that do not participate in the S@S project. However, one street waste picker indicated that they realise how organised waste pickers working in a project is better than remaining informal (Street Waste Picker #6, 04/10/2017). As such, they indicated they were planning to come together as street waste pickers and communicate with SAWPA regarding assistance and support to establish a similar project in another community around Sasolburg (Interview, Waste Picker #6, 04/10/2017). Therefore, the waste picker cooperative delivering S@S in Vaalpark has not only invaded street waste pickers' work spaces but also created room for them to acquire lessons in sustainability. .

It was also observed that some of the street waste pickers had a form of association as they frequently walked in small groups. When probed, the majority highlighted that this is because they all live in the neighbouring low-income or rural areas and only came to Vaalpark for work. Therefore, they walk the long distances to Vaalpark community together as none of those interviewed resided in Vaalpark. Only male street waste pickers dominated in the study area: there was not a single female street waste picker spotted during the time of this study. This affirms that street waste picking is physically strenuous as it entails walking long distances while pulling a heavy trolley, which is labour intensive (Schenck *et al*. 2016; Samson 2010). Female waste pickers also opt to not work in the streets because they are more likely to be victims of crime

in the streets (Gutberlet and Baedar 2008). In this regard, street waste picking is grounded on a gendered self-selection notion (Schenck *et al*. 2016).

6.4 RECYCLING BY SEMI-FORMAL RECYCLING CENTRE WASTE PICKERS

The Vaalpark Recycling Centre was established in November 2014 and it is currently operated by Ikageng-Ditamating Cooperative (Interview, Semi-formal waste picker #1, 08/08/2017). It is considered a waste minimisation facility and it was established after negotiations between SAWPA, PACSA-SA (the South African Packaging Council) and Ikageng-Ditamating cooperative. The motive to start this project followed an international trip to Brazil undertaken by PACSA and SAWPA (groundWork 2014) where lessons on waste pickers organised into cooperatives, working in similar projects, were found suitable for the Sasolburg instance. The project is mandated to provide household waste recycling or separation at source services to approximately 3000 households, including flats, as well as business areas in Vaalpark (SACN 2016).

At the time of this study, the majority of the 21 original members of Ikageng-Ditamating had left the cooperative and returned to the landfill site. The remaining eight members brought on board additional people to work with them in the recycling project (Interview, Semi-formal waste picker #2, 08/08/2017). Eight of these people are regarded as “workers” at the Recycling Centre as opposed to cooperative members as they were hired to assist with work at the Recycling Centre, but have not become members of the cooperative. In total there were sixteen individuals engaged in various recycling duties. The eight cooperative members refer to themselves as waste pickers and the others are workers, including the driver of the Recycling Centre truck. The project is at an advanced stage as the shift from undesirable conditions of informality is observable, especially as some of these people previously worked at the landfill site. The waste pickers running the Recycling Centre have invested great effort to rehabilitate the site, which is alleged to have previously been an illegal dumping spot for the Vaalpark residents (Interview, Resident #1, 25/08/2017).

The Recycling Centre is tasked to collect separated recyclables from the households in Vaalpark every Thursday while the normal municipal collection of non-recyclables take place on Wednesdays. Due to conflicts with independent waste pickers (see

below for further discussion), it became necessary to differentiate the recyclable collection day from the day the municipality collects waste as a way to avoid conflicts with informal street waste pickers who roam Vaalpark streets on Wednesdays. Participating households are expected to place the orange-lidded wheelie bin outside their premise on Thursdays just as they do with the usual Wednesday municipal collection. According to groundWork (2014), the Vaalpark S@S project is one of four SAWPA pilot projects in the country. The others are Vusanani Environmental Project Primary Cooperative, the Mooi River Recycling Cooperative and Hlanganani ma-Africa Recycling Cooperative, which are found in other provinces throughout the country (groundWork 2014).

6.4.1 On-site Semi-Formality

Throughout the period of this study, the site was always well-arranged, with different materials neatly segregated, some into bins and others neatly corralled. The Recycling Centre is strategically divided into various segments with each serving a specific purpose. On one site where the big cages are placed, all female workers sort different recyclables from the cages into bags. Thereafter, the bags are placed in an adjacent section. On the other side, male workers conduct the baling duties which include compacting recyclable material such as plastic bottles and cans and packing them into huge carriages. In front of this section, there are smaller cages placed for drop-offs of recyclables, which are done by some residents of Vaalpark community. In the middle is plenty of space for vehicles to maneuver and a bit of landscaping dotting the grounds which leads to the mobile office near the entrance. The Vaalpark Recycling Centre reclaims any recyclable material, such as paper, cardboard, glass, metal, and all plastics collected by the Recycling Centre truck from households. Collection of recyclables extends to business and some governmental areas, who often call the Recycling Centre to come and collect recyclables which they may have produced instead of sending such materials to the landfill site.

The attempt to move informal waste pickers away from landfills into semi-formal projects is an overarching goal within the informal waste sector (Samson, 2015: groundwork 2014). This solution is seen as one way to upscale waste pickers within the waste economy or value chain (Godfrey *et al*. 2016). When waste pickers are working from such formalized spaces, they are easily approachable and more welcoming to visitors (residents in most cases) as the conditions they are in are

allowing for more courteous interactions as opposed to the conditions they were formerly working in at the landfill (Samson 2009). Moreover, such conditions are unlike dispossessing informal sector livelihoods through privatizing waste and granting similar opportunities to private companies (Samson 2015); this can be viewed as a better resolution because it places waste pickers in close proximity to where waste is generated in a more acceptable way.

6.4.2 Forms of Support for the Project

The data collected from semi-formal waste pickers at the Recycling Centre illustrates that support for the project and measures to sustain its functioning structure came from different stakeholders. The signage at the entrance of the Recycling Centre includes numerous logos inclusive of public and private stakeholders who have reached out to support the project. Amongst others, the logos entail government involvement through the Free State Department of Economic Development, Tourism and Environmental Affairs (DETEA), and the national Department of Environmental Affairs (DEA). Some of the private partners include the Packaging Council of South Africa (PAC-SA, which is now known as Packaging SA), the Polyolefin Recycling Company (POLYCO), and PET Recycling Company (PETCO).

GroundWork (2014) notes that the initial form of support was from the local municipality by contributing the land in Vaalpark from where the project operates. According to the waste pickers operating at the Vaalpark Recycling Centre, the land where the project is positioned was suggested by PACSA and SAWPA as they liaised with the municipality. They believed they would recover a lot of recyclables from households in Vaalpark after the realisation by the waste pickers that, while they operated from the Sasolburg landfill site, most of the waste that contained high volumes of recyclable materials came to the landfill on the days municipal collection was in Vaalpark (Interview, Semi-formal waste picker #2, 08/08/2017). This aligns with the findings of waste scholars who have indicated that affluent urban areas tend to produce augmented volumes of waste as a result of consumption behaviours adopted in such spaces (Gutberlet 2013; Marello and Helwege 2018; Medina, 2007)

When specifically asked about the overall local municipality's involvement, one waste picker answered:

> *The municipality only offered us authority over the land [on] which the Recycling Centre is built and running water. They have promised to provide us with electricity which we have been waiting for so long and we are still waiting until this day…* Interview, Semi-formal waste picker #1, 08/08/2017.

The waste picker further maintained that the delay on electricity installation by the municipality is making their working conditions difficult:

> *…we are unable to operate the computers donated to us by other stakeholders and also the baling machine we received from PETCO…this makes working difficult as we have to bale the recyclables by hand, it is also the reason why males are stationed to bale the recyclables as it is a heavy task for the females…also we struggle with things - accessing emails and launching an online page for the project - because the computers cannot be used…* Semi-formal waste picker #1, 08/08/2017.

Clearly, the municipality ought to adhere to its promise by installing electricity at the Recycling Centre. This will not only make waste pickers' working conditions better but may potentially encourage and attract other stakeholders to donate more electrical machinery for recycling to the project (Interview, Waste Picker #4, 09/08/2017). Moreover, the availability of electricity at the Recycling Centre will permit restructuring of the currently gendered labour with machines easing the heavy duties conducted by males.

According to the SACN (2016) workshop report, the cooperative receives no form of compensation nor is it subsided by the local municipality for the service it provides to the Vaalpark residents. This was also acknowledged by the waste pickers at the Recycling Centre during interviews. One waste picker maintained:

> *Even though the municipality acknowledges the importance of the services we render to the community, we are the ones funding the whole separation at source project with the money we make by selling the recyclables…also the same money is used for paying everyone's monthly salary which has been unstable… if we received a bit of money from the municipality it would be helpful…* Semi-formal waste picker #1, 08/08/2017.

As mentioned earlier, recognition of the project by the municipality is portrayed in some local municipal gatherings, but the lack of an official agreement with appropriate dispute resolution mechanisms remains a challenge (SACN 2016). The municipality is hardly involved in activities pertaining to the improvement of the project and thus educating the Vaalpark community and getting the residents to participate in the project has also been the sole responsibility of the cooperative with external support from organisations (Interview, Semi-formal waste picker #2, 08/08/2017). Cooperative members highlight that they received insufficient training on cooperative management, and that the minimum training that has since been received by the secretary of the cooperative was offered by the private sector (Interview, Waste Picker #3, 12/09/2017).

The provincial government, via the DETEA, reached out to support the project by fencing the area and contributing storage containers and a mobile office, while Fezile Dabi of the District Municipality paved a portion of the Recycling Centre and built a structure (Interview, Semi-formal waste picker #1, 08/08/2017). This section is currently used to store some of the recycled materials which the community often comes to buy and reuse, that is glass bottles used as jars. At the time of the research study, observations and clarifications were made when some residents drove into the recycling centre with school children buying such bottles for school projects. Therefore, in Vaalpark, the Recycling Centre is not only perceived as a place where unusable and unwanted materials are diverted but also as a place of reclaiming valuable and usable items.

Additional support for the project included 6000 wheelie bins from DEA (Interview, Semi-formal waste picker #2, 08/08/2017). Each household in Vaalpark was intended to receive two free wheelie bins as depicted in Figure 6.2 below, one for the recyclables (with an orange lid) and the other one for non-recyclable materials (black lid).



Figure 7: Wheelie bins from DEA as support for the Vaalpark S@S project

Source: groundwork (2014)

No research had been conducted on the need for such wheelie bins in Vaalpark, and some were left as not every household collected (GroundWork, 2014). When asked about what happened to the remaining wheelie bins, one of the waste pickers at the Recycling Centre responded:

> *"The recycling centre retained some of the bins which we store materials in here and the local municipality took some and distributed them to other communities which do not have S@S or recycling projects…these people were just given the wheelie bins to use for general waste storage…"* Waste picker #3, 12/09/2017.

The Vaalpark Project also received a total of R230 000 from a competition on community development which was run by the International Labour Organisation (ILO). This money was used by the project to purchase the truck used for the collection of recyclable materials (Interview, Semi-formal waste picker #1, 08/08/2017). Out of its own funds the project had to hire a driver and fund the fuel to operate the truck. PETCO further supported the project with cages used to store the recyclables, which are also placed on the truck as it collects recyclables) and personal protective equipment (PETCO, 2015).

6.5 CONCLUSION

This chapter presented the recycling and S@S activities studied. It clarified that although these activities exist within the municipality, they are carried out and maintained by the informal and semi-formal waste sector. Waste pickers established the S@S project and also went forth to recruit some of the Vaalpark residents to participate in household recycling. This chapter also showed that municipal involvement in all the recycling activities and the S@S project is minimal and in some instances even absent.

Therefore, the adoption and implementation of the national legislation which stresses the importance of waste recycling and minimisation have been a duty fulfilled by the waste pickers. Integration of these already established sustainable waste management structures into the municipal system presents a bottom-up position. Although participation in S@S by residents is present, it is not fully comprehended; thus the municipality's involvement at this stage can help increase participation.

The following chapter presents and discusses the residents' involvement in recycling activities.

CHAPTER 7: SEPARATION AT SOURCE BY VAALPARK RESIDENTS

7.1 INTRODUCTION

This chapter focuses on residents' participation in the current separation at source project offered by the semi-formal waste picker cooperative and workers at the Vaalpark Recycling Centre. Although the local municipality does not formally stipulate anywhere that residents should recycle waste from households, this study made an effort to understand the household waste recycling behaviours of Vaalpark residents. In Vaalpark, S@S was introduced by the semi-formal waste pickers running the Vaalpark Recycling Centre/Facility in 2014. Prior to this, residents hardly recycled their household waste. As stated above, the project distributed S@S wheelie bins to some households and required residents to store recyclables which the project collects weekly. This chapter starts by discussing residents' household waste histories so that the shift into the current model of separating household waste can be understood. The reasons for and decisions by some residents to not participate in the S@S project are also presented in this chapter. The findings on the roles that race, gender and age play in household waste recycling are also included.

7.2 BRIEF HISTORY ON HOUSEHOLD WASTE HANDLING: EARLY 1940s to 2013

According to the data provided by old Vaalpark residents (aged around 85 years at the time of the study), the first few houses in the community were built around the early 1940s (Interview, Resident #3, 13/09/2017). During this time, the houses were dispersed and only a few people resided in Vaalpark. As the community started to develop, infrastructure was very basic and the community did not fall under any local municipality (Interview, Resident #7, 19/09/2017). As a few more people joined the community, it only made sense to formulate a small committee to which all residents were required to pay a monthly levy to take care of basic services such as sewage (Interview, Resident #3, 13/09/2017).

In the 1940s, the common way that residents stated they relied heavily on to discard their household waste was illegal disposal of waste, which came after everything was mixed together at home (Interview, Resident #3, 13/09/2017). They mixed everything

that no longer served a valid purpose in their houses in one plastic bag or wheelie bin. Two residents emphasised that they were the only residents occupying the households during that time; thus the waste from their compounds would not be a lot to require a "fancy" way to be thrown away (Interviews, Resident #12; 02/10/2017 and Resident #4; 17/09/2017).

The old Vaalpark residents were then asked what steps they would take after mixing all the household waste they would have produced. Responses included:

> *…I would dump at different spots almost every time, on my way to work I would just [drop] the bag from my car in any kind of bush that I saw…it did not really matter back then".* Resident #4, 17/09/2017.

And:

> *This place was barely developed back then and nobody cared…some of us would dump the waste along the Vaal river banks and the besides the main roads.* Resident #3, 13/09/2017.

According to the residents, at that time nobody would really see the effects of their illegal dumping habits as there was only between four and eight houses per street and the households were mostly nuclear families, thus the population of Vaalpark was certainly small (Interview, Resident #3, 13/09/2017).

> *And then in 1948 as the community had now grown, the Metsimaholo local municipality incorporated us and it took care of our basic needs including household refuse removal…* Resident #5, 17/09/2017.

As discussed earlier in chapter 4, in 1948, the Metsimaholo local municipality included Vaalpark as part of the municipality. Vaalpark residents started receiving the one-day-per-week household refuse collection service which is received by most communities within the municipality. However, the only change that this method presented was where household waste was disposed as opposed to how it is being managed within the household. No waste minimisation strategy accompanied the introduction of the municipal refuse removal technique (Interview, Resident #3, 13/09/2017). Residents stated that this service has not always been reliable especially in cases where municipal strikes ensued. In such instances of irregularities in service delivery, residents would take the waste to the Sasolburg landfill. Most residents reported that

it was in these periods that they encountered landfill waste pickers. (The relationships between residents and landfill waste pickers will be discussed in the next chapter.)

This remained the case until the introduction of the separation at source project in 2014, discussed subsequently. Currently, the neighbourhood is generally well ordered like most historically white dominated communities in South Africa. The houses have transformed remarkably when compared to what the old residents interviewed described the structure of their neighbourhood to have been in the 1940s. The majority of houses are modern structures and service delivery and convenience in terms of important facilities (schools, shopping areas, parks, churches and so on) are well covered as outlined in MLM (2016).From the observations at the time of the study, the streets were generally quiet and clean, and littering was minimal in Vaalpark.

7.3 SEPARATION AT SOURCE BY VAALPARK RESIDENTS

Separation at source as a method used to recycle household waste was introduced in Vaalpark by the cooperative in 2014. According to waste pickers at the Recycling Centre, getting residents to recycle and keep the material for them was a task they facilitated themselves during the early stage of the project. Residents who received the message (some did not) regarding S@S and who were interested in participating collected the wheelie bin. Approximately 2000 households collected the bins and separate materials for the project (Interview, Semi-formal waste picker #1, 04/07/2017).

Out of the twenty interviews conducted with residents, ten indicated that they participate in S@S. Most of those who know about the S@S project and participate have either been Vaalpark residents for a long time or reside close to the Recycling Centre. Others indicated that although they did not get the message on what the project entailed they still went to inquire at the Recycling Centre. Amongst other materials, residents indicated they recycled paper, plastic bottles, glass and metal cans. Others indicated that they sometimes put clothing items they no longer need in the recycling bin as people working at the recycling centre might find them useful.

The Recycling Centre receives between four and seven kilograms of recyclables a week from all the households in Vaalpark which participate in the project (Interview,

Semi-formal waste picker #2, 08/08/2017). The image below depicts the amount of waste collected in a period of one week by the recycling truck from households and business areas that participate in S@S. Every Thursday, the recycling truck makes four trips within Vaalpark collecting recyclables and from each trip, one cage gets filled with recyclables which the females sort.



Figure 8: Materials collected from Vaalpark households

Image by: Researcher

Even though not all of the twenty respondents participate in S@S, to an extent the amount of recyclables being retrieved from participating households affirms the notion that households in middle- to high-income urban neighbourhoods tend to produce high volumes of waste. Thus such areas tend to have higher recycling rates as opposed to lower-income communities (Schenck *et al*. 2016).

Residents who were interviewed understood what recycling is and its importance to the environment and human health. However some, particularly the young age group, portrayed limited knowledge about S@S. Some of those who participate mentioned that even though S@S was not introduced formally in their community by the local municipality, they have seen people separate recyclables from waste at household level elsewhere. The majority of those who participate and have knowledge of S@S

include the elderly pensioners who are mostly white and of both genders. One resident made the statement below:

> *I know about recycling at home because my son who lives Johannesburg recycles…but there they have refuse bags from the municipality made specifically for household recycling…* Resident #8, 15/09/2017.

Participating households use the recycling centre's orange-lidded wheelie bin in which they were instructed to place the recyclables they produce at home. Along with the bin for recycling, residents were also provided a leaflet specifying the types of recyclables they should place in the bin as depicted in the images below. From the observations conducted, residents attached the pamphlets to their refrigerators in the kitchen. This was observed in a number of households where the researcher conducted interviews.





Figure 9: Images of the S@S pamphlets in some of the households

Images by: Researcher

One resident also stated;

> *…having the pamphlet in the kitchen is helpful with regards to being consistent in recycling and knowing what to put in the bin….this is also the one area in the household where most waste is generated…* Resident #16, 03/10/2017.

Similar responses were given mostly by old female residents. This study found that after residents have separated recyclables in their households, they have different preferred methods on how the Recycling Centre receives the materials. Some residents wait for the collection of the recycled materials by the Recycling Centre truck on Thursdays, while some drop them off at the Recycling Centre. After the realisation about the latter, waste pickers at the recycling centre established a drop-off section within the centre where it was convenient for residents to put recyclables (Semi-formal waste picker #1, 08/08/2017). This section consists of smaller cages as depicted below in which residents put their separated materials.

The study probed residents to ascertain reasons for choosing to bring in recyclables. Some residents indicated that they are hardly at home for the Thursday collection, while some said this option is more practical. Business people interviewed indicated that they produced a lot of recyclables and waiting for Thursday is not feasible; the truck still collected at some of the business areas even though they bring in recyclables numerous times a week. The waste pickers at the recycling centre confirmed that residents fill up the cages placed for drop-offs every week.



Figure 10: Recyclables dropped off by residents at the recycling centre

Image by: Researcher

7.3.1 Participation in Separation at Source by Gender

With regards to gendered participation in recycling, this study found that it was mostly male individuals that came to drop off recyclables at the recycling centre. However, after visiting a few households to conduct interviews and observations, it was maintained that participation within the household is done mostly by women. Essentially, the female residents agreed that they are responsible for most of the housekeeping activities within the house, and thus they tend to be in charge of what goes into the recycling bin. Observations from this study revealed that in several cases, female residents washed and cleaned things like milk bottles and meat carriage plastics before placing them into the recycling bin. When further probed, residents indicated that if they placed the recyclables with food remainders, they would smell and this will create more and unpleasant work for the people at the recycling centre.

It is noteworthy that semi-formal waste pickers at the recycling centre reported that recyclables from the households were very clean and in better condition than materials they used to work with while at the landfill site. Furthermore, the participant observations I conducted at the recycling centre validated this aspect. This affirms the notion that moving towards S@S increases the quality for the recycling industry as the materials are less contaminated as opposed to materials being retrieved from landfills (The Waste Authority, 2014).

Although men are also aware of what is to be placed inside the S@S bin, they become active and more involved at the stage where the bin has to be emptied. In the case of this study, male residents were found to be responsible for the disposal phase of the recyclables. In several cases, they were responsible for placing the wheelie bins outside at collection point on Thursdays. In other instances, males were found to be the ones taking the recyclables to the recycling centre in households where this was a preferred method for the recycling to access the recycled material. The results from this study show that there is not much significance in gendered participation in recycling as both male and female residents play an important role as far as S@S and recycling is concerned.

7.3.2 Participation in Separation at Source by Race

Although Vaalpark is occupied predominantly by white residents, there are residents of other races found in the neighbourhood. The majority of respondents were white,

followed by blacks and then the coloured population. From the white racial group, participation rates in recycling were the highest with the reason being that they constitute most of the population of the Vaalpark community. Moreover, the majority of the white research participants conveyed an understanding of the importance of recycling and keeping the environment clean and safe for wellbeing purposes. These reasons relate to the level of education of these residents: the study found that the majority had tertiary qualifications and this explains their level of understanding regarding activities that contribute to the sustainability of the environment.

The results of this study regarding different racial group's involvement in recycling are dissimilar to that of the study by Schoeman and Schmidt (2016) conducted in the city of Johannesburg in which the white population appeared to be the group participating least in household recycling. From the residents that did not partake in households, less interest in recycling was sustained given the fact that recycling at household level meant more work for them in the presence of the municipal refuse removal.

7.3.3 Participation in Separation at Source by Different Age Groups

Significantly, the results of this study reveal that the older and retired cohort of residents perceive participation in household recycling as a significant activity in the community. As stated above this category of residents value the idea of preserving the environment, especially in Sasolburg as an area experiencing augmented environmental injustices as a result of the presence of Sasol's operation in the area. So recycling, as a way of preserving the environment, will help make up for the impairment. On the other hand the youth and economically active perceive this differently. They want to engage in activities that make them income and recycling is not a priority and they feel, since they are already paying the municipality to take care of their garbage, the issue of recycling is irrelevant.

7.3.4 Factors Hindering Participation in Recycling

According to the data gathered, residents who did not participate in S@S had varied reasons for their decision. The main reason provided was the lack of time to devote to S@S as a constraining factor. Since the majority that do not participate are youth, they all highlighted that they had work responsibilities and thus time to separate recyclables from what they discarded appeared to be scarce and contributed to their decisions regarding recycling behaviours. This makes the condition of this study's results more

practical when paralleled with the increased rates of participation in S@S from the old and retired residents of the Vaalpark community. Other reasons included lack of awareness about the S@S project, lack of an S@S wheelie bin, a need for compensation to separate materials and the lack of adequate education on household recycling. The figure below depicts reasons stated by residents when they were asked why they did not participate in household recycling and the proportion thereof.

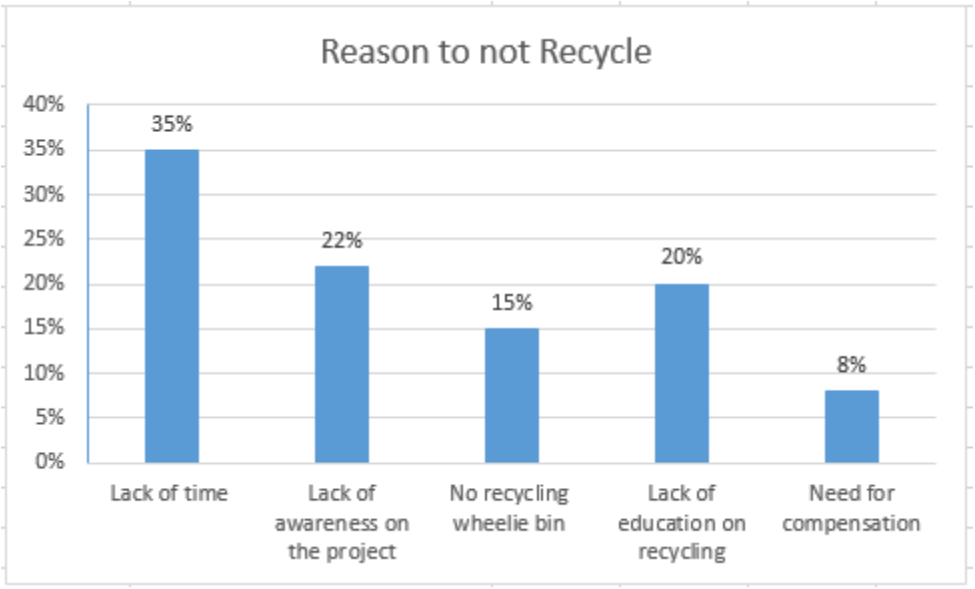

Figure 11: Reasons for not participating in separation at source

7.4 RESIDENTS' REMARKS ON THE SEPARATION AT SOURCE PTOJECT

Additional to an exploration of residents' understandings of and participation in S@S, the interviews allowed for residents to provide remarks on the overall project. Residents raised a few key concerns pertaining to the manner in which the project was introduced in their community. Residents feel that they were hardly notified or considered in the planning process of the S@S project being offered to them.

All the residents who participate in the project indicated that the municipality could have informed them as a community about their plans for bringing a waste picker cooperative to provide the service. As indicated above, most residents interviewed hold an understanding that the project is privately owned as opposed to it being a waste picker integration initiative. Such remarks from residents signify, supporting the

data collected from the cooperative, that there is minimal municipal intervention in the project. On this note, one resident mentioned:

> *I did not know that this project is more of a livelihood addressing strategy for waste pickers…because if I knew, I would support the project extensively…* Resident #16, 03/10/2017.

According to Medina (2008), sustainable waste management initiatives in developing countries should be approached from a community-based approach as this retains inclusive solutions from the ground. In this sense, communities should be central in waste management programme implementation as the services being designed will impact most on their lives. Additionally, when residents are included in decisions being taken, they are more likely to participate fully in the projects as they would have influenced the strategies (2005). In this study, there were four cases of residents who were fascinated by the idea of household recycling and S@S. Some had brilliant ideas on how the service can be improved and some are willing to offer financial help. In four interviews out the twenty conducted with residents, the interviewees suggested that after the municipality officially integrated the cooperative, they would be willing to pay a monthly recycling levy up to R10 on top of the municipal refuse removal charges they already pay. However, there is no one on the ground to move such information between the parties of interest.

7.5 CONCLUSION

This chapter has presented the change in waste practices by Vaalpark residents. Household waste management has changed drastically in the history tracked, to a point where households now find participating in the S@S project a sustainable method. The semi-formal Recycling Centre waste pickers in the cooperative have clearly played a vital role in changing the attitudes and behaviours of most residents towards households' waste.

Next, the dissertation presents and discusses the relationships studied between the different waste pickers and residents.

CHAPTER 8: RELATIONSHIPS BETWEEN RESIDENTS AND DIFFERENT TYPES OF WASTE PICKERS

8.1 INTRODUCTION

This chapter focuses on the relationship dynamic studied between waste pickers and Vaalpark residents. The different ways in which residents perceive or identify and interact with waste pickers are presented. Also, experiences that residents had with each type of waste picker are discussed as a way to explicate the relationship. The groups of waste pickers considered in this chapter include those operating at the Sasolburg landfill, the ones running the Vaalpark Recycling Centre (delivering S@S services) and also informal street waste pickers, as they all have had encounters with residents. It is noteworthy to indicate that different residents were interviewed in different spaces, with some in their households, some at the recycling centre, some in the streets and others at the Vaalpark shopping complex. Therefore, responses may have been influenced by what they were doing at the time of the interview.

According to the literature, waste pickers are looked down on, ignored and disassociated from in society owing to their informal appearance and the dirty work they conduct (Hayami *et al*. 2006; Samson 2010; Schenck and Blaauw 2011). This results in waste pickers having scant relationships with residents. However, in Vaalpark different waste pickers have managed to establish relationships with residents to varying degrees.

8.2 LANDFILL-BASED WASTE PICKERS

Nineteen out of the twenty Vaalpark residents interviewed in this study indicated they have been to the landfill in Sasolburg before. This was in instances when there were municipal strikes and on occasions where they forgot to put the garbage outside for the municipal collection. As some residents were not comfortable discarding such garbage in open illegal dumps within the community, going to the dump was an alternative.

8.2.1 Identifying Landfill Waste Pickers

Out of the twenty interviews conducted with Vaalpark residents, seventeen indicated that waste pickers are the people they would find working at the Sasolburg landfill site during the time of scant municipal waste service delivery as they would go to dump household waste at the landfill.

According to most residents interviewed, waste pickers at the landfill site generally portrayed violent characteristics towards them and seemed very desperate for recyclables (Interview, Resident #3, 13/09/2017). Typically, the waste pickers waited at an entry point to the landfill for residents' vehicles to come and discard some unwanted materials which contained recyclables. As indicated by residents, these waste pickers had a tendency of running and jumping onto the vehicles and unloading what they wanted without waiting for the residents to stop the vehicle, introduce themselves and then ask for assistance with unloading (Interview, Resident #1, 13/09/2017). Also they were spotted arguing and fighting amongst each other (Interview, Resident #3, 13/09/2017). Residents did not form basic relationships with the waste pickers, and due to the negative views they held of the waste pickers many residents referred to landfill-based waste pickers as "*aasvoels*" which translates to "vultures" in English. However, not all residents supported this dehumanisation:

> *In Afrikaans we call them "*aasvoels*"…which translate to "vultures" in English... For me, most of them are honestly trying to make a living out of waste, especially the ones at the landfill site…*Resident #3 (13/09/2017).

Communities where waste pickers work frequently associate them with crime (Moore, 2012). In this study, some residents stated that although the landfill waste pickers were not easy to deal with, and their activities were a nuisance as they sometimes burned fires at the top of the landfill, the waste pickers were less likely to come down to Vaalpark to commit crime. Due to how landfill waste pickers behaved towards the residents, the majority of residents interviewed believed that it was the distance from the landfill to their community that may have prevented landfill waste pickers from committing theft and mischievous acts.

8.2.2 Interactions and Experiences with Landfill Waste Pickers

When asked about some of their actual interactions with waste pickers at the landfill as residents, some answered:

> *…It was impossible to even greet the waste pickers at the landfill site due to how they were always ready to scare us off…the second time I went I had to go with my husband because I was nervous and after that we would request the guy doing our garden to go throw away the things for us…* (Resident #6, 14/09/2017).

> *…I went to the landfill with my husband to discard leftovers from building materials and other old things and as you arrive you get swamped by all these people and you do not even know what they are going to do to you*... (Resident #1, 13/09/2017).

Most of the residents pointed out that they could never have any form of authentic interaction with them as the landfill-based waste pickers did not give room for that to transpire. Thus, they did not even ask who they regarded themselves as but rather identified them. Unsurprisingly, the waste pickers' unreceptive behaviour left some of the residents, particularly women, in fear and dreading to ever go back to the landfill even if in cases they were obliged to. All the residents, especially the ones participating in the Vaalpark household recycling project, indicated that they were relieved since they no longer have the urge to go back to the landfill site.

As the study was assessing the extent of the relationship between residents and waste pickers, it became imperative to understand waste pickers' reasons on the issue pertaining to the behaviour of landfill-based waste pickers raised by residents. From the residents, all the encounters with landfill waste pickers transpired a while ago and this was during the time when some of waste pickers currently delivering the S@S service worked at the Sasolburg landfill site. In this regard, the study interviewed these waste pickers at the recycling centre and when asked about their relations with residents, one stated:

> *…working at the landfill site taught us nothing but to be not so welcoming…we were used to fighting amongst ourselves for recyclables as waste pickers since we all wanted to make money. So when people brought materials to the landfill*

we would all run to their vehicles in order to get recyclables, and we knew that the owners of the cars did not like it but we did it anyway…sometimes we even messed up people's cars… (Waste picker #3, 08/08/2017)

Clearly, the conditions at the landfill were not conducive to the development of positive relationships between landfill waste pickers and residents. It was further verified by these waste pickers that they were already in a position where competition and conflicts for recyclables prevailed amongst them as waste pickers and also between them and middlemen at the Sasolburg landfill site (Semi-formal waste picker #2, 08/08/2017). These waste pickers noted that an additional factor contributing to them behaving unreceptively was the fact that the local municipality had not legalised their existence on the municipal landfill at the time. Thus salvaging recyclables at the landfill illegally left them to live the "survival of the fittest" kind of life in order to generate an income.

8.3 INFORMAL STREET WASTE PICKERS

8.3.1 Identifying Informal Street Waste Pickers

*…apart from the ones at the landfill, I have seen the guys that come over pushing those big China bags and they rummage through the garbage which I put out on Wednesday…they get here very early in the morning, so when I go to work I see a lot of them in the streets… (*Resident #16, 03/10/2017).

…the street waste pickers have been working in our community for a very long time that we are used to their existence now, we no longer get surprised when we wake up to find them going through the garbage we put for municipal collection… (Resident #14, 02/10/2017)

From the above statements, it is apparent that informal street waste pickers and the activities they conduct have been accepted as a form of waste recycling in the community by some residents. Some residents interviewed referred to the street waste pickers as "trolley pushers" who they regularly see on the peripheries of their households going through the garbage. In this regard, street waste pickers provide a

form of separation at source service as their activities minimise waste that was supposed to go to landfill (Peres 2016).

Medina (2008) states that activities of informal street waste pickers do not only address their personal economic situations. Since they work in close proximity to community residents, street waste pickers are beneficial in these spaces in the sense that they raise awareness pertaining to waste management and recycling. Also from the statement above, it is apparent that some residents have accepted street waste pickers as a part of their community.

According to the data, the residents interviewed generally sympathised with the informal street waste pickers owing to the hardships associated with their work. Some residents perceived them as poor and jobless individuals who are simply taking a stand and doing something about their situation as opposed to beggars found in streets. To express acknowledgement of the presence of street waste pickers, some residents made comments like:

> *…if my trash can make him some money then that's good for him, he is free to take anything from it… (*Resident #14, 02/10/2017).

8.3.2 Interactions and Experiences with Informal Street Waste Pickers

Six out of the twenty residents interviewed indicated that it is sensible and tolerable to help someone who is already doing something to address their circumstance. These residents continue to support the street waste pickers. Four of these Vaalpark residents' support for street waste pickers extends to a point where they put aside separated recyclables for them every Wednesday. This saves street waste pickers time and they do not have to go through the messy garbage. One resident also added that "sometimes when they pass while I am at home, I even offer them food, water, jobs and clothes" (Interview, Resident #14, 02/10/2017).

Owing to their perceived characteristics and the broad conception that all waste pickers are underprivileged and socially marginalised (Marello and Helwege, 2014), there were two cases where residents mentioned having employed waste pickers to help with gardening or small house-renovation projects. The data from this study reveal that in cases where support for informal street waste pickers prevails, residents indicated they had no knowledge of the S@S project and thus the only form of

recycling they know is street waste picking. These are Vaalpark residents who did not receive the wheelie bin for S@S from the recycling centre.

Although some residents showed extensive support for the street waste pickers, three African residents had contrasting opinions and relationships with the street waste pickers. These included street waste pickers being a nuisance and their association with crime in the community. Complaints about informal street waste pickers included that they tore garbage bags apart as they searched for recyclables, they littered and left a mess of scattered materials in front of residents' yards. Such residents highlighted that they were not happy with street waste pickers for such reasons and thus they no longer allow them anywhere near their garbage. One resident mentioned:

> *Honestly I wasn't happy with the fact that they would open my bin and leave everything scattered on the ground and now I had to clean after them, so I ended up chasing them when I saw them opening or wanting to open our bin. (*Resident #12, 02/10/2017)

From the above experiences, other studies conducted on street pickers substantiate that indeed they often scatter the contents of garbage bags and bins in the quest to salvage anything valuable out of the waste (Medina 2008). Schenck and Blaauw (2011) contend that street waste pickers do not in all cases return all the garbage back into the bins after taking what they found valuable. In return, this increases municipal collection costs and in other instances cause residents to have negative perceptions of their existence in communities (Medina, 2008: Schenck and Blaauw, 2011). In such instances, the activities of informal street waste pickers are perceived as an annoyance (Interview, Resident #3, 13/09/2017). In seven instances, residents criminalised street waste pickers with regards to their appearances stating that they cannot be trusted as they are not part of any established structure.

Such experiences of residents hindered their associations with the street waste pickers, leaving them to find participation in the household recycling project practical and less chaotic. This group of residents (eight out of twenty) was found to be very reluctant to support informal street waste pickers and perceive them and their work as a form of disturbance in their communal spaces.

Additionally, residents were asked about their level of comfort or how they felt as street waste pickers rummaged through their household waste. Responses varied

considerably with those understanding and accepting of waste pickers in the community showing some level of comfort. Four out of twenty residents stated that they did not mind because they hardly discarded confidential items with their garbage. Contrastingly, certain residents were very sensitive about waste pickers going through what they had discarded and felt that they invaded their privacy. Such residents made the following remarks:

> *…your garbage is something you feel sensitive about…when someone exposes what you threw in there to your neighbours it's quite embarrassing and you don't want people who live next to you to start judging you… (*Resident #12, 02/10/2017)

and:

> *…It's a bit invasive and it is a bit intimidating because you don't know if they legitimate or are just opportunistic…and also they start judging you based on what you throw away. (*Resident #7, 13/09/2017)

Clearly, residents who made such comments are those who feel insecure and unsettled with the street waste pickers' presence in their residential spaces. They felt that street waste pickers are there to expose what they had discarded to other residents and such caused the feeling of discomfort. This is the case in instances where street waste pickers were alleged to make a mess from the garbage and leave it laying in front of the households. In such cases, residents highlighted that they ceased interactions with street waste pickers and they know they are not permitted to scavenge through their garbage to any further extent. Notably, these residents emphasised that they would feel more comfortable working with legitimate waste pickers or recyclers with formal appearances and belonged to a legitimate system. This referred to the semi-formal waste picker cooperative delivering the S@S service.

According to the data gathered from the informal street waste pickers, it is apparent that their relationship with residents is very crucial and beneficial as they are dependent on them to acquire recyclables. All the informal street waste pickers noted that having good relations with specific residents also lessens competition and conflicts over recyclables amongst them as waste pickers. In some areas of the neighbourhood, street waste pickers had residents keeping recyclables for them. This

study also observed some residents calling street waste pickers to come and collect recyclables from within their households. When probed, one resident said:

> *…what I do when I see the street waste pickers roaming around is that I give them whatever I can, even some of the stuff from the recycling bin which I am supposed to put out for the recycling centre on Thursdays and if I don't see them that's when I put everything in the recycling bin for Thursday...* (Resident #18, 04/10/2017).

When asked why she gave recyclables she had put aside for the recycling project, the residents responded:

> *… I just feel pity for them because I know what they want and it's so sad looking at them going through other peoples' garbage while I have sorted the things already. So I just call them and give them and I feel it's better when I support an individual as opposed to supporting a company. This project for me is more like a company.* (Resident #18, 04/10/2017).

Even though these are perceived as allowing relations in their working conditions in the streets, some waste pickers affirmed some contrary experiences with residents. Given that the neighbourhood is occupied predominantly by white Afrikaans residents, informal street waste pickers pointed out the difficulty in communicating with residents in some cases and also the general sense of fear while conducting their work. They indicated that it is completely different from working in other areas because the sense of freedom is limited and they have to be very vigilant.

During the observations, there were instances where some street waste pickers would discontinue salvaging if a resident emerged out of the house. In this rushed case, the street waste pickers hastily assured the resident that they would put back everything in a proper manner and not leave anything on the ground. In this case, the white resident had no intention of chasing the street waste picker away. The study made an effort to ask the street waste picker why he reacted the way he did and the response was:

> *…honestly we are very afraid working in white communities, sometimes the residents are nice and welcoming but in some cases they chase us away. So we are just trying our luck with them because their areas have a lot of*

> *recyclables. Some would tell us it's okay we can continue looking for things in their garbage while some just give us that strange look…* (Street waste picker #3, 20/08/2017).

To understand this matter further, the researcher asked some of the residents and the majority pointed out the extent of racism within the community. Some affirmed that it was not only waste pickers who had that kind of experience in Vaalpark but any other individual of a different racial background. When one new resident of Vaalpark who was coloured was asked about his sense of the neighbourhood and the kind of reception he has experienced thus far, he made the statement below,

> *…I have lived in different areas of this country but here it's totally different…here there is a more traditional backward kind of thinking. I think there's more racism here and usually racism in SA is a bit undercover but here the people are just explicit about it…so the reason why I don't think you'd find waste pickers leaving a mess here is because they are scared there'd be some kind of backlash or penalty against them…* (Resident #16, 03/10/2017).

From this statement, it is clear that the feeling of freedom or autonomy for street waste pickers in the community is quite finite and this is also perceivable to other residents. The researcher also had a similar experience while conducting the study whereby judgements about the intentions to communicate with certain residents were made based on my skin colour. In most cases, residents concluded that I was a black woman seeking employment from households as I approached some residents. In such instances when I approached certain residents who were white individuals, they would explicitly state that they were not looking for a worker nor have money to give me before I could even state my intention. This happened in several instances and when probed further with white residents who were willing to speak to me, they clarified that it a generalised notion throughout the community that when a black person attempts to speak to the white people, they are looking for a job or begging for money. Therefore, the degree of difficulty of being a foreign person in the community which includes street waste pickers was not just observed but also experienced by the researcher.

8.4 SEMI-FORMAL RECYCLING CENTRE WASTE PICKERS

All the twenty residents of Vaalpark who participated in this study were asked who they understood people operating at the Vaalpark Recycling Centre were.

8.4.1 Identifying Semi-formal Recycling Centre Waste Pickers

According to all of the residents, the Recycling Centre was operated by a small business or company, which studies on waste management and recycling usually refer to as “middlemen” (Godfrey *et al*. 2016; Medina 2007a; Sasaki *et al*. 2014 and Viljoen *et al*. 2015). This response is understandable, as waste pickers typically collect materials and then sell them to ‘middlemen’ in spaces that resemble the Vaalpark Centre. For the residents, as a small business, the Recycling Centre employed people who were seeking employment and their support for the project is therefore to sympathise with the underprivileged. By offering waste pickers at the recycling centre recyclables from their households, some residents believe they are contributing to job creation and poverty eradication in their municipality. This is to an extent the reality except that the people being supported are in fact waste pickers who formerly worked at the landfill site.

Such perceptions by the community are understandable due to the fact that the municipality did not host any formal introduction of the waste-picker-led cooperative’s operation at the recycling centre to the residents. When the residents were asked who the people working at the recycling centre were since they did not mention them when identifying various waste pickers in their community, the majority responded “I don’t know,” while a few answered that they were “recycling workers”. One respondent who was a cleaner in one of the households indicated that she knew some of the waste pickers at the recycling centre as they were all from the same lower-income community within the municipality. She was the only respondent who specified that they used to work at the landfill site as waste pickers (Resident #1, 25/09/2017).

One specific response from a resident was:

> *I don’t know who they are or where they came from, I just believe that this recycling project was opened by some corporate dude sitting somewhere in an office making money out of our recyclables through the poor recycling workers…* Resident #18, 04/10/2017.

Apart from their lack of knowledge pertaining to who really are the people delivering the S@S service, generally Vaalpark residents who participated in this study perceive these waste pickers as nice people with tranquil traits. One resident made the following remark:

> *…they are nice, friendly and decent people…they do what they promised to do. They don't disappoint and so I'm happy with their work. And also they taught us how to actually recycle, I had personally never done it before this project.* Resident #4, 17/09/2017.

Additionally, residents frequently remarked on how dirty and smelly the area where the Recycling Centre is positioned was before the waste pickers came and restored the space. Thus, their presence and the work they undertake in the community was mentioned to be appreciated by most residents.

Residents further specified that it is easier to associate with the semi-formalised waste pickers from the recycling centre because they come to their premises with a vehicle that has the name of their community on it. This creates some sense of belonging for the waste pickers and thus they are perceived as part of their community. It is also noteworthy that when the researcher drove with waste pickers on the recycling truck, it was only then when residents were more open to participate in the interviews as they associated her with the recycling project in their community. This demonstrates that residents feel comfortable and are more willing to help or support an individual who is part of an organisation or a system they are familiar with and can relate to. Thus, perceptions of an outsider are embedded in the manner in which they portray themselves to the residents. Figure 7.1 below depicts the truck used by the waste pickers to collect recyclables from Vaalpark households.



Figure 12: The S@S truck collecting recyclables from Vaalpark households

Image by: Researcher

Since all the residents had specified that they have been to the Sasolburg landfill site and had unpleasant interactions and experiences with waste pickers who worked there, the researcher explained to residents that most of the people working at the recycling centre were waste pickers from the landfill. Generally, the residents were astonished owing to their knowledge of the behavioural characteristics of landfill-based waste pickers who they never wanted to associate themselves with.

8.4.2 Interactions and Experiences with Semi-formal Recycling Centre Waste Pickers

Currently, the residents engage in completely differentiated interactions with Semi-formal waste pickers and their support for the project is extensive. Interactions between residents and waste pickers at the recycling centre extend to residents coming to the recycling on a daily basis to drop off recyclables as opposed to merely waiting for the once-per-week Thursday collection by the recycling truck. In some instances, residents phone the recycling centre to come and collect if recyclables were

forgotten on the day of collection or if they do not have a vehicle and the recyclables have filled the recycling bin before collection.



Figure 13: Interactions between a Vaalpark resident and a waste picker at the Vaalpark Recycling Centre

Image by: Researcher

From observations and interviews with semi-formal waste pickers at the recycling centre, there are several different reasons why residents come to the recycling centre. In addition to coming to drop off recyclables, some residents come to purchase some of the materials recovered from different households (Semi-formal waste picker #1,

08/08/2017). The centre is therefore promoting not only recycling but also reuse of materials discarded by other residents. Moreover, it was observed that as residents drive into the recycling centre with the intention of dropping off recyclables, there are always one or two male waste pickers who go to the vehicle to offer assistance. The waste pickers greet the residents and ask them if they need any help with the recyclables. Some residents go an extra mile by segregating different recyclables into different bags before bringing them to the recycling centre. When they arrive, the waste pickers would show them which type of recyclable goes in which cage.

8.5 CONCLUSION

This chapter has focused on the relationship dynamic between different waste pickers and residents. This was done through looking at how each group of waste pickers is perceived and identified, as well as the types of interactions residents have with each group. For the residents, the behavioural aspect of waste pickers based on the Sasolburg landfill was intolerable and they are associated with vultures. Residents and landfill waste pickers both understand that the relationship between them was constrained by the ways in which waste pickers carried themselves.

The Recycling Centre-based waste pickers have a more established relationships with Vaalpark residents owing to the formalised and presentable characteristics the S@S project delivers to the residents. Although residents have minimal knowledge of who runs the project, they continue to support it while some still consider the informal street waste pickers. Therefore, the relationships between the two groups of waste pickers and the residents are definable. Also the notion of proximity to residents provides an advantage for these waste pickers as opposed to those at the landfill site.

In the following chapter, an overall analysis of this study is presented.

CHAPTER 9: AN OVERALL ANALYSIS OF THE STUDY

9.1 INTRODUCTION

This chapter synthesises the research findings in light of the study's research questions, the literature engaged and the conceptual framework. It provides an overview of the subsequent relationship between different waste pickers and residents and how these relations impact on participation in household waste recycling or separation at source. The ways in which residents identify and conceptualise waste pickers influences the relationship they establish with them. However, these identities change as waste pickers move between waste spaces, from informal to semi-formal conditions. A number of enabling and hindering factor for residents' participation in S@S that were studied are also analysed in this chapter.

9.2 RESIDENTS' CONCEPTUALISATIONS OF WASTE PICKERS THROUGHOUT THE WASTE SPACES

According to Lefebvre (1991), different spaces are forged through a number of social structures and social relations. These do not only influence how one perceives and conceptualises them, but also one's lived experiences within such spaces (Merrifield 1993). Drawing from these arguments, it can be comprehended that residents' perceptions and understandings of the waste spaces are influenced by a number of factors and processes underway within their community. In the context of this study, residents identified and conceptualised waste pickers based on the spaces in which they conduct their work and the experiences they share with each type of waste picker.

Just as in scholarly works where academics use terms such as "reclaimers", "recyclers", and "scavengers" to refer to waste pickers in different regions (Dias 2016; Marello and Helwege 2014; Medina, 2007a and Samson 2008), similarly, a range of terms are used by residents. In this case however, the notion of "space" where waste picking occurred presented room for such identifications. Residents referred to landfill-based waste pickers as "*aasvoels*" (vultures), street waste pickers as "trolley pushers" and semi-formal waste pickers as "employees of a private company".

As Meagher (2005) argues, unified groups usually possess social relations that are strong and effectively maintained; social relations in hostile or conflicting groups are

also existent and should be equally considered. Owing to the informal working conditions - lack of a defined process to access recyclables and lack of municipal or any formal support or intervention at the landfill - waste pickers in this space tend to behave in a hostile manner towards residents who visit the landfill (Samson 2009). Competition for recyclables between landfill waste pickers prevails and as residents come to discard such materials, landfill waste pickers find this as an opportunity to gather as many recyclables as possible from residents. Ultimately, such conflicted conditions impact on the kind of relationships that get established between them. In this regard, for waste pickers the pressing need to accumulate recyclable material outweighs the need to forge a sustainable social relationship with the residents at the landfill site. This resulted in them being identified as vultures by the residents owing to how they behaved towards them. Therefore, according to the residents, landfill waste pickers are unsociable, but this overlooks the informal and undesirable conditions which the waste pickers find themselves in.

After the same waste pickers from the landfill organised themselves into a cooperative and were moved to operate within the community in improved conditions which include a defined structures to attain recyclables, intervention and support from various organisations, better appearances, and belonging to a more legitimate system, they were perceived and identified differently by the same residents. Integration into working from a perceived physically formal structure earned the former landfill waste pickers an improved and sociable identity from the residents. Moreover, the move into formalised conditions encouraged a complete change in waste pickers' behavioural traits as competition for recyclables is no longer the driving force. Waste picker cooperatives encourage working collectively towards a common objective which includes gathering as many recyclable materials as possible as a group and thus less conflicts exist amongst such individuals (Dias 2016). Altogether, these conditions coupled with close proximity to residential spaces permitted decent social relations to emerge between waste pickers and residents. In this regard, social closeness has permitted the relations between waste pickers and households to vary from those studied by Adama (2012) in Kaduna, Nigeria. Unlike the generalised criminalisation of waste pickers, their associations with filth, and waste pickers having to purchase recyclables from households, the relations between waste pickers and residents in this study portrayed some level of sympathy from residents.

Regardless of the primarily racial and income differences within the controlled spaces, residents were found to clean up, pack and place recyclables for collection by waste pickers at no cost. Thus, although associated with a private business, the waste picker cooperative is able to accumulate generous amounts of recyclable material from the community while building a good and well-defined relationship with residents.

In addition, residents were found to not have a problem supporting a “private organisation/business” which is their understanding of the waste picker cooperative providing the S@S service. However, in instances where a street waste picker appeared, the recyclables saved for the “business” were then offered by some residents to the street waste pickers. Although this was found to be a result of minimal knowledge pertaining to who the people delivering S@S were, to an extent, the case portrayed how community residents prefer supporting individuals in informal conditions as a way to narrow the gap that exists between informal and private waste sectors.

There has been a drastic change in residents’ perceptions of waste pickers in Vaalpark and this is embedded in their work spaces. The ways in which residents construct their personal spaces in relation to how they perceive different waste pickers still determines which type of waste picker has access to their recyclables.

9.3 HINDERING/ENABLING FACTORS FOR PARTICIPATION IN SEPARATION AT SOURCE

Current national solid waste management systems are advocating for waste minimisation, re-use and reduction in all areas where waste is generated. It is being encouraged that municipal waste systems include separation at source as a strategy to recycle household waste particularly in developing countries (Dias 2016). As revealed throughout this paper, different waste pickers are already dominant in recycling activities which they carry out in various community spaces (Medina 2007b). Thus it only makes sense to legitimately include and offer projects facilitating S@S to them.

In some instances, through contractual agreements, municipalities liaise with organised waste pickers in cooperatives to deliver S@S services to households in

urban communities (Dias 2016: Samson 2016). This is a strategy employed to integrate waste pickers in Pune, India (Dias 2016). Through legally documented and binding agreements between waste pickers and municipalities, the task of bringing in residents to participate in household recycling is eased as the first crucial step would have been addressed. This situation also centralises the position of waste pickers as they now need to strengthen working relationships with both local residents and the municipality (Dias 2016).

However, in the case where this study was conducted, there currently exists no legal contract nor any documented agreement between the local municipality and the waste picker cooperative. As noted in Chapter 5, the agreement is mostly verbal and conveyed during events such as municipal meetings on waste management. In this light, the process of legitimately integrating the cooperative in the municipal waste management systems is still underway. Therefore, the S@S service being delivered to residents is completed in a semi-formal context with waste pickers in the cooperative negotiating their relations with the Vaalpark households.

Since this is the case, participation in S@S by residents is not one hundred percent. Although most residents have been offered the S@S wheelie bins, some still do not participate in the household recycling project. Some indicated that they do not have a clear understanding of the S@S project's motive, let alone the purpose of the Vaalpark Recycling Centre in their community. Some hold the impression that the project is a private business and that the recyclable materials collected from them at no cost are to support someone's corporate interests. In these instances, residents feel that they should be reimbursed for participation. As Medina (2007a) and Adama (2012) indicate, in cases studied in Mexican cities and Nigeria, itinerant waste buyers purchase recyclables from households. Although the case in Vaalpark does not include itinerant buyers, some residents feel they are deserving of compensation for the work of segregating waste.

Moreover, some of the residents who participate fully in the S@S project feel that although their participation depicts their concern for preserving the environment they inhabit, they are deserving of frequent report backs from the project. This is what the formalised and integrated waste picker cooperative delivering SWaCH services to households in Pune do (Dias 2016). According to these residents, there has never

been any form of explanation provided to them regarding how the money generated from their recyclables gets used. This further clarifies why some feel they are supporting a business, offering it recyclables at no cost, and also why they tend to give away recycled materials to informal street waste pickers in certain instances.

However, in instances where I explained to some residents that the Recycling Centre and the S@S is operated by a waste picker cooperative, their perceptions of the project changed. This depicted the gap that exists in awareness raising and campaigning about the project within the community. The cooperative members agree that the only community outreach process ever conducted was in 2014 during the launch of the project. Another factor studied which is impacting on participation in S@S entails the lack of education on what to recycle and what not to recycle. Some residents were provided pamphlets detailing what to recycle in 2014 whereas some stated they never received it. In one instance, the resident owned the S@S wheelie bin in which she puts plastic bottles only. According to this resident's understanding, plastic bottles are the only recyclable material she knows of. Owing to the fact that she did not have more information or education on what else can be recycled, her isolated understanding of recycling is therefore valid. However, this impacted on the S@S project because the rest of recyclable material from her household goes to the landfill. The literature on S@S engaged in Chapter 2 highlights the important role played by environmental education and awareness raising in household recycling (Thøgersen, 1994: Troschinetz and Mihelcic, 2009). Therefore, it was found to be accurate that when residents are aware of and understand what, why and how to recycle, they tend to be highly motivated to participate in S@S.

As the members of the cooperative indicated, continuous municipal intervention in the project (which is currently minimal) could be beneficial in bringing all the members of Vaalpark community on board with regards to participating in S@S. Some of the residents who understood the context of the S@S project after I explained how it is internally structured (run by a waste picker cooperative) indicated their interest in providing more support as opposed to just giving the segregated material. Four out the twenty residents interviewed made a suggestion that after the municipality officially integrates the cooperative, they will be willing to pay a monthly recycling levy of as little as R10. According to these residents, the money could help grow the project and also work as a strategy to get more residents to participate in S@S while getting more

waste pickers off the landfill site and streets into similar projects. This affirms Medina's (2007a) argument that considering a community-participation approach in recycling retains a myriad of advantages for the waste management sector as a whole in third world countries. Thus moving away from centralised and undiversified approaches when solving the challenges faced in the waste management sector necessitates thorough examination.

9.4 THE ROLE OF INTERSECTIONALITY IN WASTE SPACES

As Omran *et al* (2009) argue, an increase in recycling facilities within communities is the best means to promote positive attitudes towards recycling and increase job creation for the locals. It is apparent that the presence of a recycling facility and informal waste pickers within a community partly eliminates the barriers which may be preventing households from recycling. This also eradicates the notion of gendered and racialized roles within the waste spaces as both female and male residents and waste pickers of any race may participate in recycling. However, both groups recycle for different purposes: waste pickers to earn a livelihood as Dias (2016) argues, while most residents recycle for purposes of addressing or supplementing their own consumption behaviours (Ramukhwatho *et al*. 2014). In the case of this study, the concept of intersectionality was prevalent in various waste spaces and played a crucial role in recycling as different racial groups perceived and particularised recycling in relation to the identity of waste pickers and the spaces they operate in.

As already highlighted above, different types of waste pickers carry out various recycling activities in different work spaces. In this study, male African waste pickers over the age of 25 years were the most dominant in the waste recycling spaces. According to Schenck et al (2016), in the Free State province of South Africa at large, the number of male waste pickers working in both the streets and landfills is much higher than the number of females. From this understanding, it is found that male waste pickers tend to dominate the recycling spaces as a result of the financial responsibilities they are confronted with in their households. Traditional households, especially African ones, place an emphasis on men as the heads of households and thus provision of financial support is mainly expected from men (Samson, 2003). In Sasolburg, male waste pickers in all spaces indicated the lack of employment in the

formal sector as a push into the informal recycling economy. As illuminated in Chapter 3, this situation places waste pickers, mostly African men, amongst the most marginalised and socially excluded in society (Crenshaw 1991). As a point discussed in Chapter 3, it is clear that some or most residents' interactions with waste pickers are also shaped by social relations with each other (that is, with other residents). This also was the case within the racialised and gendered orders of space and belonging in Vaalpark.

This study further focused on household recycling dynamics in relation to recycling activities carried out by both the informal street waste pickers and the semi-formal Recycling Center waste pickers within Vaalpark. In essence, the concept of race plays a crucial role in the entire Vaalpark community such that all spaces, including waste spaces, are racialised. The spaces are racially organised and racially controlled so that residents identified each other according to their race (residents know which race occupies which specific household). Thus when an outsider, either a young Black female researcher (myself, owning to the racial experiences I had) or more importantly an informal street waste picker, enters the community, he or she is inevitably expected to conduct himself accordingly, especially when salvaging from white residents' garbage. As pointed out in Chapter 8, the White residents indicated that they do not have a problem with street waste pickers' existence in their community. However, waste pickers mentioned they dreaded salvaging freely outside White residents' households as opposed to African households. Such subsequent social relations and experiences, regardless of levels of social closeness or intimacy, validate Neely and Samura (2011) who contend that racially organised spaces inevitably put forth the notion of spatial racialization. Essentially, as the racialised dynamics of working in Vaalpark emerge, so too do the racialised dynamics of living in Vaalpark.

Three out of the twenty residents, who are African, indicated that street waste pickers were sometimes a nuisance as they habitually left a mess after rummaging through their garbage, while all the White residents pointed out they never had such an experience. This implies that as Africans, street waste pickers feel freer when salvaging outside fellow African's households and thus tend to leave a mess which resulted in the African residents feeling they were being disrespected. The African residents noticed that the street waste pickers behaved differently when salvaging from White residents' garbage. Racial interactions and processes are therefore also

embedded in the ways we make and remake, over time and through ongoing contestations, the spaces we inhabit and as a result the making and remaking of space further constitutes the remaking of race (Neely and Samura 2011).

9.5 CONCLUSION

This chapter discussed the research findings in relation to the major themes covered in this dissertation. It focused predominantly on particularising and consolidating the theories of racialised spaces in waste management and recycling spaces. The chapter presented the implications of informality in such racialised waste spaces as opposed to semi-formality and how the subsequent relationships between residents and different waste pickers impact on recycling and S@S.

In the following chapter, conclusions for the overall study are drawn and recommendations for further areas of research are made.

CHAPTER 10: CONCLUSIONS AND RECOMMENDATIONS

This study sought to problematize the relationship between waste pickers (semi-formal waste pickers in particular) and residents in light of the local municipality's integration intervention. Chapter 1 provided an overall introduction to the study, discussed the problem that the study aimed to investigate and provided the argument developed in the overall study. It also provided information on the background and the status quo pertaining to waste management in Metsimaholo Local Municipality. Chapter 2 presented the literature review which engaged debates on waste conceptualisations, municipal solid waste management in developing countries, recycling as a sustainable practice to address the challenge of waste management faced in municipalities, the role of waste pickers in waste management systems and their need to be legitimately considered and integrated In the formal waste systems, the role of community participation in S@S, and also how a good relationship between residents and waste pickers implicates the waste management systems. It argued that there is a gap in analysing the relations between waste pickers and residents in S@S and that this study contributes to filling in this identified gap.

Chapter 3 developed the conceptual framework. It presented Lefebvre's theory of the production of space. The concepts of social relations, intimacy and intersectionality as constitutive of, and shaped by, space were elaborated to help ground this study theoretically. Chapter 4 then presented the methodology and methods used in the research. The study employed participant observation, observation, focus groups, semi-structured interviews and documentary analysis as qualitative methods, described in Chapter 4, to answer the research questions. These methods aided this study to produce and present the findings which in turn related to the way in which intersectionality and social relations as products of space play a crucial role in waste spaces and society at large.

Essentially, the relations between different systems within the waste spaces have proven to be changing especially with the process of waste picker integration which is currently underway in multiple municipalities of the developing world. This research study has served as a way to bring to light this relationship dynamic studied within the existing and emerging waste management/recycling networks in Sasolburg, South

Africa. After an exploration of the relationships, it has been identified that separation at source as a recycling strategy and a model of waste picker integration retains countless returns for all involved and concerned parties and also the spaces which the outcomes will affect. These include benefits for the formal waste management systems, the socio-economic conditions of waste pickers, the environment and the health and well-being of the community as highlighted in Chapter 2.

Facilitation of a good and a sustainable relationship between waste pickers and residents has been identified as central to the successful implementation of the S@S programme. As this study has proven, in cases where a working relationship exists between residents and semi-formal recycling centre waste pickers, significant changes in household recycling behaviour can be achieved. This demonstrates how different waste pickers also play a vital role in instilling sustainable recycling behaviours in residents which is one crucial area municipalities should capitalise. The separation at source project that included semi-formalised waste pickers improved their conditions, and sheltered them from the negative effects when S@S is conducted by a private company.

However, the cooperative had negative effects on the informal street waste pickers. This study therefore recommends that integration of informal waste pickers into municipal systems through separation at source should be approached from a holistic position with all different kinds of waste pickers. It should also include all kinds of waste pickers and residents equally in decision making. This applies equally to top-down, bottom-up and negotiated approaches to separation at source. As it has been denoted in the findings sections of this study, when certain waste pickers are excluded from integration plans and decisions, they are systematically displaced from their areas or spaces of work and this affects their means of earning a livelihood (street waste pickers feel excluded). Therefore, when the processes of mapping and encouraging waste pickers to organise into cooperatives at landfills is considered, waste pickers working in the streets should also be encouraged to form cooperatives. Provision should also be made for waste pickers who do not want to form cooperatives. The current everyday of the landfill waste pickers was not explored as they were not the primary focus of this study. No formal interviews with them were conducted and this could be an area of focus for future research interest.

Moreover, as found in this study, residents were not included or even informed by the municipality when decisions pertaining to the establishment of the Vaalpark S@S project were being taken. This impacted negatively on some residents' decisions to participate in household recycling, as well as on their innovative inputs and suggestions regarding how they could also contribute to such a community project which helped waste pickers move from undesirable working conditions. Therefore, this study argues that a bottom-up approach to waste picker integration should take into consideration insights and inputs from everyone on the ground.

As already illustrated in the evolution of the national waste management legislation in the country (Chapter 5), minimising waste by employing the steps of the waste hierarchy is emphasised. In the context of this study, the separation of waste at source service as offered by the semi-formal waste pickers has been found to encourage a situation where most of the waste being generated at household level is recovered, recycled and in some instances reused. In these cases where residents support and participate in S@S, the processing of recycled material is permitted higher up in the waste management hierarchy as opposed to being channelled into landfills.

However, residents' participation is still low throughout the Vaalpark community. When working on its own terms supported by industry and other organisations, the cooperative could only manage to bring into participation a number of residents. This study recommends additional support for the project from the local municipality as a way to increase recycling and material recovery quantities through S@S. On this note, future studies in the same area could focus on assessing the internal socio-economic systems of the cooperative, the value derived from recyclable material from residents who participate in S@S, and the sustainability of the programme.

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APPENDICES

LIST OF INTERVIEWS CONDUCTED

1. Vaalpark Residents:

Resident #1. White Female. Date: 25/08/2017. Venue: Vaalpark (her home). Interview conducted by Researcher: Lethabo Pholoto.

Resident #2. White Female. Date: 13/09/2017. Venue: Vaalpark (in her home). Interview conducted by Researcher: Lethabo Pholoto.

Resident #3. White Male. Date: 14/09/2017. Venue: Vaalpark (in his home). Interview conducted by Researcher: Lethabo Pholoto.

Resident #4. White Female. Date: 17/09/2017. Venue: Vaalpark (in her home). Interview conducted by Researcher: Lethabo Pholoto, with Zandile Ntuli as part of the conversation.

Resident #5. White Male. Date: 17/09/2017. Venue: Vaalpark (in his home). Interview conducted by Researcher: Lethabo Pholoto, with Zandile Ntuli as part of the conversation.

Resident #6. White Female. Date: 13/09/2017. Venue: Vaalpark Recycling Centre. Interview conducted by Researcher: Lethabo Pholoto.

Resident #7. White Female. Date: 13/09/2017. Venue: Vaalpark Recycling Centre. Interview conducted by Researcher: Lethabo Pholoto.

Resident #8. White Female. Date: 14/09/2017. Venue: Vaalpark Recycling Centre. Interview conducted by Researcher: Lethabo Pholoto.

Resident #9. Black Male. Date: 15/09/2017. Venue: Vaalpark Recycling Centre. Interview conducted by Researcher: Lethabo Pholoto.

Resident #10. White Female. Date: 15/09/2017. Venue: Vaalpark (in her home). Interview conducted by Researcher: Lethabo Pholoto.

Resident #11. White Female. Date: 15/09/2017. Venue: Vaalpark Recycling Centre. Interview conducted by Researcher: Lethabo Pholoto.

Resident #12. Black Female. Date: 02/10/2017. Venue: Vaalpark (in her home). Interview conducted by Researcher: Lethabo Pholoto.

Resident #13. Black Female. Date: 02/10/2017. Venue: Vaalpark (in her home). Interview conducted by Researcher: Lethabo Pholoto.

Resident #14. Coloured Male. Date: 02/10/2017. Venue: Vaalpark (in his Home). Interview conducted by Researcher: Lethabo Pholoto with assistance from Jennifer Van den Busche.

Resident #15. Black Male. Date: 03/10/2017. Venue: Vaalpark (Caltex Garage). Interview conducted by Researcher: Lethabo Pholoto.

Resident #16. Black Male. Date: 03/10/2017. Venue: Vaalpark (Caltex Garage). Interview conducted by Researcher: Lethabo Pholoto.

Resident #17. Coloured Male. Date: 04/10/2017. Venue: Vaalpark (in his Home). Interview conducted by Researcher: Lethabo Pholoto with assistance from Jennifer Van den Busche.

Resident #18. Coloured Male. Date: 04/10/2017. Venue: Vaalpark (in his Home). Interview conducted by Researcher: Lethabo Pholoto with assistance from Jennifer Van den Busche.

Resident #19. Coloured Female. Date: 04/10/2017. Venue: Vaalpark (in her Home). Interview conducted by Researcher: Lethabo Pholoto with assistance from Jennifer Van den Busche.

Resident #20. White Male. Date: 04/10/2017. Venue: Vaalpark (in his Home). Interview conducted by Researcher: Lethabo Pholoto with assistance from Jennifer Van den Busche.

2. Semi-formal Waste Pickers

Semi-formal Waste Picker #1, Black, Male. Date: 08/08/2017. Venue: Vaalpark Recycling Centre. Interview conducted by Researcher.

Semi-formal Waste Picker #2. Black, Male. Date: 08/08/2017. Venue: Vaalpark Recycling Centre. Interview conducted by Researcher.

Semi-formal Waste Picker #3. Black, Female. Date: 08/08/2017. Venue: Vaalpark Recycling Centre. Interview conducted by Researcher.

Semi-formal Waste Picker #4. Black, Male. Date: 08/08/2017. Venue: Vaalpark Recycling Centre. Interview conducted by Researcher.

Semi-formal Waste Picker #5. Black, Male. Date: 08/08/2017. Venue: Vaalpark Recycling Centre. Interview conducted by Researcher.

3. Other Recycling Centre Workers

Focus Group with Black Female Workers. Date: 08/08/2017. Venue: Vaalpark Recycling Centre. Interview conducted by Researcher.

Recycling Centre Truck Driver. Black Male. 10/08/2017. Venue: Vaalpark Recycling Centre. Interview conducted by Researcher.

4. Informal Street Waste Pickers

Street Waste Picker #1. Black Male. Date: 11/08/2017. Venue: VaalparkRecycling Centre. Interview conducted by Researcher.

Street Waste Picker #2. Black Male. Date: 11/08/2017. Venue: Vaalpark. Recycling Centre. Interview conducted by Researcher.

Street Waste Picker #3. Black Male. Date: 11/08/2017. Venue: Vaalpark. Recycling Centre. Interview conducted by Researcher.

Street Waste Picker #4. Black Male. Date: 20/08/2017. Venue: Vaalpark. Recycling Centre. Interview conducted by Researcher.

Street Waste Picker #5. Black Male. Date: 03/10/2017. Venue: Vaalpark Streets. Interview conducted by Researcher with assistance from Jennifer.

Street Waste Picker #6 Black Male. Date: 03/10/2017. Venue: Vaalpark Streets. Interview conducted by Researcher with assistance from Jennifer.

Street Waste Picker #7 Black Male. Date: 03/10/2017. Venue: Vaalpark Streets. Interview conducted by Researcher with assistance from Jennifer.

Street Waste Picker #8 Black Male. Date: 04/10/2017. Venue: Vaalpark Streets. Interview conducted by Researcher with assistance from Jennifer.

Street Waste Picker #9. Black Male. Date: 04/10/2017. Venue: Vaalpark Streets. Interview conducted by Researcher with assistance from Jennifer.

5. Informal interviews with waste pickers at the Sasolburg landfill: 18/07/2017

Questions for Vaalpark Residents

- How long have you been living in Vaalpark?
- How was the waste management system at the time you moved to Vaalpark and what changes occurred until today?
- What do you do with your household waste?
- Do you know of any waste pickers in your community?
- Do you know about the Separation at Source (S@S) project in Vaalpark?
- What is your understanding of the S@S?
- Do you participate in the S@S programme? Why/Why not?
- How do you perceive the people working under this project and the service they provide?
- How do you perceive informal waste pickers working individually and the work they do?
- What do you think of the work done by the informal waste pickers?
- What relationships do you have with people delivering the S@S service?
- How do you feel when informal waste pickers rummage through your household garbage?
- How do you feel about the idea of waste pickers delivering S@S service? Does it work for you?
- Do you communicate with them about how you feel as they conduct their work?
- What changes in household waste management have you experienced since integration of waste pickers into delivering the services?
- How do you feel about such changes?

  What else do you think the S@S project should include?
- Do you have any further information or concern regarding the issues covered in this interview?

Questions for Waste Pickers

- When and where did you start your job as a waste picker?
- How were the conditions there?
- How do you feel about working at the recycling centre delivering S@S service to the residents?
- How do you perceive residents' participation and what are your experiences of working closer to residents?
- How do you think residents perceive you and the work you do?
- What kind of a relationship do you have with residents so far?
- How do you think such relationships impact on the level of residents' participation in the project?
- What are your thoughts on other factors like race and gender that shape the level of residents' participation by residents?
- How do you feel being part of the community's S@S service delivery?
- How do these changes compare to when you worked further from residents?
- Do you think the idea of you being part of the S@S service delivery is working for the residents? Why?
- What do you think of informal waste pickers (those not integrated to deliver the S@S services)?
- What is your relationship with the informal waste pickers? How do you perceive/treat them?
- What are your perceptions of the overall S@S programme? Is the way in which it is structured working for you?
- Do you think the way S@S programme is structured is working for the residents? Why?
- What else do you think the process of waste picker integration has changed in the community?

What else do you think it should entail?

Do you have any further information or questions regarding the issues covered in this interview?