Greater Tzaneen Waste Management Project

BUSINESS CASE

2017

Greater Tzaneen Local Municipality

FROM NATURE

URBAN-ECON
Development Economists

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List of Abbreviations and Acronyms

LM	Local Municipality
DM	District Municipality
NWMS	National Waste Management Strategy
IWMPs	Integrated Waste Management Plans
WDWs	Waste Development Workers
MERF	Material Recycling Facility
EPWP	Expanded Public Works Programme
MERF	Material Recycling Facility

SECTION 1: INTRODUCTION

1.1 Introduction

Greater Tzaneen Local Municipality (LM) appointed Urban-Econ Development Economists (PTY) Ltd to compile the bankable business plan to support their funding application for the waste management project. The Section of the business plan will provide a brief business background and other sections of the business plan.

1.2 Motivation

The main aim of this project is to create youth employment in the Rural areas of Greater Tzaneen Municipality through waste management and recycling. The current Expanded Public Works Programme (EPWP) aiming to create employment is active in the rural areas, however, individuals are only employed for a period of 12 month and a contract cannot be renewed. Through this proposed rural area waste management project, the communities will be equipped with a skill and will not be employed by the municipality, but rather work for themselves.

The project will focus on generating money for the rural communities and be shared in a formal business structure.

1.3 Background

The National Waste Management Strategy (NWMS) is a legislative requirement of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008). It purpose is to achieve the objective of the waste act (Department of environmental affairs, 2011).

The waste management in Tzaneen is instructed by the National Waste Management Act and the Integrated Waste Management Act. They are five strategies, however for this project the business plan will focus Waste minimisation strategy – This strategy has three components, namely Recycling, Composting and Re-use. Image 1.1 on the right shows the Tzaneen landfill site.

IMAGE 1.1: TZANEEN LANDFILL SITE

Source: Urban-con site visit,2017

1.3.1 National Waste Management Strategy (NWMS)

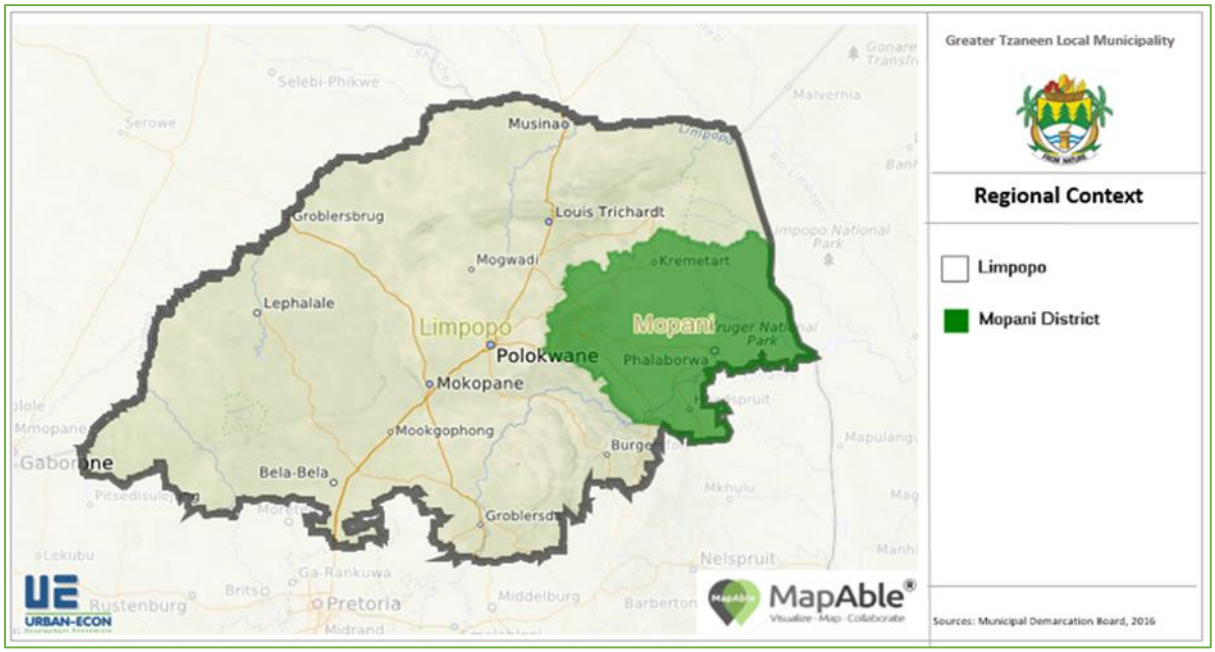
Waste management in South Africa faces numerous challenges and the NWMS provides a plan to address them. The main challenges are (Department of environmental affairs, 2011):

- A growing population and economy, which means increased volumes of waste generated. This puts pressure on waste management facilities, which are already in short supply
- Increased complexity of waste streams because of urbanisation and industrialisation.
- A policy and regulatory environment that does not actively promote the waste management hierarchy.
- Absence of a recycling infrastructure which will enable separation of waste at source and diversion of waste streams to material recovery and buy back facilities.
- Waste management suffers from a pervasive under-pricing, which means that the costs of waste management are not fully appreciated by consumers and industry, and waste disposal is preferred over other options.
- Few waste treatment options are available and so they are more expensive than landfill costs.

1.4 Study Area

Greater Tzaneen LM is situated in the Mopani District of the Limpopo Province in South Africa as indicated in the Maps below. (Map for local areas and service centres)

MAP 1.1: REGIONAL CONTEXT



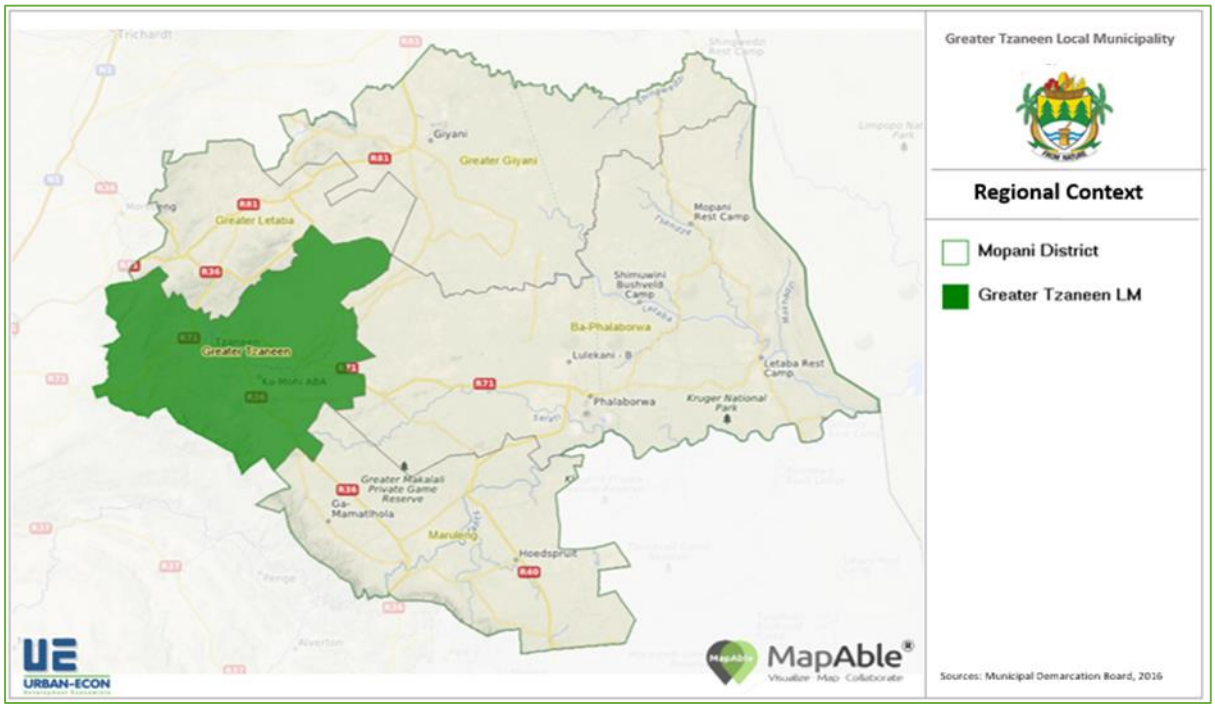
Source: Municipal Demarcation Board, 2016 via MapAble, 2017

The Mopani District has the following LMs:

- Greater Tzaneen LM
- Greater Letaba LM
- Greater Giyani LM
- Ba-Phalaborwa LM

- Maruleng LM

MAP 1.2: GREATER TZANEEN LM



Source: Municipal Demarcation Board, 2016 via MapAble, 2017

1.5 Project Goals and Objectives

The main goals of the greater Tzaneen waste management project are:

- To promote environmental education and awareness to the communities especially as they are the main waste generators
- To enhanced socio-economic benefits and employment creation for the present and future generations from a healthy environment.
- To be a department that is fully capacitated to deliver its services efficiently and effectively
- To create sustainable livelihoods through recycling of waste (waste collection & minimization)
- To support the use of environmentally friendly waste disposal technology
- Create and support mechanisms and for the protection of environmental quality
- To create the job opportunities for the youth in the rural areas of the greater Tzaneen LM.
- To improving productivity for South African farms, gardens, and landscapes while reducing greenhouse gas emissions and increasing local food security.

SECTION 2: LEGISLATIVE AND POLICY OVERVIEW

2.1 Introduction

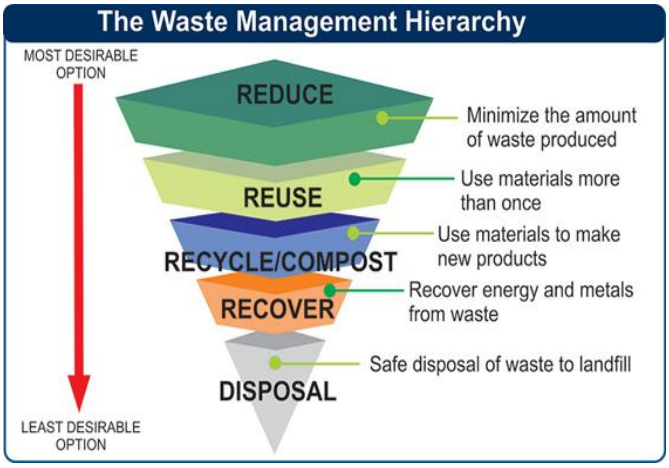
Waste and waste collection is regulated through numerous Acts, Ordinances and by-laws, which are administered by several departments at all levels of government. This section will list the key Acts which have an impact on or are related to waste collection and the General Waste Collection Standards.

South African environmental law describes the legal rules in South Africa relating to the social, economic and philosophical issues raised by attempts to protect and conserve the environment in South Africa. The waste management in Tzaneen is instructed by the National Waste Management Act and the Integrated Waste Management Act.

The objects of the Waste Act are structured around the steps in the waste management hierarchy, which is the overall approach that informs waste management in South Africa.

Diagram 2.1 shows the waste management hierarchy. The waste management hierarchy consists of options for waste management during the lifecycle of waste, arranged in descending order of priority: waste avoidance and reduction, re-use and recycling, recovery, and disposal as the last resort.

DIAGRAM 2.1: WASTE MANAGEMENT HIERARCHY



2.2 The South African Constitution, 1996 (Act 108 of 1996)

Section 24 of the Bill of rights of the Constitution of South Africa states that everyone has the right to:

1. An environment that is not harmful to their health or well-being; and
2. Should have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:

- prevent pollution and ecological degradation;
- Promote conservation; and
- Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development

2.3 The Waste Act: (Act No. 59 of 2008)

Section 11 of waste Act. stat that the department and the provincial departments responsible for waste management must prepare integrated waste management plans. The Act encompasses all aspects related to waste and waste management. It is the intention of this Act to provide for national, provincial norms and standards and waste management service standards for regulating the management of waste by all spheres of government

2.3.1 Regulations in terms of the Waste Act

- National Waste Information regulations
- National Waste Classification and Management System regulations
- Remediation of contaminated land
- Standards for soil quality

2.4 National Environment Management Act, (Act 107 of 1998)

Waste is included in the definition of pollution and so to the provision of services follows:

"pollution" means any change in the environment caused by substances emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or wellbeing or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future (EPA Victori, 2012).

The management of waste is alluded to in the various principles listed in the Act. Sustainable development where waste should be avoided, minimised, recycled, reduced and otherwise disposed of in a responsible manner.

2.5 Municipal Systems Act, 2000 (Act 32 of 2000)

In addition to the NWMS, the Municipal Systems Act sets out functions that have to be exercised by the local authority, some of which are indicated below. These functions have a direct bearing on waste management. A few selected functions which relate to service delivery and waste collection have been indicated below:

- Developing policy, plans, strategies and programmes, including setting targets for service delivery.
- Promoting and undertaking development.
- Administering and regulating its internal affairs and the local government affairs of the local communities.
- Implementing applicable national and provincial legislation and its by-laws.

- Providing municipal services to the local community.
- Monitoring the impact of effectiveness of any services, policies, programmes or plans.
- Promoting a safe and healthy environment

2.6 National Health Act, 2003 (Act 61 of 2003)

The National Health Act indicates that the definition "Municipal health services" for the purpose of the act includes waste management. This act states that every metropolitan and district municipality must ensure that appropriate municipal health services are effectively and equitably provided in their respective areas. This act therefore defines municipal responsibility regarding waste management service delivery.

SECTION 3: SOCIO-ECONOMIC ANALYSIS

3.1 Introduction

This Section will provide a socio-economic analysis for the Greater Tzaneen LM. The socio-economic analysis will cover aspects such as:

- Population and household growth
- Age groups
- Household income
- Levels of education
- Employment
- Access to services and infrastructure

To complete the socio-economic analysis, a graphic representation of key statistics will be provided. The socio-economic analysis of the LM can assist with identifying critical issues that can be addressed through government intervention.

3.2 Population and Households

The Table below indicates the population and number of households of the Greater Tzaneen LM, the Mopani DM and the Limpopo Province. Roughly 36% of the population in the Mopani DM resides in the Greater Tzaneen LM. The futures population and number of households are estimated using average annual growth rates as indicated in the Table.

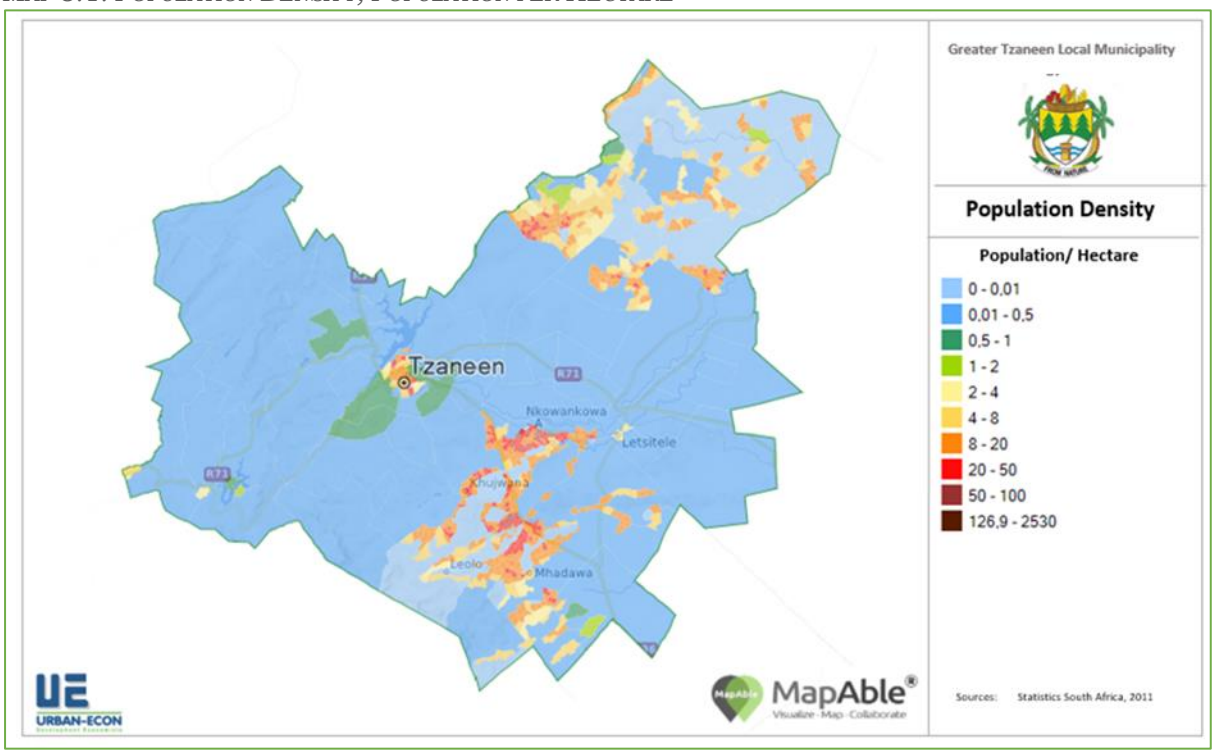
TABLE 3.1: ESTIMATED POPULATION AND HOUSEHOLDS

Area	2011	Average Annual Growth Rate	2017	2020	2025
Population					
Limpopo	5 404 866	**1.4%**	5 875 380	6 125 781	6 567 055
Mopani DM	1 092 504	**1.1%**	1 167 402	1 206 756	1 275 315
Greater Tzaneen LM	390 096	**1.2%**	419 096	434 395	461 144
Number of Households					
Limpopo	1 418 102	**2.1%**	1 604 925	1 707 372	1 892 856
Mopani DM	296 321	**1.8%**	329 583	347 589	379 811
Greater Tzaneen LM	108 927	**1.7%**	120 351	126 505	137 468

Source: Urban-Econ Calculations based on Quantec Easydata (2016) and StatisticsSA (2011)

The estimated 2017 household size in Province, District and Local Municipality is 3.66, 3.54 and 3.48 persons respectively. The Map below indicates the population density within the Greater Tzaneen LM in terms of people per hectare. This assists with indicating areas of residence within Greater Tzaneen LM.

MAP 3.1: POPULATION DENSITY, POPULATION PER HECTARE



Source: Statistics South Africa, 2011 via MapAble, 2017

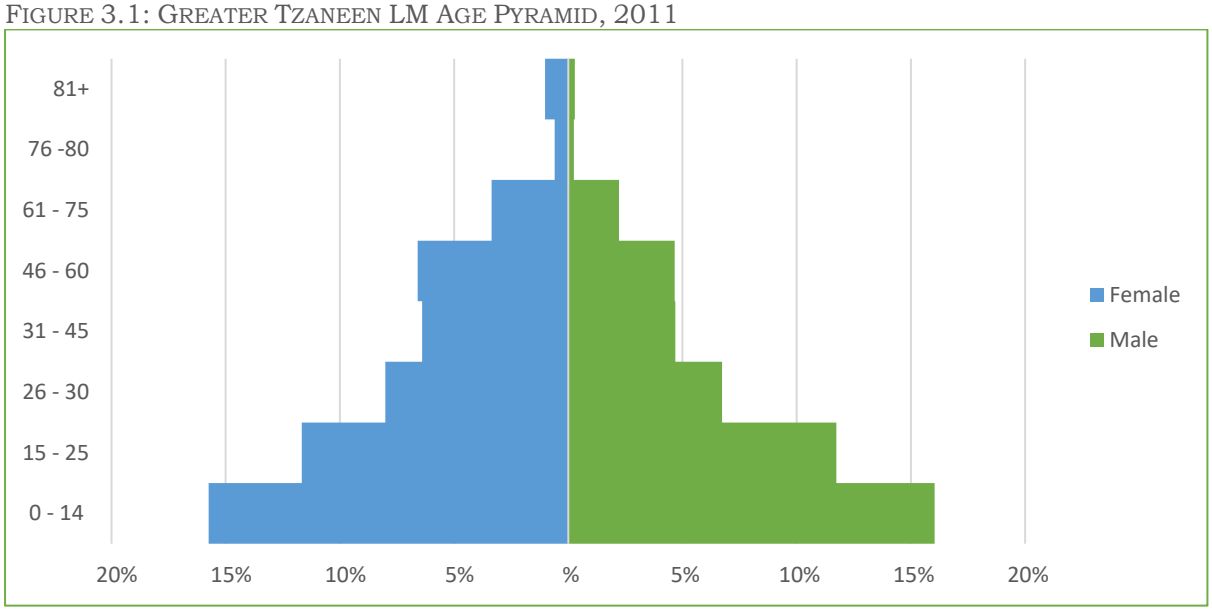
According to Map 3.1, the main population is located (areas with a higher population density) in Tzaneen, the southern areas of the Municipality (Nkowankowa and Mothlatlareng-areas) as well as scattered in the northern areas. These areas will be where the need arises for the services.

3.3 Age Groups

The Figure below illustrates the age pyramid for the Greater Tzaneen LM. The Municipality has a large female population (53% of the population), with the majority of the population (38%) can be classified as 'youth'. The Municipality also has a significant number of people below the age of 14 (32%).

'Youth' are people in South Africa between the ages of fourteen (14) and thirty-five (35) (National Youth Development Agency, 2015)

FIGURE 3.1: GREATER TZANEEN LM AGE PYRAMID, 2011

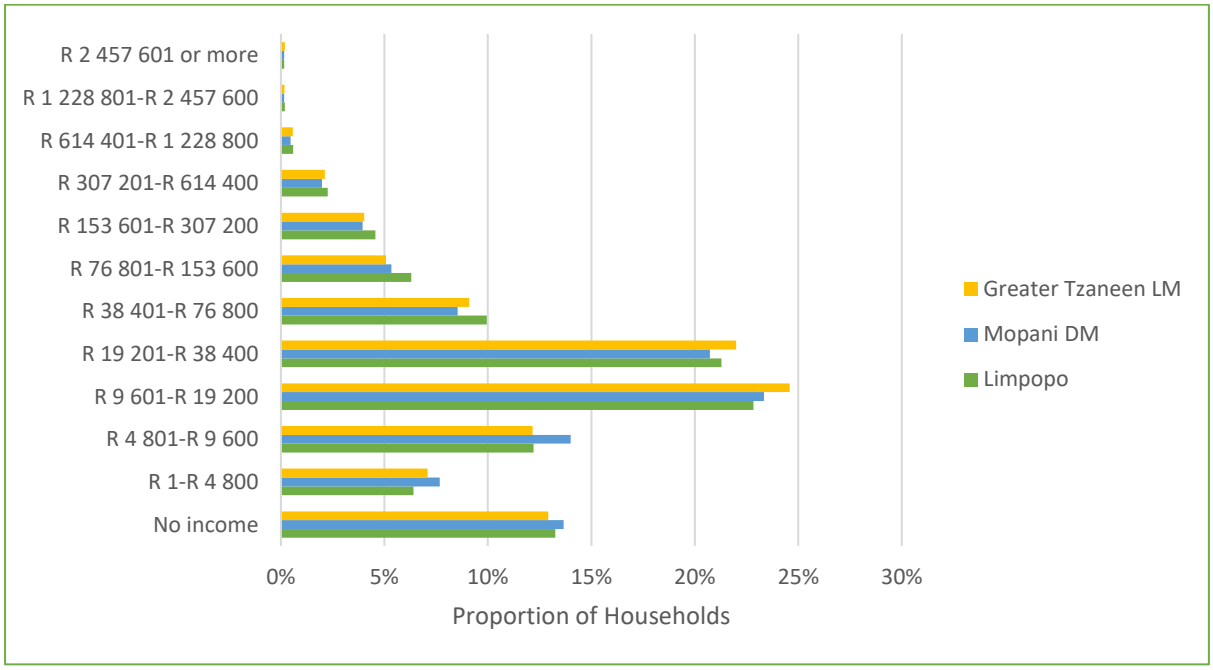


Source: Urban-Econ Calculations based on Quantec Easydata (2016) and StatisticsSA (2011)

3.4 Household Income

The Figure below illustrates the proportion of households in various annual income brackets. Across all three study areas, nearly 80% of the households earn less than R38 400.00 annually (R3 200.00 per month). In the Greater Tzaneen LM, 13% of households (14 075 household) earn no income.

FIGURE 3.2: HOUSEHOLD INCOME



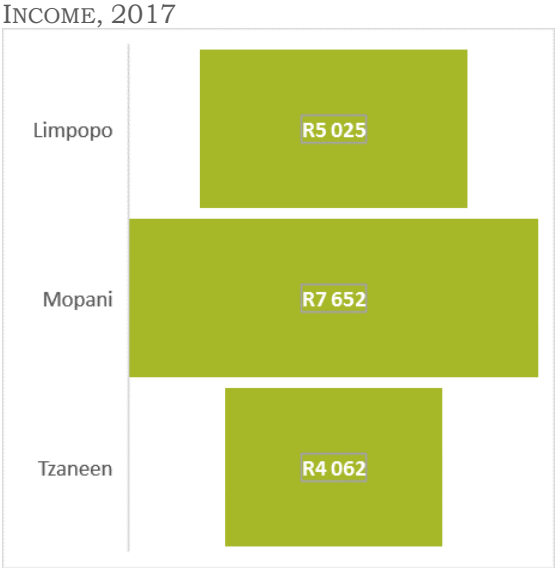
Source: Urban-Econ Calculations based on Quantec Easydata (2016) and StatisticsSA (2011)

The Figure illustrates the estimated average household income (2017) in the three study areas.

The Mopani District has a much higher average monthly household income compared to the Province and Greater Tzaneen LM.

The Municipality has the lowest average monthly household income compared to the District and Province.

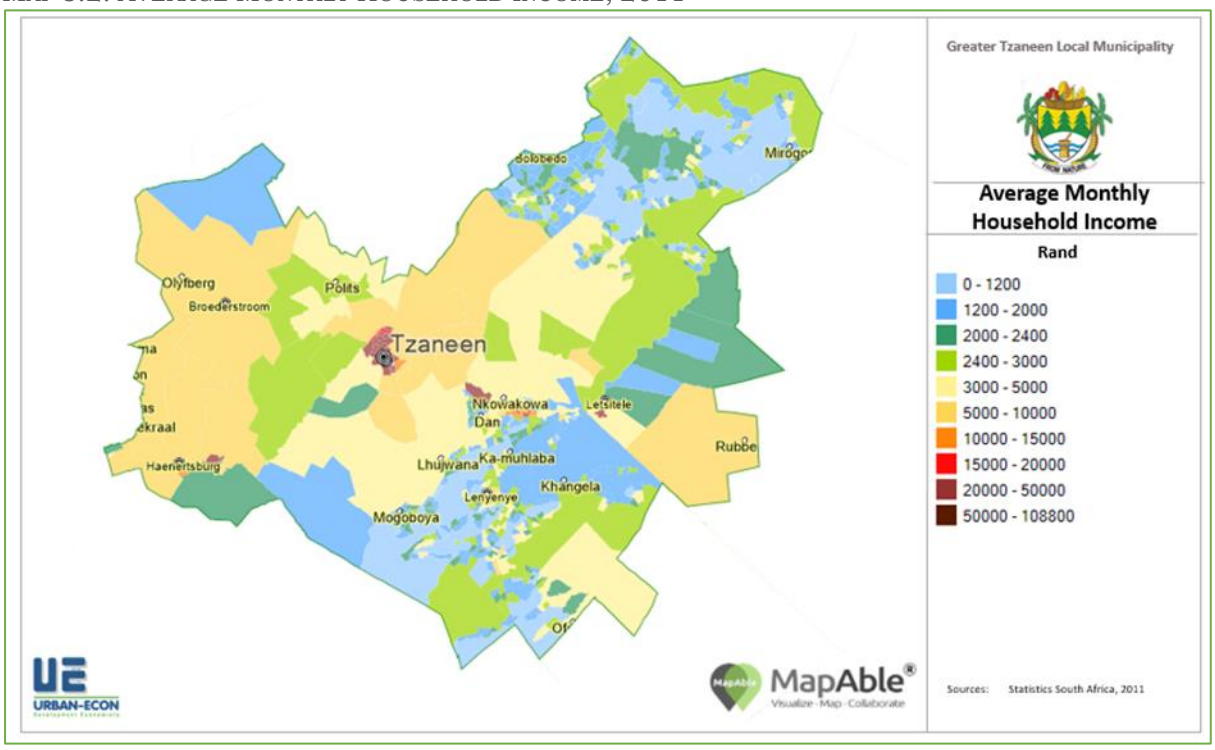
FIGURE 3.3: AVERAGE MONTHLY HOUSEHOLD INCOME, 2017



Source: Urban-Econ Calculations based on Quantec Easydata (2016) and StatisticsSA (2011)

The high youth population, which typically has a higher unemployment rate, together with the large proportion of households residing in rural areas, can contribute to lower household income levels. The Map below indicates the average monthly income in 2011 (StatsSA) in the various areas of the Municipality.

MAP 3.2: AVERAGE MONTHLY HOUSEHOLD INCOME, 2011



Source: Statistics South Africa, 2011 via MapAble, 2017

The more affluent areas within the local municipality include: Tzaneen, Nkowakowa, Letsitele, Lenyenye and Haenetsburg. The poorest communities with the Local Municipality are located in the southern- and northern rural areas.

3.5 Employment

This subsection will distinguish between three major groups of employment:

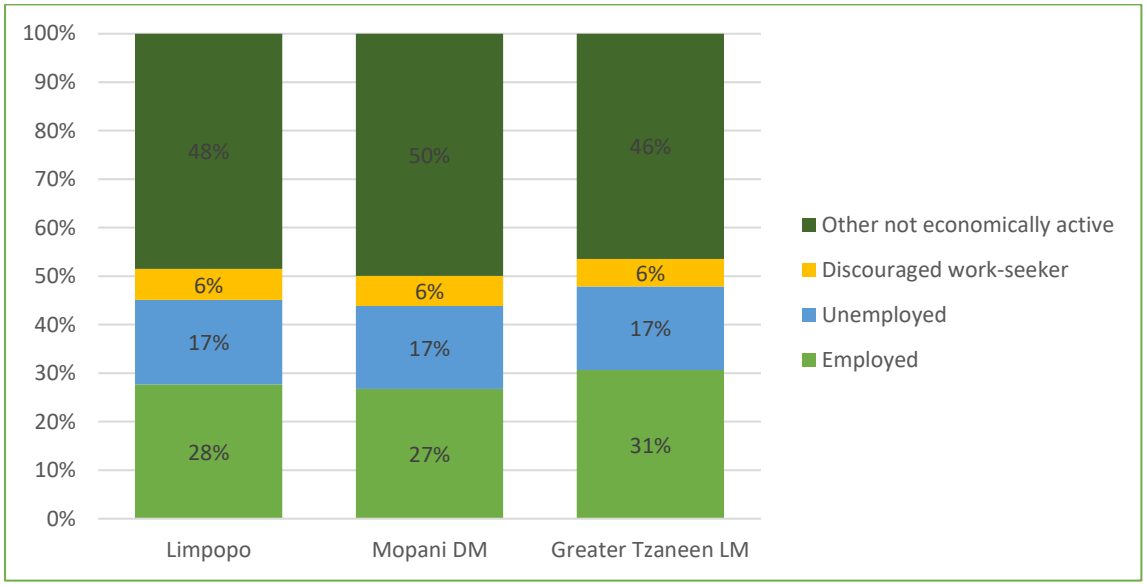
- Employed individuals,
- Unemployed individuals
- The Not Economically Active (NEA) portion of the population

Unemployed individuals are defined, according to the strict definition (Statistics South Africa, 2012), as a person:

- Who has not worked within the last seven days
- Who wants to work and is available to start within two weeks
- Who took active steps to look for work or business in the preceding four weeks

The Not Economically Active (NEA) population is the portion of the workforce who decides not to work. It includes students, housewives and any other non-working person of working age. This group is greatly dependent on others for their wellbeing. The Figure below outlines the labour market status of the head of households in the three study areas.

FIGURE 3.4: EMPLOYMENT PROFILE – HEAD OF HOUSEHOLD



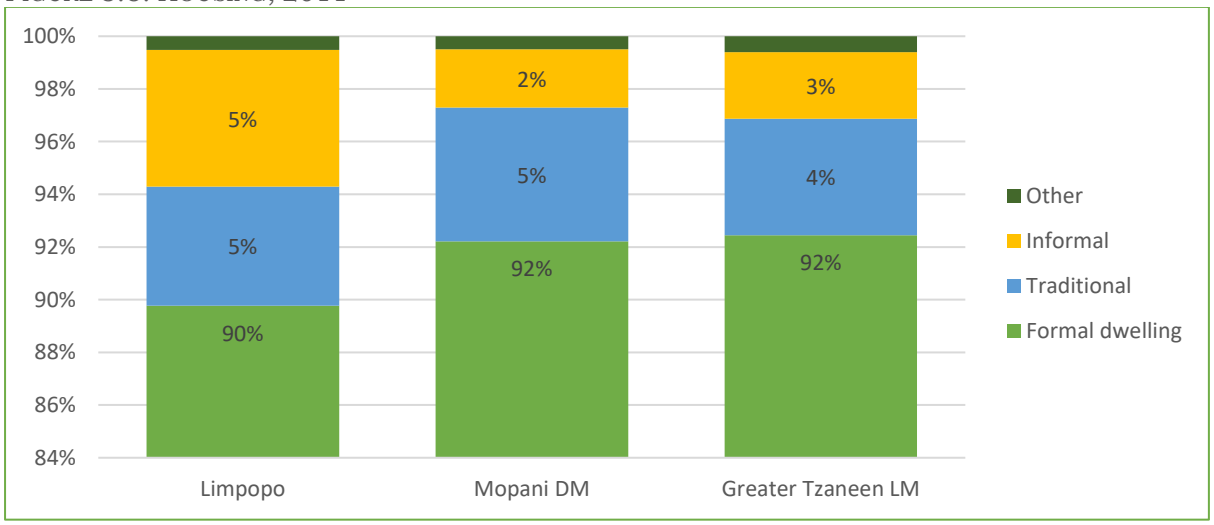
Source: Urban-Econ Calculations based on Quantec Easydata (2016) and StatisticsSA (2011)

The employment profile is similar across the Province, District and Local Municipality. The majority of the population in all three areas are not economically active, meaning that there is a high dependence on the population that is employed.

3.6 Housing

The Figure below indicates the types of housing the three study areas. The majority of households reside in formal dwellings. The Local Municipality as well as the District has less households who reside in informal dwellings compared to the Province.

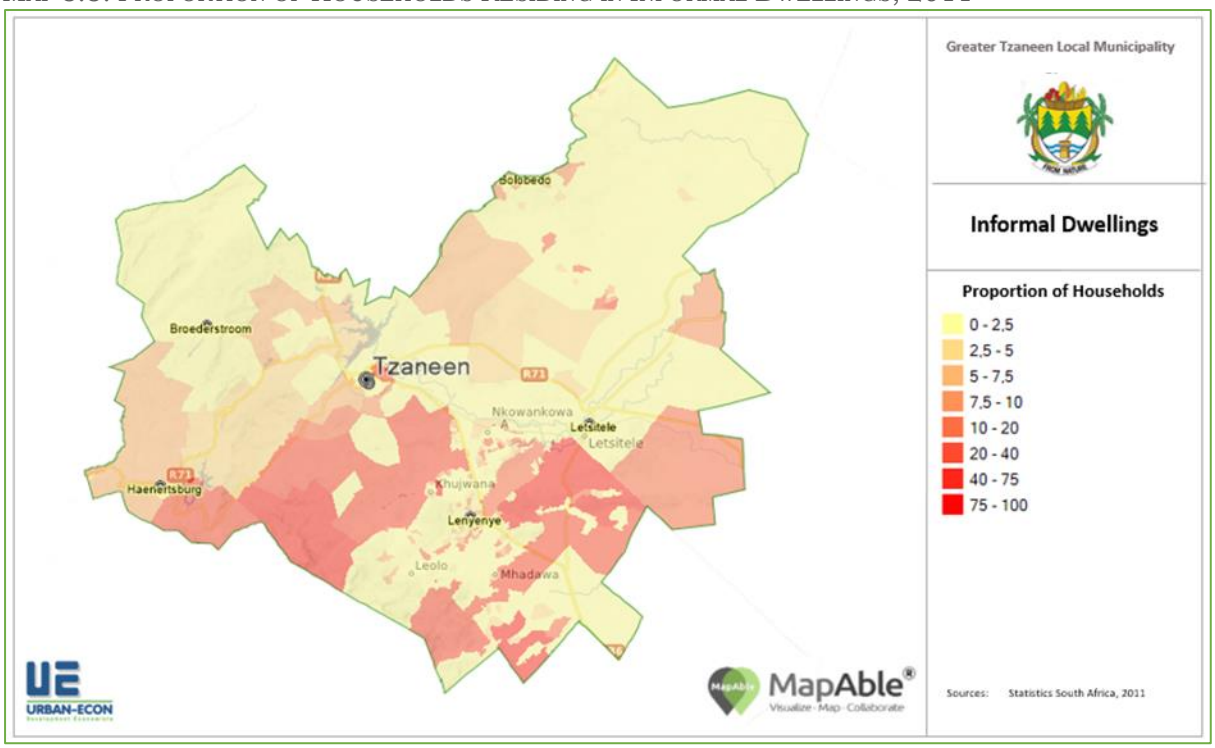
FIGURE 3.5: HOUSING, 2011



Source: Urban-Econ Calculations based on Quantec Easydata (2016) and StatisticsSA (2011)

The Map below indicates the areas where people reside in informal dwellings within Greater Tzaneen LM.

MAP 3.3: PROPORTION OF HOUSEHOLDS RESIDING IN INFORMAL DWELLINGS, 2011



Source: Statistics South Africa, 2011 via MapAble, 2017

The areas where households reside in informal settlements are mostly in the southern areas of the Municipality. These areas also coincide with the areas where there are more unemployed people as well as lower levels of income.

3.7 Access to Services

Access to services include having access to:

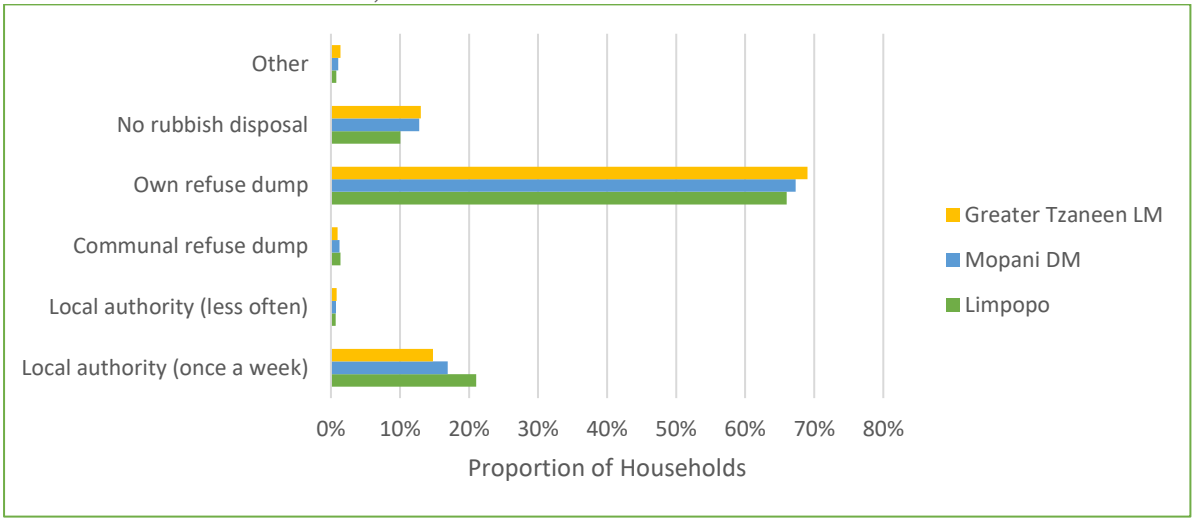
- Electricity
- Running water
- Sanitation
- Waste disposal

There are various degrees of service delivery available to households. Thus, section will look at the percentage of house hold who has the accesses refusal disposal.

3.7.1 Refuse Disposal

The majority of households in all three study areas have their own refuse dump. In Greater Tzaneen LM, only 15% of households have their refuse removed by the local authority every week.

FIGURE 3.6: REFUSE DISPOSAL, 2011



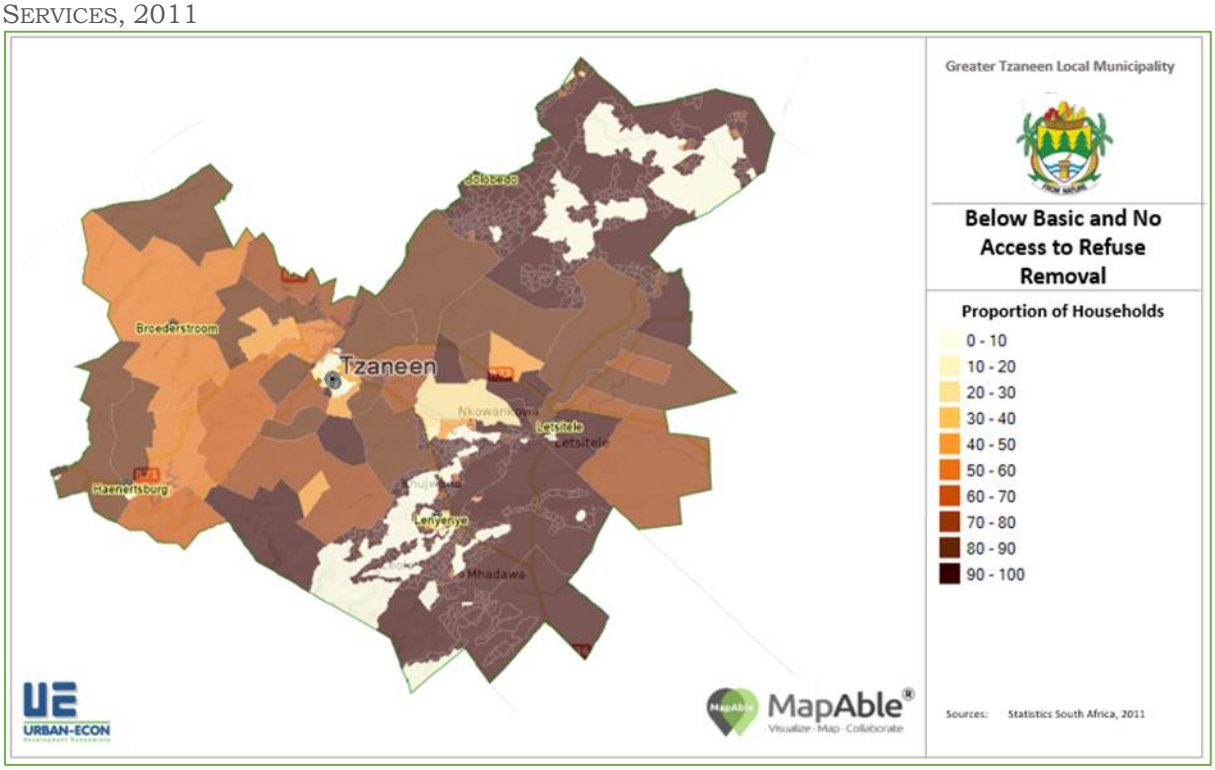
Source: Urban-Econ Calculations based on Quantec Easydata (2016) and StatisticsSA (2011)

The Map below indicates the proportion of households within the Greater Tzaneen LM who receive less than basic or no refuse disposal services. According to the National Policy for the Provision of Basic Refuse Removal Services for Indigent Households (Department of Water and Environmental Affairs, 2010), basic refuse removal can be defined as:

"The most appropriate level of waste removal service provided based on site specific circumstances. Such basic level of services is attained when a local municipality provides or facilitates waste disposal through:

- On site, appropriate and regularly supervised disposal in areas designated by the municipality (applicable to remote rural areas with low density settlements and farms supervised by waste management officer)
- Community transfer to central location point (medium density settlements).
- Organised transfer to central location points or kerbside collection (high density settlements)"

FIGURE 3.7: PROPORTION OF HOUSEHOLD WITH BELOW BASIC OR NO ACCESS TO REFUSE DISPOSAL SERVICES, 2011



Source: Statistics South Africa, 2011 via MapAble, 2017

SECTION 4: MARKET ANALYSIS

4.1 Introduction

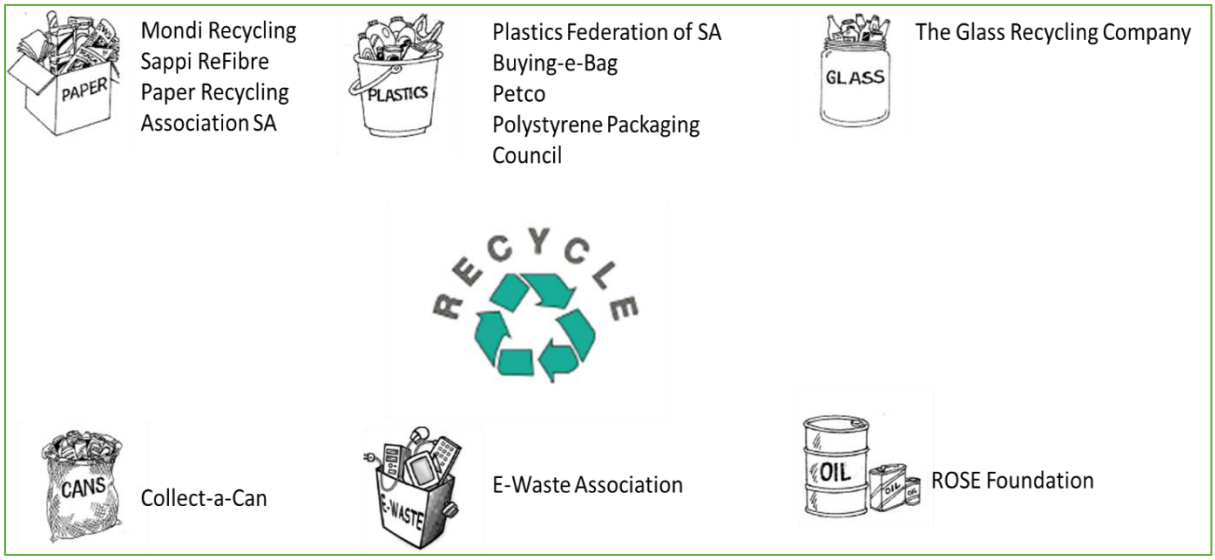
The waste management project will be an economically and environmentally sustainable project for Tzaneen LM, building local food security through recycling and transformation of organic waste into soil fertility and providing public education on composting, food waste, and their relationship to food security and environmental concerns.

4.2 Available market

At present the local recycling industry is not subsidised in the same way as it is in some overseas countries that have economic instruments such as green taxes and government grants. Recycling is a competitive business where prices paid for recyclables are subject to the fluctuations of the market, and supply and demand (Department of Environmental Affairs and Tourism, n.d).

Many unemployed people in the informal sector rely on the collection and sale of recyclables to earn a basic wage. Tzaneen has high agricultural activities and there is a definite demand for compost (thus the importance for composting). The following diagram list the recycling companies that the project can sell their product.

DIAGRAM 4.1: AVAILABLE MARKET IN SOUTH AFRICA



At present, the prices paid for recyclables fluctuate widely in South Africa due to variations in supply and demand for different recyclables in the local and overseas markets, and a lack of subsidy which would cushion the market from the effects of these fluctuations (Department of Environmental Affairs and Tourism, n.d). It is important when entering into an agreement with a recycler or agent to buy recyclables, that a contract for a stipulated period of time is agreed to at a specific price.

SECTION 5: OPERATION ANALYSIS

5.1 Current operations

5.1.1 Composting:

In the rural areas, the garden waste is not currently separated from the other household waste – so all the rural garden waste is being lost and not used to make compost. Tzaneen has high agricultural activities and a definite demand for compost.

5.1.2 Recycling:

In rural areas, the Expanded Public Works Programme (EPWP) Programme currently has local youth picking up waste which is then transported to the landfill located just outside Tzaneen town. Waste is also collected from the shopping centres and businesses.

At the landfill site, unemployed people are working for themselves and separating waste the be weighted. Compensation is received from the privately owned companies that pays for weighted waste. This method of payment ensures motivation from the people separating waste.

Individuals need to be registered with a Material Recycling Facility (MERF) and the municipality in order to work as a beneficiary in the waste. This is just to keep record and form a well organised structure working at the landfill. Individuals need to produce their certified copies in order to register at a site. There are incentives to motivate workers such as prizes are offered to individual that collects the most waste in the month (prizes such as television set; refrigerator, etc.).

5.1.3 Waste Management in Rural Areas

There are 66 service areas in the rural communities, each with a drop-off centre (or dock). Currently there are almost 700 beneficiaries working in rural communities collecting waste through EPWP Programme. According to the waste minimisation strategy, 70% of rural areas is currently activated on EPWP Programmes.

These EPWP programme beneficiaries collect and transport the waste to the drop-off centres and put it in the skips. When the skips are full, the waste is collected by truck and taken to landfill site. Beneficiaries are only allowed to work 3 days per week. Each beneficiary gets paid approximately R1100 per month.

5.1.4 Awareness in Rural Areas

Four (4) Waste Development Workers (WDWs) have been appointed to start on the 1st Sep 2017 in four separate rural villages. These workers will promote recycling awareness from door to door in rural villages using the municipality's Wise-up on Waste document. It is important that the ward councillors of these villages sign off on a form that the WDWs have been there and doing their work

5.2 Rural Waste Recycling Project Operations

The project is focusing on promoting youth employment in the rural areas. Employment creation will be in the following areas: The following diagram shows the proposed operations for the rural waste management project.

DIAGRAM 5.1: THE OPERATIONS FOR THE RURAL WASTE MANAGEMENT PROJECT.

Source: adapted from Department of environmental affairs and tourism of South Africa

5.2.1 Household Waste

Households needs to start placing daily waste on the streets. Incentives to do this may be given by providing garbage bags. Awareness will play a big role in ensuring that the household start keeping its waste than burning it.

5.2.2 Waste Collection

The collectors will pick up the house hold waste on the street once a week to the drop off centre where it will be separated according to its categories (papers, plastics, glass, cans, emotronic waste etc.) and placed in different skips.

5.2.3 Drop-off Centre

There are currently 66 drop-off centres in the rural area. The main function of a crop-off centre is to separate waste from recyclables to non-recyclables and place into the correct skip. The following requirements for a drop-off centre are:

- Centre must be separate site from school or other operations
- Recommended size is 1 hectare
- All 66 centres should have: fencing; skips for each recyclable material; paving; small office for security guard and record keeping

5.2.4 Non-recyclables

Non-recyclable material should be transported from the drop-off centre to the landfill.

5.2.5 Recyclable transportation

From the drop-off centre, truck collecting the separated waste should regularly change skips. A collected skip need to be replaced by an empty skip. Employment opportunities created are truck drivers

5.2.6 Cluster Recycling Facility

Rural area is divided into 4 clusters which means that the 66 service centres are located within the 4 clusters. A recycling facility needs to be built for each cluster to recycle waste from the centres. At the facility, waste is bailed and sold directly to the market.

SECTION 6: JOB CREATION

6.1 Introduction

The main aim of this project is to create youth employment in the Rural areas of Greater Tzaneen Municipality through waste management and recycling. This section will look at the employment opportunities that will be created by the Tzaneen waste management project.

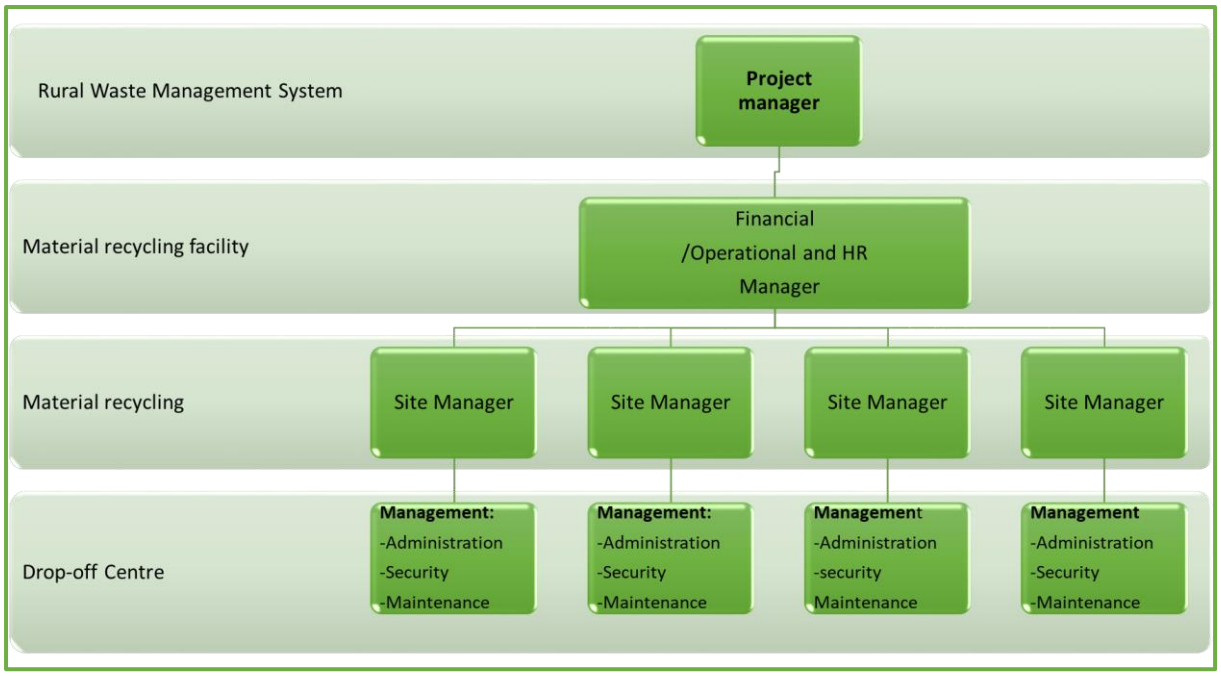
6.2 Management structure

The management of the facility will be responsible for the following functions:

- Human resource management at the facility as well as drop-off centres
- Marketing of the recyclable waste
- Financial management
- Maintenance of facility
- Management of drop-off centres

Th following diagram present the proposed management structure for the waste management project.

DIAGRAM 6.1: TZANEEN WASTE MANAGEMENT PROJECT MANAGEMENT STRUCTURE



These functions will require qualified personnel in order to ensure that the project is sustainable and creates sustainable jobs.

6.3 Workers

The following diagram present the permanent job opportunities that will be created by the waste management project for the rural community at The Greater Tzaneen local municipality.

DIAGRAM 6.2:

6.3.1 Villages

Community members (264 collectors and the 4 truck drivers) will be employed to collect the waste on the street to the 33 drop-off centres in the rural areas.

6.3.2 Drop of Centre

33 Administration officers will be employed to do the admin duties. 99 general worker who will be sorting, cleaning and doing any general duties, 12 truck drivers who will be transporting the recyclable waste from the drop off centre to the cluster and 66 securities will be employed.

6.3.3 Material Recycling Facility

1 Administration officers will be employed to do the admin duties. 4 general worker who will be packing, scaling, sorting, cleaning and doing any general duties,1 site managers who will be managing all the operations in the site and 2 securities will be employed.

The following table shows the total number of job opportunities that will be created by the project.

TABLE 6.1: JOB CREATION

POTENTIAL POSITIONS	DETAILS	SALARY PER MONTH	NUMBER OF EMPLOYEES
VILLAGES			
Drivers	Collection trucks @2 drivers per truck for 3 trucks	R1 500	6
Collectors	10 people for each service area: total of 66 service areas	R1 500	660
Subtotal			**666**
DROP OFF CENTRES			
Management	Waste production record keeping, manage staff, salaries and finances - 4 people for each centre	R5 000	132
Security guards	A day and night guard per drop-off centre (total of 2 per centre)	R1 500	66
Waste separators	10 people for each site	R1 500	330
Cleaners	Maintain grounds clean at all times @4 people per site	R1 000	132
Subtotal			**660**
RECYCLING FACILITY			
Drivers	Transportation trucks @2 drivers per truck	R2 500	4
Security guards	one day and night guard per drop-off centre (total of 2 per drop off	R1 500	2
Baling operators and assistant	Operate and pack bailed waste accordingly		
Management	Secure markets and negotiate prices, manage finances for drop-off centres, human resources	R5 000	4
Administration	weigh and record keeping of arriving wastes from drop-off centres, record leaving waste to the market	R2 500	2
Subtotal			**12**
TOTAL NUMBER OF JOBS CREATED 1 338			

This project as the potential of creating a total of 1 338 jobs for the rural communities of Tzaneen if 33 drop-off centres and a material recycling facility are created. The project can be expanded to increase the number of drop-off centres for the remaining 33 service areas. The number of temporal job opportunities will also be created during the construction of the drop of centre and the material recycling facilities.

SECTION 7: FINANCIAL ANALYSIS

The main financial requirements for start-up of the project relate to purchasing the following:

- balers - which are effective in condense dry recyclable waste material into bails suitable for delivery to recycling site
- Truck- To collect the waste from the street to the drop of centre and transport it from the drop of centre to MRF
- Skips – to separate the waste at the drop of centre
- Office building and office infrastructure – to do all the administrative duties
- Fencing- for security purposes
- Education and awareness building

This section will present the capital expenditure and the operational cost for the project.

7.1 Capital Expenditure

The capital expenditure estimated on this section is for 33x drop-off centres at service areas and 1x MRF. For the first phase of the project, the drop-off centres cannot be constructed at all 66 service centres. Once the project is sustainable, then the project can be phased to the develop additional drop-off centres at the outstanding service centres.

The table below indicates the breakdown of protective clothing that is required for the project. Protective clothing may need to be replaced over time.

TABLE 2: COST OF PROTECTIVE CLOTHING

ITEM	COST PER ITEM	QUANTITY	AMOUNT
Gloves	R100	1500	R150 000
Overalls	R80	1500	R120 000
Waterproof boots	R250	1500	R375 000
Respirators (pack of 20)	R120	80	R9 600
Total			**R654 600**

The following table present the capital expenditure that will be incurred for start-up of the waste management project.

TABLE 7.3: CAPITAL EXPENDITURE

CAPITAL	DESCRIPTION	COST PER ITEM	QUANTITY	TOTAL COST
DROP-OFF CENTRE				
Fencing (R/ha)	Diamond mesh fencing	R74 000	33	R2 442 000.00
Collecting Trucks	9ton hook lifter	R638 400	3	R1 915 200.00
Office Building	4m2	R30 800	33	R1 016 400.00
Skip	7 skips per drop off centre @R12 550 each	R87 850	33	R2 899 050.00
Protective Clothing	For both centres and recycling facility employees			R654 600.00
Subtotal				**R8 927 250.00**
RECYCLING FACILITY CAPITAL				
Fencing (R/ ha)	Diamond mesh fencing	R74 000	4	R296 000.00
Waste Baler	BH25D model	R450 000	1	R450 000.00
Warehouse Building	20m2	R4 200	20	R84 000.00
Skip Transporting Truck	9ton skip loader	R547 200	2	R1 094 400.00
Glass crusher	crush glass to smaller pieces	R20 000	1	R20 000.00
Scale	1,5 x 1,5m	R7 840	1	R7 840.00
Subtotal				**R1 952 240.00**
TOTAL CAPITAL R10 879 490.00				

The total capital expenditure to start-up the waste management project of 33x drop-off centres and 1x MRF is **R 10 879 490.00.**

The Diagram below indicate the various waste management equipment and infrastructure that has been identified.

DIAGRAM 7.1: EQUIPMENT AND INFRASTRUCTURE

7.2 Operational Expenditure

The main operational expenditure for the project will be the labour, fuel cost and protective clothing. The following Table show the parameters used.

TABLE 7.4: EXPENSES PARAMETERS

EXPENSES PARAMETERS	
Total number of trucks for the project	5
Monthly travel distance (km) per tuck	1 000
Annual maintenance and repairs for each truck	5 000
Assume that the buyer collects	600
Transportation cost per km	5
Transportation total km distance per month (km)	2000
Fuel cost per (R/km)	2,5
Monthly insurance cost per truck (R)	1500
Monthly maintenance and repairs cost per truck	5000

TABLE 5: OPERATIONAL EXPENDITURE

ITEM	DESCRIPTION	MONTHLY	ANNUAL
Salaries	Salaries for 1338 employees	R2 423 000	R29 076 000
Fuel	Total of 5 trucks @R3 per km cost	R12 500	R150 000
Maintenance and repairs	Assumption of R5000 annual cost per truck	R25 000	R300 000
Transportation Costs	Assume hired transport for recyclable waste to the buyer. Assume 2 trips per	R10 000	R120 000

	month for a maximum of 1000km for each return trip		
Vehicle Insurance	Insurance premiums for the 5 trucks	R7 500	R90 000
Total		**R2 478 000**	**R29 736 000**

7.3 Income

The income required to cover the operational costs are indicated on the Table below. The monthly production

TABLE 6: INCOME FROM RECYCLABLE WASTE

INCOME	AVERAGE PRICE (TON)	MONTHLY PRODUCTION (TONS)	MONTHLY INCOME
Paper and box	R1 650	200	R330 000.00
Plastic bottles	R2 433	500	R1 216 667.00
Cans	R1 100	750	R825 000.00
Glass	R609	800	R487 200.00
Total		**2 250**	**R2 858 867.00**

The average price (paper and box, plastic bottles and cans) in the above table is the price for the bailed waste. The estimated annual operational cost totals **R29 076 00000** where the biggest contributor is salaries.

SECTION 8: BUSINESS EVALUATION

8.1 Introduction

This Section will assess the business strengths and opportunities as well as weaknesses and external threats that may affects the success of the business.

8.2 SWOT Analysis

A SWOT analysis is an approach used to assess the project internal strengths and weaknesses as well as its external opportunities and threats that are available in the market within which the business operates.

TABLE 8.1:SWOT ANALYSIS

Strengths	**Weaknesses**
• Increases life-span of landfills • Improvement of municipal services • Further increase of environmental benefits • Motivate citizens to participate effectively in sustainable management actions	• Requires very good public awareness and support to citizens • Requires integrated planning and operation control • Increase of initial staff cost • Site must be kept up to date.
Opportunity	**Threats**
• Direct contact and activation of citizens • Results in new permanent jobs • Reduction of final disposal costs • Waste reduction	• Low awareness of population • Can work only if it is accepted by the citizens • Huge initial expenses related to these projects • Competition from private re-sellers of used goods.

8.3 Risk analysis

7.3.1 Business Risks

Risk refers to uncertainties or potential losses in various forms, mostly in financial form or setbacks. Many of these risks affects business decision making and may not be predicted with high accuracy. Most common sources of in waste management project are divided into 4 categories as follows:

8.3.1 Financial Risk

Financial risks result from the way the farm is financed. Obtaining finance for capital to fund the business may be a challenge. Poor financial management due to the lake of experience and professional trainings. The higher loan interests.

8.3.2 Institutional Risk

Institutional risk refers to unpredictable changes in the provision of services from institutions that support environment. Uncertainties in government policies such as subsidies affect waste management. Currently, they are also Acts that the farmer should comply with in waste management industry.

8.3.3 Marketing Risk

If there is no demand for certain waste products then they will have to be stored until the marker recovers for those products.

8.3.4 Human or Personal Risk

Human risks are common to all businesses where a farm can be disrupted by events such as deaths, injury or poor health of the project management personnel. Death of a highly-experienced employee in management is detrimental to the business where replacing such individual could be difficult.

SECTION 9: CONCLUSION

Urban-Econ Development Economists (PTY) Ltd to compile the bankable business plan to support their funding application for the waste management project. The main aim of this project is to create youth employment in the Rural areas of Greater Tzaneen Municipality through waste management and recycling. The majority of the population in the municipality is not economically active, and are highly dependent on the employed population.

The rural waste project is aimed at developing drop-off centres at the 33 service centres and 1 (one) material recycling facility that will bale waste and transport to the market. The project should be self-sustainable over time and be run as a business by the local people where they directly sell waste products to the market.

The total capital expenditure to start-up the waste management project of 33x drop-off centres and 1x MRF is **R 9 653 090.00.** The estimated operational cost totals **R1 751 820.00** where the biggest contributor is salaries. The estimated operational costs used the average salary of R2 500 for employees.

SECTION 10: REFERENCES

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