Kwaluseni Waste Survey Report

(Eswatini)

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AUGUST 2018

1. Study area

1.1. Location:

The Kwaluseni Constituency (Inkhundla) is located in the central part of Eswatini and has an area of 28.45 km^2. This constituency hosts the country's economically significant Matsapa Industrial Town and many of the informal and formal settlements located in the town's peri-urban area. Almost half of the constituency is Swazi Nation Land (communal) whilst almost all of the title deed and Crown (government) land is found with the Matsapha municipality. There are four chiefdoms within the area, namely Mbikwakhe, Kwaluseni, Mhlane and Logoba. All the unplanned settlements are in the peri-urban area within Swazi Nation Land.

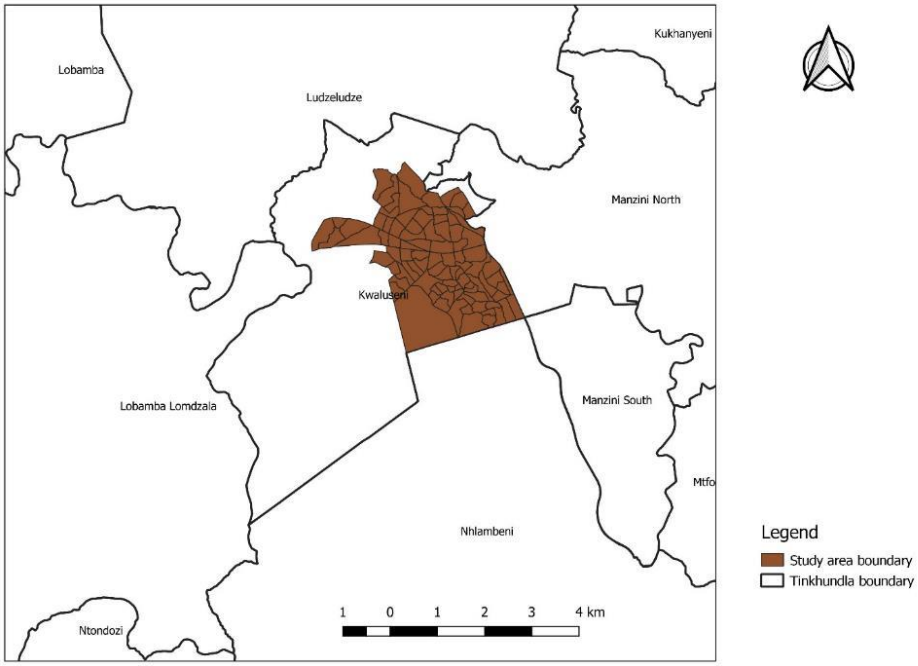

Figure 1: Location of Kwaluseni area

1.2. Demographics:

The 2017 Population and Housing Census estimated a total population of 60,064 (resulting in a population density of 2,104 persons/km2). This represents an increase of 44% when compared to the 2007 population of 41,780. The population of the area under Swazi Nation Land within Kwaluseni is estimated at **48,467**, which represents just above 80% of the entire constituency population. Most of the population growth in this area is driven by the Mbabane-Manzini corridor as the core region centered around the Matsapha industrial estate (Figure 1). The recent census indicated that Kwaluseni recorded the highest percentage of people of ages 18 and above population (70.5%). The number of regular, collectives and homeless households were, respectively, found to be 24041, 1554 and one (totaling 25,596). The Matsapha Industrial site as well as Manzini and Mbabane corridor of economic activity

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are the major magnet for migrants from outlying rural areas and other smaller towns and villages. The job opportunities in and around Matsapha makes the town of Matsapha a key target area for rural migrants looking for a better life. This mushrooming of informal settlements in this area has put immerse pressure on the land and the general environment resulting in inadequate infrastructure, particularly waste disposal facilities.

2. Waste Generation and Collection System

2.1. Waste generation and collection:

A detailed waste inventory conducted in 2003 for the Kwaluseni area (DANIDA, 2003) indicated that households generate 0.26 kg/capita/day (Table 1) which is comparable to values from other developing countries under similar circumstances. In the absence of more recent data, and comprehensive waste characterization studies in the country, it is assumed that the per capita waste generation as quoted by DANIDA (2003) is still relevant in 2017/18.

Table 1: Waste generation rates from the Kwaluseni area (source: Danida, 2003)

Waste Source	Waste generated (kg/capita/day)*
Domestic/households	0.26
Shops/businesses	3.9
Schools	2.4
Clinics	8.2

*Businesses are given as kg/business/day

A total of 424 homesteads and 134 local businesses spread over a two-week period were surveyed within the three chiefdoms namely; Kwaluseni, Logoba and Mhlane for visual waste characterization at immediate source. In addition, a total of 653 waste collection and disposal points located in residential areas spread across the area were mapped and investigated. The results of the residential /domestic and business waste characterizations from the immediate source and at communal waste collection points indicate that organic waste (including food), plastic, paper, metal and glass are the main types of waste generated in Kwaluseni. Other notable waste streams include disposable nappies, electronic waste and rubble. Based on the population of the area and the previous assessments in the area, the estimated waste generated is as shown in Table 2.

Table 2: Estimated waste generation from domestic and commercial sources in the Kwaluseni area

Type of waste	Generated amounts (kg/month)		
	Domestic	Businesses	Total
Food waste (organics)	143,656.19	9,158.76	152,814.95
Plastic	120,973.63	7,712.64	128,686.27
Paper/paperboard	79,388.95	5,061.42	84,450.37
Metal	18,902.13	1,205.10	20,107.23
Textile	7,560.85	482.04	8,042.89
Glass	3,780.43	241.02	4,021.45
Other	3,780.43	241.02	4,021.45
Total	**378,042.61**	**24,102**	**402,144.61**

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2.2. Textile industry and textile waste disposal:

The Kwaluseni area's economy is largely derived by the Matsapha Industrial Estate, the country's industrial capital. A significant proportion of the industries in the industrial estate comprises the clothing and textile industry. Historically, the clothing and textile industry in Eswatini has been linked to international markets. Prior to Eswatini qualifying for the United State of America's Government's Africa Growth and Opportunity Act (AGOA) benefits, the textile industry was not a major contributor to the country's GDP. The textile industry suffered from a lack of local quality inputs and was not protected from competing producers in South Africa. This led to Eswatini becoming a captive market for South African exports which were serviced by that country's retail clothing chain stores. With the coming into law of AGOA in May 2000, Eswatini became a beneficiary as from January 2001. This led to a sharp increase in Foreign Direct Investment (FDI) in the clothing and textile industry, creating thousands of jobs. Most of the FDI comes from East Asian companies and some South African companies. The Asian companies source their inputs mainly from China whilst the South African companies source theirs from South Africa. The key financial Incentives which have been attracting foreign investors include the following (Madonsela, 2006):

- A corporate tax rate of 30% (investors are eligible for a ten percent tax rate for a ten-year period) and exemption from tax on dividends for 10 years. This applies to investments in the manufacturing sector and other sectors such as agriculture.
- Duty free importation of capital goods, new machinery and equipment for use in the manufacturing industries, including the textile and clothing industry.
- An export Credit Guarantee Scheme granted through commercial banks and supported by the Central Bank for export-oriented enterprises.
- Double taxation agreements with the Republic of South Africa, the United Kingdom and the Republic of Taiwan (China).
- Competitively priced, well-built factory buildings readily available from the Ministry of Enterprise and Employment, and private developers.
- A regionally linked electricity supply network that provides a reliable and competitively priced service to all businesses, irrespective of size.
- A well-developed and robust telecommunications system that includes mobile cellular GSM services.
- Abundant and consistent water supply with a fair price, especially when compar ed to pricing in other countries of the region.
- An excellent transport link to regional and international destinations by road, rail and air.
- A low cost, reasonably skilled labour force.

Although the Eswatini Government has embarked on an industrial decentralization strategy, almost 80% of the textile and garment factories are located in the Matsapha Industrial Estate, the main business site and the hub of industrial activity in Eswatini. The remainder is found in rural areas and remote towns such as Matsanjeni and Nhlangano where they face serious challenges relating to under-developed infrastructure, unreliable electrical power supply, relatively larger distances to markets/ports and subsequent high operating costs. One of the setbacks in the country's textile and clothing sector is the over-reliance on foreign investment which is often profit-driven and not on national development considerations. Another critique of the industry is that most of the jobs are characterized by a lack of job security and low levels of skill acquisition. Other challenges facing the industry range from unfavourable exchange rates to uncertainties with regard to availability of future preferential markets, especially with the uncertainties regarding AGOA and the World Trade Organization (WTO) Agreement on Clothing and Textiles. The volatility in the markets results in significant fluctuations in the sector's economic activity. Notable downward trends are often characterized by factory closures and retrenchments. In a review by Madonsela (2006), 33% of the companies that were established since 1999 had ceased operations.

Whilst the textile and clothing industry has had some positive spill-over effects such as benefits to the local transport and informal real estate/housing industry, the receiving areas have observed increased levels of crime, congestion and conditions of poverty and squalor. This is in addition to the increased environmental degradation that is evident in many parts of the Kwaluseni Constituency.

Table 3: List of textile companies within Matsapha/Kwaluseni area (source: Matsapha Town Board)

	BUSINESS NAME	LOT NO.	STREET AND/OR BUILDING NAME	CONTACT NO.
1.	Africa Knitwear	765	1st Street	25186202
2.	Brothers Embroidery	243	King Mswati III Avenue	
3.	Fashion International Swaziland	695	Seventh Avenue	25187900
4.	Kasumi Apparels Swaziland Pty Ltd	718	Seventh Avenue	25187411/25188213
5.	L & G Garmets	493	Usuthu Crescent	25186645
6.	New Life Garments	712	3rd street/ Seventh Avenue	78287218
7.	RH Fashion Pty Ltd	618	Tabankulu Street	25187492
8.	Sherry and Candy Investments	503	Usuthu Crescent	25186589
9.	Sigma Clothing	814	King Mswati III Avenue	25188913
10.	Spintex (Swaziland) (Pty) Ltd	516	King Mswati III Avenue	liquidated
11.	T.Q.M Textiles	541	King Mswati III Avenue	25186654
12.	The Great Spring	715	Seventh Avenue	25186862
13.	Vortex Manufacturing	581	King Sobhuza II Avenue	25187339

Table 4: List of companies within Matsapha (source: adapted from Kipling, 2010)

NO.	NAME OF ORGANIZATION	DIRECTORS NAME	E-MAIL ADDRESS	ADDRESS	NO. OF EMPLOYEES
1	Matsapha Knitwear (Pty) Ltd	Managing Director, Mr. Simon Cheung	mkntswd@africaonline.co.sz	P. O. Box 1315, Matsapha	200
2	FTM Garments (Pty) Ltd	Managing Director, Mr. John Sheng-Neng Fan	ftmmotors@swazi.net	P. O. Box 714, Nhlangano	800
3	HO's Enterprise (Pty)Ltd	Managing Director, Mr. Joe Ho	hos@swazi.net	P. O. Box 1416, Nhlangano	800

4	Tuntex Textile Company (Pty) Ltd	Managing Director, Mr. Paul Weng	paul@tuntex.co.sz	P.O.Box 1892, Matsapha	1200
5	Leo Garments (Pty) Ltd	Managing Director, Mr. Leo Hsia	leogmt@realnet.co.sz	P. O. Box 111, Matsapha	900
6	The Great Spring (Pty) Ltd	Managing Director, Mr. Chang Wan Li	Jerry@greatspring.co.sz	P. O. Box 453, Matsapha	600
7	Texray Group	Managing Director, Mr. Mason Ma	cindy_wu@texray.com mason@texray.com	P. O. Box 1864, Matsapha	5000
8	Fashion International (Pty) Ltd	Managing Director, Mr. Mike Destombes	roberta@fashion.co.sz miked@traclo.co.za	P. O. Box 536, Ezulwini	1400
9	Far East (Pty) Ltd	Managing Director, Mrs. Tokky Hou	tokkysportz@realnet.co.sz	P. O. Box 629, Matsapha	
10	Carapparel Swaziland (Pty) Ltd	Managing Director, Ms. Cynthia Lu	cyntia@carapparel.net	P. O. Box 995, Matsapha	500
11	Zheng Yong (Pty)Ltd	Managing Director, Mr. Ping Kun Cheng	ada@zhengyong.co.sz	P. O. Box 337, Nhlangano	3000
12.	Clockwork Giant Clothing	Mr Jay Hall	jayhall@giantsz.co.sz robs@gfox.co.za	P O Box 4194, Mbabane	750
13.	New Life Garments	Mr David	mchin@telkomsa.net	P O Box 4194, Mbabane	200
14.	Juris Manufacturing		junite@junit.co.za juries@swazi.net	P O Box 1490 Nhlangano	600
15.	Ample Clothing and Apparel	Mr Ricky Huang		76346967	100
16	Kanfa Knitwear (Pty) limited	Mr Chang I-ming	Sunho51268@yahoo.com.tw zhaiyun@163.com	P O Box 1853 Matsapha Tel: 3436585	300

The importance of the textile industry in Swaziland is also evidenced by the employment provided by the sector. The Central Bank of Swaziland (2017) indicates that the sector employed 10051, 10340 and 11986 people in 2015, 2016 and 2017, respectively. These figures are, however, low compared to the peak of approximately 30,000 workers in 2004. Previous studies indicate that the companies employ between 100 to over 5000 employees per company. Most, if not all, of the workers are tenants and resident within the Kwaluseni, Mhlane and Logoba areas.

Table 5: List of textile companies in Matsapha and their investments (source: Sikhondze, 2015)

Investor Name	**Country of Origin**	**Target Market**	**Location**	**Amount Invested**	**Employment**
Leo Garments	Taiwan	USA	Matsapha	$1.15M	520
Proton	Taiwan	USA	Matsapha	$1.3M	800
Chen's Garments	Taiwan	USA	Matsapha	$4M	1200
Far East	Taiwan	USA	Matsapha	$1.8M	400
Texray	Taiwan	USA	Matsapha	$4.5M	1700
Fashion International	RSA	USA	Matsapha	$1.8M	500
Procan Investment	Canada	USA	Matsapha	$1M	
Taitex	Taiwan	USA	Matsapha	$115 000	163
Matsapha Knitwear	Taiwan	USA	Matsapha	$45M	1200
W& W Garments	Taiwan	USA	Matsapha	$3M	575
Master Garments	Taiwan	USA	Matsapha	$1M	1140
Bao Sheng	Taiwan	USA	Matsapha	$300 000	200
Lanka Products	Taiwan	USA	Matsapha	$1.3M	
The great Spring	Taiwan				650

Textiles cuttings are from the numerous Chinese (Taiwanese) garment-manufacturing companies. The textile waste, which Dlamini (2005) estimated to be 672 tonnes per year, can be found is some places within the industrial estate though the landfill is within the premises of the industrial estate. Considering that there were 13 operational textile companies in 2005, this represents an average of 51.7 tonnes of textile waste per company per year or an average of 141.64 kg/company/day.

All of the surveyed textile companies surveyed indicated that their waste is **collected by recyclers** within the Matsapha industrial site and **the rest is disposed at the municipal landfill**. Discussions with the Matsapha Town Board indicated that they provide skip bins for the textile industry which is then collected at a monthly fee (see table on Matsapha Town Board fees). Alternatively, the companies also make their own arrangements for the transport of the waste, but such vehicles must be registered with the Town Board.

Eric Slabbert Agencies, in particular, was mentioned as one company which collects the textile waste for possible recycling. Eric Slabbert Agencies indicated that there is a small and volatile market for textile waste cuttings in South Africa. Other mentioned entities who pick up the textile waste were furniture manufacturing companies who collect the waste for shredding into furniture stuffing material (for sofas and cushions, etc.). However, none of the companies had information nor records on the quantities of textile waste generated.

2.3. Waste collection system and infrastructure:

The Kwaluseni area waste management system is governed by the Inkhundla (Constituency) Council which comprises the following officers:

Statutory members

- Member of Parliament
- Constituency Headman (Indvuna Yenkhundla)
- Bucopho (one from each of the three Chiefdoms)
- Inkhundla Secretary

Employees

- Project Coordinator
- Banker
- Revenue Collectors (6, two each from each of the Chiefdoms)
- Waste Collectors (6, two each from each of the Chiefdoms)
- Chiefdom Witness
- Driver

The Kwaluseni Inkhundla council is responsible for the deployment of **a single tractor** which was donated by the Swaziland Environment Authority. The tractor had its single-axle trailer modified for waste collection through the assistance of the Matsapha Municipality. (see Figure 2). The capacity of the trailer stands at 8.5m^3. Furthermore, there is a policy which guides its operations including waste and revenue collection fees and logistics (see Annex A). However, it is important to note that the waste is disposed of at the Matsapha municipal landfill.

Figure 2: The Kwaluseni waste collection tractor in operation

Records obtained from the Matsapha Town Board shows the amount of waste from the Kwaluseni community disposed of at the Matsapha Municipality sanitary landfill (Table 4). However, it was reported that there are other private waste collectors who illegally collect waste at night and those are responsible for illegal dumping in various parts of the area particularly at a site near Mhlaleni (see Figure 3).

Table 6: Amount of waste from Kwaluseni disposed of at the Matsapha Landfill

	Kwaluseni Tractor	Private trucks/vans	Total (kg)
Amount of Waste	2,825,709	337,500	3,163,209
Total number of trips			526
Mean waste per trip			6014
Mean waste per month			137,531

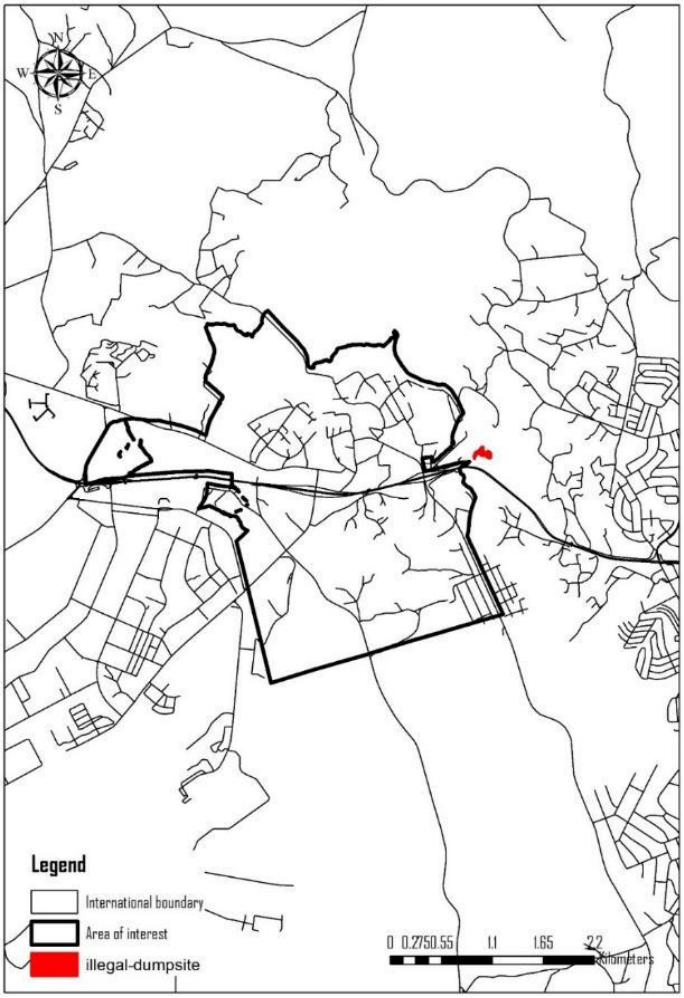

Figure 3: Location of illegal dumpsite

Considering the generated waste amount of 402 tonnes per month vis-à-vis the collected waste of 137 tonnes indicates a collection efficiency of only 36% (See Table 5). Hence, an estimated total of 265 tonnes of waste are left uncollected each month. Furthermore, a review of the revenue collected by the Kwaluseni Council over the last 12 months (June 2017 to May 2018) indicates that, of the 20732 households present in the area, the total number of households served range from a minimum of 2423 to a maximum of 4174.

Table 5 shows the estimated generated waste against the collected waste.

Table 7: Table showing generated and collected waste from the Kwaluseni area

Type of waste	**Generated amounts (kg/month)**			
	Generated	**Collected**	**Difference**	**Recycled/Reused**
Food waste (organics)	152,814.95	52,261.71	-100,553.24	23,718.51
Plastic	128,686.27	44,009.86	-84,676.41	99,582.06
Paper/paperboard	84,450.37	28,881.47	-55,568.90	1,872.51
Metal	20,107.23	6,876.54	-13,230.69	1,025.42
Textile	8,042.89	2,750.62	-5,292.27	410.17
Glass	4,021.45	1,375.31	-2,646.14	650.92
Other	4,021.45	1,375.31	-2,646.14	205.08
Total	**402,144.61**	**137,530.82**	**-264,613.79**	**127464.68**

A total of 415 waste collection points were surveyed in the study (Figure 4), a large majority (>95%) of which used bulk bags or garden bags for waste collection (Figure 5) whilst the rest use drums or waste bins (typically 200 litres in size). The rest is disposed of directly into backyard pits. The sacks and bins/drums are normally placed outside within the premises whilst plastic bags for packaging groceries are also used for storing waste within homesteads. Very few people use refuse bags.

The sizes of these waste sacks range from $1m^3$ to $2.3m^3$ in size and were located within most of the homesteads and some business areas (Figure 5). These are bought by the residents themselves from companies within the Matsapha industrial site where they are normally used to store and transport chemicals, fertilizers and other industrial manufacturing inputs. These domestic waste collection sacks receive waste almost daily considering the clustered nature of the homesteads in the Kwaluseni area. Most notably, most of the sacks were in bad condition and/or poorly anchored and unprotected resulting in spillages particularly by dogs.

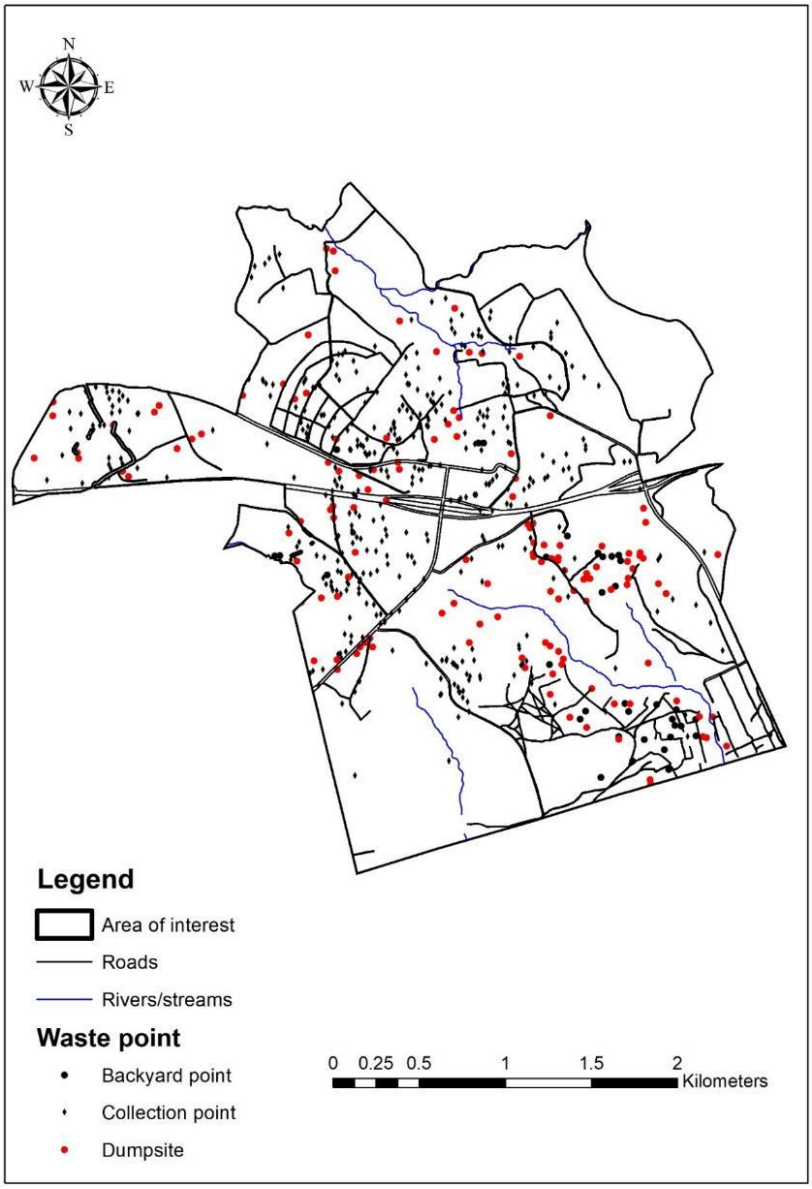

Figure 4: Map of waste collection and disposal sites visited

Figure 5: Photos of some of the waste collection points/sacks used in the Kwaluseni area.

For a majority of the homesteads, waste was found to be disposed of once a week into the sacks (Table 6). Most notably though is the lack of waste collection infrastructure within the New village under Mhlane Chiefdom. This is evidenced by the high number of illegal dump sites scattered all over the area. When asked on the waste collection service providers, there were diverse responses.

Table 8: Waste disposal frequency in the Kwaluseni area.

Waste disposal frequency (per week)	**Percentage of respondents**	
	Homesteads	Businesses
1	33.7	71.6
2	12.0	14.7
3	9.8	2.9
4	3.4	4.9
5	3.4	0
6	0.2	0
7	37.6	5.9

However, the major providers of waste collection were identified as the Kwaluseni Constituency tractor, private trucks/vans, self (including landlord) and the Matsapha municipality (Table 7). The findings indicate that the unreliability of the SEA-funded Kwaluseni tractor is swaying away current clientele towards the privately-hired or contracted trucks and vans, most of whom illegally dispose the waste illegally in dumpsites in parts of the area, some in areas very distant from the neighbouring urban areas (as far away as Macetjeni). This is creating a situation where waste from Kwaluseni is impacting areas far away from the source. It was near impossible to obtain information on the identity of the trucks and private vehicles being used to collect waste due to the illegal nature of their (predominantly) nocturnal operations. However, there are private trucks that are authorized by the Kwaluseni Inkhundla and these obtain the necessary permission to dispose of the waste at the Matsapha

sanitary landfill. The kind of contracts entered into between individual homesteads and the waste collection providers (both the illegal and the Kwaluseni Constituency tractor) are largely informal and oral.

Table 9: Sources of waste collection transport in the Kwaluseni area.

Source of waste collection transport	**Percentage of respondents**	
	Homesteads	Businesses
Landlord	1.5	3.9
Other	0.7	7.8
Self	61.3	54.9
Kwaluseni Tractor	31.1	25.5
Private truck/vehicle	5.3	7.8

Most significantly, a majority of the respondents now take responsibility of disposing of their waste, most often in illegal dumps within the area. Another significant consequence of this ineffective collection system is the resultant disposal of waste in backyards, where it is often burned and, to a lesser extent, buried. A majority of the respondents in the area also indicated that the currently recognized waste collection service provided by the Kwaluseni Constituency tractor is unreliable and inadequate. This was evidenced by the high number of backyard pits, illegal dumpsing sites and collection points which were found to be overflowing with waste (Figures 6 and 7).

Figure 6: An example of a collection point overflowing with waste.

The current waste collection frequency is often ad-hoc as reflected by almost all (98%) of the respondents that there is no specific collection day. The waste is collected any day depending on the availability of the transport being used.

Figure 7: Photos showing some of the dumpsites found within the Kwaluseni area

The existing infrastructure for waste collection at Kwaluseni could be summarized as follows:

- Poor road network and unpaved roads which become slippery even after slight rains, thus making the roads inaccessible for waste collection.
- The roads are too narrow to allow for easy maneuver of the tractor and large waste pickup trucks.
- Absence of road signage in almost all areas.
- Some of the designated waste pick up areas are not clear, save for the locals who know even those that are behind buildings.
- There is no systematic planning and provision of public waste disposal infrastructure.
- There is no proper setting up (anchoring and clamping) of the public waste bags/sacks, thereby resulting in spillages and tear.

- There is virtually no waste segregation at source.
- There is widespread illegal dumping in undeveloped plots, thickets, streams and along footpaths.
- Problematic waste includes the part of non-biodegradable waste such as nappies and plastic bags.

2.4. Waste fee policy:

The Kwaluseni tractor disposes all the waste collected at the Matsapha Municipal landfill through an agreement entered into between the Kwaluseni Inkhundla and the Matsapha Town Board. The waste disposal fees at the Matsapha municipality landfill are as shown in Table 8.

Table 10: Matsapha municipal landfill waste disposal fees.

Waste Category	**COST PER KG (NET WEIGHT) PLUS 14% VAT**
General waste (Within urban boundaries)	E0.05 + 14% VAT
General waste (Outside urban boundaries)	E0.30 + 14% VAT
Industrial Dry Waste (non-hazardous dry solid waste)	E0.10 + 14% VAT
Garden Waste	E0.00
Builder's Rubble (Clean)	E0.00
Builder's Rubble (Mixed)	E0.10 + 14% VAT
Ash (Clean, dry and cold)	E0.00
Ash (dirty)	E0.10 + 14% VAT
Animal carcass (non-commercial)	E0.00
Condemned Items	E1.00 with MTC Vehicle; E0.50 with own vehicle + 14% VAT
Confiscated Condemn Items Penalty	E1.00 with MTC Vehicle; E0.50 with own vehicle + 14% VAT
Recyclables (going out)	E0.00
Use of weighbridge (by private entities)	E50.00 + 14% VAT
Healthcare waste incineration	E5.00 + 14% VAT
Healthcare waste transportation	E150.00/collection

There are also separate rates for the use of skips and the use of the Council's facilities (such as incineration) as shown in Table 9.

Table 11: Waste collection fees for the Matsapha Municipality

SERVICE WITHIN THE TOWN'S BOUNDARY	
Category A: MTC Truck– MTC Skip	E1 620.00 plus net weight according to type of waste
Category B: MTC Truck – own skip	E1 080 plus net weight according to type of waste
NB: • **Category A**: E 1 620.00 = 8 collections per month = 2 collections per week. Additional collections will be charged at E202.50 per collection. • **Category B**: E1 080.00 = 8 collection per month = 2 collections per week. Additional collections will be charged at E135.00 per collection	

• 14% VAT cost will be added on total cost		
SERVICE OUTSIDE THE TOWN'S BOUNDARY		
Category A: MTC Truck – MTC Skip	E1 620.00 plus net weight according to type of waste	E15.00/ km
Category B: MTC Truck – own skip	E1 080 plus net weight according to type of waste	E15.00/ km
NB: • **Category A**: E 1 620.00 = 8 collection per month = 2 collections per week. Additional collections will be charged a E202.50 per collection. • **Category B**: E1 080.00 = 8 collection per month = 2 collections per week. Additional collections will be charged at E135.00 per collection. • 14% VAT cost will be added on total cost.		
HCW COLLECTION AND TREATMENT/DISPOSAL SERVICES		
E5/kg for disposal at the incinerator (excluding transportation) E150 per collection when located within the urban area plus E6/km when located outside the urban area.		

However, the Matsapha Municipality currently charges the Kwaluseni community a special flat rate of E1,500 per month for disposal of waste at the Matsapha sanitary landfill. This fee is paid at the Kwaluseni Council's convenience and is irrespective of the number of trips made. This fee covers both the Kwaluseni tractor and the other authorized private trucks.

When the waste management system was first introduced, each household had to pay E5.00 per month as refuse collection fee. However, this figure excluded tenant flats. The money was used towards meeting fuel expenses, paying the fees at the landfill disposal site, wages for the driver and the labourers. At least 1090 households were involved in this scheme. However, with time it became difficult to meet all the collection and disposal expenses. The current collection fees from the constituency are as shown in Table 10.

Table 12: Waste collection fees within the Kwaluseni area.

Collecting entity	**Fee**	
	Household	**Business**
Kwaluseni tractor	E10	E20
Private trucks/vans	E10 - 20	E20 – E150

As earlier mentioned, waste collection service is also carried out by individuals using their private vehicles who charge from E5 to E20 per household. The covers a limited number of households in comparison to the time when the service was coordinated by Inkhundla (Local Government). This fee structure is reflected by the majority (76%) of respondents who indicated that they are willing to pay monthly fee of E10 for the waste collection under the current governance and operational conditions (See Table 11).

Table 13: Kwaluseni residents' willingness to pay for waste collection.

Fee (E)	**Percentage of respondents willing to pay**	
	Households	**Businesses**
5-10	76.2	63.5

11-20	11.5	10.6
21-30	2.9	3.5
31-50	3.4	11.8
51-100	6.0	10.6

A recent study by Ndlovu (2016) investigated the influence of governance structures on willingness-to-pay (WTP) for waste management services in the Kwaluseni area. Interestingly, the study suggested mean WTP of **E47.71 per month** (with upper and lower bounds of E56.29 and E13.33, respectively) when the service provider was the Matsapha Municipality whilst a relatively lower mean value of **E36.49 per month** (max E50.83, min E12.14) was obtained if the collector was the Kwaluseni Inkhundla. The private sector WTP was found to be **E43.71 per month** (max E42.50, min E11.67), which was not significantly different from that of the Matsapha Municipality. This, the author suggested, reflects the perception amongst the community that the private sector and Kwaluseni Inkhundla were more efficient and cost-effective. This essentially implies that the households within the area are willing to pay more than the current waste collection fees, provided there were drastic improvements in the current collection efficiency (and/or frequency).

3. Recycling

3.1. Recyclable waste generation:

The amount of recyclable waste generated within the area is listed in Table 5.

3.2. Recycling industry and market prices:

With regards to recycling, there is currently no formalized recycling programme within the Constituency. However, the Inkhundla Council has previously been approached by Envirowise, a recycling company, with a view of setting up a waste segregation system at homestead level. However, that did not take off due to disagreements within the Kwaluseni Council. Furthermore, the Swaziland (Eswatini) Association for Crime Prevention, Rehabilitation and Reintegration of Offenders (SACRRO), a government-backed NGO, has an interest in setting up a formal waste recycling system within the Kwaluseni Constituency. Currently, members of the Association are involved in individual efforts wherein they collect recyclable waste from dumpsites and other disposal facilities for sale to buyers within the Matsapha industrial area.

Interestingly though, approximately 28% of the respondents indicated that they reuse some of the waste material and are involved in some kind of recycling, albeit informally. Additionally, 30% of the respondents indicated that they are aware of recycling initiatives in the area, a majority of whom were individual waste pickers who sell to the bigger recycling companies or their middlemen within the Matsapha industrial site.

A list of recyclers operating within the Kwaluseni Constituency was compiled based on information collected from informant and the Matsapha Municipality. In Table 14 is a list of known recyclers.

Table 14: List of recyclers operating within the Matsapha/Kwaluseni area.

	NAMES	WASTE MANAGED	CONTACTS
1.	Mike's Waste Reclamation	Papers	2505 3135
2.	GWJ Recycling	All	2505 4391/2

3.	Nomakanjani Scrap and Recycling	All	2518 5848/ 7694 3052
4.	Eric Slabbert	Textile	7628 7406
5.	Silapha Investments	All	2518 5051
6.	Enviro Green	Paper	2518 6227
7.	Father's Advice		7604 7229
8.	Wandile Hlatshwako	Water Bottles	7621 1565
9.	Masi Investments		7613 3661
10.	Maxx's Recycling	Textile	2518 6871
11.	Swaziland Waste Recycling (Peekay)		2518 4340
12.	M&F Plastics	Plastics	2518 7420
13.	Enviro- Swazi Scrap Metals	Metals	2518 6227
14.	Niueweco	Steel, aluminium	
15.	SHERQ Solutions	Hazardous waste	2518 4622/7602 9660
16.	Manzini City Council (Penson Dlamini)		2518 2481
17.	SEA		2404 6960/2404 7893
18.	Ecobuzz Recyclers	General waste	7833 7678/7863 6311
19.	Oil one Swaziland (Jabulani Dlamini) Jabulanidl20@gmail.com or absainvest@realnet.co.sz or oilone@realnet.co.sz	Specializes in Hazardous waste, tyres, fluorescent tubes, batteries, used oil and filters	7604 9297

Recycling of scrap metal is very active in the Matsapha Industrial area so much so that all the metal waste in the industrial estate is sold to the scrap metal merchants listed in Table 15. The scrap metal collection is well established and as a result no scrap metal is disposed in the Matsapha landfill. Even though there was no visible market for organic waste, Dlamini (2005) reports that most of the organic waste generated within the Matsapha Industrial estate was sold to animal feed manufactures and very little is disposed in the landfill. Another list of licensed recyclers was also obtained from the SEA and they are listed below (Table 15).

Table 15: List of SEA-licensed recyclers (source: SEA, pers comm).

License No.	**Type**	**NAME OF LICENSE HOLDER**	**ADDRESS/ CONTACTS**
034	Paper, cardboard, plastic, bottle & tin	Waste Reclamation Investment (Pty) Ltd	767 5467
042	Textile Fabric, Paper, cardboard, plastic, bottle	Eric Slabbert Agencies (Pty) Ltd	2518 4767 or Cell 7628 7406
028	Paper, cardboard, plastic, bottle & tin	Thandokuhle Recycling	7607 3996 Cell 7625 3053
029	Paper, cardboard, plastic, bottle & tin	Envirowise (Pty) Ltd	2518 5051 Cell: 7615 0722
003	Used Motor Engine Oil	A. G. Thomas	Matsapha
009	Transformer oil, metals (Scrap metals-Iron, copper etc)	Euro Swazi Investments (renewal)	Matsapha
020	Scrap metals i.e. Ferrous and non-ferrous metals	Nieuwco Swaziland	2158 8627

030	Scrap metals, Paper, cardboard, plastic, bottle & tin	AMZ Investments Recycling(Pty)	7673 8493
033	Scrap metals, Paper, cardboard, plastic, bottle & tin	Peekay Investments	
038	Scrap metals i.e. Ferrous and non-ferrous metals	Uyanda's Investments (Pty) Ltd	2505 4065 7698 8346
044	Bottles	Old World Investments t/a Phillip Recycling Solutions	Tel: 2518 6072 Cell: 76020058 or 76040058
045	Scrap metals, 19Paper, cardboard, plastic, bottle & tin	Rapidrop Global (Pty) Ltd	Tel: 2404 0506 Cell: 76372802 or 76313269
051	Scrap metals i.e. Ferrous and non-ferrous metals	Nsimbi Recyclers Ferrous Investments (Pty) Ltd	matt@nsimbi.co.sz 268) 23333011/2/3, 78249951
78	Scrap metals i.e. Ferrous and non-ferrous metals	Give Thanks Scrap and Metals	76053714 7606 5078
79	Scrap metals i.e. Ferrous and non-ferrous metals	Mabhengu Metal and Recyclers PTY (Ltd)	7613 7620 7835 5171
85	Scrap metals i.e. Ferrous and non-ferrous metals	Lowveld Scrap Recyclers	76054121
91	Scrap metals i.e. Ferrous and non-ferrous metals	Nhlangano Recycling Agency	76045091
95	Scrap metals i.e. Ferrous and non-ferrous metals	Previc Investments	7604 8403 7607 1922
101	Scrap metals i.e. Ferrous and non-ferrous metals	Bongaz Investments (Proprietary) Limited t/a Bongz Scrap Yard	78355171
105	Scrap metals i.e. Ferrous and non-ferrous metals	QOBO INVESTMENTS (PTY) LTD	76239431
108	Scrap metals i.e. Ferrous and non-ferrous metals	NXUMZA INVESTMENTS (PTY) LTD t/a SCD SCRAPYARD METAL RECYCLING	7607 6438
110	Used Oil	Swazi Mpumalanga Oil t/a Mpumalanga Oil Distributors	7804 1860 +27 780361269
	Scrap metals, Paper, cardboard, bottle & tin	Re-Planet Recycling Centre I	268) 76761804,

The prices of the recyclables vary from one recycler to another albeit with small variations. Metals are more attractive in the market. Whilst plastics and organics are the dominant waste stream in the area, metals were the sought after due to their market price. Of all the recyclables, textiles were obtained freely from the local textile industries which makes it difficult to create a viable business for waste pickers.

Table 16: Buying prices for selected recyclables (obtained from selected recyclers within Matsapha)

Recyclable material	**Buying price (E/kg)**					
	A	**B**	**C**	**D**	**E**	**F**
White paper	1.10				1	1
Cardboard	1.00				0.65-0.8	0.7
Plastic bottle	1.10					
Plastic/hard plastic	1.10		1-1.50		1	0.8
Glass bottle	0.10				0.1	0.3
Shrink plastic	0.75				0.5	0.5
O Paper	0.75					0.5
F News	0.15				0.25	0.5
Books/Tissue/Mixed	0.10					
Magazines	0.25					
Wiping rags	3.00					

T Pak/Plastic tack/Milk cartons	0.50				0.25	0.5
Aluminium cans	4.00				4	6
Metal	0.70			2.2		
Stainless	11.00			10		
Steel/Hard Steel	1.50	2.2				
E-Waste	1.00					
Aluminium metal	6.00			11		7
Corrugated		1.7		1.7		
Copper				45		35-45
Heavy Brass				30		20

Notably, the list of recyclers is also dominated by metal recyclers due to the attractive market prices of metal recycling. However, almost all of the recyclers could not divulge their budget/financial information as this was seen to be confidential information. Hence, such data could not be obtained. However, it was noteworthy that most of the recycling businesses could be classified as medium-scale to large-scale operations employing between 5 and 20 people and most of them export to neighboring South Africa (Table 15) and (until recently) subsequently to China. However, some of the bigger operations expressed concern that the overreliance on the Chinese market has had negative repercussions recently wherein the demand for some of the products dropped drastically. Some of the recyclers even stated that their liquidity is in jeopardy owing to the recent developments. Some of the markets that were indicated to be depressed included plastic pipes/hangers

All the recyclers indicated that they would be willing to be involved setting up of formal buy-back/collection centres and that would lessen their transportation and operational costs whilst also benefiting the waste pickers.

Table 17: Quantities of waste processed and exported by some recycling companies.

Exports	**Exported quantity (tonnes)**	**Frequency**					**Destination**
	Slabbert		Nieuwco		M&F Plastics		
Cardboard	60	weekly					SA
Textile	32	weekly					SA
Plastic	6[1]	weekly			30	monthly	SA
PET/Bottles	15-18	weekly					SA
Paper	62	monthly					SA
Metal	27-30	weekly	20	weekly			SA

4. Proposal for collection points

[1] Slabbert sells plastic locally to M&F Plastics

The locality of the current collection points was found to be adequate under the current circumstances and local conditions. However, there is need for the waste bags/sacks to be properly anchored to avoid spillages and eventual damage. Furthermore, there is a need to provide skip bins in strategic areas where there could be easy access for rear end loaders or skip loaders. These should be placed closer to the major or wider unpaved roads from where the waste will be picked up by the appropriate trucks to the landfill or recycling facilities. A total of 6 collection centres are proposed as shown in Figure 8.

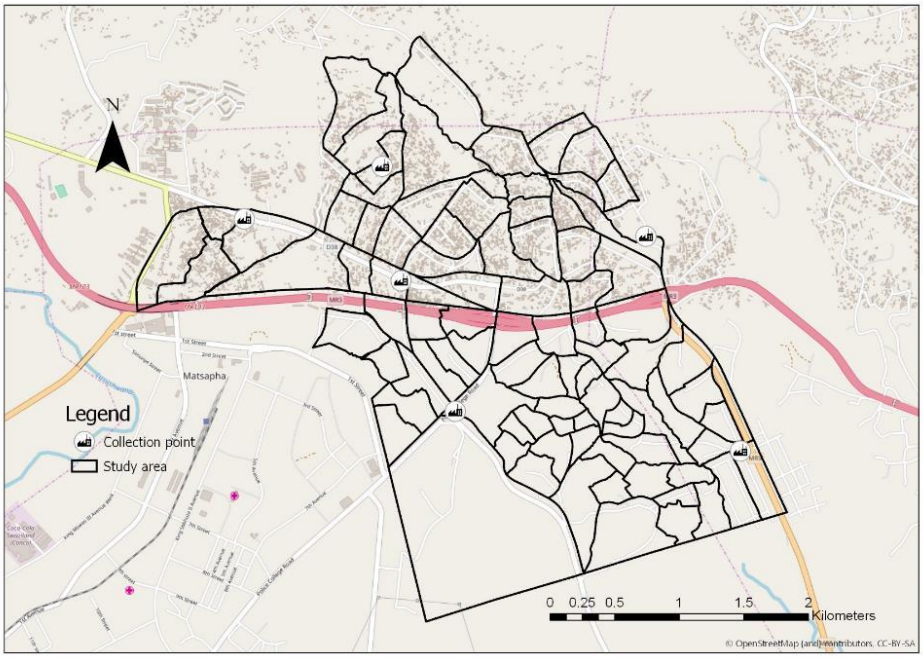

Figure 8: Proposed collection points for the Kwaluseni area.

The skip bins should be located in such a way that they do not to interfere with pedestrian movement, or create an eyesore, or a public nuisance of dust and odour.

The proposed collection points in Figure 8 should be used as buy-back centres for recyclables. The proposed collection points could also act as transfer stations and may be considered the final disposal point by the households within Kwaluseni, particularly because communal collection services are in operation. These, therefore, need to be managed and controlled with the same care and responsibility as that required for a landfill site.

5. Best Environmental Practice Assessment

The assessment of the area indicates that there is widespread dumping of waste in backyard pits and in rivers/streams accompanied by open burning. It is also evident that the waste generation in this area is very high when considering the quantities of waste that was found disposed including those in the overflowing waste infrastructure.

5.1. Waste Reduction at Source

Waste reduction at source is almost non-existent in the area. At present, retailers are not involved in the development of reduction of the source of the various waste streams. Since Eswatini imports a lot of her consumed products mainly from South Africa, reducing packaging at source is therefore a big challenge.

5.2. Waste Sorting

Depsite the majority of the waste being recyclable and/or reusable, waste sorting is extremely low save for a few individual households who are linked to recyclers within the Matsapha industrial site. Currently, this is haphazard and there is no specified locations for sorting such waste. Hence, most of the waste ends up in the dumpsites, backyard pits or the landfill.

However, there is a thriving recycling industry which is nearby within the Matsapha municipality. A lot of the recycling happens in the densely populated areas where the recyclers tend to locate appreciable amounts of waste. However, it was also observed that not all the waste ended up being upcycled, recycled or reused, even in areas where there is access to recycling facilities.

The biggest market for recycled materials seem to be (i) ferrous metals and nonferrous metals, (ii) very clear glass bottles, (iii) aluminium cans, (iv) clear plastic, and (v) cardboard. There is one case in Matsapha where they recycle almost every type of plastic including plastic crates, 20 and 25 litres liquid containers and mixed colour grocery bag plastics to manufacture refuse bags. Nevertheless, despite the availability of recycling facilities, the dumpsites and the landfill contained notable amounts of plastics and other recyclable material.

Related to recycling is the issue of waste pickers who collect the different types of waste material for recycling or reuse. In almost all the cases the waste pickers had no direct relationship with the Kwaluseni Council nor the Matsapha municipality. Hence, their operations are often inconsistent and a majority do not have proper sanitary facilities or protective clothing. However, at the Matsapha engineered landfill, the waste pickers are provided with protective clothing by the establishment although they work independently from it.

The waste that eventually goes to the dumpsite for burning is therefore not reduced and the recyclable, reusable and upcyclable materials are not removed. Furthermore, metals, glass, wet waste and inert materials are not separated from the waste that is eventually burnt, thereby promoting smoldering.

The open burning of waste continues unabated within the Kwaluseni area and is prediminatly used as a means to dispose of the waste due to inefficient waste collection. The burning is also undertake in the presence of non-combustibe material and wet organic material right in the middle of densely populated areas.

There is also a lack of strategies and targets for waste management and recycling within the Kwaluseni community. The current waste management institutional arrangement is susceptible to corrupt practices and there are very low financial and administrative skills.

Although waste collection has been encouraged within the Kwaluseni area, the inefficient collection system results in the accumulation and storage of waste for long periods of time (sometimes going for two months). This results in the putrefaction of waste and other unwanted reactions, and the degradation of the waste storage infrastructure.

However, an opportunity exists to develop best environmental practice within the Kwaluseni particularly due to the strong relation with and the willingness to assist by the Matsapha Municipality. This can build on the notable awareness amongst residents on basic waste management principles such as recycling.

ANNEX A: KWALUSENI INKHUNDLA PERI-URBAN WASTE MANAGEMENT PROJECT POLICY

1. **Background information**

Waste management in the Peri-urban area is the responsibility of the Tinkhundla which falls under the Ministry of Tinkhundla Administration and Development. However, there is currently no clear waste management system in place. This is evidenced by the amount of litter along the highway to Manzini and the road leading to Matsapha airport. The Kwaluseni Inkhundla with assistance from the Swaziland Environment Authority put in place a waste management system which unfortunately did not work out as expected. Structures were constructed at designated areas as temporal waste storage. Waste was collected from all three chiefdoms using tractor drawn cart which was modified in such a way that its capacity is increased to carry more waste. When this project started each household had to pay E5.00 per month as refuse collection fee. The money was used towards meeting fuel expenses, paying for landfill disposal fees, wages for the tractor driver and refuse collectors.

2. **Revenue collection**

Revenue will be collected from all households approximately 3000 households in Kwaluseni Inkhundla and also from commercial areas The Tariff will be as follows;

- E10 per household (homestead, tenants, if there is a business, E20. 00)
- E20.00 for medium formal businesses, schools, churches
- E10.00 – small informal businesses (vendors).

The Revenue will be collected by revenue collectors employed by the project from the households and commercial areas. In Households/homesteads, the Landlord or person appointed by landlord will be responsible for collecting waste collection fee and revenue collectors obtain fee from landlord or person appointed by landlord.

In the case of a business or commercial waste - waste collection fee will be collected from business owner. Revenue will be collected from the 20th of the current month to the 7th of the following month.

3. **Defaulters**

People who will default and not pay the stipulated fees will be reported to authorities (community leaders) and be charged. The will a penalty fee for people who pay after the set time frame of revenue collection. An Additional E2.00 will be added to the fixed E10.00 for each household that has defaulted. There will be an option for people to pay for waste collection services annually which include an incentive of a discount (10% discount).

4. **Waste collection**

   a. Type of waste to be collected

General Waste/ household waste will be collected from Kwaluseni Inkhundla Peri-urban area. Hazardous waste will not be collected since is not allowed into Matsapha sanitary landfill where the waste will be finally deposited. Examples of Hazardous waste include, oils, sludge, chemicals, florescent tubes, batteries and electric and electronic waste.

b. Storage, collection, transport, and disposal of waste

Waste will be temporary stored in waste receptacles or waste bags/sacks inside individual's premises. Waste will be collected from bins or bags at the side of the road or next to individual homesteads. Collection will be done according to a schedule that will be communicated to all residents. It is very important that every member of the community or anyone who participates in the project knows the waste collection schedule and time in which the tractor will pass by their residential areas; so that they can bring out their waste for collection in those specified dates minimizing the risk of dogs fiddling with their waste receptacles.

Waste will be transported by Kwaluseni Inkhundla tractor from their sources of generation to Matsapha Town Council Landfill. During transportation the trailer must be completely covered using a net so that there is no risk of waste falling while in transit. Waste loaded on the tractor should not exceed its loading capacity. The waste will be finally disposed of at Matsapha Town Council sanitary landfill.

c. Waste collection routes

Waste will be collected at least once a week from every homesteads and commercial areas. People will be expected to store their waste inside their yards and take it out only on the times and dates scheduled for waste collection. Waste will be collected from waste receptacles and sacks by refuse collectors.

5. Private waste collectors

Private waste collectors will be sub-contractors of the Matsapha Peri-Urban Waste Management project under the Kwaluseni Inkhundla, in which they will be expected to sign contracts with Kwaluseni Inkhundla. The private waste collectors will, when engaged by Kwaluseni Inkhundla, operate in specific sites demarcated by the Kwaluseni Inkhundla

6. Project personnel

The Project will employee 1 tractor driver, 6 refuse collectors, 6 revenue collectors, 4 litter pickers and a project coordinator. All this personnel will be issued with personal protective equipment at least once per year.

7. Monitoring and evaluation

Kwaluseni Inkhundla Project team will produce written monthly reports of project progress and financial status to be submitted to Matsapha Town Council before the last date of every month. Matsapha Town Council will further report to Commonwealth on the progress and financial status of the project.

ANNEX B: KWALUSENI WASTE MANAGEMENT COUNCIL BUDGET (JUNE 2017 TO MAY 2018)

	Jun-17	Jul-17	Aug-17	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18
Income												
Mhlane	13380	13400	15830	12980	15160	12092	8610	12570	missing	12930	13130	4510
Kwaluseni	7620	14460	10730	12380	9130	12920	8070	11300	missing	13870	10310	15960
Logoba	13170	12200	5530	10260	14310	9402	7550	7200	missing	14945	12600	14190
	34170	**40060**	**32090**	**35620**	**38600**	**34414**	**24230**	**31070**	missing	**41745**	**36040**	**34660**
Expenditure												
Diesel	5200	4800	5680	4200	6395	5100	3850	4700	missing	4300	5150	4500
Salaries	21800	21800	21800	21800	21800	21800	21800	21800	missing	21800	21800	21800
Wages	1650	2320	2755	2520	3400	2890	7980	7260	missing	14470	9300	8030
Sanitary				49	60		30	45	missing			60
Airtime	150	195	140	170	140	120	115		missing	61	100	110
Transport	350	440	430	230	255	280	290	320	missing	220	170	140
Food allowance	130	90		60		40	60	120	missing	100	550	48
Milk	120	120	120	120	120	120		130	missing	150	150	280
Reciept books				300				450	missing	450	300	
Maintenance	7091	375	3515	1165	4185	230	643	7937	missing	1758	255	1245
Raincoats				800					missing			
Announcement				100	50	100			missing			
Medication	20			220				25	missing	35	50	
Lorry (Delivery)				600					missing			
Protective wear	100	100	420	130	300	450		320	missing	216	200	
Refuse bags				270		240			missing			
Landfill fees				6000					missing			
Pens				50		20			missing	5		
Insulating tape				20					missing			
Keys and holder		175			120		10		missing		50	
Sundry	550	100	642	250	150	320	190	40	missing	50		170
Overtime					50		170	120	missing	360	110	150
Agricultural inputs							1014		missing	450		

Grass cutting							450		missing	550	510	
Retuns to customers	20						150	30	missing			30
Inkhundla Tournament/Events	2800	3400										
	37181	**30515**	**35502**	**39054**	**37025**	**31710**	**36752**	**43297**	missing	**44975**	**38695**	**36563**
Surplus/Deficit	**-3011**	**9545**	**-3412**	**-3434**	**1575**	**2704**	**-12522**	**-12227**	missing	**-3230**	**-2655**	**-1903**