SFD Lite Report

Ugie

uMshwati Local Municipality, Elundini Local Municipality, Joe Gqabi District Municipality

Eastern Cape Province, South Africa

This SFD Lite Report was prepared by Emanti Management

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1 The SFD Graphic

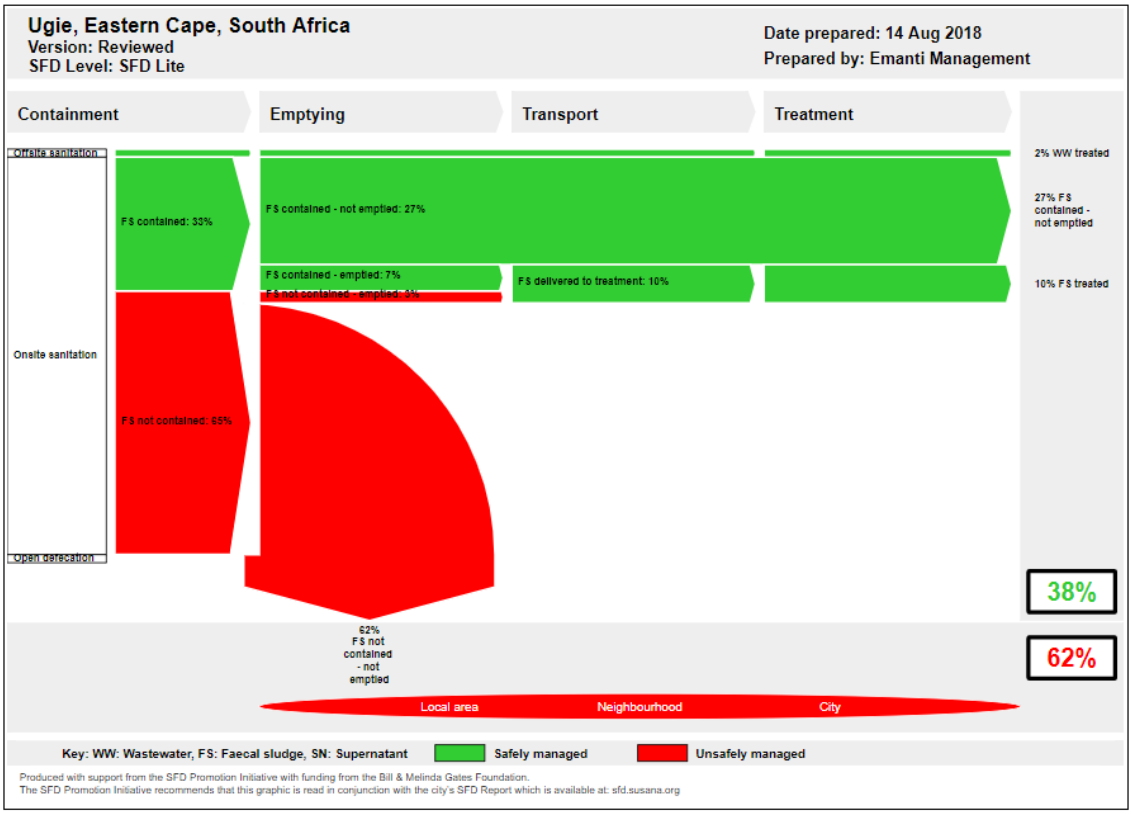

Figure 1. SFD graphic of Ugie, Eastern Cape province, South Africa

2 SFD Lite information

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Collaborating partners:

Joe Gqabi District Municipality

Elundini Local Municipality

South African Local Government Association (SALGA)

Municipal Benchmarking Initiative (MBI)

Institute of Municipal Engineering South Africa (IMESA)

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3 General municipal information

This Shit Flow Diagram (SFD) Lite Report was developed for Ugie situated in the Elundini Local Municipality (LM) which forms part of the Joe Gqabi District Municipality (JGDM) in the Eastern Cape province, South Africa. The Constitution of South Africa classifies municipalities into three (3) categories (A, B and C). Category A municipalities are metropolitan municipalities which consist of a major urbanised core. Category C municipalities are District Municipalities that consist of one (1) or more Local Municipalities (LM) (Category B municipalities). The District Municipality (DM) administers some of the functions of local government for a district which includes more than 1 Local Municipality. As defined by the Water Services Act 1997, JQDM serves the Water Service Authority (WSA) and Water Service Provider (WSP) for the district (Republic of South Africa, 1997). It therefore has statutory responsibilities and accountability in terms of legislation and policy with respect to the provision of water (and sanitation) services. The JGDM has consolidated water services functions in the district to introduce improved control and accountability (Joe Gqabi District Municipality , 2019). The JQDM, as part of the process of preparing the Integrated Development Plan (IDP) for its jurisdiction, is required to submit a Water Services Development Plan (WSDP) for review and approval.

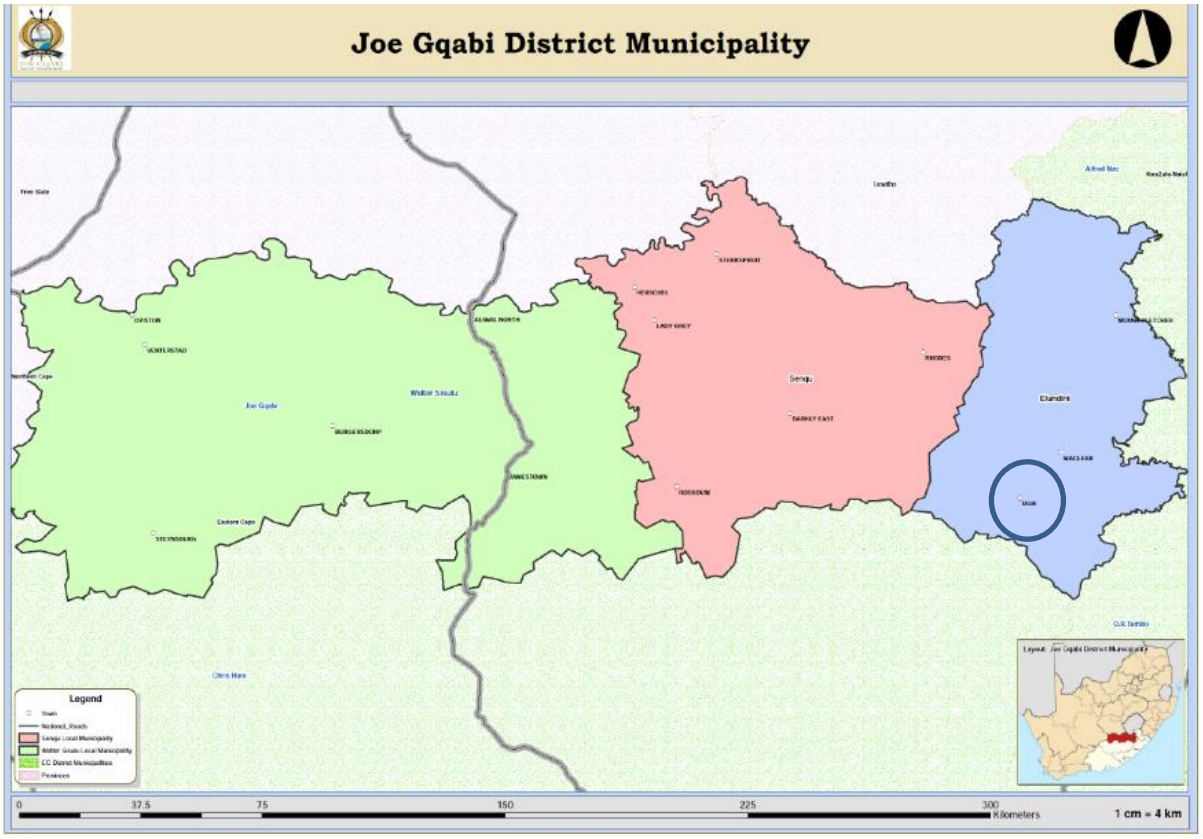

Figure 2. Map of the Joe Gqabi District Municipality. This SFD was developed for the town of Ugie located within the Elundini Local Municipality (right) (Joe Gqabi District Municipality , 2019).

The JGDM is made up of 3 LM: Walter Sisulu, Senqu and Elundini LM.

This SFD was developed for Ugie located within the Elundini LM (Figure 3). Other towns in Elundini LM include Maclear and Mount Fletcher (Joe Gqabi District Municipality, 2018). Ugie developed from a mission station at Gatberg and was established and named in 1863 by William Murray after the Ugie River in Scotland. The town was founded in 1885 (Eastern Cape, 2021). The town serves as an activity centre for the farmers and as a shopping centre to the nearby rural communities. In 2011, the town had a total area of 19.11 km2 with a total population of 13,467 (i.e. 705 people per square kilometre – km2) and a total number of households of 4,486 (i.e. 3 persons per household) (Stats SA, 2011). More recent data provided by the DM indicates that Ugie has a population of 15,234 and a total number of households of 5,078 (i.e. 797 people per km2 and 3 persons per household) (Personal communication, 2018). Ugie town and its surroundings has a mixture of both urban and rural areas with the associated breakdown of households being 2,134 urban and 2,944 rural households.

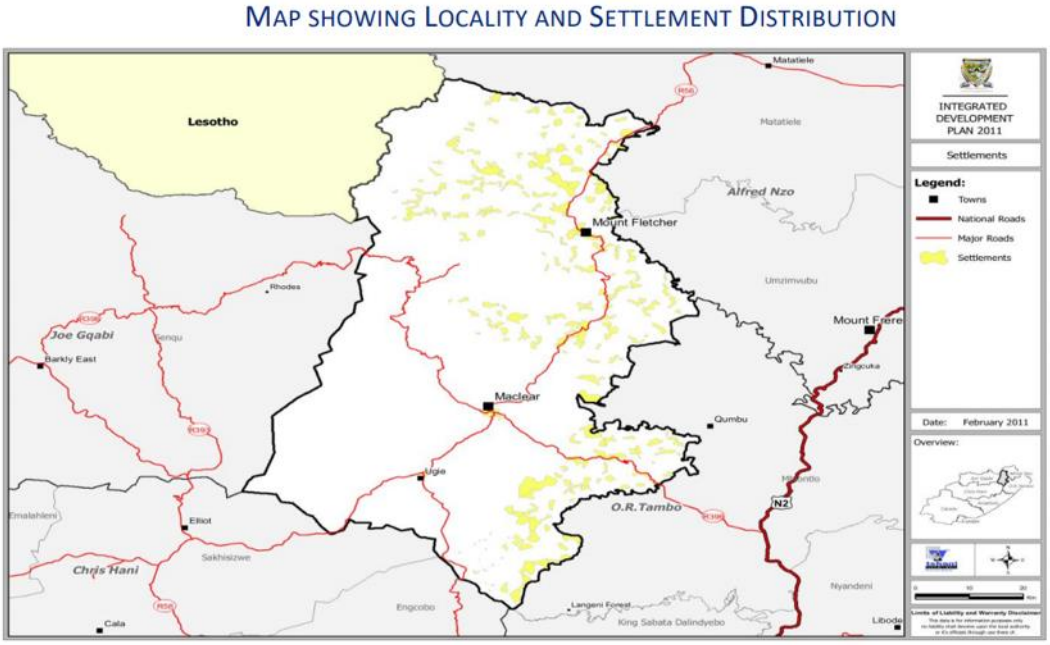

Figure 1. Settlement distribution in Elundini Local Municipality. Ugie is situated in the south of the Local Municipality (Elundi Local Municipality, 2019)

Ugie normally receives about 693mm of rain per year. Most rainfall occurs during the summer season. Temperatures for Ugie range from 16°C in June (winter) to 26°C in January (summer) (Coastal & Environmental Services, 2012). Temperatures are coldest in July (average around 1°C during the night) (Coastal & Environmental Services, 2012). The topography is hilly and covered by grassland in places (Coastal & Environmental Services, 2012). Mudstone and sandstone of the Beaufort Group of the Karoo Sequence predominate in the Ugie area. There is also sedimentary rocks of the Molteno, Elliot and Clarens Formations present (Coastal & Environmental Services, 2012). As the town is on a mountainous terrain, the ground water table varies from the areas along the river and those away from the river (JGDM, 2018).

Water and sanitation services statistics are difficult to source for Ugie alone. Planning is undertaken at local and district municipal level and thus data is presented using this

demarcation and not specifically for a town / city. Service delivery statistics are available for the JGDM and Elundini LM through the Stats SA Census (2011) and Community Survey (2016) and Municipal IDPs. There are indications that there are challenges with water and sanitation provision as stated in Municipal IDPs. The 2019/2020 Elundi IDP indicates that the trend of urbanisation in Ugie has increased the pressure for the need for land for housing, commonage land, cemeteries and social infrastructure. The urbanisation growth has placed increased strain on the existing water infrastructure and there is a need for additional bulk water infrastructure in Ugie. There are approved plans for the construction of addition water storage and upgrading of water treatment works and reticulation for the amount of ZAR143 million. With respect to sanitation, there plans to upgrade septic tanks to sewer-based systems connected by pump stations and *Wastewater Treatment Works* (WWTW) for ZAR30 million. The Elundini Rural Water and Sanitation Programme has approved budgets of ZAR413 million and 46 million for drinking water and sanitation (*Ventilated Improved* Pit – VIP – latrines), respectively. The IDP report does not specifically mention areas targeted with the LM. It states that this budget will be used for historic backlogs within the LM. This budget is included in the WSDP for the JGDM. Upgrading of sanitation services in Ugie has been estimated to be around ZAR 30 million (Joe Gqabi District Municipality , 2019).

The JGDM has 3-tier level of service delivery for water services with VIP latrines being the minimum prescribed technology (**Figure 2**). WWTWs are currently restricted to the urban centres with isolated schemes in rural areas and local hospital schemes. The decision is influenced by limited water supply and affordability constraints in the rural areas (Joe Gqabi District Municipality, 2019).

LEVEL OF SERVICE	WATER SUPPLY	SANITATION
1. Basic	Standpipe within 200m walking distance from household	Ventilated Improved Pit (VIP) latrine toilet
2. Intermediate	Yard connection	Septic tanks
3. Full	House connection	Waterborne (flush) toilet

Figure 2. Water and Sanitation service levels for Joe Gqabi District Municipality (Joe Gqabi District Municipality , 2019)

4 Service outcomes

This section presents the range of sanitation technologies/infrastructure, methods and services designed to support the management of *faecal sludge* (FS) and/or *wastewate*r (WW) through the sanitation services chain in Ugie (see also section 5 for further details of the quality of the services provided).

4.1 Containment

Table 1 shows the different sanitation technologies used in Ugie and how these are defined by the SFD Promotion Initiative, alongside the estimated percentage of population using each system.

For example, all the buried plastic and concrete tanks are referred to as *septic tanks* by the municipality. However, since these tanks do not have an outlet/discharge point they are not defined as a septic tank but as a fully lined tank as per SFD definitions (see row reference number 2 on Table 1).

Table 1: Sanitation technologies and contribution of excreta in terms of percentage of population

No.	Sanitation technologies and systems as defined by:		SFD reference variable	Percentage of population
	Joe Gqabi DM	SFD promotion initiative		
1	Toilet flushes directly to sewer	Toilet discharges directly to a centralised foul/separate sewer	T1A1C2	2.0%
2	Septic tank (plastic or concrete)	Fully lined tank (sealed), no outlet or overflow	T1A3C10	12.6%
3	Septic tank (plastic or concrete)	Containment (fully lined tanks, partially lined tanks and pits, and unlined pits) failed, damaged, collapsed or flooded – with no outlet or overflow	T1B10C10	6.1%
4	VIPs (urban)	Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow	T1B7C10	20.2%
5	VIPs (urban)	Pit (all types), never emptied, abandoned when full but NOT adequately covered with soil, no outlet or overflow	T1B8C10	1.1%
6	VIPs (rural)	Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow, where there is a ‘significant risk’ of groundwater pollution	T2B7C10	58.0%

4.2 Off-site sanitation

According to municipal records, 2% of the population of Ugie are serviced via off-site sanitation (flush toilets connected to sewer system, shown as T1A1C2 on Figure 5). JGDM estimate that all wastewater is transported to the Prentjiesberg WWTWs with no leakage, as the sewer pipes

are relatively new with low flows (W4a = 100% on Figure 5), and that all wastewater delivered to treatment is treated to meet specified requirements. There is no evidence of treatment efficiency or compliance standards monitoring, but for the purposes of this SFD Lite report KDGM estimate that 100% of all wastewater is treated effectively (W5a = 100% on Figure 5).

Ugie, Eastern Cape, South Africa, 14 Aug 2018. SFD Level: SFD Lite
Population: 15324
Proportion of tanks: septic tanks: 100%, fully lined tanks: 100%, lined, open bottom tanks: 100%

Containment						
System type	Population	WW transport	WW treatment	FS emptying	FS transport	FS treatment
	Pop	W4a	W5a	F3	F4	F5
System label and description	Proportion of population using this type of system (p)	Proportion of wastewater in sewer system, which is delivered to centralised treatment plants	Proportion of wastewater delivered to centralised treatment plants, which is treated	Proportion of this type of system from which faecal sludge is emptied	Proportion of faecal sludge emptied, which is delivered to treatment plants	Proportion of faecal sludge delivered to treatment plants, which is treated
T1A1C2 Toilet discharges directly to a centralised foul/separate sewer	2.0	100.0	100.0			
T1A3C10 Fully lined tank (sealed), no outlet or overflow	13.0			50.0	100.0	100.0
T1B10C10 Containment (fully lined tanks, partially lined tanks and pits, and unlined pits) failed, damaged, collapsed or flooded - with no outlet or overflow	6.0			50.0	100.0	100.0
T1B7C10 Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow	20.0					
T1B8C10 Pit (all types), never emptied, abandoned when full but NOT adequately covered with soil, no outlet or overflow	1.0					
T2B7C10 Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow, where there is a 'significant risk' of groundwater pollution	58.0					

Figure 3: SFD Matrix for Ugie (2018)

4.3 On-site sanitation

Containment

98% of the total population is served with on-site sanitation, the majority of which (79% = 58% +20% + 1%) are VIP type pit latrines. Of the total 4,026 VIPs, 1,082 are urban VIPs and 2,944 are rural VIPs.

Of the urban VIP latrines, JDGM estimate that 95% (1,028) of these are properly covered when the VIP is full and moved (T1B7C10 = 20% on Figure 5). The remaining 5% (54) are not properly covered (T1B8C10 = 1% on Figure 5), this is due to possible limited space in the urban environment. As groundwater is, however, not currently utilised in the urban area, the risk of groundwater contamination is rated as *low risk* (in terms of potable drinking water supply).

JDGM estimate that 100% (2,944) of the rural VIPs are properly covered when the VIP is full and moved, as there is ample space in the rural context, and as these communities have been self-reliant for many years. However, as these rural communities are reliant on groundwater, this is indicated as significant risk (T2B7C10 = 58% on Figure 5).

In the urban area, 19% of the total population use fully lined (aka *septic*) tanks with no outlet or overflow. The majority are in good condition (T1A3C10 = 13% on Figure 5), but overflows and seepage emanating from roughly a third of these tanks was noted by the JGDM (T1B10C10 = 6% on Figure 5).

Emptying and transport

As mentioned above, the VIPs are never emptied and therefore the accumulated FS is not transported to any treatment facility.

The fully lined tanks in the urban area are serviced by both municipal and private service providers (see full description in section 5). However, since there are no records of emptying coverage, the JGDM estimate that only 50% of all tanks are emptied (F3 = 50% on Figure 5) but that all the emptied faecal sludge is transported and delivered to treatment (F4 = 100% on Figure 5), with no reports of illegal dumping.

Treatment

As noted above in section 4.2, there are no records available for estimating treatment compliance. For the purposes of this SFD Lite Report, the JGDM estimate 100% of the incoming FS is treated to compliance (F5 = 100% on Figure 5).

4.4 Open defecation

No open defecation has been reported. However, it can be considered that on-site system that are not at prescribed minimum levels of the municipality can be considered as open defecation.

4.5 Risk of groundwater contamination

Water for urban areas of Ugie is supplied from the Ugie drinking-water treatment plant via pipeline to households with the majority of households either receiving water via household taps or yard connections. Raw water is obtained from the Wildebeest River (i.e. surface water).

Rural areas (outside of the urban boundary) are reliant on groundwater sources and as little/no treatment is noted, protection of these water sources is essential.

Although the groundwater is not presently being used in Ugie urban areas, climate change impacts and the increasing water scarcity facing many parts of South Africa and the Eastern Cape.

Of concern, is that in the Popcorn Valley area, sanitation systems were overflowing (old concrete tanks, blocked sewerage lines), and that the pollution could reach the Wildebeest River. As this point is upstream of the intake to the drinking-water treatment plant, a concern exists that the Wildebeest River could be contaminated and that the drinking-water supply could be compromised. The JQDM aims to establish a comprehensive groundwater monitoring plan for the monitoring of water levels and groundwater quality in rural and urban areas. This will done in partnership with the Regulator, the *Department of Water and Sanitation* (DWS) (Joe Gqabi District Municipality, 2019).

There is a need to create awareness among the rural people about the need to ensure that pit latrines/VIPs are adequately sealed when closed/moved/new pit dug and of the effects of using polluted water.

4.6 SFD Graphic

Based on the above data, estimates and assumptions, the SFD graphic illustrates that 38% of excreta is safely managed in Ugie town (**Figure 4**).

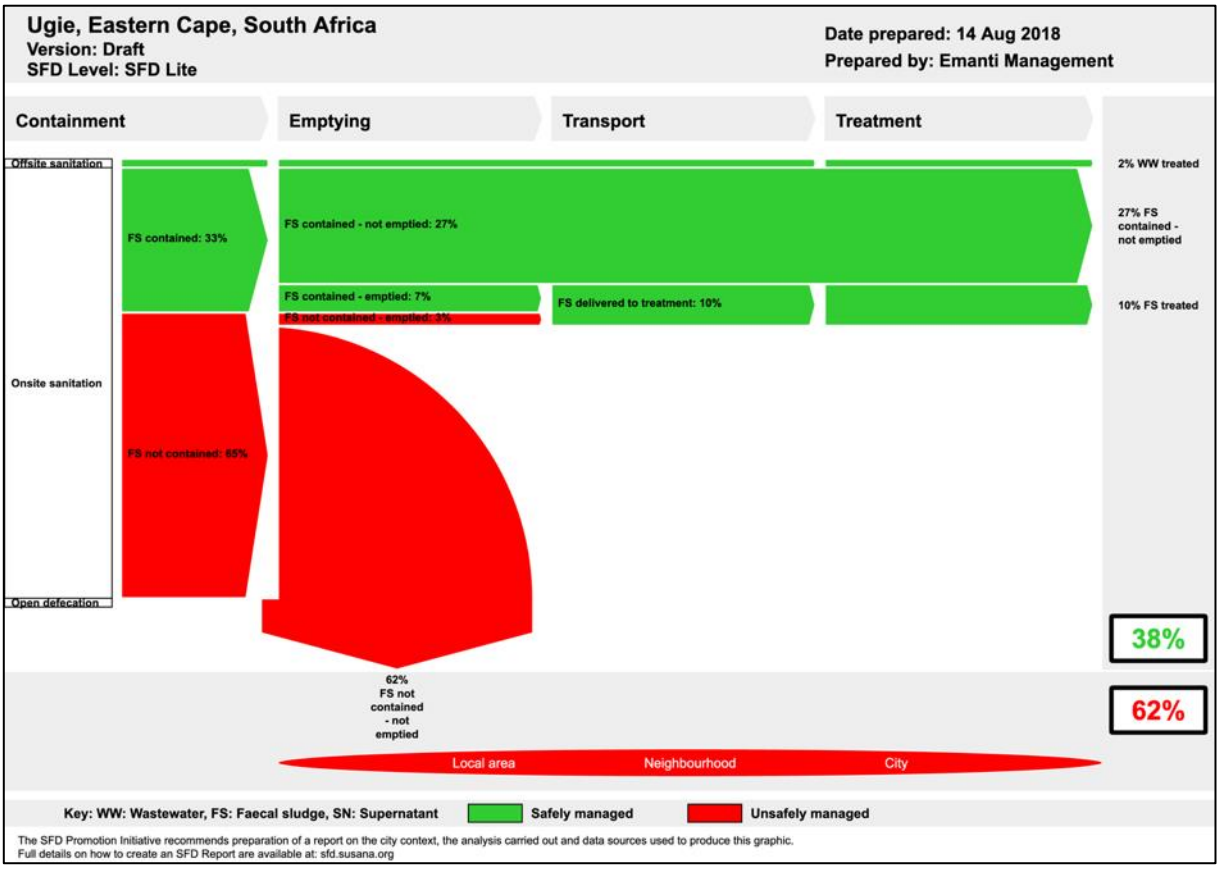

Figure 4: SFD Graphic of Ugie

98% of the total population use on-site sanitation with only 2% connected to the off-site sanitation or sewerage system. There is no open defecation.

The majority of the safely managed excreta is faecal sludge contained but not emptied from the onsite sanitation systems (27% on Figure 6). Of which, three quarters (20%) is in VIPs which are never emptied but covered and closed when full. Importantly, only 8% of safely managed excreta is faecal sludge emptied from the tanks and transported for treatment at the WWTW.

An estimated 64% of the excreta from the total population is not safely managed. This is entirely from the population using VIPs in rural areas where there is estimated to be a significant risk of groundwater pollution. For the purposes of this SFD Lite report, this faecal sludge is considered ‘not contained’ and therefore unsafely managed. Clearly, action is required to protect these water sources and/or improve sanitation services.

5 Data and assumptions

This section provides the background to data and assumption used in developing the SFD Lite Report for Ugie. In developing the SFD Lite Report, a number of information sources were used and have been noted in section 6. Data has been sourced directly from JGDM as the Municipality serves the function of WSA and WSP for Ugie and the local municipality in which the town is situated in. Sources include personal interviews and published reports. The targeted area includes an urbanised towns and smaller surrounding areas (peri-urban and rural). The assumptions used in this SFD Lite Report have been classified according to the different sanitation supply chain components.

5.1 Containment

There is a limited sewerage network with the only off-site formal waterborne sewer system being linked to the Prentjiesberg WWTW with domestic effluent originating from the PG Bison-owned houses and associated truck-stop. PG Bison is a manufacturing company that produces board products.

The remaining areas are reliant on on-site sanitation systems. The following on-site containment systems are generally noted:

- Flush toilet connected to a *septic tank* (concrete) for an individual house/building.
- Flush toilet connected to a *septic tank* (concrete) which is shared (communal).
- Flush toilet connected to a *septic tank* (plastic) for an individual house.
- VIPs.

Although the JGDM refers to these containment structures as septic tanks, as they have no formal outlets, they are defined as fully lined tanks within the SFD nomenclature.

There are concrete tanks in Ugie town serving for example, houses, the school, shops and the police station. These houses are provided with individual water connections.

There are communal concrete tanks (~2.5 mx 2.5 m x 2 m) in Popcorn Valley serving approximately 56 low-income houses. These tanks often overflow/leak (blocked lines) resulting in unhygienic conditions and possible impacts on the Wildebeest River (distance of approximately 100 m to the river, and this is upstream of the drinking-water treatment plant inlet). These houses are provided with individual water connections. Each house has at least one flush toilet and a hand washbasin as standard sanitary fixtures. In Ugie Park, the community is served with communal concrete tanks connected to flush toilets with approximately 8 to 10 households served by a communal concrete tank. These tanks regularly overflow/leak resulting in unhygienic conditions in large parts of the township. In other areas (e.g. Old Township, Ntokozweni, Mandela Park) flush toilets are either connected to a plastic or concrete tank. Regarding communal tanks, questions arising include:

- Indigents cannot pay but to protect public health and the environment, the service must be rendered – how is this managed sustainably?
- Who pays for the emptying service when 4 or 5 houses are connected to a single communal tank?

There are parts of Ugie urban and rural areas where communities use VIP toilets. To-date, these toilets have never been emptied. In rural areas, communities are used to covering up

and abandoning a full VIP and relocating the VIP to a new location. In the urban context, limited space could prohibit this practice.

Figure 7 and **8** illustrate the coverage in the targeted area. Population statistics and service levels have been provided by JGDM which serves as the WSA and WSP for the district.

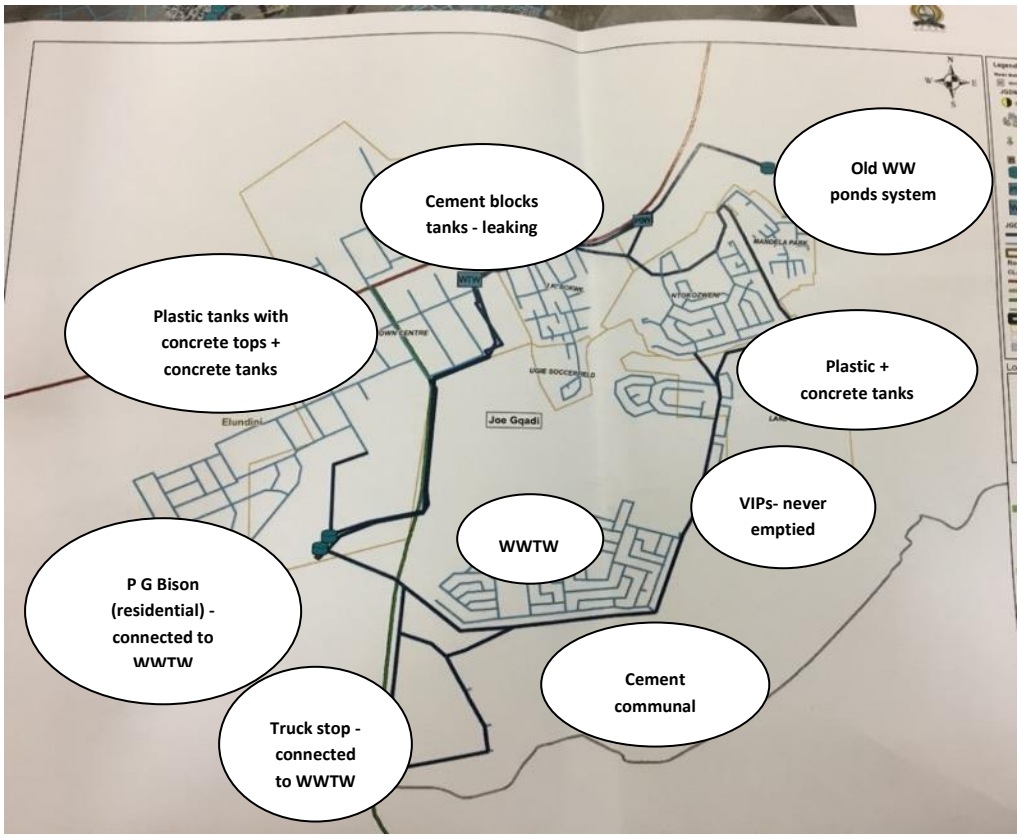

Figure 5: Ugie area representation

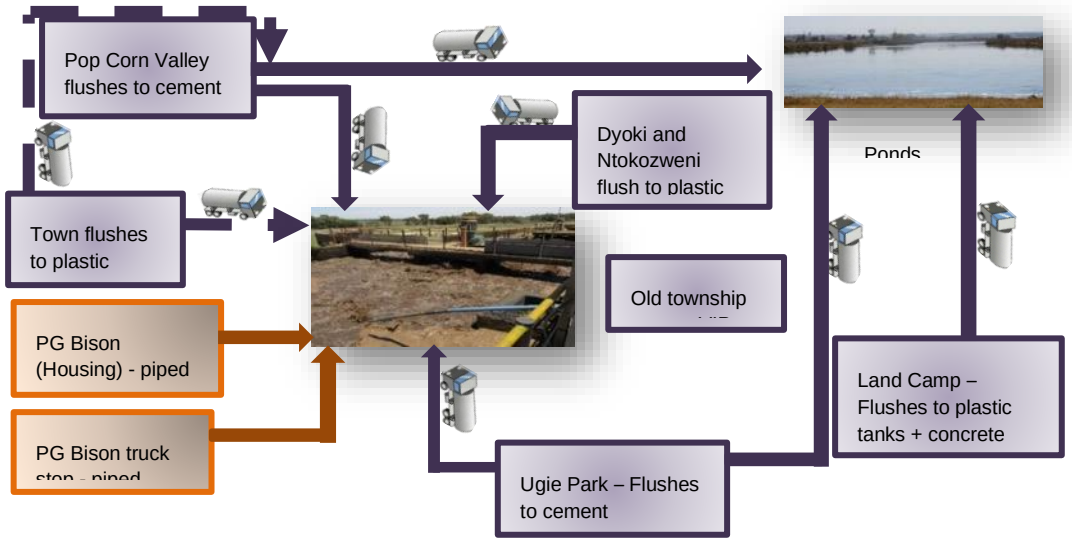

Figure 6: Ugie area sanitation flow representation

5.2 Emptying and Transport

Vacuum tankers are used to empty and transport sewage from the concrete and plastic tanks (individual and communal) to either the Prentjiesberg WWTW or the Ugie Wastewater Pond system. The JGDM is not aware of manual emptying occurring within Ugie.

As the economic circumstance of households improves, the municipality is noting an increased volume of effluent from *Reconstruction and Development Programme* (RDP) houses. It has been noted that the current fleet of vacuum trucks cannot cope with these increased volumes of FS. The municipality currently has 3 vacuum trucks but this is insufficient, and the municipality have requested that 5 vacuum trucks be in service. Vacuum trucks appear to have a volume of 5,000 L.

Vacuum trucks are mostly servicing the urban areas of Ugie. Some of the vacuum trucks are municipal owned/run while others are outsourced via a service provider with an appropriate contract and associated contract period. The municipality aims to empty all tanks every month (and at least every 3 months) but sometimes tank overflows are experienced. There is no money exchanged between the emptier/vacuum truck and the household/business. At times, high levels of intrusion are suspected (i.e. high water table at the high school), as the contents of the tanks sometimes appear to mostly be water (and not wastewater).

There is currently very little monitoring and management of private emptier and monitoring at point of discharge to the WWTWs does not appear to be occurring (i.e. *do emptiers actually deliver collected sludge to the designated discharge points*?). Despite the above, it is noted that it would be more expensive for emptiers to discharge in the rural areas/outside of the urban area, as the discharge points are relatively close by, and that some of the land on the outskirts is heavily access controlled by the nearby industry (PG Bison). Emptiers are provided with a list of households/businesses that they need to service (pre-paid by the household/business to the municipality before the service is performed). As private emptiers are paid on a daily rate, there does not seem to be an incentive to manage time efficiently.

From the site inspection, there appeared to be some evidence of recent discharging at the Prentjiesberg WWTW while there was little evidence of recent emptying at the Ugie Ponds. The staff at the Prentjiesberg WWTW indicated that to their knowledge, only 2 vacuum trucks are operational and that they deliver their sludge to the Ugie Ponds and not to the Prentjiesberg WWTW.

Vacuum truck service providers are routinely appointed on a 3-month contract, and as the reappointment process often takes approximately 1 week, this result in the loss of 1 month of service for every 12 months. Due to the current contracts for vacuum truck service providers expiring and the new appointments not yet being in place, the SFD team were unfortunately not able to meet and discuss emptying and transportation operations with the vacuum truck service providers. The typical number of households serviced, average volume collected per household, skills/capacity/training of the service provider team, use of safety equipment, etc. is therefore currently unknown.

5.3 Treatment and Disposal

Ugie town and surrounding areas are serviced by two WWTWs, namely the Prentjiesberg WWTW to the south of town and the Ugie Wastewater Oxidation Ponds located to the east.

As previously noted, there is a limited sewerage network which conveys wastewater to the Prentjiesberg WWTW (design capacity: 0.59 ML/d). The works is based on activated sludge treatment technology, with secondary treatment (aeration) and settling undertaken in one tank. Final effluent is disinfected before it is released to the Wildebeest River. The works are properly fenced with controllable access. At the time of the site inspection, the flow to the Prentjiesberg WWTW was very low. Evidence of effluent/sludge discharge from tanker trucks at the noted discharge point before the works was also visible. The on-site drying beds were empty, and appear to not be in use. The site was manned by a security officer, one process controller and a supervisor. A log-book with monitoring records of basic effluent quantity and quality parameters (e.g. flow, pH, free chlorine residual) was noted in the control room.

The Ugie Wastewater Oxidation Ponds (design capacity: 0.7 ML/d). The Ugie Ponds currently only accepts tankered FS. It is planned that the Ugie Ponds will be phased out in the future and sewage/sludge will be redirected to the Prentjiesberg WWTW. The works are properly fenced and locked. At the time of the site inspection, no evidence of recent effluent/sludge discharge from tanker trucks at the noted discharge point to the Ugie Ponds was visible. Although sludge appears to be accumulating in the ponds (islands starting to be visible), the final maturation pond still appears to have sufficient capacity. The site was not manned and no control room was noted (i.e. no monitoring records available on-site).

A large number of households currently use septic and conservancy tanks. The capacity of the Prentjiesberg WWTW would need to increase if these systems are replaced and a more widespread sewer system is installed.

If required, sludge from the Ugie Ponds and Prentjiesberg WWTW is stockpiled on-site (i.e. not disposed of at a landfill). No evidence of sludge stockpiling was evident during the site inspection.

For treatment and disposal, this SFD Lite Report used an estimate of 100% of the incoming wastewater and/or FS is treated to compliance (although there are no records available for compliance). This aspect could change in the future should compliance data be made available.

5.4 Availability and Accessibility of Data and Data Gaps

Data for Ugie town can be accessed Municipal IDPs and Stats SA sources. Municipal – district and local – IDPs are available on municipal websites. The IDP is a plan for an area that provides for an overall framework for development. IDPs are undertaken at District and / or Local Municipality level and has a lifespan of 5-years. Plans within the IDP have a budget approved by the municipal council. The IDPs are required to contains the WSDP for the municipality. The WSDP for the JGDM has been used and cited extensively in this SFD Lite Report. This report was compiled mainly using data supplied from the District Municipality which acts as the WSA and WSP for the area. The data used for this SFD Lite Report – at the time of publication – is thought to be the most recent data set available.

6 List of data sources

The relevant uMgungundlovu Municipal Officials were contacted through e-mail, letter and telephone call prior to the visit to the local municipality. The purpose of the SFD study and depth of data required was conveyed through an introductory letter to respective staff. Although

a number of stakeholders of government departments were noted, this SFD study aimed to focus on interviews with staff from uMgungundlovu District Municipality.

Below is the list of data sources used for the development of the SFD.

- Published reports: Census 2011, Community Survey 2016, IDPs, WSDPs
- Unpublished documents: IDPs, WSDP (drafts)
- Key informant interviews: JGDM

7 References

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8 Acknowledgements

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Appendix

Table 2. Stakeholder identification

No.	Stakeholder group	In Ugie context
1	City council / Municipal authority / Utility	Water Services Authority (WSA): Joe Gqabi District Municipality *Water Services Provider* (WSP): Elundini Local Municipality
2	Ministry in charge of urban sanitation and sewerage	National: Department of Water and Sanitation Provincial: Department of Water and Sanitation (Eastern Cape)
3	Ministry in charge of urban solid waste	National: Department of Environmental Affairs Provincial: Department of Economic Development, Environmental Affairs & Tourism of the Eastern Cape (DEDEAT)
4	Ministry in charge of urban planning, finances and economic development	National: Department of Human Settlements Provincial: Eastern Cape Department of Human Settlements National: National Treasury Provincial: Eastern Cape Provincial Treasury
5	Ministry in charge of environmental protection	National: Department of Environmental Affairs Provincial: Department of Economic Development, Environmental Affairs & Tourism of the Eastern Cape (DEDEAT)
6	Ministry in charge of health	National: Department of Health Provincial: Eastern Cape Department of Health
7	Service provider for construction of on-site sanitation technologies	Various, by tender appointment
8	Service provider for emptying and transport of faecal sludge	Various, by tender appointment
9	Service provider for operation and maintenance of treatment infrastructure	N/A Performed by Elundini Local Municipality
10	Market participants practicing end-use of faecal sludge end products	N/A
11	Service provider for disposal of faecal sludge (sanitary landfill management)	N/A
12	External agencies associated with faecal sludge management services (e.g. NGOs, academic institutions, donors)	N/A

Table 3: Tracking of stakeholder engagement

Name of organization	Name of contact person	Designation	Date of engagement	Purpose of engagement
Joe Gqabi District Municipality	Mr. Sicelo Pongoma	Manager: WSA	5th, 11th and 23rd July 2018	Introducing SFD, securing support for project
Joe Gqabi District Municipality	Mr. Stompie Lourens	Head: Water Services Compliance	5th, 11th and 23rd July 2018	Introducing SFD, securing support for project
Joe Gqabi District Municipality	Mr. Sicelo Pongoma	Manager: WSA	13th & 14th August 2018	Data collection, collation, verification and site visits including key informant interviews
Joe Gqabi District Municipality	Mr. Stompie Lourens	Head: Water Services Compliance	13th & 14th August 2018	Data collection, collation, verification and site visits including key informant interviews
Joe Gqabi District Municipality	Mr. Sicelo Pongoma	Manager: WSA	2nd – 5th October 2018	Draft report review and finalisation
Joe Gqabi District Municipality	Mr. Stompie Lourens	Head: Water Services Compliance	2nd – 5th October 2018	Draft report review and finalisation

Selected pictures taken during visit:

Figure 7: Example of near full VIP

Figure 8: Evidence of full and overflowing containment tanks

Figure 9: Evidence of poorly constructed and leaking containment tanks

Figure 10: Tanker discharge point at Prentjiesberg WWTW

Figure 11: Prentjiesberg WWTW

Figure 12: Treated effluent discharge from Prentjiesberg WWTW

Figure 13: Ugie Ponds showing accumulated sludge

SFD Ugie uMshwati Local Municipality, South Africa

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