



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

SEDIBENG REGIONAL SANITATION SCHEME

Progress Report for the Department of Water and Sanitation (DWS)
for the Vaal River System Intervention (Refurbishment Works)
Period Ending – 31 December 2021

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Vaal River System Intervention Programme (Refurbishment Works) Progress Report –31 December 2021

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Abbreviations / Acronyms / Definitions

BDO	:	Business Desk Officer
BoQ	:	Bill of Quantities
CLO	:	Community Liaison Officer
Consultant	:	GIBB (Pty) Ltd (GIBB)
CSC	:	Community Steering Committee
DIFR	:	Disabling Injury Frequency Rate
DWS	:	Department of Water and Sanitation
ELM	:	Emfuleni Local Municipality
ERWAT	:	Ekurhuleni Water Care Company
EMM	:	Environmental Management Plan
LDO	:	Labour Desk Officer
RR	:	Risk Register
RW	:	Rand Water
SRSS	:	Sedibeng Regional Sanitation Scheme
VRSI	:	Vaal River System Intervention
WWTW	:	Wastewater Treatment Works

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Executive Summary

Introduction

The Sedibeng Regional Sanitation Scheme (SRSS) is a multi-faceted sanitation project that aims to develop sustainable bulk sanitation capacity in the Sedibeng region, deliver effective solutions to prevent pollution of strategic national water resources and unlock development projects and economic opportunities in the region that require sanitation services.

GIBB are appointed to provide consultancy services related to the Sedibeng Regional Sanitation Scheme (SRSS) which includes the detailed design and implementation of the new infrastructure, as well as the optimisations and refurbishment of the existing infrastructure related to the Scheme.

The purpose of the Vaal River System Intervention (VRSI) Programme is to resuscitate the existing wastewater collection, conveyance and treatment infrastructure and return it to an operational state thus eliminating and preventing the pollution of the Vaal River system.

The scope of the VRSI refurbishment works consists of the three (3) wastewater treatment plants (WWTW), namely Sebokeng, Rietspruit and Leeuwkuil, the 48 individual pump stations and the unblocking of the associated conveyance and sewer network pipelines. DWS have appointed Contractors to do the unblocking and bio-solids handling for the Vaal River System Intervention and refurbishment Works. DWS is in the process of finalising the appointment of the Civil Framework Contractors and have previously undertaken to issue tenders for the appointment of Mechanical and Electrical (M&E) Contractors within the next four (4) to six (6) months.

This report documents the status and progress made on the VRSI project for the period of 1 December 2021 to 31 December 2021.

Reference Reports

The Consultant's previous progress reports documents progress up to 31 October 2021. Where required, the relevant information from previous progress reports is reproduced in this report for ease of reference.

Progress/Status

Unblocking of bulk and network sewers as well as the cleaning of Pump Stations have commenced within all three (3) catchments. Whilst Bio-solids handling activities have previously started at Sebokeng and Rietspruit WWTW, this was halted due to community members that, on 13 October 2021, has rendered the Works inaccessible. Sites re-opened on 13 December 2021 after community members retracted.

To ensure that the VRSI Programme is implemented in a sustainable manner, by also taking the present health and safety, and the environmental impact on the affected communities into consideration, the implementation of the Programme is planned to entail a dual approach as follows:

a) Community Safety and Reduction of Environmental Impacts of Sewage Spillages

It is of vital importance to reduce the impact of sewer spillages in residential settlement areas and where blockages and spillage occurs in areas with high community activity i.e. commuter areas, commercial, public and community infrastructure (schools, creches, shopping centres) etc.

Therefore, where spillages occur within communities in erven and streets, Contractors are to be mobilised to:

- reduce the associated negative consequences of sewerage spills to the health and safety of communities; and
- to reduce the environmental pollution impact by concentrating spills to specific contained areas.

b) Systematic Refurbishment of the Sewer Collection Network and System

The second part of the VRSI implementation strategy is to commence with the refurbishment of the Head of Works of the Wastewater Treatment Plants in the three (3) catchments to ensure that the Works can receive and process the incoming sewage flows. Once the refurbishment of the Head of Works and Inlet Structures of the various WWTW's has commenced, the refurbishment of the WWTW's remaining treatment process systems will continue systematically downstream to return the WWTW to full operational capacity, and upstream refurbishment activities enabling the WWTW's to receive flows from the feeder catchment and the sewer networks. This will entail, amongst other activities, the unblocking and cleaning of pipe networks and cleaning of pump stations and the refurbishment of pumps and electrical installations.

By following this approach, the Project will be implemented in a sustainable and cost-effective manner and minimising rework and wasteful expenditure.

In terms of appointing Contractors to execute the planned works the DWS has appointed ten (10) Contractors for the Provision of Plant and Equipment for the unblocking of the sanitation network and eight (8) Contractors are appointed for the handling of bio-solids.

As per a directive received from the DWS on Thursday, 29 July 2021, GIBB has engaged with and have met with all the Provision of Plant and Equipment (Unblocking) and Bio-solids Handling Contractors assigned to the VRSI project. Furthermore, all Contractors have been mobilised whilst Africa Green Loo Technology Sanitation (AGT) and Bovu Fluid Holdings (Bio-solids handling) who have been assigned to the bio-solids handling at Sebokeng and Rietspruit WWTW respectively commenced operations during the month of September. Initially works associated with the upgrade of the WWTW's were assigned to AGT and Bovu, but halted when it was ascertained that civil, mechanical, and electrical works do not form part of the scope in the Contracts under which they are appointed.

Catchment Areas, Wastewater Treatment Plants and Pump Stations have previously been allocated to the various appointed Provision of Plant and Equipment (Unblocking) and Bio-solids Handling Contractors. Where Unblocking Contractors are not allocated to catchments or areas as per the works allocation sheet received from DWS, the Contractors have been allocated specific tasks in consultation with Emfuleni LM representatives who have previous working experience with these Contractors. This

is to ensure that the more experienced Contractors are assigned to parts of the network where infrastructure is fragile and hence requires more skill and experience to execute the works. Similarly Pump Stations were re-allocated where it is expected that Contractor's Purchase Order ceiling amounts will be exceeded or where a Contractor does not have the necessary expertise.

Service Level Agreement's (SLA's) are still to be concluded and signed with seven (7) Civil Framework Contractors. At the end of August 2021, two (2) Civil Framework Contractors' ability to execute and perform mechanical and electrical works were assessed. Following the submission of the assessment to DWS on 03 September 2021, the recommendations were not accepted as it would be considered irregular expenditure. Following subsequent discussions, GIBB was requested to evaluate the remaining five (5) Civil Framework Contractors. These evaluations were concluded early November 2021 and submitted to DWS on 9 and 10 November 2021.

However, the appointment of Mechanical and Electrical Framework Contractors is to be re-advertised due to an overall non-responsiveness in the first round of call for bids. As a result of the fact that the agreements for the Civil, Mechanical and Electrical Framework Contractors have not been concluded, rework is experienced and can the Intervention be regarded as only partially successful. This can mainly be ascribed to key Pump Stations not being able to be operated at full capacity or not being operational at all due to mechanical and electrical failures.

Below Figure 8 indicates all the Pump Stations in the Leeuwkuil Catchment. Pump Stations in green indicate installations that have been cleaned, inspected and which are operational. Pump Stations in black and the conveyance network indicated in red, depicts Pump Stations that are not operational due to mechanical and electrical refurbishment requirements and /or where network conveyance refurbishment or interventions are required, due to pipe collapse or inadequate conveyance capacity.

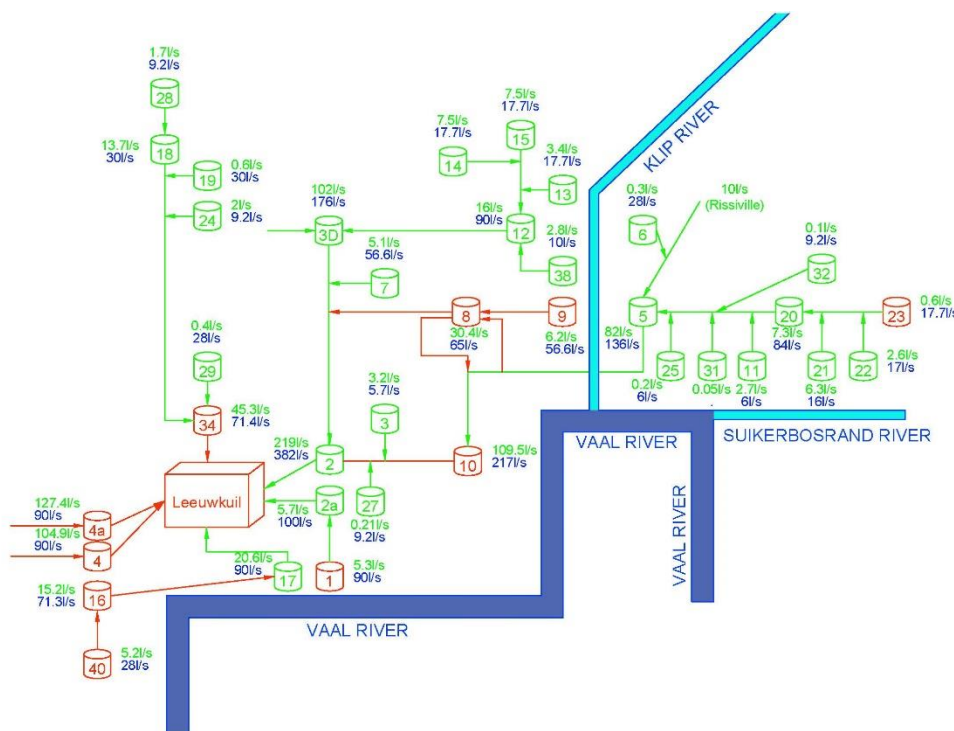


Figure 8: Leeuwkuil Catchment

Pump Station, being an vital link in the network to transfer flow to Leeuwkuil, is currently being attended to by a mechanical / electrical contractor, appointed by Rand Water, in an effort to return it to operation.

Since mobilisation of the unblocking and bio-solids handling Contractor's to site from mid-June 2021, the intervention actions have made a positive impact on the average inflows to the various WWTW's, as per Table 8 below.

Table 8: Inflow to WWTW's

Month	Inflow Mℓ/day		
	Leeuwkuil WWTW (45 Mℓ/day)	Rietspruit WWTW (38 Mℓ/day)	Sebokeng WWTW (150 Mℓ/day)
May-21	5.43	14.3	45.00
Jun-21	5.16	5.25 ⁽²⁾	41.20
Jul-21	7.24	3.34	55.50
Aug-21	8.11	26.6	46.5
Sep-21	7.96	27.6 ⁽¹⁾	66.0
Oct-21	5.23 ⁽¹⁾	37.55 ⁽¹⁾	57.74 ⁽¹⁾
Nov-21	8.05 ⁽³⁾	34.81 ⁽⁴⁾	116.60 ⁽⁵⁾

Note 1: Based on readings from 1 to 6 October 2021

Note 2: Based on 11 days reading, as the Works is operating with the Gen Set

Note 3: Based on 3 weeks of full operation without disruption up to 17 November

Note 4: Based on flow recordings 8 to 15 November 2021

Note 5: Based on flow recordings 11 to 15 November 2021

From the data received, the inflows to Rietspruit WWTW is close to capacity. Due to community members rendering the WWTW's inaccessible, data is not readily available but it can be seen that inflows to Sebokeng WWTW have increased to 75% of the Works' capacity since the unblocking operations of the bulk lines feeding the WWTW from the north has commenced. Data has been received for the period 13 December 2021 to date but are lower, possibly attributed to blocked screens at the intake works. Latest indications are that the inflow to Sebokeng WWTW's are in the order of 126

Based on Table 8 and as indicated in Figure 9 below, the impact of the mobilisation of the Contractors illustrates that the unblocking interventions to date have initially resulted in a decrease in network spillages and better containment of the sewage flows feeding into the WWTW's. However, it must be noted that the refurbishment of the three WWTW's infrastructure is urgently needed to effectively treat the incoming flows.

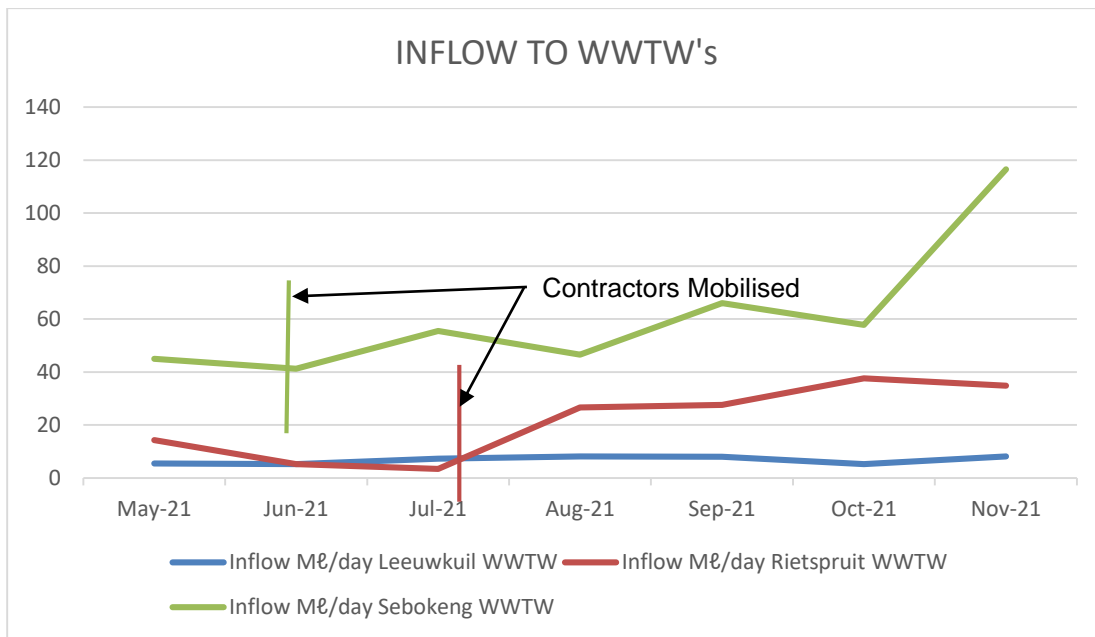


Figure 9: Inflows to WWTW's

Due to constraints in the network as well as key Pump Stations in the Leeuwkuil Catchment not being fully operational, inflows to the Leeuwkuil WWTW will not increase in the foreseeable future. In addition, it should be noted that Pump Station 34 (PS34) at Leeuwkuil WWTW is not operational and therefore flow into the works are dramatically restricted. This pump station needs to be upgraded urgently. Whilst designs and tender documents are completed, a contractor needs to be procured.

Whilst inflows to the Rietspruit WWTW is near plant capacity, the following interventions are expected to increase the inflow into the Rietspruit WWTW:

- Collapsed pipe (bulk Line, approximately 90 m) along Cilliers Street;
- Vaal Mall Line (syphon), acting as gravity, blocked off, manholes need to be constructed (no access at the moment, only accessible at the start and end of the pipeline);
- Industrial pipeline (ash line) at Delfos Road – whilst the pipeline replacement by local businesses have been completed, the impact still needs to be assessed; and
- PS41 (River Pump Station) – a pump meeting the current operational requirements has been commissioned. The impact still needs to be assessed.

In the Sebokeng Catchment, Contractors were mobilised to unblock network sewers in the various residential areas to reduce the negative Health and Safety risk and impact on affected communities. On 26 August 2021 a Contractor was mobilised to commence unblocking of the DN1500 / DN1100 and DN900 sewage main pipeline north of the Sebokeng WWTW. The significant increased inflow into the Sebokeng WWTW is attributed to the cleaning and unblocking of this pipeline.

“Hot-spot” locations for further unblocking of the sanitation network are continuously identified in accordance with a priority list and notifications received from Emfuleni Local Municipality (ELM). Following identification of the “hot-spots” the refurbishment work is scoped and Job cards accordingly prepared. During the period 1 to 31 December 2021, 116 high pressure unblocking and cleaning operations have been logged daily in the Sebokeng Catchment, 68 in the Leeuwkuil Catchment and 60

in the Rietspruit Catchment. The number of interventions decreased from the previous period as only interventions considered emergency was attended during the traditional December construction shut down period during which a limited number of teams and contractors were mobilised. However, operational issues experienced at key Pump Stations and network congestion impacts on and causes spillages in areas.

The refurbishment requirements for the Head of Works/Inlet Structures for the various WWTW's have been defined and Specifications, Bills of Quantities and Drawings have been prepared, collated, and issued to the three (3) allocated Bio-solids handling Contractors for quotations and planning purposes. Whilst quotations have been received for refurbishment works to be done at Sebokeng and Rietspruit WWTW's, civil work cannot continue until such time that the Civil Framework Contractors have been concluded by DWS and transferred to Rand Water, the appointed Implementing Agent.

Of the Pump Stations, 29 of the 48 Pump Stations are operational, 15 are not operational and the status of four (4) uncertain. Most of the Pump Stations require refurbishment in terms of additional pumps as well as the refurbishment of mechanical and electrical installations.

On 16 September, AGT commenced cleaning operations at Sebokeng WWTW's Head of Works whilst Bovu commenced cleaning the Drying Beds and Lagoons at Rietspruit WWTW on 14 September. Both these Contractors are using local labourers. However, since 13 October 2021, the community has rendered Rietspruit and Sebokeng WWTW inaccessible due to local labour employment demands not being met. Sites re-opened on 13 December 2021 after community members retracted. Whilst work has restarted at Sebokeng WWTW, the contractors have to be redeployed at the other WWTW's.

The Health and Safety (H&S) files have been received from all 13 Contractors and have been reviewed and approved by the H&S Agent. During November 2021, Health and Safety audits were executed for nine (9) Contractors currently on site. The Contractors are commended for their efforts to obtain compliance with audit scores ranging between 82.96% and 100%.

It is advised that a Community Liaison Officer (CLO) be assigned to the Project and be deployed to the site to liaise with the local community. The success of the Project is dependent on the acceptance of the interventions by the community and for the community to help protect the refurbished infrastructure from sabotage and theft. The interventions largely benefit the community with the provision of a sustainable service and protects them from the negative health and safety risks.

Meetings have earlier been held with the Community Steering Committee's (CSC) CLO to mobilise local labour identified by the community and to be employed by the mobilised Contractors. To date 30 local labourer opportunities have been identified, ten (10) per catchment, and 22 have been deployed to the sites following successful completion of a medical test and receipt of vaccinations. Pending resolution on rates to be paid by contractors, the remaining eight (8) local labourers can be deployed. Additional labourers will be engaged and employed once the Civil Framework Contractors have been appointed, since the opportunities for more local labour participation on the VRSI lies in the Civils scope of work.

As the Provision of Plant and Equipment as well Bio-solids Handling Contractors are not appointed to repair any infrastructure, the risk of abortive work, and hence possible rework, exists and is being

experienced. Once parts of the sewer network are unblocked and infrastructure cleaned, and where structural damage or mechanical or electrical failures are identified, work is completed as far as possible, and infrastructure is left standing awaiting Civil, Mechanical and Electrical Contractors to attend to or repair / refurbish the identified damage and/or failures. The result of this is that the sewer network and structures will require repetitive unblocking and re-cleaning in future until the Civil Framework Contractors are mobilised.

In addition, by not systematically implementing the proposed intervention strategy in conjunction with the replacement of critical parts of the sanitation infrastructure, as high-lighted on pages iv and v above, the risk of and sewage spillages will continue and may even occur at more locations. This not only places the community and environment at risk but will result in the current interventions being unsustainable and may result in wasteful expenditure whilst requiring rework.

The failure to appoint the much needed Civil, Mechanical and Electrical Framework Contractors to repair and replace the various failed infrastructure will, and is currently, adversely affecting the ability of DWS to meet its project objective of stopping the pollution of the Vaal River System.

1 Project Overview

GIBB are appointed to provide consultancy services related to the Sedibeng Regional Sanitation Scheme (SRSS) which includes the detailed design and implementation of the new infrastructure, as well as the optimisations of the existing infrastructure related to the Scheme.

The purpose of the Vaal River System Intervention (VRSI) Programme is to resuscitate the existing wastewater collection, conveyance, and treatment infrastructure, returning it to an operational state, thus eliminating and preventing the further pollution of the Vaal River system. The components of the scope of works are summarised in Figure 1 below.

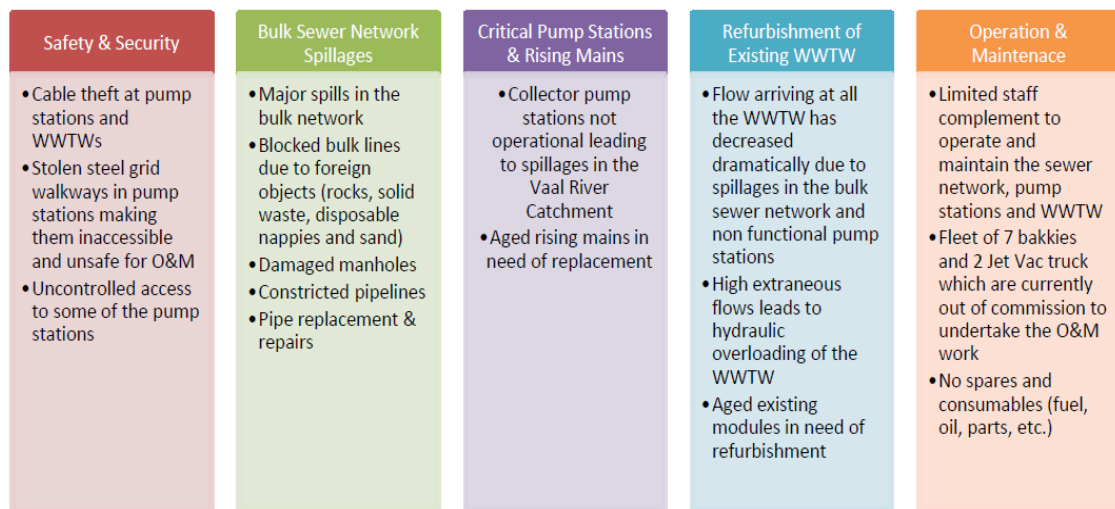


Figure 1: Components of the Vaal River System Intervention Programme

The required CAPITAL funding for the SRSS Short-Term Intervention Programme is estimated at **R1,012,802,219**. The targeted funding sources to implement the capital works over the short-term are the MIG, RBIG and WSIG grants.

The existing sewers and pump stations in the region are overburdened, due to population growth and development as well as the due to the current poor state of the infrastructure which includes the Wastewater Treatment Works (WWTWs). Moreover, the replacement, rehabilitation and preventative maintenance of existing infrastructure has suffered due to a persistent focus on emergency maintenance and ad-hoc repairs. The project objective of the Vaal River System Intervention Programme is to address and resolve the Vaal River system pollution and return the current infrastructure to an operational and maintainable state. It should be noted that once the collection network is rehabilitated, the WWTWs will be overburdened requiring further upgrades.

2 *Implementation Strategy*

To ensure that the VRSI Programme is implemented in a sustainable manner, by also taking the present health and safety, and the environmental impact on the affected communities into consideration, the implementation of the Programme is planned to entail a dual approach as described below.

By following this approach, the Project will be implemented in a sustainable and cost-effective manner and minimising rework and wasteful expenditure.

2.1 **Community Safety and Reduction of Environmental Impact**

It is of vital importance to reduce the impact of sewer spillages in residential areas and where blockages and spillage occur in areas with high community activity i.e., commuter areas, commercial, public and community infrastructure (schools, creches, shopping centres) etc.

Therefore, where spillages occur within communities in erven and streets, Contractors are to be mobilised to:

- reduce the associated negative consequences of sewerage spills to the health and safety of communities; and
- to reduce the environmental pollution impact by concentrating spills to specific areas.

2.2 **Systematic Refurbishment of the Sewer Collection Network and System**

The second part of the VRSI implementation strategy is to commence with the refurbishment of the Head of Works of the Wastewater Treatment Plants in the three (3) catchments to ensure that the Works can receive and process the incoming sewage flows. Once the refurbishment of the Head of Works and Inlet Structures of the various WWTW's has commenced, the refurbishment of the WWTW's remaining treatment process systems will continue systematically downstream to return the WWTW to full operational capacity, and upstream refurbishment activities enabling the WWTW's to receive flows from the feeder catchment and the sewer networks. This will entail, amongst other activities, the unblocking and cleaning of pipe networks and cleaning of pump stations and the refurbishment of pumps and electrical installations.

2.3 **Implementation Programme**

A programme for the outlined implementation strategy above has been developed to a high level. This programme has not been implemented as the appointment of the Civil Contractors, and Mechanical & Electrical Contractors have not been finalised. Refer Section 4.3.1 below.

3 Contractors and Works Allocation

3.1 Appointment of Contractors and Works Allocated

Ten (10) Contractors have been appointed by DWS for the Provision of Plant and Equipment for the unblocking of the sanitation network and, eight (8) Contractors for the handling of bio-solids. Service Level Agreement's (SLA's) are still to be concluded with seven (7) Civil Framework Contractors. The appointment of Mechanical & Electrical Framework Contractors is to be re-advertised due to an overall non-responsiveness in the first round of call for bids.

For the provision of Plant and Equipment to unblock the sanitation network, the following ten (10) Contractors were appointed, and sewer catchments were allocated to them.

Revised Purchase Orders have been issued to these Contractors, increasing the allocated budget from R46 629 301.47 to R90 000 000.00 (VAT Incl.).

Table 1: Appointed Contractors for the Provision of Plant and Equipment (Unblocking)

Number	Catchment / WWTW	Contractor	Purchase Order Amount (Incl. VAT)
1.	Sebokeng	Agattu Trading 186	R 4 854 678,02
2.		Bokana Construction and Projects	R 5 366 524,19
3.		Downtown Spares cc	R 16 170 820,37
4.		Isintu Projects cc	R 774 663,18
5.	Rietspruit	Makgotamishe Plant Hire (Pty) Ltd	R 17 015 006,40
6.	Sebokeng	Moreki Distributers	R 8 345 993,89
7.	Leeuwkuil	Oxy Trading 541 cc	R 3 969 845,62
8.		Rafuni (Pty) Ltd	R 1 733 663,29
9.		Retrolex 195 (Pty) Ltd	R 909 013,98
10.	Leeuwkuil	Titanium Projects	R 30 859 791,07
			R 90 000 000.01

The Eight (8) Contractors that have been appointed by the DWS for bio-solids handling and Pump Stations were provisionally allocated to catchments and pump stations as per Table 2 below.

Table 2: Appointed Contractors for Bio-solids Handling

Number	Catchment / WWTW	Pump-stations	Contractor	Purchase Order Amount (Incl. VAT)
1.	Sebokeng / Meyerton & Sebokeng WWTW	3, D3, 27, 33 & 39	Africa Green Loo Technology Sanitation (AGT)	R 16 497 851,10
2.	Leeuwkuil	4, 4A, 16, 17 & 40	Agattu Trading 186	R 19 098 801,27
3.	Rietspruit WWTW		Bovu Fluid Holdings	R 5 514 615,91
4.			Lekoa Construction & Transport Services	R 2 131 290,00
5.	Sebokeng	33, 35, 36 & 37	Moreki Distributers	R 10 846 420,59
6.	Rietspruit	1, 2A, 2, 41 & 44	Oxy Trading 541 cc	R 2 096 926,36
7.	Leeuwkuil	20, 21,22, 23 & 32	Rafuni (Pty) Ltd	R 5 514 615,91
8.	Leeuwkuil & Leeuwkuil WWTW	7, 8, 9, 10 & 34	Titanium Projects	R 22 299 478,85
				R 83 999 999.99

Copies of revised Purchase Orders were received from DWS on 23 August 2021. GIBB was advised that the purchase order for AGT is being amended as the amount entered in the purchase order is incorrect. DWS Finance has since rectified the Purchase Order and all Contractors have been issued with the revised Purchase Orders on 8 September 2021 as instructed by DWS.

In the provisional allocation of bio-solids handling work to Contractors, the Pump Stations were allocated to three (3) Contractors appointed for the provision of plant and equipment (Unblocking) as per Table 3 below.

Table 3: Pump Stations to be Re-allocated

Number	Catchment / WWTW	Pump-stations	Unblocking Contractor
1.	Leeuwkuil	18, 19, 24, 28 & 29	Downtown Spares
2.	Leeuwkuil	12, 13, 14, 15 & 38	Isintu Projects
3.	Leeuwkuil	5, 11, 25, 31 & 6	Makgotamishe Plant Hire

Several of the above listed Pump Stations have been re-allocated amongst the appointed bio-solid handling Contractors for practical/operational reasons. To date Pump Stations 14 and 15 have been reallocated to Rafuni, whilst Pump Station 2 has been re-allocated to Lekoa. Downtown Spares received Pump Station 12 and 41 as Oxy Trading 541cc purchase order ceiling amount would have been exceeded if they did this work. Pump Station 11 has been reallocated to Titanium Projects as it was cleaned together with the gravity main to Pump Station 11, since it was considered that Makgotamishe didn't have a PO number at the time when this work was undertaken. Also, Makgotamishe did not have the capability to undertake

the work to clean Pump Station 5. Arrangements have been made to assist and train Makgotamishe on cleaning bigger pump stations.

As similar rates exist under both Contracts, Pump Stations allocated to Downtown Spares will not be re-allocated and will be paid for under the Unblocking Contract.

The Pump Stations allocated to AGT Water and Sanitation has been in working order but subsequently cleaning operations were identified and are required at Westside Park (PS33) and Boitemelo Pump Station. Whilst AGT Water and Sanitation was initially assigned to the Sebokeng Catchment for Unblocking operations it was logical to assign the Pump Stations in Sebokeng to AGT Water. Three (3) of the Pump Stations and references that were allocated to Moreki Distributors could not be found in the IMQS system and whilst reported in meetings held with ELM, this was not pointed out. In the IMQS system the Pump Stations in the Sebokeng Catchment was labelled as per Table 4 below. However, upon receipt of information, by chance, from ELM during November 2021, it was established that these Pump Stations in the Sebokeng Catchment were indeed allocated to Moreki Distributors. Moreki will therefore proceed, where necessary, with the Cleaning of the pump stations in the Sebokeng Catchment.

Table 4: Pump Station References

Allocation / ELM Reference	IMQS	Pump Station Name
PS 33	PS 53	Westside Park
PS 35	PS 51	Boitumelo
PS 36	PS 36	Evaton Gardens
PS 37	PS 50	Zone 20

Whilst confirmation was requested on whether Oxy Trading 541cc will be responsible for Pump Stations 2A and 2 which is located in the Leeuwkuil and not the Rietspruit Catchment, Job cards for Pump Station 2A has been issued to Oxy Trading 541cc whilst Pump Station 2 was reallocated to Lekoa due to budget constraints.

As per Table 2 above, the following Contractors have been allocated the bio-solids handling at the WWTW's.

Table 5: Contractors - WWTW's Allocations

Number	WWTW	Contractor
1.	Leeuwkuil	Titanium Projects
2.	Rietspruit	Bovu Fluid Handling
3.1	Sebokeng	Africa Green Loo Technology Sanitation

Initially a number of bulk pipelines were allocated to the Contractors as previously reported. Most of the allocated bulk lines were attended to, where practical and the only outstanding bulk lines are indicated in Table 6 below. These contractors have since been re-allocated to other bulk lines or Unblocking operations.

Table 6: Contractors - Proposed Pipeline Allocations

Number	Catchment / WWTW	Pipelines	Contractor
1.	Leeuwkuil	Taubazana/Phelandaba line Bulk line to PS 9 (in progress)	Titanium Projects
2.	Rietspruit	Jan Cilliers line (to be completed) Mvango line, CE 7 line (Line was unblocked at Agaat Str)	Makgothamishe
3.1	Sebokeng ⁽¹⁾	Evaton OS MF Line Evaton OS line Rietspruit OS 1 Evaton OS (along Rietspruit) Evaton OS	Agattu Trading
3.2	Sebokeng ⁽¹⁾	Zone 20 & Johan Deo line Sebokeng Zone 14 & 16 lines Sebokeng OS line, Zonderwater & Vaal business depot	Moreki

Note 1: The lines are ill-defined and therefore difficult to locate geographically. The bulk lines in the Sebokeng Catchment are however systematically cleaned and the spillages addressed. It is therefore considered that all the lines in Sebokeng has been addressed or are being addressed as per Section 3.4 below.

Where Unblocking Contractors were not allocated catchments or areas as per the works allocation sheet received from DWS, these Contractors have been allocated specific tasks in consultation with Emfuleni LM representatives who have previous working experience with these Contractors. This is to ensure that the more experienced Contractors are assigned to parts of the network where infrastructure is fragile and hence requires more skill and experience to execute the works.

The Unblocking Contractors that were not allocated pipelines as per the original list received from DWS, has been allocated as follows:

- Isintu and Retrolex has been allocated to the Sebokeng Catchment;
- Bokana Construction and Projects and Oxy Trading to the Rietspruit Catchment; and
- Downtown Spares and Rafuni to the Leeuwkuil Catchment.

GIBB is informed that the following seven (7) Civil Framework Contractors have been appointed for civil engineering construction i.e. pipe replacement and structural repairs. The Service Level Agreements are reportedly being concluded between the DWS and the Contractors for transfer to Rand Water - who has been appointed as the Implementing Agent.

Table 7: Framework Civil Contractors

Number	Contractor
1.	Africa Green Loo Technology Sanitation (AGT)
2.	Amibex

3.	Belta Services
4.	Mzanzi
5.	Impoqo Trading
6.	Titanium Projects
7.	Xintsabyana

As stated above, the appointment of Mechanical & Electrical Framework Contractors is to be re-advertised due to an overall non-responsiveness in the first round of call for bids. To enable the refurbishment of Pump Stations, AGT and Titanium’s ability to undertake mechanical and electrical works were assessed by GIBB, as instructed by DWS, and a recommendation in this regard submitted to DWS on 03 September 2021. DWS decided not to pursue this option as the appointment would have been considered irregular expenditure in terms of legislation.

Following subsequent discussions, GIBB was requested to evaluate the remaining five (5) Civil Framework Contractors. These evaluations were concluded early November 2021 and submitted to DWS on 9 November 2021.

3.2 Contractor’s Mobilised

As per a directive received from the DWS on Thursday, 29 July 2021, all the Provision of Plant and Equipment (Unblocking) Contractors have mobilised, and all have been on site since Tuesday 3 August 2021.

In terms of the Bio-solids Handling Contractors, Agattu Trading 168, Downtown Spares, Lekoa Construction and Transport Services, Oxy Trading 541 and Rafuni Titanium Projects have been mobilised. Africa Green Loo Technology Sanitation (AGT) (Sebokeng WWTW) and Bovu Fluid Handling (Rietspruit WWTW) commenced bio-solids cleaning operations on 13 and 16 September 2021 respectively.

On 25 August 2021, a meeting was held with AGT at Sebokeng Wastewater Treatment Works to ascertain the possible bio-solids handling scope of works. An estimate has been received and was reviewed, a Job Card generated and submitted on 27 August 2021. Following approval of the Job Card and the successful completion of medicals for the local labourers, AGT mobilised to site.

3.3 Project Scope Definition

3.3.1 Leeuwkuil WWTW

The refurbishment requirements for the Head of Works/Inlet Structure, existing Pump Station 34 and Balancing Dam have been defined and Specifications, Bills of Quantities and Drawings have been prepared. Subsequently on 28 June 2021, GIBB engaged with Titanium Projects (Titanium) to refine the scope for the refurbishment works. Whilst a priced Bill of Quantities have been provided by Titanium, work cannot proceed until such time as the SLA’s for the Framework Civil Contractors are concluded.

In addition to the civils works, part of the scope entails a mechanical and electrical component, and an electrical contractor will be engaged to execute the electrical works, as a sub-contractor to Titanium, until such time that the mechanical and electrical framework contractors have been appointed by the DWS.

Tender documentation for the completion of the gravity main to Pump Station 2 has been completed and was submitted to DWS on the 28 June 2021 for approval. Following the appointment of Rand Water as implementing Agent, Rand Water's in-house construction team was allocated to construct the line. Whilst a site hand-over meeting was held on 4 November the team has not mobilised to site.

3.3.2 Rietspruit WWTW and Catchment

GIBB completed the scope definition of the refurbishment requirements for the Head of Works / Inlet Structure for the Rietspruit WWTW. On 6 July 2021, GIBB engaged with Bovu Fluid Handling (Bovu) during a site inspection to determine and outline the scope of works for the refurbishment of the Head of Works / inlet works for preparation of cost estimates.

Whilst an estimate has been received in the form of a Bill of Quantities (BoQ), Bovu is not proposed to be appointed under the Civil Contractor's Framework Agreements (refer to Table 7), their scope must be reallocated, whilst Bovu has only been mobilised for bio-solids handling as part of the refurbishment intervention.

It is prudent to proceed to with the refurbishment of the Head of Works as the cleaning and /or any operational issues, i.e. blockages in and cleaning of the bulk mains feeding to the Rietspruit WWTW, are being addressed by the Contractors allocated to the Rietspruit Catchment.

On 20 August 2021 a further meeting was held with Bovu at Rietspruit WWTW's in order to ascertain and scope the cleaning of ponds, digestors, Primary Settling Tanks (PST's) and drying beds and to identify job opportunities to involve the local labour. An estimate for the Works has been received, reviewed and approved by means of a Job Card submitted to DWS.

Cleaning of the ponds, drying beds and digestors have since commenced but halted on 13 October when community members rendered the site inaccessible. The contractors have to be redeployed to the WWTW's.

3.3.3 Sebokeng WWTW

Refer Section 3.2 above.

3.3.4 Catchments

Since inception of the project, GIBB has continuously engaged with Emfuleni Local Municipality (ELM) representatives to coordinate efforts and to attend to high-pressure unblocking interventions, as well as for the cleaning of Pump Stations in the three (3) catchments. As

locations of the various blockages are identified, job cards are prepared and Contractors engaged and mobilised to these identified locations.

Other “Hot-spot” locations, such where larger portions of the community are affected such as at Clinics or near business premises, are prioritised for intervention.

3.4 Progress to date

Whilst the nature of the Unblocking and cleaning operations in all three (3) catchments is similar, the modus operandi is slightly different for each catchment. In the Sebokeng Catchment, a larger catchment with a larger number of incidences reported in the various residential areas, emphasis is placed on Contractors to unblock main lines and network sewers in order to reduce the negative Health and Safety risk and impact on affected communities. On 26 August 2021 Agattu was mobilised to commence unblocking of the DN1500 / DN1100 and DN900 sewage main pipeline north of the Sebokeng WWTW.

Cleaning operations in the other two (2) Catchments are continuing which involves, amongst other, the cleaning of bulk lines over longer pipeline sections. However, due to non-operational Pump Stations and network capacity, some reported spillages cannot be fully resolved until such time as the Pump Stations are refurbished and lines have been repaired or replaced.

During the period 1 to 31 December 2021, 116 high pressure unblocking and cleaning operations have been logged daily in the Sebokeng Catchment, 101 68 in the Leeuwkuil Catchment and 100 60 in the Rietspruit Catchment. The number of interventions decreased from the previous period as only interventions considered emergency was attended during the traditional December construction shut down period during which a limited number of teams and contractors were mobilised. The number of interventions over the past two (2) months has increased due to fuel shortages experienced by the ELM hampering their operation and maintenance teams attending to call-outs. Fuel shortages experienced by the LM rodding teams are a recurring issue.

In the area north of Sebokeng WWTW, status of cleaning operations of the main outfall sewer is indicated in Figure 2 below. The extent of the cleaning operations is indicated with the red highlighted outfall sewer line.

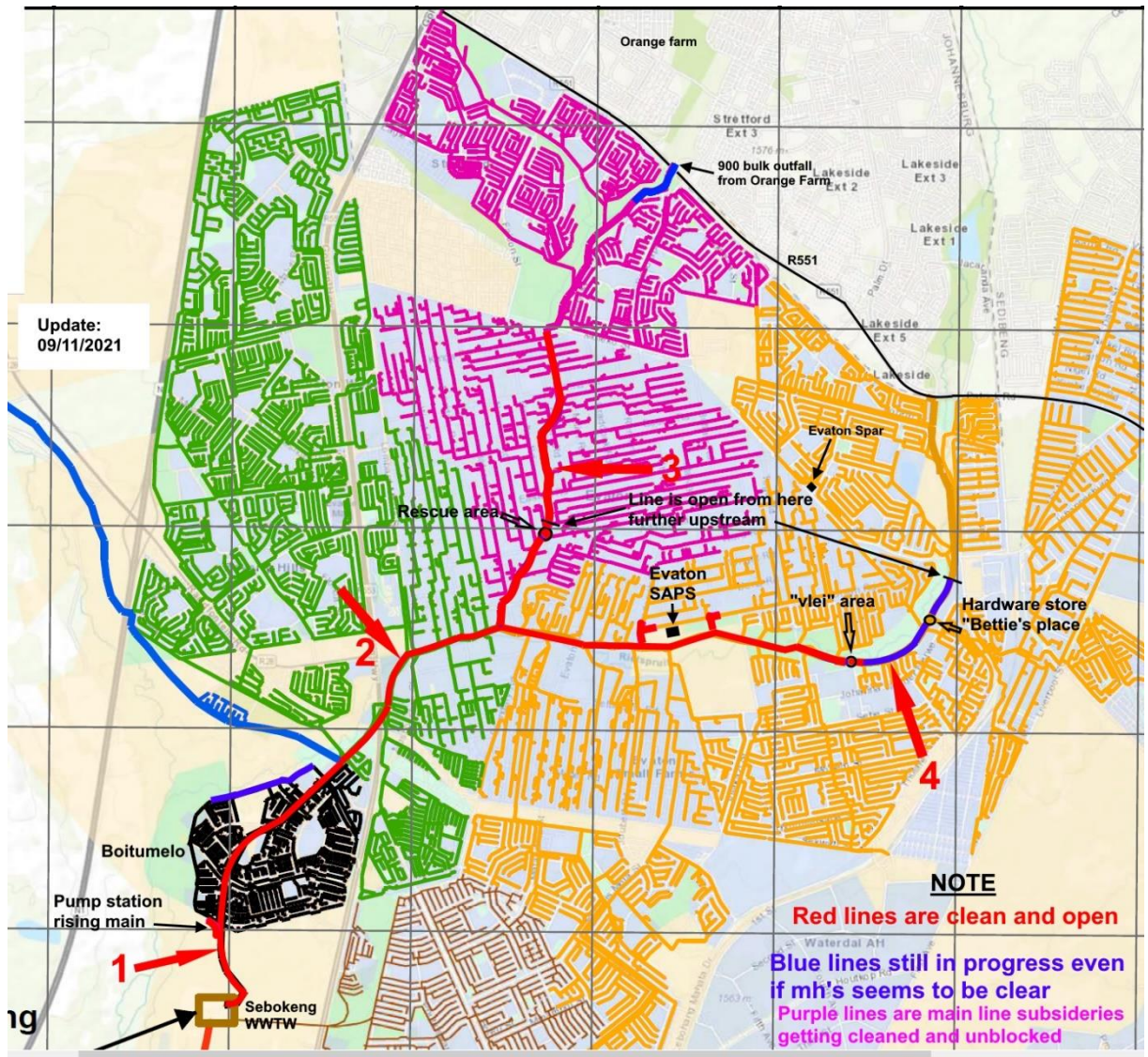


Figure 2: Sebokeng Main Outfall Cleaning Update 29 September 2021

Observations in Sebokeng Catchment:

- North, on the boundary of Orange Farm / R551, the DN900 (400 m length) line reduces to a DN675 line - approximately 150 m in length. Just south of the R551 at the first manhole, a spillage is currently occurring on the DN900 due to capacity constraints and narrowing of the pipe. This is causing a Hydrostatic block in the 900 line with the resultant spillage. (Refer Figure 3);
- The bulk line, indicated in pink in Figure 2, is at time of reporting being attended to and cleaned from the southern direction towards the north;
- Currently the “rescue” bulk line is running at more than the design capacity, causing the manholes north / upstream of the “Rescue Site” to overflow and “pop” due to the pressure in the line, refer Figure 4; this will be further exacerbated as unblocking of the said bulk line towards the R551 continues with resultant problematic inflow into the bulk line by the subsidiaries;

-
- Because of the flow, the subsidiaries are unable to drain into the bulk line due to the hydrostatic pressure and may cause further blockages in the adjacent neighbourhoods and lines. This is evident from the callouts received;
 - Were the two (2) DN600 pipelines (Vlei and Rescue Line) join downstream into a DN900 line, the DN900 is unable to deal with the flow, as stated above and constant repair and work done on the said line in the Evaton SAPS area due to the hydrostatic pressure causing manholes in both lines to “pop”;
 - Near the Montsosi School, a DN500 and DN600 line joins into a single DN600 line. The DN500 and DN600 lines are currently being cleaned and estimated to flow at 50% and 60% capacity (off-peak) respectively. This flow is expected to increase significantly which may cause the lines downstream to flow at over design capacity as is already evident at the Evaton SAPS area where the single DN600 line is at full capacity at this stage. Recurring call outs are also received to unblock lines (draining Evaton and Evaton Small Farms) joining north and south near the Evaton SAPS Station. It is suspected that the DN600 bulk line, at over capacity, is causing drainage issues out of these areas due to the extremely high flow velocity in the DN600 line causing a hydrostatic block. As cleaning operation upstream along DN500 and DN600 lines proceed, the problems will be exacerbated;
 - The blockage in DN160 bulk line running north of Boitumelo along Rietspruit, draining towards the Boitumelo Pump Station, is currently blocked causing spillages and saturating the soil and associated drainage lines creating access issues. This is related to the non-operational Boitumelo Pump Station and where appointment of the M&E contractor is awaited; and
 - By attending various spillages, it is recognised that the IMQS and Google Earth (.kmz) files are outdated or incomplete. Case in point is a line at Evaton Spar which indicates a mid-block line, but lines are worked on along Adams Road that is not included in the GIS data available.



Figure 3: Spillage at R551



Figure 4: "Popped" Manhole Upstream of Rescue Site due to Overpressured Line

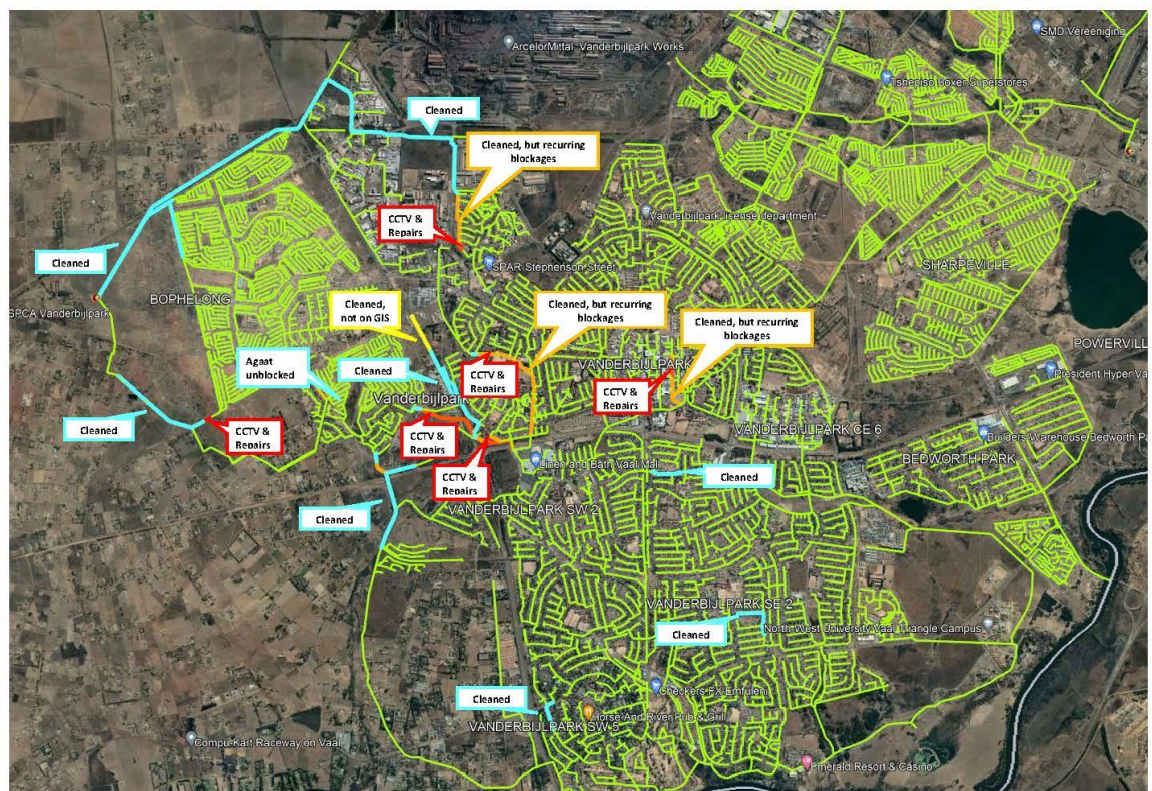


Figure 5: Rietspruit Main Outfall Cleaning Update

With reference to Figure 5: Observation in Rietspruit Catchment:

- The blue lines indicate the main bulk sewer lines and main sewer reticulation lines that were cleaned to date;
- The orange lines indicate sewer lines experiencing recurring blockages;
- The red lines indicate sewer lines that may need other forms of intervention other than high pressure jetting and cleaning. CCTV inspections are proposed to assess these lines in determining the plan of action to be implemented; and
- The yellow lines indicate sewer lines not captured in ELM's GIS.

Observations in Rietspruit Catchment:

- The majority of the sewer pipelines experience missing/broken manhole lids at various locations, and in some cases parts of manholes need to be repaired and/or constructed;
- The Vaal Mall Line (Syphon) could not be cleaned due to a lack of manholes, and manholes will have to be constructed for maintenance purposes. The western line crossing Barrage Road has reportedly also collapsed; and
- There are also instances where manholes can't be reached due to saturated soil conditions.



Figure 6: Boipatong - Tshepiso - Sharpeville Main Outfall Cleaning

Observations:

- Main bulk sewer pipelines to PS 4 generally well cleaned and unblocked. Pump Station 4 is currently not operational causing spillage into the adjacent lake;
- Most notable are two (2) constrictions to flow in main bulk lines from Boipatong to PS-4 (Sharpeville):
 - Lebohang Secondary School – major spillage on DN225 main bulk pipeline from SE3 and SE4, Vanderbijlpark. Plans are underway to provide additional capacity to this main bulk pipeline in the long term;

-
- Makopane Primary School – major blockage in DN450 main bulk pipeline extending from Lebohang School. Short term plans to unblock this line is underway;
 - Routine unblocking and cleaning service in the following “hot-spot” residential areas has been completed:
 - Boipatong North – including Snakepark;
 - Boipatong South – including Lusaka and Winniespark;
 - Tshepiso Phases 3 & 4;
 - Sharpeville North adjacent to Mareka Street; and
 - Similar to Sebokeng, it is recognised that the IMQS and Google Earth (.kmz) files are outdated or incomplete. New “by-pass” pipelines recently constructed at Tshepiso Phase 3 have not been included in the GIS data available.

Observations in the Leeuwkuil Catchment:

- The DN250 line in Union Street was blocked near the corner of Livingstone Street. As the infrastructure is old, intervention to unblock the line was carefully coordinated with ELM representatives. It was suspected that the line has collapsed. Following unblocking operations, a CCTV inspection was conducted on 17 November 2021 which confirmed the pipe collapse. The pipeline is in excess of 6 m deep and reportedly located in collapsible soils. The resulting spillage cannot be managed as explained further below; and
- The occurrence of collapsed pipelines is causing spillages at various locations i.e. at the PS 8 splitter box as well as the splitter box near PS 3. Please refer to Figure 7 below.



Figure 7: Spillages in Leeuwkuil Catchment

Unblocking and cleaning operations are reported weekly to DWS and ELM. Copies of these Weekly Reports are included in Appendix F. A copy of ELM’s Priority List / High Pressure Requirement is also included in Appendix F.

Of the Pump Stations, 29 of the 48 Pump Stations are operational, 15 are not operational and the status of four (4) uncertain. Most of the Pump Stations require refurbishment in terms of additional pumps mechanical and electrical refurbishment. For a full list of cleaning operations concluded on the Pump Stations, please refer to Appendix E.

Below Figure 8 indicates all the pump stations in the Leeuwkuil Catchment. Pump stations in green indicates installations that have been cleaned, inspected and which are operational. Pumps stations and the conveyance network indicated in red, depicts Pump Stations that are not operational due to mechanical and electrical refurbishment requirements and /or where network conveyance refurbishment or interventions are required, due to pipe collapse or inadequate conveyance capacity.

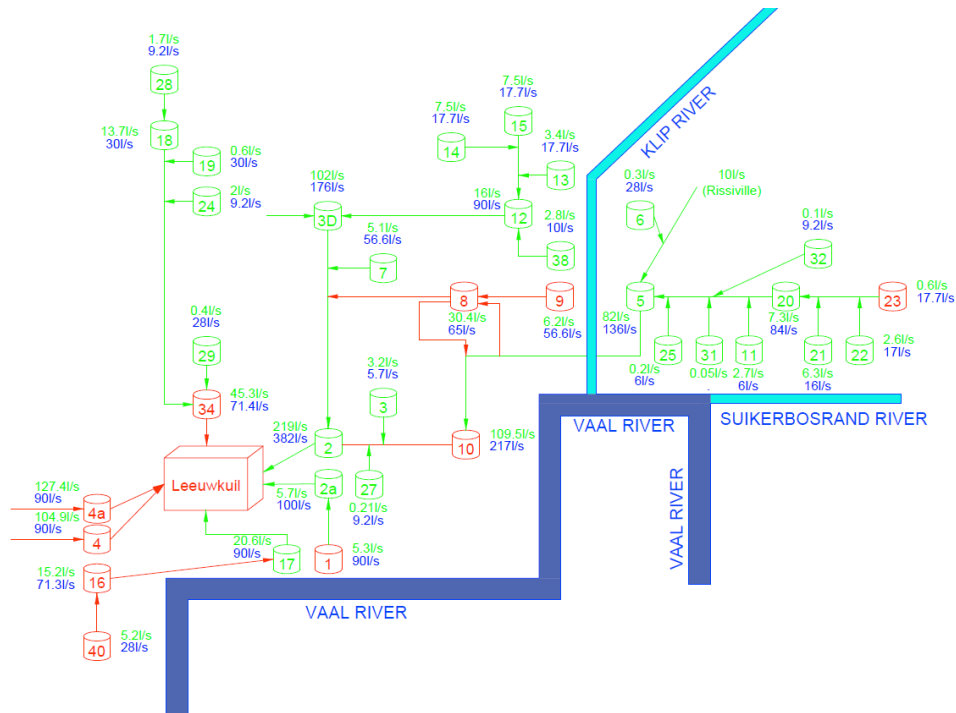


Figure 8: Leeuwkuil Catchment

On Sunday 21 November 2021, electrical repairs were done at Pump Station 10 (PS10) situated on 61-64 Mario Milani Drive, during which the transformer was replaced.

During the repairs it is assumed that incorrect procedures were followed which led to the burn-out the following components of the pump station's motor control panel:

- Soft Starters – three (3) number;
- Spike arrestor; and
- Relays.

As a result of the above, the Pump Station is currently not operational, and therefore spilling into the Vaal River. Flooding of the Pump Station's dry well has also commenced which is rendering further damage and all work done to date as fruitless. Pump Station 10, being a vital link in the network to transfer flow to Leeuwkuil, is currently being attended to by a mechanical / electrical contractor, appointed by Rand Water, in an effort to return it to operation.

An area of approximately 755 000 m² is draining to Union Street where the collapse has been recorded and which drain under gravity to Pump Station 10. To minimise spillage in Union Street, level control in or over-pumping between two (2) manholes can be done. However, as Pump Station 10 is non-operational, Union Street cannot drain and the drainage area are currently experiencing spillages which is currently being curtailed, to an extent, by level control.

On 16 September, AGT commenced cleaning operations at Sebokeng WWTW whilst Bovu commenced cleaning the Drying Beds and Lagoons at Rietspruit WWTW on 14 September. Both these Contractors are using local labourers. However, between 13 October and

8 November 2021 (Rietspruit WWTW) and 11 November 2021 (Sebokeng WWTW) as well as from 15 November to 12 December 2021, the community has rendered Rietspruit and Sebokeng WWTW inaccessible due to local labour employment demands not being met.

3.5 Impact of Refurbishment Works

Since mobilisation of the unblocking and bio-solids handling Contractor's to site from mid-June 2021, the intervention actions have made a positive impact to the inflows to the various WWTW's, as per Table 8 below.

Table 8: Inflow to WWTW's

Month	Inflow Mℓ/day		
	Leeuwkuil WWTW (45 Mℓ/day)	Rietspruit WWTW (38 Mℓ/day)	Sebokeng WWTW (150 Mℓ/day)
May-21	5.43	14.3	45.00
Jun-21	5.16	5.25 ⁽²⁾	41.20
Jul-21	7.24	3.34	55.50
Aug-21	8.11	26.6	46.5
Sep-21	7.96	27.6	66.0
Oct-21	5.23 ⁽¹⁾	37.55 ⁽¹⁾	57.74 ⁽¹⁾
Nov-21	8.05 ⁽³⁾	34.81 ⁽⁴⁾	116.60 ⁽⁵⁾

Note 1: Based on readings from 1 to 6 October 2021

Note 2: Based on 11 days reading, as the Works is operating with the Gen Set

Note 3: Based on 3 weeks of full operation without disruption up to 17 November

Note 4: Based on flow recordings 8 to 15 November 2021

Note 5: Based on flow recordings 11 to 15 November 2021

From the data received, the inflows to Rietspruit WWTW is close to plant capacity. Due to community members rendering the WWTW's inaccessible, data is not readily available but it is can be seen that inflows to Sebokeng WWTW have increased to 75% of the Works' capacity since the unblocking operations of the bulk lines feeding the WWTW from the north has commenced. . Data has been received for the period 13 December 2021 to date but are lower, possibly attributed to blocked screens at the intake works. Latest indications are that the inflow to Sebokeng WWTW's are in the order of 126

Based on Table 8 and as indicated in Figure 9 below, the impact of the mobilisation of the Contractors illustrates that the unblocking interventions to date have initially resulted in a decrease in network spillages and better containment of the sewage flows feeding into the WWTW's. However, it must be noted that the refurbishment of the three (3) WWTW's infrastructure is urgently needed to effectively treat the incoming flows.

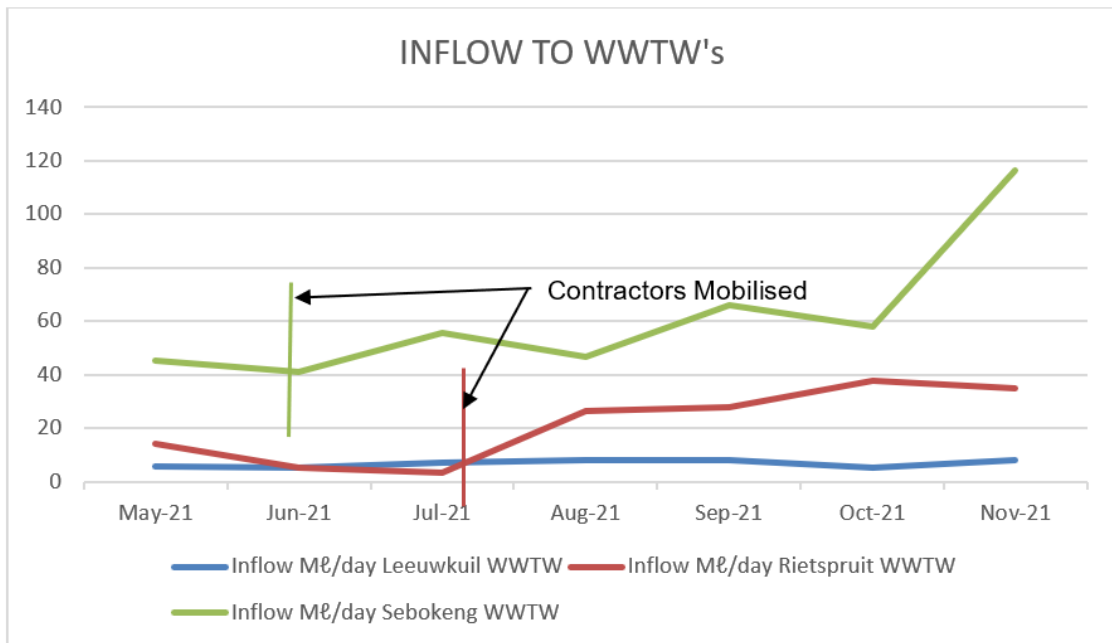


Figure 9: Inflows to WWTW's

Due to constraints in the network, as-well-as key Pump Stations in the Leeuwkuil Catchment not being fully operational, inflows to the Leeuwkuil WWTW will not increase in the foreseeable future. In addition, it should be noted that Pump Station 34 (PS34) at Leeuwkuil WWTW is not operational and therefore flow into the works are dramatically restricted. This pump station needs to be upgraded urgently. Whilst designs and tender documents are completed, a contractor needs to be procured.

Whilst inflows to the Rietspruit WWTW is near plant capacity, the following interventions are expected to increase the inflow into the Rietspruit WWTW:

- Collapsed pipe (bulk Line, approximately 90 m) along Cilliers Street;
- Vaal Mall Line (syphon), acting as gravity, blocked off, manholes need to be constructed (no access at the moment, only accessible at the start and end of the pipeline);
- Industrial pipeline (ash line) at Delfos Road – whilst the pipeline replacement by local businesses have been completed, the impact still needs to be assessed; and
- PS41 (River Pump Station) – a pump meeting the current operational requirements has been commissioned. The impact still needs to be assessed.

3.6 Occupational Health & Safety

The Health and Safety (H&S) files have been received from all 13 Contractors appointed for the 18 contracts and have been reviewed and approved by the H&S Agent which enabled the Contractors to mobilise.

Due to the DWS directive to urgently mobilise Contractor's at the start of the Project, the initial file audits were approved with conditions due to time constraints. However, this approach proved that, once on site, the Contractors were missing certain key documents as dictated by the scope of works. Based on this gap, the H&S Agent decided to assist the Contractors and

developed a more comprehensive master safety file system as well as a working file system for each Contractor, which allowed more control, was user friendly and allowed for any scope related to the project. The index for the master file and the working file index is included in Appendix D. Included in these files is the requirement of competent risk assessors and fall protection planners that will alleviate staff training pressures placed on the Contractors.

During November 2021, a number of safety audits have been conducted on nine (9) of the Contractor's Master Safety Files, Working Files and Medical and ID Files, with the audit results included in Table 9 below.

A score of between 90 and 100% is considered acceptable, whilst a score of between 80 and 89% indicates that some items identified during the audit needs attention within 7 days of the audit. However, it is noted that the effort undertaken by all the Contractors are commendable.

Table 9: Status of the Health and Safety File Approvals

Number	Contractor	Audit Date	Score
1.	Oxy Trading 541 cc	9 November 2021	98.85%
2.	Agattu Trading	10 November 2021	97.09%
3.	Titanium Projects	18 November 2021	100%
4.	Rafuni	10 November 2021	90.59
5.	Moreki Distributors	15 November 2021	97.69%
6.	Downtown Spares	9 November 2021	82.96%
7.	Isintu Projects	Note 1	93.88%
8.	Makgotamishe	17 November 2021	95.09%
9.	Africa Green Loo Technology Sanitation	Note 1	-
10.	Bovu Fluid Handling	Note 1	-
11.	Bokana Construction and Projects	12 November 2021	88.46%
12.	Lekoa Construction and Transport Services	Note 1	-
13.	Retrolex 195	7 November 2021	96.8%

Note 1: As AGT. Bovu, Isintu and Lekoa were not working on site, these Contractors were not audited.

The entire workforce of all the Contractors is issued with the relevant PPE, and the condition of the vehicles on site (i.e. trucks, bakkies etc) is clean and well branded.

Following the request to employ local labourers, medical assessments for the local labourers were arranged and took place on Monday, 30 August 2021 at Sebokeng Wastewater Works. Thirty-three (33) local labourers, which include the CSC's Community Liaison Officer (CLO), Labour Desk Officer (LDO) and Business Desk Officer (BDO), successfully completed medical fitness assessments and vaccinations for Hepatitis and Yellow Fever.

Following an incident on 30 November 2021 where two (2) ELM employees, working independently and not as part of the VRSI, were overcome by gasses present in one of the sewer manholes, the safety procedures, access permits and working in confined space

procedures of the Contractors are being reviewed. Compliance to the reviewed procedures will be audited in due course.

However, to date, all Contractors have a zero Disabling Injury Frequency Rate (DIFR) which indicates that no disabling injuries or incidents over the reporting period.

4 Project Management

4.1 Integration Management

The main purpose of integration management is to ensure that the project team remains properly focused and co-ordinated amongst the various parties. The team needs to know and understand the scope of work and interventions in the various catchments as well as of the various disciplines, insofar as it can potentially have an impact on their own disciplines work and approach. This is achieved by regular interaction between the Project Manager, Integration Engineer and allocated Catchment Leads and engineers deployed under each Catchment Lead.

It is equally important that the Client (DWS) is also fully informed about potential problems that can result in risks materialising as well as potential delays or cost increases. This is achieved by a combination of on-site meetings, generally held on Wednesday's at Metsi-A-Lekoa's offices, and online meetings, generally held on Thursday's, and frequent one-on-one communication between the GIBB Project Manager, Integration Engineer and the DWS Project Manager.

The Project Manager and Integration Engineer ensures that the team remains informed of any potential problems.

4.2 Scope Management

The Scope Management procedures are documented in GIBB's ISO Quality Management System (QMS), which comprises of a Quality Management Plan (QMP) as well as the specific management and administration plans, procedures and templates. The GIBB QMS is available to DWS should they wish to review it.

To date (end of December 2021) no scope variance has been formally requested.

At this stage no additional aspects have been identified that will require additional funding.

Variation orders may become necessary once potential shortcomings or value adding amendments to the contract that is currently in place have been identified. In this regard, a Variation Orders for an Environmental Officer, OHSE Agent and a Project Site Integration Engineer / RE have been submitted to DWS, and for which a response/approval is awaited.

During meetings held in August and September 2021 with representatives of DWS, clarification was also requested with regards to the pricing instructions included in the signed SLA's. As no

response has been received to date, the matter will be raised formally with DWS. Refer to Section 4.9.1 for an elaboration on this aspect.

It should be noted that an Agreement with regards to “The Appointment of a Panel of Service Providers for Plant Hire for the Vaal Intervention” has been concluded between ERWAT and the various Contractors. These Agreements have been ceded to DWS.

Nowhere in the Agreements are definitions provided for the billed items and also is no Scope of Works provided. This may be that the application of the Agreement as concluded with ERWAT and execution of the Works are vastly different to how the Intervention is currently implemented and administered. It is strongly advised that the Agreements be reviewed in the next financial year taking into consideration the transparency of budget determination, the omission of rates for supervision, labour and unblocking operations and the other shortcomings identified.

4.3 Time Management

4.3.1 Programme

A programme has initially been compiled outlining the VRSI scope of work. As the refurbishment scope are defined as interventions continue, it was envisaged that the Work Breakdown Structure will be progressively elaborated on, and the programme accordingly be updated.

A copy of the initial drafted programme is appended to this Report indicating the proposed scope as obtained from various reports and draft tender documentation, as well as the implementation of the various portions of works.

Where programme items indicating the parts of the works are highlighted in green, it implies that the scope has been clearly defined, and information in the form of specifications, drawings and bills of quantities have been issued to the respective Contractor allocated to that works.

Items highlighted in yellow are the parts of the works that are currently still being investigated/assessed and the scope is being defined in more detail before being issued to the appointed Contractors.

Refer to the Programme included in Appendix A.

As the Civil, Mechanical and Electrical Framework Contractors have not been appointed to date, certain aspects of this programme have not been implemented. Also refer Section 4.8.

4.3.2 Updating the Programme

This overall programme will be refined, and time durations updated as the extent of the refurbishment is unpacked in further detail and construction programmes are obtained from the various Framework Contractors. The timelines for the various task/activities will also be

reviewed as the capability and resource capacity of the assigned Framework Contractors are established.

4.4 Cost Management

4.4.1 Cost Control

Cost controls through site supervision were implemented to manage project expenditure. DWS has communicated an approved budget for the project. On 23 August 2021 revised Purchase Orders have been provided to GIBB by DWS for Provision of Plant and Equipment (Unblocking) as well as the Bio-solids Handling Contractors. On 8 September 2021, the revised Purchase Orders have been issued by GIBB to the respective Contractor's.

Where the location of spillages and scope is clearly defined for unblocking of bulk lines and bio-solids handling at Pump Stations, cost estimates are requested and provided by the Contractors prior to the commencement on any Works. The rates as per the various Contractors' Service Level Agreements and Contracts are used to determine cost estimates. The cost estimates are reviewed and attached to the job cards submitted for review by ELM and approval by DWS.

However, due to the maintenance challenges and numerous spillages experienced in the sanitation network in the various catchments, and particularly in the Sebokeng Catchment, the location of unblocking activities is identified and assessed with the Catchment Lead, following which the job cards are updated.

It should be noted that Agattu's budget for Plant Hire has been depleted and permission was obtained to continue with unblocking operations for continuity and nature of the operation. As a result, payment is certified, using Plant Hire rates, under the biosolids handling Purchase Order. This may be deemed irregular expenditure and needs to be addressed by either the reallocation of budget or adopting the Plant Hire rates under the Biosolids Service Level Agreements. The nature of the cleaning and unblocking of the bulk line in Sebokeng is of such a nature that it cannot be handed over from Contractor to Contractor as knowledge of the network and intervention cannot be easily or readily transferred.

In addition, with the ill-considered allocation of Pump Stations to three (3) Contractors appointed for the provision of plant and equipment (Unblocking) as per Table 3 above, further necessitates the review of the Agreements and implementation strategy.

4.4.2 Cash Flow

Cash-flow projections have been prepared and submitted to DWS. The projections will be reviewed, updated and reported to DWS on request and as the Scope is defined, and Works estimated and completed.

4.4.3 Expenditure

Expenditure on the Project is reported to DWS on a monthly basis.

4.4.4 Invoicing and Payments

On a weekly and monthly basis, the Contractors provide invoices to GIBB for scope defined on job cards, successfully completed and certified. Invoices are compiled per and in accordance with each of the approved job cards. These are summarised monthly in a Payment Certificate and submitted to the Department for approval and payment.

In previous months, a small number of Contractors have submitted Invoices to DWS directly. Details of these payments were obtained and further clarified during a meeting scheduled in the second week of October 2021. Whilst comments and corrections were provided back to DWS regarding the allocation of invoices to Purchase Orders and budgets, not feedback has been received whether these allocations have been corrected or otherwise allocated. Therefore Table 10 may not agree with DWS records.

Based on the payment records received to date and Payment Certificates prepared for December 2021, the expenditure is summarised in Table 10 below. The budget and expenditure summary is provisional and require confirmation with DWS representatives currently on leave.

Table 10: Budget and Expenditure Summary

BUDGET SUMMARY: UNBLOCKING AND PIPE REPAIR PROJECT (Equipment and Plant Hire)								
CATCHMENT	CONTRACTOR	PURCHASE ORDER (PO) (No)	BUDGET PO AMOUNT (Excl. VAT)	ESTIMATED PO SPEND (Excl. VAT)	ESTIMATED PO BUDGET REMAINING (Excl. VAT)	BUDGET PO AMOUNT (Incl. VAT)	ESTIMATED PO SPEND (Incl. VAT)	ESTIMATED PO BUDGET REMAINING (Incl. VAT)
BUDGET TOTALS:			R 78 260 869.57	R 64 077 894.38	R 14 182 975.20	R 90 000 000.01	R 73 689 578.53	R 16 310 421.48
Sebokeng	AGATTU TRADING 186	OR-002951	R 4 221 459.15	R 4 221 459.15	R -0.00	R 4 854 678.02	R 4 854 678.02	R -0.00
Rietspruit	BOKANA CONSTRUCTION & PROJECTS	OR-002953	R 4 666 542.77	R 4 162 433.11	R 504 109.66	R 5 366 524.19	R 4 786 798.08	R 579 726.11
Leeuwnkuil	DOWNTOWN SPARES cc	OR-002952	R 14 061 582.93	R 14 056 125.00	R 5 457.93	R 16 170 820.37	R 16 164 543.75	R 6 276.62
Sebokeng	ISINTU PROJECTS cc	OR-002954	R 673 620.16	R 673 620.16	R -0.00	R 774 663.18	R 774 663.18	R -0.00
Rietspruit	MAKGOTAMISHE PLANT HIRE	OR-002971	R 14 795 657.74	R 11 428 310.00	R 3 367 347.74	R 17 015 006.40	R 13 142 556.50	R 3 872 449.90
Sebokeng	MOREKI DISTRIBUTERS	OR-002955	R 7 257 385.99	R 3 122 283.95	R 4 135 102.04	R 8 345 993.89	R 3 590 626.54	R 4 755 367.35
Rietspruit	OXY TRADING 541 cc	OR-002956	R 3 452 039.67	R 3 387 171.77	R 64 867.90	R 3 969 845.62	R 3 895 247.53	R 74 598.09
Leeuwnkuil	RAFUNI (Pty) Ltd	OR-002957	R 1 507 533.30	R 1 507 533.30	R -0.00	R 1 733 663.29	R 1 733 663.30	R -0.00
Rietspruit	RETROLEX 195 (Pty) Ltd	OR-002958	R 790 446.94	R 790 446.94	R -0.00	R 909 013.98	R 909 013.98	R -0.00
Leeuwnkuil	TITANIUM PROJECTS	OR-002959	R 26 834 600.93	R 20 728 511.00	R 6 106 089.93	R 30 859 791.07	R 23 837 787.65	R 7 022 003.42

BUDGET SUMMARY: BIOSOLIDS / CLEANING OF WWTWs PROJECT								
CATCHMENT	CONTRACTOR	PURCHASE ORDER (PO) (No)	BUDGET PO AMOUNT (Excl. VAT)	ESTIMATED PO SPEND (Excl. VAT)	ESTIMATED PO BUDGET REMAINING (Excl. VAT)	BUDGET PO AMOUNT (Incl. VAT)	ESTIMATED PO SPEND (Incl. VAT)	ESTIMATED PO BUDGET REMAINING (Incl. VAT)
BUDGET TOTALS:			R 73 043 478.25	R 17 850 581.24	R 55 192 897.01	R 83 999 999.99	R 20 528 168.42	R 63 471 831.57
Leeuwnkuil	AFRICA GREEN TECHNOLOGY SANITATION	OR-002965	R 14 345 957.48	R 3 779 467.45	R 10 566 490.02	R 16 497 851.10	R 4 346 387.57	R 12 151 463.53
Leeuwnkuil	AGATTU TRADING 186	OR-002960	R 16 607 653.28	R 916 634.85	R 15 691 018.43	R 19 098 801.27	R 1 054 130.08	R 18 044 671.19
Rietspruit	BOVU FLUID HOLDINGS	OR-002966	R 4 795 318.18	R 4 686 456.00	R 108 862.18	R 5 514 615.91	R 5 389 424.40	R 125 191.51
Leeuwnkuil	LEKOA CONSTRUCTION & SUPPORT SERVICES	OR-002967	R 1 853 295.65	R 1 079 150.00	R 774 145.65	R 2 131 290.00	R 1 241 022.50	R 890 267.50
Sebokeng	MOREKI DISTRIBUTERS	OR-002961	R 9 431 670.08	R -	R 9 431 670.08	R 10 846 420.59	R -	R 10 846 420.59
Leeuwnkuil	OXY TRADING 541 cc	OR-002962	R 1 823 414.23	R 1 823 414.23	R -0.01	R 2 096 926.36	R 2 096 926.37	R -0.01
Leeuwnkuil	RAFUNI (Pty) Ltd	OR-002963	R 4 795 318.18	R 5 565 458.70	R -770 140.52	R 5 514 615.91	R 6 400 277.51	R -885 661.60

From Table 10 above, 81% and 24% of the Unblocking and Bio-solid budgets have been expended or allocated (bio-solids) to end December 2021. These figures are provisional and have to be confirmed.

Pending verification but according to information received, expenditure per month since mobilisation is summarised in Table 11 below. Clarification to confirm expenditure to date has been submitted to DWS with no response to date.

Table 11: Monthly Expenditure

Number	July 2021	August 2021	September 2021	October 2021	November 2021
Unblocking	R 1 434 721.32	R 10 591 482.50	R 14 656 411.47	R 11 933 396.79	R 14 849 162.14
Bio-solids Handling	R 1 961 728.65	R 7 182 153.65	R 9 712 912.39	R 6 269 973.34	R 6 370 342.43
Total	R 3 396 449.97	R 17 773 636.15	R 24 369 323.86	R18 203 370.13	R 21 219 504.57

Note: December 2022 payments to be reconciled in liaison DWS after representatives return from leave

4.4.5 Cost Estimates for Civil Works

Civil construction cost estimates will be obtained from the Civil Framework Contractors, which will be based on the defined scope of works as discussed and agreed, through prepared Bills of Quantities.

4.5 Quality Management

A Project Quality Plan has been prepared by GIBB for this project.

GIBB has established its Quality Plan in accordance with internal quality systems, thus allowing the project to be audited in accordance with the ISO9001 Quality audit process, including submission of all documentation as required for the purposes of Quality audits.

4.6 Human Resource Management

GIBB currently has a team of resources assigned to this project but will periodically plan for additional resources to be used on the project as and when the need arises. This is in accordance with the resource management plan. A Resource Schedule are being used by GIBB to manage the mobilisation of resources (and their individual budgets) on the project as per the project requirements. GIBB reviews and plans project resources internally on a weekly basis to ensure that the project is adequately resourced and to identify and close any resource gaps that may arise.

Currently the following head office and site resources are assigned:

Table 12: Resources Assigned

Position	Resource
Project Executive	Vinnie Naidoo
Project Manager	James Pollock
Project Administrator	Natasha Welken
Integration Engineer	Stéfan Malan
Sebokeng Catchment: Lead RE	Len Jansen
Sebokeng Catchment: RE	Jacques Strauss
Sebokeng Catchment: RE	Goodwill Mawelela
Leeuwkuil Catchment: Lead RE	Johannes Loots
Leeuwkuil and Rietspruit Catchment: RE	Elton Simelane
Leeuwkuil Catchment: RE	Kebeilwe Setlhabi
Rietspruit Catchment: Lead RE	Jaco Erasmus / Johannes Loots (Pump Stations)
Rietspruit Catchment: RE	Tseliso Khotle

An organogram is included under Appendix B.

4.7 Communication Management

The project communication protocol has been established, and all communication is directed via the relevant Project Managers of GIBB and DWS. A high-level Communication Management Plan has been prepared and is being managed by GIBB.

4.7.1 Correspondence

Formal letters and emails communication takes place between the GIBB Project Manager and the DWS Project Manager on an ongoing basis. All formal correspondence (letters) between GIBB and DWS for the reporting period are filed in accordance with the GIBB quality system for retrieval.

A copy of the Communication Register is included in Appendix G.

4.7.2 Reporting

The following formal reports have been submitted to DWS to date (by 31 December 2021):

- The VRSI Monthly Progress Reports.
- The Risk Management Register.
- The Inception Report (Revision A).

Action (daily progress) Reports are updated daily and submitted at the end of the workday to DWS. Copies of the Action Reports for November 2021 is included in Appendix F.

4.7.3 Meetings

Focused management meetings are held on a weekly basis, and sometimes daily, with DWS and the various Technical Leaders on the project to discuss pertinent project matters. Matters discussed are recorded and meeting minutes compiled. These meetings are extremely beneficial in terms of sharing knowledge and aligning both GIBB and DWS's expectations in terms of deliverables, reports, document formats, and general modus-operandi to execute the project.

Weekly meetings scheduled on a Wednesday are held between ELM and GIBB site representatives to which DWS are also invited. The outcome of the meetings and engagement with ELM representatives are positive and beneficial to the programme. A weekly meeting is scheduled on a Thursday afternoon to provide feedback to the DWS Project Manager. Regrettably none of these meetings proceeded during November 2021.

4.8 Risk Management

4.8.1 Current and Potential Issues

(a) DWS Community Liaison Officer

It is advised that a Community Liaison Officer be assigned to the Project and to be deployed to the site immediately to liaise with the local community. The success of the Project is dependent on the acceptance of the interventions by the community and for the community to help protect the refurbished infrastructure from sabotage and theft. The interventions largely benefit the community with the provision of a sustainable service and protects them from the negative health and safety risks.

Meetings have been held with the Community Steering Committee's (CS) CLO to mobilise local labour identified by the community and to be employed by the mobilised Contractors. To date 30 local labourer opportunities have been identified, ten (10) per catchment, and they have been deployed following successful completion of a medical test and receipt of vaccinations. However, due to the community blocking access to the WWTW's, most of the deployed local labourers are not contributing to the programme despite fixed term employment contracts. It is advised that these contracts be terminated.

Additional labourers will be engaged and employed once the Civil Framework Contractors have been appointed since the opportunities for more local labour participation on the VRSI lies in the civil scope of work.

In letter reference J39079/03/H/2.1/L017 dated 30 November 2021, the absence of the duly appointed Community Liaison Officer with whom the Service Provider and Contractors can engage with to reduce threats observed on site, is noted as most unfortunate and an appeal raised to the Department to treat this matter as a priority. A meeting with the Department and with Rand Water is requested in an effort to resolve this issue and to assist in safeguarding the well-being of our personnel and the service providers.

(b) Appointment of Civil, Mechanical and Electrical Framework Contractors

As the Provision of Plant and Equipment as well Bio-solids Handling Contractors are not appointed to repair any infrastructure, the risk of abortive work, and hence possible rework exists and is being experienced already. This includes the replacement of manhole covers. Once parts of the sewer network are unblocked and infrastructure cleaned, and where structural damage and repairs or mechanical or electrical failures are identified, work is completed as far as possible, and infrastructure is then left standing awaiting Civil, Mechanical and Electrical Contractors to attend to or repair/refurbish the identified damage and/or failures. The result of this is that network and structures will require repetitive unblocking and re-cleaning in future until the Civil, Mechanical and Electrical Framework Contractors are mobilised.

(c) Care of Works

On 25 August 2021, the cleaning of Pump Station 10 had been completed after some three (3) weeks after the Contractor commenced at an estimated cost of R4.6 million. As refurbishment works were required on the mechanical and electrical installations, a plug was left in one of the bulk pipelines that feed this pump station. Also Pump Station 5, which is feeding Pump Station 10, was switched off in order not to flood Pump Station 10. A Civil, Mechanical and Electrical Contract was awarded by ELM to a Contractor who commenced works on site at Pump Station 10 on 25 August 2021. On 27 August 2021, GIBB received notice that Pump Station 10 was being flooded after Pump Station 5 was put back into operation.

Whilst the matter was raised with the DWS Project Manager on 25 August 2021 as to who should take over responsibility of the Pump Station on completion of the cleaning operation, a definite answer was not forthcoming. As a result, GIBB and the Bio-solids Handling Contractor instructed to clean PS10 cannot take responsibility for works, this is especially true when others appoint Contractors which GIBB are not aware of.

As the Provision of Plant and Equipment as well Bio-solids Handling Contractors are not appointed to repair any civil, mechanical or electrical infrastructure, the risk of abortive work, and hence possible rework exist and is thus being experienced. In addition, once parts of the sewer network are unblocked and infrastructure cleaned and where structural damage or mechanical or electrical failures are identified, work is completed as far as possible, and infrastructure is left standing awaiting a Civil, Mechanical and Electrical Contractor to attend to or repair / refurbish the identified damage and/or failures. The result of this is that network and structures will require repetitive unblocking and re-cleaning in future until Civil, Mechanical and Electrical Framework Contractors are mobilised.

Whilst any Contractor's appointed directly by ELM are present on site, and not under the supervision of GIBB (the DWS appointed Service Provider), GIBB cannot assume responsibility for the Works and potentially wasteful expenditure of the ELM appointed Contractor. This matter has been formally raised with the DWS.

The risk of adherence of incorrect procedures during maintenance operations by ELM representatives, refer Section 3.4 above, resulted in the fruitless expenditure of R4.6 million at Pump Station 10. Without clear roles and responsibilities of the Employer, newly appointed Implementing Agent and the Local Municipality, the re-occurrence of such an incident is high.

ELM has earlier indicated that operation and maintenance staff are required to clean screens at Pump Stations to keep these Pump Stations operational and prevent pumps from blocking. With the continuous unblocking and cleaning operations, it is imperative that screens be cleaned on a continuous basis.

(d) Systematic Implementation of Refurbishment Works

In addition, by not systematically implementing the proposed intervention strategy in conjunction with the replacement of critical parts of the sanitation infrastructure, the risk of sewage spillages will continue and may even occur at additional locations. This not only places the community and environment at risk but will result in the current interventions being unsustainable and will result in rework and wasteful expenditure.

(e) Environmental Authorisation – Maintenance Management Plan

In some areas, unblocking operations occur in environmentally sensitive areas such as wetlands. Enquiries were made as to whether ELM has instituted a Maintenance Management Plan in terms of environmental legislation which can be referred to and which will guide these sensitive operations - negating the need to obtain additional environmental approvals. To date, GIBB could not ascertain whether such a Maintenance Management Plan is instituted by ELM. GIBB has received a contact person in ELM with whom the matter will be taken up and is able to assist the DWS and ELM to conduct the necessary surveys and obtain the necessary environmental approvals for such a Maintenance Management Plan should this be required.

(f) Administration of Contracts

Refer to Section 4.9.1 below.

(g) Local Labour

Refer Section 4.10.1.

In addition, the productivity rate of local labourers was previously reported as low and below standard. Contractors are hesitant to address the matter due to the sensitivity of the matter and the power that the community has in the area.

(h) Manholes

On many locations on the infrastructure, manhole covers are either missing or manholes are damaged. Some of these manhole covers are found inside manholes allegedly to sabotage the infrastructure to allow spillage at the manholes to provide “water” to livestock.

The appointment of the Civil Framework Contractors should be finalised as a matter of urgency in order to address this matter as it is a safety hazard to the community.

4.8.2 Risk Register

A Risk Register (RR) compiled as part of GIBB’s project management functions, is based on available information at the time of this Report. The RR is regularly reviewed and updated to incorporate newly identified risks and proposed mitigation measures. Risk ratings may change during the project. The latest revision of the RR is attached as Appendix C.

4.9 Procurement Management

As per the DWS Letter of Appointment to GIBB, dated 15 April 2021, the Consultant’s Conditions of Contract, Scope of Services and Remuneration is based on the terms set out in the Consultancy Services Agreement (CSA) dated 25 February 2015 related to the above project.

As part of the DWS Procurement Strategy, various Provision of Plant and Equipment as well as Bio-solids Handling Contractors have been appointed directly by DWS. DWS Purchase Orders for these Contractors have been made available and have been issued to the respective Contractor’s by GIBB. Revised Purchase Orders have been received with increased amounts. These revised Purchase Orders and amounts have been communicated to the various Contractors.

DWS is in the process of finalising the appointment of Civil Framework Contractors. As discussed during previous meetings held with DWS, and in order to allow the refurbishment works to proceed in a cost effective and sustainable manner, the appointment of the Framework Contractors must be finalised as a matter of urgency.

As stated above, the appointment of Mechanical & Electrical Framework Contractors is to be re-advertised due to an overall non-responsiveness in the first round of call for bids. In order to enable the refurbishment of Pump Stations, the Civil Framework Contractor’s ability to undertake mechanical and electrical works were assessed by GIBB as instructed by DWS, and a recommendation in this regard submitted to DWS on 09 and 10 November 2021. However, to ensure a sustainable intervention, appointment of Mechanical & Electrical Framework Contractors should be regarded as a matter of urgency.

4.9.1 Administration of Contracts

DWS has provided GIBB with copies of the Contractors’ contracts and Service Level Agreements.

Rates for various items are provided in the Service Level Agreements. However, the scope of work included in each of the rates are not defined explicitly and items and rates necessary for the execution of certain aspects of the project are omitted.

It is understood that items essential for the execution of the works has been agreed between East Rand Water Care Company (ERWAT) and the Contractors but never formalised. A copy of these items and associated rates are included in Appendix F. It is recommended that these rates are agreed between DWS and the Contractors as a matter of urgency in order to successfully implement and execute the administration of the Contracts.

Refer also Section 4.4.1.

4.9.2 Close-out of the Project

The Project will be closed out as per the Project Management Plan and Contract.

4.10 Stakeholder Management

4.10.1 Project Relations & Stakeholder Engagement

Contact is being established with representatives from Emfuleni Local Municipality (ELM) in order to

- Inform the responsible individuals or departments as to the work being carried out on ELM's infrastructure; and
- Obtain assistance as to knowledge and operational issues experienced with the network, pump stations and WWTW's.

ELM is regarded as a crucial partner in the execution of the VRSI Project, which cannot be successfully completed without their co-operation and assistance.

It is of vital importance that the expectations of the local community, small business and politicians are managed. Letter reference J39079/03/H/2.1/L015 "Vaal River System Intervention (VRSI) – Local Labour" dated 16 September 2021 has been submitted to DWS to which a response is awaited.

In future and where possible, the appointed Contractors will be required to engage with and utilise local sub-contractors and local labour as much as is practically possible and through liaison with a Community Liaison Officer. DWS/Rand Water still needs to appoint a Community Liaison Officer.

Appendix A: Programme

Appendix B: Organogram

Appendix C: Risk Management – Risk Register

Appendix D: Health and Safety File Indexes

Appendix E: Status of Pump Stations

Appendix F: Weekly Progress Reports & ELM Priority List

Appendix G: Communication Register

Appendix H: Additional Rates

Document Control and Disclaimer



FORM IP180_B

CLIENT	: Department of Water and Sanitation		
PROJECT NAME	: Vaal River System Intervention Programme (Refurbishment Works)	PROJECT No.	: J39079
TITLE OF DOCUMENT	:		
ELECTRONIC LOCATION	: P:\J39079 - Vaal Intervention\03_Project Management\G_Document Management - Reports\1_Outgoing Reports\Monthly Progress Reports\2021 11\1_Working Files\J39079 VRSI - 2021 11 Monthly Progress Report (Final Draft).docx		

Approved By Project Executive		Reviewed By	Prepared By
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DATE 13 January 2022	SIGNATURE	SIGNATURE	SIGNATURE

Approved By Project Executive		Reviewed By	Prepared By
REVISION	NAME	NAME	NAME
DATE	SIGNATURE	SIGNATURE	SIGNATURE

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