



Fair Trading Commission

Analysis of Barbados Water Authority Annual Standards of Service Report

January 1 - December 31, 2022

March 18, 2024

TABLE OF CONTENTS

List of Tables.....	2
List of Figures	2
INTRODUCTION	3
1.0 GUARANTEED STANDARDS OF SERVICE	4
GWS 1 - Installation of Service	5
<i>Residential Category</i>	6
<i>Commercial Category</i>	6
BWA's Comments	7
GWS 2 - Issuance of First Bill	8
<i>Residential Category</i>	8
<i>Commercial Category</i>	8
BWA's Comments	8
GWS 3 - Response to Complaints	9
<i>Residential Category</i>	9
<i>Commercial Category</i>	9
BWA's Comments	10
GWS 4 - Wrongful Disconnections	10
<i>Residential Categories</i>	10
<i>Commercial Categories</i>	10
GWS 5 - Meter Installations (Existing Service)	10
<i>Residential Category</i>	11
<i>Commercial Category</i>	11
BWA's Comment.....	11
GWS 6 - Repair/Replacement of Faulty Meter	11
<i>Residential Category</i>	12
<i>Commercial Category</i>	12
GWS 7 - Reconnection after Payment of Overdue Amount and Reconnection Fee	12
<i>Residential Category</i>	13
<i>Commercial Category</i>	13
GWS 8 - Scheduling of Field Appointments	13
<i>Residential Category</i>	13
<i>Commercial Category</i>	13
GWS 9 - Reliability of Supply	13
BWA's Justification.....	14
Customer Claim Compensation	14

2.0 OVERALL STANDARDS OF SERVICE	16
SUMMARY	27
Appendix 1	29
Appendix 2	30
Appendix 3	32
Appendix 4	33

List of Tables

Table 1: GWS 1 - Installation of Service	6
Table 2: GWS 2 - Issuance of First Bill	8
Table 3: GWS 3 - Response to Complaints	9
Table 4: Wrongful Disconnections	10
Table 5: GWS 6 - Repair/Replacement of Faulty Meter	12
Table 6: GWS 7 - Reconnection after Payment of Overdue Amount and Reconnection Fee	12
Table 7: GWS 8 - Scheduling of Field Appointments	13
Table 8: Customers Claims Summary	15

List of Figures

Figure 1: Guaranteed Standards of Service Compliance Rates (January 1 - December 31, 2022)	5
Figure 2: OWS Compliance rates for the period January 1 to December 31, 2021	16

INTRODUCTION

The Fair Trading Commission (“the Commission”) is empowered under the Fair Trading Commission Act, CAP. 326B (“FTCA”) and the Utilities Regulation Act, CAP. 282 (“URA”) of the Laws of Barbados to determine, monitor and review Standards of Service (“SOS”) applicable to regulated utilities. The role of the Standards of Service programme is to ensure operational consistency and outline the minimum standards, customer service and reliability that must be met by the Barbados Water Authority (“BWA”).

This report evaluates the performance of the BWA with respect to both Guaranteed and Overall Standards of Service for the period January 1, 2022 to December 31, 2022.

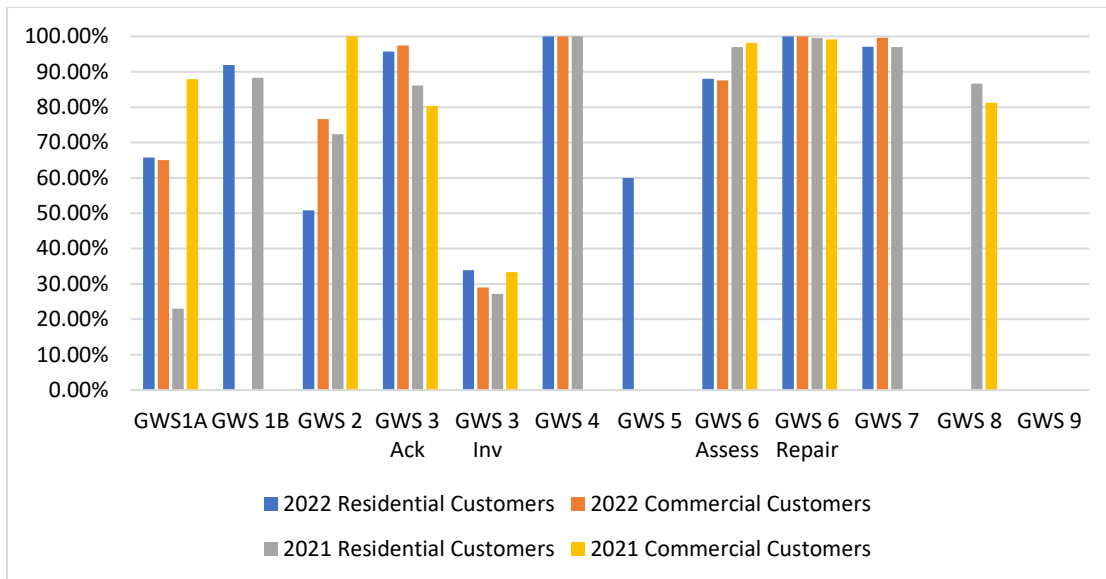
There are two (2) Sections contained herein. Section 1 provides an assessment of the BWA’s performance under the Guaranteed Standards of Service (hereinafter referred to as “GWS”), which measure the regulated utility’s provision of service to customers. The BWA is required to issue compensatory payments to individual customers affected by breaches of the Guaranteed Standards. However, the customer is required to submit a manual claim in order to receive compensation.

Section 2 assesses the utility’s performance under the Overall Standards of Service (hereinafter referred to as Overall Standards or “OWS”), which measure BWA’s efficiency in delivering service to its customers at the national level. Overall Standards do not require compensation to be paid to individual consumers if targets are not met. However, where a breach persists, the Commission may, at its discretion, invoke Section 43 of the FTCA, and Sections 31 and 38 of the URA, which allow for the imposition of fines.

1.0 GUARANTEED STANDARDS OF SERVICE

This section contains a review of the BWA's compliance with regard to the nine (9) categories of Guaranteed Standards. Each Guaranteed Standard is assessed based on the percentage of compliance, and is compared with compliance in the previous review period.

An overview of BWA's compliance for each Guaranteed Standard is captured in **Figure 1** for the period January 1, to December 31, 2022. It should be noted that the level of compliance separates BWA's performance with regard to resolution for residential and commercial customers. Discussed herein are the different targets which apply to each category of customer for each Guaranteed Standard. Generally, the graph shows several areas of improvement over the performance from the previous year (2021). Notably, the BWA was able to attain compliance rates of 90% or greater, for five of the Guaranteed Standards - GWS 1B - Installation of Service (Residential), GWS 3 - Response to Complaints (Acknowledgement), GWS 4 - Wrongful Disconnections, GWS 6 - Repair/Replacement of Faulty, GWS 7 - Reconnection After Payment of Overdue Amount and Reconnection Fee. However, the performance under GWS 3 (Response to Complaints) remains a concern for the Commission.



- GWS 1 - Installation of service
- GWS 2 - Issuance of first bill
- GWS 3 - Response to complaints
- GWS 4 - Wrongful Disconnections
- GWS 5 - Meter Installations (Existing Service)
- GWS 6 - Repair/Replacement of Faulty Meter
- GWS 7 - Reconnection after Payment of Overdue Amount and Reconnection Fee
- GWS 8 - Scheduling of Field Appointments
- GWS 9 - Reliability of Supply

GWS 1A - This refers to the time it should take between application, payment for service and the installation, for a standard connection in a Zone other than a Zone 1 area.

GWS 1B - This refers to the time to complete an investigation on receipt of an application for service in a Zone 1 area.

GWS 1C - This refers to the installation time after the completion of the investigation and approval in a Zone 1 area.

GWS 3 Ack - This refers to acknowledgement within 7 days of receipt of complaint.

GWS 3 Inv - This refers to investigation of complaint and findings provided within 20 days of receipt of complaint (inclusive of acknowledgement time).

GWS 6 Assess - This refers to an assessment and determination of the operational status of a meter and report findings to the customer within 15 days.

GWS 6 Repair - This refers to the replacement or repair of a faulty meter within 30 days of confirmation of the defect.

Note: The absence of compliance indicates that there were no instances for which to report compliance.

Figure 1: Guaranteed Standards of Service Compliance Rates (January 1 – December 31, 2022)

GWS 1 - Installation of Service

GWS 1 (1a) refers to the time taken to complete a connection in a Zone other than a Zone 1¹ area, which includes the time between application, payment for service and installation.

¹ Zone 1 - Areas of greatest restriction and normally no new developments are allowed by either the Planning and Development Department or the Environmental Protection Department.

GWS 1 (1b) refers to the time to complete an investigation following receipt of an application for service in a Zone 1 area.

GWS 1 (1c) the time it should take for installation after completion of the investigation and approval of the application in a Zone 1 area.

- i. **Residential Customers** - no more than fourteen (14) days in each instance (1a,1b, 1c)
- ii. **Commercial Customers** - no more than ten (10) days in each instance (1a,1b, 1c).

Table 1: GWS 1 - Installation of Service

GWS	January 1 - December 31, 2022		January 1 - December 31, 2021	
	Residential Customer	Commercial Customer	Residential Customer	Commercial Customer
1a	65.75%	65%	23.01%	87.91%
1b	91.87%	No applications	88.31%	No applications
1c	No applications	No applications	No applications	No Investigation

Residential Category

For the period under review, the BWA reported that there were four hundred (400) breaches, with an average compliance rate of 65.75%. This is a significant improvement from the previous year’s 23.01% for GWS 1a. However, despite the improvement, it still represents a suboptimal performance. (Refer to Table 1)

A compliance rate of 91.87% was reported for the completion of investigations on receipt of applications for service in a Zone 1 area. An improvement from the 88.31% achieved in 2021.

Commercial Category

There were thirty-five (35) breaches reported, resulting in a compliance rate of 65% for installations in a zone other than a Zone 1 area. Of the one hundred (100) applications

for service, sixty-five (65) were completed in the stipulated time. This was a substantial deterioration in comparison to the previous year's 87.91%; an average performance. The utility reported that there were no applications for service in a Zone 1 area during the period under review.

BWA's Comments

The BWA reported that it continues to be plagued by the same factors that previously impacted its performance, namely; the unavailability of labour, materials and equipment. These factors negatively impacted productivity, which resulted in the poor compliance rate. The utility advised that it will continue to build on its capacity to improve on the availability of the resources which negatively impacted its Standards of Service performance over the period under review. These actions include:

- Increasing the compliment of plumbing crews
- Facilitating the availability of equipment
- Facilitating the availability of transportation
- Ensuring adequate levels of storage of fittings and materials
- Addressing the aging infrastructure which leads to the increased frequency in the number of burst pipes/mains per month.

The BWA informed that the unavailability of crews due to staff quarantining and self-isolating as a result of COVID-19 infection and possible exposure, negatively impacted this standard during the first quarter. The BWA advised that the backlog of services were being installed simultaneously with new applications received in an effort to mitigate the negative impact of the unavailability of crews. Additionally, employees were working overtime in order to reduce the backlog.

The BWA informed that whilst the optimal performance was not achieved, improvements in this Standard were achieved through the rotation of personnel, increased monitoring on a weekly basis, and improved transport resources.

The BWA anticipates that this strategic approach to the installation process will result in a sustained increase in the compliance rate of the Standard over time.

GWS 2 – Issuance of First Bill

This Standard specifies that the time between the installation of water service and the issuance of the first water bill should not exceed thirty (30) days.

Table 2: GWS 2 – Issuance of First Bill

January 1 - December 31, 2022		January 1 - December 31, 2021	
Residential Customer	Commercial Customer	Residential Customer	Commercial Customer
50.81%	76.61%	72.36%	100%

Residential Category

The BWA reported three hundred and thirty-two (332) breaches, with a compliance rate of 50.81%. This represents a significant decline in performance when compared to the previous year’s 72.36%. This is a subpar performance. (Refer to Table 2)

Commercial Category

There were twenty-nine (29) breaches reported in this category, with the utility reporting a compliance rate of 76.61%; a decline from the previous year’s figure of 100%.

BWA’s Comments

According to the BWA, the residential category was negatively impacted by the utility’s poor performance in achieving the standard in the fourth quarter. As a result of challenges, being experienced by the external supplier, the system had to be modified to add new services as fixed rate accounts. However, the BWA informed that the problem was resolved in the second quarter of 2023.

GWS 3 - Response to Complaints

This Standard requires the BWA to respond to a customer’s complaint about a billing issue or other Standard of Service matter within seven (7) days and complete the investigation within twenty (20) days.

Table 3: GWS 3 - Response to Complaints

	January 1 - December 31, 2022		January 1 - December 31, 2021	
	Residential Customer	Commercial Customer	Residential Customer	Commercial Customer
Acknowledgement	95.69%	97.41%	86.16%	80.33%
Investigation	33.91%	28.97%	27.17%	33.33 %

Residential Category

With respect to acknowledgment on receipt of complaints, the utility reported a compliance rate of 95.69% with twenty (20) breaches. This is an improvement in performance over the 86.16% of 2021. (Refer to Table 3)

The BWA achieved a compliance rate of 33.91% in completing billing complaint-related investigations and providing findings within the stipulated twenty (20) days, with three hundred and four (304) breaches. Despite this being a modest improvement in the performance from the 27.17% of 2021, this still represents a significant performance deficit.

Commercial Category

There were three (3) breaches related to providing an acknowledgement within the stipulated time for billing complaints, resulting in a compliance rate of 97.41%. This is an improvement from the 80.33% of 2021 and an excellent performance.

With regard to the completion of investigation and the provision of findings, the BWA reported seventy-six (76) breaches, resulting in a compliance rate of 28.97% for billing complaints. The previous year’s performance in the respective category was 33.33%. The BWA continues to perform sub-optimally under this Standard.

BWA's Comments

The BWA advised that the poor performance in this standard was attributed to the unavailability of meters and a staff shortage which was more acute in the third and fourth quarters.

According to the BWA, the introduction of technology, mainly in the form of automated meter readers would contribute significantly to the compliance rate of this standard. However, in the interim the BWA advised that the Commercial department is working towards streamlining the process with a view to improving the compliance rate.

GWS 4 - Wrongful Disconnections

This Standard denotes the time in which the BWA must reconnect service to customers who were disconnected in error. The reconnection must be made within ten (10) hours of notification of the error.

Table 4: Wrongful Disconnections

January 1 - December 31, 2022		January 1 - December 31, 2021	
Residential Customer	Commercial Customer	Residential Customer	Commercial Customer
100%	100%	100%	No Disconnections

Residential Categories

Compliance for this category was 100%, as there were no reported breaches of this Standard. The utility was able to maintain this level of performance for four (4) consecutive years. (Refer to Table 4)

Commercial Categories

A compliance rate of 100% was realized in 2022.

GWS 5 - Meter Installations (Existing Service)

Under this Standard, the BWA must install a meter within forty-five (45) days of the customer's request.

Table 5: Meter Installations (Existing Service)

January 1 - December 31, 2022		January 1 - December 31, 2021	
Residential Customer	Commercial Customer	Residential Customer	Commercial Customer
60%	No requests	No requests	No requests

Residential Category

There were five (5) requests for meters, with the BWA being able to facilitate the request in the stipulated time on three (3) occasions, thus a compliance rate of 60%. There had been no request for meters in 2021. (Refer to Table 5)

Commercial Category

The utility reported that there were no requests for installation of meters.

BWA’s Comment

The BWA advised that in June 2022, there were approximately seven hundred and eighty-three (783) fixed rate services. The utility informed that this was primarily due to the difficulty in identifying the service lines, as there are no visible pipes or ferrules. This challenge is further exacerbated by the general lack of resources available to the commercial department to address the installation of meters on these services according to the utility. The BWA reported that in an effort to improve the compliance rate of this standard, a collaborate approach across departments would be adopted in order to address the shortfall in labour and equipment availability.

GWS 6 - Repair/Replacement of Faulty Meter

Under GWS 6, the BWA must assess and determine the operational status of the meter and report the findings to the customer within fifteen (15) days. In the event that the meter is faulty, it must be repaired or replaced within thirty (30) days of the confirmation of the defect.

Table 6: GWS 6 - Repair/Replacement of Faulty Meter

	January 1 - December 31, 2022		January 1 - December 31, 2021	
	Residential Customer	Commercial Customer	Residential Customer	Commercial Customer
Assess	88%	87.56%	96.94%	98.16%
Repair/Replacement	100%	100%	99.48%	99.20%

Residential Category

During the period under review, the BWA advised that there were eight hundred and fourteen (814) breaches, which resulted in a compliance rate of 88% for the assessment of meters. This outcome represents a decline from the previous year’s 96.94% but still represents a creditable performance. (Refer to Table 6)

A compliance rate of 100% was realized in the repair of the meters, an insignificant statistical change from the previous year’s 99.48%.

Commercial Category

A compliance rate of 87.56% was reported for the assessment of the operational status of the meter within fifteen (15) days. This represents a decrease in the compliance rate from the previous year’s 98.16%. The utility attained a compliance rate of 100% for the repair/ replacement of the meters.

GWS 7 - Reconnection after Payment of Overdue Amount and Reconnection Fee

This Standard requires the BWA to reconnect consumers in a timely manner after the settlement of the overdue amount and reconnection charges at the BWA’s offices. The target time for reconnection is twenty-four (24) hours.

Table 7: GWS 7 - Reconnection after Payment of Overdue Amount and Reconnection Fee

January 1 - December 31, 2022		January 1 - December 31, 2021	
Residential Customer	Commercial Customer	Residential Customer	Commercial Customer
97.09%	99.60	96.96%	No disconnections

Residential Category

For the period under review, there were fifteen (15) breaches or disconnections that were not reconnected in the stipulated time. This resulted in a compliance rate of 97.09%, an insignificant statistical decline from the 96.96% of 2021. (Refer to Table 7)

Commercial Category

The utility reported that of the two hundred and fifty (250) disconnections of service in the commercial sector for overdue amounts there was a failure to reconnect in the stipulated time on only one (1) occasion. The utility attained a compliance rate of 99.60%. There were no disconnections during 2021.

GWS 8 - Scheduling of Field Appointments

This Standard requires the BWA to keep scheduled appointments and, in instances where the appointment must be rescheduled, the customer should be given twenty-four (24) hours' notice of cancellation and notified of a new date.

Table 8: GWS 8 - Scheduling of Field Appointments

January 1 - December 31, 2022		January 1 - December 31, 2021	
Residential Customer	Commercial Customer	Residential Customer	Commercial Customer
No Scheduled Appointments	No Scheduled Appointments	86.67%	81.82%

Residential Category

The BWA reported that no field appointments were scheduled for 2022. (Refer to Table 8)

Commercial Category

The BWA reported that there were no scheduled field appointments for the year 2022.

GWS 9 - Reliability of Supply

This Standard requires the BWA to supply customers with at least 8m³ of running water over a 30-day period. The BWA reported that data remains unavailable for an

assessment of this Standard, as it does not have the wherewithal to commence measurement.

The Commission continues to engage the utility in the provision of compensation to consumers that have not received at least 8m³ of running water over a 30-day period.

BWA's Justification

The BWA advises that a project is being executed through grant funding from the Caribbean Community Climate Change Centre (CCCCC) for the Intra African Pacific Global Climate Change Alliance Plus (Intra ACP GCCA+): Enhancing Climate resilience in CARIFORUM Countries funded by the European Union.

This project will be executed in three Components. During the year 2022, the first component was initiated with a contract signed between the BWA, CCCCC and Dylam (Trinidad and Tobago) for the supply of 102 meters (78nr. 4 inch and 24nr 6 inch meters) to be used for District Metering Areas ("DMA"). These meters were expected to be delivered in the first quarter of 2023.

Component 2 comprised the acquisition of Pipes, fittings, appurtenances and civil works for Access Chambers. Under component 3, there was an assessment of the targeted locations in order to ensure the budgeted costs were in alignment with the expected grant.

The installation of the DMA will enable the generation of data required to facilitate reporting on this standard. Thus, the BWA would be able to determine whether customers received the requisite 8m³ during the thirty days period.

Customer Claim Compensation

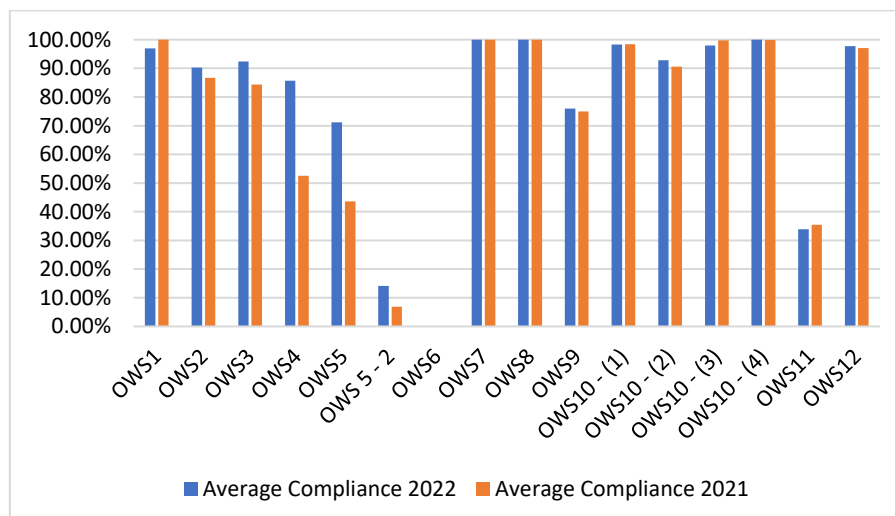
Customers are entitled to compensation where the BWA fails to meet the targets stipulated under the Guaranteed Standards. However, a customer is required to submit a manual claim, within three (3) months of the occurrence of the event that gave rise to the claim. The BWA reported that no claims were submitted for compensatory credits during the year 2022 and therefore no payments were made.

Table 5: Customers Claims Summary

Category	No. of Customers	Compensation
Number of customers eligible for compensation	2,125	\$42,760
Number of customer claims received	Nil	Nil
Number of customers claims paid	Nil	Nil

2.0 OVERALL STANDARDS OF SERVICE

Overall Standards of Service (OWS) assess the BWA’s countrywide performance in relation to its delivery of service. An overview of the performance of the BWA for each Overall Standard is captured in **Figure 2** for the period January 1 to December 31, 2022. Discussed herein are the targets for each Overall Standard. Generally, the graph shows that the BWA was able to improve its performance over the previous year although it was only able to attain the compliance rates for three (3) out of the twelve (12) Standards - OWS 7 (Notify Public of Intention to Interrupt Supply), OWS 8 (Correction of Sewerage Problem) and OWS 12 (Repair of Ruptured Mains). Some areas of concern remain and improvement in performance is required for OWS 4 (Reinstatement of Service after Electrical Outages by the Supplier of Electricity), OWS 5 (Reinstatement of Property), OWS 9 (Wastewater Effluent Quality) and OWS 11 (Repair of Ruptured Pipes).



- OWS 1 - Meter Reading
- OWS 2 - Investigation of Water Quality
- OWS 3 - Reinstatement of Service after Electrical Outages by Supplier of Electricity
- OWS 4 - Reinstatement of Service after In-House Fault
- OWS 5 - Reinstatement of Property
- OWS 6 - Minimum/Maximum Water Pressure
- OWS 7 - Notify Public of Intention to Interrupt Supply
- OWS 8 - Correction of Sewerage Problems
- OWS 9 - Wastewater Effluent Quality
- OWS 10 - Potable Water Quality
- OWS 11 - Repair of ruptured Pipes
- OWS 12 - Repair of Ruptured Mains

Figure 2: OWS Compliance rates for the period January 1 to December 31, 2022

OWS 1 - Meter Reading

Under this Standard, 100% of all accessible meters must be read every month. The BWA reported 96.94% compliance. The BWA reported that out of a possible one million two hundred and fifty-four thousand, one hundred and fifty-nine (1,254,159) meter readings, it was able to effect one million, two hundred and fifteen thousand seven hundred and ninety (1,215,790) meter readings. The BWA had attained the target for the previous year, but failed to attain the target for the year under review.

BWA's Comment

The utility suggests that the target for this Standard is more likely to be achieved with the implementation of an Automatic Meter Reading (AMR) solution. The BWA advised that the procurement of an AMR system is under consideration.

OWS 2 - Investigation of Water Quality

This Standard requires the BWA, in 95% of instances, to investigate and submit a preliminary report to the Commission within seventy-two (72) hours after a complaint is received.

The BWA reported that of the forty-one (41) reports received, thirty-seven (37) were investigated in the stipulated time for a compliance rate of 90.24%. This represents a failure to reach the compliance rate, but a statistical insignificant improvement over the previous years' 86.67%. The utility reported that there were extenuating circumstances.

BWA's Comment

According to the BWA, these complaints were mainly about discoloured water reports mainly in the north of the island and Atlantic Shores. The north is being addressed by work being conducted at the Alleyndale and Villa Maria Pumping stations. In order to solve this problem, the BWA used a tanker to service the upper parts of St. Lucy and St. Peter. The lower section of the area was being serviced by Villa Maria. The issues at Atlantic Shores were addressed by regular flushing, with some portions of

the mains being replaced. The BWA indicated that the installation of the filtration system at Alleyndale should reduce the discolouration.

OWS 3 - Reinstatement of Service after Electrical Outages by Supplier of electricity

Under OWS 3, service should be restored within eight (8) hours of restoration of the electricity supply. The compliance target for this Standard is 95%.

Out of the one hundred and thirty-one (131) reported incidents of electrical outages arising from the supplier of electricity, service was reinstated in the stipulated time in one hundred and twenty-one (121) instances. Representing a compliance rate of 92.37%, an improvement from the 84.36% of 2021. Whilst the utility is trending in the right direction in regard to this standard, it nonetheless represents a failure to attain the target.

BWA's Comment

The BWA indicated that in instances where power is lost and later restored, it takes more than eight (8) hours to move water through the system again. In recent times, outages have been longer and time has to be allocated after power has been restored, to test and replace pumps where necessary. Depending on the severity, testing, repairs and replacement, can extend beyond eight (8) hours, not including the time it takes for the water to enter the system. In areas of higher elevation, the service takes even longer to reach the customer, as the usage from the lower elevated users is significant after outages. According to the utility, there has been an increase in the frequency of these incidents, as the utility has been experiencing ongoing issues with the supply of reliable voltage from the Barbados Light & Power Co. Ltd.

The BWA advised that in order to minimize disruptions the following activities had been undertaken:

1. Increased its generator capacity - the BWA reported that it has twenty-seven (27) functioning generators and an additional seventeen (17) are to be commissioned by the 2024 hurricane season.
2. The installation of surge protection at all its pumping stations.

3. The establishment of an ongoing programme to install lightning protection at all its locations. To date there is 90% coverage.
4. The modernization of the equipment at its pumping stations e.g. installing more modern models of variable frequency drives (VFD) (starting motors for the well pumps), etc.

The BWA informs that Supervisory Control and Data Acquisition (SCADA) is a system of software and hardware elements that allows the BWA to:

- Monitor, gather and process real-time data;
- Control processes locally or remotely; and
- Directly interact with devices such as sensors, valves, pumps and motors.

Hence, SCADA systems assist in reducing downtime through the achievement of a faster response time when there are incidents at the various stations which result in outages. Through its remote monitoring and control capabilities when a station goes offline, or, there is a change in pressure, early notification and response facilitates faster restoration of the system and by extension reduces the period of service disruption for the customers. The BWA reports that 95% of the BWA pumping stations are currently on SCADA.

However, at the moment not all of the BWA pumping stations can be restarted remotely. Only the newer pumping stations such as Mt Pleasant, Trents, Lazaretto, Lodge Hill and Vineyard have this capability. The BWA anticipates that over time the older pumping stations will be upgraded to benefit from this feature.

(A more detailed explanation is included in Appendix 1)

OWS 4 - Reinstatement of Service after In-House Fault (Fault residing within the control of BWA)

Under OWS 4, in 95% of instances, water supply must be reinstated within eight (8) hours after an in-house fault.

There were two hundred and fifty-two (252) incidents of in-house faults, but the BWA reported that it was only able to reinstate supply within the stipulated time on two

hundred and sixteen (216) occasions, for a compliance rate of 85.71%. This represents a significant improvement in the performance as compared to the previous year's rating of 52.57%. Nonetheless, the utility once again performed below par and failed to reach the target.

BWA's Comment

The BWA stated that in instances where there are issues with the equipment, after the source of the problem has been identified and resolved, it can take more than eight hours to have the system fully restored and have water moving through the distribution system.

The BWA advises that the SCADA system cannot prevent outages, but serves as an early warning system to assist the BWA in reducing the downtime caused by an incident which can result in service outages. The failure to achieve the compliance rate for the period under review can be attributed to a number of factors, which include:

1. The demand for water in the area where an outage has occurred;
2. The elevation of the area where the outage has occurred;
3. The volume of water in the reservoir serving the area where the outage has occurred;
4. If any damages occur as a result of a fault (whether electrical or mechanical), the extent of the damaged incurred to the plant or equipment; and,
5. The number of systems which feed a specific area.

(A more detailed explanation is included in Appendix 2)

OWS 5 - Reinstatement of Property

This Standard requires the BWA to, in 95% of instances, to temporarily reinstate property at the end of the workday and permanently reinstate property within twenty (20) working days.

The utility reported a compliance rate of 71.16% for temporary reinstatement throughout 2022, representing a substantial increase from the 43.57% from the

previous year. Out of the eight hundred and eight (808) instances when there were dislocations of properties due to repairs, the BWA was able to reinstate service by the end of the working day on five hundred and seventy-five (575) occasions. There was also a decline in the permanent reinstatement of property as the BWA was only able to achieve an anaemic rate of 14.11%. In absolute numbers, BWA was only able to permanently reinstate property on one hundred and fourteen (114) occasions. This is a marginal improvement in performance as compared to the rate of 6.86% in 2021 but still a subpar performance.

BWA's Comment

The utility advised, that given the limited resources currently available, there was a challenge to achieve full compliance, especially as it related to permanent reinstatement. In order to address this concern, the BWA further advised that a public tender notice for provision of reinstatement services had been issued. The utility advised that it had engaged the services of the Ministry of Transport, Works and Water Resources to assist with the reinstatement effort. In addition, the BWA has employed the use of technology, through the use of an app to record, track and monitor burst in a timelier manner.

(A more detailed explanation is included in Appendix 3)

OWS 6 - Minimum/Maximum Water Pressure

Under this Standard, the BWA must maintain water pressure between twenty-five (25) and eighty (80) pounds per square inch.

BWA's Comment

The utility advised that the project under way with funding from the CCCCC outlined under GWS 9 would also enable the BWA to measure the pressure. (See BWA's comments under GWS 9 as the DMA would enable the BWA to measure the water pressure.)

OWS 7 - Notify Public of Intention to Interrupt Supply

Under this Standard, customers must be notified forty-eight (48) hours in advance of an interruption of service. The target for this Standard is 95%.

The compliance rate achieved overall was 100%, which mirrors the compliance rate for the previous year. The BWA reported that the public was notified in advance on every occasion of the fifty-eight (58) planned interruptions of service. The BWA was able to attain the target for four (4) consecutive years.

OWS 8 - Correction of Sewerage Problem

Under OWS 8, the BWA is expected to correct sewerage issues within forty-eight (48) hours of being informed of a problem. The compliance target is 95%.

The BWA reported that over the period under review, the utility received six (6) complaints but the investigations revealed that the issues were found to be on the side of the customers and addressed by the customers, thus a compliance rate of 100%. This is the fifth consecutive year that the BWA has been able to attain the standard.

OWS 9 - Wastewater Effluent Quality

For OWS 9, 95% of samples from the BWA's sewerage treatment plants should conform to the Environmental Protection Department (EPD)'s wastewater discharge guidelines.

During the period under review the utility reported a compliance rate of 76%, which is an insignificant statistical change from the previous year's 75%. A total of fifty (50) samples of the wastewater discharge were taken, but twelve (12) of the samples were not in compliance. This is an unsatisfactory performance.

BWA's Comment

The utility indicated that the demands of the Best-dos Santos lab (which also affected the Government Analytical Services Laboratory) due to the COVID 19 pandemic negatively impacted this target for the period under review.

The BWA informed that the majority of the parameters are within range except for the coliforms and Enterococcus which are always be present in wastewater. It further advised, that Samples will always fail with respect to Faecal Coliforms and Enterococcus parameters due to a lack of disinfection at the Bridgetown Sewage Treatment Plant. The BWA expects this anomaly to be addressed when the Bridgetown Plant is upgraded.

According to the BWA, high values recorded in Total Dissolved Solids (TDS) of the effluent, showed that the treatment process was not efficient. This was mainly due to one of two processing units (where the biological treatment occurs), being out of service for major repairs and rehabilitation during 2022. As a result, all raw wastewater flows were sent to the one operational processing unit, which did not achieve efficient wastewater treatment on all parameters.

The BWA further informed that high levels in the Chemical Oxygen Demand (COD) were a result of high sludge deposits within the process unit. Again, this was a result of having one process unit in operation. Consequently, the ability to efficiently treat and waste sludge was reduced.

OWS 10 - Potable Water Quality

Under OWS 10, 100% of samples taken must be within the potable water quality limits established by the World Health Organization (WHO).

During the year under review, the BWA reported a compliance rate of 98.36% for Source chemistry, mirroring the previous year's 98.40%. There was however, a marginal improvement in the compliance rate for the Source bacteria, as the utility reported a 92.79% compliance rate for the year under review, an improvement from the 90.66% in 2021.

As it relates to the distribution system, metrics of 100% were reported by the utility for chlorine and 97.98% for bacteria. This represents an insignificant statistical change from the 99.88% compliance rate for chlorine and 99.77% for bacteria found in samples

in the Distribution system during the previous year. These results nonetheless represent a failure to attain the target. However, the BWA reported that there were extenuating circumstance which are outlined below.

During the period under review of the five thousand and twelve (5,012) samples taken, eighty-five (85) fell outside the WHO guidelines. There were fifty-seven (57) positive samples for bacteria at source out of the seven hundred and ninety-one (791) tests completed. There were thirty-three (33) failures out of one thousand, six hundred and thirty (1,630) samples for bacteria in the distribution system and no failures for chlorine, i.e., the detected chlorine level did not fall below the minimum value of 0.2 ppm.

BWA's Comment

Source Chemistry

The BWA advised that during the year under review, there were challenges with the wells in the North, especially, Alleynedale and Villa Maria where as a result of the dry season, the chloride exceeded the W.H.O guideline value of 250 ppm. To counteract this, pumping was reduced or the affected wells were temporarily taken offline in order to reduce salinity. Additionally, there was no exceedance of the WHO guidelines of Nitrates of 10ppm.

Source Bacteria

During the year, a few of the sites tested positive for bacteria. The BWA advised that the samples that tested positive were taken when the station was offline, or, at an unchlorinated source that did not feed directly into distribution. However, on resampling, there were no failures.

Distribution Water Quality

The utility reported that it carried out a review of selection and sanitization of the public sample points and the repeat samples were negative. Additionally, most of the

samples are taken from public standpipes which can sometimes be in very bad conditions.

(A more detailed explanation is included in Appendix 4)

OWS 11 - Repair of Ruptured Pipes

OWS 11 requires that 90% of ruptured pipes be repaired within five (5) days of notification.

There were fifteen thousand, five hundred and seven (15,507) reports of ruptured pipes and the utility advised that it was able to effect the repairs of five thousand, two hundred and forty-eight (5,248) in the stipulated time. The BWA reported a compliance rate of 33.84%, a marginal deterioration of the performance in 2021 which was 35.48%; this represents a breach of the Standard. It cannot be stressed often enough that the longer the ruptured pipes remain unrepaired, the greater the contribution to Non-Revenue Water (NRW). NRW is defined as the difference between the amount of water produced for consumption and the amount of water for which customers are actually billed. It also indicates the utility's lack of responsiveness and efficiency.

Being mindful of the extenuating circumstances, as the BWA continues to operate with an aged, deteriorating infrastructure, and therefore more susceptible to frequent ruptures it is imperative that ruptured pipes are repaired expeditiously. The performance under this standard remains troubling, however, given the BWA's financial challenges, short term solutions continue to be restricted.

BWA's Comment

The utility advised that the unavailability of labour, materials and equipment, negatively impacted productivity and resulted in the poor compliance rate. The BWA informed that it will continue to build on its capacity to improve on the resources which have negatively impacted its performance over the period under review. These actions include:

- Increasing the compliment of plumbing crews;

- Facilitating the availability of equipment;
- Facilitating the availability of transportation;
- Ensuring adequate levels of storage of fittings and materials;
- Addressing the aging infrastructure which leads to the increased frequency in the number of burst pipes/ mains per month.

OWS 12 - Repair of Ruptured Mains

For OWS 12, 95% of repairs should be effected within twenty-four (24) hours of notification.

The BWA advised that it received, nine hundred and seventy-four (974) reports of ruptured mains and it was able to effect the repairs in the required time nine hundred and fifty-two times (952). The BWA was able to maintain a compliance rate of 97.4%, an insignificant statistical change from the previous year's 97.07%; this represents an attainment of the Standard.

The Commission will continue to monitor the BWA's compliance and made recommendations when warranted.

SUMMARY

There were areas of significant improvements in the performances of the utility under both the Guaranteed and Overall Standards. Most noticeably, under Reinstatement of Service after Electrical Outages by Supplier of Electricity (OWS 3), Reinstatement of Service after In-House Fault (OWS 4), where the performance improved to 85.71% from the 52.57% of the previous year and OWS 5 (Reinstatement of Property), from 43.57% in 2021 to 71.16% in 2022.

Optimal performances were also recorded under the Guaranteed Standards; namely Installation of a Service (GWS 1b), Response to Complaints (GWS 3) – Acknowledgment, Wrongful Disconnection (GWS 4), Repair/Replacement of Faulty Meter (GWS 6), Reconnection After Payment of Overdue Amount and Reconnection Fee (GWS 7). The BWA was also able to attain the compliance rate for Overall Standards – Notify Public of Intention to Interrupt Supply (OWS 7) and (Correction of Sewerage Problem OWS 8).

However, there are still major challenges with Reinstatement of Property (OWS 5-2), and Repair of Ruptured pipes (OWS 11). With the ongoing mains replacement projects in strategic areas, it is expected that there will be a reduction in the frequency of ruptured pipes on the distribution network that has been replaced.

It is the intention of the Commission to continue monitoring the progress of the BWA with the goal of an improvement in the quality of service provided. Where necessary and when warranted, the Commission will continue to engage the BWA on finding long-term and short-term solutions to the issues that impact the service delivery. Ever cognizant of the challenges that the BWA face daily, the Commission believes that there is an opportunity for improvement.

One such area is the streamlining of the investigative processes to ensure that investigations are completed in a timely manner. To this end, where departmental collaboration is required, there should be no impediments or barriers to hinder the collaborative process.

Timely repair of reported leaks and the reinstatement of property is critical. Not only to reduce wastage but to minimize the disruption to the roadways. Whilst lacking the financial wherewithal to implement many of the measures that require significant capital outlay, the BWA should seek to incorporate changes that positively impacts service delivery. The BWA must continually strive to be customer focussed and be responsive to their needs.

Appendix 1

OWS 3 – Reinstatement of Service after Electrical Outages by Supplier of Electricity

According to the BWA, there were several electrical outages that exceeded 8 hours and significantly impacted the distribution system during the year. In the first quarter, there were 11 such outages that exceeded 8 hours. During the month of May, 2022, in particular, electrical power transmission issues caused by Barbados Light and Power Company Limited (BLPC) resulted in prolonged outages at various pumping stations on the island. One such electrical related issue occurred at the Spring Garden Desalination Plant which caused the facility to go offline. This affected the St. Stephens, Lodge Hill, Cave Hill, Shop Hill and Carlton distribution systems. The water tanker service was used to enhance the supply of water into the affected areas during this period.

During the third quarter of the 2022, electrical power transmission issues caused by BLPC resulted in prolonged outages at Apes Hill (Distribution System) which serves the Lancaster Area, Joes River pumping station and Golden Ridge.

Action to be taken

According to the BWA, now that the SCADA system is further developed, continuous monitoring and recording of the Water Distribution network and the events that occur can be done by the SCADA control room operators. There is to be a further installation and full utilization of SCADA Infrastructure to allow more accurate monitoring of station activities. The stations that did not have SCADA infrastructure installed at the end of the year 2022 include:

- Joes River Reservoir
- Bowmanston Reservoir
- Sweet Vale Borehole #2
- Sweet Vale Borehole #3
- Warleigh
- Groves
- Greame Hall
- Ellerton
- Codrington
- Trents Booster Station
- Rock Hall Reservoir

Appendix 2

OWS 4 - Reinstatement of Service after In-House fault (fault residing within the control of the BWA)

The BWA advised that various issues impacted its ability to restore service in the requisite time, after a result of the in-house fault. According to the BWA, the insufficient supply of water into the Half Acre (St. Lucy) distribution system during the months of January and February resulted in low water levels at Half Acre Reservoir, and by extension, the Lamberts and Boscobelle distribution systems. This resulted in perennial outages within the Boscobelle distribution system. A water tanker service was used to enhance the supply of water into the Boscobelle reservoir and the Boscobelle distribution system, to offer relief.

Another source of water supply from the St. Joseph Hospital location was added to the Half Acre distribution system, which allowed for maintenance work at the Alleynedale Pumping Station to assist in reducing the issue of discoloured water. This supply also allowed for an increase in production into the Half Acre, Lamberts and Boscobelle distribution systems, once the maintenance work at Alleynedale was completed.

Scheduled repair work at the Belle Pumping Station during the month of April 2022 removed corroded I-beams and reinstalled new ones on the Well-head. This work lasted just over one week and resulted in outages and low pressures within the Fort George, Hanson, Cave Hill, Brittons and Grand View distribution systems. Water tanker service was used to enhance the supply of water into the Brittons and Grand View distribution systems, as they were greatly impacted by the reduction in supply from the Pumping station.

The insufficient supply of water from the well at the Bowmanston pumping station along with leaks in the Bowmanston and Golden Ridge distribution systems resulted in low water levels in the Bowmanston Reservoir. This resulted in perennial outages within the Castle Grant and Golden Ridge East distribution systems. Water tanker

service was used to enhance the supply of water into the affected areas to assist in lessening the supply issues.

Intense rainfall during the year caused the turbidity level within the Bowmanston Well to significantly increase and resulted in the Bowmanston pumping station being taken offline until the water was satisfactory to distribute to customers.

A large diameter transmission main to the Castle Grant Reservoir ruptured and resulted in the Golden Ridge, and the Sweet Vale Bore Hole pumping stations being taken offline to facilitate repairs. This resulted in outages and low pressure with the Castle Grant distributions system.

According to the BWA, during the third quarter, there was equipment failure at the Lodge Hill pumping station which caused it to go offline for more than eight hours. This resulted in outages and low pressure within the Shop Hill distribution system.

Appendix 3

(OWS 5 – Reinstatement of Property)

According to the BWA, road reinstatements have proven to be a major challenge, attributed to the aging infrastructure where up to 1,500 burst services and 120 burst mains are experienced monthly. Nonetheless, BWA informed that it had replaced and added new equipment and engaged in a strategic mains replacement programme aimed at replacing the worst mains first at an intended cost of \$39M.

The BWA estimated that the cost of reinstatements is currently above \$10M annually and it employed the use of technology and enhanced its collaboration with the Ministry of Transport, Works and Water Resources (MTWW) as well as external contractors to achieve the road reinstatement process.

How the BWA is addressing the issue

Technological

According to the BWA, in order to improve the effectiveness and efficiency of the road reinstatement process, an in-house Roadway Reinstatement Application was developed which went live in November 2022. This enabled the tracking of the progress of roadway reinstatements in real time.

Collaboration with MTWW

According to the BWA, this reinstatement arrangement between the BWA and MTWW commenced two years ago but has had challenges which include:

- Communication breakdown, regarding timely feedback on status of work.
- Challenges with the sourcing of hot mix, as the quantities of asphalt being produced was primarily being used by contractors on road rehabilitation projects and hot mix cannot typically be stored but must be used immediately.
- Smaller contractors could not properly contract for business as their quantities from the two main asphalt plants were insufficient; therefore, it was difficult for the BWA to work with them.

The BWA and MTWW convened meetings on October 5th, November 7th and December 5th of 2022 to discuss improvements through a joint approach to addressing the long-standing issue of roadway reinstatements.

Appendix 4

(OWS 10 – Potable Water Quality)

Background to St. Lucy Issue

The BWA provided the following background information in relation to the challenges being experienced by customers in St. Lucy. Traditionally, Alleyne Dale was the sole and main source from which the BWA pumped potable water. The water is pumped into the Half Acre, Lamberts and Boscobelle distribution systems which then supplies customers in St. Lucy and parts of St. Peter. The water challenges in the north of the island stem mainly from three conditions.

1. An inadequate supply of water to meet the increasing demands of the residential and agricultural/commercial sectors in the north. Over the years, the BWA developed and used wells in the north (i.e., Crab Hill, Hope, Colleton and Villa Maria) which have been severely affected by saline intrusion and had to be taken out of service. The Hope well was brought back into production using a containerized desalination plant, but that plant also experienced challenges processing the highly saline water. After an approximate five-year resting period, the Villa Maria well was recommissioned in the first quarter of 2022. The BWA continues to pump from this source at a reduced rate which is being monitored and managed carefully.
2. These challenges are exacerbated by an aged and deteriorating infrastructure in relation to water storage capacity as well as the transmission and distribution systems. Some of the older pipelines in the parishes of St. Lucy and St. Peter were installed before the 1950s. These mains were all metallic and most did not have the cement lining used today to protect the metal from corrosion. Much of this aged pipework is currently contributing to several water-related issues over time – like incidents of discoloration, frequent bursts, high levels of non-revenue water and inadequate water main capacity. In St. Lucy, at least 35

kilometres of mains have been identified for replacement, at a cost of BD\$35 million. Additionally, there are three reservoirs that store and supply water to customers in St. Lucy and parts of St. Peter. A comprehensive assessment on the three reservoirs concluded that rehabilitative work was required for two of the reservoirs (Half Acre and Lamberts) while a complete replacement was required for one (Boscobelle).

3. Discoloured water: Since most of metallic pipelines installed previously did not have the cement lining to protect the pipes from corrosion, those pipelines continue to be susceptible to the buildup of rust on the interior. Eventually this rust separates from the pipeline and travels along in the water. In addition to the discolouration from the rusting pipelines there is some discolouration from sediment entering the Alleynedale well.

According to the BWA, these issues affect areas across the northern water supply network; therefore, the BWA must address them simultaneously – water supply, water storage, and water quality.

To address the situation efficiently and effectively, the BWA is using a form of triage, or a multi-pronged approach to resolve the critical issues first and then drilling down to the less critical. Firstly, it has sought to ensure there is a consistent supply of water by the maintenance of both an adequate supply of water, as well as adequate capacity to store it. While the storage and supply are being dealt with, measures are also undertaken to ensure that new inflow of water being added to the system is being retained in the system. Hence, it was necessary to engage in a mains replacement programme and address the discolouration issues stemming from the Alleynedale well.

Similarly to what was done in the east of the island, additional water was and is being transferred from an adjacent distribution system into the northern system to augment the water supply. A small containerized brackish water desalination plant was setup at the Hope Plantation to augment the water supply. The Boscobelle reservoir was

also replaced to ensure that once additional water was available it could be adequately stored.

Achievements

According to the BWA the following achievements were realized in relation to the issues in the north.

1. With the assistance of trained, professional divers, maintenance was successfully carried out at the main source (Alleynedale well) to reduce the discolouration in the water and increase the production from the well; at a cost of \$70,400.00.
2. The BWA tested and placed an additional well source (Villa Maria) back into operation to augment the source water into the parish. This source was previously saline. Therefore, careful monitoring of the quality of the water being produced is performed regularly for any signs of increased salinity.
3. Two (2) new 0.5iMG capacity reservoirs were built at Boscobelle and Half Acre at a cost of \$2,419,706.90 each. The Boscobelle reservoir replaced an existing reservoir. The new Half Acre reservoir will initially facilitate repair work on the existing concrete reservoir and then ultimately, on the completion of some repairs; there will be additional storage capacity at the Half Acre site.
4. The Lamberts reservoir was cleaned and some refurbishment work was conducted
5. A total of **11.36 km** of mains had been replaced up to the end of January, 2023 costing approximately **\$11M**.

Additional Planned Works

As the strategic mains replacement continues, residents in Crab Hill, Archers Bay, Salmonds, Grape Hall, Josey Hill, Cave Hill, Date Tree Hill, Pie Corner, Mount Poyer and surrounding areas will observe the BWA's enhanced mains-laying programme within their neighbourhoods. The Crab Hill mains replacement programme will be followed by the Josey Hill and Alleynedale Cart Road to Judge Gap Corner.

1. To address the issue of increasing water demands on the system (i.e., agricultural and commercial). The BWA commenced exploratory work across the parish of St. Lucy and drilled 21 new boreholes between the Hope and Colleton areas over a 9-month period to assist in the efforts to source additional water in large enough quantities to augment the source. (\$6,306,748.71 has been spent to date). Additional exploratory works will be conducted at Mount Poyer and Broomefield with the view of establishing new wells capable of producing (0.3-0.35imgd) for agricultural purposes. Estimated cost of these works \$1,153,063.54. Estimated completion date August 31, 2023.
2. A seawater containerized desalination plant has been purchased (\$2,303,721.00), and the infrastructure is being installed to bring two (2) new seawater abstraction wells to the Hope site, before June 2023. The BWA is also exploring the Hope area with the intention of establishing two (2) new brackish wells to increase production of the existing containerized brackish water desalination plant.

According to the BWA, at least \$24.5M has been spent over the last few years on measures to improve and bring relief to the customers in the North, however, there is still a long way to go to complete the rehabilitative works (i.e., mains replacement, repairs to reservoirs) and the development of new sources of water.

Discoloured Water

According to the BWA, the following measures have been taken to address the discoloured water issues:

- a. Removal of the silt from the Alleynedale well in 2022. Siltation is a natural process that needs to be monitored.
- b. Activation of a small supplemental source to augment the supply and alleviate the pressure on the Alleynedale well. This has brought relief to a significant number of districts that were previously suffering supply issues.
- c. Installation of a rust abatement system to sequester the water at source.
- d. Flushing and swabbing of mains in different districts to help in the short term and on a temporary basis.

- e. Installation of additional Community Tanks and distribution of personal tanks to vulnerable persons and institutions within the parishes.

Whilst this is an ongoing process, the BWA believes that the work has benefitted some customers with discoloured water issues and resulted in significant improvement in areas like Six Men's, Colleton Gardens, Lower Checker Hall and Half Moon Fort.

Next Steps

According to the BWA, the next steps to be taken are:

1. The Installation of a filtration system (in process) the estimated cost of which is \$460,000. The estimated completion date was June 30, 2023.
2. While mains in some sections of this distribution network have already been replaced, priority is being given to those areas that will be targeted for mains replacement in the next phase which is expected to continue in 2023. The Crab Hill and surrounding area will commence by the end of January 2023. This will be followed by the Josey Hill and the Maycocks areas. The main between the Half Acre and Lamberts reservoirs, as well as the mains in the Rockfield area were also to be addressed in 2023. Residents in these districts may experience some dust and noise but the Authority will issue notices and endeavour to minimize dislocation.
3. BWA will continue to work with the farmers and agricultural/commercial entities in the parish. Additional exploration will be done in the Mount Poyer and the Broomefield areas with the intention of developing additional water for the farming community during 2023.