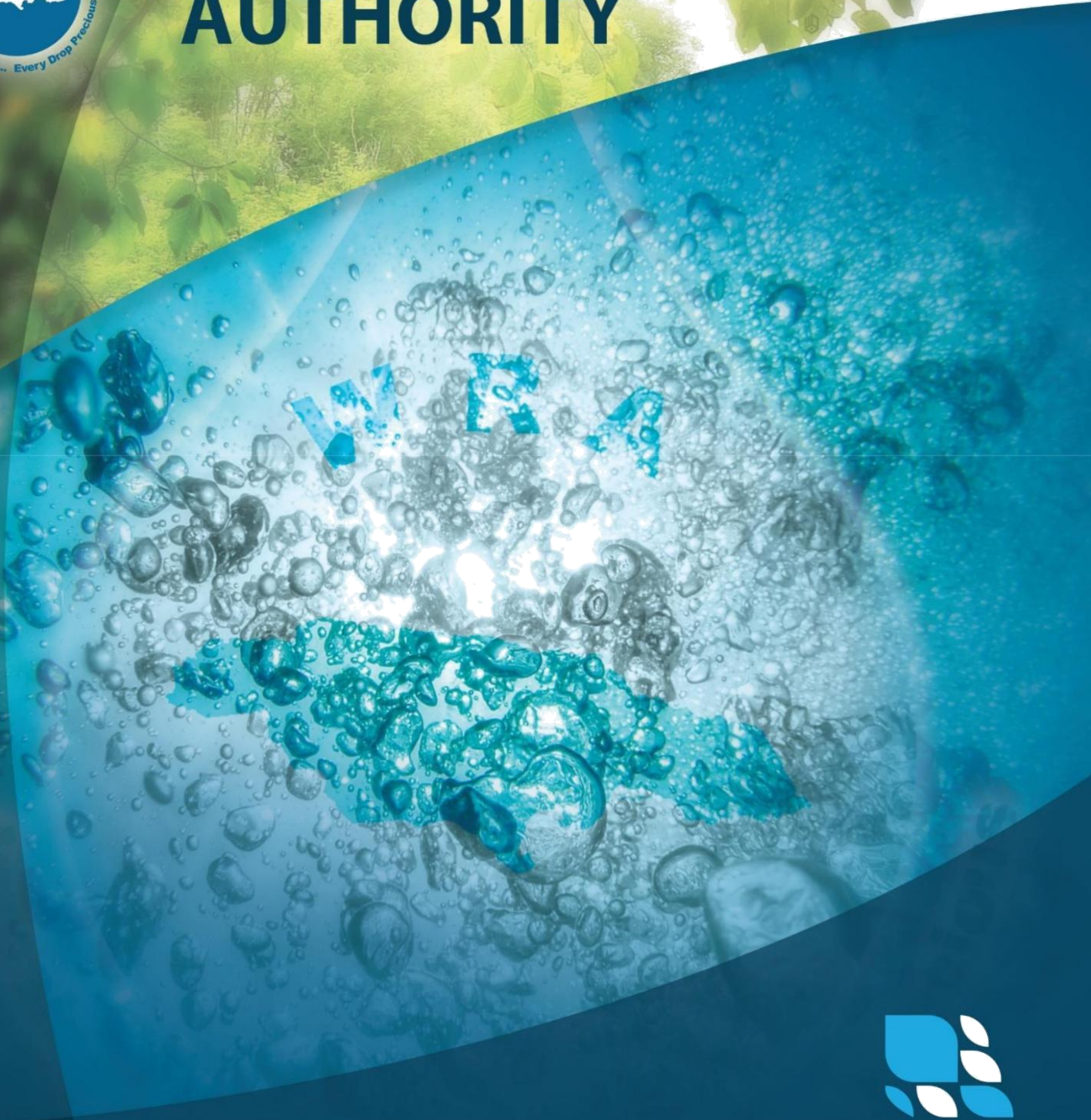




# WATER RESOURCES AUTHORITY



**ANNUAL  
REPORT**  
2016-2017

*Jamaica's Water... Every Drop Precious*

# Corporate Data



**Water  
Resources  
Authority**

(An Agency of the Ministry of Economic Growth & Job Creation)

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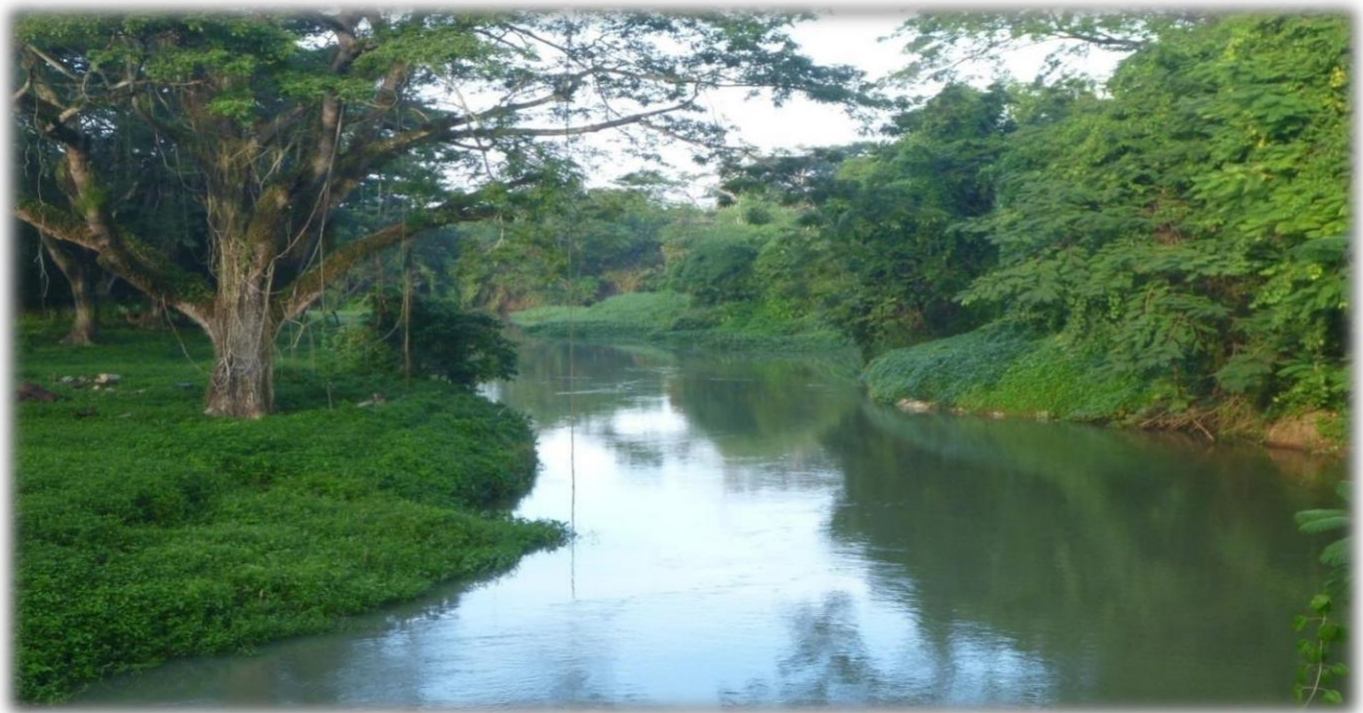


## MISSION

To secure the sustainability of Jamaica's water resources and the resilience of the nation to droughts and floods through:

- effective water resources planning;
- rational water resources allocation, conservation and protection;

with the support of a cadre of well trained, highly motivated, dedicated staff and empowered Jamaicans.



# VISION

To have a world class organization providing efficient and reliable services;  
to stakeholders for facilitating integrated water resources in Jamaica.

## ABOUT US

The Water Resources Authority (WRA) was established by the Water Resources Act, 1995. Its mandate is to; regulate, allocate, conserve and otherwise manage the water resources of Jamaica. The WRA:

- obtains, compiles, stores and disseminates data concerning the water resources of Jamaica;
- prepares and updates Jamaica's Water Resources Master Plan;
- prepares and updates Water Quality Control Plans;
- regulates and allocates the use of all freshwater resources;
- provides technical assistance to any department or agency of Government, in respect of any projects, programmes or activities which relate to the development, conservation and use of water resources.

## CHAIRMAN'S MESSAGE



This past year has been a year of transition, as we marked the end of the tenure of Basil Fernandez as Managing Director, after 46 years, with 25 of those as the Managing Director. Inheriting those very large shoes is someone very familiar with the operations of the Authority, and who has acted in the position numerous times before. But, at the outset, I wish to express my profound gratitude, both as his former Chairman, but also in my own personal capacity, to Basil, whose fingerprints are literally all over the building and the sector as a whole, and whose name will forever be etched in the Document Centre at the WRA, now named in his honour.

Herbert Thomas took over the WRA as Acting Managing Director, since confirmed, at the beginning of the fiscal year, allowing for a full year under his leadership that is being reported on in this document. He had been attending Board meetings for the previous year as an invitee, as part of the leadership transition begun by the previous

Board. This current Board also began its duties at the start of the 2016/2017 fiscal year, and has had the privilege of joining Herbert on his journey as the 4th Managing Director, together continuing the journey of the WRA through this new phase of its existence. We also welcome Peter Clarke as the new Deputy Managing Director, and an important component in the succession and continuity planning for the organization.

The Board embarked on a Top Risks dashboard monitoring for each meeting, addressing the main threats facing the organization, recognizing the fluid nature of threats at any given time. Chief among these is the ability to recruit and retain talent, and to this end, the WRA has embarked on a salary reclassification for all existing positions.

Another achievement was the refreshing of the motor vehicle fleet, where previous deficiencies caused by the unavailability of field vehicles led to the inability to conduct a robust field monitoring programme, as well as budgetary impacts of travelling reimbursements to field staff using their personal vehicles. The Board challenged Management to realize the long-gestating Volume-Based Fees proposal, which has now been signed off by the Prime Minister. Yet another achievement is the review of the Flood Water Control Act, which presently resides at the National Works Agency, which is now committed to working with the WRA on sharing skills sets and resources, especially as flooding in urban areas becomes more challenging and requiring hydrological inputs to traditional engineering solutions applied.



In closing, on behalf of the Board, I wish to encourage Management and Staff to continue pressing forward with confidence, knowing they have the full support of the Board. I also wish to thank our partners within and outside our parent Ministry, and within and outside Government itself. The Private Sector Organization of Jamaica and Jamaica Stock Exchange announced in late 2016 that there will be corporate governance awards to be given to well-run public sector organizations. I have shared this with the Managing Director, and we believe that the WRA is up to the task. There are no losers with good corporate governance, and the WRA, as always, is no loser.



*Dr Parris Lycu-Ayee*

**Chairman**

# MANAGING DIRECTOR'S MESSAGE



The 2016/2017 financial year saw the transition to new leadership at the Water Resources Authority (WRA), with **(a)** the retirement of the past Managing Director (MD) Mr. Basil Fernandez, who along with his predecessors has left the WRA with a legacy of excellent leadership and **(b)** the changing of the Board of Directors under the newly formed Government of Jamaica.

I am truly humbled and honoured to be the 4th MD since the establishment of the WRA. I am also confident that under my leadership, the vision of WRA to attain world class standard in the discharge of its mandate to ensure sustainable management and development of Jamaica's water resources will be achieved. The 2016/2017 financial year was not without its challenges. The Authority grappled with inadequate human resource capacity due to the continued attrition of the skilled and experience staff

and the inadequacy of the compensation package to attract and keep such staff. Other factors such as vehicle shortage compounded the challenge. However, the staff must be commended for their resilience, dedication and commitment to the realization of the goals that were set in the Operational Plan for 2016-17.

The core functions of the WRA, mandated by Section 4(3) of the Water Resources Act were the priority areas of the 2016-17 Operational Plan. The achievements in these areas are the focus of this report and include:

- Successfully meeting all the set targets for Hydromet data collection and the maintenance of the Hydromet network island wide.
- Meeting the 2016-17 targets under the World Bank funded Pilot Project for Climate Resilience (PPCR), for upgrading specified Hydromet stations, to enable them to log and transmit of data in real-time.
- The timely updating of the web-based; Water Resources Management Information System (WRMIS) which is accessible by all stakeholders.
- The progress made to-date in procuring the consultancy service to update the Water Resources Development Master Plan (WRDMP). The driver for this update is the integration of climate change data in the reassessment of the water resource availability and demands of the various sectors. The climate change data for various scenarios

and from different climate models have already been generated spatially over the country with the collaboration of the UWI Climate Studies Group.

- The Technical Assistance given to the public and private sector, and NGOs in data and information dissemination relating to the drought, water supply issues and flooding during the year, to inform important decision making.
- Redesign of the WRA in-house system for the Development Approval Process (DAP) for greater efficiency. DAP applications submitted by NEPA and Parish councils are guaranteed completion within a 30-day cycle. Other requests for hydrological information can be addressed within the targeted 20-day cycle.

- The implementation of new strategies with regards to water resources regulation, allocation and control, have led to improvement in the compliance of the licenced abstractors.
- Deliberate, purpose driven efforts to engage the public through information sharing.

I look forward with great excitement to the WRA in the year ahead, excelling in its performance by copping several of the prizes in the corporate governance competition.

*Herbert Thomas*

**Managing Director**

# The Way Forward

For the upcoming financial year (2017/2018), the WRA will focus on:

1. The implementation of Volume Based Fees (VBF), which will come into effect in April 2017, under The Water Resources (Water Abstraction Charges) Regulations, 2017.
2. Improvements of the Hydro-meteorological Network. Twenty-eight (28) stations have been earmarked for structural and technological upgrades. These upgraded Stations will increase the WRA's ability to assess the status of water resources across the island.

# BOARD'S REPORT

In February of 2016, there was a general election which resulted in a change in Government. The previous Board appointed by Cabinet Decision of May 18, 2015 continued to serve pending the appointment of a new Board. The new Board was appointed by Cabinet Decision of April 2016. The board met for the first time in June 2016 and has met monthly thereafter. The members of the Board are; Dr. Parris Lyew-Ayee, Prof. Michael Taylor, Mr. Michael Brown, Ms. Georgia Hamilton, Ms. Nadeen Spence, Mr. George Grant, Ms Carlene Sinclair, Ms Stephanie Abrahams and Ms Novelette Howell.

## ATTENDANCE OF BOARD MEMBERS

Directors	June 2016- March 2017										Total
	June	July	August	Sept	Oct	Nov	Dec	Jan	Feb	March	
Dr. Parris Lyew-Ayee	*	*	*	*	*	*	*	*	*	*	10
Prof. Michael Taylor	*	*		*	*		*	*			6
Mr. Michael Brown	*	*	*	*	*		*	*	*		8
Ms Georgia Hamilton	*	*	*	*		*		*			6
Ms Nadeen Spence	*	*	*	*	*	*	*	*	*	*	10
Mr. George Grant	*	*	*			*	*	*	*	*	8
Ms Carlene Sinclair	*										1
Ms Stephanie Abraham	*	*	*	*	*	*		*			7
Ms Novelette Howell	*	*	*	*	*	*	*	*	*	*	10

- Ms Charlene Sinclair resigned in July 2016



# BOARD'S REPORT

## Committees of the Board

The Chairman established two (2) committees of the Board, The Finance and Audit Committee and the Technical Advisory Committee.

### Finance and Audit Committee:

The membership of the Finance and Audit Committee were as follows;

Dr. Paris Lyew-Ayee (Chairman)	Mrs. Allison Rangolan-McFarlane	Mr. George Grant
Ms. Cheyenne McClarthy	Ms. Georgia Hamilton	Mr. Gilmore Fraser
Mr. Michael Brown	Mr. Herbert Thomas	Ms. Novelette Howell

### Technical Advisory Committee:

Dr. Paris Lyew-Ayee	Prof. Michael Taylor
Ms Nadeen Spence	Ms. Stephanie Abrahams
Mr. Michael Brown	Mr. Herbert Thomas
Mr. Peter Clarke	Mr. Geoffrey Marshall

## Management of the Authority

A three (3) person team had responsibility for the management of the Authority. They are;

1. Mr. Herbert Thomas, Managing Director (MD)
2. Mr. Peter Clarke, Deputy Managing Director. Mr. Clarke joined the staff in September 2016
3. Mr. Gilmore Fraser, Director, Finance and Accounts (Acting)\*

\*Ms. Hermine Downer, Director of Finance & Accounts remained on study leave- granted October 2015. In her absence Mr. Gilmore Fraser, Accountant, carried out the functions of the Director of Finance & Accounts.

# BOARD OF DIRECTORS



Dr. Parris Lyew-Ayee



Ms. Nadeen Spence



Ms. Georgia Hamilton



Ms. Allison Rangolan



Mr. George Grant



Prof. Michael Taylor



Mr. Michael Brown



Ms. Novelette Howell



Ms. Stephanie Abrahams

# OUR TEAM



Executive Office



Accounts Department



Human Resources



ICT



Planning and Investigation



Data Monitoring



Permits & Licenses



Office Services



# FINANCIAL SUMMARY

The approved estimates of expenditure to the Water Resources Authority (WRA) of one hundred and seventy-six million, three hundred and forty-four thousand dollars (\$176,344,000) was used to finance expenditure totaling one hundred and sixty-three million, six hundred and forty thousand, four hundred and seventy-two dollars (\$163,640,472.00) for the 2016/17 fiscal year. The amount received was insufficient to cover all the operational expenses of one hundred and seventy-four million seventy-eight thousand four hundred and sixty-five dollars (\$174,078,465). However, the WRA earned income of approximately seven million, nine hundred thousand dollars (\$7.9M) mainly from fees for licenses and permits and reimbursable. This amount, which is characterized as, 'Appropriations in Aid' and gains made from the actuarial valuation of the WRA's Pension Plan were used to offset the deficit recorded on the income statement.

Operational expenses were held constant, increases were mainly due to inflation and the devaluation of the Jamaican currency. It must be noted however, that there was an exceptional expenditure resulting from a write off of bank balances in the Project and Foreign Currency Accounts by the Accountant General's Department. At the end of the financial year, the WRA's assets were valued at **three hundred and sixteen million, one hundred and twenty eight thousand, five hundred and fifty-eight dollars (\$316,128,558)**. A significant portion of which was contained in the Retirement Benefits.

Depreciation on fixed assets, a non- cash expense, increased over the previous period relative to increases in intangible assets (computer software licenses) and new motor vehicles to the WRA's fleet. During the financial year, a number of the WRA's fleet vehicles were out of service. This resulted in an increase in travelling and subsistence costs as Travelling Officers were required to use their private vehicles in order to carry out the water monitoring programmes mandated under the WRA Act, 1995. Overall, the budgetary allocation in the Approved Estimates of Expenditure was sufficient to cover compensation of employees, travelling and subsistence, however, the WRA remained underfunded with regards to capital projects.

Regardless of the budgetary allocations, the WRA was not daunted and consistently demonstrated a commitment to manage its financial resources and obligations in order to conform to accepted accounting principles and the Financial Administration and Audit Act. This is supported by the unqualified Audit Report in the attached Financial Statements.

## ALLOCATION OF WATER RESOURCES

Pursuant to Section 20 of the Water Resources Act 1995, the Board considered applications for the use and abstraction of water resources as tabulated below:

### Summary of Applications Received 2016/2017

APPLICATION SUMMARY 2016/2017	Application Type			
	Licences	Permits	Renewals	Total
Number of completed application processed within 60 days of receipt	61	22	42	125
Percentage of applications processed within 60 days of receipt	100%	100%	100%	100%
Number of applications refused	2	0	0	2
Number of pending (incomplete) applications	16	0	0	16

### ENSURING COMPLIANCE TO THE WATER RESOURCES AUTHORITY ACT 1995

The WRA uses a Permit and Licencing System to protect the integrity of the surface and ground water resources. Permits and licences have conditions that are designed to safeguard the water resources. These include:

- Installation a full flow meter for the purpose of measuring the water abstracted.

- Monthly return to the Authority of the amount of water abstracted. Pumping water level must remain above sea level.

- Chloride concentrate must not exceed 250 mg/l.

- Abstraction should be within the licenced rate.

- Water quality must be submitted twice yearly (April and November) for specific parameters.

Each licensee must comply with these conditions.



## ALLOCATION OF WATER RESOURCES

The Authority continued an initiative that began in the 2014-2015 financial year to increase compliance among abstractors. Some abstractors were in the habit of submitting abstraction data quarterly and not monthly as required by the Water Resources Act, 1995. Warning Notices were served on these offenders which resulted in an increase in the monthly submission of abstraction data, particularly from major abstractors such as; the National Water Commission (NWC), National Irrigation Commission (NIC), New Yarmouth Estate and the Jamaica Public Service Company (JPS). The improvement in compliance for small abstractors continues to be a challenge; however, there has been an increase in the manpower of the Permits & Licences Unit that will allow for greater enforcement of compliance for the 2017-2018 financial year.

### Compliance per Quarter

<b>Period</b>	<b>Expected Submissions</b>	<b>Submissions Received</b>	<b>Quarterly Compliance Percentage</b>
<b>April- June</b>	<b>1812</b>	1415	78.09%
<b>July – September</b>	<b>1812</b>	1442	79.58%
<b>October- December</b>	<b>1812</b>	1469	81.07%
<b>January- March</b>	<b>1812</b>	1445	79.62%

# WATER RESOURCES MONITORING

The WRA continued to maintain a Hydromet Network of seventy- eight (78) Stream Gauging Stations (fifty-one (51) automatic recording and twenty-seven (27) manual stations.) Data collection is also facilitated through fifty-one (51) Spot Measurement Stations, thirty-five (35) Intensity Rain Gauge Stations,(including the four (4) Rio Cobre Early Warning System gauges),two (2) Soil Moisture Monitoring Stations and two hundred and eighty-five (285) Groundwater Monitoring Points ( Drilled wells, Dug wells and Bore/Core holes).Data collection is assisted by forty –one (41) community members, called “Observers”, who are given a stipend to read the twenty-seven (27) manual gauges as well as seventeen (17) problematic stations that are read twice daily (6am and 5pm). These gauge readings ensure that consistent data is available to compute daily flows.

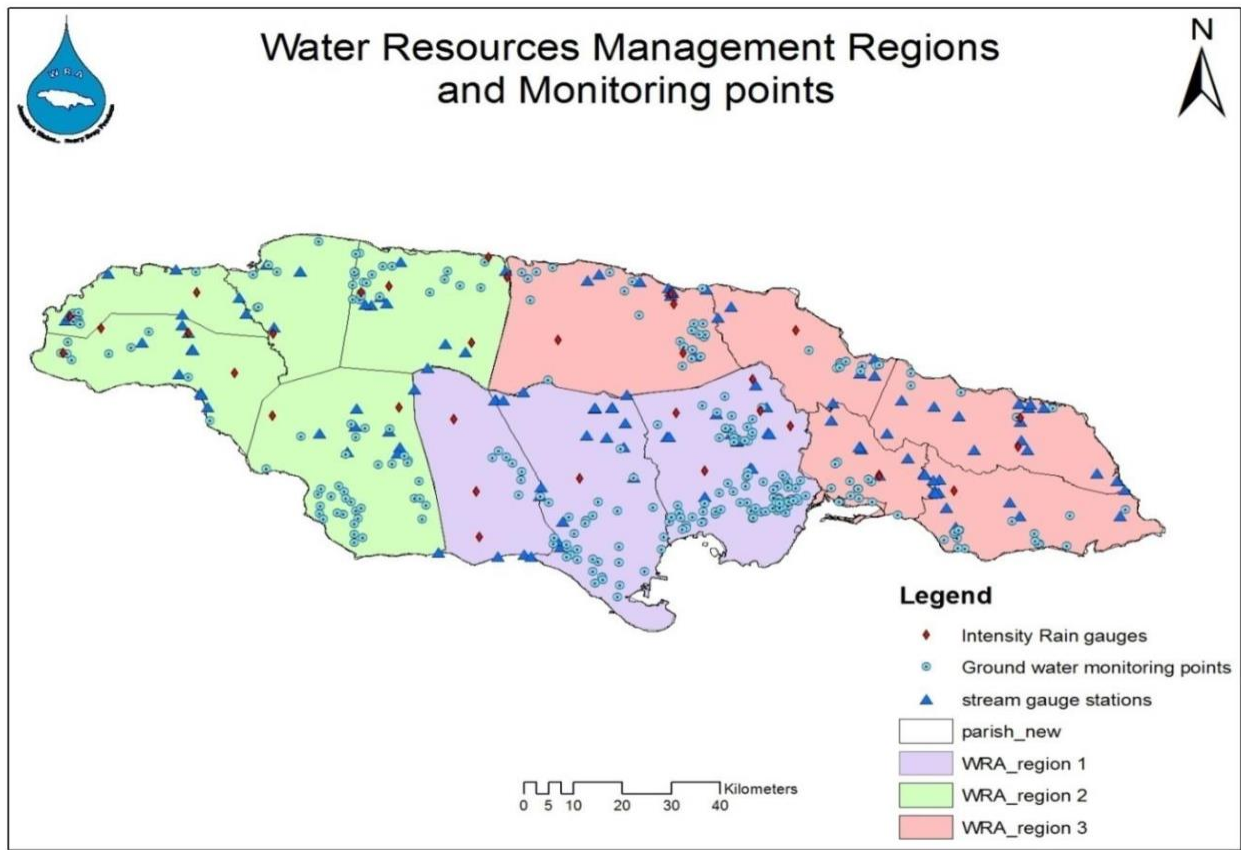


Figure 1. Jamaica's Hydromet Network

# MONITORING REGIONS AND HYDROMET NETWORK

## Surfacewater Monitoring



**Figure 2 Technician, Renard Lindo conducts streamflow measurement @ Yallah River**

Seventy- Three (73) of the seventy-nine (79) Gauging Stations were monitored consistently. Six (6) Gauging Stations provided challenges regarding the computation of data. These included four (4) Stations located in Portland (Region 3) which were affected by high tides and critical flows. The other two (2) problematic Stations are located in St Elizabeth and St James (Region 2) both of which were affected by structural damage. The annual target for spot measurements was 612 measurements of which 559 measurements were accomplished. Two measurements in Region 1, were not conducted as a result of blocked estuaries (sand dunes) preventing outflow of the stream, while three measurements in Region 3 were not conducted due to lack of access to the measurement

sections due to high flows.

## Groundwater Monitoring

The monthly groundwater monitoring programme consists of two hundred and eighty-four (284) specially selected groundwater measuring points across the three (3) regions with an annual target of 3408 measurements. Three thousand, two hundred and sixty-three (3,263) of the targeted three thousand, four hundred and eight (3408) or 96% of groundwater measurements were achieved. The target was not attained as in some instances, technicians were unable to gain access to a number of pump houses. In other instances, the absence of stilling tubes or/and blocked wells made it impossible for technicians to carry out measurement activities.

## IMPROVEMENTS TO HYDROLOGIC NETWORK

The Authority conducted major upgrades to the Hydrologic Network for the 2016/2017 financial year. Six (6) stations were retrofitted with loggers that transmit hydromet data in real-time. Three (3) Stream Gauging Stations namely: Hope River near Gordon Town in St Andrew, Plantain Garden River near Golden Grove in St Thomas, and Martha Brae River at Friendship in Trelawny. Additionally, three (3) intensity rain gauges were installed at Hope River, St Andrew, Cedar Valley, St Thomas and in Mile Gully, Manchester.

The upgrades were made possible through financing from the World Bank's Pilot Programme for Climate Resilience (PPCR). The aim of the PPCR is to improve Jamaica's climate data and information which is directly related to Outcome No. 14 of Vision 2030 Jamaica; Hazard Risk Reduction and Adaptation to Climate Change. A further twenty-eight (28) stations are slated for upgrade in the 2017/18 financial year. These upgrades will significantly improve the reliability and consistency of data collected from these sites.

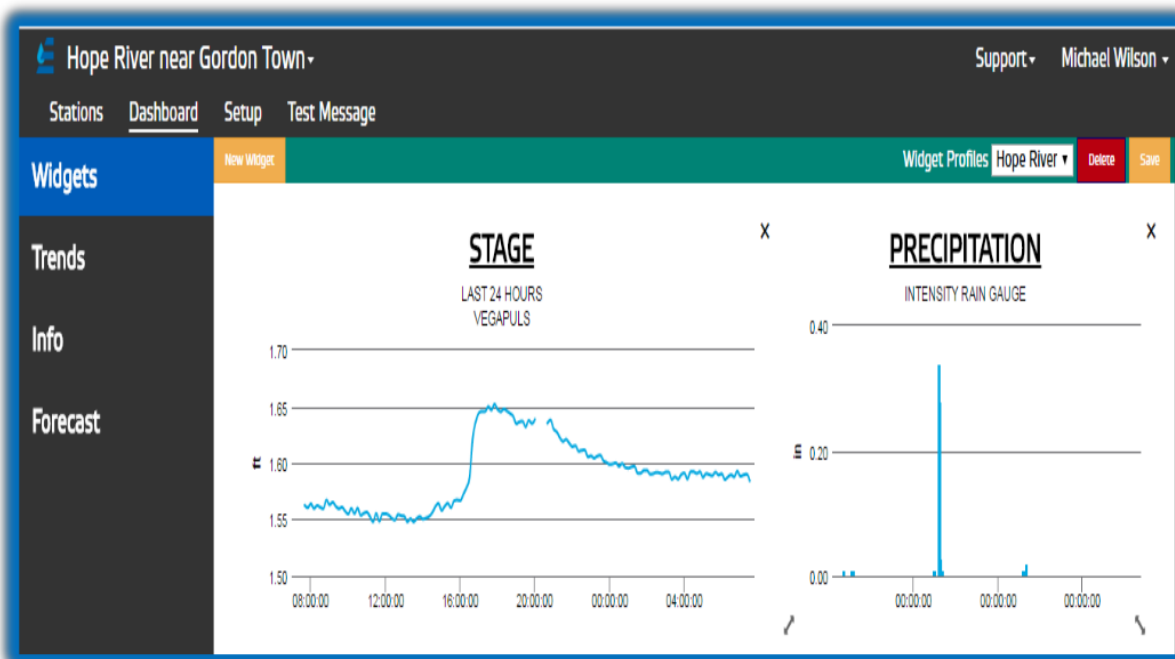


Figure 3. Real-time recording station @Hope River, St Andrew

# WATER RESOURCES DEVELOPMENT MASTER PLAN

## Contracts Signed for Water Resources Development Master Plan



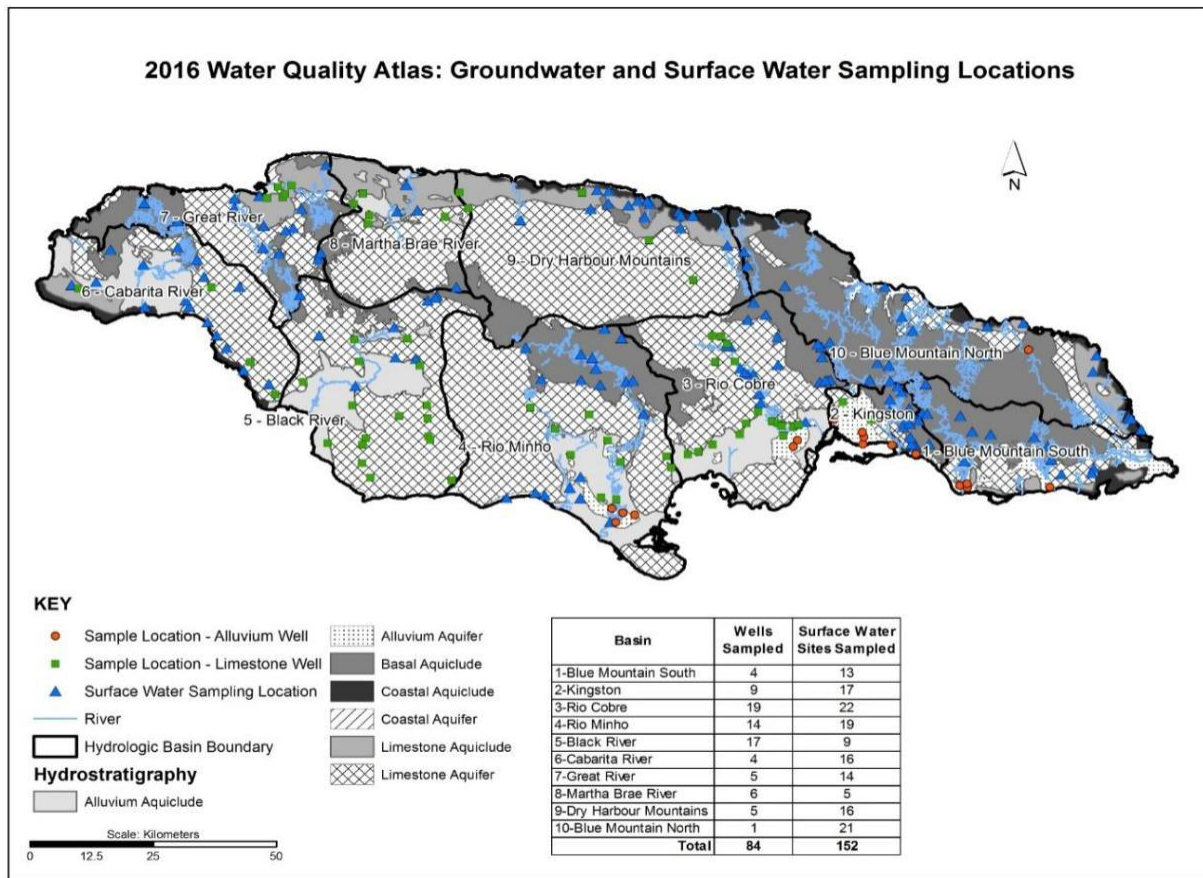
*Figure 4 Managing Director, Herbert Thomas signs contract with Mrs. Beverline Brown- Smith of EPN Consultants Ltd.*

The WRA has engaged Mrs. Beverline Brown-Smith and Mr. Michael White of EPN Consultants Limited and Hydrology Consultants Limited, respectively to update the Water Resources Development Master Plan (WRDMP). Mrs. Brown Smith, will focus on the water resources demand inventory while Mr. White, will focus on the water resources inventory. The WRDMP is expected to enhance the capacity of the Water Resources Authority (WRA) to effectively plan and manage the development and use of the island's water resources. The new WRDMP will provide projections for water resources availability and demand by integrating climate change impacts of increased temperature, changes in rainfall depths and possible sea level rise. Unlike the 1990 Master Plan, the 2017 Plan will consider harvested rainfall in determining the water balance in each basin. This is expected to greatly improve the WRA's ability to estimate exploitable resource within each hydrologic basin. The project is expected to be completed in November 2017.



# WATER QUALITY ATLAS

The WRA has completed data collection for the 2016 Water Quality Atlas. The atlas assessed the suitability of water for drinking, recreation and irrigation from selected surface and ground water sources across Jamaica’s ten (10) Hydrologic Basins. Preliminary data indicate a general improvement in ground and surface water quality.



**Figure 5 Surface and ground water sample points**

Two hundred and thirty six (236) points were sampled (as indicated in figure 5). The sample points were selected based on their historical use for domestic, irrigation and recreational purposes, as well as their proximity and exposure to various pollutants.

## WATER QUALITY ATLAS


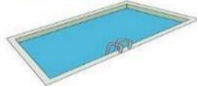

BENEFICIAL USE	PARAMETERS	ACCEPTABLE LIMIT	STANDARD
<b>DRINKING WATER</b> 	<ul style="list-style-type: none"> <li>• Nitrate</li> <li>• Chloride</li> <li>• Sodium</li> <li>• Sulphate</li> <li>• Total Dissolve Solids</li> </ul>	<50mg/L <250 mg/L <200mg/L <400 mg/L <500 mg/L	WHO Guidelines for Drinking Water, 2011, I-JAM Standard & US EPA Drinking Standard
<b>RECREATIONAL USE</b> 	<ul style="list-style-type: none"> <li>• Total Coliform</li> <li>• Faecal Coliform</li> </ul>	All times < 24000 MPN/100 ml 100 MPN/100ml	Based on US EPA Standard for bathing waters & the MoH Standard
<b>IRRIGATION</b> 	<ul style="list-style-type: none"> <li>• Conductivity</li> </ul>	<3000 S/cm	National Irrigation Commission Recommended Limit.

Figure 6 Water Quality Standards

Preliminary findings indicate; that eighty-eight (88) sources indicated excellent water quality, one hundred and thirteen (113) sources were in an early stage of deterioration and the other thirty five (35) sources were considered to have poor water quality.

Of the ten (10) Hydrologic Basins surveyed the Rio Cobre and Kingston Basins recorded the highest number of sources with deteriorated water quality.

Groundwater Sample Points				
Hydrologic Basin	Excellent/High Quality Water	Early Deterioration	Poor Quality	Total Sampled in each Basin
1. Blue Mountain South	1	3	-	4
2. Kingston	-	3	6	9
3. Rio Cobre	-	10	9	19
4. Rio Minho	6	4	4	14
5. Black River	4	12	1	17
6. Cabarita River	1	2	1	4
7. Great River	2	3	-	5
8. Martha Brae River	2	4	-	6
9. Dry Harbour Mountains	2	3	-	5
10. Blue Mountain North	1	-	-	1
<b>Total</b>	<b>19</b>	<b>44</b>	<b>21</b>	<b>84</b>

## WATER QUALITY ATLAS

<b>Surface Water Sample Points</b>				
Hydrologic Basin	Excellent/High Quality Water	Early Deterioration	Poor Quality	Total Sampled in each Basin
<b>1. Blue Mountain South</b>	9	3	1	13
<b>2. Kingston</b>	3	11	3	17
<b>3. Rio Cobre</b>	2	19	1	22
<b>4. Rio Minho</b>	7	7	5	19
<b>5. Black River</b>	5	4	-	9
<b>6. Cabarita River</b>	9	5	2	16
<b>7. Great River</b>	10	4	-	14
<b>8. Martha Brae River</b>	2	3	-	5
<b>9. Dry Harbour Mountains</b>	9	6	1	16
<b>10. Blue Mountain North</b>	13	7	1	21
<b>Total</b>	69	69	14	152

A comparative analysis of the data for the corresponding sampling points from the 2000 Water Quality Atlas highlighted improvements in thirteen (13) sources in the Blue Mountain North Hydrologic Basin, fourteen (14) sources in the Great River and twelve (12) sources in the Cabarita River Hydrologic Basins.

## TECHNICAL ASSISTANCE TO MINISTRIES, DEPARTMENTS AND AGENCIES OF GOVERNMENT (MDAs)

The WRA in accordance with its mandate under Section 4 (3) (e), continued to provide technical support to Ministries Departments and Agencies such as the Rural Water Supply Limited (RWSL) and the National Water Commission (NWC). These included:

### i. Assessing Reduced Flows of Cave River (St. Ann)

Arising from concerns raised by the National Water Commission (NWC) regarding reduced flows at Cave River, St Ann, the WRA conducted an analysis of the flows of five (5) stream gauging stations within the region to ascertain if there was a regional downward trend in flows. The analysis utilized the 30 day moving average to identify trend in the data for Bueno at Rio Bueno, Laughlands Great River at Llandovery, Cave River at Great House, Cave River at Bogue, and Dunn's River at Dunn's River Falls.

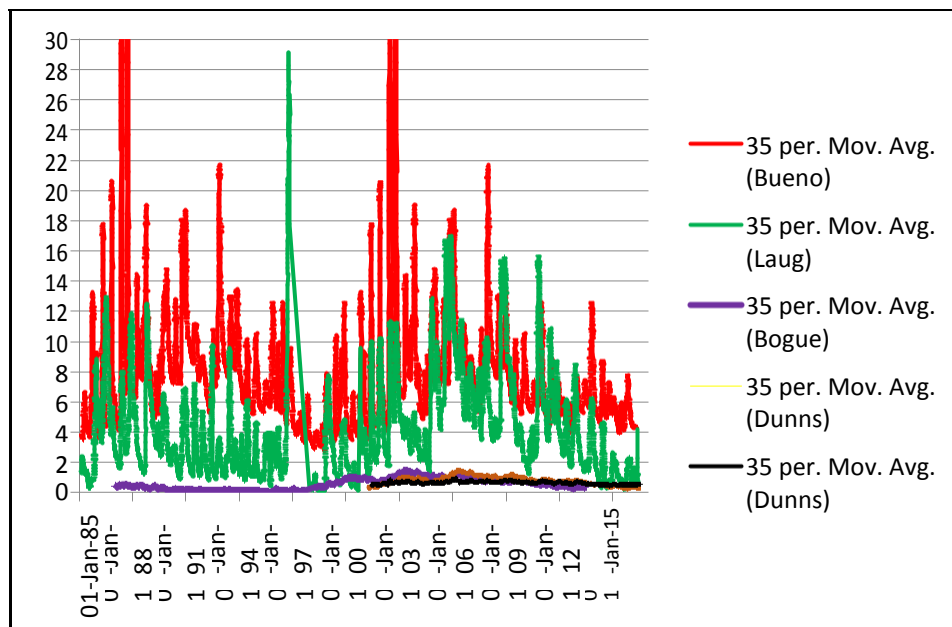


Fig 7 Showing trends in river flows from 1985 to 2015

Figure 7 indicates similarity in flow pattern for Rio Bueno and Laughlands, indicating two cycles over the period of record 1985 to 2015 with declining limbs during 1988 to 1998 and 2002 to 2015. Based on the analysis it is concluded that the low flows experienced at Cave River is the result of the regional decline associated with the cyclical flow pattern.



# TECHNICAL ASSISTANCE TO MINISTRIES, DEPARTMENTS AND AGENCIES OF GOVERNMENT (MDAs)

## ii. Albert Town / Ulster Spring Water Supply System

At the request of the Rural Water Supply Limited, the Water Resources Authority (WRA) assessed the feasibility of abstracting 0.5 MGD (2,273 m<sup>3</sup>/day) of water from the Quashie and Mouth River to augment the Albert Town/ Ulster Spring Water Supply System. Both rivers are located in the Dry Harbour Mountain Hydrologic Basin and flow within the boundaries of the Martha Brae Watershed Management Unit.

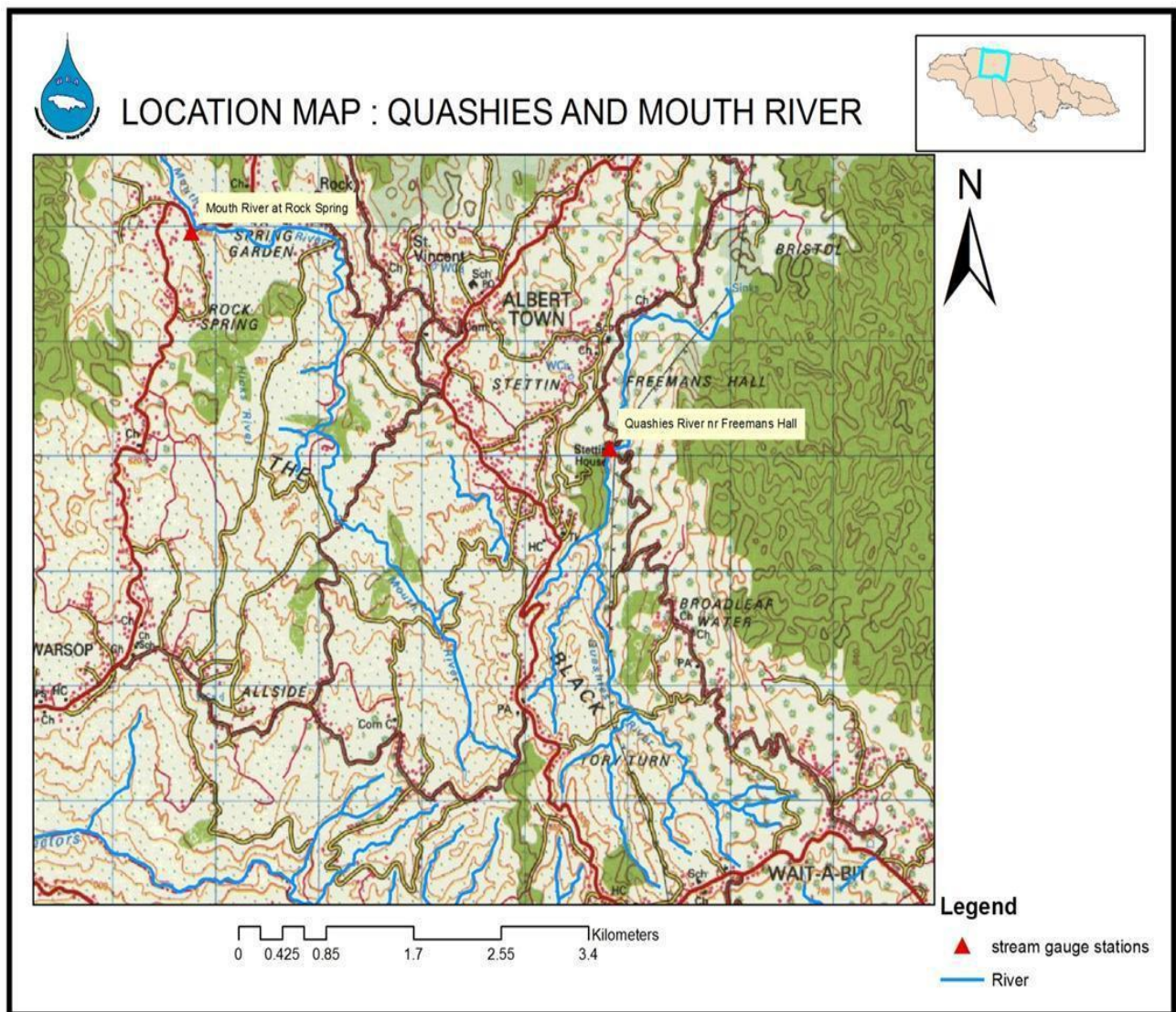


Figure 8 Location Map Quashies and Mouth Rivers

## **TECHNICAL ASSISTANCE TO MINISTRIES, DEPARTMENTS AND AGENCIES OF GOVERNMENT (MDAs)**

The analysis of the daily flow data for both resulted in a reliable yield of 1.164 MGD (5,292 m<sup>3</sup>/day). This exceeded the 0.5 MGD (2,273 m<sup>3</sup>/day) required to augment the Albert Town / Ulster Spring Water Supply. The WRA recommended that the net 0.5 MGD be abstracted from both sources be used to augment the Albert Town / Ulster Spring Water Supply System.

### **iii. Addressing Water Scarcity in Low Ground, Clarendon**

At the request of the National Water Commission (NWC), the WRA investigated and identified possible solutions to alleviate the shortage of water in several communities in North Clarendon. Two (2) solutions were proposed; deepening of one of the wells in the Low Ground Well Field and returning the Summerfield Well to production.

The Low Ground Well Field is located 1.4 kilometers east of the town of Chapelton in an Oxbow which sees the Rio Minho flowing around it. Our investigations focused on the Low Ground #1R well and Low Ground # 2R well. The Summerfield Well is located 1.6 kilometers north of Chapelton and 3.36 kilometers south east of Pennants.

Investigations confirmed that the Low Ground wells tapped the alluvium aquifer which is underlain by basal aquiclude, and an impermeable layer with very low percolation rates. The Low Ground Well Field receives most of its recharge directly from the Rio Minho River, hence when the river displays low flows, the levels in the wells were also low. The WRA recommended:

- That adequate storage infrastructure should be considered to mitigate shortages of the resource during periods in which the wells cannot be pumped.
- A properly designed replacement well should be drilled and lined with the corresponding screen, commensurate with the size of the sand particles present in the aquifer.



**TECHNICAL ASSISTANCE TO MINISTRIES,  
DEPARTMENTS AND AGENCIES OF GOVERNMENT (MDAs)**

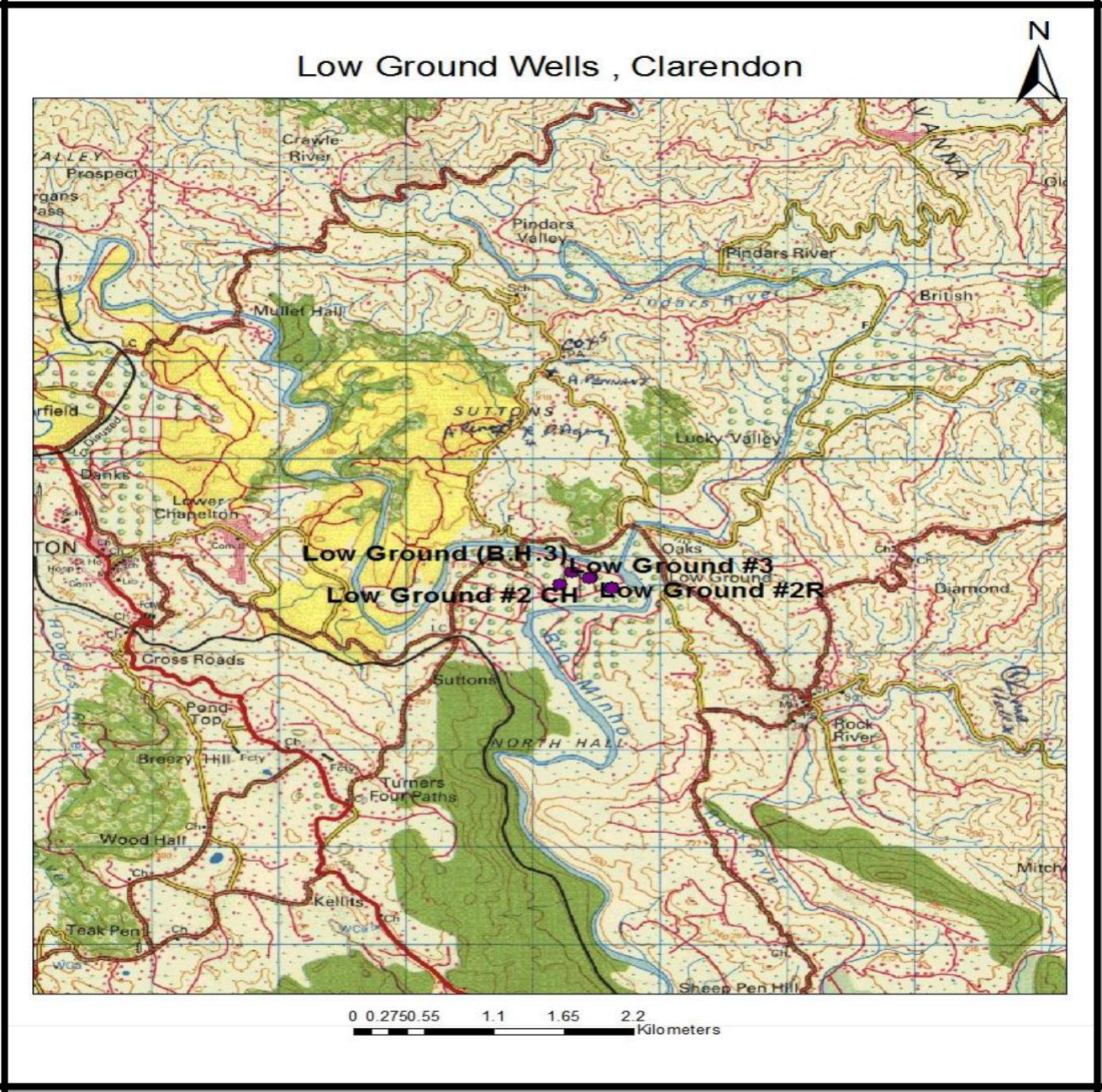


Figure 8 Location map of Low Ground Well Field

## **TECHNICAL ASSISTANCE TO MINISTRIES, DEPARTMENTS AND AGENCIES OF GOVERNMENT (MDAs)**

### **iv. Assessing Flooding in the Rio Grande Valley**

Between April 21<sup>st</sup> and April 22<sup>nd</sup> 2016, the Rio Grande Valley experienced significant amounts of rainfall which resulted in some communities being flooded. The flooding reportedly damaged a number of homes and the road network; including the main roads from Seamans Valley to Moore Town and from Fellowship to Grants Level. The agriculture sector was also severely impacted, as lands used for farming were located within the flood plain of the river.

The WRA conducted a post-flooding field investigation to collect peak flow data, and to ultimately produce a map delineating the areas of inundation to allow for further assessment.

To determine the elevation of the area of inundation, the WRA conducted leveling exercises at Fellowship, Grants Level and Sandy River. It was revealed that the peak water level at the Fellowship gauging station, based on the high water mark was at 40.11 meters (130ft) AMSL.

Based on the flood boundaries delineated it was recommended that rainfall data from the Meteorological Service of Jamaica be used along with the data collected from the leveling exercises to develop a hydrological model that simulates rainfall to runoff for future work in floodplain mapping and hydrological impact for the entire Rio Grande Valley.



TECHNICAL ASSISTANCE TO MINISTRIES,  
DEPARTMENTS AND AGENCIES OF GOVERNMENT (MDAs)

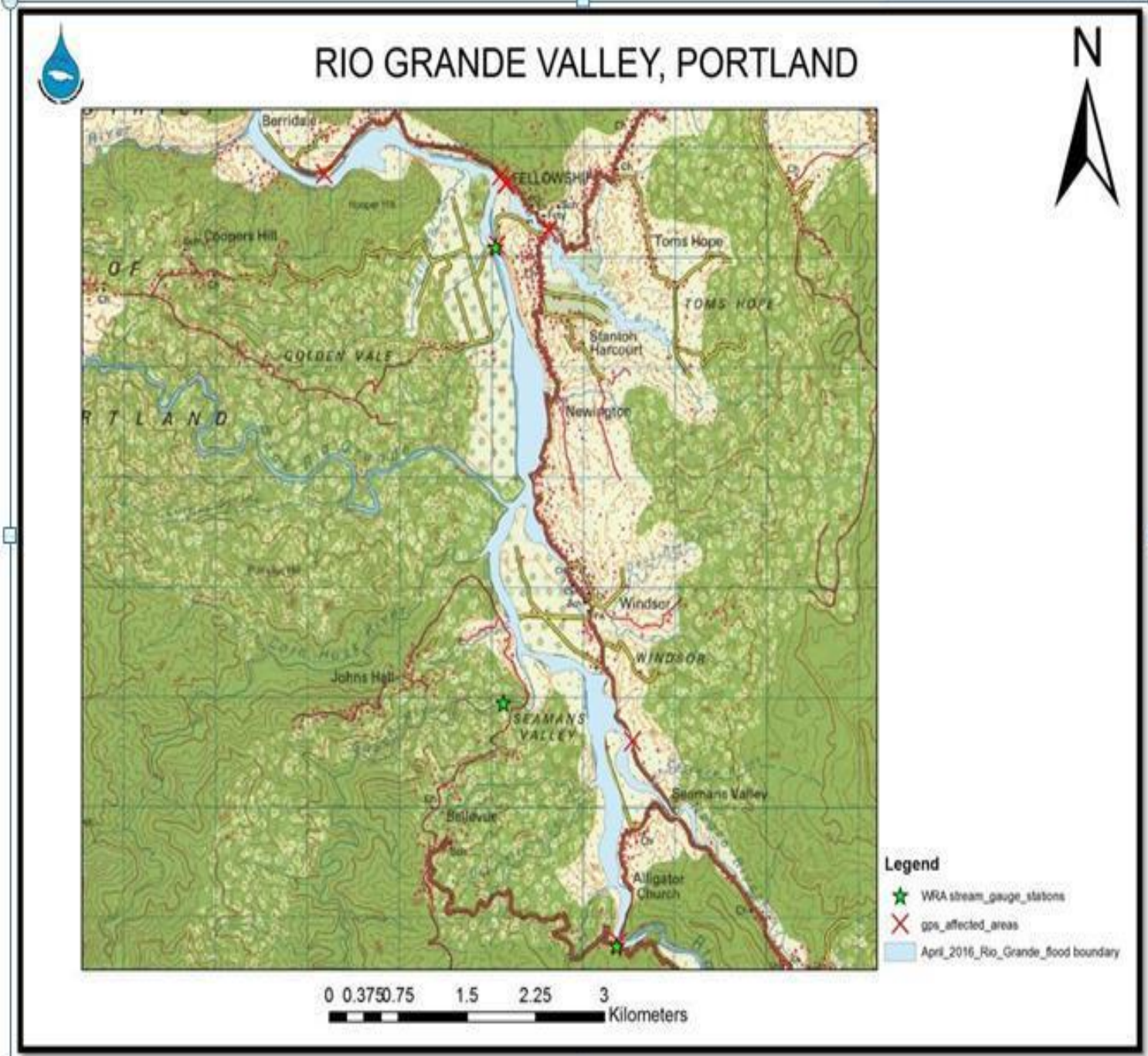


Figure 9 showing Rio Grande Flood Boundaries

## TECHNICAL ASSISTANCE TO MINISTRIES, DEPARTMENTS AND AGENCIES OF GOVERNMENT (MDAs)

### v. Assessing Flooding in Dalvey District, St Thomas



Figure 10 Direction of channel and approximate height of floodwaters above road surface

Reports reaching the Water Resources Authority (WRA) were that heavy rains in St Thomas on May 24<sup>th</sup>, 2016 resulted in flooding and the loss of one life in the community of Dalvey. It was also reported that the Plantain Garden River (PGR) had overflowed its banks. A field investigation was carried out by the WRA in the impacted area to determine the salient cause of the flooding i.e. whether it was due to riverine flooding (Plantain Garden River) as was reported in sections of the media, or due to urban flooding associated with the man-made drainage infrastructure.

The investigation consisted of the interviewing of residents, field surveys, determination of flow direction and measuring of the width and depth of the stream channel in specific reaches.

The conclusion from the investigation was that there was no evidence of riverine flooding by PGR in and around the Golden Grove or Duckensfield communities.



## **TECHNICAL ASSISTANCE TO MINISTRIES, DEPARTMENTS AND AGENCIES OF GOVERNMENT (MDAs)**

The flooding was the result of a channel with an estimated width of 1.83m (6ft) and depth of 0.30m (1ft) that was the main conveyor of the floodwaters. This channel intercepted the main thoroughfare and resulted in floodwaters flowing across it. The flow direction of the floodwaters was north to south and based on reports was of a high velocity.

It can also be deduced that the intensity of the rainfall had contributed to this flooding, resulting in the channel conveying a high volume of water (run-off) from an elevation of 17.7m (58ft). (which is the difference between the highlands and the low lands) flowing through a narrow and shallow channel at high velocity which resulted in inundation of the main roadway.

### **vi. Assessing Flooding in Runaway Bay, St. Ann**

On Sunday December 11th 2016, the town of Runaway Bay in the parish of St Ann was inundated as a result of heavy rains over a two day period. Residents as well as commuters travelling along the North Coast Highway were severely affected by flood waters, resulting in some persons becoming trapped in their vehicles while others had to seek alternate routes to their destinations. On Tuesday, December 13, 2016, a team from The Water Resources Authority (WRA) conducted a field investigation; to identify the cause of the flooding and to map the extent of the area of inundation. The recommendations from the report are as follows:

1. A drainage assessment be carried out to determine the adequacy of the existing drainage infrastructure to convey the flows peak lows of the magnitude experienced during the event (see drainage basins below). If these are found to be inadequate, then the National Works Agency and the Parish Council should oversee the design of a new drainage infrastructure.
2. Flood mitigation measures should be developed to protect the existing developments in the floodplain of the gullies.
3. Stricter monitoring and enforcement of guidelines by the relevant agencies of the private construction of infrastructure such as bridges and culverts for property access.

## **TECHNICAL ASSISTANCE TO MINISTRIES, DEPARTMENTS AND AGENCIES OF GOVERNMENT (MDAs)**

### **vii. Development Assistance**

Through the use of Integrated Water Resources Management (IWRM) principles, the Authority continued to guide the assessment, management and development of water resources for the financial year 2016/2017 by actively participating in the Development Approval Process. The Authority:

- ❖ Conducted Feasibility studies to determine source suitability for proposed abstraction;
- ❖ Reviewed Approximately 36 closure plans;
- ❖ Reviewed and assessed applications submitted through the Development Approval System as per memorandum of understanding with the National Environment and Planning Agency (NEPA). Two hundred and twenty-one (221) subdivision applications were reviewed.



## ONLINE HYDROLOGIC DATA

Through its Water Resources Management Information System (WRMIS); an online web-based hydrologic database, the WRA continued to provide timely access to stakeholders to data on the quantity, quality, and variations in time and space of the surface and underground water resources. This database was [is] accessible using the Internet Explorer, Google Chrome, or Mozilla Firefox web browser @ <http://wra.gov.jm/webmapjam>.

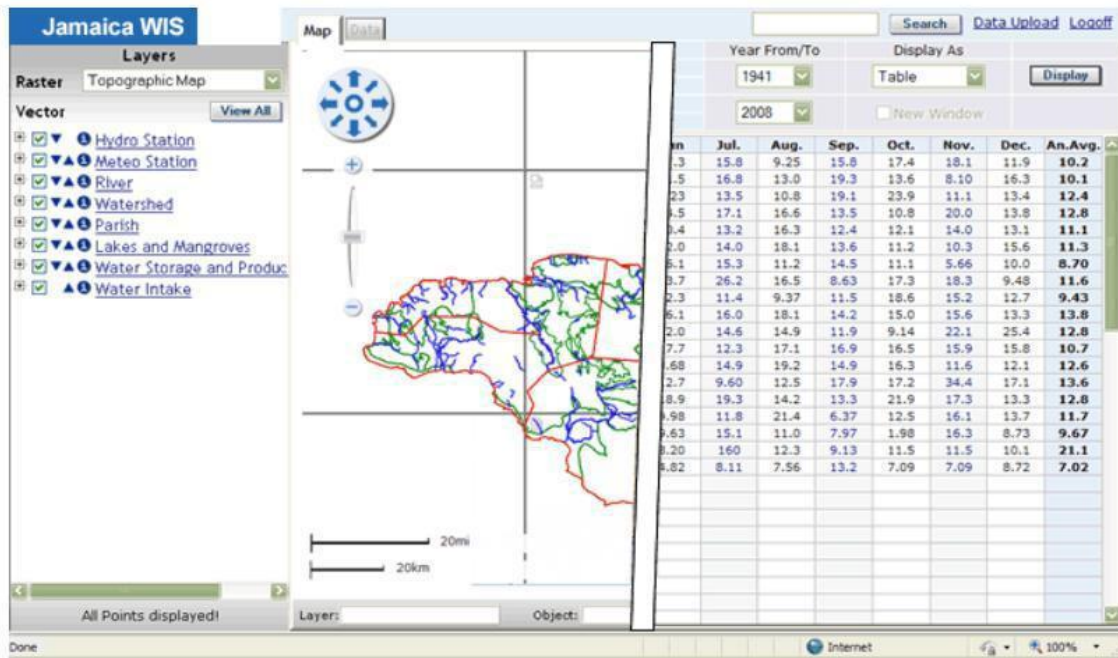


Figure 11 WRMIS User Interface

Data sets were successfully updated in the 2016/17 financial year. The data sets comprise;

- Daily discharges measurements for 72 gauging stations;
- Monthly spot measurements for 54 ungauged stations;
- Groundwater level data for 281 monitoring stations;

## USING GIS TECHNOLOGY

The WRA maintained a GIS system which is used in-house for routine spatial analysis (which cannot be done using our online web based hydrologic data set which is not in GIS format).

For the period under review, the system was successfully updated with the following data:

- ❖ Water level data for all ten of Jamaica’s Hydrologic Basins.
- ❖ Depression shape files for five of Jamaica’s Hydrologic Basins.
- ❖ Data on Water balance, surplus, deficit, and demand for Jamaica from the Draft 2005 Master Plan.

## PUBLIC EDUCATION & AWARENESS

### Water Education Summer Programme

As part of the WRA's public education campaign to promote water conservation and protection, the Authority partnered with the Jamaica Library Service (JLS) – St Thomas Parish Library and shared aspects of our Project WET Guide July 12-26 during the JLS annual summer programme. Approximately three hundred (300) children across the parish participated in the programme.



**Figure 12. Children from Morant Bay Branch Library participating in 'sum of the parts' water pollution exercise**



**Figure 13. Children engaged in craft making exercises.**

The Authority also engaged in several activities to engage members of the public at various levels- schools, community groups and researchers through its participation at national events to commemorate various environmental days, and requests for research assistance from members of the public through the Basil Fernandez Documentation Centre.

Summary of Public Education Activities		
Activity	2015/2016	2016/2017
Exhibitions	11	12
Guided Tours	3	3
Presentations	4	2
Newspaper Supplement	1	2
Advertisements	48	6
Research & Technical Assistance	198	190
Distribution of flyers/ Brochures/Posters	9,600	6000

### Essay Competition 2017

Students from the primary and secondary schools were invited to submit entries to the WRA's 'Essay Competition 2017'. An encouraging number of entries were received from both categories. After review of the scripts the followings students were adjudged the winners for the primary category; Rishona Williamson, Nicholai Newman and Jade Green;

In the Secondary category the winners were; Odane Hutchinson from St Andrew Technical, Khiara Walfall, St. Mary High and Tracy Williams of the Excelsior High School



Winners of the WRA  
Essay Competition  
Primary Category  
From left- Jade Green,  
Nocholai Newman &  
Rishona Williamson

## PUBLIC EDUCATION & AWARENESS



Winners of the WRA Essay Competition

Secondary Category

Odane Hutchinson, Khiara Walfall & Tracy Williams



The WRA commemorated World Water Day with a conference at the Iberostar Hotel, Rose Hall Montego Bay. The conference was held under the theme “Water and Wastewater”, which was the focus for World Water Day 2017. The conference focused on the opportunities and challenges of wastewater reuse for sustainable development and climate change mitigation in the agricultural sector, tourism industry, domestic and urban areas.



## PUBLIC EDUCATION & AWARENESS



Figure 16. Exhibitor at WWD Conference

The conference marked the first of several steps to encourage the reuse of wastewater to improve water resources practices of Jamaicans in the various sectors. Participants also toured the Rose Hall Development Water Reclamation Facility where they saw wastewater being reused in the tourism sector.

# HUMAN RESOURCES MANAGEMENT

## STAFFING

The Human Resources unit collaborated with other operational units to assess the needs of the organization in order to ensure the right knowledge, competency and talents were recruited to complement the committed cadre of employees on whose talents and initiatives the WRA depended to successfully execute its mandate. As a result, the organization was able to fill vacancies created by resignations, ending of contracts and a dismissal. Based on Ministry of Finance & Public Service and the Post Operations Committee's approval, six (6) persons were recruited. Additionally, six employees were promoted as shown in the tables below:

### EMPLOYED

POSITIONS	NUMBEROF EMPLOYEES
Technical Assistant	3
Deputy Managing Director	1
Temporary Senior Technical Assistant	1
Hydrologist	1
Total	6

### PROMOTED

POSITIONS FILLED VIA PROMOTION	NUMBEROF EMPLOYEES
Managing Director	1
Systems Manager / Chief Programmer	1
Chief Hydrologist	1
Senior Hydrogeologist	1
Senior Technical Assistant	1
Office Attendant	1
Total	6

### SEPARATED

POSITIONS	NUMBEROF EMPLOYEES
Managing Director	1
Chief Hydrologist	1
Hydrologist	1
Senior Assistant Hydrologist	1
Senior Technical Assistant	1
Technical Assistant	1
Driver	1



## HUMAN RESOURCES MANAGEMENT

The WRA also ensured an effective communication medium to keep staff informed, maintain a strong and engaging relationship in an environment that is conducive to stable industrial relations, promotes good health, healthy lifestyle and safety of its employees. It ensures good governance and mutual respect in sustaining employees' productivity, rewards, and recognitions. The WRA also ensured that all retirees are fully compensated through its pension fund and continue to receive health insurance in support their comfort.

### Existing Organization Structure

Units/Divisions or Projects	Staff Complement	Planned 2016/2017	Planned 2017/2018	Planned 2018/2019
Executive	2	2	2	2
ADMIN/HRD	17	15	19	19
Finance and Accounts	4	4	4	4
Management Info. System	3	2	4	4
Technical Services	2	2	2	2
Planning and Investigation	12	12	12	12
Resource Management	22	22	22	22

## HUMAN RESOURCES MANAGEMENT

In order to enhance the knowledge and talents of its employees in building the capacity of the organization and for their self-development and succession planning, the organization invested in training, I and development programmes both locally and overseas which resulted in fifty-four employees' participation in at least one of these programmes. The WRA also collaborated with Spectrum Management Ltd and the Collage of Agriculture Science & Education (CASE) to facilitate two summer workers and an intern for on the job learning.

### TRAINING & DEVELOPMENT

CONFERENCE/COURSE/SEMINAR/WORKSHOP	NUMBER OF PARTICIPANTS
Services Skills for Ancillary Workers (Jamaica)	1
Performance Management Appraisal System (PMAS)	54
Water Resources Management (Singapore)	1
Project Management Professional (PMP) (Jamaica)	1
Safety Wardens Training (Jamaica)	8
Geographical Information Systems for Hydrology Technicians(Online)	4
Jamaica White Limestone Workshop(Jamaica)	4
Hydrological Risk Management Workshop (Aruba)	1
Real-Time Data Transmission Systems Inc. (Jamaica)	15
Stream Flow Measurements, Equipment & office Procedures (Jamaica)	15
Planning ,Installation & Operation of Networks for Monitoring Subterranean Waters ( Roseau , Dominica)	2

The WRA will continue to provide stable commitment to staff motivation, satisfaction, best practices in policies and procedures in realizing full potential of its employees in the day to day execution of its operations will also continue to seek and adapt new and rewarding strategies to maintain a vibrant workforce to continue managing the water resources of Jamaica.

# APPENDICES

**Financial Statements**

**Directors' Compensation**

**Senior Executives' Compensation**

**Water Resources Authority**

**Financial Statements**  
**31 March 2017**

**Water Resources Authority**

**Financial Statements**

**Year Ended 31 March 2017**

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Statement of cash flows	4
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E-mail: crhylton@yahoo.com

**Independent Auditor's Report**  
To the Members of  
**Water Resources Authority**

*Opinion*

We have audited the financial statements of Water Resources Authority (the Authority) which comprise the statement of financial position as at March 31, 2017, Statement of Profit or Loss and other comprehensive income, changes in equity and cash flows for the year then ended, and notes, comprising significant accounting policies and other explanatory information.

In our opinion, the accompanying financial statements give a true and fair view of the financial position of the Authority as at March 31, 2017, and of its financial performance and cash flows for the year then ended in accordance with International Financial Reporting Standards (IFRS) and the Jamaican Companies Act.

*Basis for Opinion*

We conducted our audit in accordance with International Standards on Auditing (ISAs). Our responsibilities under those standards are further described in the *Auditor's Responsibilities for the Audit of the Financial Statements* section of our report. We are independent of the Company in accordance with the International Ethics Standards Board for Accountants Code of Ethics for Professional Accountants (IESBA Code) and we have fulfilled our other ethical responsibilities in accordance with the IESBA Code. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

*Responsibilities of Management and the Board of Directors for the Financial Statements*

Management is responsible for the preparation of financial statements that give a true and fair view in accordance with IFRS and the Jamaican Companies Act, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is responsible for assessing the Authority's ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting unless management either intends to liquidate the Authority or to cease operations, or has no realistic alternative but to do so.

The Board of Directors is responsible for overseeing the Authority's financial reporting process.



## **Independent Auditor's Report (Continued)**

To the Members of  
**Water Resources Authority**

### *Auditor's Responsibilities for the Audit of the Financial Statements*

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with ISAs, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Authority's internal control.

Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Authority's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Authority to cease to continue as a going concern.

Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that presents a true and fair view.

We communicate with the Board of Directors regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.



Chartered Accountants  
Kingston, Jamaica

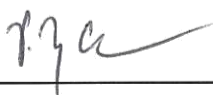
## Water Resources Authority


Balance Sheet

31 March 2017

	Notes	2017 \$	2016 \$
<b>ASSETS</b>			
Cash and cash equivalents	3	18,723,401	29,992,947
Investment	4	4,422,951	4,206,953
Accounts receivable	5	6,552,387	4,903,864
Prepayments		896,702	1,150,172
Retirement benefit asset	6.1	127,556,000	83,160,000
Intangible assets	8	7,212,838	7,214,625
Property, plant and equipment	8b	150,764,280	150,123,595
		<u>316,128,558</u>	<u>280,752,156</u>
<b>Total Assets</b>			
<b>Reserves</b>			
Reserves and Accumulated Funds			
Capital project subvention	9	1,044,719	1,333,482
Capital project grant	10	2,512,395	2,871,309
Other projects fund	11	457,851	457,851
Accumulated surplus		72,081,076	74,192,262
Capital reserve	12	61,218,693	61,218,693
Revaluation reserve	13,14	103,213,087	103,213,087
Pension revaluation reserve		66,494,286	32,221,286
		<u>307,022,107</u>	<u>275,507,970</u>
<b>Current liabilities</b>			
Payables & accruals	15	9,106,450	5,244,186
		<u>9,106,450</u>	<u>5,244,186</u>
<b>Total reserves and liabilities</b>			
		<u>316,128,558</u>	<u>280,752,156</u>

Approved for issue on behalf of the Board of Directors on 31 July 2017 and signed on its behalf by:

  
 \_\_\_\_\_ Chairman

  
 \_\_\_\_\_ Managing Director

**Water Resources Authority**

## Statement of Profit or Loss and Other Comprehensive Income

Year ended 31 March 2017

	Notes	2017 \$	2016 \$
<b>Income</b>			
Subventions		163,640,472	150,820,841
Other operating income	16	<u>7,967,893</u>	<u>8,998,420</u>
		171,608,365	159,819,261
<b>Expenditure</b>			
Expenses	17	<u>174,078,465</u>	<u>153,668,041</u>
Surplus for the year		(2,470,100)	6,151,220
<b>OTHER COMPREHENSIVE INCOME:</b>			
Other comprehensive income(loss) not to be reclassified to income in subsequent period:			
Re-measurement gain/(loss) on defined benefit plan	6.2	<u>34,273,000</u>	<u>(20,110,000)</u>
<b>Total income (loss) and other comprehensive income</b>		<u>31,802,900</u>	<u>(13,958,780)</u>

**Water Resources Authority**

## Statement of Cash Flows

Year ended 31 March 2017

	Note	2017 \$	2016 \$
<b>Cash Flows from Operating Activities</b>			
Surplus for the year		(2,470,100)	6,151,220
<b>Adjustments</b>			
Depreciation		13,523,061	9,502,927
Net change in retirement benefits		(10,123,001)	(11,222,905)
<b>Adjusted surplus for the year</b>		<u>929,959</u>	<u>4,431,243</u>
<b>Decrease/(Increase) in current assets</b>			
Change in accounts receivable		(1,648,523)	(718,135)
Change in prepayments		253,470	(378,837)
Change in investment securities		(215,998)	-
<b>(Decrease)/Increase in current liabilities</b>			
Change in payables and accruals		<u>3,862,269</u>	<u>1,477,806</u>
<b>Net cash flow from operation</b>		<u>3,181,177</u>	<u>4,812,077</u>
<b>Cash Flow from Investing Activities</b>			
Additions to property, plant and equipment		(14,169,959)	(6,699,387)
<b>Net cash flow from investing activities</b>		<u>(14,169,959)</u>	<u>(6,699,387)</u>
<b>CASH FLOW FROM FINANCING ACTIVITIES</b>			
Change in capital projects subventions		(288,763)	44,222
<b>Net cash inflow from financing activities</b>		<u>(288,763)</u>	44,222
<b>Decrease in cash resources</b>		(11,269,545)	(1,843,088)
<b>Cash and Cash Equivalent at Beginning of Year</b>	3	<u>29,992,947</u>	<u>31,836,036</u>
<b>Cash and Cash Equivalent at End of Year</b>	3	<u>18,723,401</u>	<u>29,992,947</u>

**Water Resources Authority**  
Statement of Changes in Equity  
Year Ended 31 March 2017

	Revenue Reserve \$	Capital Reserve \$	Revaluation Reserve \$	Pension Revaluation Reserve \$	Total \$
Balances at 31 March 2014	57,721,788	40,135,124	103,000,000	86,249,599	287,106,511
Change during the year	(3,221,395)	21,083,569	(1,858,029)	5,175,719	21,179,864
Balances at 31 March 2015	67,682,127	61,218,693	103,213,087	52,434,189	284,548,096
Capital project grant	358,914	-	-	-	358,914
Change during the year	6,151,220	-	-	(20,212,903)	(14,061,683)
Balances at 31 March 2016	74,192,262	61,218,693	103,213,087	32,221,286	270,845,328
Capital project grant	358,914	-	-	-	358,914
Change during the year	(2,470,100)	-	-	34,273,000	31,802,900
Balances at 31 March 2017	72,081,076	61,218,693	103,213,087	66,494,286	303,007,142



## Water Resources Authority

Notes to the Financial Statements

31 March 2017

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### 1. The Authority

The Water Resources Authority was established under the Water Resources Act of 1995. The Act became effective as of April 7, 1996.

Its main objectives were to promote the conservation and proper use of underground water resources and to control the exploitation of such water resources.

In July 1985 the functions and duties of the authority were transferred from the Ministry of Public Utilities and Transport to the Ministry of Agriculture. However, in 1989, the Ministry of Public Utilities and Transport again assumed responsibility for the Authority. Water Resources Authority is currently being funded by subventions from the Ministry of Water, Land, Environment and Climate Change

The registered office of the Authority is situated at Hope Gardens, Kingston 7, Jamaica.

### 2. Significant Accounting Policies:

The principal accounting policies applied to the preparation of these financial statements are set out below. These policies have been applied to all the years presented, unless otherwise stated.

#### **Basis of preparation**

These financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS), and have been prepared under the historical cost convention as modified by the revaluation of available-for-sale investment securities when applicable.

The preparation of financial statements in conformity with IFRS requires the use of certain critical accounting estimates. It also requires management to exercise its judgement in the process of applying the Authority's accounting policies. Although these estimates are based on management's best knowledge of current events and actions, actual results could differ from those estimates

#### ***Interpretations and amendments to published standards effective in the current year and are relevant to the authority***

The Authority applied for the first-time certain standards and amendments, which are effective for annual periods beginning on or after April 1 2016. The Authority has not early adopted any other standard, interpretation or amendment that has been issued but is not yet effective.

Although these new standards and amendments applied for the first time in during this financial year, they did not have a material impact on the annual financial statements of the Authority. The nature and the impact of each new standard or amendment is described below:

#### **Amendments to IAS 19 Defined Benefit Plans: Employee Contributions**

IAS 19 requires an entity to consider contributions from employees or third parties when accounting for defined benefit plans. Where the contributions are linked to service, they should be attributed to periods of service as a negative benefit. These amendments clarify that, if the amount of the contributions is independent of the number of years of service, an entity is permitted to recognise such contributions as a reduction in the service cost in the period in which the service is rendered, instead of allocating the contributions to the periods of service. This amendment is effective for annual periods beginning on or after July 1 2014. This amendment is not relevant to the Authority as contributions are not dependent on years of service.

**Water Resources Authority**

Notes to the Financial Statements

**31 March 2017**

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**Significant Accounting Policies (Continued):****Basis of preparation (Continued)*****Interpretations and amendments to published standards effective in the current year and are relevant to the authority (continued)*****Annual Improvements 2010-2012 Cycle**

With the exception of the improvement relating to IFRS 2 *Share-based Payment* applied to share-based payment transactions with a grant date on or after July 1 2014, all other improvements are effective for accounting periods beginning on or after July 1 2014. The Authority has applied these improvements for the first time in these financial statements. They include:

**IFRS 8 Operating Segments**

The amendments are applied retrospectively and clarify that:

An entity must disclose the judgements made by management in applying the aggregation criteria in paragraph 12 of IFRS 8, including a brief description of operating segments that have been aggregated and the economic characteristics (e.g., sales and gross margins) used to assess whether the segments are 'similar';

The reconciliation of segment assets to total assets is only required to be disclosed if the reconciliation is reported to the chief operating decision maker, similar to the required disclosure for segment liabilities.

These amendments did not have any impact on the financial statements of the Authority as it is not required, and the Authority does not present segment information.

**3. IAS 16 Property, Plant and Equipment and IAS 38 Intangible Assets**

The amendment is applied retrospectively and clarifies in IAS 16 and IAS 38 that an asset may be revalued by reference to observable data by either adjusting the gross carrying amount of the asset to market value or by determining the market value of the carrying value and adjusting the gross carrying amount proportionately so that the resulting carrying amount equals the market value. In addition, the accumulated depreciation or amortisation is the difference between the gross and carrying amounts of the asset. This amendment did not have any impact to the revaluation adjustments recorded by the Authority during the current year.

**4. IAS 24 Related Party Disclosures**

The amendment is applied retrospectively and clarifies that a management entity (an entity that provides key management personnel services) is a related party subject to the related party disclosures. In addition, an entity that uses a management entity is required to disclose the expenses incurred for management services. This amendment did not result in any changes as such disclosures were already being made by the Authority for such services. Please see Note 7.

**Water Resources Authority**

Notes to the Financial Statements

**31 March 2017**

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**4. Significant Accounting Policies (Continued):****Basis of preparation (Continued)*****Interpretations and amendments to published standards effective in the current year and are relevant to the authority (continued)*****Annual Improvements 2011-2013 Cycle**

These improvements are effective from July 1 2014 and the Authority has applied these amendments for the first time in these financial statements. They include:

***IFRS 13 Fair Value Measurement***

The amendment is applied prospectively and clarifies that the portfolio exception in IFRS 13 can be applied not only to financial assets and financial liabilities, but also to other contracts within the scope of IAS 39. The Authority does not apply the portfolio exception in IFRS 13.

***IAS 40 Investment Property***

The description of ancillary services in IAS 40 differentiates between investment property and owner-occupied property (i.e., property, plant and equipment). The amendment is applied prospectively and clarifies that IFRS 3, and not the description of ancillary services in IAS 40, is used to determine if the transaction is the purchase of an asset or a business combination. This amendment did not impact the financial statements of the Authority.

***Standards, interpretations and amendments to published standards which are not yet effective and are relevant to the authority***

At the date of authorization of these financial statements, certain new standards, amendments and interpretations to existing standards have been issued which were not effective and which the Authority has not early adopted. The Authority has assessed the relevance of all such new standards, interpretations and amendments and has determined that the following may be relevant to its operations:

***IFRS 15 Revenue from Contracts with Customers***

This new standard provides a single, principles based five-step model to be applied to all contracts with customers. The five steps are:

- Identify the contract with the customer,
- Identify the performance obligations in the contract,
- Determine the transaction price,
- Allocate the transaction price to the performance obligations in the contracts,
- Recognise revenue when (or as) the entity satisfies a performance obligation.

There is new guidance on whether revenue should be recognised at a point in time or over time, which replaces the previous distinction between goods and services. Where revenue is variable, a new recognition threshold has been introduced by the standard. This threshold requires that variable amounts are only included in revenue if, and to the extent that, it is highly probable that a significant revenue reversal will not occur in the future as a result of re-estimation. However, a different approach is applied for sales and usage-based royalties from licences of intellectual property; for such royalties, revenue is recognised only when the underlying sale or usage occurs. The standard also introduces new guidance on costs of fulfilling and obtaining a contract, specifying the circumstances in which such costs should be capitalised. Costs that do not meet the criteria must be expensed when incurred.

## Water Resources Authority

Notes to the Financial Statements

31 March 2017

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### ii. Significant Accounting Policies (Continued):

#### Basis of preparation (Continued)

***Standards, interpretations and amendments to published standards which are not yet effective and are relevant to the authority (continued)***

#### **IFRS 15 Revenue from Contracts with Customers (Continued)**

The standard provides detailed guidance on various issues such as identifying distinct performance obligations, accounting for contract modifications and accounting for the time value of money, sales with a right of return, customer options for additional goods or services, principal versus agent considerations, licensing, and bill-and hold arrangements.

The standard introduces new, increased requirements for disclosure of revenue in an IFRS reporter's financial statements.

IFRS 15 must be applied in an entity's annual IFRS financial statements for periods beginning on or after January 1, 2018. Application of the Standard is mandatory and early adoption is permitted. The directors and management have not yet assessed the impact of the application of this standard on the Authority's financial statements.

#### **IFRS 16 Leases**

This new standard requires lessees to account for all leases under a single on-balance sheet model, subject to certain exemptions in a similar way to finance leases under IAS 17. Lessees recognise a liability to pay rentals with a corresponding asset, and recognise interest expense and depreciation separately. The standard provides guidance on the two recognition exemptions for leases – leases of "low value" assets and short-term leases with a term of 12 months or less. Lessor accounting is substantially the same as IAS 17. IFRS 16 is effective for annual periods beginning on or after January 1 2019. Early adoption is permitted but not before the Authority applies IFRS 15. The directors and management have not yet assessed the impact of the application of this standard on the Authority's financial statements.

#### **Amendments to IAS 16 and IAS 38: *Clarification of Acceptable Methods of Depreciation and Amortisation***

The amendments clarify the principle in IAS 16 and IAS 38 that revenue reflects a pattern of economic benefits that are generated from operating a business (of which the asset is part) rather than the economic benefits that are consumed through use of the asset. As a result, a revenue-based method cannot be used to depreciate property, plant and equipment and may only be used in very limited circumstances to amortise intangible assets. The amendments are effective prospectively for annual periods beginning on or after January 1, 2016, with early adoption permitted. These amendments are not expected to have any impact to the Authority given that the Authority has not used a revenue-based method to depreciate its non-current assets.

## Water Resources Authority

Notes to the Financial Statements

31 March 2017

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### iii. Significant Accounting Policies (Continued):

#### Basis of preparation (Continued)

***Standards, interpretations and amendments to published standards which are not yet effective and are relevant to the authority (continued)***

#### **IFRS 7 Financial Instruments: Disclosures**

##### **Servicing contracts**

The amendment clarifies that a servicing contract that includes a fee can constitute continuing involvement in a financial asset. An entity must assess the nature of the fee and the arrangement against the guidance for continuing involvement in IFRS 7 in order to assess whether the disclosures are required. The assessment of which servicing contracts constitute continuing involvement must be done retrospectively. However, the required disclosures would not need to be provided for any period beginning before the annual period in which the entity first applies the amendments.

##### **Applicability of the amendments to IFRS 7 to condensed interim financial statements**

The amendment clarifies that the offsetting disclosure requirements do not apply to condensed interim financial statements, unless such disclosures provide a significant update to the information reported in the most recent annual report. This amendment must be applied retrospectively.

#### **IAS 19 Employee Benefits**

The amendment clarifies that market depth of high quality corporate bonds is assessed based on the currency in which the obligation is denominated, rather than the country where the obligation is located. When there is no deep market for high quality corporate bonds in that currency, government bond rates must be used. This amendment must be applied prospectively.

#### **IAS 34 Interim Financial Reporting**

The amendment clarifies that the required interim disclosures must either be in the interim financial statements or incorporated by cross-reference between the interim financial statements and wherever they are included within the interim financial report (e.g., in the management commentary or risk report). The other information within the interim financial report must be available to users on the same terms as the interim financial statements and at the same time. This amendment must be applied retrospectively.

#### **Amendments to IAS 1 Disclosure Initiative**

The amendments to IAS 1 *Presentation of Financial Statements* clarify, rather than significantly change, existing IAS 1 requirements. The amendments clarify:

The materiality requirements in IAS 1

That specific line items in the statement(s) of profit or loss and OCI and the statement of financial position may be disaggregated

That entities have flexibility as to the order in which they present the notes to financial statements

That the share of OCI of associates and joint ventures accounted for using the equity method must be presented in aggregate as a single line item, and classified between those items that will or will not be subsequently reclassified to profit or loss.



## Water Resources Authority

Notes to the Financial Statements

31 March 2017

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### iv. Significant Accounting Policies (Continued):

#### Basis of preparation (Continued)

***Standards, interpretations and amendments to published standards which are not yet effective and are relevant to the authority (continued)***

#### ***Amendments to IAS 1 Disclosure Initiative (Continued)***

Furthermore, the amendments clarify the requirements that apply when additional subtotals are presented in the statement of financial position and the statement(s) of profit or loss and OCI. These amendments are effective for annual periods beginning on or after January 1 2016, with early adoption permitted. The Authority is currently assessing the impact of this amendment on its financial statements.

**IFRS 9, 'Financial Instruments'**, (effective for annual periods beginning on or after 1 January 2018). In July 2014, the IASB issued IFRS 9 which is the comprehensive standard to replace IAS 39 'Financial Instruments: Recognition and Measurement', and includes requirements for classification and measurement of financial assets and liabilities, impairment of financial assets and hedge accounting.

Financial assets are required to be classified into three measurement categories: those to be measured subsequently at amortised cost, those to be measured subsequently at fair value through other comprehensive income (FVOCI) and those to be measured subsequently at fair value through profit or loss (FVPL).

Classification for debt instruments is driven by the entity's business model for managing the financial assets and whether the contractual cash flows represent solely payments of principal and interest (SPPI). If a debt instrument is held to collect, it may be carried at amortised cost if it also meets the SPPI requirement. Debt instruments that meet the SPPI requirement that are held in a portfolio where an entity both holds to collect assets' cash flows and sells assets may be classified as FVOCI.

Financial assets that do not contain cash flows that are SPPI must be measured at FVPL (for example, derivatives). Embedded derivatives are no longer separated from financial assets but will be included in assessing the SPPI condition.

Investments in equity instruments are always measured at fair value. However, management can make an irrevocable election to present changes in fair value in other comprehensive income, provided the instrument is not held for trading. If the equity instrument is held for trading, changes in fair value are presented in profit or loss.

Most of the requirements in IAS 39 for classification and measurement of financial liabilities were carried forward unchanged to IFRS 9. The key change is that an entity will be required to present the effects of changes in the Authority's own credit risk of financial liabilities designated at fair value through profit or loss, in other comprehensive income.

IFRS 9 introduces a new model for the recognition of impairment losses – the expected credit losses (ECL) model. There is a 'three stage' approach which is based on the change in credit quality of financial assets since initial recognition. In practice, the new rules mean that entities will have to record an immediate loss equal to the 12-month ECL on initial recognition of financial assets that are not credit impaired (or lifetime ECL for trade receivables). Where there has been a significant increase in credit risk, impairment is measured using lifetime ECL rather than 12-month ECL. The model includes operational simplifications for lease and trade receivables.

**Water Resources Authority**

Notes to the Financial Statements

**31 March 2017**

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**Significant Accounting Policies (Continued):****Basis of preparation (Continued)*****Standards, interpretations and amendments to published standards which are not yet effective and are relevant to the authority (continued)*****IFRS 9, 'Financial Instruments (Continued)',**

Hedge accounting requirements were amended to align accounting more closely with risk management. The standard provides entities with an accounting policy choice between applying the hedge accounting requirements of IFRS 9 and continuing to apply IAS 39 to all hedges because the standard currently does not address accounting for macro hedging.

The Authority is still assessing the potential impact of adoption and whether it should consider early adoption but it is not possible at this stage to quantify the potential effect.

The Authority has concluded that all other standards, interpretations and amendments to existing standards, which are published but not yet effective are either relevant to its operations but will have no material impact on adoption; or are not relevant to its operations and will therefore have no impact on adoption; or contain inconsequential clarifications that will have no material impact when they come into effect. This includes amendments resulting from the IASB's ongoing 'Improvements to IFRS project.

The principal accounting policies applied in the presentation of these financial statements are set out below. These policies have been consistently applied to all the years presented, unless otherwise stated.

**Foreign currency translation****Functional and presentational currency**

Items included in the financial statements are measured using the currency of the primary economic environment in which the entity operates (the functional currency) the financial statements are presented in the Jamaican dollars, which is the functional and presentation currency.

**Transaction and balances**

Foreign currency transactions are translated into the functional currency using the exchange rates prevailing at the dates of transactions. Foreign exchange gains and losses resulting from the settlement of such transaction and from the translation at the year end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in the statement of changes in net assets available for benefits. At the year end date, monetary assets and liabilities denominated in foreign currency are translated using the closing mid-point rate of exchange. Unrealised foreign exchange differences on unsettled foreign currency monetary assets and liabilities are recognized in the statement of changes in net assets available for benefits.

**Water Resources Authority**

Notes to the Financial Statements

**31 March 2017**

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**v. Significant Accounting Policies (Continued):****Basis of preparation (Continued)****Summary of accounting policies****Investment securities**

Investment securities are measured at fair value by reference to quoted market prices when available. If quoted market prices are not available, then fair values are estimated on the basis of pricing models or other recognised valuation techniques.

**Receivables**

Receivables are carried at cost which approximates the fair value of those assets.

**vii. Revenue recognition**

Revenue is recognised to the extent that it is probable that the economic benefits will flow to the Authority and the revenue can be reliably measured. The following specific recognition criteria must also be met before revenue is recognised.

**Subventions**

Subventions are recognised when control of the asset has been attained and recorded in the year to which they relate.

**Interest income**

Interest income is recognised on a time proportion basis using the effective interest method and includes interest income from debt securities.

**Expenses**

All expenses are recognised in the statement of changes in net assets available for benefits on the accrual basis. Accrued expenses are recognised initially at fair value and subsequently stated at amortised cost using the effective interest method.

**viii. Financial investments****Classification**

The Authority classifies its investment in debt and equity securities. These financial assets are classified as available-for-sale investment securities. The Authority's policy is for the managers to evaluate the information about these financial assets on a fair value basis together with other related information.

**Recognition/derecognition**

Purchases and sales of investments are recognised on the trade date, the date on which the Authority commits to purchase or sell the investment. Investments are derecognised when the rights to receive cash flows from the investments have expired and the Authority has transferred substantially all risks and rewards of ownership.

## Water Resources Authority

Notes to the Financial Statements

31 March 2017

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### □ Significant Accounting Policies (Continued):

#### Summary of accounting policies (Continued.)

##### Financial investments cont'd

###### Measurement

Financial investments are initially recognised at fair value. Transaction costs are expensed in the statement of changes in net assets available for benefits. Subsequent to initial recognition, all financial investments are measured at fair value based on quoted bid prices or amounts derived from cash flow invested. Unrealised gains and losses are recognised in the statement of changes in net assets available for benefits.

###### Fair value estimation

The fair value of the financial instruments traded in active markets (such as equity securities) is based on quoted market prices at the year end date. The quoted market prices used for financial assets held by the Authority is current bid price.

##### Cash and cash equivalents

Cash and cash equivalents include cash in hand, demand deposits, other short-term highly liquid investments with original maturities of three months or less.

##### Use of estimates and judgements

The preparation of financial statements in accordance with International Financial Reporting Standards requires the Board of Directors to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. These estimates are based on historical experience and the Board of Directors' best knowledge of current events and actions and are reviewed on an ongoing basis. Actual results could differ from those estimates.

##### Pension Scheme costs

The Authority participates in a defined benefit contribution pension scheme, the assets of which are held separately from those of the Authority, however, the net value of the fund and the actuarially determined employer contribution costs are reflected in the books of the Authority.

##### Property, plant and equipment:

Items of property, plant and equipment, excepting building are stated at cost, less accumulated depreciation and impairment losses. The directors however, revalued the building during the current year and indicated that the current book value represents the replacement value.

## Water Resources Authority

Notes to the Financial Statements

31 March 2017

### Significant Accounting Policies (Continued)

#### Summary of accounting policies (Continued)

##### Property, plant and equipment (continued)

Depreciation is calculated on the straight-line basis at annual rates to write down the assets to their estimated residual values over their expected useful lives. The depreciation rates are as follows:

Computer hardware	25%
Computer software	25%
Technical and scientific equipment	20%
Buildings	2.50%
Furniture and fixtures	10%
Motor vehicles	20%
Capital projects	2.50%

Land is not depreciated and is stated at cost. Depreciation rates, estimated residual values and expected useful lives are re-assessed at each financial year end.

#### Cash and Cash Equivalents

	2017	2016
	\$	\$
Bank of Nova Scotia - Current Account	11,537,340	12,735,814
Bank of Nova Scotia - Savings Accounts:		
Motor Vehicle Repair Loan	6,086,906	6,008,318
Capital Projects Account	-	7,188,312
Computer Loan Account	1,083,050	811,989
Foreign Currency Account	-	3,222,092
TCC Account	4,580	14,897
Petty cash	11,525	11,525
	<u>18,723,401</u>	<u>29,992,947</u>

#### 4. Investment

Investment comprises the following:

	2017	2016
	\$	\$
Managed funds	4,422,951	4,206,953
	<u>4,422,951</u>	<u>4,206,953</u>



**Water Resources Authority**

Notes to the Financial Statements

**31 March 2017****5. Accounts Receivable**

	<b>2017</b>	<b>2016</b>
	<b>\$</b>	<b>\$</b>
Motor vehicle repair loans	2,227,776	1,875,809
Computer loans	420,627	394,610
Staff loans	444,447	609,221
Withholding tax recoverable	835,089	833,592
Interest receivable	-	20,884
Other contribution-G.C.T.	2,084,778	974,847
Other receivables	<u>526,736</u>	<u>194,901</u>
	<u>6,552,387</u>	<u>4,903,864</u>

**6.1 Retirement Benefits Pension Scheme**

The Authority participates in a defined benefit pension plan which is open to all permanent employees and administered by Sagicor Life Jamaica Limited.

	<b>2017</b>	<b>2016</b>
	<b>\$'000</b>	<b>\$' 000</b>
Assets/(liabilities) recognized in the Balance Sheet - Retirement Benefit Asset- Pension plan	127,556	83,160
Amounts recognized in the profit or loss in the statement of comprehensive income	(3,226)	(4,340)
Amounts recognized in other comprehensive income	<u>(34,270)</u>	<u>20,110</u>

**Pension plan benefits**

The plan is funded by employees' contributions at 5% of salary with the option to contribute an additional 5% and employer contribution as recommended by the independent actuaries. Pension at normal retirement age is based on 2% of final 3 year average salary per year of pensionable service, plus any declared bonus pensions. The defined benefit asset recognized in the Balance Sheet was determined as follows:

	<b>2017</b>	<b>2016</b>
	<b>\$'000</b>	<b>\$' 000</b>
Fair value of plan assets	325,193	282,980
Present value of funded obligations	<u>(85,631)</u>	<u>(87,151)</u>
	239,562	195,829
Effect of asset ceiling	<u>(112,006)</u>	<u>(112,669)</u>
	<u>127,556</u>	<u>83,160</u>

**Water Resources Authority**

Notes to the Financial Statements

**31 March 2017****6.1 Retirement Benefits Pension Scheme (Continued)****Pension plan benefits (continued)**

The movement in the fair value of plan assets during the year was as follows:

	<b>2017</b>	<b>2016</b>
	<b>\$' 000</b>	<b>\$' 000</b>
At beginning of year	282,977	244,441
Employer's contributions	6,925	6,785
Members' contributions	3,710	3,535
Interest on plan assets	24,585	23,345
Benefits paid	(17,730)	(14,905)
Administration fees	(1,173)	(974)
Remeasurement of the plan assets	25,899	20,750
At end of year	<u>325,193</u>	<u>282,977</u>

The movement in the present value of the defined benefit obligation during the year was as follows:

	<b>2017</b>	<b>2016</b>
	<b>\$' 000</b>	<b>\$' 000</b>
At beginning of year	87,151	86,727
Current service cost	3,357	3,705
Interest cost	6,719	8,098
Member's contributions	3,710	3,535
Actuarial gains on obligations:		
Due to experience	(414)	(2,886)
Due to financial assumptions	2,012	2,877
Benefits paid	(17,730)	(14,905)
At end of year	<u>85,631</u>	<u>87,151</u>

The amounts recognized in profit or in the statement of comprehensive income are as follows:

	<b>2017</b>	<b>2016</b>
	<b>\$' 000</b>	<b>\$' 000</b>
Current service cost	3,357	3,705
Interest cost on present value obligations	6,719	8,098
Income on plan assets	(24,585)	(23,345)
Interest on effect of asset ceiling	10,140	6,228
Administration fees	1,174	974
Total included in staff costs (Note 17)	<u>(3,197)</u>	<u>(4,340)</u>

## Water Resources Authority

Notes to the Financial Statements

31 March 2017

### 6.1 Retirement Benefits Pension Scheme (Continued)

#### Pension plan benefits (continued)

The credit of \$3,200,000 (2016: \$4,340,000) was included in administrative expense in the profit or loss in the statement of comprehensive income. The amounts recognized as other comprehensive income are as follows:

	2017 \$' 000	2016 \$' 000
Remeasurement of the defined benefit liability	2,425	(9)
Change in effect on ceiling assets	(10,798)	40,869
Remeasurement of the plan assets	(25,900)	(20,750)
Total included in other comprehensive income	<u>(34,273)</u>	<u>20,110</u>

The actual loss/(gain) on plan assets was (\$2,426,000) (2016: \$9,000).

The assets of the fund were invested in Sagicor Pooled Investments Funds as follows:

	Fair value of asset 2017 \$M	% age of Total 2017 %	Fair value of asset 2016 \$M	% age of Total 2016 %
Quoted equities	95.59	29.39	68.46	24.19
Mortgage and real estate	77.45	23.82	70.05	24.76
Fixed income	9.29	2.86	10.04	3.55
Foreign currency	80.40	24.72	69.28	24.48
Money market	62.46	19.21	65.15	23.02
	<u>325.19</u>	<u>100.00</u>	<u>282.98</u>	<u>100.00</u>

The expected return on plan assets was determined by considering the expected returns available on the assets underlying the current investment policy. Expected yields on fixed interest investments are based on gross redemption yields as at the reporting date. Expected returns on equity and property investments reflect long-term real rates of return experienced in the respective markets.

## Water Resources Authority

Notes to the Financial Statements

31 March 2017

### 6.1 Retirement Benefits Pension Scheme (Continued)

#### Pension plan benefits (continued)

The three year trend for the surplus/ (deficit) in the plan, as well as actuarial (gains)/losses is as follows:

	2017 \$'000	2016 \$'000	2015 \$'000	2014 \$'000
Present value of obligation	85,631	87,151	86,727	88,289
Fair value of plan assets	(325,193)	(282,977)	(244,441)	(220,668)
	(239,562)	(195,826)	(157,714)	(132,379)
Experience adjustments -				
Defined benefit obligation	414	(2,886)	(3,871)	(7,022)
Fair value of plan assets	25,899	20,750	3,910	1,335

#### Sensitivity analysis on Present Value of Obligations

	2017 \$'000	2016 \$'000
Increase in discount rate --+1%	13,001	12,195
Decrease in discount rate --1%	(17,570)	(17,229)

#### Sensitivity analysis on Required Salary Increase

	2017 \$'000	2016 \$'000
Increase in discount rate --+1%	(10,650)	(9,940)
Decrease in discount rate --1%	8,842	7,731

### 7. Related Party Transactions

	2017 \$'000	2016 \$'000
(a) Transactions with related parties -		
Directors' fees	906	766
Directors' emoluments	7,110	6,432
(b) Key management compensation		
Short-term employee benefit-		
Management remuneration	10,299	14,433
Other	436	436
	10,735	14,869
Pension	1,026	428
	11,761	15,297

**Water Resources Authority**

Notes to the Financial Statements

**31 March 2017****8. Intangible Assets**

	<b>Opening Cost \$</b>	<b>Addition \$</b>	<b>Closing Cost \$</b>	<b>Opening Accumulated Depreciation \$</b>	<b>Charge for the year \$</b>	<b>Closing Accumulated Depreciation \$</b>
At cost :						
Computer Software	18,313,991	3,297,033	21,611,024	11,099,366	3,298,820	14,398,186
	<u>18,313,991</u>	<u>3,297,033</u>	<u>21,611,024</u>	<u>11,099,366</u>	<u>3,298,820</u>	<u>14,398,186</u>
	<b>Opening Net Book Value \$</b>	<b>Closing Net Book Value \$</b>				
Computer Software	<u>7,214,625</u>	<u>7,212,838</u>				
	<u>7,214,625</u>	<u>7,212,838</u>				



**Water Resources Authority**  
Notes to the Financial Statements  
**31 March 2017**

**8b. Property, Plant and Equipment**

	<b>Opening Cost \$</b>	<b>Additions During Year \$</b>	<b>Closing Cost \$</b>	<b>Opening Accumulated Depreciation \$</b>	<b>Charge for the Year \$</b>	<b>Closing Accumulated Depreciation \$</b>
At cost :						
Building	109,807,637	-	109,807,637	22,547,500	2,739,864	25,287,364
Furniture & Fixtures	11,480,724	649,835	12,130,559	8,443,324	596,034	9,039,358
Computer Hardware	18,732,595	77,955	18,810,550	18,732,595	19,489	18,752,084
Stations	32,650,690	-	32,650,690	623,750	816,267	1,440,017
Technical & Scientific Equip.	35,279,405	-	35,279,405	10,225,278	3,318,090	13,543,368
Motor Vehicles	12,204,889	10,137,137	22,342,026	9,459,899	2,734,498	12,194,397
	<u>220,155,940</u>	<u>10,864,927</u>	<u>231,020,867</u>	<u>70,032,346</u>	<u>10,224,241</u>	<u>80,256,587</u>
	<b>Opening Net Book \$</b>	<b>Closing Net Book Value \$</b>				
Building	87,260,137	84,520,273				
Furniture & Fixtures	3,037,400	3,091,201				
Computer Hardware	1	58,467				
Stations	32,026,940	31,210,673				
Technical & Scientific Equip.	25,054,127	21,736,037				
Motor Vehicles	<u>2,744,990</u>	<u>10,147,629</u>				
	<u>150,123,595</u>	<u>150,764,280</u>				

**Water Resources Authority**

Notes to the Financial Statements

**31 March 2017****9. Capital Projects Subvention**

	<b>2017</b>	<b>2016</b>
	<b>\$</b>	<b>\$</b>
Balance of Subvention Funds at April 1, 2016	1,333,482	1,289,258
Add: Funds Received	<u>2,900,000</u>	<u>44,224</u>
	4,233,482	1,333,482
Less: Projects Expenditure for year		
I.D.B Master Plan Project	<u>3,188,761</u>	<u>-</u>
Balance for Capital Funds - Projects	<u>1,044,719</u>	<u>1,333,482</u>

**10. Capital Project Grant**

	<b>2017</b>	<b>2016</b>
	<b>\$</b>	<b>\$</b>
Balance of beginning of year	2,871,309	3,230,223
Charge	<u>(358,914)</u>	<u>(358,914)</u>
Balance at end of year	<u>2,512,395</u>	<u>2,871,309</u>

These represent the value of assets transferred to the authority, which were purchased and used by various projects and also includes capital grant received for the construction of the Hubert Chin Building. This account is being written down by an amount equivalent to the depreciation charged on these assets and is included in other operating income.

**11. Other Projects Fund**

	<b>2017</b>	<b>2016</b>
	<b>\$</b>	<b>\$</b>
UNDP/GOJ Project	428,420	428,420
MACC	694,944	694,944
MACC Project - Clarendon	<u>(665,513)</u>	<u>(665,513)</u>
	<u>457,851</u>	<u>457,851</u>

**12. Capital Reserve**

This represents a valuation of stations built by the Authority previously excluded from the accounts. Values were obtained from qualified internal valuers.

**Water Resources Authority**

## Notes to the Financial Statements

**31 March 2017****13. Revaluation Reserve**

The revaluation reserve was as a result of revaluing the office buildings. The movement on the reserve account was as follows:

	<b>2017</b>	<b>2016</b>
	<b>\$</b>	<b>\$</b>
Opening balance	103,213,087	103,213,087
Change during the year	<u>-</u>	<u>-</u>
Closing balance	<u><u>103,213,087</u></u>	<u><u>103,213,087</u></u>

**14. Revaluation of Property**

The property was valued by DC Tavares Realty as at 31 March 2015. The valutors arrived at a market value of \$90M and a replacement cost of \$130M. The directors are of the opinion that the market value has not changed since the last valuation.

**15. Payables and Accruals**

	<b>2017</b>	<b>2016</b>
	<b>\$</b>	<b>\$</b>
Projects	3,076,413	2,687,254
Administrative expenses	<u>6,030,036</u>	<u>2,556,932</u>
	<u><u>9,106,450</u></u>	<u><u>5,244,186</u></u>

**16. Other Operating Income**

	<b>2017</b>	<b>2016</b>
	<b>\$</b>	<b>\$</b>
Investment income	215,998	-
Other Income	21,974	21,410
Well applicant fees	5,276,455	7,638,795
Reimbursements of expenditures	2,357,674	926,639
Interest income	95,791	182,025
Gain on foreign exchange	<u>-</u>	<u>229,551</u>
	<u><u>7,967,893</u></u>	<u><u>8,998,420</u></u>

**Water Resources Authority**

Notes to the Financial Statements

**31 March 2017****17. Expense by Nature**

	<b>2017</b>	<b>2016</b>
	<b>\$</b>	<b>\$</b>
Salaries and related costs	90,641,442	89,813,059
Staff benefits	9,487,489	9,590,943
Pension- employer's contribution	(3,226,595)	(4,340,000)
Accommodation and machine rental	1,611,103	1,618,300
Telephone	309,444	741,171
Utility expenses	2,767,054	3,996,317
Motor vehicle expenses	3,332,862	4,300,836
Repairs, materials and related expenses	2,421,688	3,245,491
Cleaning & sanitation	235,143	79,535
Construction materials	59,976	41,813
Haulage	194,980	86,288
Security	1,662,426	1,393,586
Postage, stationery and printing	2,367,227	1,853,880
Donations and subscriptions	-	118,895
Professional fees	1,643,152	599,022
Audit fees	775,000	650,000
Licenses & taxes	67,152	175,644
Foreign travel	188,535	683,867
Travel and subsistence	31,148,775	24,339,132
Bank charges	220,459	214,668
Meals & entertainment	854,404	640,411
Miscellaneous purchases	1,068,620	1,086,926
Accounts closed and funds sent to Accountant General's Department (Note 20)	10,023,853	-
Depreciation	13,523,061	9,502,927
Loss on disposal	-	556,823
Insurance - property	1,347,162	1,383,116
Advertising	1,354,052	1,295,392
	<u>174,078,465</u>	<u>153,668,041</u>

**18. Fair value estimation**

Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction. Market price is used to determine fair value where an active market exists as it is the best evidence of the fair value of a financial instrument. A market is regarded as active if quoted prices are readily and regularly available from an exchange, dealer, broker, industry group, pricing service, or regulatory agency, and those prices represent actual and regularly occurring market transactions on an arm's length basis. Where no market price is available, the fair values presented have been estimated using present values or other estimation and valuation techniques based on market conditions existing at balance sheet dates.

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### 18. Fair value estimation (continued)

The values derived from applying these techniques are significantly affected by the underlying assumptions used concerning both the amounts and timing of future cash flows and the discount rates. The following methods and assumptions have been used:

- (1) Investment securities classified as available-for-sale are measured at fair value by reference to quoted market prices when available.
- (2) The fair value of liquid assets and other assets maturing within three months is assumed to approximate their carrying amount. This assumption is applied to liquid assets and the short-term elements of all other financial assets and financial liabilities.
- (3) The fair value of variable rate financial instruments is assumed to approximate their carrying amounts.
- (4) Equity securities for which fair values cannot be measured reliably are recognised at cost less impairment.

The estimated fair values of the following financial instruments do not differ from their carrying values.

	2017		2016	
	Carrying Amount	Fair Value	Carrying Amount	Fair Value
	\$'000	\$'000	\$'000	\$'000
Investment securities -				
Held to maturity	4,443	4,443	4,206	4,206

None of the instruments held fell within the groups

- Level 1 includes those instruments which are measured based on quoted prices in active markets for identical assets and liabilities. These mainly comprise of equity shares traded on the Jamaica Stock Exchange and are classified as available-for-sale and financial assets at fair value through profit or loss.
- Level 2 includes those instruments which are measured using inputs other than quoted prices that are observable for the instrument, directly or indirectly. The fair value for these instruments is determined by using valuation techniques and maximise the use of observable market data where it is available and rely as little as possible on entity specific estimates. If all significant inputs required to fair value an instrument are observable, the instrument is included in level 2.
- If one or more of the significant inputs is not based on observable market data, the instrument is included in level 3.

There were no transfers between the levels during the year.

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### 18. Fair value estimation (continued)

The instruments measured at fair value are classified into their respective levels in the following table:

	2017			
	Level 1 \$'000	Level 2 \$'000	Level 3 \$'000	Total \$'000
Financial instruments at fair value Issued by Government of Jamaica		4,422,951		4,422,951
	2016			
	Level 1 \$'000	Level 2 \$'000	Level 3 \$'000	Total \$'000
Financial instruments at fair value Issued by Government of Jamaica	-	4,206,953	-	4,206,953

### 19. Financial risk management

The Authority's activities expose it to a variety of financial risks: market risk (including currency risk, fair value interest rate risk, cash flow interest rate risk and price risk), credit risk and liquidity risk. The Authority's overall risk management programme focuses on the unpredictability of financial markets and seeks to minimise potential adverse effects on the Authority's financial performance.

The Ministry of Finance are ultimately responsible for the establishment and oversight of the Authority's risk management framework. The Managers provide guidelines for overall risk management and areas, such as foreign exchange risk, interest rate risk and credit risk, and investment of excess liquidity. The Managers manage and monitoring risks, as follows:

#### (a) Market risk

The Authority does not take exposure to market risk.

#### (i) Currency risk

Currency risk is the risk that the fair value of future cash flows of a financial instrument will fluctuate because of changes in foreign exchange rates.

The Authority is exposed to currency risk due to fluctuation in the exchange rates on balances that are denominated in currencies other than the Jamaican Dollar.

Management ensures that the net exposure is kept to an acceptable level by monitoring all currency positions and ensuring adherence to predetermined limits.

The carrying amounts of the Authority's foreign currency denominated monetary assets at the reporting date are as follows:

	2017		2016	
	US\$	J\$ Equivalent	US\$	J\$ Equivalent
US\$	-	-	26,549	3,222,092

There were no foreign currency related liabilities at the reporting date.



## Water Resources Authority

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### 19. Financial risk management (continued)

#### (a) Market risk (continued)

##### (i) Currency risk (continued)

##### Foreign currency sensitivity

The following table indicates the currency to which the Authority had significant exposure on its monetary assets. The change in currency rate below represents the Finance Director's assessment of the possible change in foreign exchange rates. The sensitivity analysis represents outstanding foreign currency denominated monetary items and adjusts their translation at the year end for a revaluation of 1% and devaluation of 10% (2016 – 8%) in foreign currency rates. The sensitivity analysis includes cash and short term investments and investment securities. The correlation of variables will have a significant effect in determining the ultimate impact on market risk, but to demonstrate the impact due to changes in variable, variables had to be on an individual basis:

	2017		2016	
	Change in Currency %	Effect on Profit \$	Change in Currency %	Effect on Profit \$
U States dollar				
Revaluation	1	-	1	(32,222)
Devaluation	8	-	8	257,767

##### (ii) Interest rate risk

Interest rate risk is the risk that the future cash flows of a financial instrument will fluctuate because of changes in market interest rates.

Floating rate instruments exposes the Authority to cash flow interest risk whereas fixed interest rate instruments expose the Authority to fair value interest risk.

The Authority's exposure to interest rate risk is affected by its holding in cash and bank deposits. In respect of liabilities, the Authority does not enter into transactions involving interest costs and is therefore not affected by interest rate risk on liabilities.

The following table indicates the level of interest rate exposure of the Authority:

	2017 \$	2016 \$
Managed funds	4,422,951	4,206,953
Bank Saving Accounts	<u>7,174,536</u>	<u>17,245,608</u>
Total	<u>11,597,487</u>	<u>21,452,561</u>

## Water Resources Authority

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### 19. Financial risk management (continued)

#### (a) Market risk (continued)

##### (ii) Interest rate risk (continued)

###### Interest rate sensitivity analysis

The sensitivity analysis below has been determined based on the exposure to variable interest rate financial instruments at the end of the reporting period. The exposure is substantially on holdings of US dollar fixed deposits. The analysis is prepared assuming the amount outstanding at the end of the reporting period was outstanding for the whole year. 100 basis point increase or 50 basis point decrease (2016: 100 basis points increase or 50 points decrease) is used when reporting interest rate risk internally and represents management's assessment of the reasonably possible change in interest rates.

The following table indicates sensitivity to a reasonable possible change in interest rate with all other variables held constant. The analysis is prepared assuming the amount of assets outstanding at the end of the reporting period were outstanding for the whole year.

	2017	2016
	\$	\$
Effect on profit or loss		
Increase in net profit - increase 100 (2016: 100) basis points	3,676	1,838
Decrease in net profit – decrease 50 (2016: 50) basis points	13,145	6,572

##### (iii) Price risk

Price risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate because of changes in market price, other than those arising from currency or interest rate risk, whether those changes are caused by factors specific to the instrument or affecting all similar instruments in the market.

The Authority is not exposed to price risk.

#### (b) Credit Risk

Credit risk is the risk that a party to a financial instrument will fail to discharge an obligation and cause the other party to incur a financial loss.

Investments are allowed principally in secure liquid instruments and with counterparties that the Managers believe do not offer any significant credit risk. Based on their assessment, the Managers do not expect any counterparties to fail to meet their obligations. The managers manage credit risk by having an investment policy which includes written authority levels and prior approval by the Ministry of Finance of any investment transaction.

At the date of the statement of financial position, there were significant concentrations of credit risk in one financial institution. There are no off-balance-sheet investments and, therefore, the maximum exposure to credit risk is represented by the total carrying amount of financial assets.

**Water Resources Authority**

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**19. Financial risk management (continued)****(c) Liquidity Risk**

Liquidity risk, also referred to as funding risk, is the risk that the authority will encounter difficulty in raising funds to meet commitments associated with financial instruments. Liquidity risk may result from an inability to sell a financial asset quickly at, or close to, its fair value. Prudent liquidity risk management implies maintaining sufficient cash and marketable securities, and the availability of funding through an adequate amount of committed facilities. Due to the nature of the authority, which accumulates and invests funds to pay liabilities which crystallise principally in the short term and in a measured predictable manner, the Managers believe liquidity risk for the Authority is negligible.

**20. Account Closed and Funds Transferred to the Accountant General's Department**

The Authority, during the year, received correspondence from the Accountant General's Department requesting that all dormant accounts be closed and the monies remitted to them. Further consultation with the Accountant General's Department by the Director of Finance revealed that the funds will not be returned to the Authority.

## DIRECTORS' COMPENSATION 2016-2017

Board of Directors	Fees (\$)	Motor Vehicle Upkeep/Travelling or Value of Assignment of Motor Vehicle (\$)	Honoraria (\$)	All Other Compensation including Non-Cash Benefits as applicable (\$)	Total (\$)
Dr. Parris Lyew-Ayee Chairman	304,000.00				304,000.00
Dr. Michael Taylor	49,500.00				49,500.00
Mr. Michael Brown	65,000.00	21,432.00			86,432.00
Ms. Nadeen Spence	68,500.00	2,030.00			70,530.00
Ms. Stephanie Abrahams	47,500.00	12,502.00			68,002.00
Mr. George Grant	68,500.00	4,935.00			73,435.00
Ms. Georgia Hamilton	82,500.00	3,948.00			86,448.00
Ms. Novlette Howell	82,500.00	5,264.00			87,764.00

### Notes

1. Where a non-cash benefit is received (e.g. government housing), the value of that benefit shall be quantified and stated in the appropriate column above.

## SENIOR EXECUTIVES' COMPENSATION 2016-2017

Position of Senior Executive	Salary (\$)	Gratuity or Performance Incentive (\$)	Travelling Allowance or Value of Assignment of Motor Vehicle (\$)	Pension or Other Retirement Benefits (\$)	Other Allowances (\$)	Non-Cash Benefits (\$)	Total (\$)
Managing Director, Herbert Thomas	4,811,775.00	-	1,173,921.00	-	-	-	5,985,696.00
Deputy Managing Director, Peter Clarke	2,235,424.00	-	782,614.00	-	-	-	3,018,038.00
Director Finance & Accounts, Hermine Downer	1,749,657.75	-	559,010.00	-	-	-	2,308,668.00

*Notes*

1. Where contractual obligations and allowances are stated in a foreign currency, the sum in that stated currency must be clear provided and not the Jamaican equivalent.
2. Other Allowances (including laundry, entertainment, housing, utility, etc.)
3. Where a non-cash benefit is received (e.g. government housing), the value of that benefit shall be quantified and stated in the appropriate column above.