



# Environmental Protection Department Annual Report 2020-2021



ENVIRONMENTAL PROTECTION DEPARTMENT

## EXECUTIVE SUMMARY

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The execution of the work plan of the Environmental Protection Department (EPD) was disrupted by the Severe Acute Respiratory Syndrome CoronaVirus (SARS-CoV-2) or COVID-19 pandemic, which resulted in the reduction in the planned activities for the year.

One of the activities that was impacted was the annual Marine Litter Clean-up at Morgan Lewis Beach to mark International Coastal Clean-up Day which was not held.

The Department as part of the Air Monitoring Programme carried out monitoring of ambient air quality via three continuous air monitoring stations.

Environmental noise was monitored continuously using a semi-permanent station located at the Treasury Building, which was established in March 2020. A total of 31,015 measurements were made during the financial year. A monitoring report was being prepared using the noise measurement data collected from the station.

The Compilation Noise Characterization Study (Bridgetown, Oistins, Speightstown) was prepared and submitted during the financial year. The following documents were also developed:

- An addendum to the Section 5 of the approved National Noise Policy was prepared to clarify certain aspects of the drafting instructions for noise legislation;
- protocols for noise monitoring in Barbados; and
- guidance for the selection of entertainment zones.

A quote was obtained for a new sound level meter in order to replace one with advanced age of one that failed to calibrate.

During the period April 2020 to March 2021, thirty-one (31) air pollution and eleven (11) noise complaints were received during the financial year. Three (3) air pollution investigations were conducted.

The Department received one thousand five hundred and eight-eight (1,588) building applications in the financial year. One thousand seven hundred and seventy-two (1,772) applications were processed with two thousand six hundred and ninety-six (2,696) being brought forward from the previous financial year.

With respect to the inspection of the preliminary wastewater treatment systems, the Department inspected all of the septic tanks for which notification was received. The actual number was not captured, which requires an update of the current procedures to capture this information as an indicator of the 2020 Groundwater Protection and Land Use Policy.

In the financial year, the Department received one hundred and fifty-five (155) requests for consultation from the Town and Country Development Planning Office and the Prime Minister's Office Planning Unit. It should be noted that there may have been multiple request pertaining to one application. One hundred and forty (140) requests were processed and submitted to the relevant agencies during the period under review. These requests included the review of thirty-nine (39) development related documents inclusive of EIAs and Initial Environmental Evaluations (IEEs). The Department also participated in six (6) meetings which were associated with the review of building applications.

The Department prepared draft guidelines for meat processing facilities and undertook research in preparation for the environmental assessment of local slaughterhouses.

In relation to Oil Spill Contingency Planning, the equipment list and personnel contact list for 2020 was updated. The research review document into standards for dissolved inorganic nitrogen (DIN), dissolved inorganic phosphorus (DIP), total Kjeldahl nitrogen and bacterial indicators was prepared.

In relation to marine pollution complaints which were dealt with under the Marine Pollution Programme, thirteen (13) complaints were received and twelve (12) investigations were carried out. Five (5) regulatory notices were prepared.

The Department facilitated the movement of a shipment of waste related to the project GCP/SLC/204/GFF – Safeguarding and Disposal of PCBs, Oils and Related Waste in the Caribbean from Barbados to France through the United Kingdom.

Barbados' Annual Report for 2019 was prepared and submitted to the Technical Secretariat of Basel Convention on December 31, 2020.

Barbados was notified of changes to the arrangements for the transboundary movement of certain hazardous wastes classified under the Basel Convention. As a result, the Government of Barbados was notified of changes to the import export regime for the Special Administrative Region of the People's Republic of China. These

changes were acknowledged by the Cabinet and a public notice was issued to wastes brokers involved in the export of recycling materials.

Activities associated with the implementation of the Global Environment Facility (GEF) funded CREW+: An Integrated Approach to Water and Wastewater Management Using Innovative Solutions and Promoting Financing Mechanisms in the Widen Caribbean Region project was carried out. These included the drafting of Terms of Reference for Water Reuse Communications Strategy and for the Design of a Framework to Build/Advance the evaluation of the Enabling Environment for the Development of Sustainable Financing Mechanisms for Integrated Water and Wastewater Management (IWWM) in Barbados.

The Department participated in activities related to the implementation of Component 3 of the IWEco project which seeks to strengthen policy, legislative and institutional reforms and capacity building of sustainable land management (SLM) and integrated water resource management/water use efficiency. Also, the Hedgerow Rehabilitation Concept paper was prepared and submitted to the Project Coordination Unit for review.

The Department participated in activities to finalize the GEF ISLANDS project proposal by the Basel Convention Region Centre for submission to the GEF for funding.

A number of activities were undertaken related to the Forum of Ministers of Environment of Latin America and the Caribbean. One of the activities was the participation in five preparatory meetings of the Emergency and Environmental Preparedness Network for Latin America and the Caribbean.

Fourteen (14) applications for the importation of radioactive materials were received and processed during the financial year. The Cabinet agreed to the adoption of the Draft Radiation Protection Policy as National Policy on September 17, 2020 as indicated in (Note (20) 890/MENB 40).

Twenty-one (21) pesticide applications were received. Of these, nineteen (19) were reviewed and two had submissions which were incomplete. The Department's database was periodically updated as new applications were received.

Twenty-seven (27) requests for disposal advice were received. Of these, twenty (20) were processed completely and six (6) required additional information.

Thirty-three (33) approvals for the removal of asbestos and twenty-two (22) for fiberglass removal were given.

In relation to the Derelict programme, sixty-three (63) buildings were removed. Additionally, one hundred and forty-nine (149) derelict vehicles were identified notices served.

The 50<sup>th</sup> Anniversary Edition of the Department's Newsletter was prepared. Work continued on the website during the financial year.

In relation to the groundwater monitoring programme, two hundred and thirty (230) samples were collected from potable supply sources, sixty-one (61) from agricultural sources and twenty-nine (29) samples from springs. Widescreen sampling was undertaken on June 23 and November 17, 2020.

With respect to the nearshore monitoring programme, one thousand four hundred and eighty-seven (1,487) samples were tested for faecal coliform and one thousand four hundred and ninety-four (1,494) samples were tested for enterococci. There were no instances in which the standards for faecal coliform and enterococci were exceeded during the financial year.

Officers participated in several webinars throughout the financial year dealing with several environmental topics including environmental noise, marine pollution and the MEAs such as the Basel Convention.

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# I INTRODUCTION

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The Environmental Protection Department of the Ministry of Environment and National Beautification was established in 1971. The Department's responsibilities include the regulation, management and control of activities, which may have an adverse impact on the environment and human health.

The areas for which the Department is responsible include:

- Air and Noise pollution;
- Marine pollution;
- Solid waste and hazardous materials;
- Water quality (inclusive of groundwater and nearshore);
- Derelict Buildings and Vehicles;
- Building development; and
- Multilateral environmental agreements.

## I.1 MISSION

The Department's mission is as follows:

*Through the promotion of sustainable practices, education, partnerships and the enforcement of legislation, we strive to protect residents, visitors and the environment from the harmful effects of pollution.*

## I.2 ORGANIZATIONAL STRUCTURE

The Department is headed by Director followed by the Deputy Director. The Department is further divided into the sections outlined below.

### I.2.1 Air and Noise Pollution Control Section

Ambient air quality management and the control of noise pollution is the responsibility of the Air and Noise Pollution Control Section (ANPCS). The Section consists of a Senior

Environmental Technician (SET) and two Environmental Technicians. During the financial year 2020-2021, only the SET position was utilized.

### **1.2.2 Building Development Control Section**

The Building Development Control Section (BDCS) consists of fourteen (14) positions which include the Chief Buildings Development Officer, two (2) Senior Buildings Development Officer, eight (8) Building Development Officer, two (2) Building Inspectors and a draftsman technician. In 2020, the officer who held the post of draughtsman technician passed away.

### **1.2.3 ETO Section**

The Environmental Technical Officers Section (ETOs) consists of a Senior Environmental Technical Officer, an Environmental Technical Officer and a Technical Officer.

### **1.2.4 Marine Pollution Control Section**

In the financial year 2020-2021, the Marine Pollution Control Section (MPCS) consisted of a Senior Marine Pollution Officer and a Marine Pollution Officer. The two Marine Pollution Officer posts were vacant.

### **1.2.5 Solid Waste and Hazardous Materials Section**

The Solid Waste and Hazardous Materials (SWHM) Section consists of a Senior Environmental Protection Officer and one Environmental Protection Officer post, which was vacant in 2020-2021. While the Derelict Buildings and Vehicle Section (DBVS), consists of a Senior Environmental Inspector and two Environmental Inspectors. Only one of the Environmental Inspector posts was vacant during the financial year.

### **1.2.6 Water Quality Section**

The Water Quality Section (WQS) is manned by a Senior Environmental Protection Officer, two Environmental Protection Officers and one Environmental Inspector.

### **1.2.7 Administration**

There are five officers within the Administration section: a Senior Clerk, Secretary, Receptionist/Typist, Maid and a Driver Messenger.

## **2 AMBIENT AIR QUALITY MANAGEMENT AND NOISE POLLUTION CONTROL**

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The Ambient Air Quality and the Noise Pollution Management Programme include the following activities:

- Monitoring and regulating ambient air quality and environmental noise;
- Investigating complaints related to ambient air and noise pollution;
- Researching ambient air quality and environmental noise issues; and
- Developing and implementing policies and programmes to control ambient air quality and environmental noise.

### **2.1 AMBIENT AIR QUALITY MANAGEMENT**

The objective for the 2020-2021 financial year was “to improve the knowledge of the present situation regarding ambient air quality and improve data collection to facilitate policy making and forward planning”. Table 1 below shows the major plans for Air Quality Management during the 2020 – 2021 financial year.

Table 1: Major Plans, Target Output and KPIs for the financial year 2020-2021

| <b>Major Plan</b>  | <b>Target Output(s)</b>   | <b>Key Performance Indicator</b>  |
|--|---|---|
| <b>Regulate vehicle maintenance facilities</b>   | Conduct a gap analysis/audit of VMFs with respect to the minimum guidelines developed by EPD.   | Three (3) vehicular maintenance facilities assessed by December, 2020.            |
| <b>Monitor the ambient air quality in Barbados /</b>   | Research and identify possible reference method air quality monitoring equipment on the market. | Suitable reference method air monitoring equipment identified by March 31, 2021.  |
| <b>Administration of equipment in accordance with SOPs and manufacturers' specifications</b> | Coordinate maintenance and factory calibration of equipment.                                    | Monitoring equipment maintained according to manufacturers' calibration schedule. |

### 2.1.1 **Improve regulation of vehicular maintenance facilities (VMFs)**

This activity was not undertaken given the lack of staff as well as the precautions taken during the COVID 19 pandemic.

### 2.1.2 **Monitor the ambient air quality in Barbados**

This major plan was undertaken through the implementation of two tasks which included a pilot air monitoring project and the research of reference methods for air quality monitoring.

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<sup>1</sup> Equipment for the ambient air quality programme is capable of measuring level of VOCs, Ozone and NO<sub>x</sub> in the ambient air, which can indicate how development in Barbados contributing to climate change. The information gathered could also inform initiatives in reduce Barbados' contribution to climate change.

### 2.1.2.1 **Pilot continuous air monitoring project**

Three air quality monitoring stations using indicative air continuous air quality monitoring equipment have been established. Table 2 shows the location and status of the stations.

Table 2: Air Quality monitoring stations

| <b>Location of Station</b>                                      | <b>Indicative Monitor Used</b> | <b>Date of Commencement of Continuous Operation</b> | <b>Date of Removal for Calibration</b> | <b>Current Status on March 31, 2021</b>           |
|---|--------------------------------|---|--|---|
| <b>Caribbean Institute for Meteorology and Hydrology (CIMH)</b> | Zephyr                         | September 2020                                      | -                                      | In Operation                                      |
| <b>Treasury Building</b>  | AQT 420                        | December 2019                                       | May/June 2020                          | Equipment Reinstalled in March 2021 - Stabilizing |
| <b>D'arcy Scott Roundabout</b>                                  | Zephyr                         | July 2020   | Present                                | Equipment awaiting a replacement part             |

On a routine basis, data from air quality stations were downloaded to facilitate analysis. Data from the sites will be compiled and a report prepared in the upcoming financial year. During the financial year, 56,112 measurements were recorded.

A non-routine removal and redeployment of these samplers was conducted on July 24, 2020, due to the approach of a storm system.

### 2.1.2.2 **Research and identify possible reference methods for air quality monitoring equipment on the market.**

The equipment was identified and quotes obtained by March, 2021.

### **2.1.3 Maintenance of equipment in accordance with SOPs and manufacturers' specifications**

The Key Performance Indicator for this task was that monitoring equipment maintained according to manufacturers' calibration schedule by March 31, 2021. This was achieved by the troubleshooting and maintenance of air quality equipment being undertaken during the financial year as noted previously in section 2.1.2.1.

### **2.1.4 Implementation Challenges**

The lack of adequate human resources sometimes resulted in requesting/redirecting personnel from other critical areas. The lack of personnel also impacted the execution of some tasks.

## **2.2 LOOKING FORWARD**

The draft Ambient Air Quality Policy Statement will be completed and then forwarded to the Ministry of Environment and National Beautification. Three (3) operational sampling locations will continue to be used to carry out air quality monitoring.

## 2.3 NOISE POLLUTION MANAGEMENT

Table 3 below indicates the major plans for noise management during the financial year 2020-2021.

Table 3: Major Plans for Noise Pollution Management

| Major Plan   | Target Output  | Key Performance Indicators  |
|--|--|---|
| <b>Monitor and report on the sound levels in Barbados</b>  | A compilation report completed on the noise monitoring conducted for the four towns in Barbados.                                   | Report submitted to the Ministry by September 30, 2020.   |
|  | One (1) semi-permanent noise monitoring station set up and operational with the view to collect data at the site for one (1) year. | One semi-permanent noise monitoring station set up by March 31, 2021.                             |
| <b>Prepare revised technical guidelines for noise legislation.</b>   | A draft of the guidance document for the development of noise legislation prepared.  | Draft guidance document for the development of noise legislation completed by March 31, 2021      |
| <b>Maintain equipment in accordance with standard operating procedures and manufacturers' specifications</b> | Properly functioning equipment that can be used for regulatory purpose and to generate reliable scientific data.                   | Equipment maintained according to calibration schedule.<br><br>Calibration certificates received. |

### 2.3.1 Monitor and report on the sound levels in Barbados

As outlined in Table 3, the main activities undertaken related to this major plan was the establishment of a semi-permanent noise monitoring station and the drafting of a compilation report.

### **2.3.1.1 *Semi-permanent noise monitoring station***

The semi-permanent noise monitoring site at the Treasury was established in March, 2020. The KPI for this task was completed prior to the start of the financial year. During the financial year, continuous monitoring of noise at this location continued. A total of 31,015 measurements were undertaken during the period. The sound level meter recorded measurements at fifteen-minute intervals.

The Department also undertook site visits to check, download data and calibrate the equipment. Additionally, a log book was created and used to document issues.

Due to the impending weather system Gonzalo, the equipment was removed and redeployed after the weather system had passed.

Preparation of a report entitled, “2020 Barbados Noise Monitoring Report”, commenced, which will assess on the sound level data collected in 2020 from the monitoring station.

### **2.3.1.2 *Compilation Report***

The Compilation Noise Characterization Study (Bridgetown, Oistins, Speightstown, and Holetown) was prepared. This report combines the data collected from the prior reports into one report. It should be noted also that the Holetown and Speightstown Noise Characterization Report was updated during the financial year.

### **2.3.2 *Prepare revised technical guidelines for noise legislation***

During the financial year, the Department developed, updated and/or reviewed the following:

- drafting instructions for noise legislation for Barbados and its accompanying Cabinet Paper;
- protocols for noise monitoring in Barbados; and
- guidance for the selection of entertainment zones.

### 2.3.3 Maintain equipment in accordance with standard operating procedures and manufacturers' specifications

The Department carried out activities to facilitate the maintenance/calibration of sound level monitoring and air quality equipment. This included, among other things, the purchasing of equipment specific batteries for the sound level meters. Additionally, activities to facilitate the purchase of sound monitoring equipment and a weatherproof extension cord were undertaken.

It should be noted that a sound level meter failed its last calibration and given its advanced age as well as the recommendation by the manufacturers, it was retired without repairs. The Department will assess the option of trading in the equipment for a discount on the purchase of a new sound level meter. A quote was obtained for a new, replacement sound level meter.

## 2.4 COMPLAINTS

Table 4 shows the major plans related to the investigation of complaints and the corresponding key performance indicators.

Table 4: Major Plan for Air and Noise Complaints

| Major Plan             | Target Output  | Key Performance Indicator   |
|------------------------|--|---|
| Investigate complaints | Incidents of violation of environmental laws, policies or best practices responded to, documented and remediated | Complete 80% of investigations within the timeframe outlined by the SOPs<br>Number of notices issued. |

During the financial year, the Department received forty-two (42) complaints, which consisted of thirty-one (31) air pollution related complaints and eleven (11) noise complaints (Figure 1).

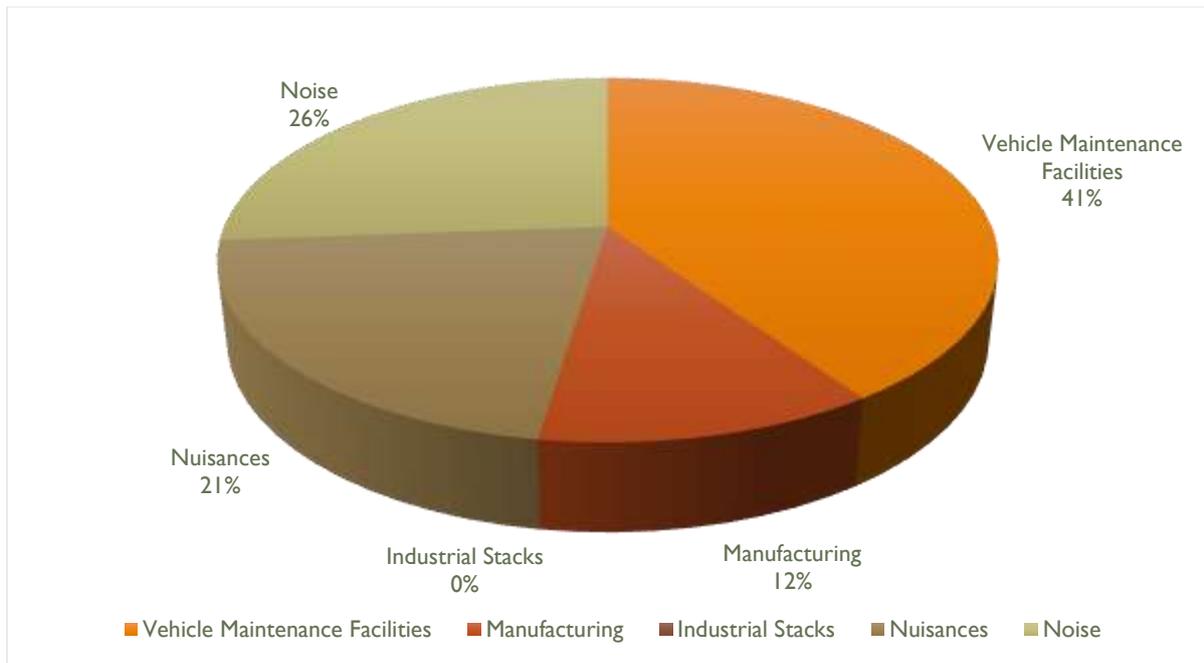


Figure 1: Air and Noise complaints received in the financial year

Three (3) investigations, all of which were related to air pollution, were carried out during the April, 2020 to March, 2021.

The KPIs were not achieved during the financial year. This was due to the programme being scaled back due to resource limitation and no legislative authority to force change.

#### 2.4.1 Implementation Challenges

A lack of human resources hampered the implementation of the Ambient Air Quality Management and the Noise Pollution Management Programmes in general and especially, as it related to the investigation of complaints.

### 2.5 LOOKING FORWARD

The Department will procure a sound level meter during the next financial year. The Speightstown Noise Characterization Study and Hometown Noise Characterization Study will be completed. Additionally, noise equipment will be calibrated.

### **3 BUILDING DEVELOPMENT CONTROL**

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The Department has responsibility for the review of building applications in accordance with the Health Services Act, 1969.

#### **3.1 MAJOR PLAN AND KEY OUTPUTS**

The objectives set for the 2020-2021 financial year were to:

- Process 48% of all residential applications within 42 days of receipt (pending full details submitted at inception);
- Process 40% of all commercial applications within 100 days of receipt (pending full details submitted at inception);
- Process 40% of all industrial applications within 120 days of receipt (pending full details submitted at inception);
- Process all consultation from the Town and Country Development Planning Office (TCDPO) within 14 days of receipt (pending full details submitted at inception);
- Conduct compliance inspections of 70% of notified completed commercial, industrial and institutional buildings within two (2) weeks prior to occupation; and
- Ensure that, when notified of the construction of preliminary wastewater treatment systems, a 100% of the systems are inspected by the Department for compliance with approved specifications.

The major plans involved the routine activities such as the processing of building applications and the preparation of building development instructional booklets (Table 5).

Table 5: Major Plans for the Building Development Control

| Major Plan   | Target Output(s)   | Key Performance Indicator  |
|--|--|--|
| <b>Process building development applications</b>   | Decisions made on building development applications.   | Decisions on building development applications completed as specified in the objectives.                         |
|  | Inspection of constructed preliminary wastewater treatment systems (septic tanks and filter beds) for compliance with approved standard.   | Number of inspection reports completed<br>Number of compliance certificates issued.                              |
|  | Digitization of building development applications for storage electronically.  | All building development applications processed during the financial year are scanned and stored electronically. |
| <b>Building Development Instructional booklets</b> | Increased public awareness on the legislative and policy requirements needed to make an application to the EPD in the following areas: animal husbandry, children’s day nurseries, medical facilities, food establishments, and water storage tanks. | Three booklets prepared by March 31, 2021.   |

### 3.1.1 Processing of Building Applications

The Department received one thousand five hundred and eighty-eight (1,588) applications during the financial year 2020-2021. Table 66 shows that the majority of applications received were residential and the least were industrial. Two thousand six hundred and ninety-six (2,696) applications were brought forward from the previous financial year which ended on March 31, 2020.

Table 6: The types of applications received during 2020-2021

| <b>Classification</b>          | <b>Number of applications</b> |
|--------------------------------|-------------------------------|
| <b>Residential</b>             | <b>1,348 (84.9%)</b>          |
| <b>Commercial</b>              | <b>181 (11.4%)</b>            |
| <b>Residential/ Commercial</b> | <b>46 (2.9%)</b>              |
| <b>Agricultural</b>            | <b>8 (0.5%)</b>               |
| <b>Industrial</b>              | <b>2 (0.1%)</b>               |
| <b>Commercial/ Industrial</b>  | <b>3 (0.2%)</b>               |
| <b>TOTAL</b>                   | <b>1,588</b>                  |

During 2020-2021 financial year, one thousand seven hundred and seventy-two (1,772) applications were processed. This figure included application brought forward from previous periods. Table 7 shows that the majority of applications (73.4%) were approved or approved with conditions, while 22.5% were refused because of non-compliance with the Health Services Act and Regulations.

Table 7: Building Applications processed during the 2020-2021 financial year

| <b>Classification</b>          | <b>Decision</b> |                                 |                |                     |                  |              |
|--------------------------------|-----------------|---------------------------------|----------------|---------------------|------------------|--------------|
|                                | <b>Approved</b> | <b>Approved with Conditions</b> | <b>Refused</b> | <b>Acknowledged</b> | <b>Withdrawn</b> | <b>Total</b> |
| <b>Residential</b>             | 861             | 335                             | 338            | 11                  | 9                | 1554         |
| <b>Commercial</b>              | 31              | 56                              | 50             | 32                  | 12               | 181          |
| <b>Residential/ Commercial</b> | 6               | 8                               | 9              | 4                   | 1                | 28           |
| <b>Agricultural</b>            | 0               | 2                               | 1              | 3                   | 0                | 6            |
| <b>Industrial</b>              | 0               | 1                               | 0              | 1                   | 1                | 3            |

|                                   |     |     |     |    |    |      |
|-----------------------------------|-----|-----|-----|----|----|------|
| <b>Commercial/<br/>Industrial</b> | 0   | 0   | 0   | 0  | 0  | 0    |
| <b>TOTAL</b>                      | 898 | 402 | 398 | 51 | 23 | 1772 |

**Error! Not a valid bookmark self-reference.** shows that the majority of the KPIs were not met.

*Table 8: Key Performance Indicators for Processing of Building Applications*

| <b>Key Performance Indicator</b>  | <b>Means of Verification</b>  | <b>KPI Achieved</b> |
|---|---|---------------------|
| <b>To process 48% of all residential applications within 42 days of receipt (pending full details submitted at inception)</b> | Of the 1,346 residential applications received between April 1, 2020, and March 31, 2021, 202 or 15% were processed within 42 days of receipt.  | No                  |
| <b>To process 40% of all commercial applications within 100 days of receipt (pending full details submitted at inception)</b> | Of the 227 commercial applications received between April 1, 2020, and March 31, 2021, 29 or 12.7% were processed within 100 days of receipt.<br><br>It should be noted that this category also includes residential/commercial applications. | No                  |
| <b>To process 40% of all industrial applications within 120 days of receipt (pending full details submitted at inception)</b> | Of the three industry applications received between April 1, 2020, and March 31, 2021, none were processed within 120 days of receipt.  | No                  |
| <b>To process 40% of all agricultural applications within 120 days of receipt</b>   | Of the eight agricultural applications received between April 1, 2020, and March 31, 2021, none were  | Yes                 |

|   |   |    |
|---|---|----|
| (pending full details submitted at inception)   | processed within 120 days of receipt.   |    |
| To process all consultation from the Town and Country Development Planning Office (TCDPO) within 14 days of receipt (pending full details submitted at inception) | Of the 40 consultation files received 38 were completed by 31 <sup>st</sup> March 2021 but none were completed within the 14 days of receipt. | No |

### 3.1.1.1 **Inspection of constructed preliminary wastewater treatment systems**

The Department inspected a number of preliminary wastewater treatment systems during the financial year (Table 9).

Table 9: Key Performance Indicators for Inspection of constructed preliminary wastewater treatment systems

| Key Performance indicator              | Performance  | Achieved                             |
|--|--|--------------------------------------|
| Number of inspection reports completed | The number of septic tanks inspected during the review period was undetermined. However, all notifications for the inspection of a septic tank were addressed. | Performance could not be determined. |

### 3.1.1.2 **Digitization of building development applications for storage electronically.**

Since the acquisition of the scanner in 2016, the Department has experienced human resource challenges to effectively scan the number of applications required. To date, two thousand, three hundred and fifty-seven (2,357) applications have been scanned and there are in excess of over twenty thousand (20,000) applications awaiting to be scanned.

### 3.1.2 **Building Development Instructional booklets**

Due the human resource constraints, the booklets were not prepared.

### **3.1.3 Implementation Challenges**

During the financial year, several factors impact on the EPD's rate of processing building applications. The factors that contributed to a reduction included:

- The COVID -19 pandemic that resulted in the closure of business within the country.
- Limited access to the server through a secure and approved system.
- The functioning with a skeleton staff and the implementation of Work from Home arrangements during the period of restricted movement within the country.
- Inadequate human resources to focus on dated applications, consultation files received from the Town and Country Development Planning Office e-planning system, as well as other large commercial developments could be implemented.
- The passing of the Draughtsman Technician with no replacements, which resulted in a further decrease in the staff compliment.
- Increased administrative and technical work load with existing staff having to take on additional tasks, which included zoning and archiving applications, to ensure that the processes within the Building Development Programme were completed to satisfy the public.
- The cessation of travel for building officers and availability of vehicles to do site visits.

## **3.2 LOOKING FORWARD**

The Department will continue to undertake the processing of applications, inspection of preliminary wastewater treatment plants, the creation of an accessible archival system and access to the server and building development application remotely.

## 4 ENVIRONMENTAL PLANNING AND ASSESSMENT

As a member of the Environmental Impact Assessment Review Panel, Environmental Protection Department reviews development related documents such as Initial Environmental Evaluations (IEEs) and Environmental Impact Assessments. Consultation files from the Town and Country Development Office and Prime Minister’s Office are also reviewed by the Department. During the process of review, these documents and files may be assessed by different expertise in the Department including the ETO Section, the BDCS and the ANPCS.

The goal for this area as indicated in the work plan was to conduct at least two (2) activities geared at ensuring that the environment is considered in the design and implementation of policies, plans and development activity by the end of the 2020-2021 financial year. These activities are outlined in Table 10 below.

Table 10: Major Plans for Environmental Planning and Assessment

| Major Plan  | Target Output(s)                   | Key Performance Indicator                 |
|---|------------------------------------|---|
| <b>Provide comments on development related documents such as environmental impact assessments to the Chief Town Planner</b> | Comments submitted to TCDPO        | Number of comments submitted to TCDPO     |
| <b>Attend meetings and hearings associated with applications reviewed as necessary.</b>                                     | Department represented at meetings | Number of meetings and hearings attended. |

### 4.1 PROVISION OF COMMENTS ON DEVELOPMENT APPLICATIONS

The Department received one hundred and fifty-five (155) requests for consultation from the Prime Minister’s Office Planning Unit and the Town and Country Development Planning Office during the financial year. It should be noted that there may be multiple requests related to a single development. One hundred and forty (140) requests were responded to during the reporting period.

The requests for review of applications on some occasions includes the evaluation of accompanying documentation. This documentation includes Environmental Impact Assessments (EIA), Initial Environmental Evaluations and the Terms of References for the drafting of these documents. The Department has fulfilled the requirements of the KPI for this major plan as shown in Table 11.

*Table 11: Comments submitted to TCDPO and PMO's office*

| <b>Key Performance Indicator</b>             | <b>Value</b> | <b>Achieved</b> |
|--|--------------|-----------------|
| <b>Number of comments submitted to TCDPO</b> | 140          | Yes             |

#### **4.2 MEETINGS AND HEARINGS ASSOCIATED WITH APPLICATIONS REVIEWED**

The Department participated in several meetings during the financial year related to development applications (Table 12).

*Table 12: Meetings attended by the EPER Section during the financial year*

| <b>Key Performance Indicator</b>                 | <b>Value</b> | <b>Achieved</b> |
|--|--------------|-----------------|
| <b>Number of meetings and hearings attended.</b> | 6            | Yes             |

## **5 MARINE POLLUTION CONTROL**

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Managing activities that may negatively impact the marine environment is the responsibility of the Environmental Protection Department. These functions include:

- Respond to complaints or pollution incidents related to the marine environment;
- Monitor and control of marine pollution;
- Conduct inspections of various sources to determine potential releases of pollutants;
- Conduct oil spill contingency planning and response;
- Conduct research into marine pollution issues; and
- Prepare guidelines for various sectors and or activities aimed at reducing marine pollution.

In the financial year 2020-2021, the activities planned pertained to regulatory and compliance inspections, oil spill contingency planning and the list of prohibited concentrations. The following sections outline the plans and the key performance indicators.

### **5.1 REGULATORY AND COMPLIANCE INSPECTIONS**

Regulatory and Compliance Inspections involve auditing of facilities to determine the aspects of its operations that could adversely impact on the environment and the adequacy of the measures used by the facility to mitigate these impacts. One of the outputs from the inspections is the development of guidelines for the particular industry, which had been targeted during the inspection. Table 13 shows the major plans and key performance indicators.

Table 13: Major Plans for Regulatory and Compliance Inspection

| Major Plan   | Target Output                       | Key Performance Indicator                     |
|--|-------------------------------------|---|
| <b>Develop draft guidelines for meat processing facilities</b> | Improved environmental performance. | Draft guidelines completed by March 31, 2021. |

The Department drafted guidelines for meat processing facilities. The document includes best practices to be undertaken by the facility in areas such as waste management including wastewater and solid waste, fuel storage, chemical storage and air and noise pollution among others.

In addition, research was conducted to prepare for the environmental assessment of local slaughterhouses and to prepare a draft regulatory assessment questionnaire for abattoirs.

Table 14: Key Performance indicator for Regulatory and Compliance Inspections

| Key Performance Indicator                            | Presence of guidelines                  | Achieved |
|--|---|----------|
| <b>Draft guidelines completed by March 31, 2021.</b> | Draft document prepared in August 2020. | No       |

## 5.2 OIL SPILL CONTINGENCY PLANNING

Table 15 shows the major plans for Oil Spill Contingency Planning.

Table 15: Major Plans for Oil Spill Contingency Planning

| Major Plan  | Target Output                                     | Key Performance Indicator              |
|---|---|--|
| <b>Update the oil spill response equipment inventory and directories of committee and response team members</b> | Knowledge of the location of available equipment. | Database updated by February 28, 2021. |

|  |  |  |
|--|--|--|
| <b>Convene meetings of the National Oil Spill Response Committee.</b>  | Annual activities planned and implemented.             | 1 <sup>st</sup> meeting convened within the 1 <sup>st</sup> half of the financial year.<br><br>2 <sup>nd</sup> meeting convened within the 2 <sup>nd</sup> half of the financial year. |
| <b>Participate in Offshore Oil Spills and Exploration training</b>   | Two Marine Pollution Officers trained.                 | Two officers trained by March 31, 2021.  |
| <b>Continue the planning of an oil spill training exercise, which will be held in the 2021-2022 or 2022-2023 financial year.</b> | Increased preparedness to respond to oil spill events. | Planning completed by March 31, 2021.  |

During the financial year, the list of oil spill equipment on the island and the personnel contact list for 2020 was updated. The activities related to the oil spill response and preparedness as indicated in Table 16 were not undertaken due to the COVID-19 pandemic.

Table 16: Key Performance Indicator for Oil Spill Planning

| <b>Key Performance Indicator</b>   | <b>Achieved</b> |
|--|-----------------|
| <b>Database updated by February 28, 2021.</b>  | Yes             |
| <b>1<sup>st</sup> meeting convened within the 1<sup>st</sup> half of the financial year.</b><br><b>2<sup>nd</sup> meeting convened within the 2<sup>nd</sup> half of the financial year.</b> | No              |
| <b>Two officers trained in Offshore Oil Spills and Exploration training by March 31, 2021.</b>   | No              |
| <b>Planning completed by March 31, 2021.</b>   | No              |

### 5.3 LIST OF PROHIBITED CONCENTRATIONS

Table 17 shows the major plans for this area which involving the establishment of limits for total kjeldahl and other substances.

Table 17: Major Plans for List of Prohibitions

| Major Plan  | Target Output         | Key Performance Indicator                |
|---|-----------------------|--|
| <b>Establish concentration limits for total kjeldahl nitrogen (TKN), dissolved inorganic phosphates (DIP), dissolved inorganic nitrates (DIN), for ambient or end of pipe standards and a one-sample bacteriological limit.</b> | Standards established | Standards established by March 31, 2021. |

The EPD conducted research into standards for dissolved inorganic nitrogen, dissolved inorganic phosphorus, total kjeldahl nitrogen and bacterial indicators. The initial literature review was completed, which outlined, *inter alia*, countries where the standards are utilized and limits set in those countries.

Table 18: Key Performance indicator for List of Prohibited concentrations

| Key Performance Indicator                       | Presence of guidelines                           | Achieved |
|---|--|----------|
| <b>Standards established by March 31, 2021.</b> | Research review document prepared in August 2020 | No       |

### 5.4 COMPLAINTS

Thirteen (13) complaints were received during the financial year, of which, twelve (12) were investigated (Table 19). The majority of complaints dealt with oil pollution. There was also one fish kill, which took place in Green Pond, St. Andrew, which was investigated by the MPCS and the Water Quality Section.

Table 19: Complaints, investigation and regulatory notices issues

| <b>Type</b>                 | <b>Complaints Received</b> | <b>Investigations</b> | <b>Compliance visits</b> | <b>Regulatory Notices</b> | <b>Other Correspondence</b> |
|-----------------------------|----------------------------|-----------------------|--------------------------|---------------------------|-----------------------------|
| <b>Oil Pollution</b>        | 5                          | 6                     | 4                        | 3                         | 1                           |
| <b>Wastewater Discharge</b> | 4                          | 4                     | -                        | 2                         | -                           |
| <b>Fish Kill</b>            | 1                          | 1                     | -                        | -                         | -                           |
| <b>Other</b>                | 3                          | 1                     | 3                        | -                         | 4                           |
| <b>TOTAL</b>                | 13                         | 12                    | 7                        | 5                         | 5                           |

## 5.5 LOOKING FORWARD

The National Oil Spill Response Equipment Inventory and members list will be updated each financial year. Additionally, a simulation exercise will be also conducted and the projection is that approximately seventy (70) response personnel will be trained during this exercise.

## **6 MULTILATERAL ENVIRONMENTAL AGREEMENTS**

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The Environmental Protection Department is responsible for the implementation of a number of Multilateral Environmental Agreements (MEAs) to which Barbados is a Party. These MEAs include the following:

- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal;
- The Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region or Cartagena Convention;
- The Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction or Chemical Weapons Convention; and
- Stockholm Convention on Persistent Organic Pollutants.

There are other agreements and best practices which the Department are a part of and these include the International Atomic Energy Agency and the Strategic Approach to International Chemicals Management.

### **6.1 BASEL CONVENTION**

The major plans developed in order to implement the Basel Convention in Barbados are shown in Table 20.

Table 20: Major Plans for the Basel Convention

| Major Plan   | Target Output(s)   | Key Performance Indicator  |
|--|--|--|
| Facilitate the shipment of hazardous wastes for environmentally sound disposal.  | Adequate disposal of hazardous waste.  | Number of waste shipments facilitated by the end of the financial year.      |
| Compile the annual Basel report  | National reporting obligations met.  | Report submitted to the Secretariat by the deadline of December 31, 2020.    |
| Participate in training courses/seminars hosted by the Convention.   | Improved knowledge of the latest Basel Convention requirements.  | Participation by at least one officer in a course/seminar by March 31, 2021. |
| Liaise with the Ministry of Foreign Affairs and Foreign Trade (MFAFT) to negotiate a bilateral agreement with the USA. | Establishment of a bilateral agreement between the GOB and USA for the environmental sound disposal of wastes. | Agreement successful negotiated by March 31, 2022.                           |

#### 6.1.1.1 Waste shipments

The Department facilitated the movement of a shipment of waste related to the project GCP/SLC/204/GFF – Safeguarding and Disposal of PCBs, Oils and Related Waste in the Caribbean from Barbados to France through the United Kingdom. Transboundary Movement document was submitted during 2021. Documentation regarding the shipment was submitted to the Competent Authority of France for processing. The Department received Consent for Shipment from the Competent Authority of France and prepared approvals for the commencement of the shipment of the waste to France for environmentally sound disposal. The Transboundary Movement Documentation regarding project GCP/SLC/204/GFF: “Safeguarding and Disposal of PCBs, Oils and Related Waste in the Caribbean”, on completion was then forwarded to the generator. Table 21 shows that the KPI for this major plan has been achieved.

With respect to waste shipment, the Department prepared Barbados’ “No Objection” to a proposal by the Basel Convention Competent Authority of the People Republic of China regarding plastic and paper wastes.

#### 6.1.1.2 **Bilateral Agreement**

The Department followed up with the Ministry of Foreign Affairs and Trade regarding the establishment of a Bi-Lateral Agreement with the USA for the environmentally sound disposal of hazardous waste from Barbados. Such an agreement is needed since the USA is not a Party to the Convention. The agreement has not yet been negotiated.

#### 6.1.1.3 **Annual Report**

The Department prepared and submitted Barbados’ Annual Report for 2019 to the Technical Secretariat on December 31, 2020. The KPI has been met as stipulated in the work plan (Table 21).

*Table 21: Key performance Indicators related to the Basel Convention*

| <b>Key Performance Indicator</b>  | <b>Value/Date</b> | <b>Achieved</b> |
|---|-------------------|-----------------|
| <b>Number of waste shipments facilitated by the end of the financial year.</b>      | 1                 | Yes             |
| <b>Report submitted to the Secretariat by the deadline of December 31, 2020.</b>    | December 31, 2020 | Yes             |
| <b>Participation by at least one officer in a course/seminar by March 31, 2021.</b> | 10                | Yes             |
| <b>Agreement successful negotiated by March 31, 2021.</b>                           |                   | No              |

#### 6.1.1.4 Other Activities

In relation to the Plastic Waste Amendments, the Department prepared a Public Information Brief. Additionally, correspondence was prepared and forwarded to stakeholders regarding the Ban and Plastic Wastes Amendments.

The Department participated in a meeting with personnel from Berger Paints Barbados to provide guidance and information on the Basel Convention procedures for the transboundary shipment of hazardous wastes for environmentally sound disposal.

Also, correspondence was prepared to update Barbados' Contact Information for Basel Convention and this information was submitted to the secretariat for the Convention.

The Department participated in briefings for Parties from Latin America and the Caribbean at the 12<sup>th</sup> Meeting of the Open-Ended Working Group (OEWG) of the Basel Convention on May 19, 2020.

A Cabinet Paper regarding the Proposal for Special Administrative Region of the People's Republic of China was finalized and submitted to Ministry of Environment and National Beautification on June 22, 2020.

## 6.2 CARTAGENA CONVENTION

The major plans for the Cartagena Convention are shown in Table 22 below.

Table 22: Major Plans for Cartagena Convention

| Major Plan   | Target Output(s)   | Key Performance Indicator                            |
|--|--|--|
| <b>Coordinate the implementation of an innovative small scale wastewater treatment demonstration project under CReW+</b> | A prototype of an innovative and small-scale wastewater system that could be used in Barbados. | Demonstration project operational by March 31, 2021. |

### 6.2.1 CREW+ Project

CREW+: An Integrated Approach to Water and Wastewater Management Using Innovative Solutions and Promoting Financing Mechanisms in the Wider Caribbean Region project is a project funded by the Global Environment Facility (GEF). This project seeks to implement innovative technical small-scale solutions for Wastewater Management in the Wider Caribbean Region.

Officers from the Department met with representatives from the Organization of American States (OAS), the executing agency, on March 11, 2021 to discuss the project, *inter alia*, the introduction of new team members and consultancies y a communication strategy and implementation plan and assessment of the enabling environment of a revolving fund.

Draft Terms of Reference for the Development of a National Communications Strategy (and Associated Implementation Plan) for Integrated Water and Wastewater Management (IWWM) in Barbados was prepared, input was solicited from other agencies and the final draft submitted to OAS. Additionally, Draft Terms of Reference for the Design of a Framework to Build/ Advance the Enabling Environment for the Development of Sustainable Financing Mechanisms for Integrated Water and Wastewater Management (IWWM) in Barbados were prepared.

The available funds were insufficient to cover demonstration project and, therefore, it was no longer pursued.

Table 23: KPI for Cartagena Convention

| KPI   | Means of Verification                  | Achieved |
|---|--|----------|
| <b>Demonstration project operational by March 31, 2021.</b> | Project operational by March 31, 2021. | No.      |

### 6.2.2 Other Activities

Activities which were not specified under the major plans were undertaken during the financial year. These included activities related to the Integrating Water, Land and Ecosystems Management in Caribbean Small Island Developing States (IWEco) and the LBS protocol.

### **6.2.2.1 IWEco**

The Integrating Water, and Ecosystems Management in Caribbean Small Island Developing States (IWEco) is a project funded by the Global Environment Facility (GEF). UN Environment is the lead implementing agency with UNDP also acting as an implementing agency. The co-Executing Agencies are the Secretariat to the Cartagena Convention, UNEP CAR/RCU, and the Caribbean Public Health Agency (CARPHA).

The Department participated in a number of webinars relating to the IWEco project. A request for support under the IWEco project was submitted. Component 3 of the IWEco project is the strengthening of the policy, legislative and institutional reforms and capacity building of sustainable land management (SLM), integrated water resource management/water use efficiency. As part of this component, the Department attended the IWEco Component 3 - Stakeholders Analysis interview on December 8, 2020.

The Department also participated in the Review and Strengthening of Policy, Legislative & Institutional Capacity to support Sustainable Land, Water Resources and Ecosystems Management: Stakeholder Focus Group Session, Barbados held on February 16, 2021.

Additionally, the Department organized a focus group meeting with various stakeholders of the IWEco project on February 24, 2021.

The Department also attended the Caribbean Regional Workshop on Mar 30, 2021 which also dealt with Component 3 of the project.

### **Hedgerow Rehabilitation Concept Paper**

The Hedgerow Rehabilitation Concept paper was prepared and submitted to the Project Coordination Unit for review.

### **6.2.2.2 LBS protocol**

A Cabinet Paper for representatives from Barbados to participate in the 5<sup>th</sup> Meeting of the Scientific and Technical Advisory Committee (STAC) to the Protocol Concerning Pollution from Land-Based Sources and Activities in the Wider Caribbean and the 9<sup>th</sup> Meeting of the Scientific and Technical Advisory Committee (STAC) to the Specially Protected Areas and Wildlife (SPAW) Protocol was prepared.

### 6.2.3 Looking Forward

With regards to CReW+, a communication strategy will be developed and a water reuse pilot project will be implemented based on available funds. If the Hedgerow Rehabilitation project is successful, the implementation of this project will proceed. Additionally, requirement of the STAC meeting will be prepared in preparation for the upcoming meeting of Contracting Parties to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (COP).

## 6.3 STOCKHOLM CONVENTION

The major plans for the Stockholm are shown in Table 24 below.

*Table 24: Major Plans for the Stockholm Convention*

| <b>Major Plan</b>   | <b>Target Output(s)</b>   | <b>Key Performance Indicator</b>  |
|---|---|---|
| <b>Continue to undertake activities related to GEF project 5558 - Development and Implementation of a Sustainable Management Mechanism for POPs in the Caribbean.</b> | A report identifying the mechanisms for strengthening the management of POPs in Barbados. |   |
| <b>Monitor atmospheric levels of POPs under the Global Atmospheric Passive Sampling (GAPS) programme.</b>   | Contribute data from Barbados to the global efforts to monitor POPs.                      | At least 1 sample submitted to Environment Canada by March 31, 2021.                                      |
| <b>Establish a local passive air sampling network for POPs</b>  | Identification of trends in the concentrations of POPs in selected media.                 | Reports prepared by March 31 of each year that summarize the analytical results of the samples collected. |
| <b>Continue to undertake activities related to the project entitled, "Supporting the Implementation of the Global Monitoring Plan for POPs in Latin America and</b>   | A report identifying the main findings of the project.                                    | Report prepared and submitted in accordance with the project schedule.                                    |

|   |   |   |
|---|---|---|
| <b>Caribbean States” (GMP II Project)</b>                                     |   |   |
| <b>Conduct an incinerator assessment study at the GAIA waste incinerator.</b> | Characterization of the waste streams from a local incinerator. | A report of the findings prepared by March 31, 2021 |

**6.3.1 Continue to undertake activities related to GEF project 5558 – Development and Implementation of a Sustainable Management Mechanism for POPs in the Caribbean.**

The objectives of the regional project *Development and Implementation of a Sustainable Management Mechanism for Persistent Organic Pollutants in the Caribbean* include building institutional and human resource capacity to manage the impacts of POPs. The project is funded by the Global Environment Facility (GEF) and was expected to conclude in November 2020. The following activities were conducted in Barbados, March 3 – 6, 2020, by the consultants RWA Group and representatives from BCRC-Caribbean, under the project component, Reducing the Emissions of Unintentionally Produced POPs by Improving Waste Management Practices at Landfills:

- Meetings with government and private stakeholders in the waste management sector regarding waste management, hazardous waste management including the management of hazardous waste storage facilities and waste segregation.
- Training was conducted by the RWA Group of landfill personnel from Sanitation Service Authority and other stakeholders regarding landfill operations and management.

**6.3.2 Continue to undertake activities related to the project entitled, “Supporting the Implementation of the Global Monitoring Plan for POPs in Latin America and Caribbean States” (GMP II Project)**

The coordinators of the GMP II were provided with requested information pertaining to the periods of PUF exposure for the various air samples. The Department also participated in an online discussion with the representatives from the international laboratories regarding the sample results from the GMP II project. Commenced the collation of donor information from the human milk campaign into MS Excel with respect to the GMP II project.

### 6.3.3 Establish a local passive air sampling network for POPs

Establishment of the local passive air sampling network for POPs was contingent on the completed of the GMP II project. At the end of the 2020-2021 financial year, the GMP II project was still ongoing. Consequently, the establishment of the sampling has been delayed.

### 6.3.4 Conduct an incinerator assessment study at the GAIA waste incinerator

The Project charter was reviewed inclusive of objectives in order to update the document. Also, quotations were obtained for the shipment of samples to the laboratory for analysis. The project will continue into the following financial year (Table 25).

Table 25: KPI for conducting and incinerator assessment study at the GAIA waste incinerator

| KPI   | Achieved                         |
|---|----------------------------------|
| A report of the findings prepared by March 31, 2021 | No. Project is still in progress |

### 6.3.5 Monitor atmospheric levels of POPs under the Global Atmospheric Passive Sampling (GAPS) programme

The Global Atmospheric Passive Sampling (GAPS) Programme continued at Ragged Point during the financial year 2020-2021. The mercury samplers and Polyurethane Foam (PUF) filters within the samplers were both retrieved and new ones deployed on a quarterly basis. A non-routine removal and redeployment of the sampler were done due to impending storm/ hurricane Gonzalo. During the financial year, a new housing apparatus was installed as the previous one was showing signs of significant wear and tear.

### 6.3.6 Other Activities

A memorandum was submitted to the Ministry of Foreign Affairs and Foreign Trade to have local focal point for the convention updated and to obtain login credentials to enable online reporting to the secretariat of the convention. A follow-up memorandum to the Ministry of Foreign Affairs and Foreign Trade for login credentials for the Stockholm Convention Electronic Reporting System was also

prepared and submitted to the Ministry of Foreign Affairs and Foreign Trade. However, to date no response has been received.

#### **6.4 STRATEGIC APPROACH TO INTERNATIONAL CHEMICALS MANAGEMENT**

The major plans developed for the Strategic Approach to International Chemicals Management (SAICM) portion of the work programme (Table 26).

*Table 26: Major Plans for SAICM*

| <b>Major Plan</b>  | <b>Target Output(s)</b>   | <b>Key Performance Indicator</b>   |
|--|---|--|
| <b>Prepare a project proposal to develop inventories of EDCs, EPPPs and TBT Barbados.</b>                    | Project proposal and Cabinet paper.   | Proposal and cabinet paper submitted by March 31, 2021.                      |
| <b>Update the project proposal for the chemical information management system and prepare Cabinet Paper.</b> | Updated project proposal document and Cabinet Paper.  | Final draft and Cabinet paper submitted by March 31, 2021.                   |
| <b>Complete the CLM Project</b>  | Develop strategies to minimize any adverse effects of cadmium, mercury and lead.              | A report outlining the various strategies prepared by March 31, 2021.        |
| <b>Undertake activities pertaining to the GEF ISLAND region project.</b>                                     | Strengthening the mechanisms for the environmental sound management of chemicals in Barbados. | Input provided in accordance with the project schedule.                      |
| <b>Negotiate a MOU with the UWI's regarding environmental research</b>                                       | Increased knowledge of the extent of environmental contamination to                           | MOU submitted to Permanent Secretary, MENB, for signature by March 31, 2021. |

|  |                                    |  |
|--|------------------------------------|--|
|  | inform the decision-making process |  |
|--|------------------------------------|--|

#### 6.4.1 Prepare a project proposal to develop inventories of EDCs, EPPPs and TBT Barbados

The project proposal for an Inventory for the Management of Endocrine Disrupting Chemicals was drafted during the financial year. As part of the drafting the proposal, an overseas laboratory was contacted to determine sampling logistics (Table 27).

*Table 27: KPIs for the EDCs, EPPs and TBT proposal*

| Key Performance indicator                                     | Achieved  |
|---|---|
| <b>Proposal and cabinet paper submitted by March 31, 2021</b> | No. The proposal was drafted and is being reviewed but the Cabinet Paper has started. |

#### 6.4.2 Update the project proposal for the chemical information management system and prepare Cabinet Paper.

This activity was not undertaken as external sources of funding were being considered.

#### 6.4.3 Complete the CLM Project

Discussions were held with the Minister and Permanent Secretary of the Ministry of Environment and National Beautification on February 8, 2021, regarding Mercury Inventory, the Cadmium and Lead Inventory and the Data Analysis that were submitted to the MENB.

Strategies and an implementation plan for the environmental sound management of products contain cadmium, mercury or lead were being developed as a way forward to improve the management of these substances. Even though the draft strategies were prepared, the KPI for this task was not achieved as the documents were still under review at the end of the financial year (Table 28).

Table 28: KPI for Completion of the CLM Project

| Key Performance indicator   | Achieved                             |
|---|--------------------------------------|
| A report outlining the various strategies prepared by March 31, 2021. | No.<br>Documents still under review. |

#### 6.4.4 Undertake activities pertaining to the GEF ISLAND region project

The Department participated in activities to finalize the project proposal by the Basel Convention Region Centre for submission to the GEF for funding. Activities included participating in a virtual MS Teams meeting, on April 9, 2020, soliciting input from local stakeholders and preparing a draft co-financing letter.

The Department attended and facilitated stakeholder participation in the GEF ISLANDS IDB Child Project 2 Results validation Workshop. A questionnaire on a Results Validation Workshop was completed.

A review of IDB Child Project 2 documents was conducted and comments submitted to the Basel Convention Regional Centre (BCRC)-Caribbean.

A brief on the status of the GEF ISLANDS Programme was prepared and submitted to the Ministry of Environment and National Beautification (MENB). Prepare and submitted the GEF ISLANDS Validation Workshop National Report Brief to MENB.

The Department attended the GEF ISLANDS Project Preparation Grant Phase Virtual Validation Workshop October 21-22, 2020.

#### 6.4.5 Other Activities

Additionally, the following activities were undertaken:

- Responses to a survey on the effectiveness of SAICM's online progress reporting questionnaire were prepared.
- Officers registered to participate in three of the Virtual Working Groups: Issues of Concerns; Targets, Indicators and Milestones; and Financial Considerations. Attended the Virtual Working Group: Issues of Concerns.

- Officers attended the First Technical Brief regarding the fourth meeting of the Intersessional Process (IP4) and the fifth meeting of the International Committee on Chemicals Management (ICCM5).
- Officer reviewed and provided comments on a report on GRULAC SAICM coordination meeting.

## 6.5 CHEMICAL WEAPONS CONVENTION

The major plans for the Chemical Weapons Convention are shown in Table 29.

Table 29: Major plans for Chemical Weapons Convention

| Major Plan   | Target Output(s)   | Key Performance Indicator   |
|--|--|---|
| <b>Prepare a report in accordance with the provisions of Article X of the Convention</b>     | National reporting obligations met.                        | Report submitted to the Technical Secretariat by March 31, 2021                   |
| <b>Prepare a guidance document for the Implementation of the Chemical Weapons Convention</b> | National Implementation of the Chemical Weapons Convention | Policy Paper prepared and submitted to stakeholders for comment by March 31, 2021 |
| <b>Training of personnel for emergency response to chemical incidents</b>                    | Training for emergency response stakeholders facilitated.  | Number of persons identified for training   |

### 6.5.1.1 **Prepare a report in accordance with the provisions of Article X of the Convention**

Correspondence was forwarded to stakeholders for information to prepare Barbados' Annual Report under Article X. Barbados' Annual Report under Article X of the CWC was prepared and submitted to the Secretariat (Table 30).

Table 30: KPI for prepare report in accordance with the provisions of Article X of the Convention.

| Key Performance indicator  | Submission Date  | Achieved |
|--|--|----------|
| <b>Report submitted to the Technical Secretariat by March 31, 2021</b> | Submitted on March 18, 2021 to Ministry of Environment and National Beautification | Yes      |

### 6.5.1.2 **Prepare a guidance document for the Implementation of the Chemical Weapons Convention**

The document “Chemical Weapons Convention National Implementation Framework” was reviewed and used as a basis for the preparation of a guidance document for the development of a National Implementation Plan for the Chemical Weapons Convention in Barbados.

Table 31: KPI for Guidance document for the implementation of CWC

| Key Performance Indicator  | Achieved   |
|--|--|
| <b>Policy Paper prepared and submitted to stakeholders for comment by March 31, 2021</b> | Yes<br>Document prepared and submitted to Director for review before dissemination to stakeholders |

Table 31 above shows that the KPI for this task was achieved. Additionally, a draft document regarding the status of Barbados’ Implementation of Article VII of the CWC which is to be submitted to the Secretariat was prepared.

### 6.5.1.3 **Training of personnel for emergency response to chemical incidents**

During the financial year, information was circulated to stakeholders regarding training opportunities available under the Convention. For instance, the Labour Department, Royal Barbados Police Force, Ministry of Health & Wellness and Barbados Fire Service were informed about the OPCW Online Training – Advanced Chemical Safety and Security Management, which was held on October 22, 2020. Nominations from the Barbados Fire Service, EPD and the Labour Department were submitted to participate in this training.

Table 32: KPI for Training of Personnel for emergency response to chemical incidents

| Key Performance indicator                 | Value | Achieved |
|---|-------|----------|
| Number of persons identified for training | 140   | Yes      |

One hundred and forty persons were identified for training during the financial year (Table 32).

#### 6.5.1.4 Other Activities

Information regarding the OPCW Scheduled Chemical Database resource was disseminated to the Customs and Excise Department. The Schedules Chemicals Database is a tool to help various stakeholders such as National Authorities, customs authorities among others with the identification of chemicals included in the schedules contained in Convention's Annex on Chemicals. Correspondence to the Permanent Secretary of the Ministry of Environment and National Beautification regarding changes to Schedule 1 of the Annex on Chemicals was prepared. These changes were the inclusion of new chemicals into Schedule 1 of the Annex on Chemicals.

The Department prepared Barbados' Operational Information for 2021 for submission to the Technical Secretariat of the Convention. This information is necessary for the Technical Secretary to maintain updated country information for use in case of chemical weapons emergency.

## 6.6 CONVENTION ON THE PREVENTION OF MARINE POLLUTION BY DUMPING OF WASTES AND OTHER MATTER (LONDON CONVENTION)

Table 33 shows the major plans that the Department has for the London Convention during the financial year 2020-2021.

Table 33: Major Plans for the London Convention

| Major Plan  | Target Output (s)         | Key Performance Indicator   |
|---|---------------------------|---|
| <b>Compile the annual report for permits issued for the disposal of waste at sea.</b> | National obligations met. | Report compiled and submitted to Ministry of Maritime Affairs and the Blue Economy by November 2020 |

This planned activity was completed during the year.

### 6.6.1 Implementation Challenges

The COVID-19 pandemic presented a number of challenges, which resulted in some priorities being changed.

## 6.7 INTERNATIONAL ATOMIC ENERGY AGENCY

Barbados is a member of the International Atomic Energy Agency and as such undertook activities to fulfil its obligation to the Agency.

During 2020-2021, the Department completed and submitted IAEA COVID-19 Survey: Impact of COVID-19 Pandemic on the Regulatory Activities for the Safety of Radiation Sources in April and August of 2020.

As part of the project RLA 9087, a Regulatory Authority Information System (RAIS) will be implemented in Barbados. The IAEA developed RAIS “as a part of supporting actions designed to assist member states in achieving the objectives of the Model Project on Radiation and Waste Safety Infrastructure”. A component of this system is the RAIS server which will be used to maintain an inventory of radioactive sources and devices on the island.

The Department liaised with the IAEA regarding the Proposed RAIS Server Mission. Information was circulated to stakeholders regarding RAIS Server Mission. Unfortunately, due to the COVID-19 pandemic the mission was unable to occur. A proposal for the IAEA Installation of RAIS Server and Training of personnel was prepared. The purposes of the proposal were to suggest the following:

- the installation of the server be done using local ICT professionals who will be guided by International Atomic Energy Agency (IAEA) to facilitate collection of data on radioactive sources and radiation devices on the island; and
- online training of personnel to use the server.

A request for the procurement of additional radiation detection equipment for the EPD and the Ministry of Health and Wellness under the project RLA 9087 “Building Capacity and Sustaining the National Regulatory Bodies” was submitted to IAEA.

The Department commenced preparations for compilation of national inventory of radiation sources and radiation devices.

Officers of the Department attended an introductory webinar on IAEA Safety Standards on December 15, 2020.

## **6.8 FORUM OF MINISTERS**

The Environmental Protection Department carried out a number of activities related to the Forum of Ministers of Environment of Latin America and the Caribbean. These included:

- Attending the 2<sup>nd</sup> Meeting of Focal Points on Chemicals & Waste
- Completing the Regional Survey to Collect Relevant Information to the Baseline and Roadmap of the Coalition for the Progressive Closure of Dumpsites in Latin America and the Caribbean
- Reviewing the Annual Progress Report for 2019.
- Completing a Survey on Priority Issues on Chemicals and Waste Management for Latin America and the Caribbean and Potential Priority Cooperation Activities for 2021-2022.
- Participating in MS Teams meeting to discuss the next steps in the lead up on the XXII forum
- Reviewing and preparing comments and a brief on the roadmap for the progressive closure of dumpsites in LAC.

- Reviewing and commenting on the draft decision regarding the closure of dumpsites.
- Attending a virtual meeting of the Coalition for the Closure of dumpsite in LAC.
- Attending the third Virtual Meeting of Network Focal Points of the Intergovernmental Network on Chemicals and Waste.
- Participating in five preparatory meetings of the Emergency and Environmental Preparedness Network for Latin America and the Caribbean
- Participating in the preparation of draft decisions for the Forum: Draft Decision 1 on Pollution, Regional Cooperation on Chemicals and Waste, Waste management, Marine litter and micro-plastics, Atmospheric pollution; and Draft Decision 6: The Environmental Dimension of Emergencies and Crises -A Critical Issue to Address to Facilitate Sustainable Development

## **6.9 LOOKING FORWARD**

During 2021-2022 financial year, inventories of endocrine-disrupting chemicals (EDCs) and Environmental Pharmaceuticals Persistent Pollutants (EPPPs) will be undertaken. Additionally, the project proposal for the chemical information management system will be updated and the associated Cabinet Paper will be completed.

## 7 SOLID WASTE AND HAZARDOUS MATERIALS PROGRAMME

The Department is responsible for the monitoring and regulation of solid waste facilities and hazardous materials including radioactive materials in Barbados. Derelict buildings and vehicles are addressed based on the provisions of the Health Services Act Cap 44.

### 7.1 REGULATION OF THE IMPORTATION OF RADIOACTIVE MATERIALS

The table below outlines the major activities that were planned for the 2020-2021 financial year.

Table 34: Major Plans for the Regulation of the Importation of Radioactive Materials

| Major Plan  | Target Outputs   | Key Performance Indicator  |
|---|--|--|
| <b>Review applications for the importation of radioactive materials</b>   | Regulation of the importation of radioactive materials in accordance with international standards. | Decisions issued within five (5) working days of receipt.              |
| <b>Identify and enrol in training courses for the management, safety and security of radioactive materials.</b> | Improved staff knowledge.  | At least one (1) officer trained by March 31, 2021.                    |
| <b>Develop technical guidelines for the establishment of legislation for radiation protection.</b>              | Strengthened regulatory framework for radiation protection.  | Technical guidelines prepared and submitted to MENB by March 31, 2021. |
| <b>Conduct inspections of facilities which use ionising radiation and radioactive sources.</b>                  | Inspection schedule developed  | At least 5 inspections completed by March 31, 2021                     |

|  |   |   |
|--|---|---|
| <b>Upgrade and maintain a database of radioactive sources and facilities</b> | Improved knowledge of the types and location of radioactive sources in Barbados | Database operational and up-to-date at the end of the financial year. |
|--|---|---|

### **7.1.1 Review of applications for the importation of radioactive materials**

Fourteen (14) applications were reviewed during the financial year. Thirteen of the applications were for medical purposes and one was for an industrial application. The industrial application was submitted by the Barbados Light and Power Limited for an Ir-192 source for use to test integrity of tank welds. It should be noted that one of the medical applications was from the Queen Elizabeth Hospital for a Co-60 source, which is a Category 1 radioactive source.

### **7.1.2 Identify and enrol in training courses for the management, safety and security of radioactive materials**

Applications to participate in the IAEA's Virtual Training Course on National Strategies in Education and Training in Radiation Safety April 19 to 23, 2021 were prepared and submitted to the IAEA.

### **7.1.3 Develop technical guidelines for the establishment of legislation for radiation protection**

The Cabinet agreed to the adoption of the Draft Radiation Protection Policy as national policy on September 17, 2020 as indicated in (Note (20) 890/MENB 40). It also agreed that a comprehensive Radiation Protection Act and Regulations for Safety and Security should be developed. The National Radiation Protection Policy (2020), which was finalized in February 2020, establishes the legislative and regulatory framework to meet the requirements of Fundamental Safety Principles, Code of Conduct on the Safety and Security of Radiation Sources, and Safety of Radiation Sources: International Basic Safety Standards and General Safety Requirements (GSR) Part 3. It also satisfies the requirement of the Governmental, Legal and Regulatory Framework for Safety Environmental General Safety Requirements (GSR) Part 1. In addition to the approval of the National Radiation Protection Policy (2020), Government also approved the submission of a letter of political commitment to the IAEA's Code of Conduct on the Safety and Security of Radiation Sources based on a submission by the EPD on the matter.

#### 7.1.4 Upgrade and maintain a database of radioactive sources and facilities

The installation of the Regulatory Authority Information Systems (RAIS) Server has not been achieved due to the COVID-19 pandemic. The inventory is currently maintained based on inspections done for applications to import. The training was postponed due to covid-19 travel restrictions.

## 7.2 APPLICATIONS FOR THE IMPORTATION OF PESTICIDES

The Department reviewed pesticide applications from the Pesticide Control Board (PCB) as the Department is a member of the PCB. The major plans outlined in Table 35 outlines the Department activities as it relates to its role in reviewing these applications.

Table 35: Major plans for Applications for the Importation of Pesticides

| Major Plan  | Target Output(s)  | Key Performance Indicator  |
|---|---|--|
| <b>Review of pesticides applications</b>                                | Environmental impacts taken into consideration during the application process.<br>Importation of less hazardous pesticides. | Number of completed pesticide applications submitted to the Pesticide Control Board.                           |
| <b>Maintain the database of pesticides and their active ingredients</b> | Improved ability to identify pesticides with different trade names but the same active ingredients.                         | By March 31, 2021, information for all of the pesticides approved during the year is inputted to the database. |

### 7.2.1 Review of pesticides applications

In the financial year 2020-2021, the Department received twenty-one (21) and reviewed nineteen (19) pesticide applications. The two applications were not processed due to the submissions being incomplete. The KPI was achieved in relation to this task.

## 7.2.2 Maintain the database of pesticides and their active ingredients

The database was updated along with the processing of applications and it is currently up to date. Consequently, the KPI for this task was achieved.

## 7.3 HAZARDOUS MATERIALS/WASTE DISPOSAL

Table 36 shows the activities planned for the financial year 2020-2021.

Table 36: Major Plans for Hazardous Materials

| Major Plan   | Target Output   | Key Performance Indicator   |
|--|---|---|
| <b>Offer advice on the environmental sound disposal of hazardous wastes.</b> | Hazardous substances disposed in an environmentally sound manner. | Number of disposal advice notices issued  |
| <b>Maintain a database of hazardous materials/substances</b>                 | Improved ability to track hazardous substances.                   | By March 31, 2021, information for hazardous wastes disposed during the year is inputted to the database. |

### 7.3.1 Offer advice on the environmental sound disposal of hazardous wastes

The Department received twenty-seven (27) requests for advice on the environmentally sound disposal of hazardous wastes. Twenty (20) of these requests were completely processed during the year. Six of the requests required additional information and one required further research to identify an alternative method for the disposal of used engine oil.

### 7.3.2 Maintain a database of hazardous materials/substances

This activity was not carried out during the financial year.

## 7.4 ASBESTOS REMOVAL

There were thirty-three (33) approvals for the removal of asbestos containing materials and twenty-two (22) approvals for fibreglass containing materials.

## 7.5 DERELICT VEHICLES AND BUILDINGS

The planned activities for the Derelict Vehicles and Buildings Programme are shown in Table 37 below.

Table 37: Major Plans for Derelict Vehicles and Buildings

| Major Plans   | Target Output(s)  | Key Performance Indicators   |
|---|---|--|
| <b>Identify derelict buildings and vehicles and investigate of complaints</b>   | Reduced number of breeding sites for disease carrying vectors   | Number of notices served<br>Number of buildings identified<br>Number of investigative reports prepared<br>At least one publication during the financial year |
| <b>Demolition of derelict structures</b>  | Reduced number of breeding sites for disease carrying vectors.  | The removal of at least 40 derelict structures by March 31, 2021<br>Number of tenders received   |
| <b>Removal of derelict vehicles</b>   | Reduced number of breeding sites for disease carrying vectors   | The removal of at least 500 derelict vehicles coordinated by March 31, 2021  |
| <b>Cost recovery</b>  | Property owners pay for the demolition of structures  | At least \$1,500 recovered by March 31, 2021.  |
| <b>Conduct a public awareness initiative on Derelict Building and Vehicles through the Government Information Service (GIS)</b> | Improved public awareness about the importance of and procedure for removing derelict buildings and vehicles. | One public awareness seminar held by March 31, 2021.   |

### 7.5.1 Identify derelict buildings and vehicles and investigate of complaints

Notice of 127 Derelict Buildings for Demolition were prepared and published on June 18, 2020. Tender packages and photographs for buildings to be demolished were prepared. A contractors' meeting was held on June 30, 2020.

Table 38 shows the number of buildings and vehicles identified and served notices during the financial year.

*Table 38: Number of buildings and vehicles identified and notices distributed*

| <b>Key Performance Indicators</b>                | <b>Number</b> |
|--|---------------|
| <b>Buildings Identified &amp; Notices Served</b> | 147           |
| <b>Vehicles Identified</b>                       | 149           |
| <b>Complaints</b>                                | 3             |

The Public Call-in Database for derelict vehicles and buildings which developed in February 2020 was updated and maintained throughout the financial year. In addition, information regarding stays of execution, which were granted, was updated.

### 7.5.2 Demolition of derelict structures

The Derelict Building Programme Tenders were opened on August 5, 2020. A Tender Evaluation Report was prepared upon completion of the Tender Evaluation process. As a part of the tender evaluation process, equipment verification inspections for prospective contractors were conducted. On completion of the evaluation process, Tender Evaluation Letters for the Contractors who were considered for award of contracts were prepared. Thirteen (13) contracts were awarded for the removal of sixty-three (63) derelict buildings. The contracts were signed on September 11 and 14, 2020.

Inspectors conducted site visits to monitor and document the work done under the awarded contracts.

A programme status report on the Derelict Buildings Removal was prepared in October 2020. It should be noted that Contract 017-2020 with HAJ Services, which was terminated and the incomplete structure was awarded to another contractor. The new contractor concluded the work before the end of December, 2020.

### **7.5.3 Removal of derelict vehicles**

A report on Contractor Performance for the Removal of Derelict Vehicles for the 2019/2020 period was prepared.

### **7.5.4 Cost recovery**

Pursuant to a request from the Prime Minister's Office, a memorandum was submitted to the Ministry of Finance with the Land Tax information for buildings that were removed by EPD during the period 2008-2020. The information will be used to develop a mechanism for cost recovery under the DBVS programme.

### **7.5.5 Conduct a public awareness initiative on Derelict Building and Vehicles through the Government Information Service (GIS)**

This activity commenced during the financial year and the public was invited to contact the Department and provide the relevant information on potential derelict buildings and vehicles.

## **7.6 LOOKING FORWARD**

The Department, during the financial year, will continue with the regulation of the importation of radioactive materials in accordance with international standards and it is anticipated that a Radiation Protection Board will be constituted.

## 8 PUBLIC AWARENESS AND EDUCATION

The Environmental Protection Department undertakes several environmental awareness-raising and education activities. These include the summer internship programme and the “EnviroFocus” Newsletter among others (Table 39).

Table 39: Major Plans for Public Awareness and Education

| Major Plan                                 | Target Output(s)   | Key Performance Indicator  |
|--|--|--|
| Conduct internship programme               | Students exposed to environmental management practices   | Participation of at least two (2) students in the programme by September, 2020 |
| Prepare and disseminate annual newsletter  | The public informed of EPD’s activities in environmental management  | Distribution of the newsletter by December, 2020                               |
| Undertake activities for environment month | Increased public awareness of environmental activities.  | Activities undertaken by June 20, 2020.  |
| Maintain website                           | Improved public access to environmental information and increase public awareness about the roles and responsibilities of the EPD. | Presence of website on the internet  |

### 8.1 REVISION OF THE PUBLIC AWARENESS AND EDUCATION PROGRAMME

A methodology was developed and finalised for revising the Department’s public awareness and education programme. After finalizing the methodology, the Department was informed that the public relations consultants of the Ministry of Environment and National Beautification would handle this area going forward.

## **8.2 INTERNSHIP PROGRAMME**

The Departments made arrangements for the recruitment of interns from the Barbados Community College (BCC) for summer internship programme 2020. However, after interviews had been held, the Department was informed that the 2020 internship programme would be suspended due to the COVID-19 pandemic. This was communicated to the candidates.

## **8.3 ANNUAL NEWSLETTER**

The 2019 EnviroFocus Newsletter finalized and disseminated to public officers, via email blast. The 50th Anniversary Edition of the Department's Envirofocus Newsletter was developed.

## **8.4 MAINTAIN WEBSITE**

The Department undertook activities involved in maintaining the Department's website inclusive of updating the website with various policies and technical documents. The EPD Website Terms and Conditions of Use and details regarding a maintenance contract was requested from site's developers.

## **8.5 ENVIRONMENTAL TIPS**

The Department obtained quotations to facilitate the broadcasting of environmental tips on International Day of Clean Air for Blue Skies and other environmental issues and its jingle on various radio stations and on CBC TV 8 during September, 2020. However, after obtaining quotes to air the environmental tips, the Department was instructed that the Ministry's public relations consultants would be handling this area going forward.

A memorandum was prepared and submitted to the MENB along with the necessary materials requesting that the PR consultants coordinate the airing of the environmental tips and the EPD jingle.

## **8.6 OTHER ACTIVITIES**

A summary of the Department's activities regarding marine plastic litter was prepared and submitted to Ministry of Maritime Affairs and the Blue Economy.

The following presentations were delivered during the financial year:

- “Exposure to Environmental Pollutants” for the Social and Environmental Impact Assessment Course in the M.Sc. Project Management and Evaluation Programme of the Department of Management Studies at the University of the West Indies, Cave Hill Campus;
- “Chemistry of Environmental Pollution” to 80 secondary school students; and
- “Green Chemistry” to 80 secondary school students.

A student intern pursuing a degree from the University of the West Indies St. Augustine Campus conducted an “Assessment of the Water Quality of the Graeme Hall Swamp” under the supervision of the Environmental Protection Department. EPD financed the assessment which was intended to enhance the knowledge on the water quality changes in the Swamp and to provide some background information for future assessments.

## **8.7 LOOKING FORWARD**

During the next financial year, the Department will develop its annual newsletter and strive to maintain an online presence via its website.

## 9 WATER QUALITY MONITORING

The monitoring and regulations of activities that impact on the quality of groundwater and near shore waters is the responsibility of the Environmental Protection Department. This is achieved through the Water Quality Monitoring Programme.

### 9.1 GROUND WATER MONITORING

Table 40 shows the Department's major ground water monitoring plans for the financial year 2020-2021.

*Table 40: Major Plans for Water Quality Monitoring*

| <b>Major Plan</b>   | <b>Target Output(s)</b>   | <b>Key Performance Indicator</b>  |
|---|---|---|
| Monitor the quality of water from potable wells, agricultural wells and spring sources. | Water quality data collected to contribute to water resources management. | Four hundred and sixty-one (461) samples collected from potable supply wells.<br>Two hundred and sixty-eight (268) samples collected from agricultural supply wells.<br>One hundred and eighty (180) samples collected from springs.<br>Report prepared by March 20, 2020 |
| Continue the verification of data for 2020.   | Data from 2020 verified to ensure accuracy.                               | Verification reports completed and all data updated as of March 31, 2021.   |
| Conduct widescreen assessments.   | Water quality data collected to contribute to water resources management. | Assessments conducted in October 2020 and March 2021 and reports completed by agreed deadlines.   |

|   |   |   |
|---|---|---|
| Conduct intensive/continuous groundwater assessment trials at Belle public supply well including measurement of chlorine residuals.               | Water quality data collected to contribute to water resources management. | Sampling conducted continuously over a period of at least two (2) weeks |
| Prepare/finalize technical guidance to the CPC for drafting comprehensive wastewater regulations.   | Improved regulation of wastewater disposal in Barbados.                   | Draft regulation submitted to CPC by March 31, 2021.                    |
| Develop a monitoring programme to be implemented in the 2021-2022 financial year to monitor for trihalomethanes at source and distribution points | Water quality data collected to contribute to water resources management  | Monitoring plan developed by March 31, 2021                             |

### 9.1.1 Monitor the quality of water from potable wells, agricultural wells and spring sources.

Ground water sampling started from April 7, 2020 to December 15, 2020 and recommenced on January 5, 2021 until March 23, 2021.

Samples were taken on a monthly basis. The Belle catchment was sampled on the first Tuesday of each month, followed by the Hampton catchment on the second Tuesday and the West Coast and Springs on the third and fourth Tuesday respectively.

Three hundred and twenty samples were collected in 2020-2021. Generally, the samples collected are tested for twenty-one (21) water quality parameters and, where applicable, the results compared to the World Health Organisation (WHO) Guidelines for Drinking Water (all parameters do not have guideline values). However, due to the Covid-19 pandemic collected samples were only tested for six parameters: nitrates, chlorides, total coliforms, faecal coliform, faecal streptococcus and pH. Three parameters of these parameters have been selected for discussion. These parameters, the associated WHO guideline values, possible sources and their implications are listed below (Table 41).

The results of the water quality analysis of the springs were also compared with the WHO Drinking Water Quality Guidelines since the water from springs is used for recreational purposes and for consumption by a sector of the society.

Table 41: Selected Water Quality Parameters and their Associated Sources and Health Implications

| Parameter                    | Standard                   | Sources  | Implications  |
|------------------------------|----------------------------|--|---|
| Chloride                     | 250 mg/l                   | In excessive amounts, it can be an indicator of saline intrusion or pollution from industrial waste or sewage. | High levels may give water an objectionable taste.<br>High concentrations can be corrosive to metal distribution pipes and release heavy metal ions into water. |
| Nitrogen measured as nitrate | 10 mg/l                    | Indicator of pollution from agriculture, fertilizer, sewage, and industrial wastewater                         | May cause methemoglobinemia particularly in infants less than six months of age   |
| Faecal Coliform              | 0 CFU <sup>2</sup> /100 ml | Indicator of faecal contamination from a warm-blooded animal   | Gastrointestinal illness and other waterborne diseases  |

Table 42 shows that the actual number of samples collected fell short of the targets. This was due to the period of “national pause” associated with the Covid-19 pandemic.

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<sup>2</sup>CFU - Colony Forming Units

Table 42: KPI for Monitoring Groundwater

| Key Performance Indicator   | Actual Value |
|---|--------------|
| Four hundred and sixty-one (461) samples collected from potable supply wells.       | 230          |
| Two hundred and sixty-eight (268) samples collected from agricultural supply wells. | 61           |
| One hundred and eighty (180) samples collected from springs.                        | 29           |
| <b>TOTAL</b>  | <b>320</b>   |

The following is a summary of the results of the water quality analysis obtained along with comparisons to previous years of sampling.

#### 9.1.1.1 Chlorides

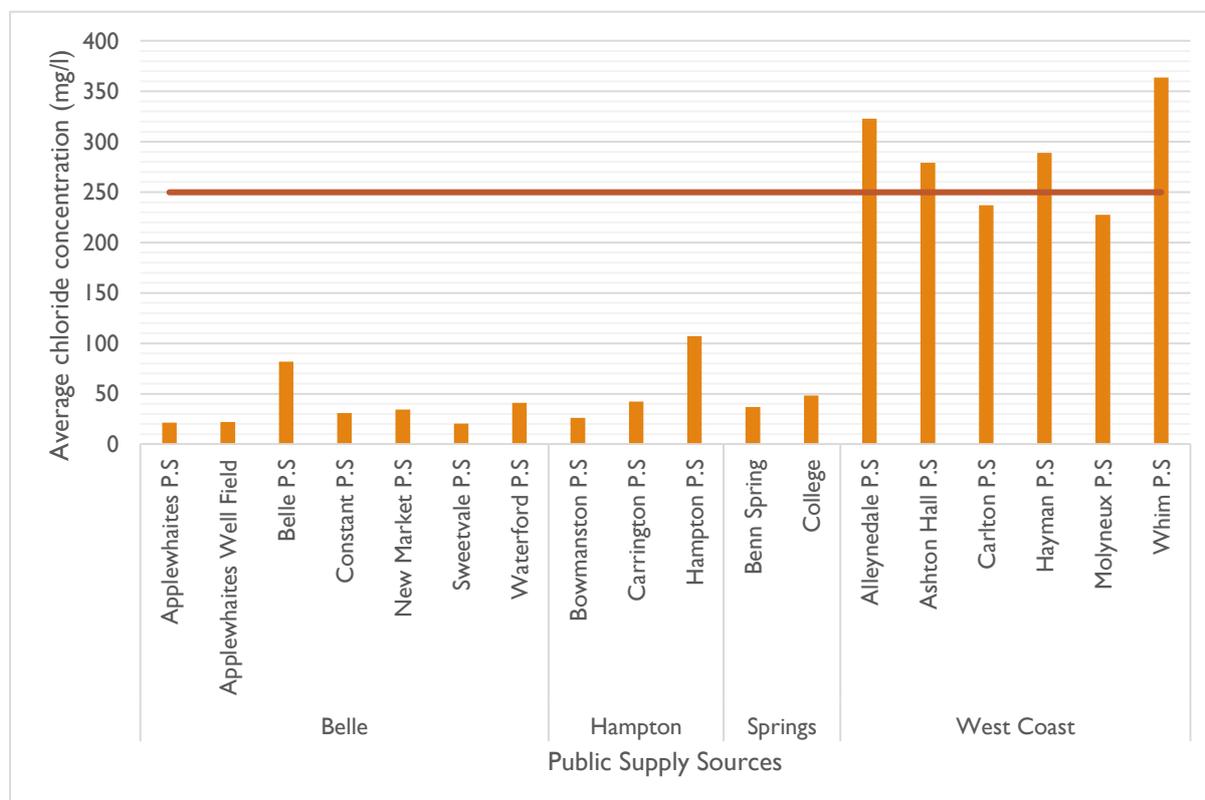


Figure 2: Average chloride concentrations for public supply sources

Figure 2 shows the average concentrations of chlorides in public supply wells in the financial year 2020-2021. The maximum value was the Whim Public Supply well (364 mg/l) and the lowest was Sweetvale P.S (20.5 mg/l). The chlorides concentrations at four public supply sources exceeded the WHO guideline value.

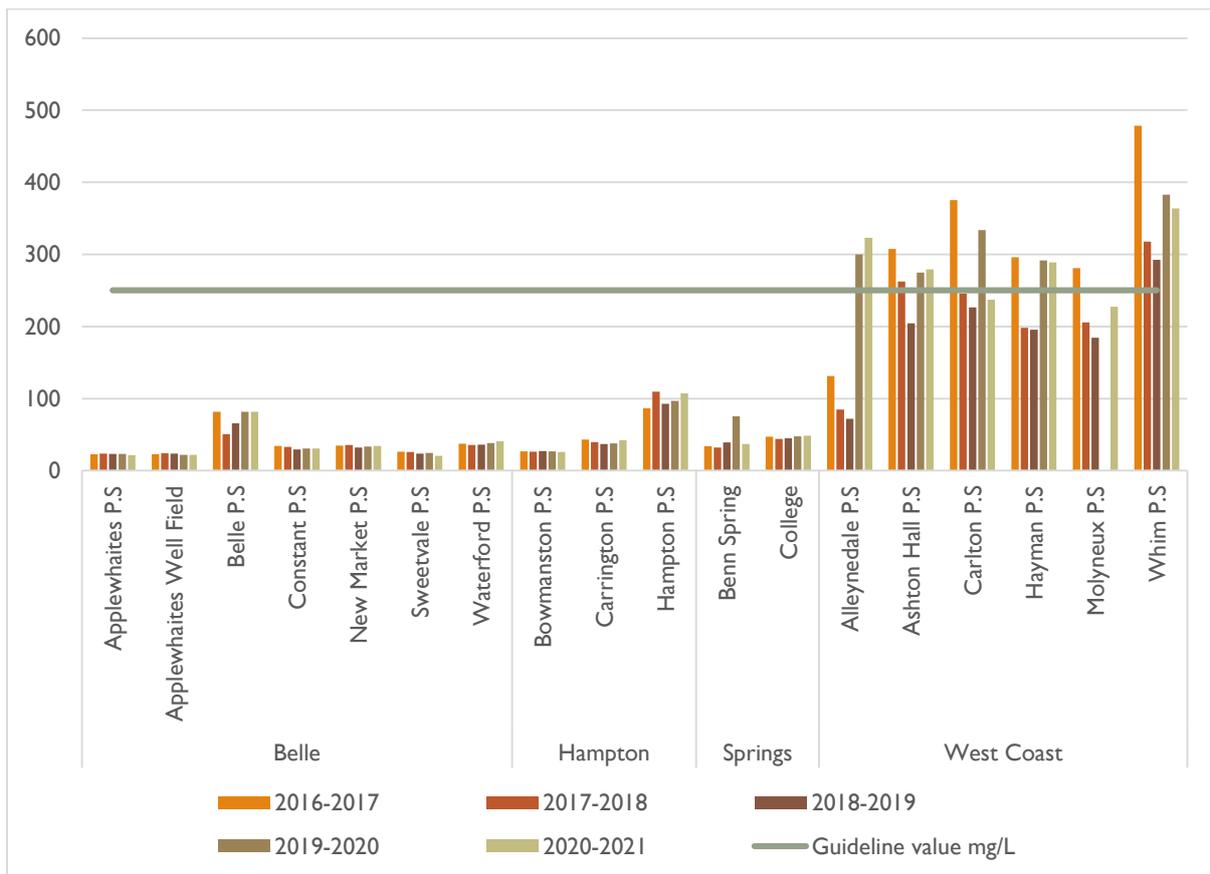


Figure 3: Five-year chlorides for 2016-2017, 2017-2018, 2018-2019, 2019-2020 and 2020-2021

Figure 3 shows that the west coast public supply wells have consistently exceeded the 250 mg/l guideline value for chlorides.

**9.1.1.2 Nitrate expressed as Nitrogen (Nitrate-N)**

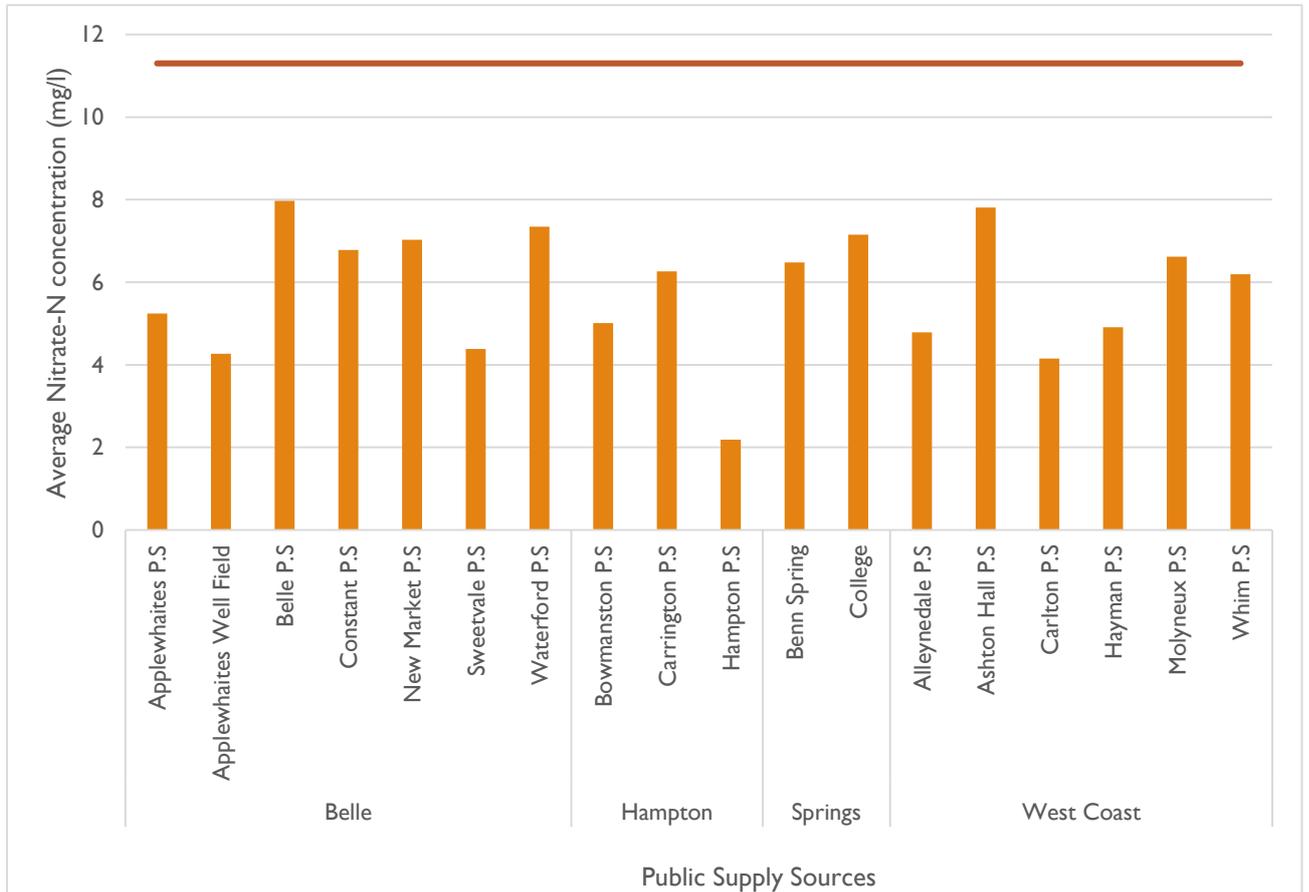


Figure 4: Nitrate concentration in public supply sources during 2020-2021

Figure 4 shows that none of the public supply wells have exceeded the nitrate-N concentration of 11.3 mg/l. It was noted that the Belle P.S recorded the highest Nitrate-N concentration (around 8 mg/l) followed by Ashton Hall P.S.

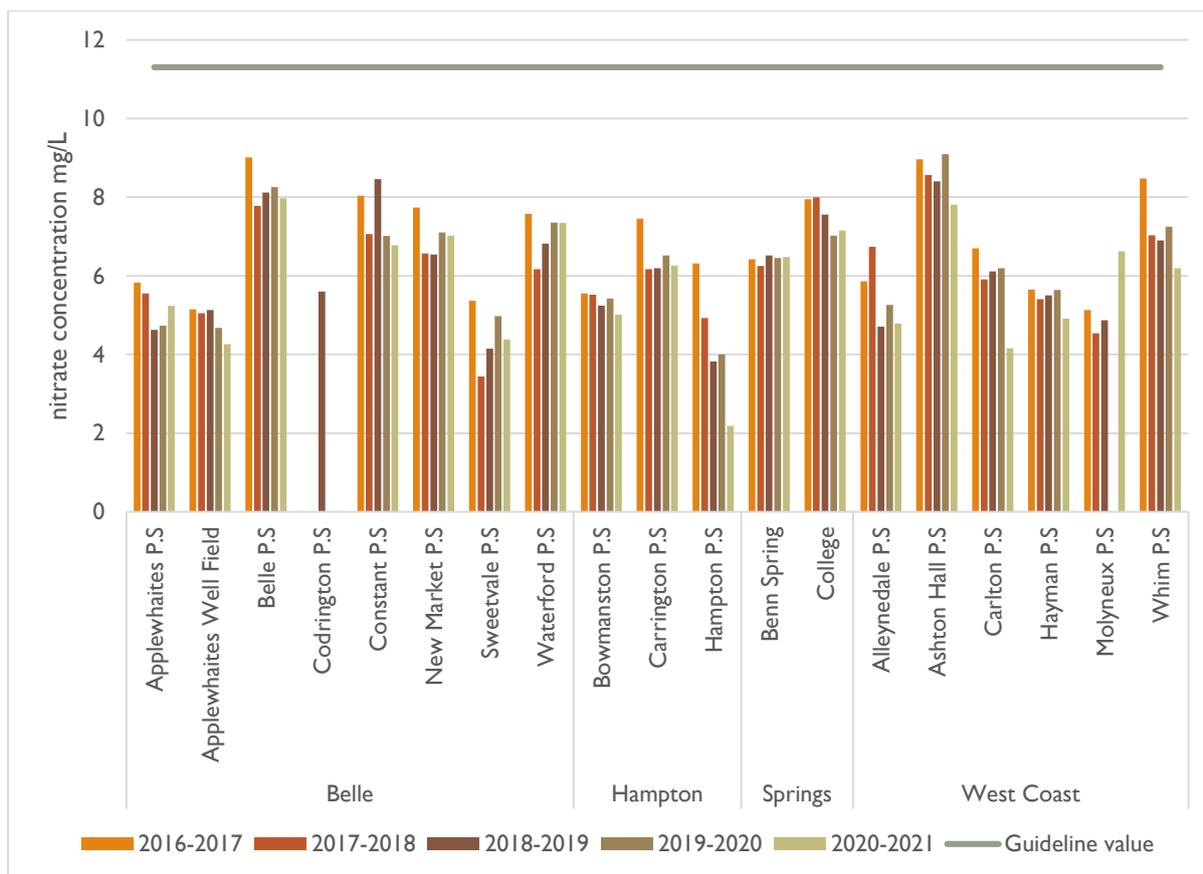


Figure 5: Nitrate concentration for public supply wells for the five-year period (2016-2017, 2017-2018, 2018-2019, 2019-2020 and 2020-2021)

From April 1, 2016, to March 31, 2021, none of the public supply sources recorded nitrate-nitrogen concentration that exceeded the 11.3 mg/l guideline value for nitrates (Figure 5)

### 9.1.1.3 Faecal Coliform

There were fourteen instances in which the faecal coliform guideline value of 0 CFU/100 ml was exceeded. Appplewhaites P.S and Appplewhaites Well Field recorded the highest value with greater than 60 CFU/ml on March 2, 2021. The other sources to exceed the guideline value were Benn Spring, Waterford P.S, Constant P.S, Bowmanston P.S and Molyneux P.S.

#### 9.1.1.4 Monitoring Natural Springs

In addition to the two springs, which are used to supply drinking water, samples were collected from five additional springs. These springs are located at Bath, Fortesque, Porey Spring, Pot House and Three Houses. These springs are not used as a source of public drinking water supply. However, a portion of the society does utilize the water from these locations for domestic purposes. Consequently, a brief summary of some of the parameters used for the drinking water sources is presented below, in order to highlight any threats that might be posed to people utilizing water from these springs. Moreover, an analysis of water from these locations can provide useful insight as to how the groundwater is being impacted.

No samples were collected from the spring at Bath since 2015 because the path to the site was blocked and the site had been overrun by bush. The Department wrote Ministry of Transport, Works and Maintenance requested that site be cleared. To date the site remains overrun with bush.

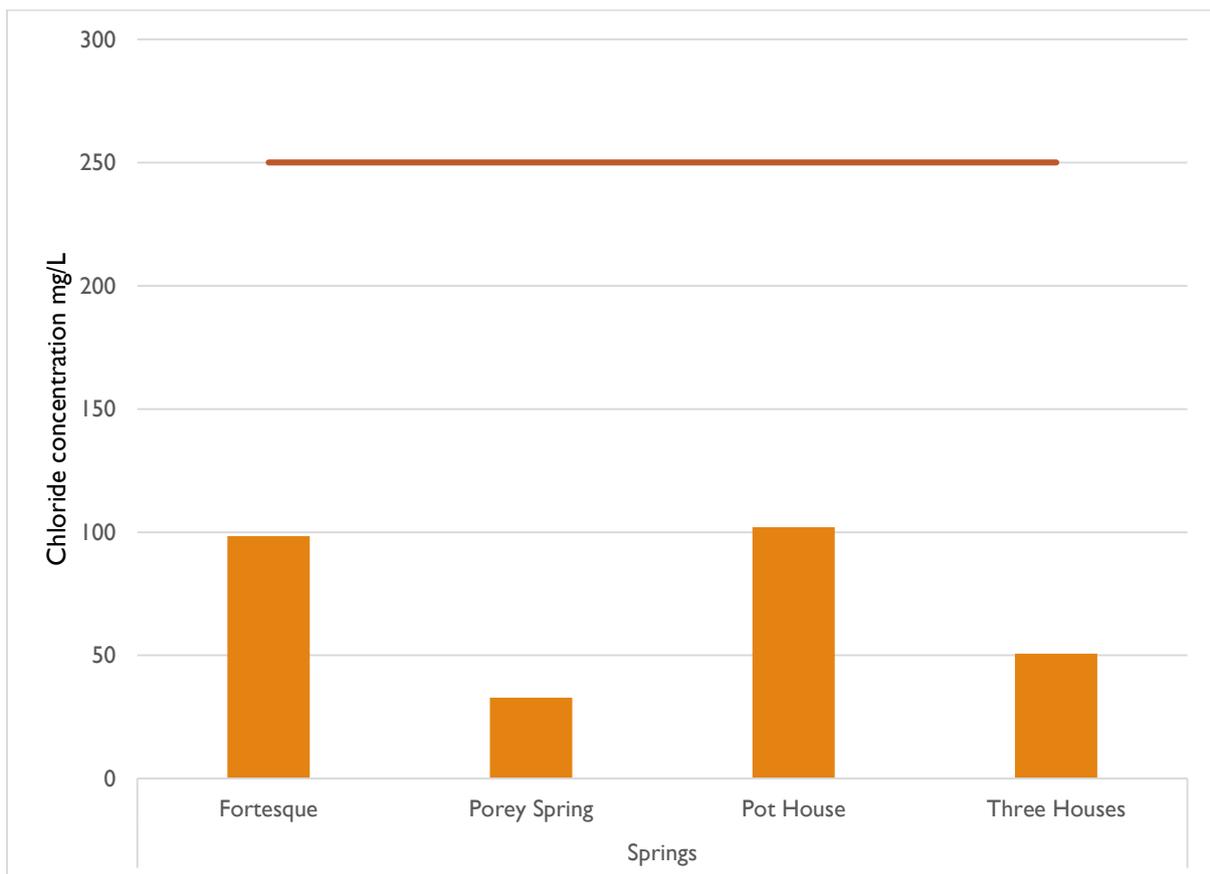


Figure 6: Average concentrations of chlorides of Natural Springs

The average concentration of chlorides of natural springs did not exceed the guideline value of 250 mg/L (Figure 6). The spring at Pot House recorded the highest chloride concentration and Porey Spring recorded the lowest.

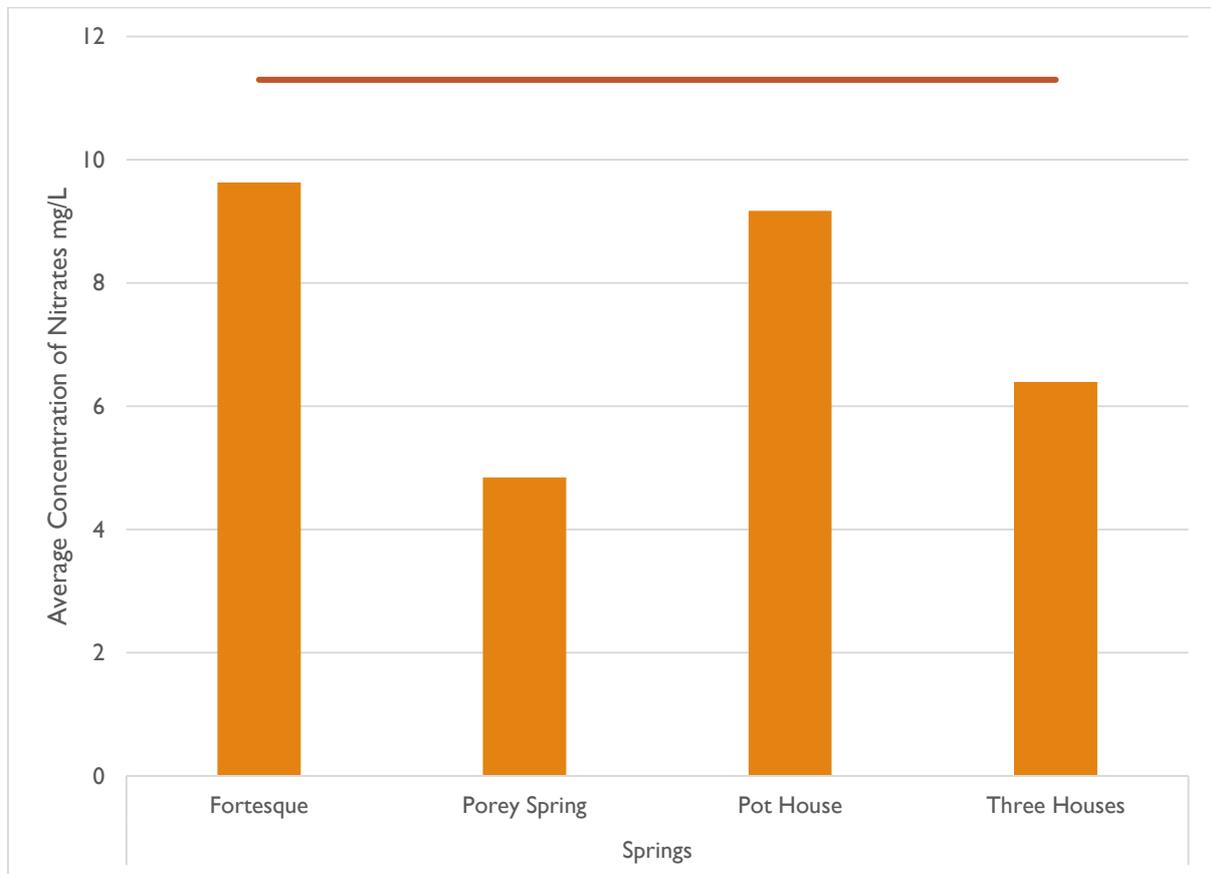


Figure 7: Average of nitrate concentrations of natural springs

The average of Nitrate-N concentrations of natural springs did not exceed the guideline value of 11.3 mg/L

### 9.1.2 Continue the Verification of Data for 2020

Verification of groundwater data for weekly nitrates for the period January to September 2020 was completed. Verification of groundwater data for the period January 2020 to September 2020 for the Belle, Hampton, West Coast and Springs Catchments completed. Verification of general groundwater data and data for weekly nitrates for the third and fourth quarters of the 2020-2021 financial year has not been completed.

### **9.1.3 Conduct widescreen assessments**

Widescreen sampling was conducted on June 23, 2020. The sites sampled were: Belle P.S., Hampton P.S., Carrington P.S., Carlton P.S., New Market P.S and College P.S. Samples were shipped via UPS and arrived at AEL laboratories in Florida on June 26 2020.

A second widescreen sampling event occurred on November 17, 2020. Samples were collected from six sites: Belle PS, Hampton PS, Carlton PS, Carrington PS, College PS and Newmarket PS. Samples were delivered to AEL Laboratories by UPS on 18 November, 2020.

During the final quarter, preparations for the 2021 widescreen dry season sampling event commenced. Two additional parameters were added N-Nitrosodimethylamine (NDMA) and Perfluorooctane sulfonic acid (PFOS) to broaden the scope of the programme. It should be noted that bacterial analyses were removed as it was not possible to meet the sample hold times. Specifically, in order to accurately perform the bacterial analysis, the sample needed to be analysed within 6 hours of collection and it takes more than 6 hours to ship the samples overseas for analysis.

### **9.1.4 Conduct intensive/continuous groundwater assessment trials at Belle public supply well including measurement of chlorine residuals**

A YSI EXO Sondes meter to aid in the assessment of water quality was purchased and received by the Department during the financial year.

### **9.1.5 Implementation Challenges**

It is not always possible to obtain samples from agricultural wells that have been fitted with automated pumping systems. Additionally, residual chlorine data from wells sampled by the Barbados Water Authority (BWA) was unavailable. Results from the laboratory are not always available for the period of reporting; this leads to the results being reported during the following quarter.

## **9.2 NEARSHORE WATER QUALITY MONITORING**

Sampling of nearshore water is conducted to ensure that the quality of water is safe for recreational purposes and also to protect the nearshore environment. Table 43 shows the major plans undertaken for the 2020-2021 financial year.

Table 43: Major Plans for Nearshore Water Quality Monitoring

| <b>Major Plan</b>                                | <b>Target Output(s)</b>  | <b>Key Performance Indicator</b>   |
|--|--|--|
| Monitor the quality of water at selected beaches | Water quality data collected to contribute to water resources management | Three thousand four hundred and thirty-two (3432) microbiological samples collected in accordance with SOP<br><br>Two hundred and sixteen (216) nutrient samples collected in accordance with SOP<br><br>Report prepared by March 31, 2021 |
| Continue the verification of data for 2020       | Data from 2020 to current data verified to ensure accuracy               | Verification reports completed and all data updated as of March 31, 2021   |

Table 44 shows the beaches which were sampled as part of the nearshore water quality monitoring programme.

Table 44: the beaches sampled as part of the sampling programme

| <b>West Coast</b>  | <b>South Coast</b> |
|--------------------|--------------------|
| <b>Brandons</b>    | Brownes            |
| <b>Brighton</b>    | Pebbles            |
| <b>Paradise</b>    | Amaryllis          |
| <b>Batts Rock</b>  | Accra              |
| <b>Coach House</b> | Worthing           |
| <b>Holetown</b>    | Dover              |
| <b>Mullins</b>     | Graveyard          |
| <b>Welches</b>     |                    |

|                     |  |
|---------------------|--|
| <b>Miami</b>        |  |
| <b>Silver Sands</b> |  |

During the financial year 2020-2021, one thousand five hundred and ninety-one samples were taken. Nine hundred and fifty-five from the south coast and six hundred and thirty-six from the west coast.

### 9.2.1 Microbiological analysis

Samples are compared to standards as indicated in Table 45.

Table 45: Marine Quality Parameters and Proposed Ambient Standards

| <b>Parameter</b>       | <b>Standard</b>   |
|------------------------|---|
| <b>Enterococci</b>     | Geometric mean of minimum of 5 samples should not exceed 35 colonies/100ml in any 30-day period.  |
| <b>Faecal Coliform</b> | Geometric mean of minimum of 5 samples should not exceed 200 colonies/ 100ml in any 30-day period.<br>AND<br>No more than 10% of samples exceed 400 |

In both catchments, one thousand four hundred and eighty-seven (1,487) samples were tested for faecal coliform and there were 131 instances of Too Numerous to Count (TNTC) and ten (10) instances of confluent growth. Additional one thousand four hundred and ninety-four (1,494) samples were tested for enterococci. There were no instances in which the standards for faecal coliform and enterococci were exceeded during the financial year.

### 9.2.2 Physicochemical and Nutrient Analysis

#### 9.2.2.1 South Coast

For the South Coast catchment, the annual average value for total nitrogen exceeded the standard (Table 46). The standard for Total Phosphorus was also exceeded.

Table 46: Average values for physicochemical parameters for the South Coast Catchment for 2020-2021

|                       | <b>Total Nitrogen/<br/>mg/l</b> | <b>Total Phosphorus/<br/>mg/l</b> | <b>pH</b> | <b>TSS/<br/>mg/l</b> | <b>Turbidity/NTU</b> |
|-----------------------|---------------------------------|-----------------------------------|-----------|----------------------|----------------------|
| <b>Standard</b>       | 0.1                             | 0.015                             | 7.0-8.7   | 5                    | 1.5                  |
| <b>Average</b>        | 0.44                            | 0.07                              | 8.28      | 2.00                 | 0.78                 |
| <b>Minimum</b>        | 0.05                            | 0.05                              | 7.33      | 2.00                 | 0.10                 |
| <b>Maximum</b>        | 1.30                            | 1.00                              | 8.50      | 2.00                 | 2.40                 |
| <b>No. of samples</b> | 52                              | 52                                | 52        | 4                    | 52                   |

#### 9.2.2.2 West Coast

For the West Coast catchment, the annual average exceeded the standard values for Total Nitrogen and Total Phosphorus. The value for pH was within the recommended range. The average turbidity value was below the standard of 1.5 NTU (see Table 47).

Table 47: Average values for physicochemical parameters for the West Coast Catchment for 2020-2021

|                       | <b>Total Nitrogen/<br/>mg/l</b> | <b>Total Phosphorus/<br/>mg/l</b> | <b>pH</b> | <b>TSS/<br/>mg/l</b> | <b>Turbidity/NTU</b> |
|-----------------------|---------------------------------|-----------------------------------|-----------|----------------------|----------------------|
| <b>Standard</b>       | 0.1                             | 0.015                             | 7.0-8.7   | 5                    | 1.5                  |
| <b>Average</b>        | 0.42                            | 0.13                              | 8.27      | 2.20                 | 0.85                 |
| <b>Minimum</b>        | 0.02                            | 0.05                              | 7.70      | 2.00                 | 0.10                 |
| <b>Maximum</b>        | 1.10                            | 0.88                              | 8.50      | 2.40                 | 3.90                 |
| <b>No. of samples</b> | 41                              | 40                                | 41        | 2                    | 41                   |

### **9.2.3 Continue the Verification of data for 2020 - Marine Waters**

Verification of the marine data has been completed for April and May 2020. Verification of special sampling data for January 2020 was completed. Verification of the marine (nutrient) data for June 2020 to August 2020 was completed. Verification of the marine data for the period June 2020 to August 2020 has been completed.

### **9.2.4 Implementation Challenges**

Sampling at some sites was not possible due to prevailing weather and sea conditions at the time of sample collection. Lags in obtaining results from the laboratory may result in the results being reported/received during the following quarter.

## **9.3 COMPLAINTS**

The Department investigated six complaints during the financial year. Three were related to discharges to nearshore and one dealt with fish and bird deaths in waterway leading to Silver Sands Beach. The two other complaints pertained to groundwater pollution: one related to improper storage and disposal of used oil and the other to possible groundwater pollution near Ionics Ltd.

## **9.4 LOOKING FORWARD**

The groundwater monitoring programme and the nearshore monitoring programme will continue in the financial 2021-2022.

## **10 TRAINING, CONFERENCES, SEMINARS AND WORKSHOPS**

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The training courses, seminar and workshops in which the Department participated were mostly held online due to the COVID-19 pandemic. The webinars attended dealt with several environmental topics including environmental noise, marine pollution and the MEAs such as the Basel Convention (Appendix A).

# APPENDIX A

Table 48: Online Training

| Name of Course/Activity   | Location & Date/Period | Aim/Objectives(s)  | Officer(s) in Attendance  |
|---|------------------------|--|---|
| FEMA Online Training Course -Fundamentals of Emergency Management     | April 10, 2020         | <p>Some of the course objectives were to:</p> <ul style="list-style-type: none"> <li>• Describe the principles and authorities that are the foundation of emergency management.</li> <li>• Explain how different partners contribute to emergency management in your community.</li> <li>• Explain how the core capabilities support the mission areas to ensure preparedness.</li> <li>• Describe the roles of each partner in emergency management.</li> </ul>   | <ul style="list-style-type: none"> <li>▪ T. Armstrong – Senior Environmental Protection Officer (SEPO)</li> </ul> |
| FEMA Online Training Course - Introduction to Incident Command System | April 14, 2020         | <p>Course objectives were to:</p> <ul style="list-style-type: none"> <li>▪ Explain the principles and basic structure of the Incident Command System (ICS).</li> <li>▪ Describe the NIMS management characteristics that are the foundation of the ICS.</li> <li>▪ Describe the ICS functional areas and the roles of the Incident Commander and Command Staff.</li> <li>▪ Describe the General Staff roles within ICS.</li> <li>▪ Identify how NIMS management characteristics apply to ICS for a variety of roles and discipline areas.</li> </ul> | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul>   |

|   |                |  |  |
|---|----------------|--|--|
| FEMA Online Training Course - An Introduction to the National Incident Management System                | April 14, 2020 | <p>Topics covered included:</p> <ul style="list-style-type: none"> <li>• NIMS Introduction</li> <li>• Fundamentals and Concepts of NIMS</li> <li>• NIMS Resource Management</li> <li>• NIMS Management Characteristics</li> <li>• Incident Command System (ICS)</li> <li>• Emergency Operations Centers (EOC)</li> <li>• Other NIMS Structures and Interconnectivity</li> <li>• Communications and Information Management</li> </ul> | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul>                              |
| Online Environmental Noise Webinar hosted by Bruel & Kjaer  | June 3, 2020   |  | <ul style="list-style-type: none"> <li>▪ L. Chapman (Senior Environmental Technician ag.)</li> </ul> |
| “Liaison Officer Orientation 2020” webinar, which facilitated by the Department of Emergency Management | June 11, 2020  | Meeting facilitated by Dept. of Emergency Management to raise awareness amongst participants about the roles and responsibilities of liaison officers and the national emergency response system.  | P. Pile - Senior Environmental Technical Officer Acting (SETO ag.)                                   |
| Virtual Performance Management Training Webinar   | June 25, 2020  | Implementation of Virtual Performance Management   | <ul style="list-style-type: none"> <li>▪ P. Pile - (SETO ag.)</li> </ul>                             |

|   |                   |  |   |
|---|-------------------|--|---|
| Regional Forum of Ministers – 2 <sup>nd</sup> Meeting of Focal Points on Chemicals & Waste              | July 24, 2020     |  | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul> |
| FAO Pesticide Registration Toolkit and Bridging Guidance for Pesticide Risk Assessments                 | July 24, 2020     | It introduced the concept of bridging in the context of the Rotterdam Convention and the bridging guidance under the FAO Pesticide Registration Toolkit, which contains detail supportive information on how bridging can be done successfully and therefore reduce the workload on decision makers in the context of pesticide management and Rotterdam Conventions obligations.  | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul> |
| Webinars on the Plastic Wastes<br><br>Amendments: Legal and Institutional Frameworks for Implementation | August 28, 2020   | Tools and guidance to support the establishment and further development of legal and administrative frameworks   | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul> |
| Webinars on the Plastic Wastes<br><br>Amendments: Technical Aspects                                     | September 7, 2020 | <p>Topics were:</p> <ul style="list-style-type: none"> <li>▪ What are the Plastic Waste Amendments?</li> <li>▪ Tools and guidance that can assist in implementing the Amendments and the Basel Convention</li> <li>▪ Update of the technical guidelines for the identification and environmentally sound management of plastic wastes and for their disposal- (presentation by one of the co-leading Parties)</li> </ul> | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul> |

|  |                    |  |  |
|--|--------------------|--|--|
| Webinars on the Plastic Wastes Amendments: Enforcement | September 28, 2020 | <p>Topics were:</p> <ul style="list-style-type: none"> <li>▪ Current challenges and successes for the enforcement of the Basel Convention in relation to the repatriation of plastic wastes (Environment Agency - England)</li> <li>▪ Preparing the legal framework and enforcement efforts for the Plastic Waste Amendments (Environmental Protection Agency, Government of Ghana)</li> <li>▪ Enforcement operation DEMETER VI and how customs can support the enforcement of the Plastic Wastes Amendments (World Customs Organization)</li> <li>▪ Emerging criminal trends in the global plastic waste market (INTERPOL)</li> </ul> | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul>                                  |
| IWEco's Eight Partners Webinar                         | October 13, 2020   | To determine where the IWEco Project sits in a regional and international landscape  | <ul style="list-style-type: none"> <li>▪ A. Eversley - Senior Marine Pollution Officer (SMPO)</li> </ul> |
| OPCW Advanced Chemical Safety and Security Management  | October 22, 2020   | This course promoted chemical safety and security by providing tools and knowledge to mitigate the risks arising from chemical accidents and potential misuse of toxic chemicals, including the threat of terrorism. This programme aims to ensure that chemicals are only used for peaceful purposes throughout their lifecycle.  | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul>                                  |

|  |                  |  |   |
|--|------------------|--|---|
| CWC Article XI Online Workshop   | November 2, 2020 | <p>Objectives were:</p> <ul style="list-style-type: none"> <li>• National capacity-building for the research, development, storage, production, and safe use of chemicals for purposes not prohibited under the Convention.</li> <li>• Promoting networking and exchange among scientific communities, academic institutions, chemical-industry associations, non-governmental organisations, and regional and international institutions.</li> <li>• Enhancing the effectiveness of current international-cooperation programmes of the OPCW.</li> <li>• Measures by States Parties and the OPCW to facilitate States Parties' participation in the fullest possible exchange of chemicals, equipment, and scientific and technical information relating to the development and application of chemistry, in accordance with the provisions of the Convention.</li> </ul> | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul>                               |
| Webinar: IWEco - Promoting Quarry Rehabilitation for a Rock-Solid Future | November 3, 2020 | To present on and engage participants in a discussion on quarry rehabilitation   | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> <li>▪ A. Eversley (SMPO)</li> </ul> |

|   |                          |  |   |
|---|--------------------------|--|---|
| <p>GEF 5558 Training on Detection, Identification and Classification of POPs by Border Control Agencies</p> | <p>November 16, 2020</p> | <p>The main objectives of the training workshop were to improve the role of Customs and related border control agencies and the implementation of the Stockholm Convention (SC) on POPs by (i) providing training on the SC and the regulations of international trade of POPs and (ii) informing on how to improve the cooperation with national and regional counterparts in the control of transboundary movement of POPs. The workshop also informed participants on the role and implementation of the Basel, Rotterdam and Minamata Conventions in the management of chemicals and waste imports</p> | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul> |
| <p>UNEP GEF IWeco Project 9th Webinar; LBS Protocol</p>   | <p>November 19, 2020</p> |  | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> </ul>  |
| <p>Introduction to IAEA Safety Standards</p>  | <p>December 15, 2020</p> | <p>Objectives were:</p> <ul style="list-style-type: none"> <li>• To enhance the understanding on the IAEA safety standards, including their purpose, scope, target audience, hierarchical structure and status, as well as how Member States can apply the standards.</li> <li>• To provide information on how the standards are developed, established and revised.</li> <li>• To increase awareness on the available resources for accessing the Safety Standards and the newly developed eLearning materials.</li> </ul>  | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul> |

|   |                                      |  |  |
|---|--------------------------------------|--|--|
| <p>A self-directed course by the Learning and Development Directorate on writing briefs</p> |                                      |  | <ul style="list-style-type: none"> <li>▪ P. Pile (SETO ag.)</li> </ul>                             |
| <p>Practical Research for Policy and Governmental Professionals.</p>                        | <p>November 2020 - February 2021</p> |  | <ul style="list-style-type: none"> <li>▪ L. Senhouse (ag)</li> <li>▪ P. Pile (SETO ag.)</li> </ul> |
| <p>Webinar: Guidance Documents for Response during a pandemic (OSRL)</p>                    | <p>October 28, 2020</p>              | <ol style="list-style-type: none"> <li>1. A brief introduction of both of our Specific Measures for In-Field Guide document and COVID-19 Field Guide Appendix</li> <li>2. NEBA Considerations under COVID-19</li> </ol>                                    | <ul style="list-style-type: none"> <li>• A. Eversley (SMPO)</li> </ul>                             |
| <p>Webinar: No such things as a bad exercise (OSRL)</p>                                     | <p>October 29. 2020</p>              | <ul style="list-style-type: none"> <li>• key learnings gained in the delivery of a number of exercises around the world over the last 20 years.</li> <li>• recent experiences in virtual exercises brought about primarily as a result of COVID</li> </ul> | <ul style="list-style-type: none"> <li>• A. Eversley (SMPO)</li> </ul>                             |

|  |                                      |  |  |
|--|--------------------------------------|--|--|
| Webinar: Volunteer management in oil spill response                        | November 5, 2020                     | This webinar looked at the reasons why it is advisable for oil companies to consider a Volunteer Plan as part of their preparedness for oil spills. Selection of volunteers, and management of the process | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> </ul>                           |
| Effective Writing Skills for the Public Service course                     | November 23, 2020 – February 8, 2021 |  | <ul style="list-style-type: none"> <li>▪ T. Williams – Marine Pollution Officer (MPO)</li> </ul> |
| Incident and Crisis Management - Working Together to Bring Order to Chaos. | March 29, 2021                       | It explained why both are essential for responding to major events, how escalation is managed and the role of liaison between the different teams to enable them to achieve their objectives               | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> </ul>                           |
| Final workshop for the Barbados Ocean Energy Studies project               | February 8-12, 2021                  | To discuss the findings of the various ocean energy studies  | <ul style="list-style-type: none"> <li>▪ A. Reeves (Technical Officer)</li> </ul>                |

|  |                                 |  |   |
|--|---------------------------------|--|---|
| <p>The Organisation for the Prohibition of Chemical Weapons Online Training Course - Reconnaissance and Sampling Operations in a Highly Contaminated Environment</p> | <p>March 15-19, 2021</p>        | <p>It was a capacity building initiative to support the OPCW member states in fulfilling national responsibility under Article X of Chemical Weapons Convention (CWC). It reinforced the member states capacity by providing specialized knowledge to chemical emergency response specialists in this critical aspect of chemical incident management. It was intended to strengthen the capability of participants to the preparation and respond to chemical incidents through setting up safety measures and procedures to carry out their tasks.</p> | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul> |
| <p>Online Training Course on Fulfilling Declarations and Inspections Obligations Under Article VI of the Chemical Weapons Conventions</p>                            | <p>March 1 - April 15, 2021</p> | <ul style="list-style-type: none"> <li>• To facilitate the submission by National Authorities of accurate and timely annual declarations required under Article VI of the Convention.</li> <li>• To provide practical guidance to States Parties on receiving and escorting OPCW inspections.</li> </ul>   | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul> |

Table 49: Online Conferences, meetings and workshops

| Name of Course/Activity  | Location & Date/Period          | Aim/Objectives(s)  | Officer(s) in Attendance  |
|--|---------------------------------|--|---|
| Basel Convention E-Waste Challenge - Using international standards to tackle the e-waste challenge             | April 1, 2020/<br>April 2, 2020 | To learn how use international standards to manage e-waste sustainably and achieve the Sustainable Development Goals   | <ul style="list-style-type: none"> <li>▪ J. Yearwood - Environmental Technical Officer (ETO ag.)</li> <li>▪ T. Armstrong - Senior Environmental Protection Officer (SEPO)</li> <li>▪ A. Reeves - Technical Officer</li> </ul> |
| Basel Convention E-Waste Challenge -The role of International Standards<br><br>in Fostering a Circular Economy | April 16, 2020                  | Topics covered included: <ul style="list-style-type: none"> <li>▪ Understanding the circular economy</li> <li>▪ E-waste management and recycling of rare metals</li> <li>▪ Importance of Global standards</li> </ul> | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul>   |
| Public Service ICT Security Protocols Webinar  | May 6, 2020                     |  | <ul style="list-style-type: none"> <li>▪ P. Pile - Senior Environmental Technical Officer (ag.)</li> <li>▪ J. Yearwood - Environmental Technical Officer (ETO)</li> <li>▪ A. Reeves - Technical Officer (TO)</li> </ul>       |

|   |              |  |  |
|---|--------------|--|--|
| Basel Convention - Briefings for Parties from Latin America and the Caribbean on the 12 <sup>th</sup> Meeting of the OEWG of the Basel Convention | May 19, 2020 |  | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul>                                  |
| Sargassum Webinar: seaweed invasion harms economies in West Africa and the Caribbean - Human Nitrogen Footprint                                   | May 26, 2020 |  | <ul style="list-style-type: none"> <li>▪ A. Eversley - Senior Marine Pollution Officer (SMPO)</li> </ul> |
| EPA Expanded Research on SARSCoV-2 in the Environment   | May 27, 2020 | This webinar highlighted research EPA is working on with CDC   | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> </ul>                                   |
| Addressing Marine Litter in the Caribbean   | May 29, 2020 | <p>To raise the awareness of participants on the following topics:</p> <ul style="list-style-type: none"> <li>▪ Promotion and Awareness and use of Citizen Science</li> <li>▪ Marine Litter Monitoring and Assessment</li> </ul> | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> </ul>                                   |

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|  |  | <ul style="list-style-type: none"> <li>▪ Microplastics Research in the Caribbean</li> <li>▪ Private Sector and Community Partnerships</li> </ul> |   |
| Energy Smart Fund II - ESHS Plan Stakeholders Meeting                    | June 5, 2020                             |  | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul> |
| CDB/IDB Regional Marine Renewable Energy Workshop                        | June 18, 2020                            |  | <ul style="list-style-type: none"> <li>▪ A. Reeves (TO)</li> </ul>      |
| CDEMA Deployment Teams Orientation                                       | July 8 &9, 2020                          | To raise participants' awareness about the roles and responsibilities of deployment teams and to solicit volunteers.                             | <ul style="list-style-type: none"> <li>▪ P. Pile (SETO ag.)</li> </ul>  |
| 3rd-6th IWeco Project Partners' Webinars                                 | July 14, July 28, Sept 1, Sept 15, 2020. | To provide training in Ecosystem Services Valuation (ESAV).  | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> </ul>  |
| Global Webinar Series: Environment & Emergencies in the face of COVID-19 | July 29, 2020                            | To participants' awareness about the various challenges to the environment and emergency response in light of the COVID-19 pandemic              | <ul style="list-style-type: none"> <li>▪ P. Pile (SETO ag.)</li> </ul>  |

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| 21 <sup>st</sup> Regional Meeting of National Authorities to the CWC          | July 31, 2020      | For allow national authorities in the region to share experiences and knowledge regarding the implementation of the CWC.  | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul>                               |
| GEF IDB Child Project 2 Results Validation workshop                           |                    | To present the main findings and recommendations of the assessments conducted by the Consultants hired under the project and discuss methods of addressing data gaps for the drafting of the alternative scenario text and the overall CEO Endorsement Document   | <ul style="list-style-type: none"> <li>▪ J. Yearwood (ETO ag.)</li> </ul>                             |
| Sixth IWECO Project Partners' Webinar (Ecosystem Services Valuation Training) | September 15, 2020 |   | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> </ul>                                |
| Webinar: Sargassum #3; West Africa Perspective                                | September 22, 2020 | This webinar featured leading experts from affected countries in the region (Benin, Côte d'Ivoire, Ghana, Guinea, Liberia, Nigeria, Senegal, Sierra Leone, and Togo) local and international organizations working on marine and coastal biodiversity management to share information, build knowledge on the phenomenon, promote best practice and develop ocean governance arrangement in combating the Sargassum phenomenon in West Africa | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> <li>▪ T. Armstrong (SEPO)</li> </ul> |
| Stakeholder Feedback Workshop on Public Sector Smart Energy                   | September 22, 2020 |   | <ul style="list-style-type: none"> <li>▪ J. Yearwood (ETO ag.)</li> </ul>                             |

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| Programme -Public Education-   |                       |   |  |
| Latin American and Caribbean (GRULAC) Regional Consultation Meeting under UNEA AHEG on Marine Litter and Microplastics | September 29-30, 2020 | Objectives were to:<br><br>1) Share information on the progress and ongoing work of the AHEG intersession work 2) Discuss possible regional coordination mechanisms and 3) Facilitate consultations of the Chair and Bureau with the regions.   | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> </ul>   |
| GEF Islands Validation Workshop  | October 21, 2020      | The primary objective of this meeting was to present the main findings and recommendations of the assessments conducted by the Consultants hired under the project and discuss methods of addressing data gaps for the drafting of the alternative scenario text and the overall CEO Endorsement Document for the GEF ISLANDS Programme | <ul style="list-style-type: none"> <li>▪ P. Pile (SETO ag.)</li> <li>▪ T. Armstrong (SEPO)</li> <li>▪ J. Yearwood (ETO ag.)</li> </ul> |
| OPCW Advanced Chemical Safety and Security Management Online training  | October 22, 2020      | It aimed to introduce chemical plant safety and peace applications in chemistry to improve Member States' capacities by sharing lessons learnt from chemical accidents and incidents  | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul>  |
| First Technical Briefing: Welcome and overview with the ICCM5 President  | October 22, 2020      | To raise stakeholders' awareness about the process that will be used during the lead-up to fourth meeting of the Intersessional Process (IP4) and the fifth meeting of the  | <ul style="list-style-type: none"> <li>▪ P. Pile (SETO ag.)</li> </ul>   |

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| and Intersessional Process (IP) Co-chair  |                  | International Committee on Chemicals Management (ICCM5)  |  |
| Sustainable and Environmentally Sound Management of Used Lead-Acid Batteries in the Caribbean | October 24, 2020 | Some of the topics covered include: <ul style="list-style-type: none"> <li>▪ Health Impacts of Lead and ULAB recycling</li> <li>▪ Enabling regulatory framework</li> </ul> | <ul style="list-style-type: none"> <li>▪ P. Pile (SETO ag.)</li> <li>▪ T. Armstrong (SEPO)</li> <li>▪ J. Yearwood (ETO)</li> </ul> |
| XXII Forum of Environment Ministers in Latin America and the Caribbean                        | October 27, 2020 | To discuss in the next steps in the lead up on the XXII forum  | <ul style="list-style-type: none"> <li>▪ P. Pile (SETO ag.)</li> </ul>   |
| Towards a Global Response to Prevent Lead Poisoning   | October 28, 2020 | To raise awareness about the harmful impacts on lead   | <ul style="list-style-type: none"> <li>▪ P. Pile (SETO ag.)</li> </ul>   |
| Virtual Launch of the Hazardous Substances Regulatory Authority (Jamaica)                     | October 29, 2020 |  | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul>  |

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| Virtual Working Group: Targets, Indicators and Milestones   | November 2, 2020  | To discuss the operation of the virtual working group and   | <ul style="list-style-type: none"> <li>▪ P. Pile (SETO ag.)</li> </ul>  |
| GEF IWeco Project Partners 9 <sup>th</sup> Webinar; LBS Protocol                                      | November 10, 2020 | This 9th Partners' Webinar focused on the Land-Based Sources of Marine Pollution (LBS) Protocol, which the IWeco Project supports, and the roles of the two LBS Regional Activity Centres (RACs). | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> </ul>  |
| Third Virtual Meeting of Network Focal Points of the Intergovernmental Network on Chemicals and Waste | November 12, 2020 |   | <ul style="list-style-type: none"> <li>▪ P. Pile (SETO ag.)</li> </ul>  |
| OPCW 22 <sup>nd</sup> Annual Meeting of National Authorities Online Meeting                           | November 23-25    |   | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul> |
| The webinar on the role of managers and supervisors in supporting                                     | November 27, 2020 | To raise participants' awareness on this subject.   | <ul style="list-style-type: none"> <li>▪ P. Pile (SETO ag.)</li> </ul>  |

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| teleworking employees   |                   |  |  |
| Webinar: Application of a Graded Approach in Regulating the Safety of Radiation Sources | December 8, 2020  | <p>Objectives were to:</p> <ul style="list-style-type: none"> <li>• To provide overview on the application of the graded approach for the regulatory control of facilities and activities with radiation sources.</li> <li>• To provide overview of criteria and factors to be considered for the development of a graded approach method.</li> <li>• To present practical examples of the application of a graded approach in the regulatory functions in three Member States.</li> </ul> | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul>                          |
| IWEco Component 3 – Stakeholders Analysis interview                                     | December 8, 2020  | To discuss key stakeholders that are most relevant in connection with the review of legislation, regulation and practice relating to integrated management of water resources, land use and ecosystems   | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> </ul>                           |
| Webinar: Tools to Support Enforcement of the Basel Convention                           | December 14, 2020 |  | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul>                          |
| UN Geneva Beat Plastics dialogue.   | February 11, 2021 | During this session, experts mapped the current life-cycle approaches in place to quantify and address the plastic   | <ul style="list-style-type: none"> <li>▪ T. Williams – Marine Pollution Officer (MPO)</li> </ul> |

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|  |                   | crisis, detailed international policies and initiatives developed to foster a plastics circular economy, and explored the role and contributions of all stakeholders, along the supply chain, to design and implement comprehensive responses to the plastic crisis |  |
| A virtual presentation on “ Air Quality and Ventilation Design for the COVID era”  | March 3, 2021     |   | <ul style="list-style-type: none"> <li>▪ L. Chapman (SET ag.)</li> </ul>   |
| A meeting regarding the proposed zoning of Spring Garden on Zone A on February   | February 10, 2021 | To discuss the implications for development around the desalination plant at Spring Garden.   | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> </ul>   |
| IWEco – Review and strengthening of Policy, Legislative & Institutional Capacity to support sustainable land, water resources and ecosystems management: Stakeholder Focus Group Session, Barbados | February 24, 2021 | To discuss current gaps in the way natural resources (i.e. water, land, coastal areas, and ecosystem services) are currently managed in Barbados, and explore potential solutions and recommendations.  | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> </ul>   |
| A webinar entitled, “Ocean Action for Sustainability – Building a Global Vision to Tackle Plastic Pollution” .   | February 17, 2021 | To review how Kenya and the rest of the African region have been tackling plastics pollution.   | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> <li>▪ T. Williams (MPO)</li> <li>▪ P. Pile (SETO ag.)</li> <li>▪ J. Yearwood (ETO ag.)</li> <li>▪ A. Reeves (TO)</li> </ul> |

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| Focus Group of the IWeco Project Component 3 meeting   | February 24, 2021    |   | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> <li>▪ T. Williams (MPO)</li> </ul>                             |
| Caribbean Maritime Climate Action: Energy Efficiency Conference and Exhibition   | February 24-26, 2021 |   | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> <li>▪ T. Williams (MPO)</li> <li>▪ L. Chapman (SET)</li> </ul> |
| A regional seminar on "Ballast Water and Invasive Species, Stony Coral Tissue Loss Disease, action against Marine Pollution                        | March 10-12, 2021    | The objective of the seminar was to provide a detailed reminder of the adverse effect, on the Marine Environment, of Ballast Water and Invasive Species, Stony Coral Tissue Loss Disease and Marine Pollution in general. It also aimed to re-emphasize the importance of the applicable Conventions and the need to accede in order to ensure their effectiveness in the Wider Caribbean Region. Parties that have already acceded were reminded of the need to implement and enforce the Conventions and to ensure capacity building in their respective State and the Region at large. | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> </ul>  |
| 5 <sup>th</sup> Meeting of the Scientific and Technical Advisory Committee (STAC) to the Protocol Concerning Pollution from Land-Based Sources and | March 15 -17, 2021   | Some of the objectives were to: <ul style="list-style-type: none"> <li>▪ Evaluate the projects and activities implemented by the Secretariat and the LBS Regional Activity Centres (RACs) within the Assessment and Management of Environmental Pollution (AMEP) Sub-Programme during the period 2019-2020;</li> </ul>  | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> </ul>  |

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| Activities in the Wider Caribbean                              |                      | <ul style="list-style-type: none"> <li>▪ Review the progress made in the implementation of the Recommendations of the Fourth LBS STAC Meeting, Decisions of the Fourth Conference of Parties to the LBS Protocol, and relevant Decisions of the Fifteenth Meeting of the Contracting Parties to the Cartagena Convention;</li> </ul>   |   |
| The Global Water Partnership Symposium                         | March 23 - 25, 2021. | Theme: Building Resilience in the Regional Water Sector to Address Climatological and Hydrological Risks and Threats   | <ul style="list-style-type: none"> <li>▪ A. Eversley (SMPO)</li> <li>▪ T. Williams (MPO)</li> </ul> |
| A webinar: SGP on Plastics                                     | February 5, 2021.    | The objective of this webinar was to learn about the projects that have been selected under the first round of the SGP on plastic waste as well as to share lessons learned that have emerged during the selection process   | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul>                             |
| A webinar: Tackling Plastic Waste through the Basel Convention | February 18, 2021.   | <p>Content:</p> <ul style="list-style-type: none"> <li>▪ Opening remarks - Basel Convention and tackling plastic pollution</li> <li>▪ Delivering through the Basel Convention Plastic Waste Partnership</li> <li>▪ Strengthening capacities through the Regional Centres and the SGP on Plastic Waste</li> <li>▪ Supporting Parties with tools, guidance and technical assistance</li> </ul> | <ul style="list-style-type: none"> <li>▪ T. Armstrong (SEPO)</li> </ul>                             |

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| IWEco (component 3)<br>Caribbean Regional<br>Workshop. | March 30, 2021 |  | <ul style="list-style-type: none"><li>▪ A. Eversley (SMPO)</li></ul> |
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