

**Minutes of a Meeting of the Environmental Authority
Held on Tuesday, 30 August 2022
At the Department of Environment and Natural Resources, Botanical Gardens, Paget
and Remotely using WebEx Teleconference**

PRESENT: Ms. Davida Morris, Chair (by remote access, then in person)
Mr. Eugene Saunders, Deputy Chair
Mrs. Susan Armstrong, Member (by remote access)
Mr. Andrew Barnes, Member
Mr. Willie Ferguson, Member (by remote access)
Mr. James Morrison, Member (by remote access)
Mr. Jonathan Starling, Member (by remote access)

ADVISORS: Dr. Geoff Smith, Environmental Engineer, DENR
Dr. Shaun Lavis, Hydrogeologist, DENR
Mr. Kirk Outerbridge, Chief Engineer, Public Works (by remote access)
Mr. Tarik Christopher, Principal Engineer (Water & Sewage), Public Works
(by remote access)
Ms. Crystal Baxter, Acting Chief Environmental Health Officer
Ms. Patricia Hollis, Environmental Officer, DENR, Recording Secretary

ABSENT: Mr. Paul McDonald, Acting Senior Planner, Dept. of Planning

BELCO Representatives:

Mr. Mark Pacheco, Director of Occupational Safety, Health & Business
Continuity
Ms. Kascia DeSilva, Occupational Safety & Health Coordinator

1. Confirmation of Minutes

The Minutes of the meeting held on 26 July 2022 were approved and then signed by the Deputy Chair.

2. Welcome to New Advisor

Ms. Crystal Baxter was welcomed to the meeting as the Environmental Health representative for the Department of Health.

3. BELCO Air Quality Updates

In a recent Royal Gazette newspaper article about the ongoing environmental complaints caused by BELCO emissions, it was stated that the reporter reached out to the Environmental Authority but that no reply was received by press time. All Members confirmed that they were not approached by any reporters for comment.

The Authority **REQUESTED:**

that DENR approach the Royal Gazette to determine who they contacted for a statement.

The Authority TOOK NOTE:

3.1 BELCO's June 2022 update letter reporting complaints and progress to addressing the soot emissions, exhaust downdrafting, and fuel odours on St. John's Road was discussed. There were no complaints of hydrocarbon odours from the fuel farm in June. There were five exceedences of the 15-minute UK SO₂ air quality objective 'Target Level' and two of the 1-hour UK NO₂ 'Limit Values' of the UK Air Quality Standard Regulations 2010.

There were 3 soot complaints in June (10th, 11th and 15th).

3.2 Two potential sites for BDA4 monitoring station have been identified. DENR and BELCO are working with the landowners to secure permission to site the monitoring station.

3.3 Government is no longer funding monitoring of the ambient air. The Chair confirmed that she has begun to draft a letter to the Minister asking for this to be reconsidered.

4. BELCO—Presentation on their Annual Operating Licence Report OL-114

Mr. Mark Pacheco and Ms. Kascia DeSilva presented the Operating Licence OL-114 Annual Report.

4.1 Compliance with Operating Licence: BELCO reported being in compliance with all the operating licence conditions except for the following five conditions:

- 1) Condition 5.4.5. The manual for the Ambient Air Quality Monitoring Programme had become outdated due to several upgrades and replacement of obsolete equipment. Revision of the manual is due to be completed by end of 2022.
- 2) Condition 5.7.1. Covid-19 pandemic related restrictions in Bermuda and internationally negatively impacted BELCO's leak detection activities.
- 3) Condition 5.7.3. Two Government reportable spills were not reported to DENR in 2021.
- 4) Condition 5.9.2. The 2021 Q3 waste oil processing facility report was submitted 2 days late.
- 5) Condition 5.9.3. The comprehensive plan for remediation of the ground/groundwater beneath the Old Power Station will developed after the current contract to raise the building of the OPS are completed. It is noted that this is a timeframe later than required.

4.2. Fuel Use: In 2021, 734,448 bbl of heavy fuel oil (max sulphur 1.98%) and 21,528 bbl of road diesel (<0.0015%) (*i.e.* in lieu of the conditioned permitted light fuel oil - max sulphur 0.5%) were consumed by their 8 diesel engines and 4 gas turbines.

4.3. Upgrade to Transmission Network: BELCO is continuing to upgrade their transmission network by replacing 40% of underground transmission cables and by increasing the capacity to support large-scaled renewable energy projects.

4.4. Air Quality Monitoring: Of the eight engines, 6 are equipped with continuous in-stack opacity monitors. Additionally, certified visual and camera-based observers are on site. There was no use of non-compliant engines in 2021. There were no exceedances in opacity recorded in 2021.

In 2021, four monitoring stations were run to measure ambient air quality and meteorological conditions. Bermuda One has shown a decline in the maximum concentrations of combustion-related contaminants in ambient air. This is due to the retirement of the old power station engines. Bermuda Four (only commissioned during the latter part of 2021) and located on Ocean Lane shows typically the highest concentrations of exhaust emissions (*i.e.* SO₂ and NO₂) compared to the other 2 monitoring stations (*i.e.* BDA1 and BDA2). This is due to the contribution from the new engines in the North Power Station and the downdrafting that is occurring when the wind is from the SW/SSW and >15 knots.

Soot emissions from the new North Power Station engines continues. However, there is no known meter for analysing and quantifying soot, other than reports from the members of the public who are impacted by such events.

4.5. Oil Recovery: During 2021, 115,200 US gallons of waste oil was recovered from plant operations and shipped overseas to a licenced facility in the US for processing.

Little subsurface oil was recovered from the groundwater in 2021. The remaining subsurface oil (*i.e.* approx. 40 m³) will better accessed for removal once the old power station buildings are demolished.

4.6. Training: BELCO continues training for hazardous materials handling, spills, asbestos and emergency response as well as training programs for standard operating procedures.

4.7. Spill Prevention and Reporting: It was noted that all petroleum storage tanks and pipelines are regularly inspected according to API standards. Inspection of two tanks larger than 20,000 gallons have been delayed but will be undertaken in 2022.

BELCO reported 47 spills of oil (total of 410.5 gallons); 30 from pole-mounted transformers, 3 from pad-mounted transformers, 11 from the Central Plant in Pembroke, and 3 from other sources.

4.8. Major Environmental Pollution Plan was tested on 25 August 2021 through a practical exercise at the Fairmont Southampton Princess.

There was much discussion following the presentation, especially regarding steps available to BELCO to address the ongoing complaints of fuel odours from tanks on St. John's Road, downdrafting from North Power Station (NPS) engines on Ocean Lane, Pembroke, and the periodic soot emissions.

Soot Emissions: Mr. Pacheco said that BELCO is working with the engine manufacturers to define optimal engine management loads and to investigate software programmes to limit fuel injection during start-up and methods to increase combustion pressures within the cylinders. BELCO is also considering reducing or suspending routine maintenance (*i.e.* water washing, nut shelling) of the exhaust ductwork during unfavourable weather conditions. Although these suggested improvements represent 'operational' changes to the BELCO NPS engines they are currently reviewing a capital acquisition; the installation of improved soot collection/particulate elimination technologies (*i.e.* electrostatic precipitators).

Use of lower-sulphur, more refined fuels has been considered as a solution to the soot emissions, however it is significantly more expensive compared to heavy fuel oil currently in use.

Downdrafting near Ocean Lane, Pembroke: After complaints of odours at Ocean Lane, Pembroke, a mobile monitoring station was established on 8th October 2020. This was operational until June 2022 when it was decommissioned and moved at the request of the land owner. In 2021, there were no exceedences of Bermuda's Ambient Air Quality Standards measured at Ocean Lane. BELCO has implemented a standard operating procedure to address complaints of odours from the downdrafting of emissions. When a complaint is lodged and the winds recorded at BDA4 monitoring station as being from the SW/SSW greater than 20 kph, BELCO will switch some of the total engines in use from using heavy fuel oil to light fuel oil. Mr. Pacheco confirmed that about 50 to 100 homes are impacted by the downdrafting, and about 20 are significantly impacted.

Dr Smith: It is noted that in terms of the UK/EU Air Quality Objectives that there were a total of 63 exceedences of the 15-minute sulphur dioxide 'Target Level' of 266 $\mu\text{g}/\text{m}^3$ at BDA4 Ocean Lane over the calendar year of 2021 where the maximum number of exceedences per year is 35 of this 15-minute target. It is further noted that the Clean Air Act Amendment Bill will make these 'Target levels' into 'Limit Values' under the Clean Air Regulations once the drafting and consultation process is completed. More recently BELCO has introduced a new standard operating procedure to switch to lower sulphur, more refined diesel in some of the baseload engines when the wind is shown to be greater than 15 knots and from a SW/SSW direction. The data since this procedure was introduced appears to show a significant reduction in the numbers of exceedences up until the BDA4 sensor had to be decommissioned in June 2022.

Mr. Pacheco stated that BELCO is still looking for a replacement site for the BDA4 monitoring station.

Fuel Farm Odours: After the installation of carbon filters in the fuel farm area, St. John's Road, in December 2021, BELCO received one complaint on 8 February 2022 and one on 2 April 2022, although the latter was traced to an issue with the oily water treatment plant.

BELCO is continuing to investigate ways to improve filter efficiencies, including recording temperature data.

When asked if a vegetative hedge would block some of the odours, Mr. Pacheco replied that it would be difficult to plant an effective hedge whose root system would not damage the many underground pipes in the area or make access to the pipes difficult.

Brownouts, Battery Storage: When questioned about the cause of the recent large brown out in Southampton, Mr. Pacheco said he was not aware of the particulars. He added that as more renewable energy sources come online, they bring more variables and instability into the grid. An example is with the new solar power at the Airport finger. A large cloud coming over the area will cause a sudden drop of 6 MW. To balance power supply, BELCO needs to maintain

spinning reserve that can be brought on immediately, or a vast battery bank that could store/release energy as needed. He added that battery technology is improving all the time.

Noting the recent departure of Andrew Rothwell from BELCO's team, Mr. Pacheco said that they are actively interviewing potential new hires.

The Authority REQUESTED:

that BELCO continue to submit monthly update reports of complaints and the progress to solving the downdrafting, soot emissions, and fuel odour issues. This was in response to the letters sent by the Authority to BELCO in July 2021 and despite the BDA4 sensor not currently being deployed to the Ocean Lane area.

After the BELCO representatives left, the Authority considered their operating licence application for reissue.

The Authority AGREED:

that proposed changes to the conditions would be considered at their next meeting.

5. Elbow Beach Waste Water Treatment Plant

The Authority **TOOK NOTE:**

that the main hotel is closed, wastewater is received only from one restaurant and some of the apartments of Fritholme Gardens. The effluent quality shows low biological oxygen demand with little settling (*i.e.* high suspended solids reading), reflective of a low organic load system. The wastewater effluent quality will continue to be monitored.

6. Ministry of Public Works Tynes Bay July 2022 Operation Update

The Authority **TOOK NOTE:**

- 6.1 Stream #1 was available for 31 days in July and ran for 22 days (70%) and was off-line due to a lack of garbage and a cable fault at the North Shore transformer. Stream #1 was shut down on 27 August, ready for one month of planned maintenance using contractors from Germany. The current low level of garbage in the pit suggests that the bailing contingency will not be required. Stream #2 was available for 29 days and ran for 10 days (34%). It was offline due to a cable fault.
- 6.2 The turbine was available for 31 days and ran for 29 days at 39% efficiency. It was offline for 2 days due to a cable fault.
- 6.3 Total waste incinerated (excluding metal) was estimated at 3, 908 tonnes. Total cooking oil was estimated at 42.9 tonnes.
- 6.4 30 loads of ash cement were disposed of at the Airport Site as blocks or pours of ash-cement away from the revetment. The amount of unconsolidated ash removed was 64.6 tonnes.
- 6.5 1,641 MWh sent to BELCO 17 June through 19 July. Total MWh generated 1-31 July was 1,828 MWh.

7. Applications for Construction Permits and Operating Licences (New)

7.1 CP-756, 757, 758, OL-1192, 1193, 1194 Bermuda Housing Corporation

The Authority **DEFERRED:**

the construction permit and operating licence applications for a waste water treatment plant and two generators at Bermudiana Beach Resort, 60 South Road, Warwick, pending submission of additional details.

7.2 CP-759, OL-1195 R. Robellato

The Authority considered the application for a construction permit and operating licence for a 20 kW propane generator at 30 Castile Road, Warwick. It was noted that this area is being developed, and the neighbouring houses are not yet constructed. Sound modelling was undertaken using a receptor located 25 feet from the site boundary. Predicted sound levels at the site line indicated a slight exceedance of the Authority's guidelines.

The Authority **APPROVED:**

the application subject to standard conditions and providing the applicant is made aware that future sound attenuation may be required if the Authority's guidelines are exceeded once the neighbouring housing is built.

8. Applications for Construction Permits and Operating Licences (Modifications)

8.1 OL-1100, OL-1161 Invisible Trenching

The Authority **APPROVED:**

the modification of OL-1100 (sand sifter with crushing attachment) and OL-1161 (rock crusher) so they may be used at sites with appropriate Department of Planning permits islandwide, subject to standard conditions.

The Authority **APPROVED:**

the reissue of OL-1161, subject to standard conditions.

9. Applications for Construction Permits and Operating Licences (Reissues)

9.1 The Authority APPROVED:

The applications for reissue of operating licences listed on the three page printout, subject to standard conditions, with the exception of OL-145 (Grotto Bay WWTP) which was deferred pending receipt of the annual report and OL-114 (BELCO) which will require a review of the conditions of the operating licence. The approved included the application for OL-521 Wedco WWTP. The Wedco annual report showing satisfactory maintenance and effluent quality had been submitted.

10. Applications for Import Permits

10.1 Karibuni Ltd (Desmond Mello) Permit 180

The Authority **APPROVED:**

the importation of 80 cylinders, each with about 25 lbs R407A, subject to standard conditions

10.2 Chilltech Ltd. (Kevin Roberts) Permits 181, 182

The Authority **APPROVED:**

the importation of 40 cylinders total, each with about 25 lbs R448A, subject to standard conditions

11. Applications for Water Rights (New)

11.1 The Authority APPROVED:

WR-5762 Nicole Bean, Domestic Water Right application for household supply at 6 Ramgoat Hill, Smiths, subject to standard conditions.

11.2 The Authority APPROVED:

WR-5763 Hamilton Warehouse Co. Water Right application for a domestic rainwater disposal borehole at 27 Woodlands Road, Hamilton subject to standard conditions.

11.3 The Authority APPROVED:

WR-5764 Hamilton Warehouse Co. Water Right application for a domestic rainwater disposal borehole at 27 Woodlands Road, Hamilton subject to standard conditions.

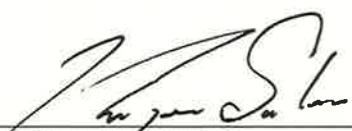
12. Applications for Water Rights (Reissue)

The Authority **APPROVED:**

the reissuance of Water Rights on the two-page printout, subject to standard conditions, except three indicated as withdrawn.

13. Date of the Next Meeting

The date of the next meeting was set for Tuesday, 27 September 2022.



CHAIRMAN

25 OCT. 2022

DATE

