

Response to the Review Report for the EIA for the Proposed “Villages of Colbeck” Development, St. Catherine, Jamaica.

Ref: 2007-14017-EP00004

The following response has been prepared by Dr. Ravidya Burrowes of Environmental Management Consultants (Caribbean) Ltd. in consultation with the BCR Industries Ltd. and the project development team. For ease of reference comments have been numbered and italicized. Responses are given immediately below in bold text.

1. *Page 9; Executive Summary: Some words seem to be missing from point 4.*
This should read “4. To ensure that specific negative impacts on the surface water quality from all aspects of construction are mitigated.”

2. *Page 19; Section 1.6.3.4: Process Flow: Although it has been indicated that the tertiary effluent will meet the Sewage Effluent Standards, a breakdown of each parameter (in terms of total Nitrogen, COD, BOD, TSS, Faecal Coliform, Residual Chlorine etc.) needs to be given.*
The tertiary Sewage Effluent shall have the following maximum concentrations:

Biological Oxygen Demand (BOD)	20 mg/l
Total Suspended Solids (TSS)	20 mg/l
Total Nitrogen	10 mg/l
Chemical Oxygen Demand (COD)	100 mg/l
Phosphates	4 mg/l
Faecal Coliform	200 MPN/100ml.
Residual Chlorine	1.5 mg/l

3. *Page 19; Section 1.6.3.4: Process Flow: Although another option for the discharge of the final effluent should be explored as discharging to the Clarendon Gully/Bowers River system may present public health concerns for downstream users in events where required standards are not met.*
Tertiary effluent discharged to the river system is unlikely to pose a major health risk as these standards are so designed. In addition, there are no persons that rely on water from this ephemeral stream downstream of the proposed outfall. The treatment plant will be provided with a standby power plant to maintain its operation making the incidence of effluent standards not being met quite remote. A more likely circumstance which could result in effluent standards failure is during weather events which are usually associated with significant flows in the gullies and therefore significant effluent dilution.
We suggest that some public education be done amongst persons living between the property and Bodles wetland to ensure that they are aware of the outfall.

4. *Page 21; Section 1.6.4 Drainage Plan: There is a concern that the realignment of the Bowers Gully will be done to facilitate only the development and may result in increased velocity of stormwater runoff which may result in flashflooding of downgradient sites. As such it has been recommended that the applicant conduct an assessment to determine the impact of this increased flow velocity and volumes on downgradient settlements and roadways. The capacity of downgradient infrastructure to accommodate these increased flows should also be assessed.*

We concur with the assessment of the possible effects of the realignment of the Bowers Gully and are currently carrying out assessments of flow and possible channel works to be implemented to mitigate against any negative impacts on the gully and its environs.

5. *Page 27; Section 1.8.3 Business Zone: The document makes reference to shops being offered for sale or rented in the commercial complex. Information should be provided regarding the nature of the businesses that would operate in the complex, and the extent to which the developers will ensure that these business activities are compatible.*

This is outlined in Section 1.5.3. pages 12-13. Normally businesses do not choose to operate in proximity to activities that are incompatible with their core operations, so the process of real estate selection should naturally ensure a high level of compatibility between businesses. Commercial areas can be dynamic, with land uses transitioning over time to the highest value use for that location. A very general business zoning plan for the CBD may be developed if the Agency deems it necessary for environmental permitting. The sales agreement for each entity will describe the types of activities that will be permitted for that operation. This description will subsequently be transcribed on the title when the transaction is being completed. On completion and during operation of the business operation, if a change is requested, the management of the commercial centre along with the owners of the other operations will have to sanction the change.

6. *Page 92; Figure 26, Proposed Design Modification: Stormwater Retention Pond on Property: The basis of the reshaping or modification of the existing pond to create a proposed stormwater retention pond to serve as a possible downstream flood mitigation measure, has not been presented. The capacity of the existing pond and the projected increase in runoff from the developed area should be determined to ensure that the reshaped pond is properly designed to accommodate the runoff.*

There was a recommendation in the EIA for the developers to consider retaining the existing pond (and possibly modifying its capacity) as an alternative to removing the pond completely. The developers are in agreement with the recommendation. As far as possible the existing perimeter of the pond will be retained, with its natural vegetation intact. In order to accommodate greater storm flows, the base of the pond may be dredged. This will therefore serve as an onsite detention basin, and will greatly reduce the risk of any downstream flooding arising from the proposed development. The engineer is in process of determining the excavation depth that is required for the pond given its area and the calculated storm run-offs after full build-out.

7. *Page 92; Figure 26, Proposed Design Modification: It has also been recommended that the natural channels are retained. If these natural channels are to be shifted then the developer needs to conduct the necessary assessment and provide the necessary evidence that the river/gully will not reclaim its natural course.*

The training of the gullies facilitates the orderly layout of the residential complexes located and general improvement of the land for the land use being proposed by the landowner. The drainage plan actually allows for an increased cross-sectional area for the gully, and is designed to ensure adequate capacity for peak flows without overtopping. As far as possible the natural gully course will be maintained.

Sections where the gully will be trained will be filled and graded to prevent flooding. The main channels through the development have the capacity to convey the design flows with freeboard capacity exceeding the requirements of the NWA and are lined to prevent scouring of the banks, therefore the flows will be confined within the proposed channels to the design capacities.

8. *Page 94; Section 5.3.1.4 Flood Potential in the Bowers Gully System: Manageability: The Assessment indicated that the maintenance of a clear channel should prevent any risk of the river overtopping (pp.93; Section 5.3.1.4), however, an indication needs to be made here as to how the developers intend to ensure that the river channel is maintained.*

Earth banks will be maintained in a vegetated state, and stabilized with gabions as necessary. Vegetation growth within the channels of service drains should be controlled as part of the regular service and maintenance of the drain normally carried out by the local municipal authorities.

9. *Page 97; Section 5.3.1.6 Changes to Water Quality: It was indicated that water imported to the site for the purposes of aquaculture and irrigation will run off into the river (Page 94; Section 5.3.1.4), however, clarification needs to be provided as to how the project proponent intends to mitigate the potential for irrigation water containing chemicals entering streams.*

The modern irrigation systems that can be a part of the proposed development do not include methods that flood areas that could result in leaching and conveying of chemicals away from irrigated locations.

10. *Page 97; Section 5.3.1.6 Changes to Water Quality: Additionally, it has been stated that increased nutrients in the wetlands from agricultural activities will promote more lush vegetative growth (pp.96, Secondary Effects) however, to what extent were other impacts due to high nutrient content considered, such as those negative impacts related to the growth of algae in these wetlands?*

“Lusher vegetative growth in the wetland areas” may well include the growth of algae in these areas. It is difficult to predict what species of vegetation will prove to be most opportunistic in this case. According to the Handbook of Constructed Wetlands¹ “Both vascular plants (the higher plants) and non-vascular plants (algae) are important in constructed wetlands. Photosynthesis by algae increases the dissolved oxygen content of the water which in turn affects nutrient and metal reactions”. Consequently, even algal growth is considered to be an important part of nutrient removal and oxygenation of the water.

11. *Page 97; Section 5.3.1.6 Changes to Water Quality: Manageability: An indication needs to be given as to the strategies to be used in mitigating the possibility of urban run-off containing oil and grease (from roadways, machine shops and other areas) from entering the gully system and subsequently the wetlands.*

The activities proposed and approved for the proposed development do not normally result in incidences of oil and grease on areas in quantities requiring any attention to negative impacts to the environment.

¹ Davis, L. A handbook of Constructed Wetlands. Volume 1. USDA-Natural Resources Conservation Service and the US Environmental Protection Agency –Region III. Available online at <http://www.epa.gov/owow/wetlands/pdf/hand.pdf>

It is proposed that as part of the sales or lease agreement, that purchasers or lessees in the commercial in the agree to install wastewater treatment systems if they are likely to conduct operations that would produce elevated oil and grease loads in run-offs or effluents from the premises. Therefore, restaurants will be required to observe the development standards in respect of grease traps for example.

Machine shops will be required to implement a wastewater reclamation system that will remove the oil from washwater and grease traps. Residential land uses are not expected to produce run-offs that are excessively loaded with oil and grease.

12. Page 99; Section 5.3.2.1 *Reduced Biomass and Habitat: Manageability: An indication needs to be made as to the efforts to be undertaken by the developer towards habitat restoration especially in areas where vegetation has been cleared. In addition, although it has been indicated that fast growing trees would be used to restore the vegetation cover (pp.97 Construction Phase), to what extent will habitat suitability be taken into account when selecting these trees?*

Land clearance is being done primarily to facilitate the proposed residential development. No habitat restoration is planned as the area will be filled, compacted and graded for housing. The affected area does not represent a unique or protected habitat and is located on private property. Suitable indigenous ornamental species will be used for landscaping and re-vegetation wherever possible. No attempt will be made to restore habitats as the whole area is being converted primarily to human habitat. The natural riparian woodland will be maintained as far as possible.

13. Page 102; Section 5.3.3.1 *Construction Nuisances: Manageability: Since wetting is to be used as a dust suppression technique, mention also needs to be made of measures to be put in place to prevent vehicles tracking mud onto major roadways.*

A stabilized construction exit² can be implemented. This is a temporary pad (15 m long by 6 m wide) consisting of coarse aggregate (2 to 3 inch clean stone) approximately 30 cm deep, located where traffic leaves a construction site and enters a public roadway. Maintenance may include replacement of stone. There could also be some provision at the central construction camp area for manual washing of tires, with a system whereby the wash water is routed to a settling basin.

14. Page 125; Section 7.3.2.2 *Material Management: A Chemical Management Plan detailing the plans for storage, use and disposal of chemicals during the site preparation and construction phases needs to be developed by the contractor as well.*

The developers agree to contractually bind the contractors to develop and implement a **Chemical Management Plan** as indicated above.

15. Page 125; Section 7.3.2.3 *Nuisance Minimization and Community Safety: An indication needs to be given as to the control measures which will be established so as to ensure that haulage contractors actually observe speed limit requirements.*

The developers agree to contractually bind the haulage contractors to observing safe driving practice and the speed limits, with a penalty fee for breaches. They will also be required to ensure that contact numbers are given at the back of the vehicle in case a complaint has to be made.

² <http://www.iowasudas.org/documents/7E-29-07.pdf>

16. Page 126; Section 7.3.2.5 Resource Conservation: *Although an indication has been made that the Jamaica National Heritage Trust (JNHT) would be contacted in the event that archaeological artifacts are unearthed during construction, it is being suggested that work also be halted at that particular site until the JNHT arrives to make an assessment. This is recommended so as to prevent possible loss or damage to those artifacts. Additionally, consultation should be held with the JNHT prior to any clearing of the site, so that they could undertake an assessment of the site regarding preservation of any artifacts or their safe removal to a suitable location.*

The developers agree to the requirement for halting of work in the event that artifacts are found until the JNHT arrives, provided they are willing to do so in a timely and reasonable manner. As an alternative, during the major earthworks period, the JNHT may wish to designate an observer who comes to the site every day to observe the operations, as it is likely that construction workers may not be able to tell the difference between garbage and artifacts.