

GENERAL COMMENTS

1. *Pages 9 and 10 of the document are missing.*

This is a typographical error: pages 9 and 10 are not actually missing. There were numbering errors in the assembling of the document. Figure 3 is on page 9 and Figure 4a and 4b should have been on pages 10a and 10b respectively. Under section 2.3.1 Site Development, the numbering for proposed works should have been labeled 1-5 and not 6-10 as is present in the document. The necessary corrections will be made.

2. *Urbanization of the Watershed. There are concerns that any urbanization of the watershed (sub watersheds 1, 2 and 3) will:*

- *Inevitably increase turbidity in the cove (the dolphins are sensitive to high turbidity) if appropriate measures are not taken to mitigate against this.*
- *Change the whole dynamics of the drainage system if debris floods or debris flows are mobilized in the channels of the watershed during storm events.*

The upper watershed of the Dolphin Cove drains the Cretaceous Hanover Shale, which is clay rich rock susceptible to excessive erosion, landslides and debris flows. Computations to estimate peak flows based purely on water floods would be erroneous leading to inappropriate flood/drainage measures. It is necessary to have this in mind if rapid urbanization is contemplated in the upper watershed.

The Smith Warner International drainage study (which was included in the EIA in full as Appendix 4) considered the growth of urbanization in the watershed and provided several modeled projections as well as possible developmental changes to protect Dolphin Cove from the effects of changes in the upstream watershed. Dolphin Cove shall ensure that it has adequate provision for storm water drainage entering its property, and that there are no obstructions to this drainage entering the sea.

The EIA consultants have since consulted with the consultants doing the EIA for NHT housing scheme planned for the lands on the other side of the highway. They have given assurances that the development team is cognizant of the sensitivities of Dolphin Cove and are making the appropriate design provisions. It shall be the responsibility of NEPA to ensure that developments permitted after Dolphin Cove is approved do not impact negatively on environmental quality at the site.

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3. *There are a few concerns with respect to the project that were not addressed in the document. The water quality monitoring programme should include oil and grease.*

This parameter will be included in the monitoring programme.

4. *What is the total area to be replanted with mangrove?*

The proposal calls for the removal of approximately half an acre of mangroves (2023 m²). Since a no net loss policy is being observed, at least half an acre of mangroves would be replanted.

5. *The effects of using grey water for the irrigation system should be carefully reviewed and there could be possible runoff into the marine environment.*

Grey water and site run-offs will be routed through the drainage swale, which is expected to allow vegetation uptake of nutrients and settling out of suspended solids before they enter the marine environment. Further, upon outfall to Bay 1, the calm conditions there and sea grass meadows are expected to further remove nutrients and suspended material, before entering the open marine environment outside of the bay.

6. *Conflict of interest. There is a concern about the obvious conflict of interest between the developers, Dolphin Cove, and their consulting firm Environmental Management Consultants (Caribbean) Ltd. Dr. Ravidya Burrowes is the senior member of the EIA consulting firm and the principal author of this EIA. She is also the daughter-in-law of two of the owners of Dolphin Cove Ltd. and Dolphin Cove's compliance officer. During her presentation at the public meeting held on July 25th 2007 in Lucea, Hanover, the conflict was quite apparent as she sometimes referred to the developers as "they" and other times as "we".*

1. Legislative Basis for the Applicant to undertake an EIA. Sections 9 and 10 of the Natural Resources Conservation Authority Act (1991) give the Authority power to request an EIA be conducted as part of a permit application. The applicant is responsible for preparing or contracting a consultant to prepare the document. This is very much the case in other countries. For example, in the United Kingdom¹ as in the case in most European Union countries, the developer is responsible for preparing the EIA and submitting along with it the planning application. It is clearly stated that the developer MAY choose to engage consultants for some or all of the work. There is no conflict of interest in the law.

¹ <http://www.communities.gov.uk/documents/planningandbuilding/pdf/157989>

The main advantages of having the developer be responsible for the EIA include: (a) they are responsible for the cost of it (b) the document represents a the level of commitment to environmental management.

2. **Precedence:** Dr. Burrowes has been accepted by NEPA for the past four years as the Compliance Advisor to Dolphin Cove, and she has represented them to NEPA and the NRCA on numerous occasions as a consultant. Dr. Burrowes prepared the application and the Terms of Reference, and there has been no objection on the basis of the familial connection.
3. **Expertise:** Dr. Burrowes is arguably the only environmental consultant in Jamaica with experience and expertise in the environmental impacts of dolphin enclosures, having monitored the Ocho Rios and Half Moon facilities for the past 4 years. She has also conducted extensive environmental research on the matter in connection with this subject for environmental reports submitted to the governments of both St. Kitts and the Cayman Islands on behalf of Dolphin Cove. No objections of conflicted interest were raised in either place either.

As a matter of record, the consultant wishes to advise that this job was accepted (as are many others) on the basis that the developers signs off only on the Project Description and the Environmental Management Plan. The integrity of the consultant to conduct the impact assessment without interference from the developer is therefore safeguarded to some extent.

We further wish to point out that having a third party do conduct an EIA is absolutely no guarantee of that there will be no conflict of interest or compromise of integrity, as the consultant is paid to get an application through the system in the interest of the applicant and not to serve the interests of the environment, the activists, the government or other stakeholders.

The suggestion that this or any EIA consultant has a “conflict of interest” is actually an attack on the integrity of the consultant, which is a particularly low blow as the particular reviewer is just using as a means of creating an issue for a project she is opposed to, not on any environmental grounds, but on the basis of animal rights. It is entirely inappropriate for the Authority to allow itself to continue to be used so as to further the non-environmental agendas of animal rights activists against developers wishing to build Jamaica.

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7. *Economic arguments. The EIA makes a range of economic arguments. The EIA states, “the dolphins that are imported from Cuba are not collected specifically for Dolphin Cove in Jamaica, and will be sold to other buyers if Dolphin Cove does not get an opportunity to purchase them. These other buyers compete directly with Jamaica in terms of attracting hotel guests and cruise ships with alternative swim with dolphin programmes being set up in several Caribbean islands that depend heavily on tourism.” The EIA also states that “if Jamaica does not continue to be viable and offer the range of tourism attractions offered in other Caribbean destinations, the country will not be positioned to compete effectively in the market.” Neither if these statements belong in an EIA. The purpose of an EIA is to identify potential environmental impacts and propose mitigation measures, where feasible.*

We agree that “the purpose of an EIA is to identify potential environmental impacts and propose mitigation measures, where feasible.” However, the EIA is a decision-making tool, which is designed to present environmental aspects within the context of the basic rationale for the project, which is most commercial enterprises is an economic one. It is important to outline the economics of the proposal so that that decision-makers can weigh the acceptability of environmental costs against wider societal benefits arising from the proposed economics. This is why many EIAs contain cost-benefit analyses. All developments can be expected to have some environmental impact, but this must be justified by a demonstrable benefit.

Decision-makers need to understand the implications of a decision that would be detrimental to Jamaica’s ability to effectively compete in the tourism market in the Caribbean. Failure to maintain our present position (by foster growth in the sector) would result in a major opportunity cost that would be felt in many areas of the human environment. The first principle of the Rio Declaration principles declares that “human beings are at the centre of concerns for sustainable development...” and as such the development process and its associated activities and impacts cannot be considered without due consideration for economic development. The Human Environment is recognized by NEPA² as a critical area of concern in the EIA, and consideration of livelihoods is a fundamental aspect to be explored in any EIA.

² NEPA Guidelines for Conducting Environmental Impact Assessments

8. *Yet the EIA contains this extraordinary statement: “The EIA is not required to return a judgment on the morality or even sustainability of the practice of collecting dolphins from the wild.” The capture of dolphins from the wild potentially affects the health of wild populations and the EIA must deal with this aspect of the captive trade of dolphins for public display. These are animals protected under the Jamaican Wildlife Protection Act and CITES.*

We maintain the validity of the not extraordinary statement. The developers are not seeking permission from the NRCA to remove dolphins from the wild, and are not proposing anything that is in violation of the Wildlife Protection Act or CITES.

9. *Analysis of Alternatives. The Analysis of Alternatives only considered and evaluated changes to the existing land use. There was no analysis of the alternatives with respect to the scale of the project, the layout of the project site or the general design of the project. There was no discussion about smaller ecotourism projects that would have less of an impact on the environment, for e.g. a similar project as the one discussed in the EIA without captive dolphins and the resulting dredging. The impacts would not be as great if they focused solely on tours through the mangroves, kayaking and other non-motorized water sports.*

The purpose of the analysis of alternatives is to evaluate FEASIBLE options to the project that could be reasonably considered as part of the decision-making process. It is ridiculous to suggest that Dolphin Cove should undertake an eco-tourism project that does not involve dolphins. A smaller scale project is not viable given the implementation costs. In the interest of economies of scale, the developers have constructed the facilities for 12 dolphins, but will introduce six dolphins initially. If there is a market basis for importing an additional six, a separate application will be done (page 21). This “over-design” approach is of benefit to the dolphins in terms of exceeding their space requirements, and associated nutrient loading effects. If the reviewer has an alternative feasible design in respect of the layout or design of the facility, DCL would welcome their input. This design has had the inputs of a range of specialists who believe it is the best design for the site and the intended purpose.

10. *Mitigation Measures. There were a number of “Moderate” negative significant impacts identified for the proposed development; however, the mitigation measures for these impacts were not adequately addressed in the document.*

We categorically disagree with this statement, and would argue from the following comments raised by this reviewer, that they did not read the document properly or read it with an agenda so that they were unable to maintain any level of objectivity in their review process.

11. *The problem with runoff caused by vegetation clearance and fugitive dust has not been dealt with.*

This statement is not valid. The reviewer may be referred to the following pages: 107, 109, 117-118, and 146 (Table 41).

12. *Monitoring of sea grass, mangrove and reforestation on an annual basis is not adequate.*

We will be guided by the recommendations of the authority on this matter. It is proposed that initially there should be monthly monitoring (for the first 3 month), then quarterly (for the next 3 quarters), and once the viability of the communities is established, we propose annual monitoring reports for the next five years.

13. *Coastal Ecosystem Impacts. During the construction phase of the proposed development sea grass beds, a mangrove stand and some corals will be severely impacted. The project also includes beach nourishment activities. Mangrove replanting is suggested as a mitigation measure for the 190m³ stand of mangroves that will be removed from the Dolphin Beach area.*

The EIA (page 11, bullet iii under the heading “Excavation/Dredging”) indicates that ½ acre of mangroves will be affected. The 190 m³ refers to the fine organic sediments underlying the mangroves that the developers are proposing to remove to make Bay 2 more suitable for the purposes of the attraction.

14. *The exact methodology for the mangrove replanting process was not clearly articulated in the document and more information is required. Similarly, the proposed methodology for sea grass and coral relocation was not sufficiently addressed in the document. Further information is required.*

The proposed approaches to mangrove, sea grass and coral relocation was outline in Section 8.4. This section states that the EIA expects that more detailed plans for the relocations will be done post-permit. The reasons for this were that:

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1. We have received a quotation from Mr. Carlton Campbell to undertake the necessary plans in the amount of \$320,000. The intention to contract a specialist to prepare the exact methodology was given on page 147 (bullet 1).

2. We anticipated that NEPA would have preferred to review the baseline data and project specifications before working with the developer on formulating an appropriate scope of works for the requisite relocation plan. The intention here was to collaborate with Agency in developing the plan, and have the benefit of the Agency's experience on other project, particularly the long-term determinations of best practices. We noted that many of the bays in this region apparently provide optimal conditions for sea grasses to thrive. Where they are not found in this region are places where they could not naturally colonize because of physical restrictions or unsuitability. Therefore it follows that any areas in this region that do not presently have the thick lush sea grasses meadows (as the climax community) are fundamentally unsuited to their success there. This begs the question of a suitable relocation site within a reasonable distance from the site. The lack of success in sea grass replant exercises in Jamaica is noted in NEPA's review report.

In lieu of a strategy of sea grass transplantation (which is not likely to be successful), it is suggested that DCL:

- Transplants viable mats of sea grasses to Bay 1, which is intended to serve as a sea grass preserve.
- Does not prevent the re-colonization of sea grass in the dolphin enclosure after dredging is completed.

The intention to seek the Agency's input was given on page 147 (bullet 1). In the light of these considerations, we would like to submit to NEPA the outlined scope of works submitted by Mr. Campbell for his services, for the Agency's comment and approval. The following is taken from the quotation from Mr. Campbell:

“The project will entail snorkelling, diving (if necessary), limited sediment determination, currents and water quality measurements. The outputs will be a report outlining our findings and maps depicting existing sea grass beds and possible replanting sites (if any). The maps will detail the areas (coverage) of sea grass and corals within the proposed footprint of the groynes and development areas, and potential open spaces for replanting. Additionally, this report will have the status of the existing sea grass beds (health and viability)

proposed method of sea grass and coral removal and replanting, removal of other fauna and flora, harvesting and replanting periodicity and proposed monitoring programme during the removal, replanting and port replanting phases.”

As DCL will be committing these funds, it is not unreasonable to want to ensure that the plan is exactly what the agency requires. We are also asking for the Agency’s approval of the basic approach outlined in Section 8.4.

15. Heritage Resources. A preliminary archaeological appraisal of the site has revealed a Taíno site in Bay 3. Based on the archaeological evidence available to us at this time, the development will impact negatively on the site. Before the JNHT can give a definite approval on the proposed development an archaeological evaluation will have to be conducted in Bay 3 to identify the character and boundaries of the Taíno site.

DCL agrees to facilitate and support any proposed archaeological evaluations deemed necessary by the JNHT anywhere on the site. They further propose to establish an onsite conservation display unit to increase public awareness of the any artifacts found on site, and the general heritage resources of Hanover.

SPECIFIC COMMENTS

1. Section 2.3.1.1 Coastal Modification, Earthworks and Landscaping. Page 6 The drainage diversion will require approval from the relevant Authority.

DCL awaits the review comments of the relevant authority on the proposed drainage diversion, and will make any recommended modifications of the drainage plan and application submittals required to secure required approvals.

2. There should be no direct freshwater or flow into the dolphin lagoon.

This is the most fundamental guiding principle at the core of the entire site design. The drainage swale diversion, the confining berm, the relocation of the mangroves, the siting of the parking lot are all measures taken to prevent freshwater from entering bay 2. Freshwater is being diverted to an earthen swale which is designed to slow flows and enhance infiltration, settlement of suspended solids and promote nutrient uptake before exiting to Bay 1.

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3. *Also, the current flow should be away from the lagoon. (Need to ensure that the current flow direction is correctly stated in document.)*

The Coastal Engineering Design Report prepared by Smith Warner International Ltd., which has been submitted to NEPA, indicates the basic modeling of currents under existing and proposed scenarios. It is emphasized that the opening of the gap between Bay 2 and Bay 3, and the re-configuration of the shoreline in Bay 2 are specifically designed to optimize flows for flushing of the lagoons. The quality of water in the lagoon will also be controlled by the ratio of dolphins to water volume (a dilution/carrying capacity factor – see pages 6 -7), the tidal exchanges and nutrient uptake by sea grasses in the lagoon over time.

4. *Page 7 The National Standards and Guidelines for Operating Dolphin Facilities in Jamaica is an interim document.*

These interim standards and guidelines (S & Gs) for a legally binding Appendix to the operating license issued in 1999 to Dolphin Cove, and have been in use since that time. They were largely based on the APHIS Regulations “Animal Welfare Act: Subpart E Specifications for the Humane Handling, Care, Treatment and Transportation of Marine Mammals”, which are presently suspended in the US. A revision of the Jamaican (S & Gs) were given to DCL for review and comment by NEPA in September 2004. A detailed response to the revision was submitted by DCL in November 2004. The Agency’s representatives met with DCL lawyers and technical consultants in February 2005 to discuss the matters raised in the review, and DCL’s summary of that meeting was submitted on March 2005, reiterating concerns.

Version 3 of the S & Gs were issued on June 13, 2005, but failed to take into consideration all of the matters discussed with the operators. Discussion with the Agency continued, as documented in our letters of November 2005, regarding participant ratios. Requested information on the participant ratios used in the US and other similar programmes, descriptions of the programmes, as well as the Association of Marine Mammal Parks and Aquaria guidelines (which are now in use in the US) have been provided to the NEPA for the purpose of preparing S & Gs that are in line with international industry standards. DCL awaits an informed and finalized version of the S & Gs, and is prepared to provide any technical assistance required on the matter to the Agency.

5. *Page 7 The lagoon is to be excavated to a depth of 3 meters to ensure 2.55 meters depth at low tide. The interim dolphin facilities guidelines require an average depth of at least 2.74 meters for structures not subjected to tidal action. How will the effects of siltation be compensated for?*

The proposed excavation will be to 3 metres below the low tide datum, so that the required depth for the dolphins is actually exceeded at all times. Siltation in the lagoon is primarily controlled by the prevention of run-offs to the bay, and the diversion of the freshwater outfall that now discharges to the bay. The removal of the mangrove area and drainage are in themselves mitigations of this effect. The design depth of the bay will be maintained, and maintenance dredging conducted (with NEPA's approval) if it becomes necessary in the future.

6. *Page 7 What is the length of the opening in both bay 2 and 3?*

The mouth of Bay 2 is 77 m wide. The mouth of Bay 3 is 57.5 m wide. The proposed opening between these bays is shown in Figure 3 a (SWIL – Proposed Works Cross Sections), and is 25.4 m wide.

7. *Page 11 Need to ensure that the calculations provided for the fill and beach nourishment is correct.*

The calculations have been confirmed as being correct.

8. *Page 14 The EIA should indicate if dredged material can be used.*

As stated in the EIA pages 14-15, 7a. “Beneficial use of the dredge spoil will be considered (e.g. if suitable sand for the creation of the beach is found it will be utilized). If dredged material cannot be used beneficially, it will be transported to the nearest dumpsite by an approved contractor for appropriate disposal.” Preliminary investigations on the quality of sediments in the area confirm that they are not contaminated (page 110), and it is expected the dredged and excavated material will be required for fill on site.

9. *If not the name of the approved dumpsite should be provided.*

Any unacceptable material will be taken to the NSMA landfill in Retirement, St. James

10. Page 15 *The names of viable coral species and sea grass as well as the size for relocation should be provided and the designated transplantation site identified in the EIA.*

See response to General Comment #14. All viable specimens will be replanted; for corals this usually not a particular species, but an average diameter of 5 cm.

11. Page 16 *The possible sand sources and quantity for beach nourishment have not been identified in the document.*

If there are insufficient quantities offshore that can be feasibly pumped to shore, sedimentologically and aesthetically suitable sand will be purchased from either quarries or sand-exporting countries (Turks and Caicos or Barbuda). An application will be submitted to NEPA in respect of the proposal for sand sourcing, further to acquisition of the a permit for the overall facility.

12. Section 2.3.1.2 Structures. Page 19 *A description of the Stingray's enclosure should be provided and included information as to the care these animals.*

The stingray enclosure will have a sand bottom and varied depth of 1-3 metres. Animal care will be consistent per DCL's animal husbandry operational guidelines.

13. Page 20 *No provision for building space for the dolphin kitchen/storage area for food and preparation has been provided.*

This is incorrect. See page 8, Figure 2 for a graphic presentation on the proposed built structures, which includes the dolphin kitchen/storage area for food. Section 2.3.1.2, page 19, No. 2, for additional information on the proposed facility.

14. Page 21 *Project Implementation Schedule and Activities: A more detailed implementation schedule needs to be submitted to outline phases of construction including the dolphin and stingray enclosure and other structures planned for the site.*

See pages 13-17 and page 21 for a very comprehensive outline of the construction implementation schedule.

15. *Additionally, the dolphins/stingrays should not be introduced to the site until construction adjacent to the enclosures is completed.*

See page 21. Bullet #2.

16. Page 22 *The number of countries in the region where dolphins are available should clearly be stated and the scientific data provided on their population size/and sex distribution. Cuba and the United States are named as regions where dolphins are available, the Agency, however, is not aware of the United States as a source for dolphins for attractions.*

The United States is a supplier of dolphins to the region and has provided dolphins to the Atlantis facility in the Bahamas. DCL will explore all economically feasible options for the purchasing of dolphins for attractions, provided that suppliers are fully compliant with the requirements of CITES.

17. Section 2.3.1.3 *Operational Phase Footprint. Page 23-24 . The number of Stingrays, the sex ratio and the location where the Stingrays will be collected should be provided.*

DCL will collect stingrays from different areas of the island (more likely Negril, Ocho Rios and Montego Bay). A random sample of males and females will be collected. The total number of stingrays will be not more than 30 individuals. Males and females of all sizes will be collected. The collection method involves the use of a soft net, which will be baited then lifted once a stingray has entered. Dolphin Cove will obtain the necessary license from the Fisheries Department for collection of specimens.

18. *The size of Bay 2 should be provided.*

The area to be deepened (dredge footprint) is 2000 m². This represents an estimated 40% of the total area of Bay 2, given an estimated total area of 2000 m² or 1.24 sea acres.

19. *The effects of de-barbing the Stingrays should be ascertained. Will these Stingrays be caged or allowed to be free roaming and in cases of a hurricane how will these animals be protected? If the stingrays are going to be free roaming then their barbs are not to be removed however if removed, the applicant needs to provide the protective measures to be taken for the Stingrays in case of a Hurricane or water quality changes. The barbs are the protection for the Stingrays in the wild.*

The stingrays will be allowed to free roam in an open marine habitat enclosure. In the event of a hurricane or changes in water quality the stingrays will be moved to a salinated swimming pool. See page 24 (No. 3) and page 133. Stingrays will be de-barbed for the safety of visitors. This will be done by clipping the barb of each stingray (this will be done each time the barbs grow back). Scientists have asserted that clipping the barb of a stingray is painless. In fact stingrays naturally shed their

barbs each year. In the event that the stingrays are to be released back into the wild, this will be done after their barbs are re-grown. Stingrays primary defense mechanism is camouflage and avoidance behavior³. Spines are only used for defense and not predation. Spines are expected to re-grow if the animals escape into the wild.

20. *This project is a Nature Tourism venture.*

Okay.

21. *Section 4.2.9 Coastal Water Quality. Water samples collected to determine the coastal water quality at the site were taken during the wet and dry seasons. However, only one set of water samples were taken for each season and these samples were taken within a month of each other (December 7, 2006 for the wet season and January 31, 2007 for the dry season). This will not accurately represent the changes in the coastal water quality that may occur over the course of a year, particularly since the samples were collected over only two days.*

Discussions with Mr. Dillard Knight prior to finalizing the Terms of References concluded that this was adequate for the purposes of the rapid assessment required for the EIA. It is understood by the developer and the regulatory authorities that on-going coastal water quality monitoring would be a necessary part of operational permitting conditions.

22. *Also samples to determine Total Nitrogen and Phosphorous were only analyzed in January, during the dry season. Samples taken during the wet season would quite likely have shown other levels*

Again, this was discussed with Mr. Dillard Knight prior to finalizing the Terms of Reference, and it was agreed that this was adequate for the purposes of the rapid assessment required for the EIA, provided that a long-term monitoring planned was developed.

23. *4.2.9.1 BOD. Page 62 The control limit here referred to (0.8 to 1.7 mg/L) as the limit for fresh water is not used as reference for marine water. The marine standard currently being used is 0.57 to 1.16mg/L. It means therefore that the points (bay 3, a) wet and (offshore W, b) dry would be out of the specified limits for this parameter. This further invalidates bullet two.*

³ <http://www.news.com.au/couriermail/story/0,23739,20365800-5008740,00.html>

The freshwater BOD criteria on page 62 should be replaced with the saltwater criteria. As such, Bullet #2 is incorrect (Bay wet season 3a and offshore West dry season b exceed this value) and will be modified to read “all mean concentrations of BOD were within NRCA standards.”

24. Section 4.2.9.4 Nutrients. Page 64. Reference is again made to the fresh water standard which is not suited for assessing marine water quality. NEPA currently uses the marine standard for coral reef health as a control limit for both nitrate and phosphate; these values are 0.0619mg/L and 0.009mg/L respectively. Phosphate values of 0.1mg/L would therefore not meet the standard.

This is a mistake in the draft EIA. The statements made on page 64, “phosphate concentrations were below 0.1 mg/l, which is significantly lower than the NRCA criteria for freshwater (0.8 mg/l). These data suggest very little contamination from nutrient sources” will be edited to omit the underlined clauses.

25. The report did not indicate the detection limit used for the parameters measured. Of interest is the fact that all nitrate values were below this detection limit. Further, with such low levels of nitrate it is questionable how the total nitrogen values are as high as those recorded. NEPA does not currently have a standard for total N and P in marine water.

The detection limit used for the parameters measured were (i) Nitrates 0.014 mg/l and (ii) Phosphates 0.003 mg/l. This was left out in error. Changes will be made accordingly. Operational-phase monitoring of Total N and Total P is recommended.

26. Section 4.2.9.5 Oil and Grease. Page 65. Oil and grease, as noted, is a problem. The reasons for the very elevated readings of oil and grease should be investigated, as it will impact on the marine species and users of the proposed recreational beach. It should not only be left to the pollution possibly being caused by fishing vessels. Efforts should be made to identify the sources and eliminate the potential for contamination of the dolphin bay especially in the event of accidental spill or heavy rainfall. Mitigation measures should also be outlined.

We agree that there is a need not only for investigation but for monitoring. If the investigations show that there are indeed elevated readings of oil and grease, then monitoring will be undertaken to determine if the problem is persist over periods of weeks (or if detected levels are sustained over a period of time). There is no present land use or sources that could explain this. The Emergency Response Plan (post-permit documentation) will contain an oil spill response plan. No motorized vessels

will be in use at the attraction, and the bays will be buoyed off from approaching vessels.

27. *Section 4.3.1 Terrestrial Eco-systems. 4.3.1.1 Vegetation Cover. Page 67 First paragraph, line 4: the sentence “The three species of mangrove identified at the site are protected.” is incorrect as the species of mangrove are not protected but as part of a wetland ecosystem it is protected.*

While it maybe erroneous to say that each species is protected, the statement is true if reworded to say that as part of the mangrove wetland system they are protected. This is really a matter of semantics.

28. *On a site visit, two plant species were identified that are not listed in Table 17. These are Capparis cynophallophora (Jamaica Caper) and Cordia alba (White manjack)*

The species list is not exhaustive beyond practical means: species that were not observed were not included in the list, and the species noted by NEPA staff could well have been missed. One species of Cordia (*Cordia laevigata*) was in fact included in Table 17. Neither of these is rare or protected.

29. *Section 4.3.1.3 Other Fauna. Page 71 The consultant should indicate whether the area is used by any nocturnal animals such as bats and marine animals such as sea turtles and the West Indian Manatee.*

There was no evidence to suggest the presence of nocturnal animals (such as bats) and their typical habitats were absent.

30. *Page 71 No mention was made at all about whether or not this site is a marine turtle nesting beach. Section 4.3.2.1 of the EIA states that there was no evidence of turtles among the sea grass beds, unlike the adjoining Fiesta property. However, given that turtles are seen at that property and the proposed Dolphin Cove site has extensive sea grass beds, it is likely that turtles may be present and the site used as a nesting beach. Further studies need to be done in order to determine if this is the case and what effect this development may have on them.*

The Fiesta site is not adjoining the property. Due to the rockiness of most of the shoreline turtle nesting at this site would not be possible.

31. *Section 4.3.2 Marine eco-systems. A marine survey was conducted during the month of December 2006. No mention, however, was made of the total number of days spent surveying the area. There appears to be no consistency in the way the three bays were assessed. Each bay was monitored using a different method with no explanation given. It is recommended that all the bays should have been assessed using the same methodology and that the area be assessed over a longer time period to capture seasonal changes.*

The small size of the three bays did not warrant extensive assessment over a longer time period to capture seasonal changes. The entire area was dived and surveyed in order to capture existing conditions and determine suitable sampling sites. The marine survey was completed in two days, and the methodology used was consistent for each bay. Quadrat sampling methods were the same in all bays, as is indicated in figure 30, pg. 72. The same number of quadrants were done, but in different locations due to existing rocky and shallow conditions within bay 2. Transects were undertaken in areas that were not shallow and rocky, in order to have a more detailed account of the existing marine life in the bays.

32. *Very few fish species were noted during the assessment. Given the eco-systems present in the area (mangroves and sea grass beds) the area is probably a fish nursery site, making this assessment difficult to believe. This is further compounded by the EIA's statement that the majority of the fish seen were juveniles. Any development at this site may adversely affect the fisheries in this area.*

It is a well-documented (see page 84 of the EIA) that the artisanal fisheries of northern Jamaica are severely depleted. According to the FAO (Fisheries Country Profile), "the nearshore reef resources are since many years in a state of severe over-exploitation, in particular on the North shelf. Fishing is an employment of the last resort, and solving the overfishing problem is therefore more a sociological problem than a fisheries management problem." Development of the site, conservation of Bay 1, and use of marine areas for alternatives to artisanal fishing will positively affect the fisheries resources in this area.

33. *During the time the bays were assessed, the water in the bays "displayed evidence of storm water input in the form of brown and murky low visibility water" (pg. 77 section 4.3.22). This may explain the low number of fish seen in the area. The conducting of a marine assessment of this area during a time when the water was "brown and murky" would not give an accurate depiction of what may be found at the site. Several additional surveys should have been done, not only in the wet season but at other times of the year so that the area and the species present could be properly identified.*

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See page 77. “At the time of the assessment both bays 1 and 2 displayed evidence of storm water input in the form of brown and murky low visibility water. This was observed mainly in the areas closest to the mangrove forests but dissipated closer to the mouth of the bays.” The brown murky water was not regarded as a particularly seasonal variable as it is likely to be due to the presence of fine organic sediments which can become suspended by surface flows, or even fish or crabs. The level of investigation of the species present in the bay was consistent with the level of concern that they would be impacted by the proposed project. It must be emphasized that this is a marine park, that has the objective of promoting and preserving marine biodiversity. Although the initial construction activities may result in fleeing behavior in fish species, nothing will be done to prevent their return after the construction is complete.

34. *The highest faunal abundance was found in Bay 1. It is in this Bay that the storm water run off will be diverted to, should the proposed development be allowed. There is no mention of the potential impacts on the faunal abundance found in Bay 1 should it experience an increase in run off.*

Run-offs into Bay 1 are expected to be very limited as the swale is being designed to slow run-off to promote settlement of fines and infiltration of water, as well as nutrient uptake by the vegetation within the swale and along its banks.

35. *Section 4.3.2.1 Benthic Cover. Page 73 Sea grass Beds: the extensive sea grass beds in all three bays was noted (2nd para., line 1) however, no mention was made as to whether it is being utilized by the West Indian Manatee.*

There are no anecdotal or historic reports or ecological evidence of this species in this area.

36. *Section 4.3.2.2 Marine Fauna. Page 76 Second paragraph, second to last line: The absence of invasive species is mentioned and should also be provided for the terrestrial review of the biological resources.*

See page 72: “Presently the three systems described are in equilibrium as there are no obvious sources of disturbance to the system.” This suggests that there have been no serious incidence of terrestrial invasive species.

37. *Section 4.4.8 Traffic. Page 92 Traffic counts were conducted over a period of six days, between the 24th and the 30th of January, 2007. However, these traffic counts did not provide an accurate estimate of the amount of traffic experienced near the site. By the EIA consultants own admission, these counts were taken at a time of abnormally high traffic levels, since the Air Jamaica Jazz and Blues Festival was being held in Montego Bay and a cruise ship was also in port. No further studies were done to show the differences, if any, in the level of traffic experienced within the area at other times of the year.*

The data were sourced from the latest National Works Agency. The traffic flows that were measured represent peak conditions, and give a very good idea of the maximum flows that must be taken into consideration in the planning process.

38. *Section 4.4.9 Heritage Resources. Page 93 The parish of Hanover is a site of importance in Jamaica history, as such, the EIA should specifically state whether the Jamaica National Heritage Trust has indicated that the project site may have historical/cultural items.*

See General Comment 15.

39. *Section 6.3 Environmental Impacts; 6.3.1 Site development and construction phase. There are several questions with respect to the impacts of the proposed construction works. First, the EIA lacks a detailed assessment of the potential impacts that the proposed dredging/excavations could cause on the coastal eco-systems. The project proposes excavations of the headland between Bays 2 and 3 to enhance circulation and flushing of Bay 2. This excavation would involve lowering 200 m² of the headland to a depth of -0.5, and lowering 485 m² to a depth of -1.0 m. It is estimated that 1270 m³ of excavated rock will be produced. This would include the removal of ~3152 m² of sea grass beds. The potential environmental effects of dredging are generally two-fold, firstly as a result of the dredging process itself and secondly, as a result of the disposal of the dredged material.*

Generally, the potential impacts of dredging and disposal can be summarized as follows:

- Removal of subtidal benthic species and communities.*
- Short term increases in the level of suspended sediment can give rise to changes in water quality which could affect marine flora and fauna negatively, such as increased turbidity, the possible release of organic matter and nutrients.*
- Settlement of these suspended sediments can result in the smothering or blanketing of subtidal communities and/or adjacent intertidal communities.*

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See pages 109-111. These effects are not likely if there is suitable management in place.

40. *In addition to the environmental effects that may occur as a direct result of dredging, the EIA failed to assess the environmental effects that may occur as a result of the physical changes to the bathymetry and hydrodynamic processes caused by dredging. These changes can be summarized as follows:*

- *Alterations to coastal or estuary morphology, for example, alteration of sediment pathways and changes to siltation patterns, which may affect coastal habitats and species in addition to marine species.*
- *Alterations to water currents and wave climates, which might affect navigation and conservation interests.*
- *Reduction or improvement of water quality.*

See pages 111-2. The design of the facility has taken all of these parameters into consideration, and a design-based impact minimization approach was used. This is why these are not necessarily discussed as impact of the proposed design, the design basis of which is outlined on pages 6-7

41. *Secondly the EIA failed to do a detailed assessment of the potential changes caused by changes to shoreline configuration in Bay 2. Dredging and excavation can initiate or accelerate land loss by locally enhancing erosive forces, increasing water levels, and decreasing sediment supply. These extraction activities may also indirectly cause additional land losses by changing water circulation patterns, decreasing sediment supply, and decreasing water depths.*

The proposed changes in the configuration of Bay 2 include the replacement of the soft muddy irregular shoreline with sand. The EIA failed to assess the impact that changing these conditions would have on the coastal eco-system by changing wave refraction patterns and depleting sand supplies in adjacent beaches. Replacing the muddy shoreline with sand will have impacts on the sediment budget in the area. The changes in the sediment budget need to be addressed in the EIA.

See pages 112-3. The engineering design of the facility has taken these factors into account. The reviewer's comments (underlined) are either not relevant or real issues in this project, or are highly speculative and generic with no engineering or scientific basis.

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42. *Thirdly, the EIA provides misleading information about the disposal of treated sewage. In several places, the developer states sewage would be evaporated, rather than released to the environment. The EIA states that: “land based sources of pollution to the marine environment should be strictly controlled to minimize effects on the bays on the property. Consequently, there shall be no discharge of treated sewage effluent into the marine environment. Treated sewage effluent shall be evaporated away using a tile field.” It also mentions that: “This effluent will be chlorinated, filtered and evaporated (tile field) out as the developers do not wish to have any discharge of effluents to the marine environment.”*

This information is misleading. A tile field is not an evaporation basin, which would be impractical for this area. Considering the high rainfall: over 1000 mm per year. Rather, inspection of the Schematic Diagrams (Schematic 3 and Schematic 4) for the tile field in Appendix reveals that it is nothing more than a drain field in which treated effluent would seep down into the surrounding soil and, ultimately the marine environment.

Since the Sewage Treatment Plant (STP) that the developer plans to install – the Clearstream Wastewater Treatment System- has no capacity to remove nutrients (a trait shared by all extended aeration package sewage treatment plant), then all of the nutrients in the sewage will ultimately enter marine waters in the vicinity of the development.

The system will have to be approved by the Environmental Health Unit, and any informed design modifications that are required by the EHU will be implemented, further to the presentation requested by them (see Specific Comment #53 below). It is hoped that nutrient loads in the throughflows from the tile-field will be taken up by vegetation (both aquatic and terrestrial) before entering the open marine environment outside of the bay. This approach is preferred to a direct end-of-pipe outfall to the open marine environment, which is typically adopted by many coastally based developments.

43. *The EIA also envisions the discharge of untreated run off from the parking lot. The proposed project would include a 1500 m² parking lot facility. Parking lots are notorious for being sources of contaminated storm water runoff as these paved areas collect motor oil and other automotive fluids that seep from parked cars. Despite this, the design of the proposed facility lacks any components for treating storm water runoff from the parking lot of the proposed facility. Oil and grease and other pollutants in automotive fluids would simply be carried away in storm water runoff via the culverts and drainage swales that are proposed for the site.*

All drainage from the site, including parking lots and buildings (bay 2) will be routed to a drainage swale (soak away). If the reviewer could suggest any operation in Jamaica that has been required to treat parking lot run-offs, DCL would be receptive to adopting the system they use.

44. *Mitigation Measures Under section 6, the Assessment of Impacts, the EIA consultant does not mention how any of the proposed impacts will be mitigated. No mitigation plans are given. Each potential impact is assessed, but there is no discussion about how to reduce the impacts. For example, the EIA lacks information and analysis of the potential environmental impact of maintenance activities. The EIA has no information about strategies to prevent environmental impacts during the operation phase. Leaking toilets, unnecessary use of chemicals, excessive solid waste, poor staff participation in environmental programs, and poor monitoring of utilities can cause environmental impacts.*

Management options for every single negative impact are presented, under the heading of “manageability”. A mitigation schedule is given on page 146 as Section 8.3, inclusive of construction and operation phases.

- **Minimization of the impacts of maintenance activities in the dolphin attraction revolve around control of site run-offs, and were therefore not separately discussed.**
- **“Leaking toilets, unnecessary use of chemicals, excessive solid waste” are generally not consistent with the aesthetics of a marine-based tourism attraction, and are not expected to occur.**
- **The environmental impact of “poor staff participation in environmental programs” is a relatively new concept that requires scientific substantiation from the EIA literature before it is accepted as valid; the importance contractor performance has been recognized (page 145) in respect to construction impacts.**
- **The environmental impact of “poor monitoring of utilities” also requires some level of scientific substantiation.**

45. *The assessment of the impact to costal [sic] water quality on page 109 of the EIA (section 6.2.1.3) concludes that the proposed project would have only a moderate impact on coastal water quality. However, this assessment is based on the analysis of only a single pollutant: total suspended solids (TSS). It is quite likely dolphin excreta will cause increases in fecal coliform levels and nutrients. As described above, the proposed project would also cause the release to coastal waters of nutrients (via the Sewage Treatment Pant’s drain filed) and oil and grease (via storm water runoff from the parking lot).*

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An assessment of the proposed project's impact on coastal water quality must include these water quality parameters.

See page 131-2. (Operational Phase Negative Impacts)

46. *The most glaring example of the absence of mitigation measures is the lack of detailed plans for the removal of the mangrove forests and the sea grass beds. Throughout the document, it is velar that the proposed development includes the clearing of mangrove forests and sea grass beds. While the EIA indicates that mangrove seedlings and sea grass will be replanted, they do not indicate how or where they will be replanted. So far, sea grass replanting efforts have not met with consistent success in Jamaica. The EIA must include full details of coral reef relocation and sea grass replanting plans so their likely success can be evaluated.*

See Reply to General Comment 14.

47. *Section 6.3.1.13 Importation of dolphins in Jamaica. Page 123 It is noted that there is a discussion on the dolphins to be imported for the facility however no discussion is included on the Stingray population size, collection site and method of collection, gender ratio and age of animals.*

See Reply to Specific Comment 17 above.

48. *Page 124 The EIA stated that CITES has two requirements: that the imported specimens are not used in a manner that threatens their survival, and that the applicant can adequately house the specimens (in accordance with existing standards and guidelines). With regard to point 1, the requirement is not that individuals (specimens) in trade should not be used in a manner that threatens their individual survival, but that the trade in the individuals does not threaten the survival of the species. Article IV of the treaty, with respect to Appendix II species (in which bottlenose dolphins are listed), states that "a Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of the species".*

While we agree with the reviewer's observation of the CITES regulations, the importation of 12 specimens of *Tursiops truncatus* into Jamaica cannot be deemed under any circumstances to be detrimental to the survival of the species, which has a wide global distribution, and is not listed as endangered.

As stated in the EIA, CITES does not make any provision for animal rights, and activists should not be allowed to use CITES to subvert the EIA process. In fact the Secretariat cautions about "allegations and interpretations of the Convention that are

clearly inaccurate and sometimes misleading” in the most recent statement by CITES in respect of the trade in live dolphins (reproduced below).

Please note that exportation from either the US or Cuba is not under investigation.

49. Page 125 Mortalities. This section of the EIA states: “These dolphins represent major investments and are given the best available living environment, care and veterinary treatment. However, dolphins, like other living things have finite life spans (~ 50 years), and get old or sick. There is no scientifically valid way to predict the turn over of dolphins”. However, actuarial tables can be used to determine the risk of mortality as a function of age and other factors.

As in the case of much of JET’s review report, this is typical example of the tactic of activists to use the minutia of legitimate science, convention or procedure to detract from a rational perspective. The fact remains that the developers will invest heavily in the care of these animals, as their business depends on their health and well-being.

50. Page 126. The developers also plan on creating a dry limestone forest, sourcing trees from coastal areas in St. Ann and Trelawny. A tropical dry limestone forest, “is a unique eco-system that you find [in] a dense forest of low height near the coast and of medium height (app. 10 m) further inland which grows on no surface soil”. A dry limestone forest is the result of millions of years of evolutionary processes. Creation and re-creation of this complexity are not yet feasible. The nearest biologists have gotten to it is in India, but even those attempts, as rich and diverse as they were, are only a small part of the real thing. It is also extremely disturbing to read that trees will be taken from other areas in St. Ann and Trelawny, there by likely resulting in forest degradation in those areas.

What is the source of the quotation underlined above? To avoid confusion, DCL withdraws the claim of reproducing a dry limestone forest, and proposes to plant seedlings of the typical native forest assemblage that is known to thrive in dry coastal limestone areas with little soil or water requirements. The seedlings will be taken from sites where environmental permits for development and clearance have been granted. No landscaping or application of fertilizers or pesticides will be done.

Because of the hidden agenda of the activists to prevent the permitting of the captive dolphin facility, even the most positive attributes of the project (such as the nature preserves) have been attacked in the hope of distracting the decision-makers and the public.

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51. Section 6.3.1.20 *Harvesting and keeping of animal species (not protected or endangered). Page 133 . In the table provided it is stated at Resilience that the Stingray is not endangered and that it is unlikely to affect the viability of the population. Such a statement can not be supported as the population status of the Stingray is unknown and what has been the likely effect of the changes in the water quality of their environment and their food source.*

The reference to whether a species is endangered typically is interpreted as relating to its IUCN conservation classification and not the population status. According to The World Conservation Union (IUCN) Red List of Threatened Species, stingrays (pelagic) are listed in the category of Least Concern, i.e., species evaluated with a low risk of extinction. There is no reason to believe that the population is not viable or that water quality will impact the environment or food sources.

52. Page 133. *The consultant should indicate which other animals are being considered for the facility and the likely location of their enclosure provided.*

No other animals are being considered for the facility at this time.

53. *Appendix 3 Technical specification on the Clearstream Wastewater Systems should be submitted for evaluation. The manufacturer/distributor will be required to make a technical presentation to representatives from EHU/NEPA/WRA prior to approval of the system. The above mentioned can be obviated if evidence of the treatment technology operation in Jamaica can be presented and its efficiency verified.*

This system has been approved for use at the Ocho Rios Facility by the St. Ann Parish Council. DCL shall be pleased to facilitate a technical presentation by representatives of the manufacturers to EHU, and the other interested agencies including the Hanover Parish Council and Health Department.

http://www.cites.org/eng/news/press/2004/040305_dolphin.shtml

For use of the media only;
not an official document.
Geneva, 5 March 2004

STATEMENT

Trade in live dolphins

The Secretariat has been made aware of serious concerns regarding a number of recent cases of trade in live dolphins. **Unfortunately, certain of the statements made in the media and in correspondence to the Secretariat contain allegations and interpretations of the Convention that are clearly inaccurate and sometimes misleading.**

Trade in dolphins of species included in Appendix I of the Convention is not allowed when: the import is for primarily commercial purposes or for purposes which are considered detrimental to the survival of the species; the export is considered to be detrimental to the survival of the species; the specimens have been obtained illegally; or the proposed recipient is not suitably equipped to house and care for the animals. The Convention describes the responsibilities of both the Management and Scientific Authorities for these issues in the country of export and in the country of import. Several organizations have recently written about trade in dolphins of an Appendix-I species that took place in 1999 between Thailand and Singapore. The Secretariat has contacted the Management Authorities of the countries concerned with a request for detailed information. Until it receives replies, it is inappropriate for the Secretariat to comment further.

Trade in bottlenose dolphins and animals of other species listed in Appendix II to the Convention is allowed under certain conditions: the export must not be detrimental to the survival of the species and the animals must have been legally obtained and exported. Shipments must also be in accordance with the IATA Live Animal Regulations. The Convention contains no specifications with regard to the use and housing of the animals in the importing country, which is - unlike for Appendix-I species - not required to issue an import permit.

The Secretariat continues to investigate trade in live bottlenose dolphins between the Solomon Islands and Mexico (see the previous statement from the Secretariat in that regard).

Trade in live bottlenose dolphins from Guinea-Bissau has also been reported but the Secretariat has been further advised that the species is totally protected under national legislation and that these reports on trade are unfounded.

The Secretariat is aware of proposed trade in live bottlenose dolphins from Guyana and is reviewing supporting documentation provided by the Government.

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