Review of the Environmental Impact Assessment

Done by

Caribbean Ecosystems Ltd. (October 2008)

For the
Pellew Island Villa Development
Portland
Jamaica

Review prepared by:

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This document contains the professional opinion of the Jamaica Environment Trust (JET). In arriving at our opinion we have made every reasonable attempt to ensure that our resource persons are informed and reliable and experts in the area in which their comment and analysis is sought. JET encourages readers to apply their own critical analysis to the information provided in this document and by others, particularly where JET's opinion differs from those others.

General comments

1. The Environmental Impact Assessment (EIA) of the Pellew Island Development project has failed to comply with aspects of the Terms of Reference (TOR) issued by the National Environment and Planning Agency (NEPA) for the EIA
2. The EIA did not include basic relevant information, such as the identity of the project proponent, area of all infrastructures and amenities, detailed description of and quantification of the area of the island that would be cleared for construction, detailed soil analysis, flora and fauna population densities, among other relevant information. The information presented about the natural environment is not fully supported by documented and sourced data.
3. The impact assessment section (Chapter 7) lacks rigour due to weaknesses in the impact assessment methodology and missing relevant information such as Appendix 6. The analysis of impacts is not sufficiently thorough, nor it is based on independent documented data.
4. The EIA does not refer to relevant policy frameworks – the draft Portland Development Order, the status of the Port Antonio Marine Park, the draft policy on Jamaica's islands and cays, the GOJ's Seagrass "no net loss" policy.

1. The EIA of the Pellew Island Development project has failed to comply with aspects of NEPA's Terms of Reference (TOR)

1.1 Detailed description of the project

The project description section does not include detailed information about the location and area of some of the proposed construction, such as the pools, central internal common area, decks, jetty, vehicle parking lots, the proposed dock facility and others. Section 2.3 of the EIA mentions these, but briefly.

The EIA was prepared by the consultant firm Caribbean Ecosystems Ltd. but the project proponent(s) is/are not identified, nor is there a list of professionals who conducted the EIA appended. .

A description of a project should be a "detailed statement of **all** the critical components, attributes or phases of the proposed development. This should also include pre-construction phase activities, thorough commissioning, to the operational phases of the development (NEPA, Guidelines for Conducting Environmental Impact Assessments, revised version 2005). The project description section should also include the construction activities and schedule, future phases of the proposed action in any, connected actions, if any (Bass, 2001 *The NEPA Book*). An incomplete description of the project will not allow authorities to make an informed decision about the project viability, discuss and assess the environmental impacts of the project and the related actions to the full extent and/or design adequate mitigation measures.

1.2 The study failed to provide information about the construction area of the proposed villas, land modification, forest clearing, pools, and other interventions

compared to the island area and how much of the vegetation cover would be cleared and/or transformed

The EIA included in Appendix 2 a site layout schematic plan of the proposed development that is not clear about the areas, purpose and design of all the project components, but the project seems to inevitably involve significant clearing of vegetation. The schemes in appendix 2 are barely readable. Given the vulnerability and special characteristics of Pellew Island, the importance of detailed mapping is obvious. The steepness of the island does not seem to have been taken fully into account.

1.3 The EIA failed to comply with an adequate assessment of alternatives

The EIA has not sufficiently considered alternatives, including a reduction in numbers and size of the villas. Section 6 of the EIA describes the chosen alternative as 'the best' without presenting supporting data why it would be so. The TOR requires the EIA to include 'project design alternatives' according to the physical, ecological and socio-economic parameters of the site.

Moreover, the EIA fails to comply with Section 3.2.9 of NEPA Guidelines for Conducting Environmental Impact Assessments:

"All the alternatives taken into account in developing the project should be documented. Documentation of the project alternatives illustrates that the developer may have considered other approaches to the project. These may include the consideration of other project sites, densities and /or means of minimizing environmental damage..."

The study failed to comply with the following:

"Each alternative should be evaluated in respect of its potential environmental impact and capital and operating costs)."

"Identification and Analysis of Alternatives or the Consideration of Alternatives …should include the following as may be appropriate:

- Alternative scales of the project
- Alternative processes or equipment
- Alternative site layouts
- Alternative ways of dealing with potential impacts.

2. Weaknesses of the baseline data

As the TOR states, the description of the existing environment will form the basis upon which impacts if the project will be assessed and should include a detailed qualitative and quantitative assessment of terrestrial habitats in and around the proposed project sites and the areas of impact including flora and fauna surveys, marine habitats, coral reefs, associated biota, topography, soils, drainage, geology, coastal features, ecological health, conservation significance of terrestrial and marine habitats, among others (p.2). Critical areas to be

studied will be dependent on the project site and the project details. This description of the environmental setting is a record of conditions prior to implementation of the proposed project. It is primarily a benchmark against which to measure environmental changes and to assess potential impacts. Data collection and interpretation should involve a combination of desktop research including satellite imagery, project related documents, review of relevant literature, topographical maps and site plans.

2.1 Soil and geology section

Soil is a major factor affecting plants and habitat for terrestrial and avifauna. Thus avoiding major impacts of a development on the soil can go a long way towards preventing the degradation of the whole ecosystem. In the context of an EIA, it is important to know what type of soil is present on and around the development site, as soil types differ considerably. This is particularly true in projects such as the development proposed for Pellew Island, as there is a possibility of erosion that could significantly affect the entire island and the marine habitat. The geology and soil section in page 29 corresponding to Chapter 4 (Description of the Environmental Setting), has not presented detailed assessment of the soil composition, erodability analysis, soil composition given that the EIA itself acknowledges that the project could cause major negative long-term impacts on the soil profile of the project site. The removal of vegetation –which has not been quantified- will leave areas of soil exposed to the elements, which will result in soil erosion. This is a particular area of concern since the restricted nature of the island has also restricted the rate of soil accumulation that can take place as compared to mainland areas (EIA, p. 72).

An e-mail from Professor Edward Robinson of the Marine Geology Unit of the University of the West Indies has outlined his contention that the geology is incorrect and that there is a wealth of maps and other information apparently not considered by the EIA. This email is appended to this report and has been sent directly to NEPA by Professor Robinson.

It was stated at the public meeting held on June 18th, 2009, that vegetation would be cleared in phases and would not be cleared during periods of rain. As it rains very frequently in Portland, this is unlikely to be adhered to.

2.2 Terrestrial habitat

The TOR requires:

“Detailed qualitative and quantitative assessment of terrestrial habitats in and around the proposed project sites and the areas of impact. This must also include flora and fauna surveys including species list. A detailed qualitative and quantitative assessment of marine habitats and communities in and around the proposed project sites and the possible areas of impact. This must include but not be limited to seagrass, coral reefs and their associated biota.”

The EIA failed to comply with this presenting detailed qualitative and quantitative information (for instance density of species) of the environment as described below.

The EIA says in page 32 that Pellew Island is not densely vegetated. This statement is not supported by references, forest density assessments and is not supported by the picture on the cover page of the EIA, satellite images and photographs of the area. The EIA says the island consists of 'moderate floral diversity '(p. 32) but does not present evidence records of the plant population density to support this statement. Page 31 describes the methodology used to assess the vegetation in the area using aerial images and a site visit to formulate a general image of the area and to identify habitats and vegetation types but those results are not included in the EIA.

The next page says 23 species of plant species were observed during the assessment but no information is provided about the density of plant species. This section also says that the assessment was carried out four months after Hurricane Dean affected the area, therefore the assessment reflects an area recently affected by hurricane, therefore characterizing the area as moderately vegetated reflects the status of vegetation after a natural disaster and not the average conditions.

One of the major flaws of the EIA is failure to provide information about the plant density, diversity and composition. Considering that the study has also failed to provide detailed information about the total vegetated areas that will be cut and/or transformed by the project it is not possible to understand the environmental consequences of the proposed action. Moreover, this is particularly important considering that Pellew Island is an important bird nesting area. The study acknowledges this fact, in page 36 it says about avifauna "…nevertheless, being only 82 meters from the Jamaican mainland, a few species may find its isolation ideal for nesting. This was evident from the observation of the nest of a Bananaquit (*Coereba flaveola).* It may be also a possible nest hole of a Jamaican Woodpecker (*Melanerpes radiolatus*), and at least 14 species of birds (p. 36). It is also important to note, that all bird species observed in the area are protected under the Wild Life Protection Act (1945) (EIS, p. 37).

The impact assessment section of the study (page 64, Environmental Impact Assessment) says "only a small footprint of vegetation needs to be cleared for the implementation of the project, and all trees will be preserved." This does not seem realistic. As mentioned, the study does not quantify the percentage area of vegetation of the island that would be cleared. From what appears in the schemes in Appendix 2 it looks like practically all the vegetation cover would be cleared for the implementation of the project. Moreover, the TOR asks for detailed information of the site clearance, earthworks during the construction phase and this has not been included.

Although turtles have reportedly used the beach for nesting and manatees are rarely seen in the area, there are no management strategies to prevent impacts on either of these endangered and protected species.

The impacts to seagrass have not been fully explained. At the public meeting, the EIA consultant advised that construction materials would be transported by boat to the island. A question from the floor asked for the draught of the proposed boat and it was revealed that this type of craft would not be able to get to the island on the east side without damage to sea grass beds and probably dredging, as it is too shallow. The western side contains coral

reefs and there are some reefs in the footprint of the docks. There is no mention of coral reef relocation strategies or other mitigation measures.

3. Weaknesses of the impact assessment methodology

Overall the statements in Chapter 7 about the environmental impacts of the project are constrained by their lack of basic information (quantify construction area, etc.) and an adequate methodology for qualitative and quantitative impact analysis. The entire Chapter 7 "Environmental Impact Assessment" is based on assumptions and incomplete information (see description of methodology in page 64) and sources of data and information on the existing environment has not been adequately referenced.

The methodology described in page 64, in the beginning of Chapter 7 fails to comply with presenting an analysis based on magnitude, significance, extent and especial sensitivity described with Section 3.2.6.1 "Prediction of Impacts" in NEPA's Guidelines for Conducting Environmental Impact Assessments. Environmental Impact Assessment methodology need to follow scientifically accepted methods to assess environmental impacts. Standard practice of impact analysis requires that the methodology of environmental assessment be based on the evidence in the record, quantitative and qualitative analysis (Bass, 2001)[1].

4. Comments on other relevant environmental and social impacts omitted from the EIA

4.1 The EIS does not have detailed information how water would be supplied to Pellew Island development project during the construction and operation phases.

Total water consumption during the construction phase is estimated to be 3,300 L/day (3.3 m3/day); total water consumption for the operation phase is calculated in 4,840 L/day (4.8m3/day). There is a very brief reference about this in section 2.3.4 about water requirements, it says: "Water for use in the construction and operation phases will be provided by the National Water Commission (NWC) main supplying the area". At the public meeting, it was stated that the water and electricity conduits would be laid under the sea – which would have impacts on benthic organisms.

4.2 The capacity of the proposed sewage treatment system is not adequate to treat the amount generated by the project

The information provided on the sewage treatment system is confusing.

The developer proposes to use the equipment "Croma Glass Waste Water Treatment System." This system's capacity is based on a design flow of 1,210 gallons/day, but page 8 of the EIA says the project would generate 4,840 litres or 1. Appendix 3 does not specify if the design data of the wastewater treatment system refers to Imperial or U.S. gallons.

[1] Bass, R. (2001) The NEPA Book. A step by sep guide on how to comply with the National Environmental Policy Act. Solano Press Books. 2nd Ed.

Cromaglass Corporation is a U.S. company, and the product specifications in their website appear to be in US gallons.
http://www.cromaglass.com/products/specs.html

The specifications included in Appendix 3 are formulated as "RECOMMENDATIONS AND CALCULATIONS" from the wastewater equipment manufacturer and may not necessarily be enforced by the developer. Appendix 3 did not include details about management, how would the developer assess the effectiveness of the system (effluent monitoring, reporting), backup systems in case of emergency or failures and other critical issues such as the management and final disposal of wastes generated by the treatment system (chlorine, sludge, etc.)

Also, the information in Appendix 3 does not include "details of design plans for sewage disposal system, drainage features, site drainage" required in the Terms of Reference.

In addition, the specifications mentioned in Appendix 3 of the EIA say that the proposed treatment facility would be able to treat waste waster with BOD levels of 220 mg/L. According to the Engineering Report: Sewage Treatment System prepared for Gore Developments Ltd. Nov 2008 available on NEPA's website as below, medium strength domestic wastes would have a BOD of 250 mg/L.

Table 1: Sewage Treatment Plant Wastewater Characteristics

Parameter	Units	Influent	Effluent
COD	mg/l	500	100
BOD	mg/l	250	20
TSS	mg/l	220	20
TKN	mg/l	40	10
P	mg/l	8	4
FC	MPN/100ml	10^7 -10^8	200

Source: Engineering Report: Sewage treatment system prepared for Gore Developments Ltd. Nov. 2008

Therefore, the proposed sewage treatment system may not be adequate for this project and present a threat to public health, coral reefs and the marine environment.

In summary, the EIA has very little information about where the sewage system would be placed, management and maintenance of the system, quality control or final disposal of the wastes produced, and the technical information provided needs explanation.

4.2.1 Other relevant issues related to the sewage treatment system not fully addressed in the EIA are

- ***Treatment of the water from the two plunge pools*** (EIA, p. 6, 73, 84). There is no information about the size, location and design characteristics of the plunge pools. The

study recommends not discharging the water from the plunge pools in the marine environment, but does not have concrete or specific plans about management, treatment and final disposal of the water from the pools. Chlorine may be used in the maintenance of the pools (EIA, p. 73). Discharging the water from the pools in the marine environment or used for irrigation could cause severe environmental damage given the concentration of chemicals used for the pool maintenance.

- ***Several water quality parameters are already higher than WHO Guideline***s for Safe Recreational Waters and the US EPA standards. Prudent environmental management would try to ensure a safe, healthy and aesthetically pleasing environment. The WHO recommends in these cases integrated management frameworks that include compliance and enforcement measures, application of control and abatement technology, public health advice and information initiatives. Source: (WHO 2003 Guidelines for safe recreational waters. Ch. 13, pg. 1. http://www.who.int/water_sanitation_health/bathing/srwe1/en/

5. Waste management plan

The project does not have a waste management plan for the construction phase and operation phases that would include construction wastes, waste reduction measures, adequate management and final disposal. Construction wastes could include hazardous materials such as used batteries, oil, construction material, paint, soil, sewage and others that need to be adequately managed. In this regard, page 90 of the study barely says

> "Solid waste collection in the area is limited to once per week schedule. This current schedule will not be able to handle the removal of the solid waste from the construction site. Solid waste may also have an impact on the marine environment which has been discussed in Section 7.3".

This section has vague recommendations such as "hiring a private licensed solid waste collector" that would "properly transport and dispose" the wastes (EIS, p. 90).

6. Cumulative impacts

There is insufficient discussion of cumulative impacts in the EIA. Page viii of the study mentions that one of the objectives of the EIA is to 'identify and predict (among others) any cumulative and synergistic environmental and socio-economic impacts that may arise from the project". There is actually no section dedicated to address cumulative impacts in the EIA. Cumulative impacts are mentioned as potential risks in page 67, 76, 82, 85 and later in the text as 'to do' but not discussed in depth.

7. Social impacts

One of the major issues of concern about the Pellew Island development is the local residents' concerns about having access to the island and the aesthetic impacts of the project. It seems from the design plans and information provided in Appendix 2, Pellew Island would be completely transformed and will lose its unspoiled, natural aesthetic value. Despite the TOR's requirement to assess the aesthetic and visual impacts of the project

(see section 5, this issue has not been discussed at all in the EIA, nor the overall impact of the loss of this iconic natural asset for present and future generations. There is no mention of a potential claim for prescriptive rights from the local people who have been using the beach for decades, as well as the legal right of the public to use the foreshore.

8. Other

Insufficient attention has been paid in the EIA to the island's susceptibility to damage from storms and hurricanes, particularly in the context of climate change.

Verbatim text of an e-mail from Professor Edward Robinson to Diana McCaulay dated 18th June, 2009 on the subject of the Pellew Island Environmental Impact Assessment done by Caribbean Ecosystems Ltd.

This is for Diana.

I have been recovering from a pulmonary embolism and am just now getting back into circulation.

I have been reading the (revised) EIA for Pellew Island prepared by Caribbean Ecosystems Ltd. I don't remember seeing an original version.

Anyhow, I looked in vain for an e-mail or telephone number for the consultants so I pass this on to you as you had a contact in there for the petition. The account of the geology is screwed up. Pellew Island is, in fact, the type locality for the Pellew Island Formation, which does not belong to the Coastal Group, but to the White Limestone Group (recorded in the Annual Report for the Geological Survey of 1958?). I can check the reference but I am writing from memory. It is overlain on the island by a younger unit, the San San Formation, which does belong to the Coastal Group and the type section for which is now very poorly exposed on the highway. I mapped the island in 1957 (or was it 1958?) in concert with other members of the Geological Survey Department (Prof Zans and Jonny Williams) during a week-long stay at the invitation of the San San Bay Association. We also mapped the bathymetry of the floor of the bay in detail. We also mapped the positions of some 17 fresh-water springs that rise within the bay and its neighbourhood, and we mapped Navy Island. The maps should be on file in the Mines & Geology Division in Hope Gardens, would be useful to include to put the island in a local context (the current Google imagery is not good enough although there are excellent older air photos).

I also recall from this and from later visits that the burrowing echinoid *Meoma* was very common on the lee side of the island. Has this species gone extinct locally or was the fauna not studied?

On another point, I don't understand the mitigation proposed for sea water quality when the existing measured quality parameters are so way above accepted values. Surely one has first to reduce the existing pollutants to acceptable levels through a bay-wide clean-up programme before allowing any additional construction in the area. This seems to be a limitation of the EIA system as presently constructed. One needs to look at the total existing load of environmental pressures, not just the ones that new construction may produce. There should be more quality monitoring points and a map of currents and water circulation in the bay.

Finally, although I realise it is not a NEPA requirement, there is no mention of possible effects of future climate change on the system. If the presumed life of the buildings is to be some 40 or 50 years a lot of things can happen, particularly to the reef system and marine biota, and possibly to the island itself through expected increased ferocity of hurricanes.

I say all this, not because I am against the idea of erecting buildings on the isle (I am of course very much against disturbing the island at all) but because I see no reference in the consultant's report to geological work carried out there except for a brief and incorrect note. Was a geologist used? I would have thought that there would have been a list of professionals involved in the preparation of the EIA (with qualifications), as is normally given in other reports I have read. In fact I thought it was a requirement. The contact telephone and address should be on the front cover, or on the page

immediately inside the cover.

Tek care,

Edward Robinson, OM, Ph.D.
Professor Emeritus of Geology & Director, Marine Geology Unit, UWI