**Verbatim Report of the 7th Harbour, Gunboat Beach EIA Public Meeting held at Donald Quarrie High School, Harbour view on July 5, 2007 at 5:30pm.**

*Chairman Kingsley Thomas:* ...in my time it was NRCA and that's changed and now it's taken over a number of other functions.

The Public consultative process is extremely important - is an extremely important part of the process and this meeting is just that - where we hear from stakeholders and others. We obtain their comments on the proposed project - the environmental aspects of the proposed project. And your views, will be faithfully recorded, notes taken and the report of this meeting submitted to NEPA within, whether it be 7 days or 14 days. One part of the Acts says 7, one part says 14 and I saw 14 on their website and ... The input from this meeting will be a part of the final deliberations of NEPA on the granting or refusal of a permit. The order of business is basically that a presentation will be made by the EIA consultants who I will introduce shortly. Then we will have a question and answer session....and that is, I think, that is one of the most important parts of the exercise as we seek to get the feedback of the stakeholders. After that there will be a closing session, closing statement that we can just wrap up the proceedings.

I'd just like to point out to the presentation by e m c squared - that is how the '2' is done? Right - is that that this session is focussing on Phase 1 of a proposed two phase development on a 108, I see 109, acre site - 108, 109 acres. We are focussing this evening on Phase 1, the definition of which we will see in awhile. At this point in time, I'd like to introduce - a number of people I was told I must introduce - emc2 team led by Dr. Burrowes who has been responsible for undertaking, her firm has been responsible for undertaking the environmental impact assessment. Ted is a member of the team - there is the able administrative assistant who has been making - she didn't introduce herself to me though she asked everyone for their names in writing and who else is there from the team (*Dr. Burrowes voice off-mike*) - Os and Kamille. I'd also like to take the opportunity to introduce the gentleman on the hot seat who is the developer, brave enough to be the developer, Mr. Norman McDonald of 7th Harbour or Treasures, depending on how you look at it, or how it turns out - could be Treasures, could be something else. Also his technical team of designers, architects for Mode group, Mr. And Mrs. Bernal. I think I could just leave it at that. Mr. Barry Brown, noted engineer who has got as gray as I have and - who? - (*Dr. Burrowes voice off mike*) Oh! Graham from Smith-Warner who ... oh, yes, and he's Smith Warner. OK. And who else? But you told me he wasn't involved (*chuckles*) Lloyd Thomas - oh well, it's up to you to expand your team. I didn't want to give the impression that the audience had too many of your team (*laughter from audience*)

I was also advised that I could, if any were in the audience, introduce dignitaries. And I see at least two in the audience. One is Mr. Bobby Stephens of PRAGMA, the Port Royal (*unintelligible*) - and we are very happy, Bobby that you are here.

At least it shows that your interest is stretching inwards instead of just being out in Port Royal and I sincerely

hope that you have all the luck with that project and that it becomes reality one day soon. Mr. Ian Levy, I'm just recognizing you sir. I'm not advertising anything to anyone (chuckles) - but just to recognize that you are here. So, Dr. Burrowes is there anything more I need to say at this point in time? Or can we just run into the presentation. Great. Let's go. You start. Dr. Burrowes.

*Dr. Ravidya Burrowes:* Thank you. Right. Good evening everyone. Thanks for turning up. And I'm just going to go straight into the presentation. We're focussing tonight on the actual impacts, but I'll give a brief introduction to the project for those who haven't had the opportunity to actually read the document.

(*Some off mike chatter*)

Just to quickly introduce you in terms of who conducted the actual environmental study; I was the principle author. Professor Robinson, who is here in the front, he's an environmental geologist, who has done a great deal of work on the Palisadoes. Ms. Beverline Brown-Smith, who is not here tonight, did the social impact assessment. Ms. Loureene Jones-Smith was the marine ecologist. She also did the coastal ecology with some assistance from a very experienced forester from the Forestry Department Mr. Lascelles Fearon. Smith-Warner International basically were involved - did all the design work but they also did all the oceanographic modelling that was used in the EIA. And members of my team - my technician Mr. Tyrone Rose collected the water and sediment samples. Mr. Chin, who's in the audience, an assistant. And my administrative assistant, Ms. Forward, who is begging everyone to sign the register.

Right now, in terms of where we are in the EIA process just one slide to bring us all up on the same page. We submitted the draft terms of reference mid-November and after the public had a time to comment on what the study should contain, the document was finalized and approved by NEPA on the 22nd of January. On the 22nd of May we submitted the document to NEPA and now the stage right now is having the public meeting. There will be a verbatim report prepared in 7 days and the end of the public review period is actually around August 5th which is 30 days from today. So, if for some reason you think of a questions or comment after you leave this room, please feel free to send your comments to NEPA, but I wish to advise that every comment or question that is raised here at this meeting will go forward also to NEPA. A decision, hopefully, will be made in August or September at the board meeting following internal reviews at NEPA and a multi-agency technical review. Right.

Now, just to show you where we are. Well, not where we are now, but where the proposed project is, this map scale ... each of these blocks here is a kilometre, a square kilometre, so we're just about 2 ½ kilometres off shore of Bournemouth Gardens. And we're on the far eastern side of the Palisades. We're not, the project area is just after you pass this very thin strip of the Palisadoes and start getting into this wider area with the wetlands and the Norman Manley Airport. The nearest institutions are the yacht club and Maritime - Caribbean Maritime Institute.

In terms of settlements, as you can see the nearest settlements are about 5 kilometres away - which would be

Harbour View. Right. Now, this is just a slide in case we didn't have the master plan up, but we do, so you can keep it in view. I'll skip that over. This is the Google image showing the location of the site. Phase 1 is actually just this little area here and doesn't encroach into the mangrove part. So all of these mangroves here are actually part of the property. But Phase 1 is really where you see these buildings and scrub here - that white area there. This marks the edge of it.

Right - I'm just going to show you another.... just introduce you to the project. These are the main elements of the project: a small entertainment centre, 5000 people, seating capacity with some concessions, bars, box office and so on; a mini-marina with about 80 slips and various marina facilities including pump-out, refuelling and so on; a boat tour facility using a 150 person capacity catamaran; a Harbour Mart, which is really a convenience store for the marina; a restaurant bar and grill which will have a total capacity of about 200 guests/seating; and associated with this will be a small gaming lounge. And of course, in support of these facilities, there will be a range of additional infrastructure such as parking, access to the main road, a sewage treatment plant, storm water drainage, potable water supply, power supply and cabling (sic).

Just looking quickly at the sea, the coastal side first. This is basically what the design of the marina looks like. What is being proposed on your far right is a sort of a recurved groyne which will offer some protection, to create some protected conditions within the marina. You'll notice that the slips are all parallel and they are roughly aligned with the slope. And they are - these - basically the vessels will park parallel to the onshore wind - [(aside) Is that correct?] So that you are not going to have too much rocking of the boats. So that's basically it. There's going to be - the coloured areas, brown and where the plus signs, mark areas of dredging - proposed dredging. That's essentially - oh, one other thing - the actual shoreline is going to be filled and we'll talk some more about that later in the presentation. It is going to be filled to a certain elevation and then you're going to have revetment put in front to stabilize that area, and a sort of promenade deck placed on top of the boulders above sea level.

This graphic gives you an idea of the actual footprint of the proposed development over the natural environment as it is today. As you can see there's very, very little encroachment into the - what would be called, the wetland area, which is just along the strip here. And this actually isn't mangrove - this is more shrubby vegetation. But most of this area here you'll see is very disturbed vegetation. And of course, in the Gunboat area it's been built up, concreted over and so on. There is that off-shore structure which is going to have to be removed. So that gives you an idea as to what the change is likely to be from what is there now.

Right. So now we'll move quickly into the impacts. There are a number of minor negative impacts, including the modification of drainage, consumption of fuel, creation of what would be called ecological barriers, because of the presence of a groin and a fence. There is also a conflict - to some extent a conflict with the protected area status, because the site is a NEPA, NRCA protected area.

Not the particular site, but the Palisadoes in a whole is a protected area. It is also a RAMSAR site. However, both the documents that establish the protected area status recognize that the area of mangroves near to the

airport are heavily disturbed, and actually promote that if there was to be further development on the Palisadoes this would be the place. With any development, especially in the construction phase you will have minor changes due to vehicular emissions and fugitive dust from haulage vehicles and so on. Also, in the operational phase you'll expect to have - you'll have the potential - Now I need to stress here that these impacts are potential. With mitigation they don't have to materialize, which is one of the reasons why the predictive capacity of the EIA is so important. Because we can predict our worst case scenario, and take action, intervene and prevent it. So in any situation where you are going to have solid waste, garbage, food being stored, vessels coming into a marina, you are going to have a potential for introduction of pests like mosquitoes, flies, cockroaches, rodents,

I think with the marina you're looking at organisms that stick themselves onto the boats and travel from different ports - could also be introduced. But these are all classified as relatively minor because one of the criteria we use is a divergence from baseline. And because this is a port, and a harbour and has been for hundreds of years, you know, - these impacts have happened. In terms of demands for municipal services and utilities, of course there is going to be a demand for power and water and so on. We had to look at the impacts on protected species. There were reports of crocodile sightings near to the yacht club. Our scientists found none. No evidence of nesting or any such. But we were still very precautionary in our approach and assumed that there is a potential for them to range in this area, and made several recommendations to protect the species. Also, when you remove vegetation and put concrete in, you're going to have a change in microclimate. So these are just some of the relatively minor negative impacts.

In terms of moderate impacts, which are all fairly reversible if the project were to be shut down, you would get some disturbance of birds in the wetlands as a result of noise. You get some increase lighting - in coastal areas this is always a concern, especially where you have wetlands because birds can be disturbed. In this area we're not so concerned about turtles but in other parts of Jamaica coastal lighting is a big problem. Also there is a potential for a decline in coastal water quality because of heavy equipment working during construction and so on. You're putting big boulders into the water and you might have some turbidity. You're dredging. And in the operational phase - although most people may associate declining water quality with marinas, the actual cause of declining water quality - there are two causes. One is the accidental discharge of sewage in a marina, which is not going to happen in this case because there are going to be mandatory facilities - pump-out facilities - so in fact this marina will be serving to clean up the water by providing that facility to boats that would normally just have emptied it - wherever. The other thing is the major cause of water pollution in marinas has to do with the sanding, repairs, maintenance, painting and so on. In this phase, as I understand it, there is not really going to be to be any of that stuff. There is also of course, the potential for oil spills but there are a number of precautionary measures that can be implemented to prevent oil spillage during refuelling. Associated with the entertainment centre, there will be some traffic and parking issues.

However, these can also be mitigated and we'll go into some those in a little while.

Also, one of the things that has come up in the development of the Palisadoes, over and over, is that it is a high risk area in terms of vulnerability to hurricanes and earthquakes and slumping and tsunamis and all sorts of disasters. So actually putting visitors and structures there, especially in a case where you can't predict something like an earthquake, you do carry with you a certain level of risk. So that is one impact that we had to discuss.

Just to show you about the noise effect. There is a formula which is detailed in here to calculate, I think with a redoubling of distance you lose 6 decibels of ...it's sort of a logarithmic function. And basically, if we have ... if we start here at 110, by the time you reach the airport which is a high noise zone anyway, you're down to conversational level, which is less than what I'm talking to you at here with the mike. So...and also the noise will tend push things to the west - I'm sorry the wind - wind and topography tend to have an effect on noise...the perception of noise. And in this case topography is not an issue because you're basically at sea level. So the main factor is dominant wind which will skew these perfect circles to the west, creating more of an oval.

Right. Now, in terms of impacts classified as moderate, but not reversible. We found that there were going to be impacts on the marine macro-benthic. These are the little organisms that burrow in sediment on the seabed. We found that the - basically the sediments there were quite contaminated, polluted. As we know Kingston harbour has a high level of pollution.

Biodiversity was very low and there were no rare, endangered or protected species found at the site in the areas that were going to be dredged or within the footprint of the proposed marina. Another big issue that we found that could not be reversible was the removal of the dunes, which would alter the topography for the purpose of putting down parking. This was assessed as being unlikely to affect the stability of the Palisadoes.

I have a graphic here that is from - sourced from Inversiones Gamma, which is a consulting firm that recently worked with the Ministry of Works, to determine the vulnerability of the Palisadoes to be able to focus energy, attention to where the problem areas were. Basically, the purple areas, as you go to the darker purple areas, is where you have erosion. The yellow is where you have accretion. And what you'll notice is that the areas around - on the seaward side of Gunboat, are actually areas that – there's no purple there. It is areas much further along the strip that are vulnerable to attack and those were the areas that were recommended in the study to be fortified and sea defence structures to be put in place. Strangely enough - I don't know that people necessarily agree with it - but one of the main mechanisms that they suggested was actually to put sand, recreate the dunes in those damaged areas. So what we found in discussing this was in removing, in actually removing the sand, from this area here, which is assessed as being quite stable and was in a wide accreting area, that material would actually be perfect for use elsewhere on the Palisadoes because it's the identical dune material that you find along the Palisadoes.

Now, we didn't actually find anything that we could classify as significant negative impacts. But before I tell you - before we make up our minds about it, there are some criteria - the method we use is a very objective

one. The hope is that you could use the same criteria that I have used for each of these impacts to decide for yourself whether they are minor, moderate or significant. But ultimately - these are criteria that are recommended by the World Bank – some of them, some of them by the USEPA, some of them Environment Canada. It is really a collection of criteria that I have found in about fifteen years of working, that would give you a good sense of whether something is a significant impact and does it impact negatively on a protected area or sensitive -sensitive or protected area. In this case it doesn't. Although it is close to, it doesn't really have a footprint into the area. It doesn't contribute to the endangerment of any threatened species. It is not beyond any receptor's ability to cope. In fact, most receptors are located quite far away from the proposed site. It does not damage habitat quality or create any major ecological barriers. The barrier we spoke about as minor was basically a chain link fence to keep the crocodiles out. It doesn't reduce stocks of commercially important species. It doesn't create any intergenerational impacts.

The impacts are not widespread out of the area. It is not inconsistent with national plans, and in fact in the legal section of the document, we review several national plans such as the Tourism Master Plan, the Road Plan and various other documents, to make sure that there is nothing in the project proposal that was (sic) in conflict with any of the laws of Jamaica or the national plans.

Also the Protected Area Plan and so on, is also reviewed. It doesn't threaten any cultural or heritage resources. In fact, it is seeking to rehabilitate the actual Gunboat site, which historically - maybe some people, you know, from just a little bit before my time time might remember that the Gunboat site has actually probably seen better days when water quality was a little better.

It doesn't cause any community lifestyle change or require any long term adjustment from local communities, doesn't change any traditional values and it doesn't represent any long term nuisance or significant safety risk to other users. So these are the criteria - international criteria - that will allow us to say, it meets any of these, then there is potential for it to be considered significant. And in my evaluation, based on the reviews of the law, review of the project and the review of the baseline information - environmental information - we didn't find any impacts that fit this bill.

We did find two major positive impacts which included the stabilization of the shoreline and the improvement of the appearance of place, the visual change - which I'll go into in a little more detail in a minute. We also found there were relatively moderate impacts. Some people may just classify them a little higher - in terms of the effects on stimulating local economy. One of the things that talked about is the development of marine tourism in the Kingston harbour area. So this is one of the positive impacts for that level of diversification.

It provides a new social amenity Kingston, to the urban dwellers of Kingston, and it's - the benefit of the change of land use in terms of putting it into a productive land use as opposed to a fairly isolated and derelict condition that is unproductive at present time. So these were some of the positive impacts that we found.

I just wanted to go into a little more detail about the stabilization of the shoreline which I regard to be one the

most important positive impacts. The elevation of this site will actually be raised by about a metre which will protect it from storm surge and erosion, which will actually work to make sure that the likelihood of a breach near to the Gunboat Beach would be very low. The promenade and revetment that is being proposed by the consultants would discourage recreational bathing. Now, the Environmental Health Unit at the Ministry of Health and NEPA have both tried for many years to discourage bathing because the water is so polluted and poses such a major public health risk, but people still go there. And in fact, when we did our surveys we still found people using the area for swimming - kids going there. So one of the major positives is actually a public health benefit of being able to control swimming in this water.

The promenade itself will stabilize this section of the Palisadoes because of the presence of a massive stone revetment. So if there is a major hurricane or something you have that extra buffering of the land. It will also serve, to some extent, as protection from slumping because you're going to have engineering - engineered land fill and so on, behind the promenade which hopefully will be a lot stronger than the loose, unconsolidated sediments that now comprise the underlying rock there. Of course, there's the visual and unproductive use of the shoreline.

Just to speak a little bit more in terms of the major change. It is a very, very rare project where a development, at least in my experience, where a development represents a significant improvement on the natural condition of the land. Being an environmental scientist, we generally find that the natural condition is usually better somehow than concrete and so on. But in this case the condition of the land - I don't know how many of you have actually seen the Gunboat area, but it is pretty much an eyesore right now. So what is being proposed is a number of things including removal of a massive amount of solid waste from the shoreline - and not just a one time removal - but long term maintenance because it is the suggestion that there's a little dead area around here that causes some solid waste from all over the eastern section of the harbour to actually build up here - that not all of it is actually coming from people using the beach. It is actually being collected in the surface water and dumped there. So that's going to require long term managing.

You are also going to have removal of the off shore derelict structure, creation of a visually pleasing shorefront which, I would add, when it is completely developed will be quite beautiful when seen from the other side of the harbour or from approaching vessels.

Now, looking at landside, there will be demolition of derelict buildings which now pose a hazard and the old pavements, construction of architecturally designed buildings for recreational use. There is also likely to be a lot of bulky waste. There has been tendency for people to dump old fridge, old truck, old battery right into the mangroves and we when we actually tested the water inside the pond we did find some significant evidence that it was this kind of contamination.

So basically all of this is going to be cleaned up by the developers and landscaped and, you know, be made to look beautiful. There will be some removal of grass, but this is not the natural vegetation. This disturbed vegetation, I am told. That's going to be replaced by indigenous ornamental trees, and Ms. McDonald has

assured me that any trees worth preserving on the site will be left alone as far as possible. Of course, there will be continuous ground maintenance. Also, the entrances now to the area are relatively small and there are going to be new alignments with widening and paving and landscaping and signage and so on - because basically the entrances are going to be shared and will have to facilitate the traffic flows that are planned for the area. So these are just some of the aesthetic positives of the proposal.

In terms of what we have now, the EIA is required to look at alternatives. One of the alternatives that we have to look at is the status quo. What we find there now is, some of the environmental impacts include illegal use of the site. You know, you have people selling drugs and all kinds of illicit things going on. Public safety risk because of the crocodiles and buildings - derelict buildings. We're not sure you know, what the roofing was made of and so on. These are quite old buildings from the days when asbestos and pipes, lead pipes were commonly used. There's also the public health risk because of the poor water quality in the area.

The continued degradation of a national heritage site, which Gunboat is, supposedly. It's a .... Basically, there are very few other things that can go there because of the proximity to the airport, and because of its location on the Palisadoes. You can't put housing there for instance. So maybe the only other productive alternative would be something like aggregate batching, like what they have closer to the roundabout. There is also a lot of illegal dumping of appliances and batteries and so on, in the wetlands which do contribute to the problem. We did find very high levels of oil and grease in the pond and there's no - I would hardly think, that that runoff from the airport. A lot of it is coming out because of garbage that is contained in the area. There is also is also people going in there to cut wetland trees, the mangroves, for charcoal. A lot of that still goes on in Kingston. There is also the possibility....these dunes are severely eroded, and there is the possibility that people are towing them away a wheelbarrow at a time anyway. There's also the poor visual aesthetic of the garbage on the shoreline, and I don't think a lot of people realize how important this point is. I'll show you a slide in a minute.

And finally, there is a massive problem in the area because of the low elevation of the site. Because of storm surge and erosion. The site is actually below a metre and a half - which means the whole thing could be flooded. So actually, this development which is proposing to fill the land up to a level that will not be flooded and to stabilize the shorefront, will be addressing most of these impacts of what is going on right now.

That is a typical sight of Gunboat Beach. This is not one little area. This is continuous, hundreds of metres of garbage piled two feet deep that the developers will have the wonderful task (chuckle) of getting rid of and maintaining.

The main findings of the EIA are that none of the negative impacts that were identified was assessed to be significant using our criteria. The negative impacts that we did find, we found could be very cost effectively mitigated and actually did not require any design modification. There were very good opportunities for the

enhancement of environmental performance in terms of energy consumption, monitoring of waste water, storm water disposal and so on. And also we found that there were, in fact, significant environmental benefits.

To just give you a few slides - and I hope I'm not boring you at this point - these are some of the environmental objectives that we recommended in the management plan to the developers. A lot of times, you know - a lot of times we put mitigation measures in place and they bind the developer but it is very important for the developer to insure in their contracts with the actual people that are doing the work that these mitigation measures will be upheld. That is where the legal process in Jamaica sort of falls down, because the developer is legally bound, but his contractors are usually not. So, the developer is not the one who is dredging, he's not the one who is hauling the garbage.

So the NRCA license may say that he is required to cover the tracks, but he is not the man who owns the truck. So one of the recommendations is that legal contractual controls, whatever the NRCA license stipulates, must be carried through to contracts.

Also, we have a number of areas, a number of mitigation measures - but this is just the broad objective - to reduce and manage identified waste streams; to effectively plan for and respond to hazards; to maximize the positive environmental impacts; to conserve resources, including the ecosystem, the mangrove system that occurs outside of the project; to promote environmental stewardship and to commit to and provide appropriate monitoring of environmental resources to ensure sustainable use.

In terms of construction mitigation, ...I'm just going to summarize because it is a rather long document...construction mitigations falls in three broad areas: public and worker safety, which means erecting a construction fencing, appropriate signing, protective gear, portable lavatories and an emergency response plan. A lot of times NEPA tells you to have an ERP that really only extends to the operational phase but there is also a need to have a construction phase emergency response because that is when you have things that are not properly contained and you can have a lot of damage - if a hurricane hits you and you are not prepared at that point. So there's a need for emergency response planning in the construction phase as well.

Haulage management: a lot of impacts - environmental impacts that arise are related to the transportation of debris or construction materials, stone, aggregate, cement and so on. Things like dust, emissions and so on. A lot of the management relates to scheduling - make sure it's off peak so you don't contribute to congestion, road safety. Make sure your contractors are licensed. Make sure the vehicles are maintained, covered, make sure the axle loads are spread properly so you don't damage the surface of the road. The other big area has to do with materials management which has to do with how you manage your stockpiles of aggregate, your earth, your fill... ground cover...placing your ground cover early on.

Putting turbidity barriers when you dredge. Making sure that when you pump the dredge spoil onto land that it is all contained properly. Where possible, we'd like to see reuse of debris. Some of that concrete that's there now could be reused in the fill. And, you know, if there is any hazardous waste from the demolished houses,

we talked about the possibility of asbestos, possibility of lead pipes and so on - that when they are finally disposed of, they be treated as hazardous waste and not just sent off to the dump.

Right. This is one of the buildings…the main structure that is presently slated, has a shingled roof. I'm not sure what the ceiling is made of - some kind of tiling. There are probably also very long disused septic systems in the area.

In the operational phase, these are some of the mitigation measures that were proposed. A lot of them focus around traffic management, particularly - well - in terms of the entertainment centre operations, a lot of that would have to do with scheduling and organizing shuttles, paying close attention to the circuit of traffic flow. Creating bus bays and taxi stands to reduce the demand for parking so if you do have a lot of people who don't car pool, you're not going to get a line-up of cars on the main road, and on the highway.

Noise abatement. Again this relates to scheduling. There are a number of things that could be done to further minimize the effect of noise in terms of the direction that your speakers are pointing in. Obviously, if you're having a session in the entertainment centre, you're not pointing the music outside. You're pointing it into the sandy amphitheatre. So there's going to be some dampening effect. But the people inside will have the benefit of the 110 decibels.

We made recommendations in terms of maintenance of the grounds. Fencing. Signage. Keeping the drains clear and free. Putting bins. Having a dumpster and so on. Some solid waste management issues. The law of Jamaica requires effluent monitoring of the waste water, so we would expect that this would be done once the waste water system is operational. There would be flow metering and monthly monitoring of the quality of the effluent to make sure that they comply with the national standards. Pest control in the food and garbage areas. There are a number of recommendations to control that.

Marina Management. Strict management of waste. Prevention of spills. Disposal of oily rags. These are just some of the areas that we looked at. And again, if you want to read more, or if you have specific questions we can drill down, or I can direct you, or we can have a discussion.

Also, we are very interested in energy conservation. As you know the price of fuel keeps going up. Electricity bills keep going up. Not just because of the economic reasons, but also because of the carbon footprints in terms of a global effect. There is a strong need to limit A/C use and a lot of the buildings - I think it is a bit understated in the EIA - a lot of the buildings being proposed, that have been designed, allow for free ventilation and open air seating and so on. It is a coastal site and it's very breezy. Those of you who have ever been downtown Kingston know how pleasant it can actually be.

So, these are just some of the mitigation measures.

The EIA is not the only document that's going to be produced. NEPA has a number of post permit plans that are usually required but -

(sound of phone ringing: “Sorry. Let me just turn this off. Sheilah, please turn it off.”) Sorry.

- Dredge spoil disposal plan that was outside of the scope of the EIA. Now even though the Terms of Reference didn’t stipulate, we found some levels of contamination, heavy metal contamination because of garbage disposal in the area, so we are recommending further testing and a proper disposal plan because of the potential for the sediments of the Kingston harbour in this area to be contaminated with heavy metals, copper and lead in particular.

- We are also recommending a waste management plan because ... not because we expect this facility to produce so much garbage, but from the preliminary oceanography, there seems to be a tendency for garbage to pile up in the area that the marina will be in. So they are going need to have a pretty serious waste management plan to kind of deal with all the garbage coming in from outside.

- Emergency Response Plan which is a standard requirement of NEPA. And we are also recommending that - we know that Phase 2, which involves this lovely lagoon here to be developed - we’re also recommending that some sort of rehabilitation be considered and integrated into the design. Elsewhere, including the yacht club, marina activities co-exist very well with the wetlands, so we are hoping that something similar could be done here where the wetlands be rehabilitated. Maybe they are silted up in places. Whatever the cause is, I think we need to have a good look at it and find a way to have visually pleasing development, environmentally sound development, within the wetland area. So we are proposing that for Phase 2, which is somewhat outside the scope of this particular EIA, that we take a closer look at rehabilitating this area.

In terms of actual monitoring, we propose monitoring of the construction impacts and the success of the mitigation as well as continuous monitoring of water quality. As I said, waste water effluent quality is required by law. So that’s no different from what we are proposing. And also monitoring of the sediment quality in the area during the operational phase, when the marina is actually in operation.

Right. So that concludes my talk. (*Applause*).

***QUESTIONS AND ANSWER SESSION***

*Chairman:* Thanks very much Dr. Burrowes. I think that that was a very informative presentation and points to the level of work which went into it. I hope that you were in fact paid on time (chuckles) by my good friend Norman. Now the question and answer period...this is where we are now. I think we are allocating about a half an hour. It is now about 6:40. OK. Great. But it is important that everybody here... Just a couple of ground rules first. I'm requesting that the mike be used by anybody who wants to ask a question. One, that you state your name and your affiliation or organization. If you're not affiliated to anything, like myself, just say 'none'. Then you ... we're asking that the questions be as relevant as possible to what you have just seen and not necessarily out the scope of what has been ...as I said earlier this EIA relates to the 12 acre development, the first phase, of the proposed two phase development on the 109 acre site. So, with those words, can I ask who will be the first person to ask a question? And who will take .... will they come to the mike or take the second mike? ... ( off mike voices )

*Bobby Stephens from PRAGMA Port Royal:* What is the proposed method of disposal of sewage? And what is the proposed method of dealing with solid waste?

*Dr. Burrowes:* The waste water plant is being proposed and some of the conceptual information is in there. Barry is here in case there is some more technical information. But basically, it is a waste water treatment plant, package plant.

I will hand over the mike in a minute to Mr. Brown, but in terms of solid waste, basically collecting it and taking it to a landfill by a contractor is the method of disposal. Barry.

*Barry Brown, Civil Consulting Engineer:* The basic sewage treatment is mechanical. We have not much area on site that we could use alternative methods unless we going to go over into the ponds. So it's basically a mechanical system that will give you the effluent quality as required by NEPA and the Ministry of Health. Some other things that happens with that system. Because of the very flat nature of the site, we have to get into pumping sewage from two locations, over to the treatment plant, which is remote from the site. It will be treated to the required standards. And one of the features of the design is, instead of just discharging the waste into the mangroves, it is proposed that all of the treated waste be used as sub-surface irrigation for all the green area shrubs on the site. So it's pretty well looked after in terms of sewage.

*Chairman:* Next question. Thanks very much Barry. ….please, could you come up here.

*Cranston Ewan, Director of Finance, Caribbean Maritime Institute:* Thank you very much. Good evening everyone. I am Cranston Ewan, representing the interests of the Caribbean Maritime Institute. I listened diligently to you presentation – very good presentation.

I noticed though, that issues surrounding the close proximity of this major development to the Caribbean Maritime Institute were not addressed. I don't know if those were looked at as a part of the whole planning process. Some of the concerns we have – and I'll just highlight a few: significance of noise from a major development which is adjoining the Caribbean Maritime Institute, an educational institution; issues surrounding safety and risk of students and staff entering the institution in the same proximity and the same area; traffic risk etc. Now, were any of these looked at in the whole planning process and the impact assessment that was done, on this major educational institution?

*Chairman:* Thanks very much.

*Dr. Burrowes:* Yes. Thank you. Actually traffic impact was looked at and a number of mitigation measures were proposed including scheduling of … the bulk of the traffic would be expected thirty times per year approximately, because that's the operational availability of the entertainment centre. A number of measures were proposed to deal with this including working with the CMI to make sure that there are no conflicts especially in terms of scheduling, but in terms of the days the sessions selected the days that you will have performances as well as the timing of it. A lot of the timing will be well outside what would be normal school hours – and where you do have a day time session it will certainly not be on a school day. So there are a number of traffic issues that can be dealt with in. There's also planned widening and rationalization of the whole entrance. So it's not, you can't envisage that the present. You can't assume that the present very narrow roadway entrance to the site which is shared by the yacht club and CMI will be the same entrance that will – that all this high volume of traffic will be using. It's actually going to be a much, much wider and larger roadway and entrance to the facility with proper lay-bys that will have to be approved ultimately by the NWA and the planning department. But it will be in keeping, and in consultation with the other people. And I think, you know, traffic management is, strictly speaking, not an environmental issue but we did touch on it and there's actually an impact in the EIA that describes it and makes a number of recommendations for managing it.

So, ….. (chairman – off mike) ….the noise slide? (chairman – off mike). OK. I can show you. The school is located just under the second 'c'. Is it the – sorry, just near to the 'b' in buccaneer I think, in that area there…the b-u-c in buccaneer. Right. If you look at this larger one on here – but this doesn't really give you an idea of where it is, you know, in terms of the present situation. That's the Caribbean Maritime Institute right there….those orange buildings, orange buildings on the other side of the swamp. The swamp actually acts as an additional buffer. But as I said, there will be not loud music going on while classes are going on. It will be scheduled. Just to address the question of public safety. Again, it's not really an environmental issue in terms of the students being in any greater risk from, I presume, criminal elements, because of the presence of the marina. I – that was really outside the scope of the EIA.

*Kinsley Thomas: (responding to a voice off mike)* Yes. Please. (Mr. Ewan heard off mike). Let's let him this follow-up, then you can note….

*Mr. Ewan:* Just to note that the Caribbean Maritime Institute also operates a boarding facility with students on the campus and, information that we have is that your development will extend into this region also. Can we, …because we feel that it would significantly impact our school.

*Norman McDonald, Treasures Ltd., the developer:* Norman McDonald, Treasures Ltd., the developers. I'd like first to address the whole question of security. That road from the Maritime Institute right to Gunboat now, is very unsafe. I go there regularly and I worry about the students who have to walk down that road. Do you agree that, sir? It is a very lonely road. I think additional traffic adds significantly to their safety and security.

Number Two. We have found our own security company and we're going to have at least four armed guards constantly on the site that will significantly add to the security of staff and students at the CMI.

In regard to that piece of land that you're talking about right here, I think from about here to right here is the planned site for the hotel. I don't think a hotel is going to significantly affect you from a noise point of view…in fact, I'm going to suggest it might add to your security. The typical activities at this place on a daily basic will be taking place over here which is a restaurant, grill and bar, and a small entertainment centre over here. And I want to suggest that that is a pretty long distance. Dr. Burrowes pointed out that her perfect circle would be skewed to that side because of the wind, so I'm just trying to pretend to be technical now, but any noise here, I don't think would actually trouble you too much.

*Chairman:* Thanks very much. Any other question? Yes. Please. Will you come forward please. Sorry about it. Mike.

*Doreen V. Samuels, Director of Human Resources, Caribbean Maritime Institute:* Good afternoon everyone. I am Doreen Samuels. I am also from Caribbean Maritime Institute. And my question, when you listed the list of criteria in terms of…criteria, in terms of negative impact one of them spoke about community lifestyle and those kind of issues – social type issues. My concern here is the compatibility issues. What have you found – what are your findings in relation to the compatibility issues of operating an entertainment centre, in such a close proximity to a large contingent of young adults and the challenges that would pose in terms of trying to manage our relationship and manage our students, because as my colleague said, we have residential students as well.

*Dr. Burrowes*: I could just go back to, you know, the amphitheatre. There's going to be actually significant buffering between, between the, – between the area just between the residential – are you located on the western … are the residences located on the western side or the eastern side? (Mr. Ewan's voice off mike) …closer to, OK.

Basically the speakers during the session will be directed inward and the base of the open air structure will be sand. There will also be all the vegetation along that area will be left intact. Our modelling of the noise shows basically you're going to be maybe about 70 decibels by the time you reach the Caribbean Maritime Institute. So, (off mike voices from audience) six -, well remember, no, it's constantly changing, right. So 68 is at the yacht club, the outer part of the yacht club. So it's going to be – it's kind of a logarithmic scale – at the dead centre where you see that square, which is where we assume the entertainment, the speakers will be, pointing inward, not pointing outward, there will be a significant fall-off. You're not going to get 110 decibels at the residential. You're going to get something closer to 70, which according to the World Health Organization for an industrial area – this is an area where you have an airport – for an industrial area that is really quite acceptable.

*Chairman:* Can I just get back to you – since there are many more questions. Yes. Mr. …. You need to come up. We'll get back to you…we'll just ensure that… (*inaudible words from Chairman*).

*Norman P. Saulter, Engineer, AAJ:* Good afternoon. My name is Patrick Saulter and my interest is the airport. I notice that you have what appears to be a noise contour there. I'm not too sure what informs that – if that speaks to what now exists, or what you project going forward. As an airport, clearly we are very interested in developments that's (sic) going to take place around it. We can't always predict the time of aircraft …. that we're going to allow to the airport. But we are in the process of doing a proper contour of what now exists and project the kind of noise you can expect in the area. So, I don't know if you have looked at this. You have got some fairly static figures there. I don't know what you expect in five, ten years, fifteen years down the road. I just thought I'd mention that being an airport we clearly have this kind of interest and you need to have a look at the kind of noise that's going to get generated in the future. (off mike voice from audience) Airport activities. Airport related activities. Aircraft etcetera.

The other issue I wanted to ask about is utilities. On the plan sir, is the issue of water and of course electricity. Again, we have our own problems in terms of consistent supplies. I'm not to sure the extent to which you have made contact with the National Water Commission. I'm not too sure what the developers plan to do to ensure that they have a regular supply of potable water. The current system relies on water coming in from Yallahs, which you all know goes a long way up and down again. Or maybe it comes from the system out in Bog Walk which has to come all the way through the southern end of the city etcetera. So I'm not too sure what you've done about ensuring a reasonable flow of potable water. And of course, it being a peninsula, low-lying there is always the issue of disruption of electricity supplies.

That is something we have found quite challenging. I wonder how you have dealt with sustainability in these areas.

*Chairman:* Thanks very much Mr. Saulter, who we …

*Dr. Burrowes:* I just want to say thank you for those comments, which I think the developers will be

definitely … would you like to comment on any… Mr. Brown will comment. I know that much more sophisticated computer modelling of noise is possible. I, in fact, worked on an airport expansion in R.L. Bradshaw, in their new airport. But we did very extensive noise modelling. In this case we did a very simple modelling based on the known physics of how noise behaves because there wasn't significant topography. Some of these models are quite sophisticated and designed to deal with buffers and so on. We assumed a flat plain and we assumed that wind had no effect – so it's a straight circle. It's very simple. And it's just based on a simple equation. Right. We did actually look at noise from the airport to see how it affects us using the endpoints of the runways – the take-off and landing points. However, that wasn't particularly included in the EIA. We just did it for personal interest. So, I'll pass you on to Barry Brown, but I would like to speak to you afterwards because I had some questions. When I was working with the R.L. Bradshaw International Airport one of the big problems the air and seaport authority had over there was birds. They were very adamant that they didn't want any trees near to the airport. And I wonder how you cope the wetland being so close to the runway - and knowing that there are all kinds of aviation controls on this kind of thing. And the fact of having a protected wetland in proximity to the airport, represents a significant international aviation hazard. But we can talk about that afterwards.

*Barry Brown:* Water. We have provided storage for two days on site. And if we have a problem we need more than two days, we'll have to truck that water, which shouldn't be difficult to do. (off mike voices) The source would be the water commission supply that passes the site. (off mike voice 'electricity') There is back-up generator but what you'd have to describe for them is what the power - how much power is generated, and for what.

*Lloyd Thomas:* Good evening. My name is Lloyd Thomas, an electrical engineer. The power demand is significantly less than one MV. We will be providing a stand-by generator to provide 100% coverage. Who was it that asked the question? Oh yes, Mr. Saulter. We understand from JPS that airport feeder is a priority feeder and we will be taking our power supply from that airport feeder to the development. So we anticipate not many interruptions and if there are, we anticipate a quick return of power. The developer is also keenly interested in using photo-voltaic a/c system to provide power. And we are now in discussion with a supplier to see what they have to offer.

*Chairman:* Next…OK? Just a follow-up? OK – well, just finish with the follow up. Can you show Patrick? (off mike queries & responses). Are you in a position to address it Mr. McDonald? It's a technical question.

*Norman McDonald:* We are in discussions with – I tell you – PCJ, to provide the following assistance to this particular development; photo-voltaic lighting, solar thermal energy, for them to look at our sewage system to make sure it is the best possible. They say we should add wind power to it and geo-thermal. I maybe got it (chuckles) wrong – although geo-thermal. So Kingsley's quite right, maybe I don't know about this thing, but that was actually a suggestion from the PCJ, OK?

*Chairman:* Just as a layman's thing, I understand if you put in wind generation thing, those things make so

much noise that your music would pale, I mean, in comparison to the noise that is generated by such wind – that's serious noise (off mike voice from audience). No. That's true.

*Ted Robinson:* I might be able to say something about the ocean thermal technology.

*Chairman:* Ted Robinson….

*Ted Robinson:* Ted Robinson from the University of the West Indies. When I was working with PCJ about thirty years ago we did look into the ocean thermal possibilities. We looked at sites around Jamaica. The area south of the Palisadoes is not one of the favourable sites. The area of Yallahs was one. There's another off Port Maria. You need a twenty-five degree Celsius temperature difference in the ocean, in order to even look at the possibility of generating through ocean thermal methods. You get that at about two to three thousand metres depth in the ocean. Now, in front of the Palisadoes we get down to about a thousand metres, but no deeper. It may …. , of course, to look at it further, one would have to look at the temperature gradient in the area. But just on the face of it, it's probably not feasible with the present technology.

*Dr. Burrowes:* I know also there's … speaking to a friend of mine from a company called Implementation, they … John Marcocchio, who is one of the directors, was telling me about a technique where they have pipes where they pump seawater – not from deep seawater – but pump seawater to turn a turbine in night and cool it down and then in the daytime, when you have your peak electrical usage they turn off the a/c's and pump the cooled water through the building in these pipes. That actually is causing a savings in the ultimate bill because it shifts your peak usage to the night rather than the daytime. I mean, he's a lot more of an expert on it, but I'm told it can add up to quite a lot of savings.

*Chairman:* Thank you, Dr. Burrowes. We appreciate the exposition on this new ocean…what is it?...(off mike voice) ocean thermal thing is not really part of this project now, and we're going to stick to what it is. You had your hand up.

*Richard Thompson:* My name is Richard Thompson from TPDCo. I just want to find out if any consideration was taken in terms of any module as it relates to pending sea level rise, in terms of the construction, in terms of what the height levels are and such?

*Chairman:* Dr. Burrowes …….

*Dr. Burrowes:* Yes. Actually in the Hazards section, we did look at sea level rise and the projections and so on and it's one of the things that was focussed on in the engineering report …and maybe Graham wants to …. As the coastal engineer on the project -

*Graham Jervis:* Graham Jervis from Smith-Warner. We did a study on sea level rise and the whole storm

surge modelling and made recommendations of increasing the land higher, to protect it from future sea level rise and also storm surges. (off mike voices from audience) We recommended a metre and a half rise in there, in this area, the phase one area…it's here right? Yeh, around here. Because our wave run up, our static storm surge plus the wave run up added up to about one point five - little bit. So that seem like one point five metres plus static storm surge which is just a rise up to prevent inundation – then you have a little overtopping or so. One point five was what we - the recommended height for protection. (*off mike voices*) Well, because of its location, right. The main attack from storm surge was …

*Norman McDonald:* …It's pretty far away from what you are talking about. So I don't know that that will actually be a major problem either. Down the road, are you planning to put residents close to – well, I (off mike voice) – so you don't want to expand in that direction. OK, would this also be something where we could expand it to the point where it is compatible in terms of the location of the hotel, you know what I mean? In other words, we keep the noise level in that area very low. Because people are going to be living there. So I don't know that that's going to be a major problem down the road.

*Chairman:* We have heard that. Now, I would just like a distinction to be made as the person who's been asked to chair this with respect to 'A'. the very specific issues which have been raised in respect to the status quo, in terms of the current plan versus what exists at the CMI. And they are 1. noise, 2. the social contamination for the want of a better word, or better phrase and I think those are the two main ones. No. Well, you have asked about security, which we understand would be improved or enhanced by the .. (off mike – Mr. Ewan) NO. No-no-no-no. I say by the presence of … (off mike voices) No, no-no-no-no. I'm saying talk about the issues. Related. No-no-no-no. that is something totally separate in terms of your plans to use up lands which are under commercial lease – and it mean that you have to draw a line. This is a legal document, I understand. OK. So it can't be reversed. OK. So that's one. That's one. So that's one. Your future plans - though, and it's something I support 100%, because we need to get learning institutions and the regional nature of the thing is so, I mean it has a fantastic reputation region wide. But we have to separate the things now. You know, your future plans to the current, what you consider negative impacts.

And the third thing is – one, how great are these, how negative – what category, moderate, you know, significant, whatever – where they fall. And the third thing, what are the mitigating measures that can be taken. First of all we have – an evaluation has to be done. I mean, I'm sure you will be putting these things forward in a more formal manner, if you have not yet done so. And if you had came (sic) at the beginning, you would have heard that there is a period of one month from, where you could formalize these things in a letter to NEPA. But critically, we need to separate the issues. We can't … and this is very – I mean you are getting some free advice here – don't weaken your case by bringing in the thing of your planned expansion and all this sort of thing, because somebody – (off mike voices from audience) – because (laughing) I mean, I have the balance. Don't be ridiculous, please.

Please. Please. Please, don't weaken your case by putting in anything about your plan to expand all this thing

…

*(more off mike chatter – sounds like Mr. McDonald and Mr. Ewan about airport and numbers of flight.)*

OK. Yes. You.

*Shawn Scott:* My name is Shawn Scott from Honduran Pine Exports. My comment is really from the perspective of a former university student. I don't know if this is outside of the environmental scope of the environmental impact, but since it seems to be a point of discussion, I just thought I'd lend my two cents. I don't know how you view the quality of learning from an educational perspective but I would like to think that more focus should be placed on the benefit of having an entertainment and – an entertainment centre and a place where students can socialize and these things. Because when you look at universities around the world, more focus is being placed on the overall student experience, which is not just about being alone in your room, quiet, studying. It's about interaction, and learning, and social gatherings and what not. So, I just thought I'd make that comment.

*Chairman:* OK. Any other comments? Question? (*off mike question*) Buffered. Yeh, yeh, yeh. (*off mike comment*)

Are there any other questions? Comments. Disagreements. Yes, ma'am. (off mike question) How long has it…how long (off mike chatter about 30 seconds) OK. I don't know – something just hit me, all right. That in fact - I'll tell you, I attend a (sic) session out there once, with Admiral Bailey – a massive session. They used to have sessions out there – and I used to attend. I mean, didn't you? You didn't? I just, I remember clearly I went out there with Admiral Bailey. You remember? You were there? (laughing) I just, it just hit me – which is long ago, but when you told me only twenty years – fine. OK. OK. All right. (off mike chatter)

Dr. Burrowes do we summarize? I think it is a fairly, fairly interactive session - and would you like to sum up? and … But before you sum up, can I just thank everyone for having come and hope that, you know, at least, the session was conducted in a fairly open and balanced manner.

In fact, I think I went a one bit too far, Mrs. NEPA, (laughing) to give air to any dissenting view because this is critical. And we can only hope that whatever happens, that is all scientific, technical discussions be brought to bear on the points raised and the best solution arrived at in the interest of all concerned. One the interests of CMI. The interests of the total country in terms of employment creation. The interests of the development of the tourism product. That is why I think you have the land – the land has been put in your charge. OK? And in the interests of all the positive impacts that have been pointed out. Also the mitigating measures which need to be put in place to counter the negative impacts. So, thank you very much for coming, and I'll turn you over for the summary to Dr. Burrowes.

*Dr. Burrowes:* Thank you Mr. Thomas. I'm not going to rehash everything that has been said. I just have some standard closing remarks and that is to remind you that all the comments that have been made here have

been recorded and will be produced in a verbatim report which will be put online and will be submitted to NEPA for review. Also want to remind you that you have thirty days from this meeting to submit any comments in writing to the Applications Branch - Applications Secretariat at NEPA. I'm sure those will be collated at some point and given back to me for a formal response. My formal response – well…the developers and myself as the consultant, will formulate the response. Those … That will be an addendum report which will then also be a public document available for review and comment before the final decision is made. So, again I'd like to thank everybody for coming and if you'd like to speak with me privately afterwards, or you'd like to send something in, I'm more than happy to talk to you. But at this stage, once the formal EIA is submitted to NEPA, comments should really be directed to NEPA for their transmission to me. So, with that, I will say thank you and goodnight. (*applause*)

*Chairman:* Thanks very much. There's some housekeeping matters that we ….

*Sheilah Forward:* Thank you. I know there were a few people who came in after we got started, and I need this list – NEPA wants this list. So if you could please,… I think there are five or six people that came in that have not done the sign in. Thank you.

*Chairman:* Thank you. Your names please.

*****End of the Meeting*****

**To the best of my recollection and knowledge, this is an accurate transcription of the digital audio recording made at the meeting held on July 5th 2007 starting at 5:45 pm and ending around 7:45 pm. The digital recording is available on CD for verification purposes.**

Ravidya Burrowes

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**Ravidya Burrowes**