



Environmental Assessment Board for the Cruise Berthing Facility
Sub-committee of the National Conservation Council
PO Box 10202
Grand Cayman, KY1-1002
Cayman Islands
Email: ConservationCouncil@gov.ky

Environmental Impact Assessment Scoping Opinion for the Proposed Cruise Berthing and Cargo Enhancement Project

25 February 2020

1. Introduction

On 21 January 2020, Verdant Isle Port Partners (VIPP) submitted an Environmental Impact Assessment (EIA) Scoping Update (called VIPP's submission herein) for the proposed Cruise Berthing and Cargo Enhancement Project (CBCEP) (formerly the proposed Cruise Berthing Facility (CBF) at the time of the 2015 EIA). VIPP has been identified as the preferred bidder for the Design-Build-Finance-Maintain contract for the CBCEP by the Cayman Islands Government (CIG).

An EIA for the project was prepared in 2015 for the CBF however there has been an evolution of the design of the scheme assessed. There are fundamental changes to the CBCEP design which would result in the requirement to reassess the likely effects of the new design as the effects predicted in the original CBF EIA may no longer apply to the new project. The fundamental changes which may have new likely significant effects on the environment include:

- An increase in the expected passenger numbers from a maximum of 2.3 million passengers in 2015 to 2.5 million passengers in 2022 with anticipated growth of 1 to 1.5% beyond 2022 (page x (in Roman numerals) of VIPP's submission);
- A change in the area of the dredge pocket, moving it further from Eden Rock but closer to Cheeseburger/Soto's Reef;
- An extension in the time required for dredging as well as confirmation of the dredging methodology;

- Approximately half the number of predicted operational jobs;
- Reduced number of predicted construction jobs;
- Restricted access to the Wreck of the Cali, which is proposed to be accessible only by permission of the Port Authority of the Cayman Islands (PACI); and
- Changes to the mitigation measures proposed resulting in residual effects which are greater than in the 2015 EIA.

In addition to the above, there are potential significant effects associated with the items listed below which are not sufficiently described in VIPP's submission, namely:

- The inclusion of the cargo port within the CBCEP – the original EIA did not consider the cargo port as part of the scheme assessed; and
- The on-shore disposal of material within the land reclamation area (if suitable) or at an undisclosed location (if not suitable).

All of the above indicates that aspects of the 2015 EIA will need to be revisited and an Environmental Statement (ES) Addendum prepared and submitted to the Environmental Assessment Board (EAB). The ES Addendum will comprise an update to the relevant aspects of the original 2015 CBF EIA as detailed in this EIA Scoping Opinion. In this document, the ES Addendum is referred to as the EIA Update.

The proponent team at CIG (prior to the involvement of VIPP) volunteered to skip the EIA Screening Stage and agreed to proceed to the EIA Scoping Stage, following the process outlined in the EIA Directive (2016) as per the meeting notes from the 8 October 2018 meeting (Appendix A).

The EAB, which is a sub-committee of the National Conservation Council, comprises members from the Department of Environment, Department of Planning, Department of Tourism, Department of Environmental Health, National Roads Authority, and Cayman National Museum and is chaired by the Department of Environment.

2. General Comments

The purpose of comparing the 2015 EIA to the new design for the CBCEP is to identify whether the assessment of effects predicted in the 2015 EIA are still considered valid for the new scheme. At times, VIPP's submission frames the proposed CBCEP as providing beneficial environmental effects, when in fact they remain adverse but are 'less worse' than the 2015 CBF. For example, Section 6.3 which says, "Each of these changes represents a net benefit..." is misleading, as many effects remain negative. The EIA Update will provide a transparent framework for updating the effects of the proposed CBCEP based on updated data and the current design.

The positive and negative effects of the CBCEP have not yet been quantified. The quantification of the effects where they have changed from the previous design, is a key component of the EIA Update.

Furthermore, as a general principle, statements should be adequately justified using data and an evidence-based approach (personal communications do not hold carry scientific weight).

The proposed methodology for dredging in VIPP's submission is often referred to as less environmentally damaging in comparison to other methods; however this is not confirmed to be the case as:

- A longer dredging period is proposed;
- The impacts from backhoe dredging extend throughout the entire water column; and
- There are un-quantified impacts from the land reclamation area.

VIPP's submission refers to the Invitation to Submit Outline Solutions (ISOS) and the Invitation to Submit Final Tenders (ISFT) information. The Department of Environment, National Conservation Council and EAB has not been provided with any of these documents.

Under the EIA Directive, the Environmental Management Plan (EMP) (which includes the Dredge Management Plan and the Coral Relocation Plan) forms part of the formal EIA process. Section 5 and Schedule 3 of the EIA Directive describe the requirements of the EMP in detail. VIPP's submission outlines a number of additional studies and surveys which will need to take place to support the development of the EMP, including the identification of mitigation measures. However, it appears that the proposed timing of these studies is after the EIA Update has been completed. Given that the EMP is a key deliverable of the EIA and that mitigation measures will need to be defined in order to assess the significance of residual impacts, it is clear that the proposed studies and surveys will need to be conducted as an integral part of the EIA Update as outlined in each aspect below.

Royal HaskoningDHV (RHDHV) has been retained as the environmental advisor to the CIG proponent team and section 2.5 of VIPP's submission suggests that RHDHV will be reviewing EIA documentation alongside the EAB. Given the direct involvement of RHDHV in assisting the CIG proponent team to deliver the project, and given that this proposed role of RHDHV is outside the provisions of the EIA Directive (2016), the EAB respectfully notes that this proposed review role is unnecessary and inappropriate. The EIA Directive makes provision for an independent third party review of the EIA to be triggered by either party, and the EAB will select a separate independent reviewer in agreement with the proponent if a third party review of any part of the EIA is necessary. This approach was agreed with the proponent team at CIG.

Where an ES chapter update is required or mitigation measures are no longer being proposed, the corresponding Rapid Impact Assessment Matrix (RIAM) tables must be updated.

3. Description of the Proposed CBCEP

The description of the proposed CBCEP should include:

- Details on the expected numbers of passengers, both daily and annual maximum and average, over the life of the project;
- Details on how the passenger limit of 25,000 passengers per day will be controlled;

- An adequate description of the waste generation predicted and quantities predicted year-on-year;
- An adequate description of the waste management proposals and in particular the provision of a waste management plan is sought to address both construction and operational lifecycles. This plan should demonstrate the elimination of wastes where feasible through reduction and or diversion initiatives. It should present the anticipated quantity and composition of waste materials and provide proposals which will manage these materials from capture to disposal and or diversion from disposal;
- Detailed plans for the landside development;
- Details on how the maximum passenger number will be accommodated within the CBCEP or in the George Town area;
- Details on how cruise passengers and cargo operations will be separated;
- Details on the number of piles and the methodology for pile construction including duration;
- Plans showing pedestrian movement around the landside development;
- Information on movement of waste transport vehicles, emergency vehicles and other services;
- Details of predicted traffic movements and routes including for cargo operations which will now take place during the daytime; and
- Description of how unsuitable dredged material will be identified, where the unsuitable dredged material will be placed, how it will be transferred/transported, and any interim storage of the material.

In some areas of VIPP's submission, it is considered that there will not be adverse impacts to the *Wreck of the Cali* because the tender operations will not be used each day. However, in Section 18.6 of VIPP's submission, it is proposed that traffic will be reduced because marine-based operations will be able to use the tender facilities to pick up and drop off passengers. This raises conflicts between users of the Cali and users of the tender facilities. The use of the tender facilities must be treated consistently in the description of the proposed CBCEP and between each of the topics in the EIA Update.

The 2015 EIA predicted that cargo operations are expected to remain a night-time activity, however VIPP's submission states that "ability to offload cargo vessels during the day will reduce vessel demurrage costs". This must be treated consistently in the EIA Update.

4. Summary Analysis of Alternatives

No update to the Summary Analysis of Alternatives is required. For clarity, the 2015 EIA did not consider an enhanced tendering alternative because this option was ruled out by CIG prior to commencing the EIA.

5. Natural Hazards Assessment

An update to the ES chapter will only be required if there is replacement or upgrade of the existing south cargo dock/quay wall.

Section 7.6 notes that the existing south cargo dock/quay wall will be retained as part of the project. VIPP is proposing to undertake a condition assessment of this structure to assess its ability to withstand the design hurricane and seismic events. VIPP's submission states that should an upgrade of this structure be required, this will be undertaken as an extra cost item. The replacement or upgrade of this structure may have significant environmental effects. There must be confirmation that no upgrades are required in order to agree to remove an update to this section from the scope of the EIA update.

The following additional tasks listed by VIPP in Section 7.7 should be completed as part of the EIA Update as they are required for other aspects of the ES Addendum:

- Seabed sampling program, geophysical field investigation, geotechnical field investigations and laboratory tests, probabilistic seismic hazard assessment and geotechnical engineering analysis; and
- Numerical and physical modelling of extreme wave conditions and wave-structure interactions.

The following tasks are not required to form part of the EIA Update:

- A Disaster Management Plan.

6. Geology and Soils

Section 9.4.1 of the 2015 EIA states,

"As noted above, the subsurface conditions are a critical consideration in the design, construction and cost of the project. However, due to limitations in the available subsurface information, additional subsurface investigations are required to support detailed design development for the proposed project. In particular, more reliable information is required to support an assessment of the following key issues:

- *Extent of loose sediment over cemented materials, and strength of cemented materials;*
- *Selection of dredging equipment, and associated production rates and costs;*
- *Ability to drive piles, and assessment of alternative methods to provide tensile capacity to resist wave extreme uplift loads on piers;*
- *Seismic risk, in particular for land reclamation area (liquefaction potential)."*

Section 8.7 of VIPP's submission supports this as it says, *"In addition, the modelling of turbidity, sedimentation and sediment re-suspension will be updated to reflect the results of the geotechnical investigation."*

The '2019 Response' with respect to the rate of sedimentation of the dredged berth pockets states that the VIPP layout is expected to reduce the risk and severity/extent of sedimentation due to its location in deeper water. This should be supported by evidence.

The geotechnical investigation is also required to identify the quantity of dredging material which will not be suitable for filling within the land reclamation area. Treatment, transport, storage, dewatering or disposal of the unsuitable material could have significant environmental effects. The cut/fill balance for the dredged area and land reclamation area should be quantified and included in the EIA Update.

The following additional tasks listed by VIPP in Section 7.8 should be completed as part of the EIA Update:

- Bathymetry and seabed mapping;
- Dive survey and coral mapping;
- Geophysical investigation; and
- Geotechnical investigation.

The following tasks are also required to adequately predict the environmental effects:

- Cut/fill balance for the dredged area and land reclamation area using information from the geotechnical investigations; and
- Liquefaction Assessment (completed by Langan in 2019 but not yet submitted to the EAB).

7. Coastal Processes – Waves and Sediment Transport

An update to the ES chapter is required, as detailed below.

Given the national importance of Seven Mile Beach and the public and scientific interest in the sediment transport links, the sediment transport modelling of the proposed CBCEP and Seven Mile Beach should be revisited. There may be parameters in the modelling which can be refined, tightened or modified based on information which continues to be collected on the baseline conditions since the original 2015 ES. Using improved parameters it may be possible to better refine the sediment transport modelling which was carried out as part of the original 2015 ES.

The wave overtopping study completed by RHDHV included numerical model simulations, but on the ISFT design which is not the same design that is being proposed by VIPP. The study should be updated using the VIPP layout to assess the effects of wave overtopping, which was also highlighted as a key concern for members of the public. The effects of the wave/flood wall proposed around the land reclamation area on the wave climate and adjacent properties should be assessed in the EIA Update.

The following additional tasks listed by VIPP in Section 9.7 of the EIA Scoping Update should be included in the EIA Update:

- Bathymetric and seabed mapping;
- Additional baseline measurements of turbidity, waves and currents;
- Updated modelling of sediment transport and sedimentation in the dredged area;

- Numerical and physical modelling of wave transformations over the wall and wave-structure interactions including wave loads on the piers, dolphins and bulkhead walls and wave overtopping of the land reclamation area.

8. Coastal Processes – Nearshore Dynamics, Dredge Plumes and Sediment Resuspension

An update to the ES chapter is required, as detailed below.

The area of dredging, dredge methodology, and dredging timeframe have changed since the 2015 EIA, and the changes as well as the effects arising from these changes must be quantified and adequately assessed.

As the dredge pocket has moved to the north, effects will be more negative on Cheeseburger/Soto's Reef.

In the original 2015 EIA (page 152), the cutter suction dredge was found to produce a slightly smaller impact zone than the low productivity backhoe dredge for both the turbidity and sedimentation criteria. The impact zone is also limited to the bottom layer for the cutter-suction dredge whereas the impacts are throughout the water column using the backhoe dredge. VIPP's submission states that backhoe dredging has a reduced environmental impact which is not what was reported in the EIA. The duration of mechanical dredging will also be greater than with hydraulic dredging.

The effect from sedimentation on coral has both a spatial and temporal component. While the spatial component may be reduced when compared to the 2015 CBF scheme, the temporal component may be greater, as a longer dredging time is proposed. If the assessment does indicate that there is a reduced spatial impact, the overall significance of effect may not be reduced when taking the dredging duration into account.

Stress on corals due to bleaching events should be incorporated into the construction planning process, in addition to mass coral spawning.

The additional modelling of turbidity and sedimentation due to dredging and cruise ship propellers and thrusters must be included in the EIA Update.

The additional tasks listed by VIPP under Section 10.7 of VIPP's submission should be included in the EIA Update:

- Bathymetric survey and seabed mapping;
- Dive survey and coral mapping;
- Additional baseline measurements of turbidity, waves and currents;

- Navigation simulations to confirm dredge pocket geometry and evaluate potential to reduce the width of the berth pockets and associated impacts, in particular encroachment into Cheeseburger Reef;
- Update modelling of dredge plumes; and
- Updated modelling of sediment re-suspension by cruise ships.

As outlined by VIPP, the above studies are required to update the Environmental Management Plan (e.g. Coral Relocation Plan and Dredge Management Plan) including updating sedimentation thresholds and development of the correlation curve for NTUs (nephelometric turbidity units). The scope of these updates will be defined in the Terms of Reference.

9. Sediment and Water Quality

An update to the ES chapter is not required and the proposed additional studies within Section 11.7 form part of the requirements for assessment within the other environmental chapters.

10. Stormwater Management

An update to the ES chapter is not required as part of the EIA Update.

11. Air Quality and Climate Change

VIPP's submission does not adequately address air quality issues. In particular, the report does not pay relevant attention to air pollution (nitrogen oxides, sulphur oxides and particulate matter) but focuses solely on greenhouse gases.

The 2015 EIA did not provide a complete air quality assessment, which was noted in the ES chapter as well as in the relevant appendices.

11.1 Air Quality

Appendix G – Air Quality, the Air Quality Report for the EIA of the Cayman Islands Berthing Facility states:

"The current survey of a limited subset of the compounds of potential concern (COPC) defined by the ToR was only a three month campaign limited to the summer months. We would recommend that a longer measurement period would be better in order to capture the complete variability within pollutant levels. Furthermore, since the main cruise season is during the fall to spring months (October to April), we would recommend that future monitoring include this time period to ensure samples representative of the cruise period and at times when pollutant levels may be higher. We would also recommend that PM₁₀ baseline monitoring be included in future measurement campaigns as it is a defined ToR COPC."

"It should be noted that while the converted results presented in Table 7 and Table 8 [of Appendix G] do not exceed the UK ambient air quality standards (AAQS) values, the 1-hour NO₂ values approach upwards of 90% of the standard value. This leaves little "space" for increased impacts from changes at the cruise terminal. Therefore, we would also recommend that measurements be made that allow for direct comparison to the averaging time of the appropriate standards to ensure a more accurate assessment of exceedances, or potential for exceedances, of the AAQS values. For example, SO₂ measurements should be made with a minimum of a 15 minute averaging time, which can then be averaged into the other, longer, averaging times."

The cargo operations were not considered part of the scope of works for the air quality assessment, although they generate significant traffic movements. The Air Quality Report states, *"Cargo operations occurring at the cargo terminal will not be affected by the cruise activities according to the ToR. Therefore, in terms of assessing changes in emissions of COPC imposed by the development, cargo operations can be ignored at this stage. In later work, emissions from cargo operations may need to be considered for dispersion modelling of impacts."*

The Air Quality Report also states: *"The wind-rose plots in Figure 1 and Figure 4 indicates that most emissions from the Royal Watler Cruise Terminal location would be carried out to sea and may have minimal impact on the surrounding area. However, this does not mean that there may not be significant impacts on local air quality caused by the Development. It can be noted from the two figures that there is a north-south element to the wind, which, when combined with the shape of the coastline at the harbor location and increased emissions from both harbor and on-road activity, may cause local impacts in air quality on the timescales of the AAQS. The only way to accurately assess the impact of the altered emissions is through dispersion modelling."*

The EIA states, *"Based on the significant increase in the emissions of COPCs predicted by this review, dispersion modelling is strongly recommended to predict levels at specific sensitive receptors. Information from the modelling would serve as a basis for the formulation of policy and strategies for effective management of ambient air quality."*

Based on the above, dispersion modelling should now be undertaken.

11.2 Greenhouse Gases

VIPP's submission provides a justification for an improvement in effects from the revised design by providing information about ship's emissions of greenhouse gases while in port. However the information provided is only a small part of the total greenhouse gas emissions from the CBCEP. The information is also unsupported by evidence and includes only the capacity of a *Freedom* class of 4,370. *Freedom* class ships currently tender at the port. The calculations do not include *Oasis* class which are likely to have higher total emissions and per passenger emissions as a function of their size and the facilities they provide and so the calculations should have included *Oasis* class ships. The rough calculations also do not mention manoeuvring into the berths, which can be a significant source of emissions.

The general consideration that the greenhouse gas assessments did not consider differences in emissions for vessels at anchor versus vessels at berth is valid. Particularly as the 2015 EIA states, *“more detailed ship-specific emission data should be collected from ship owners/operators to determine if the generic emissions factors are accurate for representative ships.”*

Notwithstanding the above, the conclusions of the original ES regarding greenhouse gas emissions are considered to remain valid (that the effects are slightly negative to moderately negative) and no update to the EIA is required.

12. Noise and Vibration

The proposed CBCEP will have longer and wider piers with more piles driven to support them. This will increase the duration of noise and vibration effects. This was not addressed in VIPP’s submission and additional information regarding the number of piles and methodology of pile construction including duration should be included in the EIA Update. It should be verified that there are no new likely significant effects as a result of this change.

The EIA also relied upon hydro sound dampers on nets surrounding the pile drivers to absorb the noise in order to reduce effects on marine species and diving and snorkelling. According to Section 14.6 of the EIA Scoping Report, the hydro sound dampers are no longer included. The EIA predicted an effect with a value of ‘-C’ (moderate negative) without mitigation and with ‘-B’ (negative) with mitigation. If the mitigation is no longer being provided, then the effect remains of value ‘-C’ which is moderate negative. Therefore, the residual effects will be worse than predicted in the EIA.

Furthermore, marine mammals are extremely rare in the George Town port, and a ‘marine mammal observer’ is not required.

13. Terrestrial Ecology

The scoping out of this topic remains agreed.

14. Marine Ecology

An update to the ES chapter is required, as detailed below.

Although the dredging pocket moves north and therefore further from Eden Rock, it moves closer to Cheeseburger/Soto’s Reef. Even though there are coral outcroppings which will no longer be directly within the dredging pocket, the dredging pocket now includes more reef structure.

The EIA Update must include quantification of:

- The effects on Cheeseburger/Soto’s Reef;
- The effects on Eden Rock and Devil’s Grotto;

- The direct and indirect coral impacts of dredging and piling; and
- The impacts from the land reclamation works.

The estimates of impacted coral within VIPP's submission do not seem to be consistent both within the document itself and with the 2015 EIA. At the end of page 53 of VIPP's submission there is a reference to additional information on the estimated extent of the various substrates within the anticipated indirect impact zone, but it is not clear where this is. Figure 16.4 is not a quantification of the impact zones. The Coral Relocation Plan was based on a previous iteration and therefore does not contain estimates of loss based on the proposed CBCEP. Figure 16.1 has no key and the images on the left and right are the same, at least at the resolution presented. Page 54 states that "It is understood that Cabinet has recently approved a proposal to amend the limits of the Marine Protected Areas to create a specific anchorage zone." The area has always been the anchorage zone. Therefore, given that there is no precise quantification of coral impacts (both direct and indirect), these must be included in the EIA Update. This is supported in VIPP's submission which states in Section 16.4, *"The actual size of the indirect impact zone will be defined through the additional modelling proposed by VIPP."* The indirect impact zone is a crucial environmental effect of the project, and this must be appropriately quantified and included.

The EIA Update must not overstate the contribution of the reduction in anchorage as a mitigation measure. The proposed benefits in Section 16.5 are overstated because:

- Anchoring will still be required, the requirement is only reduced by the CBCEP,
- The two retained anchorages are on either side of the CBCEP and the middle of the anchorage area will still be impacted by cruise ships using the CBCEP, therefore the overall impact area will remain similar.
- The current stressors on coral are such that the coral reefs are unlikely to recover on their own.
- There has been a loss of three dimensional structure and rugosity within the anchorage area which will reduce likelihood of recovery.
- The substrate in the area is completely unconsolidated and the corals will be subject to ongoing sediment stress from the anchorage points which will continue to be used.
- Offshore anchoring of cargo vessels does not regularly occur.
- The time frame of recovery is likely to be extremely long, if at all.
- There is too much emphasis placed on the size of the anchorage area as a comparison to the CBCEP area. The impact on the environment from this would be more appropriately considered cumulatively with those of the anchorage facility.
- The entirety of the 430 acres of the anchorage area is not used for anchorage, and corals are protected across the Cayman Islands.

The plans for the outplanting of corals or the movement of large pieces of coral spurs to the anchorage area must be the subject of additional consultation with the Department of Environment/National Conservation Council.

The Coral Rescue and Triage Nursery cannot be considered mitigation or biodiversity offset in the EIA Update. This was agreed during the meeting held between the Department of Environment and VIPP including Dr. Vaughan on 18 October 2019, where it was considered an 'extra'.

The land-based coral nursery cannot be considered as an offset. According to Good Practices for Biodiversity Inclusive Impact Assessment and Management Planning¹, biodiversity offsets:

- Must follow the mitigation hierarchy;
- Should support landscape-level conservation;
- Must provide additionality;
- Have sufficient scale to achieve no net loss or net gain;
- Provide in-kind (like for like) vs. out-of-kind (trading up);
- Stakeholder participation fortifies offset design; and
- Offsets' benefits should endure as long as project impacts.

The land-based coral nursery meets some of the requirements (e.g. mitigation hierarchy, additionality) but not all. The land-based coral nursery does not provide landscape-level conservation as it will be a land-based activity. Beyond the propagation of individual corals, the nursery would not be able to mitigate for the loss of ecological processes and functions of the landscape. Given the scale of the CBCEP, the proposed land-based coral nursery does not provide an adequately compensatory scale. The good practice guide also indicates that the offset should be expanded in size to accommodate uncertainties in design and expected effectiveness of the offset. There is a high degree of uncertainty with the land-based nursery. The proposed land-based coral nursery does not provide like-for-like or out-of-kind trading up, as a reef ecosystem will be lost. The loss of coral habitat to the CBCEP is a nearly permanent effect. Although we understand that there is a 25 year commitment to the land-based coral nursery, in line with the 25 year life of the contractual agreement, the land-based coral nursery will not endure as long as project impacts.

As per Figure 1, the land-based coral nursery can be considered an 'other action'.

¹ Multilateral Financing Institutions Biodiversity Working Group. (July 2015). Good Practices for Biodiversity Inclusive Impact Assessment and Management Planning.

Biodiversity Mitigation Hierarchy

(Adapted from Rio Tinto Biodiversity Strategy)

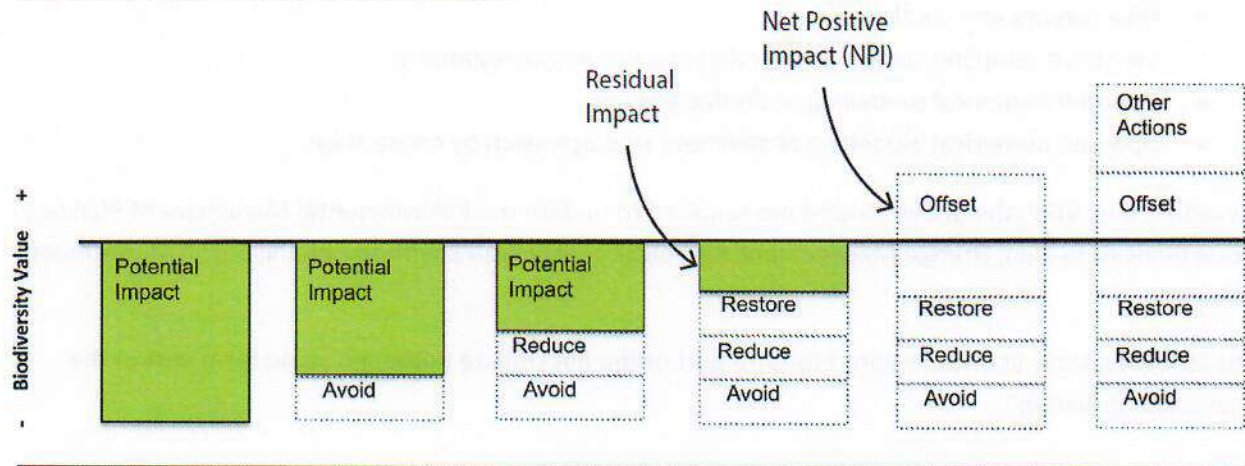


Figure 1. The Biodiversity Mitigation Hierarchy from Good Practices for Biodiversity Inclusive Impact Assessment and Management Planning (July 2015).

It is appreciated that:

- The Coral Rescue and Triage Nursery is proposed to be stocked with smaller corals and coral fragments that will not be relocated as part of the Coral Relocation Plan (i.e. corals that would be destroyed by dredging otherwise).
- The Coral Rescue and Triage Nursery is proposed in conjunction with a Coral Outplanting Program.
- The overall goal is to plant 100,000 corals per year for 25 years for a total of 2,500,000 corals.
- There is suggestion of outplanting corals within the anchorage area.

However, there are practical and physical limitations to the above suggestions, and there is a great degree of risk and uncertainty associated with those activities. The risk and uncertainty is too high to consider this program as an effective mitigation measure. Section 16 of VIPP's submission states, "ISFT stated objective of no net loss of coral habitat over the long term." No biodiversity metrics have been proposed for the 'no net loss of coral habitat'.

The current condition of the corals within the project area is a very large factor in their survival under periods of further stress through sedimentation/turbidity. It is not currently known whether the corals surrounding the proposed CBCEP in the impact area are close to their 'tipping point' beyond which rapid reef degradation can occur. However, the Marine Ecology Appendix J prepared for the 2015 EIA suggests that, for the George Town Harbour reefs, the average percentage of coral and calcareous coralline algae (32%) relative to the average percentage of macroalgae and turf algae (33%) suggests that the existing steady state of the reefs is close to the tipping point

The following additional tasks listed by VIPP in Section 16.7 should be included in the EIA Update:

- Additional baseline monitoring of turbidity, waves and currents;
- Bathymetric survey and seabed mapping;
- Dive surveys and coral mapping;
- Sediment sampling, geophysical and geotechnical investigations;
- Updated numerical modelling of dredge plumes;
- Updated numerical modelling of sediment re-suspension by cruise ships.

As outlined by VIPP, the above studies are required to update the Environmental Management Plan (e.g. Coral Relocation Plan, Dredge Management Plan and Construction Environment and Social Management Plan),

The following tasks are not required to form part of the EIA Update (although some form part of the overall EIA process):

- Stormwater Management Plan.

15. Cultural Heritage

No update to the ES chapter is required for the assessment of cultural heritage, however the loss of access to the *Wreck of the Cali* must be included within the Socio-economic Impact Assessment. Additional comments are below.

The 2015 EIA did not account for the loss of access to the *Cali*. VIPP's submission has stated that access to the *Cali* will be only by permission from PACI due to the presence of tendering traffic (and presumably marine tour staging). If access to the *Balboa* is made easier, but access to the *Cali* is now by permission only, there are no additive positive effects. There may be even adverse effects because the loss of access to the *Cali* is a certainty given the design, and there is a risk of damage to the *Balboa* when it is relocated.

The relocation of the *Balboa* was considered, albeit not confirmed, in the 2015 EIA and was given a 'long-term positive and moderate to high impact.' VIPP's submission indicates that the proponent is proposing to change the layout of the *Balboa* to the shape it was pre-1957 when it was damaged to reduce risk to navigation. This is considered a marginal benefit. The loss of public access to the *Cali* is likely a greater adverse effect than the re-configuration of the *Balboa* is a positive effect (see Table 1). It is considered that the current proposals have more adverse effects than the original EIA predicted.

Table 1. Accessibility of the existing *Wreck of the Cali* versus the proposed relocation of the *Wreck of the Balboa*.

Existing <i>Wreck of the Cali</i>	Proposed Relocation of the <i>Wreck of the Balboa</i>
Accessible for shore divers and snorkelers	In a depth of water which will be accessible for divers but not for snorkelers
Accessible by the public from land adjacent to North Church Street	Located off a private hotel development which will have limited access for shore access by members of the public

Existing <i>Wreck of the Cali</i>	Proposed <i>Relocation of the Wreck of the Balboa</i>
Utilised by numerous co-located businesses including Sea Trek and SNUBA, Divers Down, Cayman Diving, SeaLand Adventure Tours, Nautilus	Reduced available space and land for co-located businesses
The <i>Cali</i> is also presently stable and affixed to the seabed by natural processes, thus not a threat to the surrounding environment. It is a safe wreck site for the public to visit.	<i>In situ</i> , the <i>Balboa</i> is presently stable and affixed to the seabed by natural processes. Relocation creates instability, and thus requirements for special measures to affix the many components to the seabed, in order to avoid their movement and potential resulting damage to the components and surrounding environment.

Dredging in the historic Hog Sty Bay was not considered in the 2015 EIA and it is not considered in this update. Therefore, there is no change and there is no new benefit from the revised plans.

Furthermore, the 2015 EIA stated that there would be a monitoring program of the *Cali* to identify and address unforeseen impacts, which is not included in VIPP's submission, therefore the residual effect remains '-D', i.e. major negative.

As outlined by VIPP, the pre-construction inspection of historically/culturally significant buildings and structures in proximity to the project site are required to update the Construction Environment and Social Management Plan. The Coral Relocation Plan forms a key part of the mitigation measures for the *Wreck of the Balboa*.

The EIA Update should ensure that the National Museum is named appropriately, rather than confused for National Monument.

16. Vehicular and Pedestrian Traffic

An update to the Port Operations Plan will be required based on the VIPP's submission noting that some cargo operations will be taking place during the day. Also, a clarification needs to be made on which operations are being proposed to occur during the day. It may be prudent to revisit that cap of 25,000 passengers per day in relation to the annual passenger volume of 2.5 M, which results in far less passengers per day when spread over the year.

Since the 2015 EIA, the cargo facility has been included within the scope of works and the passenger volume has been increased to 2.5 million with VIPP anticipating 1 to 1.5% growth per annum from 2022. In addition, VIPP's submission states that there are likely to be cargo operations during the day (Section 19.6). It is noted that the working area for cargo operations has been increased, particularly during the day, so that now it is not necessary to clear the area for cruise operation. This will result in additional vehicles and pedestrians movements which should be assessed.

The original Traffic Impact Assessment was based on 11,000 passengers today with an optimistic 3% growth per year to give a theoretical future volume of 14,300 passengers as a worst case scenario. The CBCEP is being constructed with a capacity of 25,000 passengers per day. The VIPP proposal notes that the PACI will limit cruise traffic to a maximum of 25,000 passengers /day and will review this intermittently in consultation with Department of Tourism and other CIG entities.

A Traffic Impact Assessment update will be required noting the concerns above. The applicant should revisit the 25,000 cap and how this will work with the proposed cargo operations during the day and the affect that number will have on the carrying capacity of the existing and proposed mitigating infrastructure works in George Town itself.

The following tasks are required to form part of the EIA Update:

- Traffic Management Plan;
- Port Operations Plan; and
- Detailed design of landside development.

17. Cargo and Cruise Operations

An ES chapter update is required.

The Applicant must:

- reconfirm that there will be no provision of potable water, electricity or waste disposal for the cruise ships when calling at Grand Cayman;
- confirm that there will be no dredging in Hog Sty Bay required in the future in order to provide the 15 years of additional capacity at the cargo port which is proposed in VIPP's submission.

Much of the information in the original ES chapter would now be considered outdated. For example, the highest number of cruise ship arrivals occurred in 2018 at 1.9 million and in 2019, there were 1.8 million arrivals. While the ES looked at a 10 year period and concluded that there was a generally declining trend in cruise arrivals, if the updated EIA was to look at the previous 10 years of cruise data, there would be a general increase (1.5 million passengers in 2009 to 1.8 million passengers in 2018).

The CBCEP design now shows separated functions whereby debarking cruise passengers flow does not overlap with the Cargo operations. Evidence is to be provided of the footfall flow and mitigation of any security threats to visitors with specific concern and emphasis on the disembarkation of cruise visitors from the southern positioned pier. Additionally, a clear explanation and demonstration should be provided on how both operations will safe guard the containment of visitors in the cruise section and not cause any breach into the cargo facility.

VIPP's submission chapter did not include that there will be the potential loss of recreational opportunities because of lack of access to the *Cali*, however this must be adequately addressed in the Socio-economics Impact Assessment.

The 2015 ES indicated that PACI have recorded peak passenger arrivals of over 20,000/day; however these are rare occurrences. PACI's records show that passenger arrivals are less than 11,000 pax/day 85% of the time during cruise season. The proposed plan is to increase passenger arrivals to maximum 25,000/day. Carrying Capacity studies are required in order to determine whether the key attractions in Cayman have the ability to accommodate the predicted visitation levels without having a detrimental effect on visitor experience or on the attraction. This is also a recommendation in the recently tabled National Tourism Plan (2019-2024).

The following tasks are required to adequately predict the environmental effects:

- Carrying Capacity studies at key attractions such as Stingray City and Seven Mile Beach.

18. Socio-Economic Impact Assessment

An update to the ES chapter is required, as detailed below.

The Socio-Economic Impact Assessment must take into account:

- The reduced number of jobs estimated during construction (245 to 200 FTE);
- The reduced number of operational jobs estimated (999 to 550 FTE);
- The Carrying Capacity studies; and
- The loss of public access to the *Wreck of the Cali*.

If increased expenditure due to 'more affluent passengers' is to be used as a metric, it must be supported by evidence. Verified third party data or primary data is preferred, for example, the Outline Business Case used data from Business Research and Economic Advisors (BREA).

If a decrease in cruise ship passenger numbers is used within the assessment, there should be evidence that cruise ship passenger numbers will decrease if the CBCEP does not proceed.

The proposed coral nursery is not suitable for consideration as a mitigation measure or as an offset within the Socio-Economic Impact Assessment.

It is especially important to update the Socio-Economic Impact Assessment because much of the mitigation which was presented in the 2015 ES is no longer being proposed.

19. Business District Impact Assessment

The Business District Impact Assessment has been included within the Socio-Economic Impact Assessment.

20. Landscape and Visual Impact Assessment

No update to the ES chapter is required.

The detailed masterplan for the proposed landside development has not been included in VIPP's submission for review and has not been shared with the EAB. Nonetheless, the size and visual impact of the CBCEP is likely to be similar to the 2015 EIA scheme and it is considered that there are no new likely significant effects.

Beyond those required for an appropriate description of the proposed CBCEP in the EIA Update, the following tasks are not required to form part of the EIA Update:

- Project renderings, including existing and proposed conditions (although these are likely to be useful for the EIA Update);
- Final design and detailing of landside development; and
- Final design and detailing of marine structures.

21. Conclusions

The EAB has reviewed VIPP's submission and concluded that an EIA Update is required to reassess the likely effects of the new design as the effects predicted in the original CBF EIA may no longer apply to the new project design. The EIA Update should include updates to the Geology and Soils, Coastal Processes – Waves and Sediment Transport, Coastal Processes – Nearshore Hydrodynamics, Dredge Plumes and Sediment Re-suspension, Air Quality, Marine Ecology, Vehicular and Pedestrian Traffic, Cargo and Cruise Operations and Socio-Economic Impact Assessments. The additional studies proposed by VIPP are generally acceptable, as detailed within the Scoping Opinion above, and form the basis for the updates to the ES Chapters (see Table 2). The proponent should now submit details of the consultancy team which will carry out the EIA so that the EAB can confirm that they possess the range of technical competencies required to undertake the EIA based on the above Scoping Opinion.



Gina Ebanks-Petrie
Chair, Environmental Assessment Board

Table 2. A summary showing the studies proposed by VIPP required to support various chapters. Certain studies are needed to support multiple studies.

Studies to be Undertaken	Natural Hazards Assessment	Geology and Soils	Coastal Processes – Waves and Sediment Transport	Coastal Processes – Nearshore Hydrodynamics, Dredge Plumes and Sediment Re-suspension	Sediment and Water Quality	Stormwater Management	Air Quality	Noise and Vibration	Terrestrial Ecology	Marine Ecology	Cultural Heritage	Vehicular and Pedestrian Traffic	Cargo and Cruise Operations	Socio-economic Impact Assessment	Landscape and Visual Impact Assessment
Updated ES Chapter Required?	No	Yes	Yes	Yes	No	No	Yes	To be confirmed	No	Yes	No	Yes	Yes	Yes	No
Bathymetry and seabed mapping		X	X	X						X					
Seabed Sampling Program	X	X			X					X					
Geophysical field investigation	X	X			X					X					
Geotechnical field investigation	X	X			X					X					
Probabilistic Seismic Hazard Assessment	X									X					
Geotechnical Engineering Analyses	X	X								X					
Dive survey and coral mapping		X		X						X					
Additional baseline measurements of turbidity, waves and currents			X	X	X					X					
Additional modelling of sediment transport and sedimentation in the dredge area			X	X	X					X					
Numerical and physical modelling of wave transformations over the wall and wave-structure interactions			X							X					
Navigation Simulations				X											
Port Operations Plan												X	X		

APPENDIX A



**DEPARTMENT OF
ENVIRONMENT**
CAYMAN ISLANDS GOVERNMENT

8 October 2018

**NOTES FROM A MEETING BETWEEN MAJOR PROJECTS OFFICE, ROYAL HASKONINGDHV AND THE
DOE ON THE PROPOSED CRUISE BERTHING FACILITY**

The purpose of the meeting was for the Major projects Office and Royal HaskoningDHV to update the DoE in respect of relevant aspects of the project that had been completed since last summer and to provide some insight as to the process that would be followed moving forward. This information was required by the DoE in order to determine their level of comfort with appearing on Cayman Crosstalk this coming Friday.

It was agreed that there have been material changes to design of the proposed Cruise Berthing Facility (CBF), such that the Environmental Statement (ES) completed by Baird in 2015 may no longer reflect the environmental effects of the proposed CBF.

As a result it was also agreed that certain aspects of the previous EIA will need to be updated and the results of this update would likely constitute an Addendum to the ES.

During the meeting, it was revealed that Royal HaskoningDHV had been commissioned by the Major Projects Office/Ministry of Tourism to undertake an interim EIA update. Although the scope of this update was not made clear to the DoE it was agreed that in order to follow the provisions of the NCL, the scope of works developed by Royal HaskoningDHV should go before the EAB with a request for a Scoping Opinion (as per Box 3 of the flow chart in the EIA Directive).

Given that there is a previous Terms of Reference (ToR) and that the scoping exercise will have a fair amount of detail, it was agreed by all that the ToR for the update should be straightforward. It was also agreed that a further round of public consultation will be undertaken on the scope of work to be undertaken in order to update the ES and that the EIA Directive process would then be followed as normal (this would include another round of public consultation on the updated EIA/ES Addendum).

Royal HaskoningDHV informed the group that the Outline Dredge Management Plan and Draft Coral Relocation Plan had been updated, taking into account the proposed new layout.

The DoE observed that, as written, the Outline Dredge Management Plan called for a number of additional studies and that it was not clear when these studies would take place relative to the issuing of the contract (for example, on page 9 the plan identifies the need for geotechnical investigations to inform the choice of dredging methodology). Royal HaskoningDHV noted that the geotechnical investigations would need to be done before the DMP could be finalized. It was acknowledged that given the range of additional studies and updating of existing studies needed to finalise the DMP (and possibly other key documents such as the Contractor's Environmental

Management Plan) it would be worthwhile to develop a flowchart so that the relative timing of all required work could be more easily understood and visualised. Royal HaskoningDHV agreed to produce a first draft of this Flow Chart by Wednesday 10th October.

The DoE also asked about the way in which the whole suite of environmental mitigation measures proposed in the Baird ES would be treated and costed as only some of them were encompassed by the DMP and the CRP. The DoE expressed the view that the government would need to decide which of the proposed mitigation measures it planned to utilise as they all had a cost which would need to be factored into the overall project cost. It was agreed that the contractor would have to cost those mitigation measures that were relevant to the construction of the piers but that there were other mitigation measures which would not be the contractor's responsibility (eg the proposed mitigation measures for the predicted socio-economics effects of the project). The DoE observed that following completion of the ES in 2015, Baird produced a Draft Preliminary Scoping of Possible Mitigation Measures and that the DoE/EAB had reviewed this document and provided comments. The representatives from the Major Projects Office requested that the DoE email the DoE/EAB's review. *(N.B. In the DoE's view the question of which mitigation measures will ultimately be carried forward so that the true residual impacts of the project can be identified and a total cost associated with mitigating project impacts can be arrived at was not satisfactorily resolved. Further discussion is required.)*

The Major projects Office noted that Royal HaskoningDHV had been retained to review the means and methods of delivering agreed mitigation measures proposed by the appointed contractor. The DoE asked whether the EAB would have a role in reviewing that information and it was agreed that this information would be provided to the EAB for review.

Finally, the Major Projects Office informed the DoE that Royal HaskoningDHV would be retained to monitor adherence to agreed environmental mitigation measures and standards.