



20 February 2023

Via Email only

To: Department of Environment, Environmental Centre, 580 North Sound Road, George Town, Grand Cayman.

Subject: Draft National Roads Authority East West Arterial Extension Terms of Reference for Environmental Impact Assessment Public Consultation Comments

Dear Department of Environment,

Sustainable Cayman is a registered NPO established for the purpose of promoting sustainability, climate resilience, and public participation in the Cayman Islands as it relates to the equitable management of natural resources and upholding the rights of citizens for a healthy and sustainable environment in the Cayman Islands. We recognize the importance of protecting the Central Mangrove Wetlands (CMW), the largest remaining contiguous mangrove wetland in the region, its critical ecosystem services and natural capital value. We also recognise the urgent need to alleviate the traffic congestion which is negatively impacting the quality of life of residents of the Eastern Districts. We are also greatly invested in ensuring an effective modern transportation system, including an efficient public transit system, is implemented.

We are pleased to see an Environmental Impact Assessment (EIA) is being undertaken on the proposed East West Arterial (EWA) extension project and we welcome the opportunity to respond to the Terms of Reference (ToR).

There are many aspects of the ToR which we commend to help tackle society's clear need for improved transport infrastructure. In particular, the inclusion of the alternative solution of improvements to the Bodden Town Road and the recognition of critical ecosystem services that the CMW provides to Caymanian society. There are however some indispensable improvements which we believe will need to be made for the ToR to be fit-for-purpose and ensure the EWA does not make the traffic problem even worse.

Cayman's EIA process helps meet basic international lending standards for projects. The International Finance Corporation-World Bank (IFC) Environmental and Social Performance Standards should be reviewed and incorporated into the EIA process. In particular, Performance Standard 6, *Biodiversity Conservation and Sustainable Management of Living Natural Resources*, details measures that projects should take to protect and conserve biodiversity, maintain the benefits from ecosystem services, and to promote the sustainable management of living natural resources.

Compliance with these standards is required for all projects funded by the Caribbean Development Bank (CDB), and should be for all private lending. The CDB states that they will not finance or support operations that significantly convert or degrade impacts on critical, natural, and protected habitats, and will instead promote the conservation, protection and management of natural resources. The CDB and the IFC define critical habitats as natural or modified habitats with high biodiversity value that may include regionally significant and or highly threatened or unique ecosystems – a criteria which the CMW and dry forest habitats on Grand Cayman meet. Importantly, any project which impacts critical habitats is required to demonstrate a Biodiversity Net Gain in accordance with the IFC Standards.

Our consultation response addresses four critical considerations which we believe the ToR must include in order for the EIA to achieve its objectives. It also includes further important considerations which we believe should be included in the ToR.

CRITICAL CONSIDERATIONS:

1. Induced growth should assess all land and the entirety of any land parcels whose borders fall within one and a half miles (1.5) of the proposed EWA Extension project, and other alternatives assessed based, on historic deforestation and development trends
2. Impacts to critical marine resources, wildlife and habitats are missing and should be assessed within a marine ecology chapter
3. Mitigation measures for habitat loss should include critical habitat re-establishment at a ratio of 1:30 and demonstration of Biodiversity Net Gain in accordance with the IFC Standards
4. It is crucial that the potential loss of Natural Capital, such as rainfall, and mitigation/offsetting costs associated with achieving at least a No Net Loss of biodiversity should be included within the Cost Benefit Analysis in the Alternative Alignment Evaluation

OTHER CONSIDERATIONS:

5. The impacts of lighting on terrestrial and marine wildlife, such as the threatened Cayman parrots and West Indian whistling ducks and mating green, loggerhead, and hawksbill turtles, should be assessed
6. Land use forecasting and traffic modelling should be based on a 'worse-case' scenario in line with historic development trends
7. Embedded Greenhouse Gas (GHG) emissions, such as those associated with mining aggregate and shipping, should be included within the Cost Benefit Analysis in the Alternative Alignment Evaluation
8. Implementation of public and active transport methods should be factored in when assessing environmental and socio-economic impacts of alternative options
9. The improvements to the Bodden Town Road alternative should factor in public transport, active transport methods and road upgrades to key bottlenecks

10. Biosecurity risks and mitigation measures should be included in the ToR
11. Alternative solutions to the proposed EWA Extension project should be assessed in the 'Alternative Alignments Evaluation' which should therefore be named 'Alternative Solutions Evaluation'
12. Important clarifications on the use of Natural England's Biodiversity Metric 3.1 are required
13. Additional standards and guidelines should be used for evaluating potential effects to terrestrial and marine ecology
14. Consider implications of the draft National Planning Framework (Plan Cayman) and proposed Natural Resource Preservation Overlays

Details for each consideration are provided under each of the headings below.

1. Historic development trends and lack of a development plan mean that induced growth should be assessed for the entirety of unprotected land parcels whose border falls within one and a half miles (1.5) of the proposed EWA Extension project:

- Section 4.1 Overview of Assessment Parameters states that *"Induced residential or commercial growth could also occur due the new access provided by the new roadway and/or reduced commute times. The impacts caused by these new developments would also be considered as indirect effects. Typically induced growth is anticipated within approximately one mile of each new access point, the area that is protected from development, such as NCA lands, would be excluded, then the impact associated with the remaining land would be estimated and evaluated."* We are pleased to see that induced growth will be assessed as an indirect impact within the EIA.
- Historic development trends show that, in the absence of the National Conservation Act/National Trust of the Cayman Islands, protection and any modern development plan zoning, mangroves and wetland habitats are destroyed at alarming rates <https://fb.watch/iPqttkK49v/>. For example, Grand Cayman history shows 72% mangrove deforestation and wetland habitat loss over ~40 years following roads being built along West Bay¹The Development Plan and zoning maps have not been updated since 1997 and are therefore not in-line with international sustainable development frameworks and standards. If the proposed EWA Extension project is built where it is gazetted, it will provide access to large areas of privately owned land within the CMW and unlock it for deforestation and development. For these reasons, we believe the one-mile radius proposed in the ToR to assess induced growth is highly inadequate.
- Given these considerations, induced growth forecasts should use a 'worst case' scenario when modeling potential environmental impacts. Induced growth should assess all land and the entirety of any land parcels whose borders fall within one and a half miles (1.5) of the proposed EWA Extension project, and of any other alternatives being assessed. This use of a 'worst-case' scenario is recognised in the guidance adhered to in the ToR: The Chartered Institute of Ecology

¹ DOE Earth Day (2020); 'Earth Day 2020 – Climate Action' Available: <https://doe.ky/earth-day-2020-climate-action/>

and Environmental Management's (CIEEM) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*.

2. Impacts to marine resources, wildlife and habitats are missing and should be assessed:

- Section 4.5.2 Baseline Conditions states *"The Central Mangrove Wetland provides filtered water and nutrients to the North Sound which provides the base for the North Sound food web. The North Sound is directly linked to the Central Mangrove Wetland; consequently, effects to the Central Mangrove Wetland will also affect the North Sound ecosystem."* Section 4.6.2 Baseline Conditions also states that the CMW provides nursery grounds, food, shelter, and habitat for a wide range of aquatic species. However, in the terrestrial ecology chapter, Section 4.5.4.1 Potential Receptors, while the CMW, migratory birds and protected species of flora and fauna are listed as features identified as potential receptors, marine species and habitats associated with the CMW and the North Sound are not. Indeed, it appears that an entire chapter for marine ecology is absent from the ToR, which is a critical omission. This chapter is crucial for economic and environmental considerations in the EIA.
- Given the stated link between the two ecosystems, marine species and habitats should be listed as potential receptors under a marine ecology chapter and all potential direct and indirect impacts to them assessed. Such impacts should include changes in hydrology, disturbance to sediment and nutrient flows, loss of habitat and restriction of movement for aquatic species, loss of nursing grounds for juvenile aquatic species, roadway runoff including water contamination by pollutants and lighting.

3. Mitigation measures for habitat loss should include re-establishment of mangrove and dry forest at a ratio of 30:1 and demonstration of Biodiversity Net Gain in accordance with IFC lending standards:

- Section 4.5.6 Mitigation Measures states, *"Mitigation measures will be investigated to offset unavoidable impacts from the proposed EWA Extension project."* However, these mitigation measures do not mention the mitigation hierarchy. This is an elementary standard that should be applied, as detailed in the CIEEM *Guidelines for Ecological Impact Assessment in the UK and Ireland* and in the IFC PS6 *Biodiversity Conservation and Sustainable Management of Living Natural Resources*. As previously mentioned, the IFC Standards define critical habitats as natural or modified habitats with high biodiversity value that may include regionally significant and or highly threatened or unique ecosystems – a criteria which both the CMW and dry forest habitats meet. Lenders that require compliance with the IFC Standards, such as the CDB, require projects to provide a Biodiversity Net Gain if any critical habitats are unavoidably impacted as part of the project.
- We recommend the text in this section is amended to state that *"mitigation measures will follow the mitigation hierarchy throughout project design and the EIA process, specifically giving priority to avoidance of impacts to critical habitats, and where this is unavoidable, demonstrating that the project can achieve a No Net Loss in biodiversity at a minimum in accordance with IFC Standards."* In order to compensate for direct impacts to critical habitats, mangrove and dry forest habitats, we recommend that mitigation measures define habitat

replacement requirements at a ratio of 30:1, meaning that for every one acre of habitat lost 30 acres are replaced. This ratio is used in UK standards² when compensating for irreplaceable habitats, like ancient woodland (the UK's equivalent to mangrove forest and dry old-growth forest), as Natural England's Biodiversity 3.1 Metric does not recognise irreplaceable habitats.

- Given that the proposed EWA Extension project is expected to result in the direct deforestation of 174 acres of terrestrial habitat, the majority of which is critical habitat (mangrove or dry forest), Sustainable Cayman does not see how it is possible for the proposed project to achieve the desired No Net Loss of biodiversity as stated in the ToR.
- Protecting habitat or funding the conservation of protected areas is not included as a mitigation measure. We request that protecting the CMW, dry forest and other ecological important habitats in perpetuity is included as a mitigation measure, either via designation as a NCA land or land is purchased and donated to the people of the Cayman Islands as a protected National Park
- Promised mitigation measures can fail due to a lack of monitoring and maintenance. There is no provision within the ToR that details long-term monitoring and evaluation of mitigation measures after project completion to ensure their effectiveness. We therefore recommend the addition of the following section: *"4.5.7 Monitoring and Evaluation – Long-term monitoring measures will be identified to allow evaluation of the success or otherwise of ecological mitigation measures required to offset the impact of the proposed EWA Extension project and included in the Environmental Management Plan (EMP). In addition, the resourcing and mechanisms for reporting monitoring results will be made clear, along with the resourcing of any remedial measures needed to ensure mitigation measures are successful and fully meet their required objectives."*

² Natural England and the Forestry Commission (2018); 'Standing Advice: Ancient Woodland and Veteran Trees.'
Available:

<https://www.csaenvironmental.co.uk/wp-content/uploads/2018/01/2018-Website-Article-New-Guidance-on-Ancient-Woodland-v3.pdf>



Figure 1. Sediment pollution due to coastal works dredging for Heritage Holdings Ltd, 2017.

4. It is critical that the potential loss of Natural Capital and mitigation/offsetting costs associated with achieving at least a No Net Loss of biodiversity should be included within Cost Benefit Analysis in the Alternative Alignment Evaluation:

- Section 3.2 Roadway Alignment Alternatives and Analysis details the process that will be undertaken for the Alternative Alignment Evaluation. ‘Cost Effectiveness’ and ‘Environmental and Natural Resource Conservation’ are listed as sustainability measures that will be assessed in the comparison matrix for the alternatives. We are pleased to see that the ToR recognise the ecosystem services that the CMW provides. The monetary cost of these ecosystem services to Grand Cayman’s economy is known as Natural Capital Value. These ecosystem services that should be assessed as Natural Capital Value include but are not limited to:
 - o Storm surge protection
 - o Water filtration
 - o Reduction in soil erosion
 - o Nursery for fish stocks which supports fisheries and reefs
 - o Carbon sequestration and storage
 - o Contribution to rainfall - estimated to contribute 40% of the rainfall in the western districts³

³ Bradley, P.E., Cottam, M., Ebanks-Petrie, G., & Solomon, J. (2004); ‘Important Bird Areas of the Cayman Islands. BirdLife International.’ [http://datazone.birdlife.org/userfiles/file/IBAs/CaribCntryPDFs/cayman_islands_\(to_uk\).pdf](http://datazone.birdlife.org/userfiles/file/IBAs/CaribCntryPDFs/cayman_islands_(to_uk).pdf)

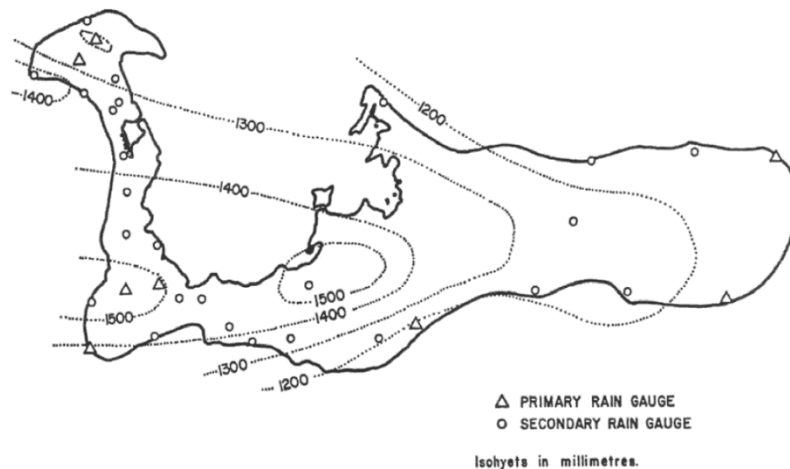


Figure 2. Distribution of mean annual rainfall across Grand Cayman, for the 21-year period 1976-1987.

- We request that the estimated Natural Capital Value lost as a result of the proposed EWA Extension project and other alternatives assessed is included within the Alternative Alignment Assessment. In addition, we request that any mitigation costs, such as those associated with mitigating any impacts to critical habitats to achieve Biodiversity Net Gain in accordance with the IFC Standards, are included within the Alternative Alignment Assessment.

5. The impacts of lighting on terrestrial and marine wildlife should be assessed:

- The potential impact of lighting on wildlife is not included within the ToR. Lighting during construction and operation often negatively impacts wildlife through disturbance and disorientation. Species known to be negatively impacted by lighting are fish, birds (particularly migrating birds), bats and sea turtles (including nesting females and hatchlings). The negative impacts of lighting are often amplified on bridges and elevated structures as elevated lights can be seen from further away, resulting in a greater Zone of Influence for lighting on these structures than for ground-level lighting.
- The impacts of lighting on terrestrial, marine and avian species should be assessed and appropriate mitigation measures included, such as wildlife-friendly spectrum bulbs, downward facing and cowed lighting, and lighting turned off outside of peak hours. The DoE provide information online on [turtle-friendly lighting](#) and the UK's Bat Conservation Trust '[Bats and artificial lighting in the UK](#)' Network Rail [Minimising impact of artificial lighting on people and wildlife](#)' documents provide best practice guidance for reducing lighting impacts to birds, bats and other wildlife. These guidelines should be followed when detailing lighting mitigation measures.



Figure 3. Example of wildlife-friendly lighting.

6. Land use forecasting and traffic modelling should be based on a ‘worse-case’ scenario:

- Section 3.1 Roadway Operations states “An analysis of forecasted land uses along with a determination of future travel needs projected through traffic modelling data will be used to guide the design of the EWA Extension. Current and emerging policies, including the Development Plan and the National Energy Policy, will also be consulted in guiding the design and measures needed to provide a new roadway facility that effectively meets the transportation needs while best avoiding and minimising impacts to the natural, cultural, and human environments.”
- As detailed in section 1, given the lack of an updated development plan and the historic rates of development seen in Grand Cayman to-date, the potential for induced development across large areas of unprotected, privately-owned land within the CMW and other areas of Grand Cayman is significant. Induced growth should therefore be assessed on a ‘worst-case’ scenario basis where all unprotected, privately-owned land whose parcels start within 1.5 miles of the proposed EWA Extension project, and of any other alternatives being assessed, is assumed to be developed.
- In order to accurately forecast and assess the long-term effectiveness on traffic of the proposed EWA Extension project and other assessed alternatives, traffic modelling should be conducted based on this ‘worst-case’ scenario. Land use forecasting and traffic modelling should be conducted by an independent organisation who have access to all the raw traffic data across the whole island to provide an impartial and unbiased analysis. Without this, the EWA risks being a white elephant, having contributed to the traffic problem, rather than resolve it.

7. Embedded Greenhouse Gas (GHG) emissions and those associated with mining aggregate and shipping should be included within the Cost Benefit Analysis in the Alternative Alignment Evaluation:

- Section 4.7.5 Assessment Methodology states *“The GHG analysis will include the following emission sources to establish project totals: Construction Equipment tailpipe emissions; Material/delivery vehicle tailpipe emissions; Peat removal carbon sequestration losses; Road material (concrete, asphalt etc.); and Ancillary materials (crash barriers).”*
- We request that a GHG emissions comparison is produced for the Alternative Alignment Evaluation to the proposed EWA Extension project and alternative solutions for both construction and operation. We request that the assessment includes embedded GHG emissions, including those associated with quarrying, concrete, and tarmac production, as well as emissions associated with construction-related shipping, and operational traffic emissions. Operational traffic emissions should be forecast in line with the ‘worst-case’ land use forecast and traffic modelling projections.

8. Implementation of public and active transport methods should be factored in when assessing environmental and socio-economic impacts of alternative options:

- Section 1.1.2 Purpose and Need states in relation to the proposed EWA Extension project that *“While not responsible for operation of the public transit system, the NRA has considered options to promote the use of public transportation and other forms of mobility by including dedicated bus lanes and pedestrian/bicycle lanes and facilities.”* We agree that the National Roads Authority have a duty to provide safe roads for all road users, this includes pedal bikes, scooters, and motorbikes and other recognised road users, not just cars. However, public transport is not mentioned anywhere else in the ToR. Measures such as safe bus and bike-only lanes and routes across the island would bypass traffic dramatically increasing journey times for bus and bike users, and a reliable and affordable bus transportation system and bike hire scheme would provide alternative transport options that benefit all Caymanians.
- We request that the relevant government departments responsible for public transportation are actively engaged in the EIA process to ensure that the public transport and other modes of active transport are appropriately assessed to measure their environmental and socio-economic impacts on the traffic and resilience problems the EWA Extension project and alternative solutions are aiming to solve.

9. The improvements to Bodden Town Road alternative should factor in public transport, active transport methods and road upgrades to key bottlenecks:

- Section 3.2 Roadway Alignment Alternatives and Analysis details three primary alternatives that will be considered within the EIA, one of which is improvements to Bodden Town Road. This alternative to the proposed EWA Extension project includes *“providing alternative routes for emergency vehicle passage, when the road is compromised; dedicated lanes for transit and safe pedestrian/bicycle use; and a road design that will be resilient to climate changes and extreme weather events.”*

- We request that provision for a bus system and bus and bike-only lanes and routes, as detailed above, are included in this alternative option, as well as road upgrades to key bottlenecks within the road network, making it a more holistic solution to solving the traffic and climate resilience issues the island faces.
- We also request that the impact of these provisions on current and projected traffic modelling, along with those already listed in the description for this alternative, are included within the assessment and compared against other assessed alternatives.
- The Transport Review produced by Ardent Consulting Engineers⁴ appended to this consultation response provides an assessment of the traffic modelling conducted to date and the effectiveness of the proposed EWA Extension project on the existing traffic issue which we believe may be of value to the Alternatives Analysis Evaluation.

10. Biosecurity risks and mitigation measures should be included in the ToR:

- There is no mention of biosecurity within the ToR. IFC Standards require that projects implement measures to avoid alien species introductions and spreading of established alien species, including the transportation of substrates and materials which may harbor alien species. Measures should also be taken to eradicate alien species from the natural habitats within the project area.
- We therefore recommend that section 4.5.6 Mitigation Measures, includes biosecurity measures to eradicate and/or manage invasive alien species risks.

11. Alternative solutions to the proposed EWA Extension project should be assessed in the 'Alternative Alignments Evaluation' which should therefore be named 'Alternative Solutions Evaluation':

- Section 3.2 Roadway Alignment Alternatives and Analysis details three primary alternatives that will be considered to determine which alternative(s) would effectively meet the purpose and need of the project. The wording of the text then changes from 'Roadway Alternatives' to 'Alternative Alignments', implying that all alternatives that will be assessed are various alignments of the proposed EWA Extension project. However, this is not the case of the third alternative solution listed, improvements to Bodden Town Road, nor is it the case for other alternative solutions that could resolve the traffic and climate resiliency problems the proposed EWA Extension project aims to solve.
- Whilst the EWA Extension project could provide a disaster-resilient alternative route and improve traffic conditions, its high cost would use up financial resources that are increasingly being needed to combat the effects of climate change on the Cayman Islands economy and communities, notably increased storminess, flooding and sea level rise. This is why detailed consideration should be given in the EIA to a range of transport options giving priority to options that provide the greatest Cost Benefit Ratio. There is not an endless pot of money, and cheaper alternatives provide better scope to protect communities and quality of life.

⁴ The Transport Review is also available online at: <https://sustainablecayman.org/important-documents>

- We therefore request that all other reasonable alternative solutions that exist that could resolve these issues are assessed, and hence the Alternative Alignment Evaluation and subsequent wording in the ToR and EIA that refer to alternatives, use 'Alternative *Solutions*' rather than 'Alternative *Alignments*'.

12. Clarifications on the use of Natural England's Biodiversity Metric 3.1 are required:

- Section 4.5.6 Mitigation Measures also states, "*Mitigation measures will be evaluated using the Natural England's Biodiversity Metric 3.1 Calculation Tool with the goal of achieving No Net Loss of Biodiversity.*"
- We are really pleased to see the inclusion of a target to achieve a No Net Loss of biodiversity within the ToR. However, Natural England's Biodiversity Metric 3.1 has been developed for UK Habitat Classification and does not include categories for the habitat types found in Grand Cayman and in the scope of the EWA Extension project. The Biodiversity Net Gain policy in the UK (for which the Biodiversity Metric was created) excludes 'irreplaceable habitats' from the metric. We would argue that mangrove and old-growth dry forest qualify as 'irreplaceable habitats'.
- We request that the EIA consultants clarify how the habitats assessed in the EIA, including irreplaceable mangrove, old-growth dry forest and marine habitats directly linked to the CMW in the North Sound, will be categorised and incorporated into the Biodiversity Metric 3.1.

13. Additional standards and guidelines should be used for evaluating potential effects to terrestrial and marine ecology:

- Section 4.5.3 Applicable Standards and Guidelines should include the following international standards and guidelines for evaluating potential effects to terrestrial and marine ecology:
 - o The IFC Performance Standards on Environmental and Social Sustainability, 2012:
 - [PS No. 1: Assessment and Management of Environmental and Social Risks and impacts;](#)
 - [PS No. 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources;](#)
 - o National Conservation Act, 2013 and ancillary documents such as Species Conservation Plans and Management Plans.

14. Consider implications of the draft National Planning Framework (Plan Cayman⁵) and proposed Natural Resource Preservation Overlays:

- The draft National Planning Framework (Page 27/Section 4.0) proposes Natural Resource Preservation Overlays (NRPO) to ensure that future development is sensitive to these unique and important natural and ecological features, including the CMW 'Create a Natural Resource

⁵ Plan Cayman <https://www.plancayman.ky/get-involved/>

Preservation Overlay (NRPO) and identify the properties that are included in this Overlay, such as the Barkers area, the Central Mangrove Wetland, ... the Mastic Reserve and any other ecologically important lands.'

- Two recent rezone applications to the Central Planning Authority for land within the CMW were turned down (CPA/28/22): "It was resolved to not pursue the proposed rezone as it is not consistent with the draft National Planning Framework (Plan Cayman) submitted to the Ministry PAHI on September 29, 2022 based on a resolution of the Authority at its meeting on September 14, 2022."

This response has been compiled with the assistance of professional consultants with appropriate expertise as part of the Wetlands Thrive Life Survives initiative.

We look forward to your response and we would be pleased to meet with you to engage in further discussion on these important issues.

Sincerely,
Sustainable Cayman



Melanie Carmichael
Executive Officer