REPORT

Edward Bodden Airfield Relocation draft Terms of Reference

Client:	Cayman Island Government
Reference:	PC6310-RHD-XX-XX-RP-EV-0001
Status:	Final/01
Date:	8 May 2025

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Enhancing Society Together

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Royal HaskoningDHV

Table of Contents

Table of Tables

Table of Figures

Appendices

Executive Summary

The Cayman Islands Aviation Authority (CIAA) is proposing to relocate the Edward Bodden Airfield (EBA), located on Little Cayman ('the Project'). The existing EBA does not comply with Overseas Territories Aviation Requirements (OTARs), has significant safety issues and lacks essential facilities.

The Cayman Islands Civil Aviation Authority (CAA) is the regulatory body responsible for overseeing aviation safety and economic regulation in the Cayman Islands. Due to non-compliance with international standards since 2003 the CAA has awarded exemptions to enable EBA to operate. The CAA has confirmed that this practice of exemption will not continue unless steps are taken to achieve certification. Various alternatives to achieve certification for the EBA were considered and public outreach events were held, with relocation being the preferred option due to feasibility. The CIAA therefore proposes to relocate EBA to a central island location to comply with international aviation requirements. The Project, which will begin the design process in 2025 and is proposed to be operational by 2028, aims to achieve ICAO certification and improve efficiencies for travel to and from Little Cayman.

The relocated EBA will meet all regulatory standards and accommodate larger aircraft, ensuring continued air service. The Project includes several key features to meet airport certification standards and improve the facilities at the EBA:

- New 4000 ft runway with Obstacle Limitation Surfaces (OLS) and 787 ft / 240 m Runway End Safety Areas (RESA) at each end.
- New airport terminal.
- New Aircraft Rescue and Fire Fighting (ARFF) tender shelter and landside access area with adequate parking.
- New perimeter fence.
- Access road linking to the existing coastal road to the project site.

An Environmental Impact Assessment (EIA) process, voluntarily initiated by the CIAA in 2023, is underway to identify, assess and address the potential environmental impacts associated with the Project. In May 2023, the CIAA submitted a request for an EIA scoping opinion to the National Conservation Council (NCC). The NCC confirmed that the Project falls within Schedule 1 of the National Conservation Act, and therefore an EIA was required and convened an Environmental Advisory Board (EAB), comprising of the Department of Environment (DoE), the CAA, Cayman Islands Fire Service, Department of Planning, and Water Authority-Cayman. In 2024, the CIAA acquired the services of Royal HaskoningDHV to author a Terms of Reference (ToR) (this document) to define the assessments required to inform the EIA for the Project. The EIA will address the potential environmental impacts associated with the Project and respond to public consultation feedback.

This ToR identifies the scope of work required to inform the EIA, including the detail required for the construction activities and operational parameters for the Project, the surveys required to inform the environmental baseline and the EIA methodology to be used to assess the potential effects on the natural and human environment. The EIA will address the following topics:

- Terrestrial and coastal ecology
- Cultural heritage and identity
- Noise and vibration
- Air quality
- Hydrology, drainage, water quality, contaminated land and natural resources
- Socio-economics

- Visual and landscape effects
- Climate Resilience and Hazard Vulnerability
- Greenhouse Gas Assessment

The EIA will assess the potential impacts arising from the construction and operational activities for the Project. Should significant effects on environmental resources and communities be identified the EIA will propose measures to avoid or minimise those effects so those effects are no longer significant in EIA terms. The EAB, in accordance with Section 3(13) of the National Conservation Act of 2013, will oversee the preparation and implementation of the EIA.

Acronyms

Acronym	Acronym description
ARN	Affected Road Network
AQG	Air Quality Guideline
AQS	Air Quality Standards
ATC	Air Traffic Control
ARFF	Aircraft Rescue and Fire Fighting
AZEs	Alliance for Zero Extinction
AAQS	Ambient Air Quality Standards
NH_3	Ammonia
BPM	Best Practicable Means
BS	British Standard
BTO	British Trust for Ornithology
BEIS	Business, Energy and Industrial Strategy
CRTN	Calculation of Road Traffic Noise
CO	Carbon monoxide
CAL	Cayman Airways Ltd
CAA	Cayman Islands Civil Aviation Authority
CIAA	Cayman Islands Aviation Authority
NEP	Cayman Islands National Energy Policy
CIfA	Chartered Institute for Archaeologists
CIEEM	Chartered Institute of Ecology and Environmental Management
CCRA	Climate Change Risk Assessment
CGI	Computer-Generated Imagery
CEA	Cumulative Effects Assessment
DoE	Department of Environment
DEH	Department of Environmental Health
DMRB	Design Manual for Roads and Bridges
EcIA	Ecological Impact Assessment
ESO	Economics and Statistics Office
EBA	Edward Bodden Airfield
EAB	Environmental Advisory Board
ESF	Environmental and Social Framework
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan

EPUK	Environmental Protection UK
ES	Environmental Statement
EHS	Environmental, Health, and Safety
FOD	Foreign Object Damage
GIS	Geographic Information System
GWP	Global Warming Potential
GHG	Greenhouse Gas
HGVs	Heavy Goods Vehicles
IAQM	Institute of Air Quality Management
IPCC	Intergovernmental Panel on Climate Change
IBAs	International Bird and Biodiversity Areas
ICAO	International Civil Aviation Organization
IFC	International Finance Corporation
IUCN	International Union for the Conservation of Nature
JNCC	Joint Nature Conservation Committee
KBAs	Key Biodiversity Areas
LAQM	Local Air Quality Management
NBAP	National Biodiversity Action Plan
NCA	National Conservation Act
NCC	National Conservation Council
NRA	National Roads Authority
NTCI	National Trust Cayman Islands
NO_2	Nitrogen dioxide
NO_X	Nitrogen oxides
NVSR	Noise and Vibration Sensitive Receptor
NGO	Non-governmental Organisation
NRMM	Non-Road Mobile Machinery
NWP	Numerical Weather Prediction
OLS	Object Limitation Surface
OTARs	Overseas Territories Aviation Requirements
PM	Particulate Matter
PEC	Predicted Environmental Concentration
PCSM	Preliminary Conceptual Site Model
PC	Process Contribution
RCPs	Representative Concentration Pathways
RESA	Runway End Safety Area

SLR	Sea Level Rise
SSPs	Shared Socioeconomic Pathways
SAP	Species Action Plan
SMP	Stakeholder Management Plan
SPS	Strategic Policy Statement
SO_2	Sulphur dioxide
TG	Technical Guidance
ToR	Terms of Reference
NTP	National Tourism Plan
IEMA	The Institute of Environmental Management and Assessment
UNESCO	The United Nations Educational, Scientific and Cultural Organisation
Defra	UK Department for Environment Food and Rural Affairs
UNFCCC	United Nations Framework Convention on Climate Change
VPS	Vantage Point Surveys
VOC	Volatile Organic Compound
WAC	Water Authority-Cayman
WHO	World Health Organisation

1 INTRODUCTION

1.1 Project background

The Edward Bodden Airfield (EBA) is the smallest of the three aerodromes in the Cayman Islands, located at the west of Little Cayman. The airfield lies immediately west of Blossom Village, on land which is privately owned. Access to the EBA is provided by the main roadway (Guy Banks Road A8) which circles around Little Cayman. The Cayman Islands Aviation Authority (CIAA) is proposing to relocate the EBA on Little Cayman to CIAA/Crown Estate owned land in the centre of the island (hereafter referred to as 'the Project'). These locations are shown below in **Figure 1.1**.

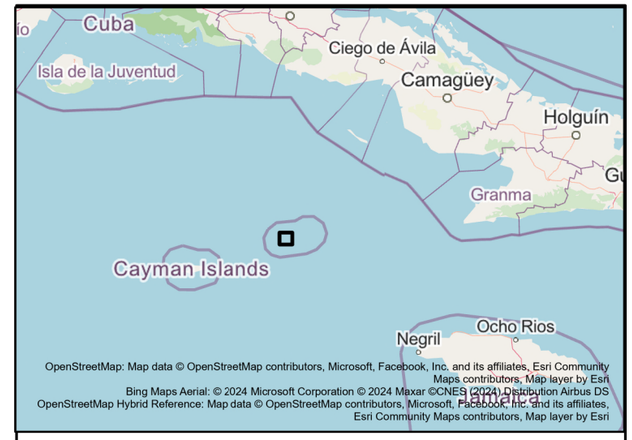
The primary reason for the relocation of the EBA is that the existing aerodrome does not comply with Overseas Territories Aviation Requirements (OTARs), meaning it cannot be certified. To date, the EBA has received over 21 years of exemptions from the Cayman Islands Civil Aviation Authority (CAA) to allow operations despite a lack of certification. The exemption is granted annually and has been ongoing since 2003. At the beginning of 2024 a 6-month extension was given which ended on June 30th. The current exemption expires on 31st December 2024. The CAA have confirmed that this practice of exemption will not continue if steps are not taken to achieve certification of the EBA. This Terms of Reference (ToR), and the subsequent Environmental Impact Assessment (EIA) process, represents positive action towards the certification of an aerodrome on Little Cayman. During this EIA process, and subsequent construction of the Project the CAA will continue to grant exemptions for the current EBA until the Project is operational.

At this new location, the Project proposes to include the construction of a new asphalt load bearing 4000ft runway, runway end safety area (RESA), terminal building and auxiliary facilities to accommodate the heavier aircraft (>10,000kg) in the Cayman Airways Ltd (CAL) fleet and would accommodate the SAAB aircraft and any forecasted larger aircraft that Cayman Airways is considering adding to their fleet (ATR-72) to improve efficiencies. This option would have additional runway expansion capability if required.

The Project is expected to begin the design stage in 2025 and once the EIA has been completed and approved construction is anticipated to begin in 2026. Construction is expected to take 18 months to complete, and it is anticipated the Project would be operational in 2028.

In May 2023, the CIAA voluntarily decided to carry out an EIA for the Project and submitted a request for an EIA scoping opinion to the National Conservation Council (NCC). The NCC confirmed that the Project falls within Schedule 1 of the National Conservation Act, and therefore an EIA was required. On the 23rd August 2023, the NCC appointed the Environmental Advisory Board (EAB) to provide advice throughout the EIA process. The EAB comprises the Department of Environment (DoE), the CAA, Cayman Islands Fire Service, Department of Planning, and Water Authority-Cayman.

Following the requirements of the EIA Directive a subsequent meeting was held on 27 September 2023, where the EAB met for an initial discussion regarding the EIA scoping and produced a scoping report. The EAB's Scoping Opinion was published on the 15 December 2023 (**Appendix A**).



Legend:

Project Footprint

Client:	Project:
Cayman Island Government	Edward Bodden Airfield Relocation Terms of Reference - Little Cayman

Title:

Project Location

Figure:	Drawing No:
1.1	PC6310-RHD-XX-ZZ-DR-Z-0001

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	07/11/2024	GC	LR	A3	1:60,000

Co-ordinate system: Name: NAD 1927 UTM Zone 17N

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1.2 The Project location

Little Cayman is the smallest of the three Cayman Islands, measuring around 10 square miles (26 km^2) and with distinctive topography; the island is incredibly flat, rising only 40 feet (12 meters) above sea level at its highest point. Although it fluctuates annually, the island has a permanent population of approximately 130 persons, or roughly 0.25% of the entire Cayman population. Little Cayman's main economic sector is tourism, which is driven by the island's SCUBA diving locations. One of the main attractions in this area is the Bloody Bay Wall Marine Park, which gives divers the opportunity to explore one of the most famous underwater 'walls' in the Caribbean, dropping more than 5,000 feet.

The island is notable for its Booby Pond Nature Reserve, a protected area under both the National Conservation Act and the National Trust Act and the only designated Ramsar site in the Cayman Islands. Located immediately to the west of the EBA, this landlocked coastal lagoon is home to a wide variety of resident and migratory waterfowl. The mangrove fringe to the north of the pond supports one of the region's largest breeding colonies of red-footed boobies, a species that is declining in numbers regionally, according to American Bird Conservancy, who attribute the change to various factors including climate change, habitat loss and predation by invasive species. The Booby Pond Nature Reserve is also the only breeding site within the Cayman Islands for the magnificent frigatebird (*Fregata magnificens*). This reserve adds to the ecological diversity of the island and provides vital habitat for bird life. The reserve is discussed in greater detail in **Section 4.1.1.1**.

The EBA is currently situated alongside Preston Bay in the southwest of the island, adjacent to Blossom Point and Guy Banks Road. The surrounding area is dominated by dry shrubland and seasonally flooded mangrove and woodland, and a small settlement, Blossom Village, around Booby Pond.

The proposed site for the Project is located in the centre of the island (**Figure 1.1**), which is also dominated by seasonally flooded mangrove shrubland and dry shrubland. Currently there is no existing infrastructure, including transport links, at the proposed site.

1.3 Need and alternatives for the Project

1.3.1 Need for the Project

The EBA currently operates a single runway, 35-foot wide, 3,000-foot-long tar and chip-seal pavement structure. It features a short, narrow, slightly curved runway with pavement slopes exceeding the maximum recommended by International Civil Aviation Organisation (ICAO) Annex 14 'Aerodromes'. The runway strip is well-maintained, with evident grass cutting and is surrounded by a mangrove forest, ponds, Blossom Village, private property, and the main road.

There are several safety issues with the existing runway, including that there is no parallel taxiway, and several power poles, streetlights, and trees penetrate the runway's transitional surface. Additionally, the runway is not marked and lacks threshold, edge lights, edge identifiers, slope indicators, and a rotating beacon. The gravel component of the runway is not suitable for aircraft operations, as it can cause Foreign Object Damage (FOD), which is a safety hazard. The EBA's location is constrained by road proximity, powerlines, vegetation growth, and development east of the runway. Objects beyond the runway thresholds can also penetrate the Object Limitation Surface (OLS). The road running along the south side of the runway strip, across the taxiway, and between the runway and aircraft parking apron is a clear violation of aerodrome standards and would need to be remedied before certification. The EBA also lacks an aircraft apron area and no fuel facility for operations. Currently, private aircraft landing/departing EBA do so at their own risk and may not follow any prescribed safety measures implemented by CAL. Additionally, the aerodrome has no Air Traffic Control (ATC) tower.

Given the above, the EBA does not meet regulatory standards and does not comply with OTARs; meaning it cannot be certified without improvements/modifications to meet the standards. However, CAL must provide air service to the island, as an agency of government. The CAA manages the EBA's safety measures and views the EBA as an uncertified aerodrome and has therefore had to issue exemptions to permit CAL operations.

The CAA is unlikely to continue providing exemptions to CAL to operate commercial services to Little Cayman unless a plan is in place to rectify regulatory compliance. Therefore, there is an urgent need for works to be carried out to maintain air service to the island.

It is not considered feasible to improve the existing aerodrome to the extent that it can be certified due to multiple privately owned properties, environmentally sensitive surrounding wetlands, including the Booby Pond, and endangered Rock Iguana populations. It is however recognised that there could be similar restrictions on construction and expansion at the proposed relocation site for the Project which would need to be thoroughly investigated as part of the EIA process.

Located northeast of the current airstrip, CIAA owned land has been identified as the site for the proposed Project. The proposed location would satisfy all applicable aerodrome standards as a state-certified airport under ICAO Annex 14, 17, and Doc 9774 as well as applicable OTARs (OTAR 139, 178), and would accommodate the forecasted future CAL fleet.

1.3.2 Historical and projected passenger numbers

EBA provides a lifeline service between Little Cayman and Grand Cayman and Cayman Brac with the Grand Cayman route making up nearly 70% of flights in 2019. Each flight carries an average of seven passengers and currently all scheduled flights are run on turboprops (Twin Otter) operated by CAL. These aircraft are limited in the weight they can transport which often causes issues for tourists transporting diving gear and can result in delayed baggage arrival (Cayman Islands Department of Tourism, 2024). Non-commercial operations represent 4% of total annual movements, with helicopter flights being a significant part (CIAA Master Plan 2023). It is important to note that the Project is not expected to become an international airport.

Despite not compiling statistics, CAL reported a 0.8% annual growth in passenger demand between 2011 and 2019, serving 30,537 passengers in 2019 (**Figure 1.2**). Although the 2020 Covid19 pandemic caused a decrease in passenger numbers moving through EBA, as the aerodrome operates solely domestic operations it was less significant than that at Grand Cayman Airport (CIAA Master Plan 2023).

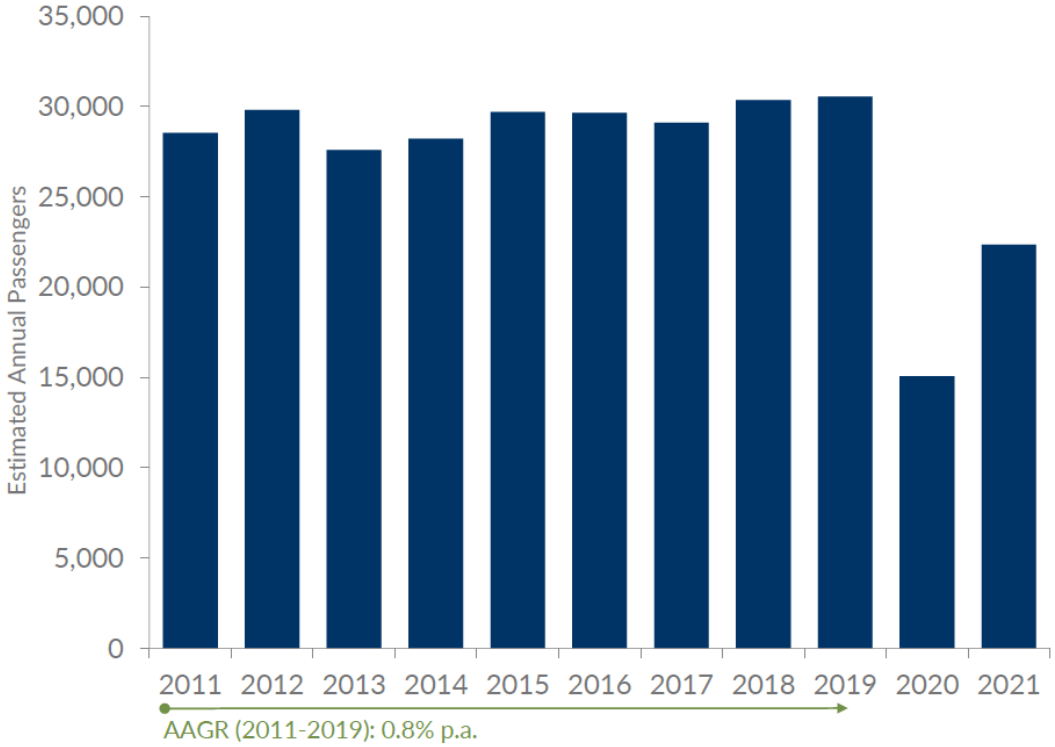


Figure 1.2 Historical passenger numbers for the Edward Bodden Airfield 2011-2021. Source: Cayman Airways Statistics within (CIAA Master Plan 2023).

By 2041, passenger numbers are expected to increase to 39,000 per annum using an estimated 3,056 flights; of which 2,947 will be commercial (**Table 1.1**). This increase is driven by a steadily growing tourist industry on the island (Cayman Islands Department of Tourism, 2024). It shall be noted that currently the CIAA anticipate the total number of aircraft movements will remain at current levels or will decrease since some Twin Otter flights are likely to be replaced by the larger ATR-72s which can transport a higher number of passengers per flight (CIAA Master Plan 2023) and will not have such a restricted weight limit.

Table 1.1 Summary of total passengers and growth (historical (H) and forecast (F)) at Edward Bodden Airfield. Source: CIAA Master Plan 2023

Passenger numbers			Passenger Growth (% per annum)		
2019 (H)	2021 (H)	2041 (F)	2019-2021	2019-2041	2021-2041
31,000	22,000	39,000	-14.5%	1.2%	2.9%

1.3.3 Alternatives considered

Various alternatives to the relocation of the EBA have been considered, some of which were excluded at the Scoping stage. These are discussed in detail in the CIAA Airports Master Plan (Stantec, 2023) and summarised here. The alternatives considered include:

1. A ‘Do Nothing’ scenario;
2. A ‘Bare Minimum’ scenario retaining the current EBA and bring it into regulation;
3. Closure of the existing EBA and introducing a helicopter service;
4. Closure of the existing EBA and introducing a ferry service from Cayman Brac;
5. Closure of the existing EBA and introducing a seaplane service; and
6. Relocating the EBA to land owned by the CIAA.

In a ‘Do Nothing’ scenario the EBA would not be granted further exemptions for operation. The current condition of the runway, runway strip width and OLS do not meet applicable airport certification standards. This would limit passenger numbers using EBA as the aerodrome could only be used by aircraft that has 9 seats or less and as such this is considered to be an unviable option.

The ‘Bare Minimum’ scenario would involve the regularisation of the current EBA, requiring:

- Removal, levelling, alignment, and rebuilding of existing runway.
- Widening of runway to 75ft and graded to have appropriate camber for runoff.
- Widening of runway strip to 262ft.
- Requirement for runway visual aids, new reflective runway markings, and lighted signage.
- Removal of obstacles that penetrate OLS.
- Relocation of Guy Banks Road out of the runway strip.
- Removal of existing terminal and parking apron to the North.
- No new terminal and perimeter fence required for security and safety.

Although the ‘Bare Minimum’ scenario would result in a quicker project turnaround and potentially reduced environmental impacts, it comes with considerable drawbacks and is not a sustainable option, given the future projections and needs of the island (**Table 1.1**). For example, the CIAA will be required to negotiate with landowners around the perimeter of the EBA and to renegotiate the current landowner’s (Aerodrome Lands Ltd.) 13-year lease which expires in 2029. The runway will remain non-aligned to prevailing winds and an expansion will still not permit for larger aircraft forecasted to join the CAL fleet. From an environmental perspective, **Figure 1.3**, indicates that an increase in size of the existing aerodrome would result in the loss of the pond habitat to the west of the EBA. In addition, its proximity to the Booby Pond Nature Reserve will continue to intersect bird migration patterns. It is however also recognised that the proposed location of the Project could also have implications for bird migration patterns that would need to be investigated as part of the EIA.

A new heliport (Option 3) would enable emergency/medical evacuation flights; however, passenger numbers could be limited depending on the size of the helicopter utilised and noise concerns were raised during public consultation. The consideration of a new ferry service from Cayman Brac to Little Cayman (Option 4), is largely impractical and unsafe due to the adverse sea state between the islands, with significant sea swells common to the area. Lastly, the introduction of a seaplane service using DHC-6 Twin Otters on amphibious pontoons (Option 5) would allow a similar air service but with severe aircraft load and weight constraints.

Figure 1.3 Location of existing aerodrome on Little Cayman, overlaid with the dimentsions of a potential expansion.

Public input was collated during outreach exercises held on Little Cayman on 12th July and 31st October 2022 (see **Section 3.2.2** for more details). From these sessions, Options 3, 4 and 5 were excluded from further consideration. Given the restrictions and challenges associated with Option 2, the CIAA has expressed a preference for Option 6.

The proposed relocation of the EBA would not require the purchasing of any land, could be constructed to meet regulation standards with prevailing winds and could accommodate for the forecasted CIAA fleet. In addition to this, take-off and landings would no longer occur over residential areas, and if required, the new location allows for future expansion. However, there are still potential significant environmental impacts of using undeveloped land in the location of the proposed new airport. The new location is immediately to the north of the Booby Pond Reserve and so may still be along the flight path of the boobies as they leave to feed at sea every day and return around sunset. Additionally, the Booby colony has moved location over time, likely due to disturbance of nesting and roosting activity, and so the potential for collisions will be investigated from all potential habitats (**Section 4.1** details the work required to address this).

1.4 Outline Project description

At this early stage in the process, the Project is therefore proposed to include the following features:

- A new 4000 ft long runway and OLS to meet the applicable airport certification standards, alongside a 787ft / 240m RESA at each end. The new runway will have all required visual aids including paint markings, signage and apron lighting, alongside the potential for future expansions to create a 5000 ft runway.
- In addition to this a new airport terminal capable of meeting requirement for future capacity projection, security measures and passenger processing will be constructed. The new terminal building will be in keeping with the cultural aesthetic of Little Cayman (**Figure 1.4**).
- To meet further requirements a new Aircraft Rescue and Fire Fighting (ARFF) tender shelter and landside access area with adequate parking will also be implemented.
- Although it is not required for aerodrome compliance, a new perimeter fence will be required for security compliance if larger aircraft (>10,000kg) service the island.
- An access road linking to the existing road in the north of the proposed Project.

During operation the Project will be capable of receiving larger aircraft and is projected to support a similar or reduced frequency of flights as the current EBA. The EIA consultant will collaborate with the design consultants to finalise the project description and confirm the impacts to be assessed within the EIA with the EAB prior to the commencement of the process (i.e., before the report is written). Similarly, the study area for each receptor will be agreed with the EAB.

Figure 1.4 A conceptual rendering of the preliminary terminal building design.

1.5 Scope of works for EIA introductory sections

The EIA shall include a full description of the Project including figures showing the red line boundary, with all facilities shown and all associated works and infrastructure. Once the project description is finalised the scope of the EIA shall be confirmed with the EAB.

The justification for the Project shall discussed in detail with particular emphasis on the predicted numbers of passengers and the basis for the predictions. This shall also consider the capacity of the island to host such increases in terms of infrastructure, needs of the local community and ecological resources. This section will take account of the responses to public consultation as summarised in **Section 3.2.2**.

The alternatives considered will be fully discussed together with the process followed for justification of the preferred option. The results of any public consultation, either directly for the Airport Master Plan, the Draft Planning Statement for the islands and the results of the public consultation for this ToR will be incorporated into the EIA. How the plans fit with existing and proposed planning requirements will be discussed.

The study area for each parameter will be determined by the findings of the baseline characteristics and the potential for effect that could arise from the proposed construction and operation of the Project. The study area for each topic shall be confirmed with the EAB.

The construction methodology shall be detailed together with a proposed time plan for any works showing any seasonal restrictions that are identified during the assessment process. If there is uncertainty over any methodologies, the precautionary principle will apply, the assumptions shall be detailed, and worst-case scenarios used for the assessment process. Any sources of material that are taken from outside of the red line boundary, for example fill material, if needed, will be identified in terms of volumes required and sources and the transportation routes identified and assessed. It is assumed that fill material could be sourced from the existing quarry on Little Cayman (82A15REM4), operated by Scott Development Company Ltd. If material is to be taken from or deposited in unlicensed sites, then the potential effects shall be included in the EIA.

The operational requirements of the facility shall be detailed including the numbers of flights, type of aircraft, materials to be stored and used for any operational activities (for example, the fire and rescue facility), air quality information, any wastes that could be produced and the methods for their use or disposal and any risks that are identified from the operations. Maintenance requirements and activities at the Project shall be provided to inform the assessments in the EIA.

The proposals for decommissioning of the existing airport facility will be detailed.

2 LEGISLATION AND PLANNING REQUIREMENTS

This section outlines the legislative and policy framework that is relevant to the EIA procedure. The requirements of the legislation will be applied to the relevant sections of the EIA to ensure full compliance.

2.1 Legislative framework

2.1.1 National Conservation Act (2013)

The requirement for an EIA in the Cayman Islands is determined by the National Conservation Act (2013). Specifically, Section 43 of this Act outlines the legal framework for EIAs. The process is further detailed in the National Conservation Council's Directive for EIAs, which was gazetted on 29 June 2016.

The National Conservation Act of 2013 is aimed at protecting and conserving the natural environment. The Act is designed to protect and conserve endangered, threatened, and endemic plants and wildlife, as well as their habitats. It provides a legal framework for the conservation of biodiversity in the Cayman Islands. The Act established the National Conservation Council. Section 6(1)(a) of the National Conservation Act (NCA) places responsibility for the administration and enforcement of the Act with the DoE. This includes overseeing the EIA process for projects that may impact the environment. Other aspects of the Act which may be relevant to the EIA process include:

- Legal Framework: The Act provides the legal basis for conducting EIAs in the Cayman Islands. Section 43 of the Act outlines the requirements and procedures for EIAs.
- The EIA Directive: The National Conservation Council issued a directive for conducting EIAs under the NCA legal framework, ensuring that all potential environmental impacts are thoroughly assessed and mitigated.
- Stakeholder Involvement: The Act mandates the involvement of various stakeholders, including government agencies, environmental organizations, and the public, in the EIA process. This ensures a comprehensive and transparent assessment.
- Sustainable Development: The Act promotes sustainable development by ensuring that all government entities are required to consult with the NCC on the likely effects of their projects, plans and actions before taking any decisions or giving any undertakings.

The National Conservation Act (Commencement) Order, 2014: This order specifies the dates on which different parts of the 2013 Act would come into effect.

As per section 43 (2), an EIA shall:

(a) assess the proposed action having regard to its direct, indirect and cumulative impact and the need to
(i) protect and improve public health and social and living conditions;
(ii) preserve natural resources, ecological functions and biological diversity;
(iii) protect and conserve protected areas and conservation areas;
(iv) protect and conserve protected, endemic and migratory species and their habitats; and
(v) avoid any adverse effects of climate change on the quality of the environment; be carried out by a person approved by the Council; and
(b) comply with any directives of the Council and regulations made under the Law.

Part 3 addressed the conservation of land, and Section 7 described the designation process of protected areas. Similarly, Part 4 addressed the conservation of Wildlife, and Section 16 covers the listing procedures for protected species.

Section 11 (2), prohibits and regulates any activity that is likely, individually, or cumulatively, to harm or adversely affect a protected area or that is otherwise not compatible with the purposes for which a protected area was established. To obtain an exemption to Section 11 (2), the proponent must submit an application to the Council to obtain a permit under Section 20 (2)(a). Section 11 (2)(d) prohibits or regulates the dumping of discharge of water or other substances.

The NCA (2013) also superseded the National Biodiversity Action Plan 2009 (NBAP). The NBAP is a comprehensive framework aimed at protecting and enhancing the unique biodiversity of the Cayman Islands. It outlines conservation goals, action plans, sustainable development, stakeholder engagement, and monitoring and evaluation mechanisms. The plan encourages local communities, government agencies, Non-governmental Organisations (NGO), and other stakeholders to participate in biodiversity conservation efforts.

2.1.2 Directive for Environmental Impact Assessments, 2016

The Directive for Environmental Impact Assessments (EIA), 2016, issued by the National Conservation Council of the Cayman Islands, provides a structured framework for conducting EIAs. The directive is issued under Section 43 of the National Conservation Act ("the EIA Directive"), and in conjunction with Sections 3(12)(j) and 43(2)(c) of the National Conservation Act. The Directive outlines the procedures and requirements for EIAs (**Figure 2.1**).

2.1.3 National Trust Act, 2010

The purpose of the Trust is to preserve the historic, natural, and maritime heritage of the islands through the preservation of areas, sites, buildings, etc.; maintain conservation; and protect flora and fauna. Of relevance to this project are the environmental sites maintained by the Trust (of which there are 12 total). The closest in proximity to the Project is the Booby Pond Nature Reserve.

2.1.4 Cayman Islands Constitution Order, 2009

The Cayman Islands Constitution Order, 2009 establishes the constitutional framework for the Cayman Islands and replaced the previous constitution from 1972. Various aspects of the Constitution Order are relevant to the EIA process, for example:

- Environmental Protection Mandate: The Constitution mandates that the government must consider the need to foster and protect an environment that is not harmful to the health or well-being of present and future generations. This principle underpins the EIA process, ensuring that environmental sustainability is a core consideration in development projects.
- Legal Framework: The Constitution provides the legal foundation for the National Conservation Act (2013), which directly governs the EIA process. This ensures that EIAs are conducted within a robust legal framework that aligns with constitutional principles.
- Sustainable Development: The Constitution supports sustainable development by balancing economic growth with environmental protection. This balance is a key objective of the EIA process, ensuring that development projects do not compromise the environment or social well-being.

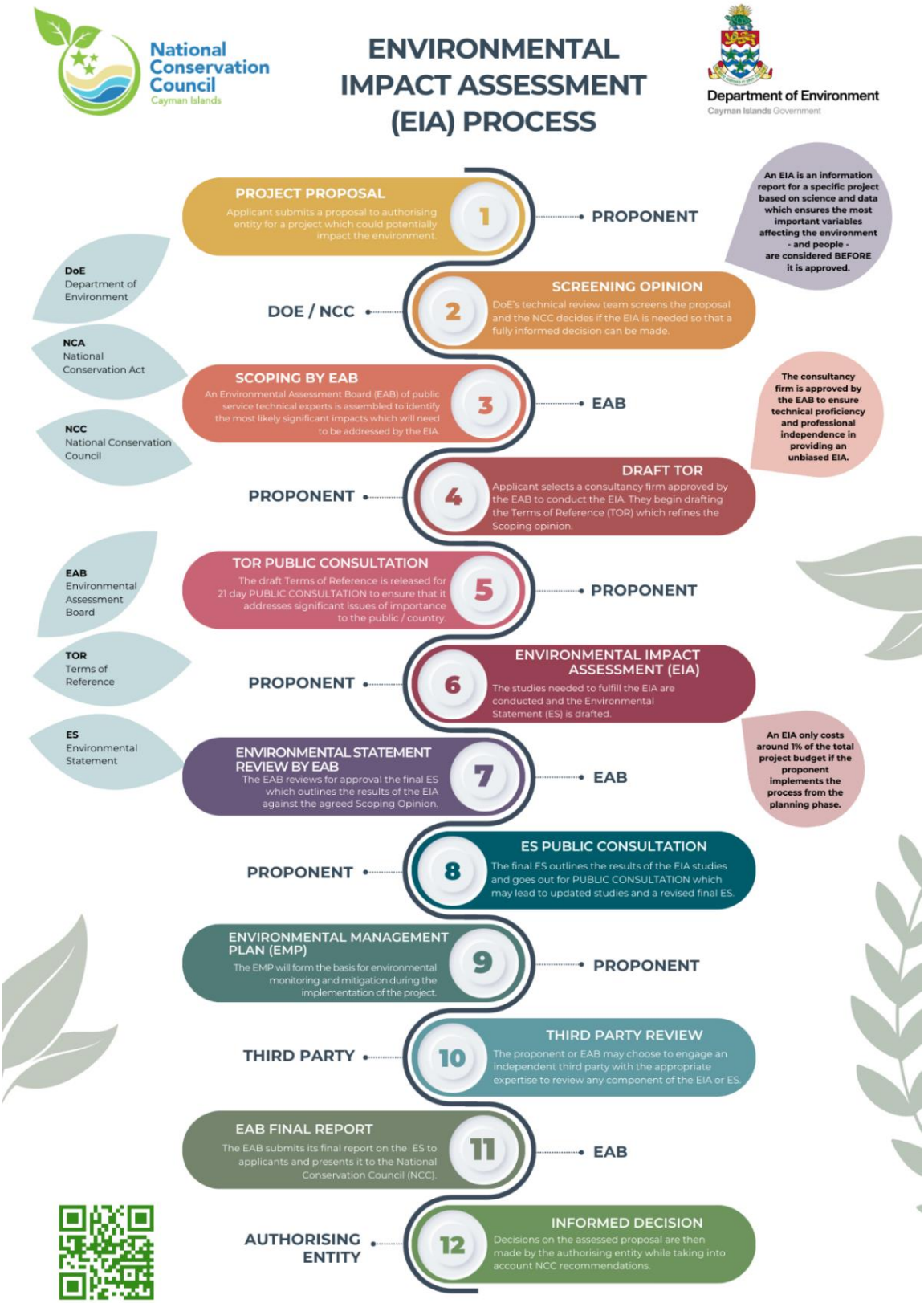


Figure 2.1 EIA Process as outlined in the EIA Directive.

Schedule 2, Part I (18) states that:

(1) Government shall, in all its decisions, have due regard to the need to foster and protect an environment that is not harmful to the health or well-being of present and future generations, while promoting justifiable economic and social development.

(2) To this end government should adopt reasonable legislative and other measures to protect the heritage and wildlife and the land and sea biodiversity of the Cayman Islands that—

(a) limit pollution and ecological degradation;

(b) promote conservation and biodiversity; and

(c) secure ecologically sustainable development and use of natural resources.

2.1.5 Environment Charter, 2001

The Environment Charter, 2001 is an agreement between the Cayman Islands and the United Kingdom, aimed at promoting sustainable development and environmental protection. It outlines commitments by both the Cayman Islands and the UK to protect and conserve the environment. For the EIA process, it may provide:

- Framework for Action: It provides a framework for environmental management, including the development of policies and strategies to address environmental issues.
- Legal and Policy Foundation: The Charter serves as a foundational document that influences environmental legislation and policies in the Cayman Islands. It supports the implementation of the National Conservation Act (2013), which governs the EIA process.
- General EIA Guidance: The principles outlined in the Charter guide the EIA process, ensuring that environmental assessments are conducted to high standards. This includes thorough evaluation of potential impacts and the incorporation of sustainable practices.
- International Standards: By aligning with the Charter, the EIA process in the Cayman Islands adheres to international best practices and standards for environmental protection and sustainability.

2.1.6 Airports Authority Act, 2005 revision

The Airports Authority Act is relevant to the EIA process as it provides guidance on:

- Establishment of the Authority: The Act establishes the Cayman Islands Airports Authority (CIAA), which is responsible for the management and operation of airports in the Cayman Islands.
- Environmental Compliance: The CIAA is mandated to ensure that airport operations comply with environmental standards and regulations. This is crucial during the EIA process, where potential environmental impacts of airport projects are assessed.
- Long-Range Planning: The Act requires the CIAA to develop long-range plans for airport development, which includes considering environmental impacts and sustainability.
- Stakeholder Coordination: The CIAA coordinates with various stakeholders, including government agencies, environmental bodies, and the public, to ensure comprehensive environmental assessments.
- ICAO Standards: The Act ensures that airport operations conform to the standards and recommended practices of the ICAO, which are integral to the EIA process.

Specifically, the Airports Authority Act states:

“ (3) In giving effect to subsections (1) and (2) the Authority shall – (b) in accordance with section 5(1)(g), take adequate measures for the protection and preservation of the environment, and to prevent or deal with

noise, vibration, pollution or any other disturbance attributable to aircraft used for the purpose of civil aviation. ”

2.2 Planning framework

2.2.1 The Planning Statement, 1997

The 1997 Development Plan Statement for the Cayman Islands aims to maintain and enhance the quality of life by effectively directing development to safeguard the economic, cultural, social, and general welfare of the people; while also protecting the environment This document has specific guidelines for development in Little Cayman.

Specifically, Appendix 2 provides guidelines for development control in Little Cayman and Appendix 3 provides provisions for an Environmental Impact Statement. Key areas to note are:

- *“The tarpon lake… should at the same time be protected to ensure that its attractions continue to be available in the future”.*
- *“The airstrip should be improved to ensure that the island is readily accessible to the people of the island and to visitors on a regular flight schedule”.*
- *“It is recognised that Little Cayman is considered a unique island. Every effort should therefore be made to retain its unspoilt character and to make it an attraction for persons interested in natural life… Development should be in harmony with the unspoiled character of the island…”*
- *“it is recommended that careful access should be provided to the natural features of the island to enable visitors to enjoy the natural life which is available without jeopardising these natural assets.”*

It has relevance to the ToR and the EIA process by:

- Providing a guidance Framework for creating terms of reference; ensuring they align with the overarching goals of the plan.
- Ensuring a proposed development complies with the established guidelines and objectives.
- Encouraging public consultations and stakeholder involvement.

2.2.2 Development and Planning Act, 2021 and 2022 Revision

Section 25 (1) regulates the removal or destruction of trees (including individual trees, groups of trees, or woodlands), and includes conditions for replanting woodland habitat.

Further to the Act, which prohibits development within designated Mangrove Buffer zones, the Regulation considers impacts to the ecological function of mangrove habitat: which includes mangroves habitat that:

a) service as a nursery and natural habitat for marine life, birds, insects, reptiles and crustaceans;
b) filtration of overland run-off to the sea and ground water aquifer recharge;
c) export of organic particulate and soluble organic matter to coastal areas; and
d) coastal protection, and the protection of the Islands against storms and hurricanes.’

It should be noted that although there is mangrove habitat on Little Cayman, there are no designated Mangrove Buffer Zones.

2.2.3 Cayman Islands Development Plan Planning Statement, 2024 (Draft)

The Draft Planning Statement is a high-level document that defines the various Zones, Overlays and Other Policy Considerations that will guide development in the Cayman Islands. The primary objective of the Plan is to maintain and enhance the economy, society and environment of the Cayman Islands. The Planning Statement is drafted to incorporate all three islands whilst factoring in flexibility, acknowledging that each island will have unique needs. The document outlines a strategic vision for land use and development, focusing on sustainable growth, efficient land use management, infrastructure improvements, community engagement, and environmental protection. It emphasises sustainable development, mixed-use development, infrastructure improvement, community engagement, and preserving natural habitats and biodiversity. It has relevance to the EIA as it:

- Provides detailed strategies and policies that address the objectives outlined in the ToR that will be addressed as part of the EIA.
- Operationalises vision, translating broad goals into actionable policies.
- Ensures compliance with regulatory framework and standards.
- Facilitates monitoring and evaluation, establishing benchmarks for assessing progress and impact.

3 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

3.1 Overview

This ToR has been developed with reference to the Scoping Opinion prepared by the EAB and following guidance from the International Finance Corporation (IFC) of World Bank Group's Performance Standards on Environmental and Social Sustainability. These IFC standards play a significant role in shaping the EIA process in many countries, including the Cayman Islands as they provide standards to follow on various subjects including:

- Risk management.
- Stakeholder engagement.
- Compliance and best practices and,
- Monitoring and reporting.

Although not a requirement, by incorporating these IFC standards into the EIA process, this project, and the Cayman Islands overall can achieve higher levels of transparency, accountability, and sustainability, aligning with global best practices.

3.2 Terms of Reference

In an EIA process, the first step is screening, to determine if a project needs an EIA based on its potential environmental impacts. This is followed by a scoping stage, which identifies the key issues to be addressed in the EIA through stakeholder consultation. Screening decides the necessity, and scoping defines the focus of the assessment. These stages have already been completed for the EBA as it is a major development and so a full EIA is required under Schedule 1. The EAB have provided a scoping opinion that defines the potential impacts that require investigation during the EIA (**Appendix A**)

Through additional research and public engagement, the ToR refines the existing EIA's scope established in the Scoping Opinion. The EIA provides a systematic process for assessing the likelihood that a project may have a detrimental effect on the economy, society, and the environment. The ToR identifies the applicable environmental Acts and regulations, establishes effective methods of evaluation, and directs the Project to fulfil its ultimate needs efficiently and effectively.

The purpose of the ToR in the EIA Process is:

- **Defining Scope and Objectives:** ToR reports outline the scope and objectives of the EIA, specifying environmental aspects, methodologies, and key issues to be addressed.
- **Guided Assessment:** ToR provides a structured framework for conducting the EIA, detailing specific tasks and studies.
- **Stakeholder Engagement**: ToR reports include provisions for stakeholder engagement, ensuring the views and concerns of various stakeholders are considered.
- **Regulatory Compliance:** ToR ensures the EIA complies with environmental regulations and standards, aligning the assessment with legal requirements.
- **Quality Control:** ToR provides detailed guidelines and criteria for the EIA, maintaining the quality and consistency of the assessment.
- **Decision-Making:** ToR informs decision-making by providing a clear plan for the EIA, enabling informed decisions about the Project.

This document forms the ToR for the Project and covers Steps 4 and 5 out of the 12 Step process as outlined in the EIA Directive[1] which are shown in **Figure 2.1**.

3.2.1 Requirements of the EIA

The EIA shall undertake the following tasks which will be presented in an Environmental Statement (ES):

- Describe the need for the Project.
- Justify the selection of the preferred option for the Project detailing the reasons why all alternatives were not selected.
- Compare the preferred option against the “Do Nothing” Option.
- Describe in detail the construction methodology including the sources and delivery of all material and the proposed duration for works with any seasonal restrictions on activities.
- Describe in detail the proposed operational activities for the Project.
- Describe the proposed decommissioning for the existing airport.
- Discuss any potential future expansion plans for the airport.
- Undertake consultation with stakeholders (consultation is addressed in **Section 3.2.2, 3.2.3, 3.2.4** and shall continue throughout the EIA phase).
- Identify the baseline conditions for each of the topics covered in **Section 5** including their sensitivity and vulnerability to the construction and operation of the proposed airport.
- Assess the potential impacts on the receptors.
- Determine the potential for mitigation of any significant effects.
- Assess the residual impacts on the receptors and determine next steps for any effects that are still significant (consider alternatives, importance and potential for offsets).
- Determine any monitoring requirements for each receptor where mitigation is required.
- Undertake a cumulative effects assessment.

Following completion of the ES, an Environmental Management Plan (EMP) shall be prepared outlining the requirements to be implemented during the construction phase and the roles and responsibilities of all those involved together with review and reporting requirements for the monitoring results. It is recommended that adaptive monitoring and management strategies are developed for any monitoring required.

Additional plans shall be produced at this stage that are needed to address specific activities, for example pollution contingency planning and waste management during both construction and operation.

3.2.2 Public consultation

Public consultation throughout the EIA process is essential given the nature and scale of Project. The potential impact on both the environmental features and the residents of Little Cayman, could be considerable without mitigation. The National Conservation Act’s EIA Directive mandates the public consultation requirements during the ToR and EIA process:

- During draft ToR development:
  - The draft ToR document (this report) will be available on the DoE website for a period of 21 consecutive days.
  - The availability of the ToR will be advertised at least twice in the local press within the 10-day period immediately preceding the start of the 21-day review period.
  - All comments and feedback received during the public consultation period will be reviewed. Relevant issues raised by the public will be integrated into the final ToR to ensure that the

[1] *https://conservation.ky/eia-process/*

EIA addresses all key concerns. A summary of the public consultation process, the issues raised and how these will be addressed, will be documented and included in the final ToR.

- During ES development:
  - The draft ES document (once produced) will also be available on the DoE's website for 21 consecutive days.
  - Similar to the ToR, the publication of the ES will be advertised at least twice in the local press within the 10-day period prior to the commencement of the 21-day review period.
  - During both the ToR and EIA review periods, the public can submit comments directly to the EAB via the DoE, either by email, direct mail, or hand delivery to the DoE offices. These comments will be jointly assessed by the EIA consultants and the EAB, and relevant changes will be incorporated into the final documents. Responses to all comments received will be appended to the Final ToR and ES, respectively.

3.2.3 Stakeholder engagement

Stakeholder engagement will be an integral part of the EIA process, extending beyond public meetings and document publication. The stakeholder engagement will draw upon the consultation already undertaken as part of the public outreach for the planning stages, including that undertaken for the draft planning statement and the Airport Masterplan.

A Stakeholder Management Plan (SMP) shall be developed as one of the first activities in the EIA process to outline the consultation stages to be followed and shall be a 'live document' which will record the outcomes at each stage. Any comments received throughout the EIA process shall be documented and responded to and included in the ES.

Various outreach and communication methods will be employed to continue the consultation, including stakeholder meetings, adverts in the Caymanian Times and Cayman Compass, press releases, radio, project newsletters, community outreach sessions, pull-up banners and regular CIAA website and social media updates. In addition to this, stakeholder organisations will be contacted directly to invite them to contribute to the EIA process in two consultation phases. The first consultation phase will present the proposed approach to the EIA and will collate feedback from the stakeholders on specific topics/issues that shall be covered in the ES. The second consultation phase will advise attendees of the outcomes.

The first consultation phase, which will happen at an early stage in the EIA, will present the proposed approach to the EIA and will collate feedback from the stakeholders on specific topics/issues that shall be covered in the ES. The second consultation phase, to provide a forum for discussion of the draft report, will advise attendees of the outcomes. In between these two stages there will be informal consultation with those stakeholders that either request further consultation at the initial stage, are identified for further consultation as they hold relevant information or have concerns over the Project or are identified during the EIA process.

Stakeholders will be involved at critical decision-making stages, such as evaluating project alternatives, assessing impacts, developing mitigation strategies, and reviewing findings to determine the preferred solutions. This proactive engagement will ensure that the feedback and insights gathered from stakeholders are incorporated into the Project planning and decision-making processes, thereby enhancing the Project's overall effectiveness and community acceptance.

Stakeholders include representatives from:

- Local business owners.

- Local residents.
- EAB members.
- Appropriate government bodies.
- National Trust for the Cayman Islands (NTCI).
- CAL.
- Cayman Islands National Museum
- CIAA.
- Sister Island Committees.

Due to the potentially controversial nature of this project, engaging both public and private stakeholders at an early stage is crucial. Throughout the EIA process it will be essential to thoroughly research and address environmental concerns and ensure all voices are heard. The stakeholder process will be flexible enough to incorporate new consultees as the Project progresses as it is recognised that additional stakeholders are likely to be identified throughout the EIA.

3.2.4 Summary of consultation on this ToR

Following completion of a draft version of this ToR a public outreach event was held on Little Cayman. The meeting was held at least seven days before the end of the public consultation review period. The below summarises the main discussion areas raised during the meeting and signposts where in this ToR the comments have been taken into account.

To be completed following public outreach sessions for this ToR.

3.2.5 Assessment methodology

It is proposed that the ES evaluates the potential direct and indirect effects of a project using the following methodology.

All receptors will exhibit a greater or lesser degree of sensitivity to the changes brought about by the proposed scheme and defining receptor ‘sensitivity’ as part of the definition of the baseline environment helps to ensure that the subsequent assessment is transparent and robust. The sensitivity of a receptor is a function of its capacity to accommodate change and reflects its ability to recover if it is affected, and is defined by the following factors:

- Adaptability – the degree to which a receptor can avoid, adapt to or recover from an effect.
- Tolerance – the ability of a receptor to accommodate temporary or permanent change.
- Recoverability – the temporal scale over and extent to which a receptor will recover following an effect.

In order to define the sensitivity of a receptor, the guidelines presented in **Table 3.1** will be used to determine the level of effect that could occur on each receptor during the EIA process. Receptor specific definitions will be applied where appropriate.

Table 3.1 Generic guidelines used in the determination of receptor sensitivity and value

Sensitivity / value	Description
Very high	Receptor has very limited or no capacity to accommodate physical or chemical changes or influences. Receptor possesses fundamental characteristics which contribute significantly to the distinctiveness, rarity and character of the resource, is of very high importance and rarity that is international in scale (e.g. protected species, designated sites such as Ramsar Sites, World Heritage Sites, Important Bird and

Sensitivity / value	Description
	Biodiversity Area, Alliance for Zero Extinction Sites and Key Biodiversity Area) and has very limited potential for substitution / replacement.
High	Receptor has a limited capacity to accommodate physical or chemical changes or influences. Receptor possesses key characteristics which contribute significantly to the distinctiveness, rarity and character of the resource, is of high importance and rarity that is national in scale (e.g. designated sites such as Terrestrial and Marine Protected Areas under the NCA and the National Trust Act, NBAP habitats and species, Heritage Coasts, (Major) Features listed on the National Heritage Register, National Trust Properties, etc.), and has limited potential for substitution / replacement.
Medium	Receptor has a limited capacity to accommodate physical or chemical changes or influences. Receptor possesses key characteristics which contribute to the distinctiveness and character of the resource, is of medium importance and rarity that is regional in scale (e.g. (Minor) Features listed on the National Heritage Register), and has limited potential for substitution / replacement.
Low	Receptor has a low - moderate capacity to accommodate physical or chemical changes or influences. Receptor characteristics make a small contribution to local character or distinctiveness, and are of low importance and rarity, are not designated, and could be substituted / replaced.
Very low	Receptor is generally tolerant of and can accommodate physical or chemical changes or influences. Receptor characteristics do not make a significant contribution to local character or distinctiveness, and are of very low importance and rarity, are not designated, and are easily substituted / replaced.

It should be noted that the sensitivity criterion is a composite one; combining value (a measure of the receptor's importance, rarity and worth) with tolerance to a change. In some instances, the inherent value of a receptor is recognised by means of designation (see below), and the 'value' element of the composite criterion recognises and gives weight in the assessment to that designation.

The magnitude of an effect is typically defined by four factors:

- Extent – the area over which an effect occurs.
- Duration – the time for which the effect occurs.
- Frequency – how often the effect occurs.
- Severity – the degree of change relative to existing environmental conditions.

To help define impact magnitude, the criteria presented in **Table 3.1** and **Table 3.2** are proposed to be adopted for the purposes of the EIA. While this table provides guidelines of a generic nature, more specific guidelines in relation to impact magnitude can be adopted for the topics assessed, where considered necessary.

Table 3.2 Generic guidelines used in the determination of magnitude of effect

Magnitude	Description
Very high	Adverse: Loss of resource and/or quality of the resource; severe damage to key characteristics, features or elements. Permanent / irreplaceable change, which is certain to occur. Beneficial: Large scale improvement of resource or attribute quality; extensive restoration or enhancement.
High	Adverse: Loss of resource, but not affecting quality of the resource; partial loss of or damage to key characteristics, features or elements. Permanent / irreplaceable change, which is likely to occur. Beneficial: Improvement to, or addition of, key characteristics, features or elements of the resource; improvement of attribute quality.
Medium	Adverse: Minor loss of, or alteration to, one (maybe more) key characteristics, features or elements; measurable change in attributes, quality or vulnerability. Long-term though reversible change, which is likely to occur. Beneficial: Minor improvement to, or addition of, one (maybe more) key characteristics, features or elements of the resource; minor improvement to attribute quality.

Magnitude	Description
Low	Adverse: Very minor loss of, or alteration to, one (maybe more) key characteristics, features or elements; noticeable change in attributes, quality or vulnerability. Short- to medium-term though reversible change, which could possibly occur. Beneficial: Very minor improvement to, or addition of, one (maybe more) key characteristic, feature or element; very minor improvement to attribute quality.
Very low	Adverse: Temporary or intermittent very minor loss of, or alteration to, one (maybe more) characteristic, feature or element; possible change in attributes, quality or vulnerability. Short-term, intermittent and reversible change, which is unlikely to occur. Beneficial: Possible very minor improvement to, or addition of, one (maybe more) characteristic, feature or element; possible improvement to attribute quality.

The significance of an impact is determined by combining the predicted magnitude of the effect with the sensitivity of the receptor, as defined in **Table 3.3**. Impact assessments carry a degree of subjectivity, as they are based on expert judgement regarding the effect-receptor interaction that occurs and on available data. As such, each impact assessments will be qualified appropriately, and all assumptions made shall be discussed in the relevant section.

Table 3.3 Impact assessment matrix

Receptor sensitivity (inclusive of value)	Magnitude of effect				
	Very high	High	Medium	Low	Very low
Very high	Major	Major	Moderate	Moderate	Minor
High	Major	Moderate	Moderate	Minor	Negligible
Medium	Moderate	Moderate	Minor	Minor	Negligible
Low	Minor	Minor	Minor	Negligible	Negligible
Very low	Minor	Negligible	Negligible	Negligible	Negligible

The probability of an effect occurring (i.e. an effect-receptor interaction) shall also be considered in the assessment process; capturing the probability that the effect will occur and also the probability that the receptor will be present. For example, the magnitude of the effect and the sensitivity of the receptor may have been established, and it may be highly probable that the effect will occur; however, the probability that the receptor will be present at the same time will also be considered.

The level of confidence in the assessment of each receptor to each potential change will be detailed and shall be based on the level of confidence in the baseline situation and the ability to predict the change that could occur.

Significant impacts in EIA terms are taken to be those of moderate or major significance (as defined above); albeit that appropriate mitigation, where available, shall be sought for all impacts. Impacts will be assessed both prior to the application of mitigation and as a residual impact, assuming successful implementation of the mitigation. The mitigation hierarchy shall be followed for assigning measures to reduce or offset potential effects. The Institute of Environmental Management and Assessment (IEMA) provides detailed guidance on implementing the mitigation hierarchy. According to IEMA, the hierarchy involves the steps illustrated in **Figure 3.1.**

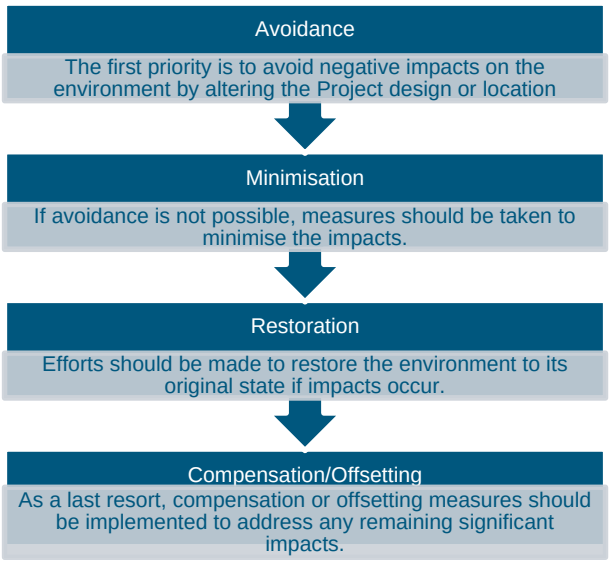


Figure 3.1 Mitigation hierarchy

IEMA emphasises the importance of integrating these steps from the earliest stages of project planning and maintaining them throughout the Project's lifecycle. Monitoring shall be recommended to ensure successful implementation of each mitigation measure.

3.2.6 EIA study area

The ES shall include details of the study area for each receptor and provide a justification for the assigned study area. The study area will differ for each receptor depending on the sensitivity of the receptor, its functional area (i.e. migratory pathways) and the vulnerability of the receptor associated with the potential changes that could occur due to the construction and/or operation of the proposed airport. The study area for each receptor will include the footprint of the Project, surrounded by an area that takes account of the direct and indirect effects that could occur. In addition to this, any areas linked to the site, for example, the Booby Pond via bird flight paths, will also be included. Direct impacts will be evaluated on a quantitative basis were data permits and holistically to account for indirect impacts also. The study area for each receptor must be proposed and accepted by the EAB.

3.3 Cumulative Effects Assessment

A Cumulative Effects Assessment (CEA) shall be undertaken as part of the EIA process to ensure that any impacts are considered cumulatively with others that are predicted for the same project but also for other projects or plans that could interact both temporally and spatially. A list of other projects shall be derived during the EIA process through investigation of relevant planning proposals and discussion with the government bodies.

4 CONSIDERATION OF POTENTIAL EFFECTS

4.1 Terrestrial and coastal ecology

4.1.1 Baseline conditions

4.1.1.1 Overview

The habitats of Little Cayman include dry forests, wetlands and xerophytic shrubland. Additional habitat types that are present within the island include: coastal mahogany forest, coastal shrubland, dry shrubland, seasonally flooded mangrove forest, woodland, and shrubland, semi-permanently flooded grasslands, tidal tropical or subtropical annual forb vegetation, and beach sand communities. The local climate is influenced by the location of the Islands and can be described as a tropical marine climate with two distinct seasons: a wet season from May through November and a relatively dry season from December through April (see discussion of climate trends in **Section 4.8.1.3**).

Throughout the EIA process, a comprehensive review of technical reports, publications, government documents, websites, and the Geographic Information System (GIS) datasets provided by the DoE will be conducted to gain an in-depth understanding of the baseline existing conditions within, adjacent to, and in the vicinity of the proposed EBA relocation. This will include review of the following:

- Little Cayman Landcover and Habitat (2018);
- Little Cayman National Trust Sites (2022);
- Little Cayman National Conservation Act (NCA) Sites (2022); and,
- International Bird and Biodiversity Areas (IBAs), Key Biodiversity Areas (KBAs) and Alliance for Zero Extinction (AZE) Database.

4.1.1.2 Protected areas

The nationally important ecological resources identified within 1 km of the Project include two National Trust sites, four NCA protected sites, and NCA marine protected resources (**Table 4.1** and **Figure 4.1**).

Table 4.1 Nationally protected areas within a 1 km terrestrial buffer, Little Cayman.

Protected Area	Location	Designation	IUCN Management Category	Area
Booby Pond and Rookery Animal Sanctuary	Within 1 km buffer	Ramsar Site, NCL (2013) protected land	Ib[2]	0.82 km^2
Bloody Bay Marine Park	Within 1 km buffer	Marine Park	II[3]	2.04 km^2
South Hole Sound Replenishment Zone	Within 1 km buffer	Replenishment Zone	IV[4]	3.70 km^2
Salt Rocks Land	Within 1 km buffer	Salt Rocks Land	II	0.10 km^2
Preston Bay Marine Park	Within 1 km buffer	Marine Park	II	1.01 km^2

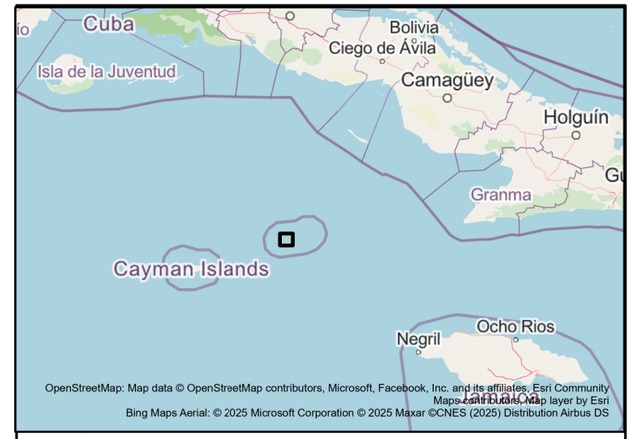
[2] Wilderness Area: Large areas that are protected and managed to preserve their natural condition, allowing minimal human impact and providing opportunities for solitude and primitive recreation.
[3] National Park: Protected areas managed mainly for ecosystem protection and recreation. They are large natural or near-natural areas set aside to protect large-scale ecological processes.
[4] Habitat/Species Management Area: Areas managed mainly for conservation through management intervention. They often require regular, active interventions to address the requirements of particular species or to maintain habitats.

The following international protected areas fall within a 1 km buffer zone of the Project. These internationally recognised areas are listed in **Table 4.2**, and shown in **Figure 4.2**. These sites of international significance are described in more detail below.

Table 4.2 Internationally recognised areas within a 1 km terrestrial buffer, Little Cayman.

Protected Area	Location	Designation	Criteria met	Area
Booby Pond Nature Reserve – Ramsar Site	Within footprint	IBA KBA	IBA criteria[5]: A1, A2, A4ii, B4ii (2007) Global KBA criteria: D1a[6] (2009)	136 ha
Crown Wetlands	Within footprint		IBA criteria: A1, A4ii, B4i (2007) Global KBA criteria: confirmed (2009)	516 ha (fragmented)
Sparrowhawk Hill	Within 2 km buffer		IBA criteria: A1, A2 (2007) Global KBA criteria: confirmed (2009)	152 ha

[5] *A1 – Globally Threatened Species: The site is known or thought regularly to hold significant numbers of a Globally Threatened species*
A2 – Restricted Range Species: The site is known or thought to hold a significant population of at least two range-restricted species
B3b (formerly A4ii) - Regionally important congregations: Multi-species aggregations. The site is known or thought to hold, on a regular basis, ≥ 20,000 waterbirds or ≥ 6,700 pairs of seabirds of one or more species.
B4i - This criterion is met if the area is known to support a significant number of individuals of a species that is globally threatened or near threatened.
B4ii - This criterion applies if the area supports a significant number of individuals of a species that is restricted to a specific biogeographic region.
[6] *D1a – Demographic aggregations ≥ of the global population size of a species, over a season, and during ≥ 1 key stage in life cycle*



Legend:

- Project Footprint
- Project Footprint 1km Buffer
- Booby Pond and Rookery Animal Sanctuary
- Little Cayman Animal Sanctuaries
- Little Cayman National Trust Areas
- Marine Reserve
- Line Fishing Zone
- Terrestrial Protected Area
- NCA Protected Areas - Tarpon Lake

Client:	Project:
Cayman Island Government	Edward Bodden Airfield Relocation Terms of Reference - Little Cayman

Title:

Map of the Nationally Protected areas on Little Cayman

Figure:	Drawing No:
4.1	PC6310-RHD-XX-ZZ-DR-Z-0002

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	07/11/2024	GC	LR	A3	1:60,000

Co-ordinate system: Name: NAD 1927 UTM Zone 17N

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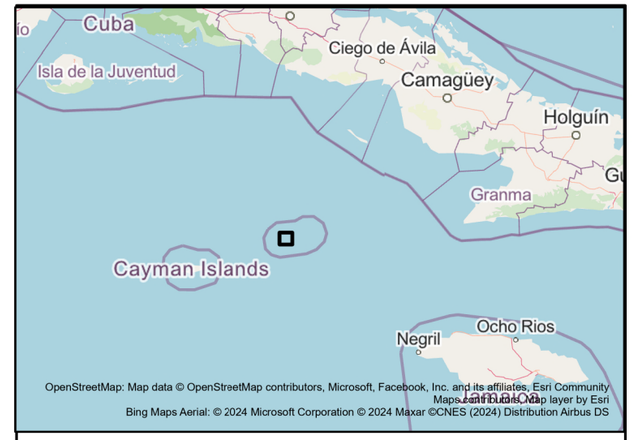

Legend:

- Project Footprint
- Project Footprint 1km Buffer
- Key Biodiversity Areas

Client:	Project:
Cayman Island Government	Edward Bodden Airfield Relocation Terms of Reference - Little Cayman

Title:

Map of the Internationally Protected Areas on Little Cayman

Figure:	Drawing No:
5.2	PC6310-RHD-XX-ZZ-DR-Z-0003

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	07/11/2024	GC	LR	A3	1:60,000

Co-ordinate system: Name: NAD 1927 UTM Zone 17N

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4.1.1.2.1 Booby Pond Nature Reserve

The protected area of Booby Pond, located on the south coast of Little Cayman, is an internationally recognized Ramsar Site and 80% protected as an animal sanctuary by the NTCI. The area is characterized by an enclosed hypersaline lagoon, a broken black and white mangrove, and a dry forest on the north inland side of the pond. The dominant dry forest species include *Bursera simaruba, Canella winterana, Guapira discolor, Coccothrinax proctorii, Ficus aurea, Myrcianthes fragrans*, and *Plumeria obtusa*. The site is a key location for Red-footed boobies, the largest colony in the Caribbean, and the Greater Antillean *Grackle (bangsi)*, which has become extirpated from Cayman Brac after 1945. The featured species of this protected area are summarised below in **Table 4.3**.

Table 4.3 Booby Pond Nature Reserve protected species. Source: (BirdLife International, 2007)

Species	IUCN Red List	Season	Year(s)	Size	IBA criteria
West Indian Whistling-duck *Dendrocygna arborea*	NT	breeding	2005	20 breeding pairs	A1
White-crowned Pigeon *Patagioenas leucocephala*	NT	resident	2007	unknown	A1
Magnificent Frigatebird *Fregata magnificens*	LC	breeding	2007	150-200 breeding pairs	B4ii
Red-footed Booby *Sula sula*	LC	resident	2007	20,000 individuals	A4ii
Caribbean Elaenia *Elaenia martinica*	LC	resident	2005	unknown	A2
Vitelline Warbler *Setophaga vitellina*	NT	breeding	2005	60 individuals	A1, A2

An additional 31 taxa breed within the protected area. 16 landbirds: Caribbean Elaenias *Elaenia martinica caymanensis* and *Bananaquits sharpei* are fairly common. Indigenous species are the White-crowned Pigeon, Zenaida Dove *Zenaida aurita*, Common Grounddove, Mangrove Cuckoo *Coccyzus minor*, Smooth-billed Ani, Northern Mockingbird, Barn Owl and the Yellow Warbler, with summer breeding migrants the White-winged Dove *Zenaida asiatica*, Grey Kingbird *Tyrannus domincensis*, Antillean Nighthawk *Chordeiles gundlachii* and the Blackwhiskered Vireo *Vireo altiloquus*. 15 waterbirds, in a mixed heronry: max counts 250 pairs snowy egrets, 40 pairs Tricoloured Herons, 14 pairs Cattle Egrets, eight pairs Little Blue Herons and 25 pairs Yellow-crowned Night-herons. Max counts 20 pairs Least Terns, four pairs Pied-billed Grebes, 12 pairs Green Herons, 18 pairs American Coots, 230 Common Moorhens (breeding and migrant), 103 pairs Black-necked Stilts and five pairs of Willets. A major wintering waterbird site for up to 500 Blue-winged Teals, 40 Northern Shovelers *Anas clypeata*, 18 American Wigeons *Anas americana* and 20 Lesser Scaups *Aythya affinis*, 300 American Coots, 40 Great Blue Herons *Ardea herodias*, 130 Great Egrets *Casmerodias albus*, and 300 Greater Yellowlegs *Tringa melanoleuca* and Lesser Yellowlegs *T. flavipes*, and flocks of up to 400 Semipalmated Sandpipers *Calidris pusilla* and Least Sandpipers *Calidris minutilla*. Migrant raptors include Ospreys, Merlins and Peregrine Falcons. Regular migrant landbirds include Yellow-bellied Sapsucker *Sphyrapicus varius*, Gray Catbird, White-eyed Vireo, Yellow-throated Vireo *Vireo flavifrons* and 21 species of warbler, most commonly Northern Parula *Parula americana*, Cape May Warbler *Dendroica tigrina*, Yellowthroated Warbler *D. dominica*, Palm Warbler *D. palmarum*, Prairie Warbler *D. discolor*, Yellow-rumped Warbler *D. coronata*, Black-and-white Warbler *Mniotilta varia*, American Redstart *Setophaga ruticilla*, Ovenbird *Seiurus aurocapilla* and Northern Waterthrush *S. noveboracensis*.

Non-bird biodiversity: Plants endemic to the Cayman Islands are: *Allophylus cominia* var. *caymanensis*; *Cordia sebestena* var. *caymanensis* and *Cocothrinax proctorii*. Endemic to Little Cayman and Cayman Brac are: *Chionanthus caymanensis* var. *caymanensis*, *Encyclia kingsii*, *Myremecophila thompsoniana* var. *minor* and *Phyllanthus caymanensis*. Endemic fish: *Limnea caymanensis* and *Gambusia xanthosma*. Reptiles include *Anolis mayardi*, endemic to Little Cayman. Endemic to Little Cayman and Cayman Brac: *Alsophis cantherigerus ruttyi*, *Cyclura* (*nubila*) *caymanensis* (EN), *Sphaerodactylus argivus bartschi*, *Tropidophis caymanensisis parkeri* and *Comptus maculatus* (Sister Isles endemic Galliwasp). The land crab *Cardisoma guanhami* is decreasing. Endemic molluscs: *Cerion nanus* (EN), *Proserpinula lewisi*, *Alcadia lewisi* and *C pannosum*. Endemic insects to Little Cayman and Cayman Brac include *Diceroprocta caymanensis* and *Psammoleon reductus*.

4.1.1.2.2 Crown Wetlands

Little Cayman's wetlands, which make up around 40% of the island's area, are home to mangrove wetlands on the north and south coasts, interior landlocked mangrove shrublands, and brackish herbaceous wetlands in the south-west. The fringe vegetation includes mangrove species, mixed with *Cordia sebestena, Thespesia populnea* and *Rhabdadenia biflora*. In the south-west, Preston Bay westerly ponds are brackish herbaceous wetlands on pavement ironshore; the vegetation is *Conocarpus*, *Laguncularia, Acrostichum aureum* and herbaceous species *Sesuvium portulacastrum, Salicornia bigelovii, Ruppia maritima* and *Rhachiallis americana*. Protected bird species are set out in **Table 4.4**.

Table 4.4 Crown Wetlands protected species. Source: (BirdLife International, 2007)

Species	IUCN Red List	Season	Year(s)	Size	IBA criteria
West Indian Whistling-duck *Dendrocygna arborea*	NT	resident	2005	135 breeding pairs	A1, A4i
White-crowned Pigeon *Patagioenas leucocephala*	NT	resident	2007	unknown	A1
Least Tern *Sternula antillarum*	LC	breeding	2005	60 breeding pairs	B4i
The site has up to 135 pairs of the globally threatened West Indian Whistling-duck, which is more than 1% of the global population, with the largest sub-populations at Jackson's Pond, Grape Tree Pond and Charles Bight Pond. A total of 16 taxa breed: White-crowned Pigeon, Zenaida Dove, Yellow Warbler and biome species Greater Antillean Grackle *bangsi*. There is a mixed heronry of max 250 pairs of Snowy Egrets *Egretta thula* and Tricoloured Herons on Jackson's Pond; Yellowcrowned Night-herons (in small colonies or singly, with the highest numbers at Tarpon Lake, Jackson's Pond and Charles Bight Pond) and Green Herons (singly) breed throughout. Max counts are 16 pairs Pied-billed Grebes, 60 pairs Least Terns, 10 pairs Willets, 16 pairs American Coots,Common Moorhens, and 250 pairs of Black-necked Stilts. A major wintering site for up to 1,500 Blue-winged Teals, 60 Northern Shovelers, 32 American Wigeons and 64 Lesser Scaups, 300 American Coots, 83 Great Blue Herons, 160 Great Egrets, 360 Greater Yellowlegs and Lesser Yellowlegs, and 250 Semipalmated Sandpipers and Least Sandpipers. Purple Gallinules *Porphyrio martinica*, Soras and Wilson's Snipe *Gallinago delicata* occur on Coot Pond and the Preston Bay westerly ponds. Migrant raptor species include Osprey, Merlin and Peregrine Falcon. Regular migrant landbirds, mainly warblers, include most commonly Northern Parula, Yellow-throated Warbler, Palm Warbler, Prairie Warbler, Black-and-white Warbler, American Redstart, Ovenbird and Northern Waterthrush. Non-bird biodiversity: The site contains endemic reptiles, alongside *Cardisoma guanhami* and *Barbouria caymanensis*.					

4.1.1.2.3 Sparrowhawk Hill

The site is a pristine dry forest with no public road in the centre, but survey tracks have been built. The dominant tree species are *Calyptranthes pallens, Sideroxylon salicifolium, Chionanthus caymanensis, Erythroxylum areolatum*, and *Canella winterana*. Protected bird species are set out in **Table 4.5**.

Table 4.5 Sparrowhawk Hill protected species. Source: (BirdLife International, 2007)

Species	IUCN Red List	Season	Year(s)	Size	IBA criteria
White-crowned Pigeon *Patagioenas leucocephala*	NT	breeding	2007	unknown	A1
Caribbean Elaenia *Elaenia martinica*	LC	resident	2005	unknown	A2
Vitelline Warbler *Setophaga vitellina*	NT	resident	2005	unknown	A1, A2
It is estimated that the forest covers about 3% of the range of the Vitelline Warbler *crawfordi*. Six taxa breed, including the Caribbean Elaenia *caymanensis*, Bananaquit *sharpei*, Zenaida Dove and the migrant, White-crowned Pigeon and Black-whiskered Vireo. A total of 86 migrant landbirds are recorded, including Yellowbellied sapsucker, Grey Catbird, White-eyed Vireo, and the warblers: Northern Parula, Cape May Warbler, Yellowthroated Warbler, Yellow-rumped Warbler, Prairie Warbler, Black-and-white Warbler, American Redstart and Ovenbird.					

Species	IUCN Red List	Season	Year(s)	Size	IBA criteria
Non-bird biodiversity: Plants endemic to Little Cayman and Cayman Brac*: Chionanthus caymanensis* var. *caymanensis*, *Encyclia kingsii*, *Myremecophila thompsoniana* var. *minor* and *Phyllanthus caymanensis*. Endemic to Little Cayman: *Dendropemon caymanensis*. Phyllostomid bat *Macrotus waterhousii* minor found in caves. Sister Isles endemic reptiles inclduing *Comptus maculatus*. Lepidoptera endemic to the Cayman Islands: *Cyclargus amnon erembis* and *Memphis echemus danielana*.					

4.1.1.3 Habitats

The Cayman Islands, including Little Cayman, are situated on the Cayman Ridge, which forms the southern margin of the North American Plate. This tectonically active area is near the Oriente Transform Fault and the Mid-Cayman Rise, contributing to the unique geological features of the islands. The island is primarily composed of calcareous rock formations; sedimentary rocks formed from the accumulation of coral, shells, and other organic materials over millions of years.

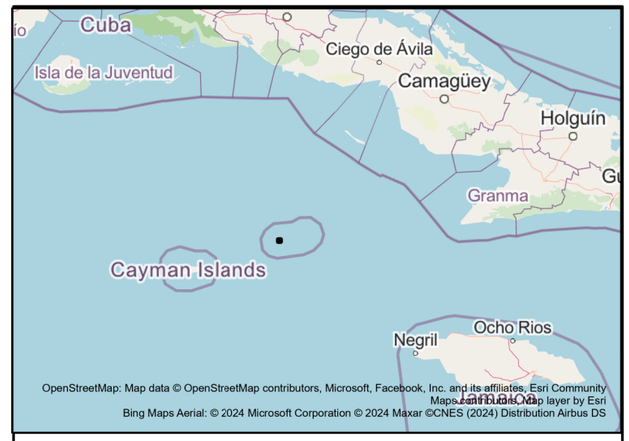
Habitats that have developed on the island include wetland, shrubland and forest with some areas that have been modified by man. The majority of the island is unmodified habitat with the percentages shown below in **Table 4.6**.

Table 4.6 Land cover on Little Cayman. Source: Cayman Islands Land Cover, 2013.

Land cover category	Total area (acre)	Protected (acre)	Protected (%)
Wetland	1,917	163	8.5%
Xerophytic shrubland	4,201	259	6.2%
Dry forest	288	16	5.6%
Man-modified areas	724	11	1.5%
Total	7,130	449	6.3%
Total area (sq. miles)	11	1	

Habitats present within the footprint of the Project and a 1 km buffer zone are shown in **Figure 4.3**. Habitats present within the footprint of the Project include dry shrubland, seasonally flooded mangrove, ponds pools and mangrove lagoons and some areas indicated as previously man modified.

80°6'0"W
80°5'0"W
80°4'0"W
19°41'0"N
19°40'0"N
N
Existing Airport Runway
Existing Airport Terminal
0
0.5
1 km



Legend:

- Project Footprint
- Project Footprint 1km Buffer

Habitat

- Coastal mohagany forest
- Coastal shrubland
- Dry forest and woodland
- Dry shrubland
- Invasive speceis - casuarina
- Man-modified
- Ponds, pools and mangrove lagoons
- Seasonally flooded mangrove forest and woodland
- Seasonally flooded mangrove shrubland
- Semi-permanently flooded grasslands
- Shoreline
- Tidal tropical or subtropical annual forb vegetation
- Tidally flooded mangrove forest and woodland
- Urban

Client: Cayman Island Government	Project: Edward Bodden Airfield Relocation Terms of Reference - Little Cayman

Title: Map of the Habitats Present on Little Cayman, Overlaid with the Locations of the Existing and Proposed Airport

Figure:	Drawing No:
5.3	PC6310-RHD-XX-ZZ-DR-Z-0005

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P01	07/11/2024	GC	LR	A3	1:15,000

Co-ordinate system: Name: NAD 1927 UTM Zone 17N

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4.1.1.4 Species

Little Cayman is known as the “nature island,” and support numerous species of animals and plants, many of which are endangered and unique to the island. Species of particular interest include:

- **Sister Islands Rock Iguana** *Cyclura nubila ssp. caymanensis*: an endemic and critically endangered reptile species (Goetz & Burton, 2012) only found on Little Cayman and Cayman Brac. It is suggested that populations are steadily declining due to development, increased tourism, road mortality (roadkill) and predation by pets such as cats and dogs (Echternacht et al., 2011). They are legally protected under Schedule 1 Part 1 of the NCA.
- **Little Cayman Green anole** *Anolis maynardi*: another endemic species of reptile only found on Little Cayman and is legally protected under Schedule 1 Part 1 of the NCA. This is thought to be a primarily arboreal species but despite its rarity and endemic status, little is known about the abundance, ecology, or natural history of this species (Herrel et al., 2011).
- **The Little Cayman Island Snail** *Cerion nanus*: an endemic and critically endangered species (Hounsome, 2024) of land snails closely associated with the dry (xerophytic) shrubland plant *Evolvulus squamosus*. Distribution of this species is extremely limited to a small area to the north of Blossom Village, with a small population east of Olvine Kirk Drive. It is thought to be one of the most restricted snail populations in the world (DoE, 2024) and is legally protected under Schedule 1 Part 1 of the NCA.
- *Turnera triglandulosa*: amongst many other endemic species of plants that are thought to be so rare that have never been given common names, this one is also listed as threatened in the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species (Burton & Roberts, 2014). This plant is protected under Schedule 1 Part 2 of the NCA.
- **Marine turtles**: species such as green turtles (*Chelonia mydas*), hawksbill (*Eretmolchelys imbricata*) and loggerhead turtle (*Caretta caretta*) are known to nest on the coast to the north of the Project and are legally protected under Schedule 1 Part 1 of the NCA.
- **Red-footed booby** (*Sula sula*) – this species nests at the Booby Pond Nature Reserve, which is located approximately 650m to the south of the proposed relocation site. This is considered one of the four largest colonies in the Caribbean, although the NBAP (2009) identified significant fluctuations in the population, with a peak of 4,849 pairs in 1997 and 670-700 pairs in 2008. The NTCI states that the current population is about 4,000 birds, and that this represents at least a third of the Caribbean and Atlantic population (NTCI, 2024). Red-footed boobies nest between November and July. It was a ‘species action plan’ (SAP) species under the NBAP and is included in the draft Species Conservation Plan for colonial nesting seabirds (National Conservation Council, 2022). All bird species are legally protected under Schedule 1 Part 1 of the NCA. Flight path information exists for this species that was collected during research under a Darwin Initiative project to develop assessment and conservation actions for Cayman Islands seabird populations. This study gathered data on bird foraging trips, including overland flight pathways and boundaries for the red-footed booby colony on Little Cayman.
- **Magnificent frigatebird** (*Fregata magnificens*) also nests at the Booby Pond Nature Reserve between November and July. Approximately 150-200 pairs nest at the reserve. Data exists for flight tracking for this species as a result of a Darwin Initiative study undertaken to provide regional-scale marine conservation management. Important habitats were identified, and a management framework developed to recognise, designate and protect vulnerable ecosystems onshore, nearshore and offshore. This data would provide an important resource for understanding of bird flight movements and habitats of importance.
- **Vitelline warbler** (*Setophaga vitellina*) – this species is restricted to the Cayman and Swan Islands, and the subspecies *S.v.crawfordi* is endemic to Cayman Brac and Little Cayman. It is listed as a ‘near threatened’ Red-list species under IUCN criteria. The species nests in dry shrubland habitats

between April and August and will also forage in edge wetland habitats. It was a SAP species under the NBAP, and is legally protected under Schedule 1 Part 1 of the NCA.

- **Migratory birds**. The Cayman Islands are of importance to migratory bird species, particularly between October and March. Some birds remain on the islands for the winter, while others use the islands as a stopover during migration between North and South America. Dry shrubland, mangrove habitats and associated wetland habitats are likely to be of particular importance for a range of migratory passerine bird species.

4.1.2 Potential effects

The potential effects arising from the construction and operation of the Project on terrestrial ecology will be determined during the EIA study using existing data, results from the surveys and consultation with relevant stakeholders, including the DoE and NTCI. Additionally, potential secondary effects on surrounding ecological receptors, such as seasonally flooded mangroves, will be evaluated.

It is not anticipated that there would be any impacts on the coastal and marine environment, given the location of the Project in the middle of the island and the best practice measures that would be implemented to ensure spillages and run off are managed on site and to protect groundwater resources (**Section 4.5.4**). However, as the EIA progresses it is recognised that additional impacts may occur that require investigation, and this will be considered for each topic.

The potential effects on ecological features arising from the Project are set out in **Table 4.7**.

Table 4.7 Potential effects on terrestrial and coastal habitats and species

Activity	Effect	Receptor
Construction		
Construction of the Project	Loss of habitat and habitat fragmentation within the airport footprint and new access road, and its associated effect on species using these areas (losses of blue carbon stores would also be assessed in relation to habitat loss and are discussed further in **Section 4.5.2**	Terrestrial habitats and species within the footprint of the Project.
	Loss of species through direct impacts during site clearance, disturbance and/or wildlife-vehicle collisions associated with the increase in traffic volume in an area that is currently traffic-free	All species within the footprint of the Project and the study area.
	Fugitive dust affecting habitats and associated species	Terrestrial habitats and species within the footprint of the Project and the study area.
	Restriction of animal migratory movements	All species within the footprint of the Project and the study area.
	Construction and roadway runoff (sedimentation and/or contamination) affecting habitats and associated species;	Terrestrial habitats and species within the footprint of the Project and the study area.
	Disturbance to species from noise and vibration	All species within the footprint of the Project and the study area.
	Disturbance to species from light pollution into surrounding natural areas (this includes for any potential for impact on turtle nesting areas due to light affecting the nesting and hatching behaviour of turtles	Terrestrial and coastal habitats and species within the footprint of the Project and the study area.

Activity	Effect	Receptor
Decommissioning of existing EBA	Potential for decommissioning of existing airport facility to provide habitat creation opportunities	Terrestrial habitats and species within and around the EBA.
Operation		
Presence of the Project	Disturbance to species from light pollution into surrounding natural areas (this includes for any potential for impact on turtle nesting areas due to light affecting the nesting and hatching behaviour of turtles	Terrestrial and coastal habitats and species within the footprint of the Project and the study area.
	Disruption to hydrology and its impact on surrounding habitats and associated species	Terrestrial habitats and species within the footprint of the Project and the study area.
	Impacts to bird species arising from aircraft safety management (including a review of the existing Wildlife Hazard Management Plan and consideration for similar measures that could be implemented at the proposed new site);	Endemic and migratory bird species on Little Cayman.
	Potential for an increase in numbers of visitors to Little Cayman resulting in increased disturbance	Terrestrial habitats and species across Little Cayman.
	Reduction in disturbance due to moving the airport facilities from the existing location	Terrestrial habitats and species in the vicinity of the EBA.
	Disturbance to species from noise and vibration.	Terrestrial habitats and species within the footprint of the Project and the study area.

4.1.3 Assessment methodology

4.1.3.1 Further baseline surveys recommendations

Existing data for the habitats and species outlined in **Section 4.1.1** will be reviewed to provide a detailed account of the baseline ecology of the coastal and terrestrial habitats around and on Little Cayman. In order to update and complement the existing baseline data, further field surveys are required to provide a sufficient baseline characterisation of the habitats and species such that the potential effects of the Project are accurately assessed.

It is important to bear in mind that some wildlife surveys may require licences or permits from the DoE. Prior to the surveys being confirmed, discussions with the DoE and the NTCI shall be undertaken to ensure that all available data has been considered and that the survey methodologies cover all species and habitats that could be of concern and require assessment as part of the EIA. The surveys will include but may not be limited to the following.

4.1.3.1.1 Terrestrial habitat and species surveys

- Habitat and Botanical surveys (to include distribution of *Evolvulus squamosus*):
  - A desk study using existing datasets and latest satellite imagery shall be carried out, in order to divide the survey area into homogeneous stands of vegetation/ land cover.
  - Habitat surveys shall be undertaken to characterise broad habitat types within a minimum 50 metres of the Project footprint.

- Surveys shall be undertaken between April and June when the majority of plants are in bloom.
- Methodology for vegetation surveys such as those provided for the National Vegetation Classification (Rodwell and JNCC, 2006). Representative sites within the area to be surveyed shall be selected and a suitable number of quadrats will be selected and all plant species within each quadrat recorded. A floristic table summarising the species frequency and abundance values characteristic of the vegetation will be produced.
- Additional habitat features such as soil type, slope, aspect, and any signs of disturbance or management will be recorded.
- The survey data will be presented as a comprehensive report, including maps, species lists, and descriptions of the vegetation communities listing details of endemic, notable and/ or protected species.

- Little Cayman Island Snail *Cerion nanus*:
  - The surveys will ideally be timed during the wet season when the snails are more visible on the higher part of their host plants such as *Evolvulus squamosus*.
  - A minimum of five surveys shall be undertaken spread through the wet season.
  - The survey area shall encompass known territories, thought to be in small specific areas around limestone flats in the western part of the Island and focus on the distribution of host plants. This will be guided by existing maps from previous surveys.
  - Visual searches of the host plants shall be conducted and the surrounding areas.
  - Live snails and shells shall be recorded in order to estimate population size.
  - Habitat condition shall be recorded noting any changes or threats such as invasive species or habitat degradation or loss.

- Sister Isles Rock Iguana *Cyclura nubila ssp. caymanensis*:
  - The surveys shall ideally be timed during the iguanas' active periods and when they are most visible basking, typically early morning or late afternoon.
  - Seven visits shall be undertaken, spaced at two-week intervals.
  - The survey area shall encompass known habitats, such as rock outcrops, clearings and dry forest. The species are also known to use roads for thermoregulation and often attracted to residential areas to forage.
  - Visual counts can be undertaken systematically through transects or grids, recording, where possible, age class, sex and any notable behaviours. Any road kills and dead specimens shall also be recorded.
  - A threat assessment recording immediate threats to iguanas, such as predation by feral and domestic species, road kills and habitat loss/ degradation shall be undertaken.

- Little Cayman Green Anole *Anolis maynardi*:
  - The surveys shall ideally be timed during the anoles' active periods and when they are most visible basking, typically early morning or late afternoon.
  - Seven visits shall be undertaken, spaced at two-week intervals.
  - This species is mainly arboreal and thought to be widespread in areas of suitable habitats, notably coastal shrublands, preferring the canopy and upper trunks of trees but also observed in residential areas.
  - Visual counts can be undertaken systematically through transects or grids, recording, where possible, age class, sex and any notable behaviours. Any particular areas of higher concentration of individuals or important features for the species shall be noted.

4.1.3.1.2 Breeding and non-breeding bird surveys

Surveys shall encompass the Project site and surrounding areas, including Booby Pond Nature Reserve, to include targeting the key species identified above.

The surveys shall be undertaken using a method adapted from the UK Bird Survey Guidelines[7], comprising, as a minimum, once a month early morning visits over a 12-month period. The length of each monthly survey will be determined by the length of time it takes to cover the survey area. The surveys shall be undertaken by a suitably experienced field ornithologist, familiar with visual identification and calls/songs of the expected species.

Each survey will comprise a walked transect that encompasses all areas (observed to a maximum distance of approximately 50m, depending on accessibility) within the application site and Booby Pond Nature Reserve. The transect route(s) will be determined through a pre-survey reconnaissance visit.
Species recorded shall be mapped, using British Trust for Ornithology (BTO) activity codes8. Bespoke species codes shall be generated for those species recorded during the surveys.

Because of the overlapping breeding and non-breeding/migratory periods, a single survey methodology is proposed (rather than breeding and non-breeding surveys); however, analysis of the results shall address breeding and non-breeding/migratory species separately, in order than the relative importance of the survey area for each group can be considered.

4.1.3.1.3 Vantage point surveys (VPS)

VPS surveys would be used to identify whether typical flight routes by bird species (particularly larger species such as red-footed booby and magnificent frigatebird) may conflict with aircraft safety requirements. The survey will draw on the information available through the Darwin Initiative projects that have been undertake for these species in the past (as outlined above for the baseline section) and collect up to date survey information.

Surveys shall be undertaken using methods adapted from the UK windfarm industry[9], comprising a minimum of 72 hours observation of the application site over a 12-month period.

The surveys shall be undertaken by a suitably experienced field ornithologist, familiar with flight identification of the expected species. Surveys shall be spread over the period (i.e. six hours per month on average) and timed to ensure coverage at different times of the day, and also targeted at known periods of peak activity by relevant species (where known). Due to reduced visibility at night, surveys extending into twilight hours may benefit from the use of an infrared scope. Additionally, some surveys shall be conducted during the rearing of hatchlings as this is when there is maximum daily flight activity.

Vantage point locations shall be selected to ensure that all areas where birds cross the application area (and areas along the aircraft take-off and landing flight path) can be observed. This shall be determined through a pre-survey reconnaissance visit, but at this stage it is considered likely that 3-4 vantage points would be required. The surveys shall map and record species, flight routes and heights in accordance with the guidance[9], to enable subsequent analysis.

[7] *https://birdsurveyguidelines.org/methods/survey-method/*
[8] *https://www.bto.org/sites/default/files/efws_instructions.pdf*
[9] *https://www.nature.scot/sites/default/files/2018-06/Guidance%20Note%20-%20Recommended%20bird%20survey%20methods%20to%20inform%20impact%20assessment%20of%20onshore%20windfarms.pdf*

4.1.3.2 Approach to assessment

The proposed ecological evaluation and impact assessment approach will be based on Guidelines for Ecological Impact Assessment (EcIA) in the United Kingdom and Ireland (Chartered Institute of Ecology and Environmental Management (CIEEM), 2018). These guidelines aim to predict the residual impacts on important ecological features affected, either directly or indirectly by a development, once all the appropriate mitigation has been implemented.

The approach to determining the significance of an effect will follow a systematic process for all impacts as discussed in **Section 3.2.5**. This involves identifying, qualifying and, where possible, quantifying the sensitivity, value and magnitude of all ecological receptors which have been scoped into the assessment. Using this information, a significance of each potential impact shall be determined.

The criteria for defining the sensitivity/value of a receptor will follow that set out in **Section 3.2.5** and may be refined for each receptor in the ES. This EIA Chapter will use professional judgement to ensure the assessed significance level is appropriate for each individual receptor, taking account of local values for biodiversity, to avoid a subjective assessment wherever possible.

4.1.4 Mitigation measures

All significant effects will be investigated in terms of the potential to mitigate the effect according to the mitigation hierarchy set out in **Section 3.2.5**.

Specific mitigation measures would need to be tailored according to the potentially affected habitats or species but may include:

- Ecological supervision with interaction if needed;
- Controls on the timing, duration and location of works;
- Habitat and species translocation;
- Protection of primary habitat not currently protected;
- Habitat management;
- Protection and management of hydrological features;
- Wildlife tunnels and safe crossings;
- Wildlife fences; and
- Environmental awareness campaigns.

Depending on the significance of residual impacts there may be a need for offsetting if the Project is deemed to be essential considering the significant effects remaining. The measures to be applied to reduce the significance of effects will be detailed within the EMP for the Project and within any feature, or activity, specific management plans required.

4.2 Cultural heritage and identity

4.2.1 Baseline conditions

The smallest of the Cayman Islands, Little Cayman measures 8.7 miles squared, housing a permanent population of 182 people across 130 households (Cayman Islands Government, 2021). This small number of inhabitants reflects the tight-knit and community-focused cultural identity of the island, which is also shaped by Little Cayman's relatively isolated island nature and associated maritime heritage.

With its small population, the island retains a largely undisturbed landscape. The earliest recorded visitors, prior to permanent inhabitants, are noted to be fishermen and turtlers who benefitted from the island's marine resource; the island was recognised by Christopher Columbus for its abundance of turtles in the sixteenth century (Leshikar-Denton, 2006; Little Cayman Museum, 2020). Reflecting the abundance of marine-life minimally impacted by external influence, the Little Cayman Marine Parks and Protected Areas were placed onto the United Kingdom's World Heritage Tentative List in 2023. This recognises the outstanding universal value of the natural resource of the island and denotes consideration to be nominated for United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site status.

The historic relationship between the local community and its marine environment is evident with seafaring, boat and ship building, wattle and daub construction, weaving, sisal and thatch work identified as traditional practices and important elements of the common heritage of the Cayman Islands (Ministry of Health and Culture, 2017). The historic relationship between the local community and its marine environment is evident with seafaring, whether for transport or fishing, identified as a traditional practice and an important element of the common heritage of the Cayman Islands.

The earliest accounts of the island's heritage are known only through oral tradition with Bloody Bay and South Hole on the northern and southern sides of the island respectively noted to be the first permanently inhabited areas (Little Cayman Museum, 2020).

The NTCI maintain a Heritage Register which provides a record of the natural, historic and cultural resources of the Cayman Islands. The register includes sites which the NTCI considers to be nationally significant and worthy of preservation. The register lists seven sites within Little Cayman, all of which are in the Blossom Village (**Table 4.8**). Two sites, Ernest Joseph Grizzel's House and Uncle Joe Grizzel Parent's House are recorded as having been demolished.

Table 4.8 NTCI Heritage Register – Sites on Little Cayman

Reference	Name	Address	Location
LC 001-01	Old Baptist Church/Marine Museum	987 Guy Banks Road	Blossom Village
LC 002-01	Captain Theo Bodden's Villa	81 Blossom Village Drive	Blossom Village
LC 003-01	Little Cayman Cemetery	Blossom Village Drive	Blossom Village
LC 004-0	Eleanor Bodden's House	96A Blossom Village Drive	Blossom Village
LC 005-01	Ernest Joseph Grizzel's House*	1074 Guy Banks Road	Blossom Village
LC 006-01	Uncle Joe Grizzel Parent's House*	Unknown	Blossom Village
LC008-01	Nature Trail/Phosphate Mine	South Trailhead at Airstrip. North Trailhead at Salt Rocks Dock	Blossom Village

*demolished

4.2.2 Potential effects

The relocation of the aerodrome has the potential to affect the cultural identity, cultural heritage and socioeconomics of Little Cayman. This potential will be explored in greater detail in the EIA with this section broadly highlighting the potential effects of the Project. The historic character of the island is a key element in in its cultural heritage, deriving from the interaction of humans and nature during the occupation of the island, and effects on this historic character shall also be considered. Potential effects on cultural heritage and identity are summarised in **Table 4.9**.

Table 4.9 Potential effects on cultural heritage and identity

Activity	Effect	Receptor
Construction		
Construction of the Project	Loss or disturbance of archaeological and heritage interest	Recorded and unrecorded archaeology and heritage including the nominated UNESCO WHS.
	Presence of external construction workforce	Cultural identity and close-knit community of Little Cayman.
Operation		
Presence of the Project	Increased tourism and trade on the island	Socioeconomics and cultural identity of Little Cayman, cultural behaviours and access to cultural sites including the nominated UNESCO WHS.
	Change in land use and ownership	Cultural behaviours and access to cultural sites including the nominated UNESCO WHS.
	Induced development, facilitated by the new aerodrome	Socioeconomics and cultural identity of Little Cayman, cultural behaviours and access to cultural sites including the nominated UNESCO WHS.

4.2.3 Assessment methodology

The EIA methodology shall ensure that the Project assesses the impact to the cultural heritage and cultural identity of the inhabitants of Little Cayman.

The EIA will be undertaken in line with the IFC's Performance Standards 1 (Assessment and Management of Environmental and Social Risks and Impacts) and 8 (Cultural Heritage) as appropriate (IFC, 2012a; IFC, 2012b). IFC Performance Standard 7 (Indigenous Peoples) appears unlikely to be directly applicable, but the principles set out therein around participation and consent, are likely to be relevant to understanding traditional culture and lifeways (IFC, 2006). This includes the protection of cultural heritage within the design and execution of the Project noting the requirement for the consideration of tangible and intangible cultural heritage '*whether or not it has been legally protected or previously disturbed*' (Ibid., p.1).

Cultural heritage practices that may be affected by the Project will need to be identified as part of the EIA with appropriate mitigation implemented. Legislation and policy surrounding the safeguarding of intangible cultural heritage is emerging. With the understanding and significance of these practices only fully realised within the communities in which the cultural behaviours take place, it is essential that the identification of cultural heritage practices, impacts and any mitigation is carried out through engagement with the local population of Little Cayman. Appropriate survey methodology will need be established by a suitability qualified and experienced Social Impact Assessment expert in consultation with the Cayman Islands government building on the policy direction included in the National Culture and Heritage Policy and Strategic Plan for the Cayman Islands 2017-2026 (Ministry of Health and Culture, 2017). If ratified by the UK and the Cayman Islands Government following the consultation held in early 2024, it is expected that any established methodology will also have regard to the 2003 UNESCO Convention for the Safeguarding of Intangible Cultural Heritage.

Initial surveys will be required to identify whether the currently available data on sites of historic and archaeological interest and traditional practices recorded on national heritage registers reflects the full range of valued heritage features and practices and to ensure that features and practices that are at present unrecognised are assessed appropriately in the EIA. This survey will also develop an initial historic characterisation of the development area and its immediate context, and its scope and methods shall be consulted with the NTCI.

To establish initial potential for the presence of archaeology, appropriate study of such historic mapping and documentary sources as are readily available, supplemented by a walkover survey will need to be undertaken. This will be completed following the guidance presented in Chartered Institute for Archaeologists' (CIfA) Standard for Archaeological Field Evaluation (CIfA, 2023a) and Universal Guidance for Archaeological Field Evaluation (CIfA, 2023b).

As part of establishing knowledge of built heritage and the historic character of Little Cayman, it is expected that surveys will also be conducted to provide an initial visual record, alongside a record of the types, ages and locations, of historic monuments, buildings and their settings within an appropriately established Study Area of the Project. At this stage, it is anticipated that surveys to the standard set out in *Understanding Historic Buildings* (Historic England 2016) Level 1 would be sufficient for initial surveys.

All archaeological work is to be completed in line with CIfA's Code of Conduct (CIfA, 2022).

The surveys shall cover the site of the Project and associated infrastructure plus a sufficient buffer, agreed with the relevant consultees, to allow for an understanding of archaeological context for the historic character of the area and to identify sites that may be affected by change to setting. It is anticipated that this buffer be at least 1 km.

4.2.4 Mitigation measures

To mitigate the potential effects on cultural heritage and identity as well as the socioeconomics of Little Cayman, the EIA will identity appropriate mitigation of any identified significant effects on features and practices central to the cultural heritage and cultural identity of Little Cayman.

In line with the IFC Performance Standards, a hierarchy of mitigation shall be adopted to anticipate and avoid, or where avoidance is not possible, minimise any effects. Where residual impacts remain, measures that would compensate or offset effects shall be identified.

Particular attention shall be given to ensuring that the design of the aerodrome and any associated structures and infrastructure responds to the cultural identity of Little Cayman and that adverse effects on the tentative World Heritage Site are avoided.

4.3 Noise and vibration

This chapter considers the scope of potential noise and vibration impacts at noise and vibration sensitive receptors (NVSRs) during the proposed construction and operational phases of the EAB relocation project.

This chapter will focus on assessing impacts on human NVSRs, which includes structures, as discussed in **Section 4.3.2** of this section. The Project may also result in noise and vibration effects at ecological and cultural heritage receptors (**Sections 4.1** and **4.2**) and modelling results produced for this chapter will feed into the assessments for these topics.

4.3.1 Baseline conditions

This section provides a summary of baseline conditions in respect of noise and vibration, based on a review of publicly available data for the Project area and extending to an initial study area of 1 km from the Project. The study areas will be refined at the assessment stage as the design and construction activities are defined, the consultation processes progress, and as related topic assessments are progressed. The review has identified:

- NVSRs - including residential and sensitive sites such as schools, parks and places of worship, and
- Potential sources of baseline noise levels at the identified NVSRs, such as the existing airport and roads.

The Project lies within the western area of the Little Cayman Island adjacent to Spot Bay Road. The site has very few sensitive receptors in the vicinity; what appears to be the closest residential receptors are located on Albion Way, at approximately 200m west of the Project, with additional residential receptors located around 400m to the north. The following non-residential human receptors that are potentially sensitive to noise and vibration have been identified within the initial study area (other receptors would be considered under separate topics, for example the birds using Booby Pond will be considered under the ecology section):

- Little Cayman Clinic (350m)
- Little Cayman Beach Resort, Conch Club Condos, Southern Cross Club, Paradise villas (Guy Banks Road, 800/1100m)
- Little Cayman Cemetery (Guy Banks Road, 850m)
- Little Cayman Museum (Guy Banks Road, 830m)
- Little Cayman Church (Guy Banks Road, 850m)

EBA is currently located at approximately 100m west of the Paradise Villas, with additional sensitive receptors to the west in Blossom Village. There are numerous commercial activities south of the Project in the Blossom Village area, which are likely to contribute to the existing ambient noise at the identified NVSRs.

The only identified potential source of ground-borne vibration in the locality of EBA is the existing runway. The propagation over distance will attenuate emitted vibration such that it is not expected to be perceptible at the identified receptors; hence, baseline vibration levels are expected to be negligible. No sources of ground-borne vibration have been identified in the locality of the Project.

In order to inform the EIA, it is proposed to undertake noise surveys to capture levels representative of the baseline noise climate at the identified receptors. Further details are described in the assessment methodology section.

4.3.2 Potential effects

The potentially significant effects to be scoped into the noise and vibration assessment are displayed in **Table 4.10**.

Table 4.10 Potential noise and vibration effects

Activity	Effect	Receptor
Construction		
Earthworks and construction of airport infrastructure (incl. blasting or jack-hammering of rock if required)	The proximity of likely sensitive receptors to the Project means that the generation of noise from on-site activities during the construction phase has the potential to cause disturbance, albeit temporary. This conclusion would be reinforced should any night-working be required.	NVSRs within 300m[10] of the proposed relocation site, including: • Residential dwellings; • Community facilities, such as places of worship, Little Cayman Clinic and the Primary school; and

[10] *300m study area for construction noise impacts taken from the Design Manual for Roads and Bridges, Sustainability & Environment Appraisal, LA 111 Noise and vibration Revision 2 (May 2020) (DMRB)*

Activity	Effect	Receptor
		• Commercial properties, such as hotels and offices.
	Depending on the type of construction works required, ground-borne vibration can also be generated, with the potential to cause temporary disturbance and building damage.	NVSRs within 100m[11] of the proposed relocation site.
Construction road traffic	The construction of the Project will introduce Heavy Goods Vehicles (HGVs) and other construction related vehicles onto local roads, which may increase road traffic noise emissions and cause a disturbance to sensitive receptors.	NVSRs within 50m of any affected route[12].
Operation		
Airborne aircraft take-off and landing	The operation of the relocated airport will introduce airborne aircraft noise from start-of-roll for take-off until end-of-roll at landing, and while in flight; with the potential to disturb nearby NVSRs. There will also be reductions in aircraft noise levels at receptors near the existing airport site.	NVSRs with the potential to experience positive or adverse noise effects from changes in airborne aircraft noise level, which extends to the following predicted aircraft noise level contours: 51 dB $L_{Aeq,16h}$ (daytime) and 45 dB $L_{Aeq,8h}$ (night-time)[13].
	Low frequency noise from airborne aircraft also has the potential to cause perceptible vibration levels within dwellings, which is most obviously characterised by effects such as windows rattling.	NVSRs with the potential to experience positive or adverse effects from changes in low-frequency noise, which is classed as a threshold of 97 dB L_{Cmax}[14].
Surface activities, including: • aircraft taxiing and manoeuvring on the runways and aprons, • aircraft auxiliary power units and ground running, • ground support vehicles, • engine test facilities; and • static plant and equipment.	The operation of the Project will introduce noise from surface activities (also referred to as ground noise) with the potential to disturb NVSRs near the proposed relocation site. Ground noise levels will also reduce at receptors near the existing airport site.	NVSRs within 1 km of the proposed relocation site and the existing airport site.
Operational road traffic	The operation of the Project will increase traffic flows on roads near to the proposed relocation site, which may cause a disturbance to sensitive receptors. Road traffic noise emissions may also reduce from roads near the existing airport site.	NVSRs within 50m of any affected route.

[11] *100m study area for construction vibration taken from the DMRB*
[12] *50m study area and definition of affected route takken from the DMRB*
[13] *51 dB $L_{Aeq,16h}$ (daytime) and 45 dB $L_{Aeq,8h}$ (night-time) criteria taken from UK Civil Aviation Authority (CAA) guidance 'Environmental Assessment Requirements and Guidance for Airspace Change Proposals' (2023)*
[14] *97 dB L_{Cmax} threshold taken from Historic England guidance 'Aviation Noise Metric – Research on the Potential Noise Impacts on the Historic Environment by Proposals for Airport Expansion in England' (Historic England, 2014)*

4.3.2.1 Matters scoped out

Ground-borne vibration may be generated by on-site sources such as road and air traffic activity that are associated with the operation of the Project. These sources are not expected to generate very high levels of ground-borne vibration, and the propagation over distance will attenuate emitted vibration such that it is not expected to be perceptible at the receptors. Consequently, operational ground-borne vibration is scoped out of the assessment.

4.3.3 Assessment methodology

This section sets out the guidance and standards that will be adopted for the assessment of noise and vibration. The assessment will consider the likely significant effects during construction and operation of the Project. It will be undertaken in line with IFC Performance Standard 3 (Resource Efficiency and Pollution Prevention) and the Environmental, Health, and Safety (EHS) Guidelines: Environmental noise management as appropriate (IFC, 2012a, 2012b).

4.3.3.1 Baseline

In order to determine the potential noise impacts of the Project, environmental sound level surveying will be undertaken in the vicinity of noise sensitive receptors near the Project, to establish baseline sound levels. Surveys may also be carried out at locations representative of noise sensitive receptors near the existing EBA. Surveys shall be undertaken with due regard to the guidance in British Standard (BS) 7445-1:2003 and would typically consist of a 7-day measurement at each identified location. Meteorological measurements will be taken in parallel with noise measurements, to verify that appropriate conditions prevail during the surveys. Consultation will be undertaken with the relevant stakeholders, prior to undertaking the surveys, to confirm measurement locations and methodology.

4.3.3.2 Construction phase

Due to the proximity of sensitive receptors to the Project, temporary significant effects may occur at sensitive receptors during the earthworks and construction programme. The assessment of noise and vibration considers the following:

- Construction noise emissions from on-site activities;
- Construction vibration emissions from on-site activities; and
- Changes in road traffic noise due to construction traffic on the local road network.

The potential impacts of construction will be evaluated considering the existing noise environment of Little Cayman, as informed by the baseline surveys recommended in **Section 4.3.3.1**.

4.3.3.2.1 Construction noise

A construction noise assessment will be undertaken based on expected construction activity and plant use during representative periods of activity throughout the construction programme. Noise levels at receptors will be calculated using BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise data and procedures.

Noise during site clearance, demolition and construction will be assessed in accordance with Annex E ‘significance of noise effects’ of BS 5228-1:2009 Part 1 Noise.

4.3.3.2.2 Construction vibration

The following standards and guidance will be used to predict and assess potential construction vibration impacts:

- BS 5228-2 Code of Practice for Noise and Vibration Control on Open Construction Sites – Part 2: Vibration;
- BS 6472-1 Guide to evaluation of human exposure to vibration in buildings: 1-Vibration sources other than blast-induced vibration; and
- BS 7385-2 Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from ground-borne vibration.

4.3.3.2.3 Construction road traffic

The assessment of noise impacts from construction road traffic will depend on the availability of road traffic data. If sufficient data are available, the impacts of changes in road traffic noise due to construction traffic on the local road network will be determined with reference to the following standards and guidance:

- Calculation of Road Traffic Noise, 1988;
- BS5228-1; and
- DMRB LA111 Noise and Vibration

4.3.3.3 Operational Phase

Potential noise effects due to the operation of the Project may be experienced at sensitive receptors due to:

- Airborne aircraft – noise from aircraft during the landing and take-off cycle, including noise from start-of-roll for take-off until end-of-roll at landing, and while in flight;
- Ground aircraft operations – noise from on-site ground activities such as aircraft on the ground prior to take-off and after landing i.e. taxiing, holding and aircraft activity at stand. Additionally, on-site road traffic, fire testing areas and noise generated at areas designated for engine testing will be included; and
- Operational road traffic– noise from changes in road traffic flows on the existing road network and new road infrastructure serving the Project.

Noise emissions from stationary sources (i.e. fixed plant) may also need to be considered; however, it is likely that aircraft ground noise will dominate on-site noise emissions and an assessment of these sources can potentially be scoped out. However, as there remains uncertainty over this aspect, the need for a fixed plant noise assessment will be kept under review.

4.3.3.3.1 Aircraft operations

The operational noise assessment will identify and assess the potential noise impacts of changes in aircraft noise levels at sensitive receptors near the existing airport and the proposed relocation site. 3-d modelling will be undertaken to predict aircraft noise levels at the receptors near to the existing airport, which are likely to experience beneficial effects, and those near to the proposed relocation site. Changes in noise levels will be predicted in terms of the daytime $L_{Aeq,16h}$, and, if the airport is used at night, the night-time $L_{Aeq,8h}$. The overall impact of changes in aircraft operational noise on the residents of Little Cayman will be determined with reference to appropriate guidance, which includes the Institute of IEMA ‘Guidelines for Environmental Noise Impact Assessment’ (IEMA, 2014).

4.3.3.3.2 Operational road traffic

The assessment of traffic noise will be undertaken with reference to the following standards and guidance:

- Highways England (2020), Design Manual for Roads and Bridges: LA 111 Noise and Vibration (Revision 2).
- Calculation of Road Traffic Noise (CRTN), 1988

4.3.4 Mitigation measures

The EIA will determine the requirement for the implementation of mitigation measures to reduce the significance of the impact to noise sensitive receptors. The section below outlines possible mitigation measures which may be implemented where necessary.

4.3.4.1 Construction

Mitigation measures will be employed to ensure that potential noise impacts at nearby sensitive receptors due to earthworks and construction activities are minimised. The preferred approach for controlling construction noise is to reduce source levels where possible, but with due regard to practicality. The simplest and most effective method of reducing noise at nearby receptors is to ensure that noisy plant is located as far from receptors as practicable and screened using temporary barriers. Noise can also be reduced by limiting the daily time that noisy equipment is operated; however, it is acknowledged that sometimes a greater noise level may be acceptable if the duration of the construction activity, and therefore length of disruption, is reduced.

Potential mitigation measures to reduce impacts from construction related activities would include adherence to the principles of Best Practicable Means (BPM), as defined in BS 5228-1.

4.3.4.2 Operation

4.3.4.2.1 Aircraft noise

The ICAO Balanced Approach to aircraft noise management is the main overarching policy on aircraft noise, and it is included in Annex 16, Volume I to the ICAO Chicago Convention. Mitigation measures in line with the ICAO Balanced Approach to Aircraft Noise Management would be adopted to reduce predicted potentially significant adverse aircraft noise effects, where practicable. The four principles of the ICAO Balanced Approach are:

- reduction of noise at source;
- land-use planning and management;
- noise abatement operational procedures; and
- at a last resort, operating restrictions.

4.3.4.2.2 Ground noise

Use of barriers, bunding or landscaping will be applied where necessary and practicable to reduce ground noise emissions from the airport.

4.3.4.2.3 Road traffic

Where significant noise effects are predicted, mitigation measures will be considered to reduce road traffic noise effects. This may be achieved, where practicable, through:

- Environmental barriers – can be either earth bunding or noise fencing. The use of these is dependent on space available;
- Low noise road surfaces – reduces noise created by the interaction between tyre and road. Reductions in road traffic noise range from approximately 1 dB at mean speeds of 10 km/h to approximately 3 dB at mean speeds of 50 km/h; and/or
- Speed restrictions – above 40 km/h, noise levels increase with vehicle speed.

4.4 Air quality

This section considers the scope of potential air quality impacts at sensitive receptor locations during the construction and operational phases of the Project. The air quality assessment will assess the impacts on

human and ecological receptors. The results of these assessments will then feed into other disciplines as relevant, such as terrestrial ecology and socio-economics.

4.4.1 Baseline conditions

There are currently no baseline air quality data readily available for Little Cayman. It is understood that the Cayman Islands Government Department of Environmental Health (DEH) has launched a new programme collecting baseline air quality data. Correspondence with DEH has confirmed that the monitoring programme is still in the early stages and as such the full monitoring programme is not yet in place.

There are a number of sensitive receptors within 1 km of the Project; these include residential dwellings, schools and medical centres. There are also a number of ecological receptors in the vicinity of the site, including the Booby Pond Nature Reserve.

In order to inform the EIA, it is proposed that a baseline nitrogen dioxide (NO_2), sulphur dioxide (SO_2), Carbon Monoxide (CO) and Volatile Organic Compound (VOC) (specifically benzene, polycyclic aromatic hydrocarbons, and butadiene) monitoring survey is undertaken for a minimum period of 6 months; capturing data in both the wet and dry seasons. Locations will include the closest sensitive human receptors, background locations away from any nearby air pollutant sources, as well as appropriate locations along the main roads that will be used by construction and operational traffic, at a distance of between 1 m and 5 m from the road edge. If practicable, NO_2, nitrogen oxides (NOx) and ammonia (NH_3) monitoring shall also be undertaken at nearby ecological sites that are sensitive to nitrogen and/ or acid deposition. Indicative monitoring for particulate matter (PM_{10} and $PM_{2.5}$) using a hand-held or fixed in-situ PM_{10} meter could also be undertaken in order to provide an indication of baseline conditions.

4.4.2 Potential effects

The potential significant effects to be scoped into the air quality assessment are displayed in **Table 4.11**.

Table 4.11. Potential air quality impacts

Activity	Effect	Receptor
Construction		
Construction phase dust and particulate matter caused by activities associated with demolition, earthworks, construction and trackout[15]	• Dust deposition, resulting in the soiling of surfaces (resulting in potential amenity loss and annoyance) and leaves (resulting in restricted ability for plants to photosynthesise and, depending on chemical composition, damage to the leaves themselves); • Visible dust plumes indicating emissions of dust; and • Elevated PM_{10} and $PM_{2.5}$ concentrations which are detrimental to health.	• Human receptors sensitive to dust soiling and health effects related to particulate matter (e.g. residential dwellings, schools, hospitals, hotels, offices, car parks, museums) within 250 m of the boundary of the site; and/ or • Ecological receptors within 50 m of the boundary of the site.
Construction phase road traffic emissions	• Increased concentrations of NO_2, PM_{10} and $PM_{2.5}$ from vehicles	• Human (e.g. residential dwellings, schools, hospitals) and ecological receptors within 200 m of the affected road network.

[15] *The transport of dust and dirt from the construction site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction / demolition site with dusty materials, which may then spill onto the road, and/ or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.*

Activity	Effect	Receptor
	associated with the construction phase using the public highway network.	
Odour from construction activities (e.g. excavation of historical landfill or contaminated land areas if present)	• Nuisance • Loss of amenity	• Sensitive human receptors in the general vicinity of the odour source. Distance will depend on odour concentration and prevailing meteorological conditions.
Operation		
Aerodrome combustion emissions from aircraft, on-site ground vehicle movements and any stationary combustion plant (e.g. boilers, generators or combined heat and power (CHP))	• Increased concentrations of NO_2, SO_2, PM_{10} and $PM_{2.5}$ from aircraft take-off, landing and taxiing, ground support vehicles and stationary combustion equipment used at the aerodrome.	• Human (e.g. residential dwellings, schools, hospitals) and ecological receptors in the vicinity of the aerodrome.
Operational phase road traffic emissions	• Increased concentrations of NO_2, PM_{10} and $PM_{2.5}$ from vehicles associated with the operational phase using the public highway network.	• Human (e.g. residential dwellings, schools, hospitals) and ecological receptors within 200 m of the affected road network.
Odour from aviation fuel	• Nuisance • Loss of amenity	• Sensitive human receptors in the general vicinity of the odour source. Distance will depend on odour concentration and prevailing meteorological conditions.

4.4.2.1 Matters scoped out

Construction phase Non-Road Mobile Machinery (NRMM) emissions can be scoped out provided that it can be demonstrated that suitable controls and site management are built into the construction methodology and are captured within a Construction Environment Management Plan. These measures include:

- Ensuring all equipment is compliant with the appropriate NRMM standards;
- Ensuring further abatement plant is installed on NRMM equipment (e.g. diesel particulate filters) where practicable;
- Ensuring no idling takes place i.e. all vehicles switch off engines when stationary;
- Avoiding the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment wherever possible; and
- Impose and signpost a maximum speed limit of 15 mph on paved and 10 mph on unpaved haul roads and work areas.

4.4.3 Assessment methodology

The following standards will be reviewed to ensure compliance during preparation of the EIA:

- Cayman Public Health Act, 2021 Revision.
- International Finance Corporation Guidance Note 3, 2012.
- Cayman Islands Climate Change Policy, 2024-2050.
- Development and Design (GG103), Revision 1, 2020.
- Cayman Islands National Energy Policy 2024-2045.

The air quality assessment will be carried out in accordance with the principles contained within the following guidance documents:

- International Finance Corporation: General Environmental Health and Safety Guidelines Air Emissions and Ambient Air Quality, 2007.
- Department for Environment Food and Rural Affairs: Local Air Quality Management (LAQM) Technical Guidance 2022 (LAQM.TG(22)), 2022.
- Institute of Air Quality Management (IAQM): Guidance on the Assessment of Dust from Demolition and Construction, 2024.
- Environmental Protection UK (EPUK) and IAQM: Land-Use Planning and Development Control: Planning for Air Quality, 2017.
- IAQM: A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites, 2019.
- Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001), 2018.
- Highways England: Design Manual for Roads and Bridges (DMRB) LA105, 2019.

4.4.3.1 Baseline

It is understood that the Cayman Islands has not adopted numerical standards for ambient air quality. Therefore, baseline monitoring data to be collected as described in **Section 4.4.1**, will be compared against the UK (England) Air Quality Standards (AQS) and World Health Organisation (WHO) Air Quality Guideline levels (AQG), presented in **Table 4.12**.

Table 4.12 Ambient Air Quality Standards

Pollutant	Averaging Period	Concentration	
		UK (England) AQS	WHO AQG – presented as: Interim Target (IT)1/ IT2/ IT3/ IT4/ AQG Level where relevant
Particulates (PM_{10})	1 day	50 µg.m^{-3} (not to be exceeded more than 35 times a year)	150/ 100/ 75/ 50/ 45 µg.m^{-3} (not to be exceeded more than 3 times a year)
	1 year	40 µg.m^{-3}	70/ 50/ 30/ 20/ 15 µg.m^{-3}
Particulates ($PM_{2.5}$)	1 day	-	75/ 50/ 37.5/ 25/ 15 µg.m^{-3} (not to be exceeded more than 3 times a year)
	1 year	20 µg.m^{-3}	35/ 25/ 15/ 10/ 5 µg.m^{-3}
Nitrogen dioxide (NO_2)	1 hour	200 µg.m^{-3} (not to be exceeded more than 18 times a year)	200 µg.m^{-3}
	1 day	-	120/ 50/ -/ -/ 25 µg.m^{-3} (not to be exceeded more than 3 times a year)
	1 year	40 µg.m^{-3}	40/ 30/ 20/ -/ 10 µg.m^{-3}
Sulphur dioxide (SO_2)	10 minutes	-	500 µg.m^{-3}
	15 minutes	266 µg.m^{-3} (not to be exceeded more than 35 times a year)	-
	1 hour	350 µg.m^{-3} (not to be exceeded more than 24 times a year)	-

Pollutant	Averaging Period	Concentration	
		UK (England) AQS	WHO AQG – presented as: Interim Target (IT)1/ IT2/ IT3/ IT4/ AQG Level where relevant
	1 day	125 µg.m^{-3} (not to be exceeded more than 3 times a year)	125/ 50/ -/ -/ 40 µg.m^{-3} (not to be exceeded more than 3 times a year)
Carbon Monoxide (CO)	15 minutes	-	100,000 µg.m^{-3}
	1 hour	-	35,000 µg.m^{-3}
	8 hours	10,000 µg.m^{-3}	10,000 µg.m^{-3}
	1 day	-	7,000/ -/ -/ -/ 4,000 µg.m^{-3} (not to be exceeded more than 3 times a year)
Benzene	1 year	5 µg.m^{-3}	No safe level, however the concentration of benzene for excess lifetime risk of 1/ 1,000,000 is 0.17 µg.m^{-3}.
Polycyclic Aromatic Hydrocarbons (PAHs)	1 year	0.00025 µg.m^{-3} (Benzo(a)pyrene (B[a]P))	No threshold can be determined, however the concentration for lifetime exposure to B[a]P producing excess lifetime cancer risks of 1/ 1,000,000 is 0.000012 µg.m^{-3}.
1, 3 Butadiene	1 year	2.25 µg.m^{-3}	No definitive conclusion as to how to assign appropriate cancer risk in humans based on studies on animals, therefore no guideline value is recommended for butadiene.

4.4.3.2 Construction phase

4.4.3.2.1 Construction phase dust emissions

An assessment of the potential level of risk associated with construction phase activities will be carried out in accordance with the method presented in the IAQM guidance on the assessment of dust from demolition and construction. This will assess the potential level of risk of dust impacts caused by construction activities by taking into consideration the potential dust emission magnitude combined with the sensitivity of and distances to receptors in order to determine the level of risk. The guidance suggests appropriate mitigation measures according to the level of risk. When these measures are implemented correctly, it is concluded that any effects will be not significant.

4.4.3.2.2 Construction phase road traffic emissions

Traffic data for the construction phase will be screened against DMRB LA105 criteria for roads within 200 m of ecological receptors, and against EPUK and IAQM land-use planning & development control: planning for air quality criteria for non-strategic roads. Where road links trigger the criteria, these will need to be modelled in the ADMS-Roads air dispersion modelling software. Appropriate receptor locations will be selected along the road links that trigger the criteria and all roads with traffic data within 200 m of the selected receptors will be identified, in order to identify the Affected Road Network (ARN).

Should dispersion modelling be required, the following scenarios will need to be considered:

- Baseline year (ideally 2023);
- Future year without the Project in place, but inclusive of all other committed plans and developments (do-minimum)
- Future year with the Project in place and inclusive of all other committed plans and developments (do-something)

Appropriate emissions factors will be derived from the UK Department for Environment Food and Rural Affairs (Defra) emissions factors toolkit, in consultation with the Traffic Consultant on the Project to ensure the fleet mix is appropriate. Meteorological data will either come from any long-term meteorological datasets that are or sufficient quality and data capture, or it will be procured from a Numerical Weather Prediction (NWP) model.

Pollutant concentrations will be predicted at locations equivalent to the locations used for NO_2 and NOx monitoring. These predicted concentrations will then go through a process termed verification, as outlined in Defra Local Air Quality Management Guidance (LAQM.TG(22)). This process is used to derive an adjustment factor, which is equivalent to a calibration against real world monitoring results, in order to correct errors in the model.

Pollutant concentrations will be predicted at the selected human health receptor locations and compared against the relevant air quality standards.

Ecological sites will be assessed in line with Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations (NEA001). Appropriate emissions factors for NH_3 will be derived from the Calculator for Road Emissions of Ammonia (v1A), in consultation with the Traffic Consultant on the Project. Pollutant concentrations of NOx and NH_3 will be predicted along receptor transects, perpendicular to the road out to a distance of 200 m from the road edge. The predicted pollutant concentrations will be compared with relevant Critical Levels and will be used to derive the level of nutrient nitrogen deposition and acid deposition. These deposition rates will be compared with an appropriate Critical Load, as specified by the Project Ecologist, for the ecological site.

4.4.3.2.3 Construction phase odour emissions

Odour emissions will be assessed using the qualitative risk-based assessment described in the IAQM guidance on the assessment of odour for planning. This method implements a source-pathway-receptor model to estimate the level of risk posed by an odour source on a receptor-by-receptor basis.

4.4.3.3 Operational phase

4.4.3.3.1 Operational phase aerodrome and road traffic emissions

Operational phase road traffic will be assessed using the method outlined in **Section 4.4.3.2.2**. Aircraft emissions will be assessed using appropriate emissions data, to be confirmed with the operator, and the ADMS-Airport model. Stationary combustion sources, if proposed, will be assessed using appropriate emissions data, to be confirmed with the operator, and the ADMS-6 model. Predicted concentrations for NOx/ NO_2, PM_{10}, $PM_{2.5}$ and SO_2 assessed by each model will be combined in order to present the full impact of the operational phase on air quality.

4.4.3.3.2 Operational phase odour emissions

Odour emissions for the operational phase will be assessed using the method outlined in **Section 4.4.3.2.3**.

4.4.3.4 Significance criteria

Impacts on air quality will be assessed through identifying the:

- Sensitivity of receptors;
- Magnitude of changes; and
- Significance of impacts on local air quality.

Two sets of criteria will be used. These are dependent on baseline pollutant concentrations within the airshed. These criteria will be based upon an 'undegraded' airshed or a 'degraded' airshed. A 'degraded'

airshed is an area of poor air quality where relevant air quality standards or WHO guideline levels are significantly exceeded. Receptor sensitivity and magnitude criteria differ depending on whether a project is located in a 'degraded' or an 'undegraded' airshed, where the former is more sensitive to any increases in pollutant concentrations.

4.4.3.4.1 Receptor sensitivity

Receptor sensitivity in an undegraded airshed is summarised in **Table 4.13**. Where baseline concentrations exceed relevant ambient air quality standards, the airshed receptor sensitivity is considered to be high.

Table 4.13 Receptor sensitivity

Sensitivity	Definition
High	Baseline pollutant concentrations are in exceedance of the relevant Ambient Air Quality Standards (AAQS).
Medium	Baseline pollutant concentrations are in exceedance of 50% of the relevant AAQS, but do not exceed the relevant AAQS.
Low	Baseline pollutant concentrations are below 50% of the relevant AAQS.

4.4.3.4.2 Magnitude criteria

The IFC General EHS Guidelines (2007) states that projects with significant sources of emissions to air and that have the potential for significant impacts on ambient air quality should minimise or prevent impacts by ensuring that:

"*Emissions do not result in pollutant concentrations that reach or exceed relevant ambient quality guidelines and standards by applying national legislated standards, or in their absence, the current WHO Air Quality Guidelines, or other internationally recognized sources;*" and

"*Emissions do not contribute a significant portion to the attainment of relevant ambient air quality guidelines or standards. As a general rule, this Guideline suggests 25 percent of the applicable air quality standards to allow additional, future sustainable development in the same airshed.*"

For projects next to ecologically sensitive areas or for projects located within degraded airsheds, the Project should ensure that "*any increase in pollution levels is as small as feasible, and amounts to a fraction of the applicable short-term and annual average air quality guidelines or standards as established in the Project-specific environmental assessment.*"

Therefore, impact magnitude can be determined as a combination of:

- Any increase in air pollutant concentrations due to the Project (Process Contribution (PC)); and
- Total air pollutant concentrations i.e., baseline + PC (the Predicted Environmental Concentration (PEC)) or cumulative impacts at sensitive receptors.

Pollutant concentrations predicted by air dispersion modelling will be compared to the relevant AAQS or WHO guidelines for human health or ecology, as relevant.

Different standards will apply to each pollutant and the relevant averaging period. To determine impact magnitude, the contribution of emissions from the Project to ground level concentrations will be assessed alongside the combined total concentration (project contribution plus baseline, PEC) as a percentage of the AAQS, as presented in **Table 4.14**.

Table 4.14 Magnitude criteria

Magnitude	Definition	
	Undegraded airshed	Degraded airshed
Large	• PC is >25% of relevant AAQS; or • PEC exceeds relevant AAQS.	• PC is >10% of AAQS.
Moderate	• PC is 15-25% of relevant AAQS; and • PEC does not exceed relevant AAQS.	• PC is 5-10% of AAQS.
Small	• PC is 5-15% of AAQS; and • PEC does not exceed relevant AAQS.	• PC is 1-5% of AAQS.
Very small	• PC is <5% of AAQS; and • PEC does not exceed relevant AAQS.	• PC is <1% of AAQS.

4.4.3.4.3 Significance of impact

Receptor sensitivity and impact magnitude will be used to determine the significance of the impacts using the significance matrix presented in **Table 3.3**.

For the purposes of the assessment, impact significance descriptors will be assigned to each assessed receptor. The overall significance of effect of the Project will be based on the magnitude, extent, duration and frequency of impacts. This will result in a binary judgement as to whether the effect of the Project is significant or not significant in relation to air quality.

4.4.4 Mitigation measures

4.4.4.1.1 Construction phase dust emissions mitigation measures

Mitigation in relation to construction dust risk will be determined in accordance with IAQM guidance. Measures are advised as highly recommended, desirable or not required dependent on the level of risk for each construction activity. Mitigation measures are provided for the following categories:

- Communications;
- Site management;
- Monitoring;
- Preparing and maintaining the site;
- Operating vehicle/ machinery and sustainable travel;
- Operations;
- Waste management;
- Demolition;
- Earthworks;
- Construction; and
- Trackout.

4.4.4.1.2 Construction phase traffic emissions mitigation measures

Construction phase traffic emissions mitigation measures could include the Project specifying that road vehicles must be of a certain emission standard such that emissions from construction phase road traffic are reduced. Alternate routes could also be considered, along with timings of vehicle movements to avoid busier times of the day.

4.4.4.1.3 Construction phase odour emissions mitigation measures

Construction phase odour emissions mitigation measures could include containment at source or only undertaking works at specific times of day, when receptors are less likely to be present.

4.4.4.1.4 Operational phase aerodrome and road traffic emissions

Operational phase traffic emissions mitigation measures could include similar measures to those described in **Section 4.4.4.1.2**. They could also include further refinement of any travel plans associated with the airfield in order to reduce overall traffic movements. Aircraft emissions could be reduced through refinement of schedules such that less flights could be made but with a greater number of passengers per flight, therefore making each trip more economical. Stationary combustion sources shall be sited away from sensitive receptors and with exhaust stacks of the correct dimensions to ensure efficient dispersion of air pollutants.

4.4.4.1.5 Operational phase odour emissions

Operational phase odour emissions mitigation measures could include ensuring that aviation fuel is stored away from sensitive receptors and that appropriate management and containment measures are implemented to prevent fugitive release of aviation fuel odours.

4.5 Hydrology, drainage, water quality, contaminated land and natural resources

The Project has the potential to cause alterations to the baseline hydrology, local drainage networks, water quality, human health and natural resources receptors within Little Cayman during the construction and operational phases of the proposed Project. Therefore, an assessment is required to characterise the baseline environment, identify potential impacts that could occur as a result of the Project and discuss potential mitigation measures to reduce the significance of effect on identified receptors.

The study area for the assessment of impacts on hydrology, drainage, water quality, human health and natural resources will include the land within the redline boundary for the Project and a 250m buffer. The buffer zone will be extended to 1 km for assessing the presence of groundwater abstraction wells due to the higher sensitivity of the receptor.

4.5.1 Baseline conditions

An initial review of published and publicly available information will be used to develop the existing baseline conditions for the Project site's hydrology, drainage, water quality, potential for contaminated land, geology, hydrogeology and natural resources receptors.

4.5.1.1 Geology and hydrogeology

A review of published geological mapping (Jones, 2022) indicates that the western half of Little Cayman, where the Project is located, is underlain by bedrock geology of the Ironshore Formation. The Ironshore Formation is formed of limestones with rhizoliths present in some lithified skeletal and oolitic sands (Jones, 2022).

The eastern half of the island is dominated by the Bluff Group with the Ironshore Formation forming the coastline of the island. The Bluff Group is formed of limestones and dolostones with a high porosity (Jones, 2022). The Bluff Group is unconformably overlain by the Ironshore Formation.

No easily accessible information is available on the extent of any superficial deposits that might be present on Little Cayman beyond the material making up beaches.

Limited information on the hydrogeology of Little Cayman is available. A hydrogeological survey undertaken by Ng and van Genderen (1994) on behalf of the WAC noted that the rocks of the Bluff Group (as described in **Section 4.5.1.1**) contain “major freshwater lenses” (interpreted as being freshwater bearing strata) on Grand Cayman and Cayman Brac, and could therefore also support freshwater resources on Little Cayman.

4.5.1.2 Topography

The topography of the proposed relocation site ranges from approximately 2 to 7 metres above sea level (Topographic-map.com, n.d.). Due to the variation in levels across the Project site, and the requirement for a flat platform for the proposed runway, it is currently unsuitable for development as an aerodrome, as such there will be the requirement to alter the topography of the site through filling and regrading exercises.

4.5.1.3 Rainfall

The Cayman Islands National Weather Service provides rainfall statistics for Grand Cayman and Cayman Brac but does not report data for Little Cayman. A 30-year average rainfall record from Owen Roberts International Airport on Grand Cayman shows an annual average rainfall of approximately 1400mm (Cayman Islands National Weather Service, 2024). Data from 1986-1992 presented in Ng and van Genderen (1994) shows that annual rainfall ranges from approximately 650mm to 1300mm, which suggests that rainfall conditions on Little Cayman are similar to those recorded on Grand Cayman.

The 30-year record shows strong seasonality, with a drier period between December and April and a wetter season from May to November (Cayman Islands National Weather Service, 2024). Peak rainfall is recorded in September and October. Monthly data from 1986 and 1987 for Little Cayman presented by the WAC (n.d.) shows similar seasonality, but a much more pronounced October peak of approximately 400mm in 1987.

4.5.1.4 Surface hydrology and drainage

Analysis of aerial photography of Little Cayman suggests that the surface drainage network is extremely limited (and potentially ephemeral). Although no linear drainage features (i.e. streams) are apparent, the area does contain several ponds and areas of wetland. These features do not appear to have been included on the hydrogeological map of the island presented by the WAC (n.d.) as “ponds with mineralised water” or “perennially wet land”. Water quality data from Ng and van Genderen (1994) suggests that there is strong connectivity between the sea, groundwater, and terrestrial surface water features (see **Section 4.5.1.5**); the ponds are therefore likely to be predominantly fed by groundwater rather than rainwater.

A landcover map within the EAB’s Scoping Opinion (**Appendix A**) indicates that the eastern area of the site is dominated by seasonally flooded mangrove shrubland.

A small area of seasonally flooded mangrove shrubland is also present within the southwestern area of the site along with pools, ponds and mangrove lagoons. A small number of ponds are also present within the central area of the site. The wider island of Little Cayman is surrounded by the Caribbean Sea in all directions.

4.5.1.5 Water quality

Mapping produced by the WAC (n.d.) suggests that much of the coastal fringe on the east of the island, including the area to the north of the Project, does not contain significant fresh groundwater resources. This area is, however, reported as supporting “ponds with mineralised water”. The centre of the island, including the site of the Project, is reported as supporting “limited fresh groundwater resources” (WAC, n.d.).

Ng and van Genderen (1994) monitored water quality in sixteen boreholes and eight ponds across Little Cayman. The results of this investigation indicated that all the surface ponds were saline, with salinity either

in excess of or close to that of the neighbouring sea water. These features are therefore likely to be supplied by saline groundwater that is well connected to the sea.

Groundwater was also found to be affected by saline intrusion, although it was described as “lightly brackish” to the west of the existing airport and along Cross Island Road (Ng and van Genderen, 1994). However, there were four areas of potential fresh groundwater occurrence within Little Cayman, one of which is located immediately to the south of the Project (Ng and van Genderen, 1994). Groundwater to the north of Booby Pond was significantly less saline than the water in the pond itself, which suggests that there could be a degree of local variation in groundwater units and/or water supply mechanisms to the ponds.

There are no further data on the quality of the surface water features in the vicinity of the proposed Project. Although water quality sampling was undertaken in Booby Pond in the southwest of the island (in two phases, between 1995 and 1997 and November 2003 and January 2004, respectively), the local variance described by Ng and van Genderen (1994) suggests that the data may not be representative of the ponds adjacent to the Project.

4.5.1.6 Water resources

Ng and van Genderen (1994) reported that residents of the island utilised rainwater for potable water and groundwater for non-potable uses. Natural well supplies were also used to supply water to individual homes, with reverse osmosis used by larger water consumers (Ng and van Genderen, 1994).

The 2021 Cayman Islands Census Report (Cayman Islands Government, 2022) indicates that the main source of drinking water on Little Cayman was bottled water (67.5%). The main source of household water was reported to be cistern (rain or trucked water) at 55.6% followed by mains supply (city water or desalinated) at 29.1%.

4.5.1.7 Designated sites

The Project is located within or close to wetlands of national and international importance. See **Section 4.1.1.1** for details on these sites.

4.5.1.8 Land uses

The proposed location of the Project is dominated by seasonally flooded mangrove shrubland and dry shrubland. An access track, which branches off from North Coast Road, runs northwest to southeast through the site.

A review of Google Earth imagery (date range 2006 – 2023), and the landcover map within the EAB’s Scoping Opinion (**Appendix A**), indicates that there are areas of previous development (recorded as ‘man-modified’ on the landcover map) located within the boundary of the proposed Project. There is the potential for these areas to represent potential sources of contamination, however further information will be sought as part of the EIA process.

4.5.2 Potential effects

Potential effects on human health, groundwater, surface waters and ecological habitats, natural resources and the existing water resources, supply and treatment infrastructure that may arise during the construction and operation of the Project are summarised in **Table 4.15**.

Table 4.15 Potential effects on hydrology, drainage, water quality, contaminated land and natural resources

Activity	Effect	Receptor
Construction		
Construction of the Project	Mobilisation of pre-existing contamination and introduction of new contamination sources (e.g. from construction materials, fill material and fuel and lubricants from construction equipment).	Human health (construction workers and other human health receptors). Surface water and ecological habitats
	Alteration of migration pathways or creation of preferential pathways that did not previously exist between a source and receptor.	Human health (construction workers and other human health receptors).
	Ground disturbance during construction could result in the generation of fine sediments that could be transported into the ponds and wetland habitats through surface runoff or aeolian action	Surface waters and ecological habitats
	Excavation of surface layers causing increased infiltration and surface run-off to the sub-surface. Potentially mobilising pre-existing sources of contamination and create new pathways to the water bearing strata.	Groundwater quality Human health
	Excavation of surface layers causing a change to subsurface flow patterns and the mechanisms through which ponds and wetland habitats are supplied with groundwater, as well as the potential for contamination.	Surface waters and ecological habitats
	The filling and grading of the site impacting the storm water management on the Project site and adjacent properties	Surface water and built environment
	Introduction of fill material which may contain contaminants.	Groundwater quality Human health
	Introduction of fill material that has different hydraulic qualities to natural substrates (greater or lesser porosity or permeability) could potentially result in a change to subsurface flow patterns and potentially alter the volume and rate at which groundwater is fed into ponds and wetland habitats at the ground surface.	Surface water and ecological habitats
	Deep ground workings potentially required for the terminal building creating new preferential pathways allowing potential pre-existing sources of contamination (where present) to migrate into the underlying aquifer.	Groundwater quality
	Accidental release of lubricants, fuels and oils via spillages, leakage or storage.	Groundwater quality Surface water and ecological habitats Human health
	Requirement for fill material	Natural resources (Little Cayman and wider Cayman Islands)
	Increased water demand during construction (e.g. for consumption by construction workers, use in concrete production, dust suppression and vehicle cleaning).	Water resources and the existing water supply and treatment infrastructure. Surface water and ecological habitats
	Increases in the generation of wastewater as a result of increased water usage during the construction phase.	Wastewater treatment infrastructure and surface water and ecological habitats
Operation		
Presence of the Project	Accidental release of lubricants, fuels and oils via spillages, leakage or storage.	Human health
	Mobilisation of pre-existing contamination during scheduled or unscheduled excavations, for example extensions or modifications to the runway.	Human health

Activity	Effect	Receptor
	Exposure to pollutants in the site drainage system or consumption of contaminated groundwater	Human health
	Operation and maintenance of the proposed Project has the potential to mobilise potential pre-existing contamination (where present) or introduce new sources of contamination through the leakage or spillage of fuels, oils and other chemicals from aeroplanes, vehicles, machinery and other operational equipment.	Groundwater, surface water and ecological habitats
	Changes to land use within the site, specifically the introduction of impervious surfaces, has the potential to alter natural and stormwater drainage patterns and infiltration rates that currently exist within the site and surrounding areas. Drainage patterns may also be impacted via the introduction of new drainage systems as part of the construction works.	Quantity, quality and behaviour of both groundwaters and connected surface waters
	Any increases in water demand associated with the operational phase of the new airport (e.g. for consumption by passengers or use in the operation and maintenance of aircraft and associated infrastructure)	Water resources and water supply and treatment infrastructure. Surface water and ecological habitats.
	Generation of wastewater as a result of increased water usage and the discharge of treated effluent.	Wastewater treatment infrastructure
	Effects on storm water management in the vicinity of the Project	Surface water and built environment

4.5.3 Assessment methodology

As part of the EIA process, the existing environment with respect to hydrology, drainage, water quality, contaminated land and natural resources will be described, including, but not limited to, the following:

- Hydrology and surface water features;
- Geology and natural resources;
- Hydrogeology, aquifer designations and groundwater resources;
- Historical land use and potential contamination sources; and
- Sensitive land uses (including designated sites).

The baseline for hydrology, drainage, water quality, potential for contaminated land, geology, hydrogeology and natural resources will be established in general accordance with the Environment Agency 'Land Contamination Risk Management Framework' (2023), which advocates a phased risk-based approach. In the absence of local guidance in relation hydrology, drainage, water quality, potential for contaminated land, geology, hydrogeology and natural resources, it is deemed appropriate to utilise the Environment Agency guidance due to the Cayman Islands being a British Overseas Territory.

A Preliminary Conceptual Site Model (PCSM) will be developed as part of the establishment of baseline conditions. The PCSM will aid in the identification of potential sources of contamination within the site boundary (inclusive of buffer zones discussed in **Section 4.5** above). The PCSM will also aid in identifying the potential risks posed to sensitive receptors. Sensitive receptors include both those that currently exist and those that could be introduced as a result of the Project, e.g. construction workers, water consumers, and ecological communities in water-dependent habitats.

The hydrology, drainage, water quality, contaminated land and natural resources chapter will consider the likely significant effects during the construction and operation of the Project. It will be undertaken in accordance with the IFC Performance Standard 1 (Assessment and Management of Environmental and Social Risks and Impacts), Performance Standard 3 (Resource Efficiency and Pollution Prevention) and

Performance Standard 6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources) (IFC, 2012c).

The assessment will also be undertaken in accordance with the following:

- The Cayman Islands Constitution Order 2009 (His Majesty's Government, 2009);
- Guidance Note 3, Resource Efficiency and Pollution Prevention (IFC, 2012d);
- Environmental, Health and Safety (EHS) Guidelines (IFC, 2012e);
- Development and Planning Regulations (2021 Revision) (Cayman Islands Government, 2021); and
- Water Authority Act (2022 Revision) (Cayman Islands Government, 2022).

As there are no specific requirements for water quality in the Cayman Islands, the British and international standards will be evaluated, along with consultation with the Cayman Islands government.

4.5.3.1 Definitions

For each potential impact, the assessment will identify receptors sensitive to that impact and implement a systematic approach to understanding the impact pathways and the level of impacts (i.e. magnitude) on given receptors. The definitions of sensitivity and magnitude for the purpose of the hydrology, drainage, water quality, contaminated land and natural resources assessment are provided in **Table 4.16** and **Table 4.17** respectively.

Receptor sensitivity will be defined with reference to the adaptability, tolerance, recoverability and value of individual receptors. **Table 4.16** provides examples of the likely criteria for appraisal of sensitivity for hydrological setting, local drainage networks, localised water quality, human health and natural resources receptors based on professional judgment.

Receptor sensitivity considers, for example, whether the receptor:

- Is rare;
- Has protected or threatened status;
- Has importance at a local, regional or national scale; or
- Has a key role in ecosystem function (in the case of biological receptors).

Generic receptor sensitivity examples based on the above criteria are presented in **Table 4.16**.

Table 4.16 Example definitions of sensitivity for hydrological setting, local drainage networks, localised water quality, human health and natural resources receptors

Sensitivity	Definition
High – has very limited or no capacity to accommodate physical or chemical changes.	General • Receptor is internationally or nationally important / rare with limited potential for offsetting / compensation.
	Contaminated land – human health • Construction workers involved with below ground construction works / ground breaking activities; • Public and local residents / children (on and off site within 50m); and • Future end users (residential or allotment end use).
	Hydrology and water quality • Public water supplies / surface water and groundwater abstractions for potable use; • Supports habitats or species that are highly sensitive to change in surface hydrology or water quality; and • Surface and groundwater supporting internationally designated sites.

Sensitivity	Definition
	Natural resources • Nationally important resource.
Medium – has limited capacity to accommodate physical or chemical changes.	General • Receptor is regionally important / rare with limited potential for offsetting / compensation.
	Contaminated land – human health • Future end users (commercial / industrial end use / open space); • Public and local residents / children (off site a distances > 50m but <250m).
	Hydrology and water quality • Private water supplies for potable groundwater abstractions (off site within 250m); and • Surface and groundwaters supporting nationally designated sites.
	Natural resources • Regionally important resource.
Low – has moderate capacity to accommodate physical or chemical changes.	General • Receptor is locally important / rare.
	Contaminated land – human health • Future end users (transport end use such as car parks or highways); • Public and local residents / children (off site >250m); and • Commercial / industrial workers (off site at distances >50m but <250m).
	Hydrology and water quality • Groundwater or surface waters supporting locally important sites.
	Natural resources • Low economically viable resource.
Negligible – is generally tolerant of physical or chemical changes.	General • Receptor is not considered to be particularly important / rare.
	Contaminated land – human health • Commercial / industrial workers (off site >250m).
	Hydrology and water quality • Unproductive strata; and • Supports or contributes to habitats that are not sensitive to changes in surface hydrology or water quality.
	Natural resources • No economically viable resources.

The magnitude of potential impacts will be assessed qualitatively, according to the criteria set out in **Table 4.17**.

Table 4.17 Definition of magnitude of impacts

Magnitude	Definition
High – permanent or large-scale change affecting usability, risk or value over a wide area, or certain to affect regulatory compliance.	Contaminated land – human health • Permanent or major change to existing risk exposure (adverse / beneficial); • Unacceptable risks / severe harm to one or more receptors with a long-term or permanent effect (adverse); or • Remediation and complete source removal (beneficial).
	Hydrology and water quality

Magnitude	Definition
	• Permanent, long-term or wide scale effects on water quality or availability, groundwater or surface water flows (adverse / beneficial); • Permanent habitat creation or complete loss (beneficial / adverse); or • Measurable habitat changes that are sustainable / recoverable over the long-term (adverse / beneficial).
	Natural resources • Complete sterilisation of resources.
Medium reversible change affecting usability, value or risk over the medium-term or local area. Or possibility to affect regulatory compliance.	Contaminated land – human health • Medium-term or moderate change to existing risk of exposure (adverse / beneficial); or • Unacceptable risks to one or more of the receptors with a medium-term effect (adverse).
	Hydrology and water quality • Medium-term or local scale effects on water quality or availability, groundwater or surface water flows (adverse / beneficial); or • Observable habitat changes that are sustainable / recoverable over the medium-term (adverse / beneficial).
	Natural resources • Medium-term or local scale loss of resources.
Low – temporary change affecting usability, risk, or value over the short-term or within the study area; measurable permanent change with minimal effect, usability, risk or value; no effect on regulatory compliance.	Contaminated land – human health • Short-term temporary or minor change to existing risk exposure (adverse / beneficial); or • Unacceptable risks to one or more receptors with a short-term effect (adverse).
	Hydrology and water quality • Short-term or very localised effects on water quality or availability, groundwater or surface water flows (adverse / beneficial); • Measurable permanent effects on a water supply source that does not impact on its operations (adverse); or • Observable habitat changes that are sustainable / recoverable over the short-term (adverse / beneficial).
	Natural resources • Short-term or very localised effects on resources.
Negligible – minor permanent or temporary change, indiscernible over the medium to long-term. Short-term, with no effect on usability.	Contaminated land – human health • Negligible change to existing risk exposure; or • Activity is unlikely to result in unacceptable risks to receptors (neutral).
	Hydrology and water quality • Very minor or intermittent impact on local water quality or availability, groundwater or surface water flows (adverse / beneficial); or • Very slight local changes to habitats that have no observable impact on dependent receptors (neutral).
	Natural resources • Very minor impact on resources.

The evaluation of significance of an effect is a function of the sensitivity of the receptor and the magnitude of the impact. Following the identification of receptor sensitivity and magnitude of the impact, it is possible to determine the significance of the effect. The determination of significance will be guided by the use of the impact significance matrix presented in **Table 3.2** with definitions for each level of significance provided in **Table 4.18**.

Table 4.18 Definition of effect significance

Significance	Definition
Major	Very large or large change in receptor condition, which are likely to be important considerations at a regional or district level because they contribute to achieving national, regional or local objectives, or could result in exceedance of statutory objectives and / or breaches of legislation.
Moderate	Intermediate change in receptor condition, which are likely to be important considerations at a local level.
Minor	Small change in receptor condition, which may be raised as local issues but are unlikely to be important in the decision making process.
Negligible	No discernible change in receptor condition.
No change	No impact, therefore, no change in receptor condition.

For the purposes of the EIA assessment, any effect that is of major or moderate significance is considered to be significant in EIA terms, whether this be adverse or beneficial. In addition, whilst minor impacts are not significant in their own right, it is important to distinguish these from other non-significant impacts as they may contribute to significant impacts cumulatively or through interactions.

4.5.4 Mitigation measures

To mitigate the potential impacts on hydrological setting, local drainage networks, water quality, human health and natural resources receptors within Little Cayman during the construction and operational phase of the proposed Project, the EIA will identify appropriate mitigation measures for any effects on known receptors.

In line with the IFC Performance Standards (IFC, 2012c), a hierarchy of mitigation (see **Figure 3.1**) will be adopted to reduce the potential impacts on hydrological setting, local drainage networks, water quality, human health and natural resources receptors within Little Cayman. The focus of the hierarchy of mitigation is the prevention of impacts occurring through avoidance. Where this is not possible, the next stages of the hierarchy of mitigation are minimisation of the potential impact followed by compensation or offset of the effect with a positive outcome (IFC, 2012c).

Specific measures to prevent adverse impacts during construction are likely to include:

- Development of a construction-stage drainage and water management strategy to control the management of surface runoff and groundwater. This would include measures to control the rate at which water is discharged, where it is discharged to, a method for dewatering of subsurface excavations.
- The temporary construction stage drainage strategy would also incorporate measures to reduce/remove risk of sediment entrainment, potentially including: i) storing and capping topsoil to minimise wind/water erosion; ii) minimising subsoil exposure and retention of strips of undisturbed vegetation on edge of working areas; iii) where practicable, water entering construction areas would be pumped via settling tanks/filtration ponds before being discharged via interceptor drains to remove sediment in line with any permits required; iv) where vegetation has been removed, reseed to prevent future runoff.
- A range of measures would be incorporated to manage potential contamination risks, potentially including: i) fuels, oils lubricants and other chemicals to be clearly labelled and the site shall retain an up-to date Control of Substances Hazardous to Health (COSHH) inventory; ii) fuels, oils lubricants and other chemicals to be stored in bunded compound (volume of which shall be at least equivalent to the capacity of the tank or tanks plus 10%), located in designated areas taking into account security, location of sensitive receptors, and inspected at least weekly for signs of spillage,

leaks and damage; iii) portable bowsers with built-in bunds shall be used for any refuelling activities required in working area, with the bowsers returned to the construction compound overnight; iv) small plant to be provided with drip trays; v) all construction plant shall be inspected for fuel leaks before being delivered to working areas; vi) biodegradable oils to be used where possible; vii) concrete/cement mixing and washing areas shall be located at least 10m away from nearest water body, and washing areas shall incorporate settlement and recirculation systems to allow water to be reused and all washing out of equipment would take place in a contained area and the water collected for disposal offsite; viii) a Pollution Prevention Management Plan shall be prepared by the contractor for pollution events will provide detail as to how to report and deal with environmental incidents including measures to manage spills (e.g. through use of spill kits), or the release of hazardous substances, and to clean up following an incident and ix) consideration of collection and/or treatment of any wastewater from welfare facilities.

Specific measures to prevent adverse impacts during operation could potentially include:

- A permanent operational drainage strategy shall be developed to control the quantity and quality of runoff and offsite flood risk from permanent above ground infrastructure.
- The operational drainage strategy shall include measures to control the supply of contaminants from the Project, including fuel and chemicals such as degreasers .

Depending upon the outcomes of a more comprehensive review of baseline information and the subsequent impact assessment, it may be necessary to undertake develop additional mitigation to safeguard potable and non-potable water supplies. This could include improvements to water treatment processes or the provision of an alternative water supply.

4.5.5 Additional assessments

It is recommended that the following further investigations are undertaken to inform the assessment of impacts on hydrology, drainage, water quality and land quality, and, where appropriate, inform the development of suitable mitigation measures:

- Ground investigation: A targeted ground investigation may be required in order to characterise the baseline environment with regard to water quality and contamination. This may involve, but is not limited to, exploratory holes (for example boreholes), collection of soil and groundwater samples for geo-environmental analysis and groundwater monitoring.
- Cut fill exercise: Due to the varying topography of the Project site, fill material will be required to create a level platform. An exercise shall be undertaken to determine the volume of material that would be required to create the level platform. The results of this exercise would then inform the geotechnical design of the Project. In addition to calculating the total volume of material required, characterisation studies (for example collecting samples of the fill material for geo-environmental analysis) will be required in order to determine the suitability of the material in terms of its potential to act as a source of contamination. Furthermore, if the required volume of fill material cannot be entirely sourced within the Project area, the direct and indirect impacts of additional quarrying for aggregate and fill need to be addressed in the EIA.
- Water features survey: A walkover survey to verify the presence and type of water-related habitats in the area surrounding the Project shall be undertaken by a suitably qualified ecologist. This survey shall delineate each type of water-dependent habitat, identify dependent communities (e.g., aquatic plants, invertebrates and birds that use the habitat), and determine its value and sensitivity to change.
- Review of water use and supply: It may be necessary to undertake a survey to revisit the findings of Ng and van Genderen (1994) and verify the presence of private uses of groundwater resources

for potable and non-potable uses. Any properties and enterprises in the area of influence identified in the PCSM will be contacted to determine whether they use groundwater, what they use it for and whether it is treated prior to use. A detailed risk assessment and further mitigation may be required if water users are identified as being at risk as part of this process.

- Surface water investigation: Depending upon the outcomes of the water features survey, further monitoring may be required to improve the understanding of the nature, quality and ecological value of surface water features and water-dependent habitats in the study area. This shall include:
    - Installation of water level loggers to monitor water levels in water-dependent habitats (e.g., ponds and wetlands with standing water) and inform the evaluation of the relationship between groundwaters and surface water features. If possible, an automatic logger will be installed in each surface water feature within the development site and in the area of potential influence identified during the PCSM to collect, as a minimum, daily water level readings.
    - Periodic collection of surface water samples to characterise the quality of surface water features that could potentially be affected by the Project. Samples will be taken on at least a monthly basis and submitted to an accredited laboratory for measurement of key water quality parameters. In the absence of detailed archive data, it is recommended that a broad suite of determinands are considered for at least three monthly sampling rounds at the outset of the monitoring period, considering basic water chemistry (e.g., pH, electrical conductivity, salinity, dissolved oxygen, biochemical oxygen demand) and any potential contaminants identified following completion of a detailed PCSM (e.g., a subset of relevant nutrients, metals, hydrocarbons, herbicides and pesticides, as included in Schedule 3, Parts 2 and 3 of the Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015. This will allow potential contaminants of concern to be identified, and subsequent monitoring to be targeted at those substances.
- Groundwater investigation: Depending upon the outcomes of the water features survey, further monitoring may be required to improve the characterisation of groundwater levels, quality and groundwater-surface water connectivity in the study area. This will include:
    - Installation of boreholes with water level loggers to examine groundwater levels and determine the relationship between groundwaters and surface water features. If possible, an automatic logger shall be installed in at least one borehole within the development site to collect, as a minimum, daily water level readings.
    - Periodic collection of groundwater samples to characterise groundwater quality. Samples shall be taken on at least a monthly basis and submitted to an accredited laboratory for measurement of key water quality parameters. In the absence of detailed archive data, it is recommended that a broad suite of determinands are considered for at least three monthly sampling rounds at the outset of the monitoring period, considering basic water chemistry (e.g., pH, electrical conductivity, salinity) and potential contaminants identified following completion of a detailed PCSM (e.g., a subset of relevant nutrients, metals, hydrocarbons, herbicides and pesticides, as included in Schedule 5 of the Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015. This will allow potential contaminants of concern to be identified, and subsequent monitoring to be targeted at those substances.

4.6 Socio-economics

4.6.1 Baseline conditions

4.6.1.1 Overview

Little Cayman is known for its pristine natural environment and small, close-knit community. The island's economy is primarily driven by tourism, particularly eco-tourism, and marine activities. However, like many small island communities, Little Cayman faces unique socio-economic challenges, including limited access to healthcare, education, and other essential services.

This section will provide information on the following key areas:

- **Demographic Profile:** An overview of the population size, age distribution, and other demographic characteristics.
- **Economic Activities:** Analysis of the main economic sectors, employment patterns, and income levels.
- **Social Infrastructure**: Examination of the availability and quality of healthcare, education, housing, and other social services.

The EIA will identify and consider the relevant legal and regulatory Standards and Technical Guidance that are applicable to the Project. This may include:

- Legal and Regulatory Framework
    - Cayman Island EIA Regulations: National Conservation Council Directive for Environmental Impact Assessments Section 43, National Conservation Act, Extraordinary No.50/2016, June 2016
    - Data Protection Act, 2021 Revision
    - Education Act, Act 48 of 2016
    - Employment Act, Law 3 of 2004
    - Labour Act, 2021 Revision
    - Land Acquisition Act, 1997 Revision
    - Poor Person's Relief Act, 1997 Revision
    - Public Health Act, 2021 Revision
    - The Registered Land Act (2018 Revision)
    - The Workmen's Compensation Law, 1996 Revision
    - Tourism Act, 2002 Revision
    - Tourism Law, 1995 Revision and Tourism Regulations, 2002 Revision
    - Trade Union Act, 2019 Revision
- Socioeconomic Data and Planning
    - Approved and Proposed Developments
    - Cayman Islands Government 2022-2024 Strategic Policy Statement
    - Compendium of Statistics, 2021
    - Draft National Planning Framework
    - Existing and Proposed Utilities
    - Existing Land Use and Community/Emergency Facilities
    - National Tourism Management Plan 2019-2023
    - The Cayman Islands Census Report 2021 (ESO)
    - The Cayman Islands' 2021 Census of Population and Housing Report
- International Standards and Guidelines
    - United Nations Sustainable Development Goals, 2015

4.6.1.2 Demographic profile and social infrastructure

The population of the Cayman Islands is relatively young, with approximately 85% of the population being under the age of 65 and making up much of the workforce (**Table 4.19**). Unemployment on the Sister Islands is 3.5%, which is lower than the 2021 global unemployment rate of 6.2% (Economic and Statistics Office, 2022).

Table 4.19 Little Cayman population by age group, 2021

Age group	Total	
Children under 5 years	0	0%
Children 0 – 14 years	2	1%
Youth 15 – 24 years	4	3%
Working age 15 + years	159	99%
Elderly 65+ years	21	13%
Median Age	44	

Between 2010 and 2021, the Sister Islands saw an addition of 36 households, marking a 3.5% increase and bringing the total to 1,060 households. During this period, the average household size on the Sister Islands decreased from 2.24 in 2010 to 2.13 in 2021. Of the 130 households, 22.2% are owned, either with or without a mortgage, rather than rented. The majority of dwellings are either apartments, detached houses or studios (**Table 4.20**).

Table 4.20 Number of households per dwelling type on Little Cayman (ESO (Economics and Statistics Office), 2022)

Dwelling type							
Detached house	Duplex	Apartment	Condominium	Studio	One-room	Combined business	Other
33	2	58	1	28	4	1	2

In the Cayman Islands, 90.5% of households obtain their water from the mains, which includes piped city water or desalinated water. However, on the Sister Islands, 52.5% of households rely on cisterns, either rainwater or trucked water, as their main water source. Despite these differences, 75.2% of households across all districts use bottled water as their primary source of drinking water (ESO (Economics and Statistics Office), 2022). The proportion of household water sources on Little Cayman is presented in **Table 4.21**.

Table 4.21 Main source of household water on Little Cayman

Main source of household water (% of households)						Bottled water
Mains	Cistern	Well / other	Well	None	DK/NS	Main source of drinking water (% of households)
29.1	55.6	13.7	12.8	-	1.7	67.5

4.6.1.3 Economic activities

The main economic industries are financial services, tourism, and real estate sales and development. Finance and tourism are commonly referred to as the two pillars of the Cayman Islands economy.

In the National Tourism Management Plan 2019-2023, the development of Little Cayman airport is listed as a strategy to improve the connectivity and infrastructure of the Cayman Islands. As of 30 September 2024, there are a total of 151 accommodation bedrooms licensed by the Cayman Islands Department of Tourism across various property types; comprised of 43 bedrooms in condos/apartments, 41 in villas/guesthouses, and 67 in hotels. This is a considerable amount given the small population on the island and geographical scale, reflecting the islands dependence on tourism (Department of Planning, Cayman Islands, 2023).

While local tourism leaders and stakeholders identified diving as the most popular recreational activity for stayover visitors to the Sister Islands, the Visitor Exit Survey results reveal that terrestrial nature and cultural heritage sites were the most popular attractions on the Sister Islands. The Booby Pond Nature Reserve was Little Cayman's most popular attraction (Department of Planning, Cayman Islands, 2023).

The Cayman Islands National Tourism Plan (NTP) (2024 edition) (Cayman Island Department of Tourism, 2024) identifies a roadmap for enhancing the Cayman Islands tourism industry and ensuring the sustainability of the islands' cultural and natural assets. The NTP sets specific goals for each of the islands and through public consultation presents a vision statement for each island

Little Cayman Vision Statement:

"*To sustainably grow and diversify the Island's tourism industry in a manner that preserves and celebrates the unique character of the island and its natural resources, enhances the business environment and quality of life for residents, and delivers a diverse range of high-quality visitor experiences.*"

The NTP identifies the requirement for airport facilities on Little Cayman to meet regulatory standards so that it can meet the primary objectives to promote more investment and increases in numbers or visitors and to achieve the vision statement:

- Sustainably grow the number of visitors and visitor related services to support infrastructure and other basic services improvements that would make Little Cayman a more attractive place to live and visit, and to grow the local workforce and reduce the need to import labour.
- Improve destination management, including beach, road, marine resources, solid waste management, feral cats and mosquito control, to promote sustainable growth of tourism and of the local population.
- Promote investment that is targeted to investors that will seek to maintain a balance between growth and preserving the unique character of the island, which is a primary driver of visitor demand, and to grow and diversify the product offer and the market base, to support more convenient and affordable access.

This is echoed in the Strategic Policy Statement (SPS 2024-2026) Specific Outcome 7 which is to '*Improve our tourism, as an industry, product and economic driver for our islands'*. Alongside various goals for tourism, this includes specific projects to promote Little Cayman, expand Cayman Airways routes and ensure safety regulatory oversight of the aerodromes to a credible level meeting internationally mandated standards supports the growing tourism sector.

4.6.2 Potential effects

Little Cayman's socioeconomic status shall be assessed using both objective and subjective criteria. This shall include both reviewing quantitative data such as income, education, and household value, in addition to more qualitative data such as the opinions of locals. The groups to be considered include residents, companies, short-term renters, and marginalised/vulnerable groups. The socioeconomic study area for the EIA encompasses the entirety of Little Cayman, as the impacts of the Project will likely affect the entire island due to its small size and population.

As part of the EIA, the following components set out in **Table 4.22** will be analysed to assess potential socioeconomic benefits and impacts arising from the Project.

Table 4.22 Potential effects on socio-economics

Activity	Effect	Receptor
Construction		
Construction of the Project	Community mobility and connectivity: Evaluate the Project's impact on community mobility and connectivity (e.g. alteration to transportation networks, local and accessibility, and business connectivity).	Access and mobility
	Job creation: Assess the potential for job creation during project construction	Income and economics
	Housing availability and affordability: Analyse potential impacts on housing availability and affordability; including the effects of a temporary shift in the demand for construction workers.	Housing
Operation		
Presence and operation of the Project	Island connectivity: Assess the impact on island connectivity and level of service compared to existing aerodrome under future conditions.	Access and mobility
	Tourism impact: Analyse potential changes to existing environmental and socioeconomic conditions due to shifts in tourism.	Income and economics
	Community resiliency: Consider changes to community resiliency from the Project compared to the impacts such as climate change. Community resiliency is defined as the ability of communities to prepare, adapt, and recover from negative impacts on social, physical, and environmental health.	Income and economics
	Lifestyle and wellness: Assess the Project's impact on lifestyle and wellness related to the islands' connectivity, carrying capacity and sustainability.	Access and mobility Income and economics
	Community mobility and connectivity: Evaluate the Project's impact on community mobility and connectivity (e.g. alteration to transportation networks, local and accessibility, and business connectivity)..	Access and mobility
	Tourism access: Evaluate potential changes in tourism due to increased or decreased access to resources.	Access and mobility
	Economic resiliency: Analyse potential impacts on economic resiliency resulting from changes in tourism.	Access and mobility
	Job creation: Assess the potential for job creation during project operational lifespan.	Income and economics
	Equitable opportunities: Prioritise equitable business and employment opportunities.	Income and economics
	Tourism effects: Evaluate the effects on tourism based on improved access.	Income and economics
	New development: Evaluate the potential for new development, as a result of the Project.	Housing
	Housing availability and affordability: Analyse potential impacts on housing availability and affordability.	Housing

4.6.3 Assessment methodology

The assessment will analyse statistics and trends in the area, including changes in tourism and the influence of the global economy. Data will be collected from secondary sources like census data, government planning documents, and NGOs. Primary data sources will include consultation with key stakeholders, and socio-economic indicator data will be gathered on income sources, livelihoods, employment opportunities, and social services. The assessment will be undertaken following international guidance on socio-economic assessments such as the World Bank Standards: Environmental and Social Framework (ESF) which

includes standards in Annex 1 for assessing social impacts, stakeholder engagement, and grievance mechanisms.

The steps taken during this analysis are as follows:

- Define objectives and scope
- Stakeholder identification and engagement plan
- Data collection (secondary and primary)
- Impact analysis
    - Economic impact: Assess the potential economic benefits and costs, including changes in employment, income, business activity, property values, and tourism revenue. This analysis will evaluate the potential changes to the local economy, including growth in residential development and land value changes.
    - Social impact: Evaluate the social implications, such as changes in community cohesion, access to services, quality of life, and potential displacement of residents.
- Infrastructure assessment
- Travel and accessibility impact (patterns, cost and accessibility)
- Boundary and development impact
    - Physical boundaries: evaluate the creation of physical and/or visual boundaries.
    - Temporary Workers: assess the effects of temporary workers with potential impacts on local inhabitants.
    - New developments: evaluate the potential for new developments.
- Equity and vulnerability assessment
    - Marginalised groups: identify unequal impacts on any marginalised or vulnerable groups.
- Risk assessment
- Cost-benefit analysis
- Recommendations, monitoring and evaluation
    - Develop indicators: create indicators to monitor the ongoing socio-economic impacts of the airport relocation.
    - Regular reviews: conduct regular reviews and updates to the assessment as new data becomes available and conditions change.
- Public consultation and feedback
- Mitigation measures

This methodology ensures a thorough and participatory approach to evaluating the socio-economic impacts of relocating the airport on Little Cayman, incorporating both pre- and post-COVID-19 data to provide a comprehensive analysis.

4.6.4 Mitigation measures

Potential mitigating strategies for unavoidable impacts of the Project on socioeconomic receptors will be identified. Measures and practices will be proposed that have the potential to reduce the potential consequences of the Project during construction and operation could include:

- Maximise local employment;
- Full transparency, ensuring locals are aware of all potential impacts during construction and operation;
- Review planning and zoning policies and regulations to make appropriate recommendations;
- Recommend revisions or new regulations to encourage future developments in areas of the island that would minimise impacts to existing communities and natural resources.

4.7 Visual and landscape effects

4.7.1 Baseline conditions

Little Cayman, the smallest of the three Cayman Islands, is known for its tranquil environment, pristine natural beauty, and low population density. The island is 10 miles long and 1 mile wide, offering a serene escape with its unspoiled landscapes. Its natural environment includes white sandy beaches, lush mangroves, and vibrant coral reefs, with low-lying vegetation, salt ponds, and small lagoons. Key views include Bloody Bay Marine Park, Owen Island, and South Hole Sound Lagoon.

Little Cayman's unique charm is a result of its small size and low development density. Its natural and built environments are well-integrated, with minimal visual intrusion from human activities. Cultural and historical sites include the Little Cayman Museum, which showcases the island's history and cultural heritage, and the Booby Pond Nature Reserve, a designated Ramsar site home to a large colony of red-footed boobies and other bird species.

Recreational areas include diving and snorkelling sites, hiking trails, and secluded beaches and wildlife habitats. Little Cayman's pristine landscapes, minimal development, and strong sense of tranquillity make it a cherished destination for nature lovers and those seeking a peaceful retreat.

4.7.2 Potential effects

Given its largely natural state, major proposed developments on Little Cayman require a visual impact assessment. This assessment is essential to identify potential visual changes and mitigate adverse effects, ensuring the preservation of the island's unique aesthetic, cultural heritage and ecological integrity for future generations. Furthermore, the potential visual impacts of the proposed airport relocation on landscape/seascape character include:

Table 4.23 Potential effects on visual character

Activity	Effect	Receptor
Construction		
Construction of the Project	Visual disturbances from equipment, materials storage, and temporary structures;	Visual character of Little Cayman
	The creation of physical and/or visual boundaries	Visual character of Little Cayman
Operation		
Operation of the Project	Permanent alteration and/or visual intrusion into the cultural and natural heritage site affecting the setting or character of a designated site;	Visual character of Little Cayman
	The creation of physical and/or visual boundaries	Visual character of Little Cayman
	Long-term visual changes due to the presence of the airport, including buildings, runways, and associated infrastructure. This includes changes to visual amenity due to the presence of larger aircraft, the relocated aerodrome and associated equipment / vehicles.	Visual character of Little Cayman

4.7.3 Assessment methodology

The visual effects assessment will first describe the current (baseline) visual environment of the proposed site and its surroundings, including:

- Landscape Character: detailed description of the existing landscape, including natural features (e.g., vegetation, topography) and man-made elements.

- Visual Receptors: identification of key viewpoints and sensitive receptors, such as residential areas, tourism hotspots, and ecological sites.
- Photographic Survey: a comprehensive set of photographs from various viewpoints to document the current visual conditions.
- Existing Land Use: overview of the current land use and any relevant planning designations.

The methods used to assess the potential visual effects shall include:

- Viewpoint selection: definition of criteria for selecting representative viewpoints for the assessment.
- Visual simulations: use of computer-generated imagery (CGI) to create visual simulations of the Project from key viewpoints.
- Impact criteria: definition of criteria for assessing the significance of visual impacts, considering factors such as magnitude of change and sensitivity of receptors.
- Consultation: engagement with stakeholders, including local communities and planning authorities, to gather input on visual concerns.

4.7.4 Mitigation measures

Specific mitigation measures for visual impacts will be confirmed after surveys are undertaken, however, they may include:

- Design considerations: incorporation of design elements to minimise visual intrusion, such as building height, colour, and materials – in keeping with the existing style of infrastructure on the island.
- Landscaping and visual screening: implementation of landscaping plans to screen and soften the visual impact of the development, including planting of trees and shrubs.
- Lighting: design of lighting to reduce night-time visual impacts, including the use of downward-facing and low-intensity lighting.
- Monitoring: establishment of a monitoring program to ensure the effectiveness of mitigation measures and to address any unforeseen visual impacts.
- Viewshed enhancements: analysing and improving the visible areas from a specific point or set of points. Using GIS tools, viewshed analysis determines which areas are visible from a particular location, helping to optimise scenic views and minimise visual obstructions.

4.8 Climate resilience and hazard vulnerability

The EIA will include a review of applicable standards and guidelines, alongside an assessment of baseline conditions relevant to the climate resilience and hazard vulnerability assessment. In particular, the following hazards shall be evaluated in the EIA:

- **Hurricanes and tropical storms:** Little Cayman is located in a region prone to hurricanes and tropical storms, which can cause significant damage through high winds, heavy rainfall, and storm surges. The Project must be designed to withstand these extreme weather events to ensure operational continuity and safety.
- **Sea-level rise**: As a low-lying island, Little Cayman is vulnerable to sea-level rise, which can lead to coastal erosion, increased flooding, and loss of land. The aerodrome's location and infrastructure must account for projected sea-level changes to mitigate these risks.
- **Flooding:** Heavy rainfall associated with tropical storms and hurricanes can lead to flooding events. Appropriate drainage systems and elevated structures are essential to prevent water accumulation and damage to the aerodrome facilities.

- **Heatwaves:** Increasing temperatures and heatwaves can affect both the structural integrity of the aerodrome and the health and safety of personnel and passengers. Measures to mitigate heat impacts, such as heat-resistant materials and adequate cooling systems, shall be incorporated into the design of the new aerodrome.
- **Seismic activity:** Although less frequent, and not likely to be impacted by future climate change, the potential for seismic activity in the region shall not be overlooked. The aerodrome's design shall include earthquake-resistant features to minimise damage and ensure safety during seismic events. Additionally, the aerodrome shall be designed to safely accommodate the residents of Little Cayman during crisis situations.

4.8.1 Baseline conditions

An initial review of published data and publicly available information will be used to further develop the existing baseline described below for the Climate Resilience and Hazard Vulnerability assessment. This shall include consideration of topography, climate, tropical storms and hurricanes, storm surge and flood risk, earthquakes and land use changes. This data will also be used to inform the hydrology and drainage chapter (**Chapter 4.5**).

4.8.1.1 Topography

The Cayman Islands are part of the Cayman Ridge, an undersea mountain range stretching from Cuba to the Gulf of Honduras. They are separated from Jamaica by the Cayman Trench, the deepest part of the Caribbean (Cayman Islands Goverment, 2024). Little Cayman is a low-lying island with some areas rising to a maximum of 12 metres above sea level.

4.8.1.2 Geology and Seismic Activity

Little Cayman is comprised of two geologies, the Bluff Group, overlain by the Ironshore Formation and. The former is the only geology that exists within the Project site (**Section 4.5.1.1**).

The islands are situated on the plate boundary between North American and Caribbean tectonic plates, which limit the size of earthquakes. Minor tremors are common and many residents don't notice them. A 7.7 magnitude earthquake struck in January 2020 but caused limited damage.

4.8.1.3 Existing climate

The Cayman Islands have a tropical marine climate with two seasons: wet (May to October) and dry (November to April). The average temperature is 78 °F (25.5 °C) in winter and 86 °F (30 °C) in summer; rarely falling below 70 °F or above 90 °F (**Table 4.24**). Rainfall varies seasonally (**Table 4.25**), with prevailing winds from east to south between May and October and northeast to northwest from December to April. The hurricane season is considered to be between 01 June and 01 December.

Table 4.24 Average monthly temperature data in the Cayman Islands between 1971 to 2017. Source: (Climate Studies Group Mona & The University of the West Indies, 2020)

Average Temperature (°C)											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
25.6	25.5	26.1	27.4	28.1	28.9	29.3	29.3	29.0	28.1	27.3	26.2

Table 4.25 Average monthly rainfall data in the Cayman Islands between 1971 to 2017. Source: (Climate Studies Group Mona & The University of the West Indies, 2020)

Average Precipitation (mm)											
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
36	29	27	21	107	126	113	141	193	183	110	62

As identified in the Cayman Islands Climate Change Risk Assessment (CCRA) (Cayman Islands Government, 2022), the three most severe risks to Little Cayman as a result of climate change are considered to be:

1. Disruption of turtle distribution and population dynamics
2. Increased frequency and severity of coral bleaching and coral disease outbreaks
3. Decline of coral reef structure and integrity

The following risks were also identified. Those highlighted in bold are most relevant to the Project:

- **Damage to roads, airports and infrastructure**
- **Damage to coastal settlements and buildings**
- **Disruption & damage to the tourism sector (and related infrastructure)**
- **Disruption to fossil fuel imports, power generation and distribution**
- **Impacts on communications infrastructure**
- Disruption to ports and shipping traffic
- Loss of endemic species and sub-species as a result of habitat degradation (animals and plants)
- Loss and damage to mangroves
- Loss and damage to seagrass beds or change in seagrass distribution
- Freshwater lens contraction and salinisation of surface and groundwaters
- Impact on forest, woodland and shrubland communities
- Shortage of water for human consumption

In addition to this, the Cayman Island Climate Change Policy 2024-2050 evaluated the greatest climate related risks in the Cayman Islands, highlighted in **Figure 4.4**.

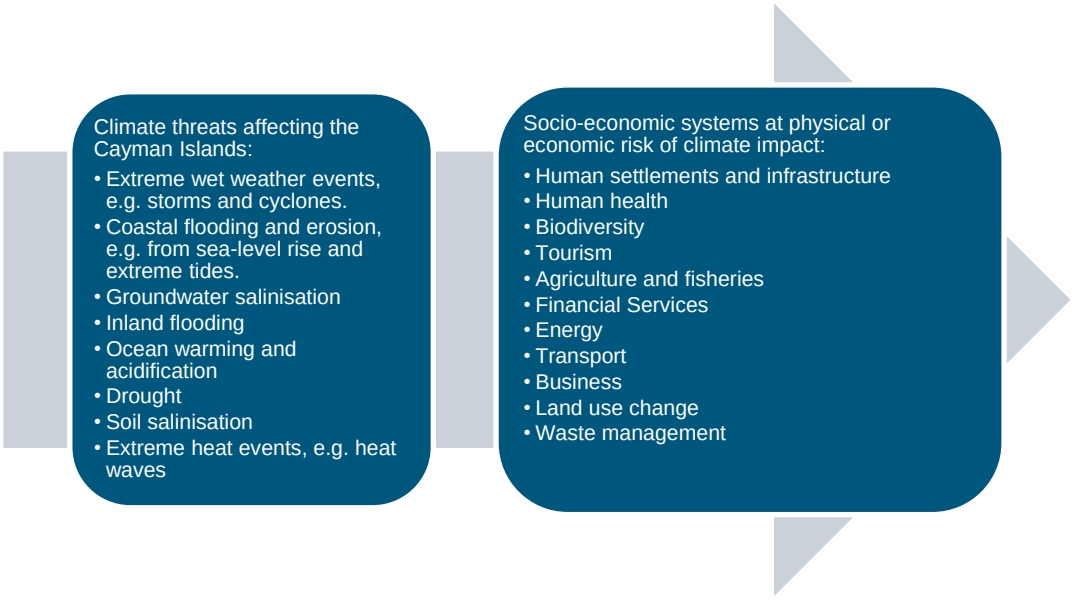

Figure 4.4 Identified climate threats affecting the Cayman Islands and the socio-economic systems at physical or economic risk of Climate impact. Source: (Cayman Island Government, 2024)

The CCRA for the Cayman Islands identified that over the past 40 years, air temperatures in the Cayman Islands have risen by approximately 2.2°C. Tropical cyclones have increased in frequency and intensity in

the North Atlantic since the 1970s. Projections suggest that the frequency of hurricanes will not increase significantly in the Caribbean, however strong hurricanes are anticipated to become more common. Atmospheric carbon dioxide (CO_2) concentrations have increased by 42% since the industrial revolution, and declines in surface ocean pH are already detectable and accelerating, including in the Caribbean (Cayman Islands Government, 2022).

4.8.1.4 Tropical storms and hurricanes

Previous hurricanes in the Cayman Islands have flooded coastal mangroves, causing them to retreat or die-back in areas. Mangroves receded 7 m in Little Sound in Grand Cayman after Hurricane Ivan (2004) and were drowned in Tarpon Lake in Little Cayman following Hurricane Gilbert (1988). Some of these have subsequently recovered, but recovery is often slow.

A total of 65 storms, between Category 1 – 5 have been recorded within a 150 mile radius of Little Cayman, between 1842 and 2023 (**Figure 4.5**) with 10 storms recorded between 2000 and 2023 (**Figure 4.6**).

Note the Saffir-Simpson Hurricane Wind Scale consists of a five-point scale of hurricane intensity and starts at 74 mph. Below this, tropical cyclones with wind speeds up to 38 mph are classified as tropical depressions, and those with wind speeds from 39-73 mph are classified as tropical storms (TS).

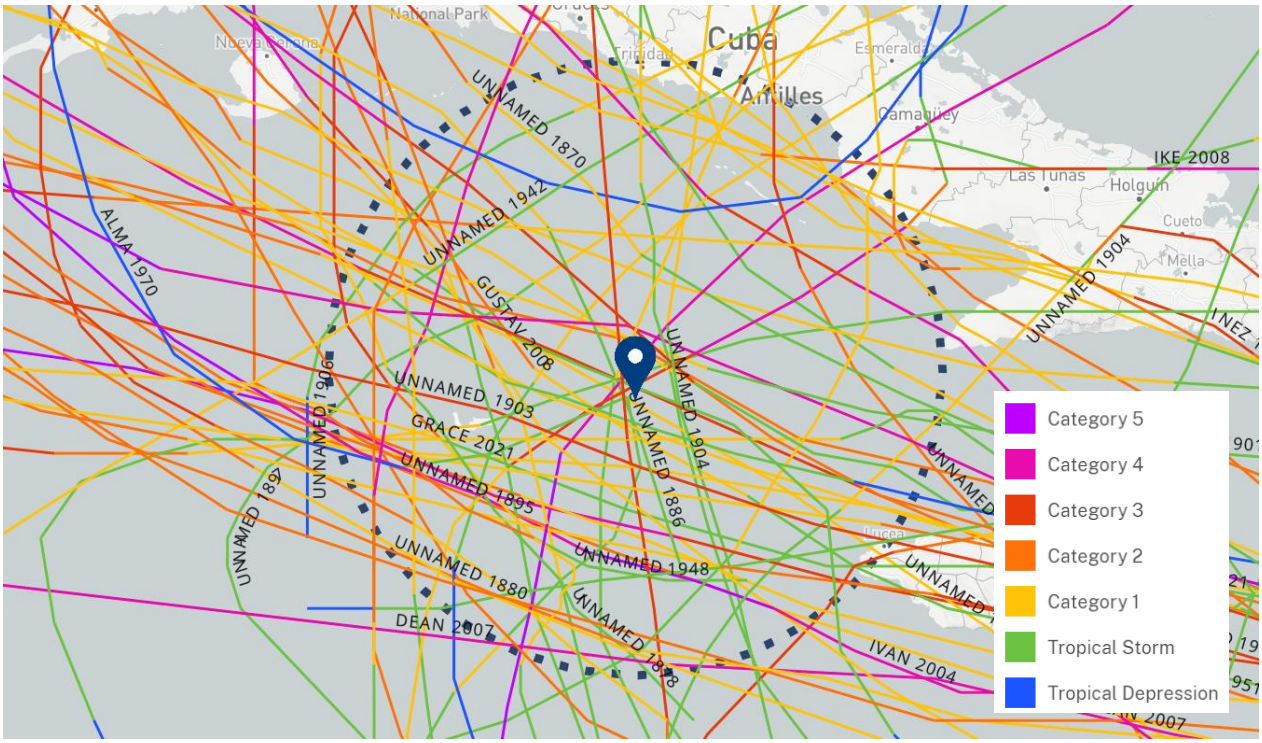

Figure 4.5 Storms tracks passing within 150 miles (241 km) of Little Cayman, between 1842 and 2023. Only Category 1 - 5 storms are shown. Source: NOAA Historical Hurricane Tracks portal.

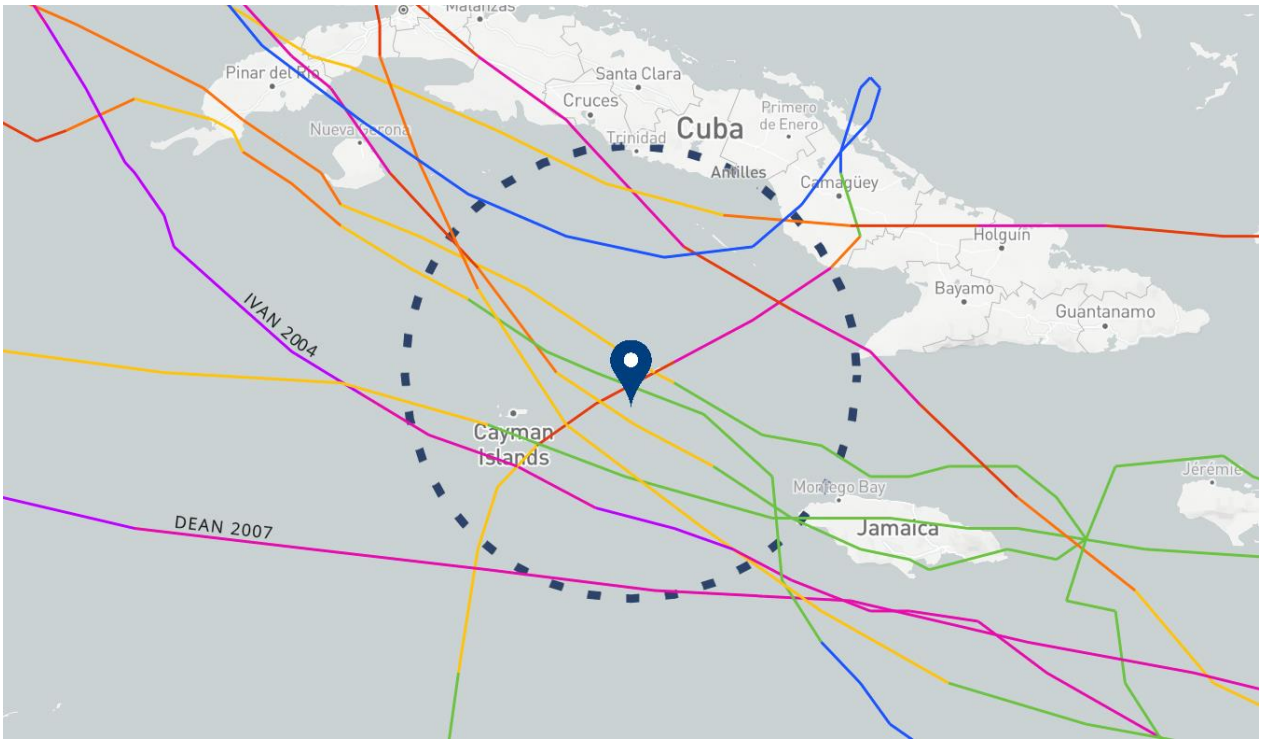

Figure 4.6 Storms tracks passing within 150 miles (241 km) of Little Cayman, between 2000 and 2023. Only Category 1 - 5 storms are shown. Source: NOAA Historical Hurricane Tracks portal.

4.8.1.5 Sea level rise

Historical records show significant variance in the rate of sea level rise across the Caribbean. Tide gauge data for South Sound (near George Town) show a rising trend of around 1.76 mm per year between 1972 and 1996, with future sea level rise (SLR) forecasts of 0.29 to 0.32 metres by the 2050s compared to 1986–2005 (Cayman Islands Government, 2022).

Little Cayman, like the rest of the Cayman Islands, is experiencing the impacts of sea level rise. Tide gauge data for the region indicates a rising trend of approximately 1.76 mm per year between 1972 and 1996. Projections suggest that sea levels could rise by 0.29 to 0.32 meters by the 2050s relative to the baseline period of 1986-2005 (Cayman Islands Government, 2022).

This rise in sea level poses significant risks, including increased coastal flooding, erosion, and impacts on infrastructure and ecosystems. The data in **Table 4.26** below shows the anticipated loss of habitats associated with various SLR scenarios.

Table 4.26 Habitat extent on Little Cayman in 2010, and percentage loss of habitat associated with various SLR scenarios. Source: Figures extracted from Hurlston-McKenzie et al. (2011).

Habitat type	2010 extent (acres)	% loss associated with sea level rise of *x* meters			
		0.25	0.5	0.75	1
Poole, ponds and mangrove lagoons	241	3.95	50.62	94.32	99.56
Salt tolerant succulents	9.25	0	0	1.38	17.37
Seasonally flooded grassland	50.5	0	0.01	0.04	2.77

Habitat type	2010 extent (acres)	% loss associated with sea level rise of *x* meters			
		0.25	0.5	0.75	1
Semi-permanently flooded grasslands	1.99	0	0	4.57	45.2
Coastal shrubland	400	0	0.02	0.61	2.2
Dry forest and woodland	1,927	0	0	0.05	0.64
Dry shrubland	2,248	0	0	0.04	0.87

4.8.1.6 Future climate

The Intergovernmental Panel on Climate Change (IPCC) uses several climate scenarios to project future climate conditions based on different levels of greenhouse gas emissions. These scenarios are known as Representative Concentration Pathways (RCPs) and Shared Socioeconomic Pathways (SSPs):

1. RCP2.6: This is a low-emission scenario where significant mitigation efforts are made to limit global warming to below 2°C above pre-industrial levels. It assumes that greenhouse gas (GHG) emissions peak early and then decline significantly.
2. RCP4.5: This scenario represents a stabilisation pathway where emissions peak around 2040 and then decline. It assumes moderate mitigation efforts.
3. RCP6.0: This is a stabilisation scenario with emissions peaking around 2080 and then declining. It assumes less aggressive mitigation efforts compared to RCP4.5.
4. RCP8.5: This high-emission scenario assumes continued increases in GHG emissions throughout the 21st century, leading to significant global warming and severe climate impacts.

The newer SSPs combine these RCPs with different socio-economic pathways to provide a more comprehensive view of potential futures:

1. SSP1-1.9 and SSP1-2.6: These scenarios are optimistic, assuming sustainable development and significant mitigation efforts.
2. SSP2-4.5: This is a middle-of-the-road scenario with moderate mitigation and socio-economic trends.
3. SSP3-7.0: This scenario assumes high challenges to mitigation and adaptation, with fragmented and slow economic growth.
4. SSP5-8.5: This scenario represents a future with high fossil fuel use and rapid economic growth, leading to high emissions and severe climate impacts.

More specifically, the following climate projections for the Cayman Islands are summarised in **Table 4.27** below.

Table 4.27 Climate change projections for the Cayman Islands. Source: (Cayman Island Government, 2024)

Air temperature	Rainfall	Storms and Hurricanes	Sea level rise
• 2050s: 1.57˚C - 2.4°C rise • 2080s: 2.53˚C - 3.72˚C rise • Increased ‘hot days’ and ‘hot nights’, approx. 30 in every month between July-October • ‘Cool days’ and ‘cool nights’ disappear by mid-century for the	• Changes in rainfall patterns expected with generally heavier rainfall events • 2020s: drying trend established across Caribbean region • 2050s: region is 2% drier on average • 2100: region up to 17% drier	• More ‘major hurricanes’ (category 4 and 5) expected • Substantially more rainfall and peak winds intensity	• 2020-2050: 11.4 to 12.6 inches • 2090s: 21.7 to 28.3 inches

Air temperature	Rainfall	Storms and Hurricanes	Sea level rise
summer months and none between May-November	• Slightly wetter conditions through to mid-century changing to drier conditions by the end of the century		

Sea level rise in the Caribbean has varied, with projections of 0.29 to 0.32 metres by the 2050s. Tropical cyclones have increased in frequency and intensity in the North Atlantic since the 1970s, with strong hurricanes becoming more common in the Caribbean. Rainfall data also shows fewer but more severe events in recent years, with little change in projected average annual rainfall for the Cayman Islands until the 2080s (Cayman Islands Government, 2022).

4.8.2 Potential effects

An assessment of climate resilience and hazard vulnerability to ensure the long-term suitability and safety of the Project. This chapter in the ES will outline the critical environmental and climatic factors that will be considered, including the island's susceptibility to extreme weather events, sea-level rise, and other climate-related hazards.

At the time of writing, the Project is assumed to have an indefinite design life. The climate projection data in **Section 4.8.1.6** highlights that it is likely that climate conditions will change during the operational lifespan of the Project from current baseline levels. This could impact the operation and function of infrastructure and assets associated with the Project. Therefore, a Climate Change Resilience and Hazard Vulnerability Assessment will be undertaken for the operational phase of the Project.

The receptors for Climate Change Resilience and Hazard Vulnerability Assessment include the infrastructure and assets associated with the Project. Potential impacts are outlined in **Table 4.28**:

Table 4.28 Potential effects relating to climate change resilience and hazard vulnerability

Activity	Effect	Receptor
Operation		
Operation of the Project	Alterations to the natural water circulation and drainage patterns, disruption to groundwater recharge, and increased storm runoff volume of velocity.	Infrastructure and assets associated with the Project
	Heat stress to key infrastructure and assets.	
	Damage to infrastructure and assets in storm events from high winds or surface water flooding.	
	Drought conditions leading to water stresses or affecting the functionality of infrastructure and assets.	
	Sea level rise effects on minimum elevation and the stormwater management plan.	

4.8.2.1 Matters scoped out

The construction phase of the Project is expected to take place within the next few years and so it is therefore not considered likely that there will be large changes to the climate parameters from present day conditions. With construction anticipated to be completed by 2028, changes in air temperature and rainfall are anticipated to be far less than 1°C and 1% respectively compared to current averages. In addition, whilst there is the potential for non-climate hazards such as earthquakes to take place, responses to such events would be in accordance with established procedures.

Therefore, whilst hazardous climatic and weather events may occur, there is unlikely to be a significant change to climatic conditions which would significantly affect the resilience of the Project during construction. Therefore, it is proposed that a Climate Change Resilience assessment for the construction phase of the Project shall be scoped out of the assessment.

4.8.3 Assessment methodology

The following standards will be reviewed during preparation of the EIA:

- Stormwater Management Guidelines (Cayman Islands Planning Department and National Roads Authority (NRA), 2024).
- EIA Directive (2016) issued in accordance with the National Conservation Act (2013).
- International standards such as the UK's Environmental Quality Standards (2021).
- Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation, 2020.

4.8.3.1 Climate Change Resilience Assessment

4.8.3.1.1 Methodology

The receptors for the Climate Change Resilience and Hazard Vulnerability Assessment include the infrastructure and assets associated with the Project. The assessment will provide a description of how the Project will be designed to be resilient to projected climate change in the Cayman Islands region.

The methodology for the Climate Change Resilience and Hazard Vulnerability Assessment will be based upon the principles in the IEMA Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation (IEMA, 2020). A three-step methodology will be adopted for the Climate Change Resilience assessment and Hazard Vulnerability Assessment.

The first stage of the assessment aims to identify the climate variables, hazards and receptors associated with the Project which could be vulnerable to climate change and hazards during its lifetime. If deemed necessary, a more detailed climate vulnerability assessment is then undertaken following the identification of the influencing climate and hazard variables. This comprises an assessment of the level of risk associated with the hazards posed by the predicted changes in climate variables.

The approach carried out for each step of the Climate Change Resilience assessment is set out below.

Step 1: Identifying receptors and climate variables, hazards and receptors

The first step of the Climate Change Resilience and Hazard Vulnerability Assessment is to identify the climate variables and hazards within the study area, receptors associated with the Project and the likely effects of climate change.

The receptors for the assessment comprise of individual components associated with the Project, where section-specific climate and non-climate related hazards can be identified. The receptors identified shall include both known receptors (such as receptors reported/known to have already experienced a climate-related event (i.e. flooding)) and unknown receptors which are yet to be impacted according to available data and literature.

The climate variables that are likely to change as a result of climate change are identified from available climate projection data.

Step 2: Climate and hazard vulnerability assessment

Step 2 is undertaken where it is identified that receptors are considered to have the potential to be vulnerable to climate change or hazards, with consideration of primary mitigation incorporated as part of the design of the Project. The risks to the Project and its associated infrastructure are qualitatively identified through a hazard likelihood and consequence matrix. The descriptors of likelihood and consequence are provided in **Table 4.29** and **Table 4.30**. The matrix is detailed in **Table 4.31**.

Table 4.29 Descriptors of likelihood for climate or identified hazards

Likelihood	Description
Almost certain (5)	The climate or identified hazard is likely to occur numerous times during the anticipated operational lifespan of the Project, e.g. approximately once per year
Likely (4)	The climate or identified hazard is likely to occur on several occasions during the anticipated operational lifespan of the Project e.g. approximately once every five years
Moderate (3)	The climate or identified hazard will occur on limited occasions during the anticipated operational lifespan of the Project e.g. approximately once every ten years
Unlikely (2)	The climate or identified hazard will occur infrequently during the anticipated operational lifespan of the Project e.g. approximately once every 15 years
Very unlikely (1)	The climate or identified hazard may occur once during the anticipated operational lifespan of the Project e.g. the event could occur once over the lifetime of the Project.

Table 4.30 Descriptors of consequences as a result of climate or identified hazards

Consequence	Description
Catastrophic (5)	Permanent damage to infrastructure, resulting in a severe lasting effect to the Project to function. Very significant adverse effect to the surrounding environs requiring remediation and restoration
Major (4)	Extensive damage to infrastructure requiring major repairs and maintenance, resulting in a severe effect to the Project to function. Significant adverse effect to the surrounding environs
Moderate (3)	Limited damage to infrastructure requiring maintenance or minor repair, resulting in a potential effect to the Project to function. Adverse effect to the surrounding environs
Minor (2)	Small and localised damage to infrastructure and a minor effect to the Project to function. Potential for slight adverse effect to the surrounding environs
Insignificant (1)	No damage to infrastructure or the ability of the Project to function. No adverse effect to the surrounding environs

Table 4.31 Likelihood/consequence matrix for determining risk rating

Likelihood	Consequence				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain	Low	Medium	High	Extreme	Extreme
Likely	Low	Medium	Medium	High	Extreme
Moderate	Low	Low	Medium	High	Extreme
Unlikely	Low	Low	Medium	Medium	High

Where climate risks are identified as 'low', the resilience of the Project to projected effects of climate change or identified hazards is considered to be 'high', and effects are considered to be not significant.

Step 3: Mitigation and resilience rating

For climate risks identified to be 'medium' or 'high' in the likelihood/consequence matrix in Step 2 (see **Table 4.31**), secondary mitigation measures are identified. With the proposed mitigation measures taken into consideration, a residual risk rating is then assessed. For each hazard, a resilience rating is identified as one of the following:

- High – strong degree of climate resilience. Remedial action or adaptation may be required but is not a priority.
- Moderate – a moderate degree of climate resilience. Remedial action or adaptation is recommended.
- Low – a low level of climate resilience. Remedial action or adaptation is required as a priority.

Significance

The significance of the Climate Change Resilience and Hazard Vulnerability Assessment is determined through consideration of the climate risk (identified in Step 2) and resilience rating (identified in Step 3), applied to each climate hazard. **Table 4.32** presents the matrix used to identify the overall significance of the Climate Change Resilience assessment.

Table 4.32 Significance criteria

Risk rating	Resilience rating		
	High	Moderate	Low
Extreme	Significant	Significant	Significant
High	Not significant	Significant	Significant
Medium	Not significant	Not significant	Significant
Low	Not significant	Not significant	Not significant

Potential cumulative effects with respect to climate resilience may arise from other developments, which have the potential to exacerbate the vulnerability of the Project to the effects of climate change or identified hazards, for example other projects giving rise to increased flood risk. These cumulative effects will be considered in the relevant EIA topic (for example flood risk and hydrology) and summarised within the Climate Resilience and Hazard Vulnerability Chapter.

4.8.4 Mitigation measures

The Project will include resilience measures to address future climate change. This will take into account climate hazards such as flood risk, storms, and high temperatures. These steps will be incorporated into the design, and any additional mitigation measures proposed after Stage 3 of the Climate Change Resilience Assessment will be given.

4.9 Greenhouse gas assessment

The provision of the Project will give rise to GHG emissions. The potential change in emissions associated with the provision of the Project will be evaluated through a GHG assessment.

The term 'GHG' in this assessment will encompass the GHG's listed in the Kyoto Protocol as referenced in Legislation. It is likely that the primary emissions from the emissions sources associated with the release of carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O), but where appropriate the other 'Kyoto' gases will also be quantified. Where practicable, the results of the GHG assessment will be expressed in units of carbon dioxide equivalent (CO_2eq) which recognises that different gases have notably different global warming potential (GWP).

4.9.1 Baseline conditions

4.9.1.1 Cayman Island policies

The Cayman Islands, including Little Cayman, are actively working on climate change policies and GHG emission targets. Information is documented within:

- The Climate Change Policy: The Cayman Islands Government is developing a national climate change policy aimed at reducing greenhouse gas emissions and addressing climate risks.
- The National Energy Policy: This includes long-term targets for reducing GHG emissions. The policy aims to mitigate the impacts of climate change by promoting renewable energy and energy efficiency.

4.9.1.2 Emissions

The UK reports on GHG emissions for the Cayman Islands as part of its inventory requirements under the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. As part of this agreement, the DoE reports annual greenhouse gas emissions from electricity generation and fuel usage. Data is also gathered and provided on solvent use, waste management, mobile machinery, aircraft and air transport, shipping, agriculture, and forestry. Applicable standards will be assessed to ensure that the Project complies with rules and follows current recommendations.

The release of these GHG's in the Cayman Islands has been increasing since 1990 due to the growing population, expanding economy, and increases to quality of life (Cayman Island Government, 2024).

The Cayman Islands' energy economy relies heavily on imported petroleum products, over 97% of electricity demand is met by diesel generators, with 3% coming from utility-scale and distributed solar. The Cayman Islands GHG Inventory estimates that total emissions amount to 1,115,000 tonnes CO_2e, as shown in **Figure 4.7**, which was a decrease in emissions from the previous year, although it is noted that this was likely due to restrictions as a result of the Covid-19 pandemic. The Transport and Business sectors were responsible for 30% and 19% of total GHG emissions in 2022 respectively (**Figure 4.8**).

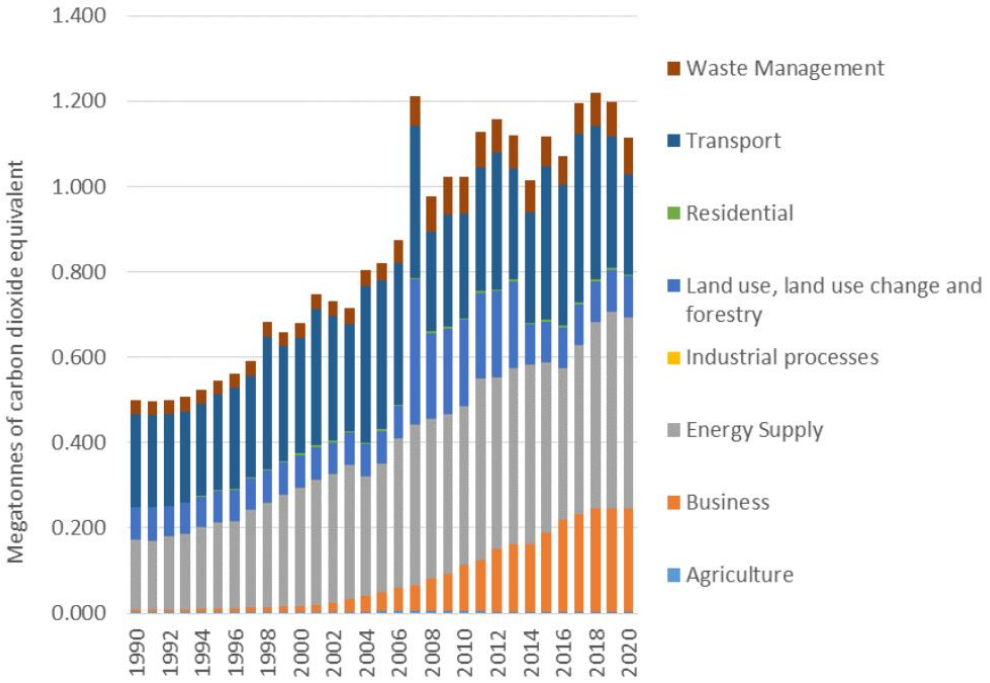

Figure 4.7 Cayman Island GHG emissions by sector 1990-2020. Source: Aether (2022) United Kingdom National Atmospheric Emissions Inventory 2022 Submission.

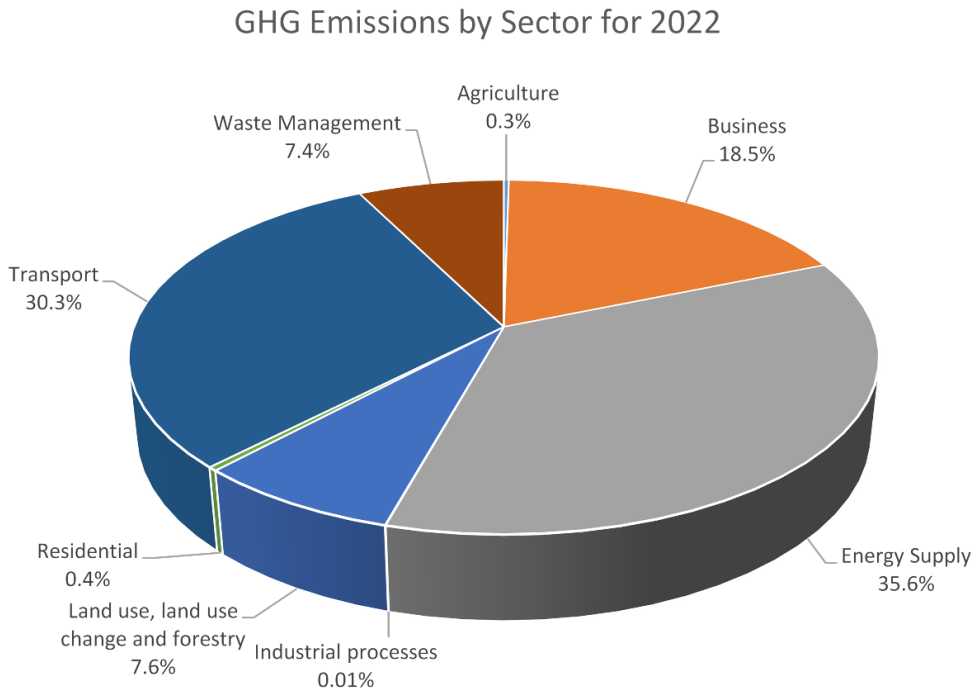

Figure 4.8 Greenhouse gas emissions by sector in 2022 for the Cayman Islands. Source: Cayman Islands' GHG Inventory 1990-2022 (Aether, 2024)

4.9.1.3 Target reduction

As stated within the final draft Cayman Islands' Climate Change Policy (2011), the Government of the Cayman Islands will take steps to achieve a low carbon climate-resilient economy. Consequently, the

Cayman Islands Government published the Cayman Islands National Energy Policy (NEP) in April 2024 (Cayman Island Government, 2024) which seeks to, amongst other things, reduce the country's carbon footprint in line with agreed national targets and establishes a national GHG emissions reduction target,

Updated Targets:

- 100% renewable energy by 2045
- 100% new vehicle sales from EVs by 2045
- 100% Emissions reductions from electricity supply by 2045

More specifically for GHG emissions:

- Electricity Supply
  - 30% emissions reduction over 2019 levels by 2030
  - 100% emissions reduction by 2045
- Ground Transportation:
  - 35% reduction by 2030
  - 90% reduction by 2045

4.9.1.4 Existing scenario

CAL operates flights between EBA and other flights on the Cayman Islands. CAL does not report its annual GHG emissions or currently have a Net Zero Plan, or similar, to outline how the company will reduce GHG emissions associated with its activities. It is likely that CAL's strategic goals will follow those stated in the National Climate Change Policy.

There are very few aircraft based on Little Cayman currently (**Table 4.33**). Historically, annual aircraft movements have remained relatively stable around 4,570 a year. However, it should be noted that this data only extends to 2000 so the full EIA shall obtain this updated data.

Table 4.33 Number of aircraft based on Little Cayman (2002 – 2020) Source: Synder and Associates Inc. from the Little Cayman Master Plan 2003.

Year	Single-engine piston	Multi-engine piston	Total
2002	0	0	0
2005	0	0	0
2010	1 – 2	0	1 – 2
2015	1 – 2	1	2 – 3
2020	1 – 3	2	2 – 4

The majority of the based aircraft will have the following characteristics:

- Fewer than ten (10) passenger seats
- An approach speed up to but not including 121 knots
- A wing span up to but not including 79 feet
- A gross weight under 12,500 pounds

The CAL operates two DeHavilland DHC-6-300 Twin Otter aircraft through its subsidiary, Cayman Airways Express, for flights between Grand Cayman and sister islands Cayman Brac and Little Cayman, and two Saab 340B+ aircraft for service to Cayman Brac (Cayman Airways Limited, 2022). These existing flight paths are greatly inefficient. For example, as detailed in the 2023 CIAA Masterplan flights (most notably in Little Cayman) are weight restricted and so luggage cannot always board at the same time as passengers, resulting in extra flights.

Additionally, the 2023 CIAA Masterplan states the airport is expected to focus solely on domestic operations, with passenger demand forecasted to reaching near 40,000 per year by 2041. Additionally, by 2041, 3,056 flights are predicted to operate, with 2,947 being commercial flights. Aircraft movements are expected to decrease significantly due to Twin Otters replacements by the larger ATR 72s.

4.9.2 Potential effects

4.9.2.1 Matters scoped in

Activities related to the Project are anticipated to emit GHGs. Emission sources that are likely to arise during construction include activities associated with the extraction, manufacture and transportation of materials ('embodied carbon') that would be used in the Project, fuel consumption by plant and equipment, as well as vehicles and aircraft (airplane and helicopter) moving to and from the site.

The change in land use such as removal of mangrove habitat associated with the Project will also result in a minor emission source. These vegetative habitats serve as terrestrial "sinks" for atmospheric greenhouse gases (particularly CO_2, CH_4 and N_2O). When carbon sinks are disturbed or removed, their ability to sequester and store carbon is decreased. This loss will be factored into the GHG assessment for the construction phase.

During the operational phase, the provision of the Project will result in a change in the fleet that uses the airport which will change the GHG profile and could potentially allow for better efficiency of aircraft movements. GHG emissions from the existing (baseline) scenario will be compared to a future scenario when the Project is operating at fully capacity. The operational phase assessment will also consider emissions from electricity and fuel consumption in plant, equipment at buildings, road vehicle movements, and waste disposal where information is available for both the baseline and future scenarios.

4.9.2.2 Matters scoped out

The receptor for the GHG assessment is the global atmosphere, and there are no common receptors between this assessment and other disciplines in the EIA. GHG emissions to atmosphere contribute to climate change, and therefore the effects are global and cumulative in nature. This is taken into account in defining the receptor (i.e. the global atmosphere) as high sensitivity. The IEMA guidance (IEMA, 2022) states that effects of GHG emissions from specific cumulative projects shall therefore not be individually assessed, as there is no basis for selecting which projects to assess cumulatively over any other.

Therefore, a cumulative assessment with other projects has been scoped out of the GHG assessment. This approach is in line with IEMA guidance 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' (IEMA, 2022).

Additionally, at the time of writing, there is no detailed plan for the decommissioning of the existing EBA as it is on private land. Therefore, this has been scoped out of the GHG assessment.

4.9.3 Assessment Methodology

4.9.3.1 Applicable guidance and standards

The following standards will be reviewed during preparation of the EIA:

- The Climate Change Act, 2008;
- The Environmental, Health and Safety Guidelines, General EHS Guidelines: Environment (IFC, 2023).
- Stormwater Management Guidelines (Cayman Islands Planning Department and NRA, 2024).

- EIA Directive (2016) issued in accordance with the National Conservation Act (2013).
- International standards such as the UK's Environmental Quality Standards (2021).
- Assessment Greenhouse Gas Emissions and Evaluating their Significance (IEMA, 2022).

The GHG emissions assessment will be carried out in accordance with the Greenhouse Gas Protocol (WBCSD & WRI, 2015), an international standard for corporate reporting. GHG emissions arising from activities associated with the construction and operation of the Project will be quantified.

The assessment will apply representative emission factors to activity data to determine GHG emissions associated with the Project. Emission factors will be obtained from sources such as the GHG conversion factors from data sources applicable to the Cayman Islands, or the UK Department for Business, Energy and Industrial Strategy (BEIS, 2024).

The emission sources that will be considered in the assessment will be defined once the activity data is collated, but it is likely that the source groups listed in **Table 4.34** will be considered in the assessment.

Table 4.34 Emission sources that will be considered in the assessment for the construction and operational phase.

Construction phase	Operational phase
Embodied emissions in construction materials, including runway / road material (concrete, asphalt etc.).	Electricity consumption for operational assets
Fuel consumption from road vehicles and vessels / aircraft (if applicable)	Fuel consumption from road vehicles
Fuel or electricity consumption from construction plant and equipment	Emissions associated with waste disposal requirements
Emissions arising from Land Use, Land Use Change and Forestry (LULUCF). I.e. mangrove removal	Fuel consumption from aircraft (compared to existing aircraft efficiency and schedule)
Emissions arising from the loss or removal of mangroves and seagrass and disturbance of peat and soils, if applicable or data are available.	Reduced sequestration potential of blue carbon habitats (i.e. mangrove and seagrass)

4.9.3.2 Significance

The IEMA guidance 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' (IEMA, 2022) provides significance criteria for the assessment of a project's emissions. The guidance emphasizes that all new GHG emissions contribute to a negative environmental impact, but some projects replace existing development or baseline activities with a higher GHG profile. The significance of a project's emissions shall be based on its net impact over its lifetime, which can be positive, negative, or negligible. The guidance recommends aligning significance criteria with the Paris Agreement, and applicable net zero commitments. The updated IEMA guidance provides relative significance descriptions to assist assessments, specifically in the EIA context. Section VI of the updated guidance describes five distinct levels of significance, not solely based on whether a project emits GHG emissions alone but how the Project contributes towards achieving a science-based 1.5°C aligned transition towards net zero. **Table 4.35**, below summarises the significance criteria to be used.

Table 4.35 Assessment significance criteria

Significance	Description
Major adverse	The Projects GHG impacts are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for Proposed Developments of this type. A Proposed Development with major adverse effects is locking in emissions and does not make a meaningful contribution to a regional or national emission reduction target

Significance	Description
Moderate adverse	The Projects GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for Proposed Developments of this type. A Proposed Development with moderate adverse effects falls short of fully contributing to a regional or national trajectory towards net zero.
Minor adverse	The Projects GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for Proposed Developments of this type. A Proposed Development with minor adverse effects is fully in line with measures necessary to achieve a regional or national trajectory towards net zero.
Negligible	The Projects GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for Proposed Developments of this type, such that radical decarbonisation or net zero is achieved well before 2050. A Proposed Development with negligible effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions.
Beneficial	The Projects net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without-Proposed Development baseline. A Proposed Development with beneficial effects substantially exceeds net zero requirements with a positive climate impact.

For the purposes of the EIA, major and moderate effects are considered to be significant in EIA terms.

4.9.4 Mitigation measures

Mitigation measures in relation to GHG emissions will be determined at the assessment stage, but could include the following:

- Construction phase
  - Limiting the amount of materials required during construction, and the use of low carbon alternatives where practicable (i.e. carbon with a low carbon content);
  - Efficient use of plant and equipment on site;
  - Utilising equipment that use power from the grid, opposed to diesel powered.
- Operational phase:
  - Adoption of energy efficiency measures in buildings;
  - Efficient design of the Project, reducing emissions from aircraft and road vehicles.

5 APPROACH TO EIA

5.1 Summary of approach to collation of baseline information required to inform the EIA

Table 5.1 summarises the baseline information required for the EIA of the Project so that the assessments can be carried out as described in **Section 3** and outlined in **Section 4**. As set out in **Section 1.5** the EIA consultant will collaborate with the design consultants to finalise the project description and confirm the impacts to be assessed (and therefore study area for each topic) within the EIA with the EAB prior to any surveys or modelling being undertaken.

Table 5.1 Summary of the approach to inform the EIA

Topic	Approach
Terrestrial and coastal ecology	Baseline surveys of terrestrial habitats and species, breeding and non-breeding birds as well as vantage point surveys are required to inform the EIA.
Cultural heritage and identity	Walkover surveys required to inform the EIA and verify data on sites of historic and archaeological interest and develop an initial historic characterisation and initial visual record of the Project area, built heritage and the historic character of Little Cayman.
Noise and vibration	A 7-day baseline sound level survey required in the vicinity of noise sensitive receptors near the Project boundary. Surveys may also be carried out at locations representative of noise sensitive receptors near the existing EBA. Modelling of aircraft noise during operation required to predict the overall impact of changes of noise on Little Cayman residents.
Air quality	Baseline NO2, SO2, CO and VOCs (specifically benzene, polycyclic aromatic hydrocarbons, and butadiene) monitoring survey is undertaken for a minimum period of 6 months; capturing data in both the wet and dry seasons is required to inform the EIA. Locations will include the closest sensitive human receptors, background locations away from any nearby air pollutant sources, as well as appropriate locations along the main roads.
Hydrology, drainage and water quality, contaminated land and natural resources	A Preliminary Conceptual Site Model (PCSM) will be developed as part of the establishment of baseline conditions. The PCSM will aid in the identification of potential sources of contamination within the site boundary as well as identifying the potential risks to sensitive receptors. A water features survey is required to verify the presence and type of water-related habitats in the area surrounding the Project.
Socioeconomics	To inform the EIA data will be collected from secondary sources like census data, government planning documents, and NGOs. Primary data sources will include consultation with key stakeholders, and socio-economic indicator data will be gathered on income sources, livelihoods, employment opportunities, and social services.
Visual and landscape effects	A photographic survey will be undertaken to provide a comprehensive set photographs from various viewpoints to document the current visual conditions. Viewpoints will be selected for the use of CGI to create visual simulations of the Project from key viewpoints which will form the basis of the EIA.
Climate resilience and hazard vulnerability	A desk-based assessment will be undertaken to identify the climate variables and hazards within the study area and the risks of those occurring and the receptors vulnerable to climate change or hazards and their resilience to each risk.
Greenhouse gas assessment	The desk-based GHG emissions assessment will be carried out in accordance with the Greenhouse Gas Protocol.

5.2 Outline EIA programme

An outline programme for the production of the EIA is provided in **Table 5.2,** below, which provides a guide for effective forward planning.

Following the appointment of a suitably qualified EIA specialist consultancy, the detailed scope of the surveys identified in this ToR required to inform the baseline of the EIA shall be developed and confirmed with the EAB. Consequently, a clear survey scope can be produced to commission specialist survey companies. Once commissioned, the surveys can commence. The timings provided in the programme are based on those recommended in each topic section in this ToR.

While the surveys are ongoing it is important that the design of the airport (the Project description) is developed, and the construction methods and operational activities are established so that the potential impacts on identified receptors can be accurately assessed.

At the same time, the initial sections of the EIA and all topic sections can be progressed, and the impact assessment sections commenced as far as possible while waiting for the survey and modelling data to be finalised for those topics which require surveys to inform the baseline.

Sufficient time must be allowed for the provision of the survey and modelling reports and then for the EIA itself to be finalised. Following this a review of the draft report by the proponent shall be allowed for and updates to be made prior to submitting the final report to the EAB for review and consideration.

Table 5.2 Outline EIA programme

Task	Month																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Review, refine and agree survey scope with EAB																								
Commission and undertake surveys																								
Terrestrial and coastal ecology																								
Bird surveys																								
Cultural heritage																								
Visual assessment																								
Noise																								
Air quality																								
Finalisation of survey reporting																								
Undertake modelling and reporting																								
Noise and vibration																								
Air quality																								
Hydrology, drainage, water quality, potential for contaminated land, geology, hydrogeology and natural resources																								
Development and provision of Project description, construction methodology and operational requirements																								
Production of EIA																								
Client review of EIA																								
Finalisation of EIA																								
Submission of EIA to Cayman authorities																								

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APPENDIX A – EAB SCOPING OPINION

Environmental Impact Assessment Scoping Opinion for the Proposed Relocation of the Existing Aerodrome on Little Cayman
Prepared by the Environmental Assessment Board Subcommittee of the National Conservation Council

10 November 2023

Finalised 15 December 2023

1. Introduction

At its meeting on 28 August 2023, the National Conservation Council (NCC) agreed to appoint an Environmental Assessment Board (EAB) comprising members of the Department of Environment (DoE), Planning Department, Civil Aviation Authority, and Water Authority as well as The Cayman Islands Fire Service. The EAB has been appointed to guide the Environmental Impact Assessment (EIA) for the relocation of the Existing Aerodrome on Little Cayman (Edward Bodden Airfield) as proposed by Cayman Islands Airport Authority ('the proponent') as shown in Figures 1 & 2. Two separate EABs have been convened for EIAs for projects by the proponent on both Cayman Brac and Grand Cayman, and members from those EABs, including the Cayman Islands Coast Guard, contributed to the EIA scoping exercise. A summary of the appointments by the NCC for each EAB is provided below in Table 1:

Table 1. NCC appointments of Environmental Assessment Boards for each Environmental Impact Assessment for projects by the proponent.

Agency	Relevant EIA		
	Grand Cayman	Cayman Brac	Little Cayman
Civil Aviation Authority	Yes	Yes	Yes
Cayman Islands Fire Service	Yes	No	Yes
Coast Guard	Yes	No	No
Hazard Management Cayman Islands	Yes	No	No
National Roads Authority	Yes	No	No
Department of Planning	Yes	Yes	Yes
Water Authority	Yes	Yes	Yes

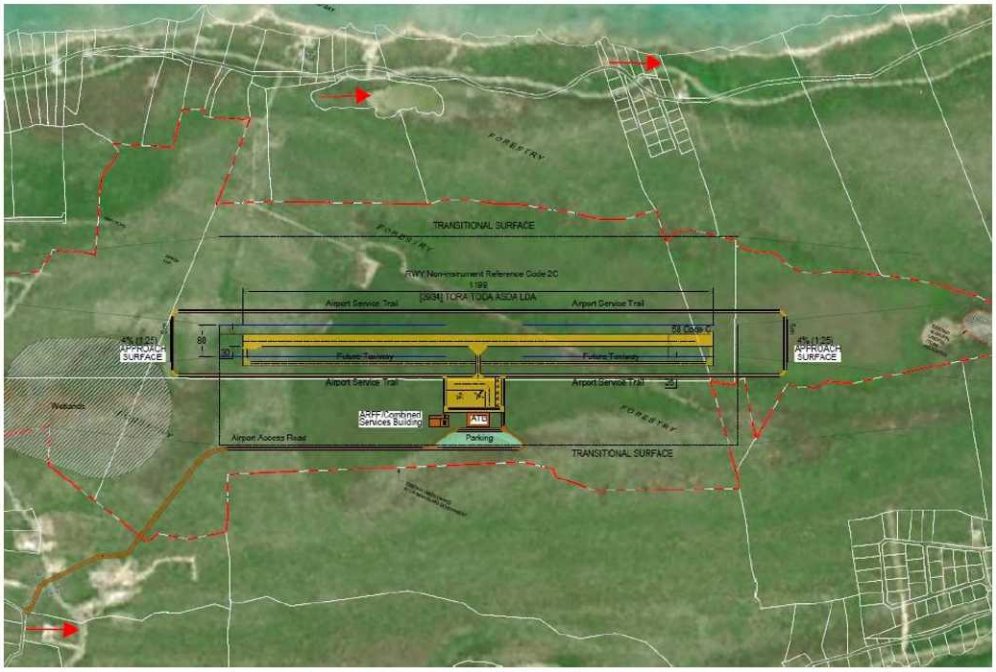

Figure 1. Site of the proposed relocation of the existing aerodrome on Little Cayman (Edward Bodden Airfield) (CIAA, 2023)

Figure 2. Site of the proposed relocation of the existing aerodrome in relation to the existing Edward Bodden Airfield (CIAA, 2023)

In accordance with the EIA Directive (2016), the following EIA Scoping Opinion outlines the likely significant effects of the project which will need to be assessed as part of the EIA process.

2. Background

2.1 May 2023 – Request for EIA Scoping

The proponent voluntarily decided to carry out an EIA for the proposed relocation of the aerodrome and submitted a request for EIA scoping. At their meeting on 28 August 2023, the NCC determined that the proposed relocation of the aerodrome falls within Schedule 1 of the National Conservation Act and agreed that an Environmental Impact Assessment was needed. At the same meeting, as outlined above, the NCC appointed the EAB to guide the EIA process.

2.2 September 2023 – EIA Scoping of Project Proposal

On 27 September 2023, the EAB met for an initial discussion on the scoping of the EIA. The result of this meeting is the EIA Scoping Report herein.

3. Proposed Project

The Cayman Islands Airports Authority, as project proponent, is proposing the relocation of the Edward Bodden Airfield to land owned by the CIAA in the centre of Little Cayman. Currently, the aerodrome operates under an exemption from the Civil Aviation Authority (CAA), permitting the use of the airfield by any de Havilland DHC-6 (DHC-6-300) operated by Cayman Airways Express. To adhere to International Civil Aviation Organization (ICAO) standards, the proponent has stated that they must relocate or modify the existing aerodrome to meet regulations. Various concepts have been explored in this regard, including modification of the existing aerodrome or introduction of new alternative services. To date, the concepts considered include:

1. Modifying the existing aerodrome to meet ICAO standards,
2. Shutting down the existing aerodrome and introducing a helicopter service,
3. Shutting down the existing aerodrome and introducing a ferry service from neighbouring Cayman Brac,
4. Shutting down the existing aerodrome and introducing a seaplane service, and
5. Relocating the aerodrome to lands owned by the CIAA in the centre of Little Cayman.

It is understood that public input during outreach exercises led to the abandonment of options 2, 3 and 4. Given a number of challenges associated with option 1, the proponent has expressed a preference for the implementation of option 5, entailing the relocation of the aerodrome to lands already owned by the CIAA in centre of Little Cayman (Block 80A Parcel 179).

The proposed relocation of the aerodrome will include the following measures:

- A new 5000 ft long runway / 1500 m runway strip and Obstacle Limitation Surface (OLS) meeting several applicable airport certification standards, with 240 m runway end safety areas (RESAs) on each end. The proposed runway is to have all required visual aids – including paint, signs and apron lighting (with associated field electrical vault and backup generator),
- A new airport terminal to meet requirements for capacity, security and passenger processing,
- A new Aircraft Rescue and Fire Fighting (ARFF) tender shelter to meet requirements and house equipment, and
- A new landside access area and adequate parking.

The proponent has indicated that the existing aerodrome is at high risk of having the exemption and operations certificate revoked if changes are not implemented soon.

4. Consultation

Prior to the EIA process, the CIAA conducted a number of public consultation sessions, which informed and guided the direction of the preferred project proposal.

Under the EIA process, no other government entities outside of the members of the EAB have been consulted on the project to date.

5. Scope of the EIA

5.1 General EIA Methodology

The EIA methodology shall follow the requirements of the NCA and the EIA Directive (2016). Particular reference should be made to Schedule 2 of the EIA Directive which contains the information for inclusion in Environmental Statements (ES). The methodology to be employed to assess the effects for each topic shall be agreed as part of the Terms of Reference.

Generally and briefly, the ES shall:

- Describe and state the need for the project,
- Consider alternatives and justify why it was decided to choose the proposed runway layout/design and relocation of the aerodrome,
- Consider the “Do Nothing” option,
- Identify and assess the baseline conditions for each topic identified below,
- Identify the potential environmental receptors (especially sensitive receptors) which may be impacted by the proposed runway expansion and may need to be considered as part of the assessment,
- Identify mitigation measures for each topic identified below and identify any residual effects,
- Undertake a Demolition and Construction Impact Assessment including a prediction of impacts for each topic identified below,

- Undertake a Completed Development Impact Assessment, including a prediction of impacts for each topic identified below, and
- Undertake a Cumulative Effects Assessment.

As per the EIA Directive (in particular Schedule 3), each ES shall include an Environmental Management Plan which shall include the mitigation measures recommended and present procedures and reporting relationships. A Non-Technical Summary is also required as part of the EIA process. Further detail will be agreed as part of the Terms of Reference.

5.2 Consideration of Reasonable Alternatives

The proponent has identified several alternatives to the proposed relocation of the aerodrome. It is noted that the CIAA Airport Master Plan reviewed alternatives at a high level and without agreed criteria or objectives. It is important that the ES provides further information about these alternatives and the approach used to select or discount them. Although the ES will focus on the proposed relocation of the aerodrome, the proponent must ensure that there is an assessment of reasonable alternatives including consideration of alternative locations and layouts. The proponent must also ensure that the environmental effects of any proposed alternatives have undergone a form of consultation (in this case, public consultation) that may influence their selection, and that any alternatives are adequately considered against each other.

5.3 Topics with Significant Effects

There is the potential for likely significant effects, during both the construction works associated with the proposed runway expansion and once the expanded runway is complete and operational, for the below topic areas:

- Terrestrial Ecology and Wildlife Management including Impacts to Protected Areas,
- Cultural Heritage, Cultural Identity and Socioeconomics.
- Noise and Vibration,
- Hazard Vulnerability and Climate Resiliency,
- Hydrology, Drainage, Water Quality and Natural Resources, and
- The Need for Fill Material.

These topics shall be included as chapters within the ES.

5.4 Terrestrial Ecology and Wildlife Management

Affected Resources

The proposed relocation of the aerodrome has the potential to affect terrestrial ecology. The landcover on the site consists of dry shrubland, as well as seasonally flooded mangrove shrubland in addition to man-modified areas. (Refer to figure 3).

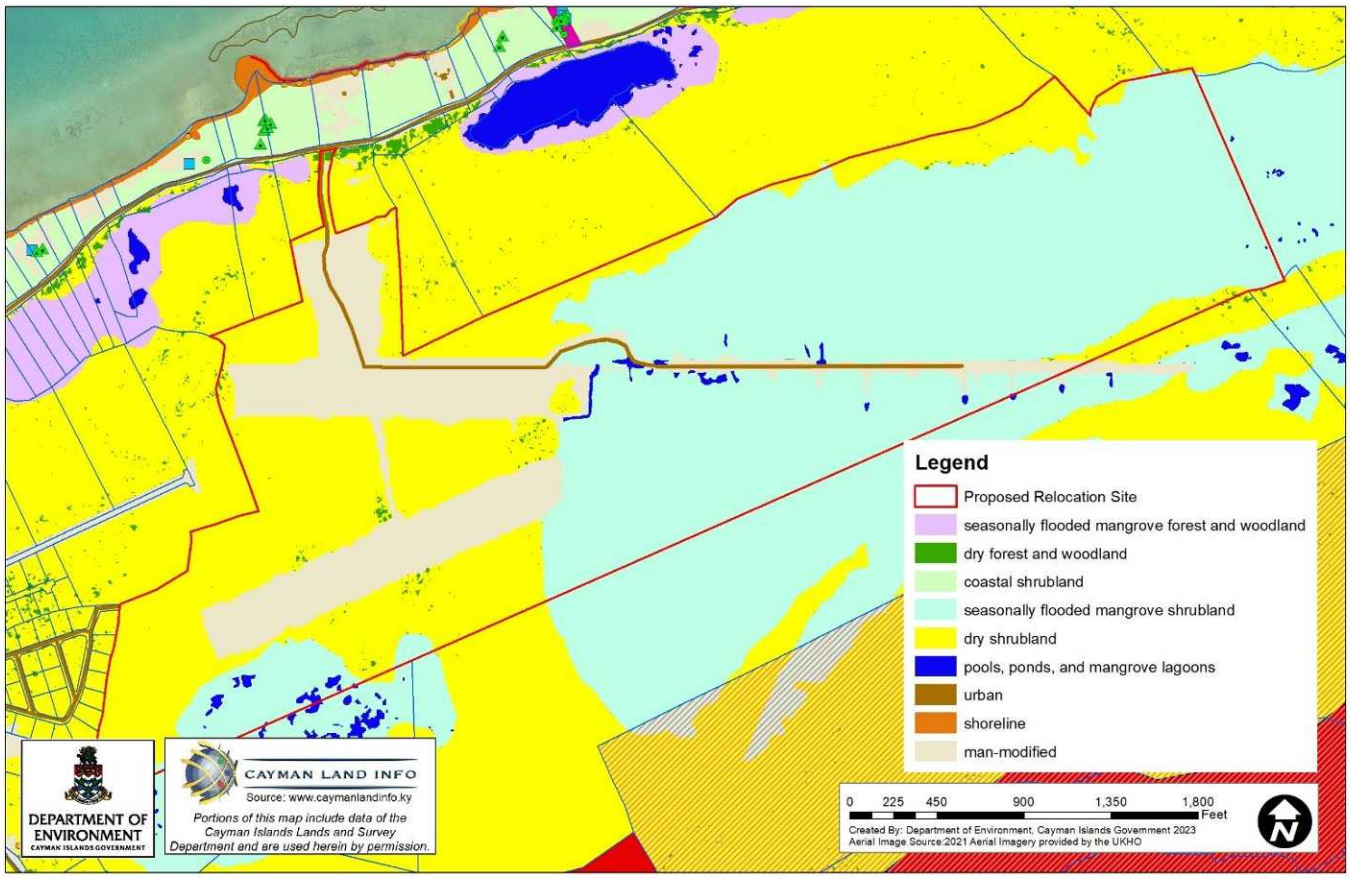

Figure 3. Landcover map of the proposed relocation site, mapped using 2013 aerial imagery (Source: DoE Landcover Mapping, 2013).

Dry shrubland and mangrove shrubland, along with the associated pools and ponds are important habitat for much of the flora and fauna found on Little Cayman. The site is located in close proximity to The Booby Pond Nature Reserve and Rookery, designated as a Wetland of International Importance under the Ramsar Convention. This area is home to one of the largest breeding colony of Red-footed Boobies (*Sula sula*) in the Caribbean region (at least 30% of the total Caribbean population), and the only breeding colony in the Cayman Islands. In addition to this, the pond and surrounding vegetation is home to a growing breeding colony of Magnificent Frigatebirds (*Fregata magnificens*). The dry shrubland surrounding the pond provides habitat for the endemic Sister Islands Rock Iguana (*Cyclura nubila caymanensis*), a Part 1 Schedule 1 Protected Species under the National Conservation Act (2013). These iguanas have a tendency to be attracted to roads and other paved areas for

thermoregulation and social interaction and, as such, may be impacted by the construction and operation of the proposed aerodrome.

The area and proposed access road also includes habitat that is home to Little Cayman's endemic snail, *Cerion nanus*. These snails are critically endangered and are a Part 1 Schedule 1 Protected Species under the National Conservation Act (2013).

Potential Impacts

The proposed relocation of the aerodrome, with the associated clearing and required filling works, will permanently alter important habitat to the flora and fauna of Little Cayman. Impact to this habitat will result from the construction of the aerodrome, and also from the day to day operation of the airport.

The proposed access road is currently depicted as going through part of a Protected Area for *Cerion nanus*, the construction of which would constitute an offence under the National Conservation Act unless it is authorised by the National Conservation Council.

Management of terrestrial ecology during operation of airports is already a concern, with bird control measures (including lethal methods) regularly employed on both Grand Cayman and Cayman Brac. Many bird species rely on ponds and wetlands as stopover points during migration. The area contains a number of wetland ponds and a large area of low lying mangrove shrubland. Eliminating these resting and foraging areas can disrupt migration patterns, leading to exhaustion and decreased survival rates, eventually leading to a decline in biodiversity. The small size of Little Cayman has the potential to amplify these impacts.

Construction of the aerodrome will involve the use of heavy machinery and the paving of large areas of currently untouched habitat. This is likely to disturb ground-nesting iguanas. The associated large scale clearing of vegetation and necessary site preparation has the potential to disrupt existing iguana nests or interfere with nesting behaviours.

The construction of a larger airport has the potential to increase passenger numbers to Little Cayman, and with this comes the potential for accelerated development, particularly in the absence of a Development Plan for the island. As such, the relocation of the aerodrome has the potential for a number of indirect impacts on ecology. This will be explored further under Cultural Heritage, Identity and Socio-economics.

Therefore, the EIA shall include an Ecological Impact Assessment which assesses:

- Direct impacts on ecology during construction and operation,
- Direct impacts to nearby protected areas (refer to Figure 4) resulting from construction and day to day operation of the aerodrome, and
- Indirect impacts on ecology during construction and operation including wildlife hazard management.

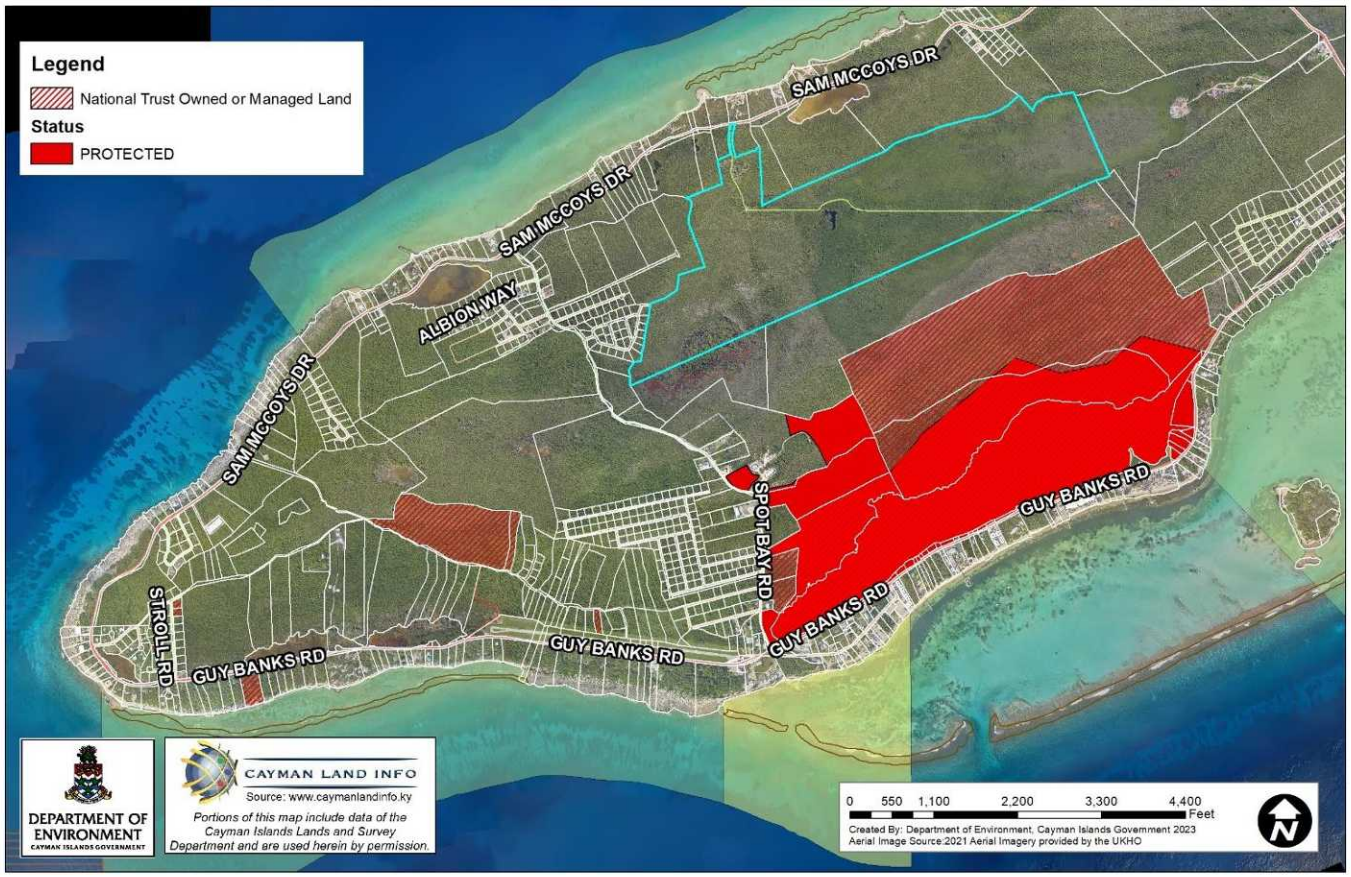

Figure 4. Terrestrial Protected Areas near the site of the proposed aerodrome relocation (Aerial Image Source: UKHO, 2021).

5.5 Cultural Heritage, Identity & Socio-economic

Affected Resources

As the smallest of the Cayman Islands, Little Cayman has a unique cultural identity. The island's cultural identity is rooted in its traditional heritage, tight-knit community and historical connection to seafaring. The smallness of the island, combined with its low population and relative isolation have all contributed to the unique character of Little Cayman. Little Cayman includes several areas that have been shortlisted for UNESCO World Heritage status to recognize places of outstanding natural or cultural value. The island has a small population, and remains largely undeveloped.

Potential Impacts

The small population and relatively undeveloped nature of Little Cayman has remained that way, in part, due to its relative isolation. The construction of a larger aerodrome is likely to have impacts on development of the island and therefore permanent impacts on the cultural identity of Little Cayman.

The potential impacts to cultural heritage and identity resulting from the construction of the aerodrome include:

- Changes in community dynamics – an influx of tourists and potentially new residents facilitated by the improved accessibility can lead to cultural changes to local community dynamics and risks the dilution of the island's unique cultural identity
- Economic changes – the development of the new airport is likely to lead to increased tourism and trade, which can come with economic benefits but is also likely to shift economic activities and livelihoods of local residents to further rely on tourism. There may be changes in local employment structure
- External Influences – with increased connectivity comes increased likelihood of external influences, including foreign investment, potentially overshadowing or eroding the cultural identity of the island
- Environmental changes – the cultural heritage of Little Cayman is closely tied to the Island's natural environment (both on land and at sea). As such, environmental changes caused by the development of the new aerodrome is likely to have a knock on cultural impact. Additionally, the increase in both local residents and visitors that will likely follow the construction of a new aerodrome has the potential to result in increased pressure on island resources, including indirect impacts on environmental resources, as well as an increase in the level and scale of development activity on Little Cayman.

Therefore, the EIA shall consider:

- Impacts during construction, including consideration for housing and infrastructure for construction workers, as well as the impact a large construction project will have on local residents and businesses,
- Long term forecasting of passenger numbers over the lifespan of the project, in particular the impacts to the local community given the seasonal nature of tourism and residency,
- Effects on the quality of life and tranquillity currently enjoyed by the local population as well as tourists on Little Cayman, and
- Indirect effects on environmental resources as a result of increased population/number of visitors.

5.6 Noise and Vibration

Affected Resources

Although sparsely populated, there are a number of properties in close proximity to the proposed aerodrome. The economy of Little Cayman is also highly dependent on tourism and there are a number of nearby tourism sites that may be affected by noise and vibration both during construction and during operation of the airport.

Potential Impacts

Construction of the new airport involves earthwork and grading, both dependant on heavy equipment. Heavy equipment often generates high noise levels, causing disturbances for nearby residents, tourists, and wildlife and potentially impacting quality of live. In addition to noise, vibration resulting from construction activities can impact nearby buildings and homes, potentially to the point of causing structural damage.

In addition to the impacts resulting from construction of the aerodrome, the daily operation of the airport is also likely to result in noise and vibration impacts. A large amount of noise is generated by aircraft activities (take-offs, landings, general operation) and ground operations (aircraft maintenance, fueling, cargo handling). Aircraft take-offs and landings can also generate ground vibrations which may affect nearby residents and buildings in a similar manner to construction activities.

The combination of the above over time can lead to various health and environmental concerns, including annoyance, sleep disturbance and stress among residents living close to the aerodrome. It is also possible that the construction and day to day operation of the aerodrome will reduce property values and reduce the overall quality of life for the surrounding area.

Therefore, the EIA shall consider:

- Noise and vibration impacts on surrounding properties during construction, and
- Noise and vibration impacts on surrounding properties during operation of the proposed aerodrome.

5.7 Hazard Vulnerability and Climate Resiliency

Affected Resources

The proposed relocation of the aerodrome will require the permanent alteration of a large area of seasonally flooded mangrove shrubland. This could significantly affect the resiliency of the surrounding area to accommodate flooding associated with severe storm events.

The site of the proposed relocation also includes areas of low and high elevation which will be required to be filled in or levelled, which may change the area's vulnerability to hazards.

Due to the low elevation of Little Cayman the project will be vulnerable to climate change in general and specifically to sea level rise. In order for the project to be successful it will be necessary to review impacts of climate change and sea level rise.

Potential Impacts

The removal of the seasonally flooded wetland areas, as well as the flattening of the elevation profile across the site has the potential to significantly reduce the resiliency of the immediate area to withstand extreme weather events.

The ES shall identify how risks from major disasters will be mitigated and assess the potentially significant effects of the relocation of the aerodrome on the vulnerability of the island to major disasters. At a minimum, the EIA shall include:

- A Hazard Vulnerability Assessment including hurricanes, storm surge, and earthquakes,
- An assessment of climate resiliency including identification of the options to climate proof the aerodrome in light of anticipated climate change and especially expected sea level rise,
- A Flood Risk Assessment, including in the context of rising sea level forecasts (NOAA estimate of 1 foot in 30 years), and
- Identification of how the proposed aerodrome would be used during post-disaster operations and crisis situations.

5.8 Hydrology, Drainage and Water Quality

Affected Resources

The site of the proposed relocation of the aerodrome contains several ponds that could be affected by changes in quantity and make-up of run-off. Due to the limited elevation of the site, there is also a potential that groundwater may be affected. It is also adjacent to a Ramsar wetland of international importance. There are also a number of residential and commercial properties in the immediate vicinity for which water quality is likely to be a concern. The potential significant volume of fill material that may be required from a quarry outside the project area will impact natural resources outside of the project area.

Potential Impacts

Construction of the aerodrome will require filling and grading along with the installation of drainage systems. These alterations can change the natural drainage patterns of the area. If not properly managed, these changes in drainage patterns have the potential to result in increased stormwater run-off, leading to erosion, flooding and sedimentation of nearby water bodies and impacts on groundwater.

The increase in impervious site surfaces will lead to increased surface water run-off that will also need to be adequately managed. Natural drainage patterns will be impacted in the project area. Inadequate stormwater management can lead to pollutants, such as oil, grease, chemicals and heavy metals being washed into nearby water bodies and groundwater, causing pollution.

If not managed adequately, deterioration of surface and ground water quality has the potential to cause pollution and odour issues for the nearby properties including a Ramsar wetland of international importance.

The volume of aggregate and fill material required from a quarry outside of the project area may impact natural resources outside of the project area, including but not limited to surface water, groundwater, ecology and wildlife.

Therefore, the EIA shall consider:

- Impacts on surface water and groundwater during construction and operation, and
- Impacts on water quality in the ponds during construction and operation.

5.9 The Need for Fill Material

At this preliminary stage of the project, there is no target for the minimum elevation of the runway and associated infrastructure. Having completed a cursory review of the elevation of the project area using the 2013 LIS Digital Terrain Model, about 75% of the runway will be located in an area of 2 – 6 ft elevation above mean sea level (eastern part). Whereas the western part has more elevation and some material from that area may be used to fill in lower areas, it is possible that a significant volume of aggregate and fill will need to be sourced from the quarry in Little Cayman or from somewhere else. The impact of the additional quarrying for aggregate and fill for this project also needs to be assessed.

Therefore, the EIA shall consider:

- The volume of fill required,
- The source of fill, and
- Any direct or indirect impact of additional quarrying for aggregate and fill.

6. Next Steps

The next stage of the process is for the proponent to provide the EAB with details of up to three suitably qualified consultancy firms to carry out the EIA based upon the requirements outlined in the EIA Scoping Opinion. The Consultant's proposals shall provide details of the professional team composition, including Curricula Vitae for all team members who should have at least five years professional experience of similar projects. Consultants should:

(i) Include a qualified and experienced EIA Coordinator with experience of coordinating EIAs for similar aviation projects on small islands,

(ii) Include a qualified (external) terrestrial biologist with experience in wildlife hazard management in aerodromes and in similar habitats,

(iii) Include a qualified water resources engineer or hydrologist/hydrogeologist capable of assessing (and modelling, as necessary) the stormwater drainage patterns and flows, flood risks, and risks to nearby water quality, including in the context of rising sea level forecasts,

(iv) Outline relevant experience in undertaking noise and vibration assessments,

(v) Outline relevant experience undertaking hazard vulnerability assessments including flood risk assessments on small limestone islands, and

(vi) Outline relevant expertise in undertaking geological and hydrogeological reviews of the project area and areas outside of the project area where aggregate and fill material will be sourced.

The Consultant may propose suitable Sub-Consultants in specific areas of expertise as applicable. Credentials of such Sub-Consultants should be submitted as part of the Submission. The EAB will review the submissions from each consultancy team in order to confirm that the teams have the required experience and expertise to address the issues outlined in this EIA Scoping Opinion. Upon completion of the EAB's vetting process, the proponent is free to select consultant(s) from those which have been deemed competent by the EAB.

Upon appointment of the EIA consultants the EAB will make itself available to meet with the proponent and its EIA consultancy team to discuss the development of the draft Terms of Reference for the EIA, based on this EIA Scoping Opinion. Once agreed, the draft Terms of Reference will need to go out for public consultation (including discussion in at least one public meeting) for a period of 21 consecutive days and then finalised, taking into account the public's input all in accordance with the EIA Directive.

We trust that this information is of assistance. Please do not hesitate to get in touch should you have any questions.

Gina Ebanks-Petrie
Director, Department of Environment & EAB Chair

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Change is happening. And it's happening fast – from climate and digital transformation to customer demands and hybrid working. The speed and extent of these changes create complex challenges which cannot be addressed in isolation. New perspectives are needed to accommodate the broader societal and technological picture and meet the needs of our ever-changing world.

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