ENVIRONMENTAL

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ADDENDUM
ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED PRINCESS HOTELS AND RESORTS DEVELOPMENT, COVE, HANOVER, JAMAICA

PHASE 2
CONSTRUCTION
ROADWAY

DRAFT NO. 1

DOCUMENT TITLE	**Addendum to the Environmental Impact Assessment for the Proposed Princess Hotels and Resorts Development, Cove, Hanover, Jamaica for the Phase 2 Construction Roadway**
PREPARED BY	**CL Environmental Co. Ltd.** **20 Windsor Avenue** **Kingston 5**
DATE	**April 2024**
VERSION AND NO.	**Draft No. 1**

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1.0 INRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Overview of Project Phases

Princess Resorts is developing a combination of four distinct hotel blocks and fourteen overwater sea rooms. Each hotel will cater to a different clientele, ranging from adults-only packages to family fun parks and public beach clubs. The resort's four hotels will be constructed in two phases. During each phase, two hotels will share service areas, resulting in a lower plot ratio and environmental impact, as they will function operationally as a single hotel. This entails having one centralized kitchen, industrial area, warehouse area, personnel area, etc., for each phase. Additionally, one of the two hotels in each phase will be designated as "Adults Only" to diversify the product offering. The resort, totalling 2,037 rooms, will be distributed as follows:

- **Phase I: 1,012 Hotel Rooms**
    - Hotel I: 422 Rooms
    - Hotel II: 590 Rooms
- **Phase II: 1,025 Hotel Rooms**
    - Hotel III: 590 Rooms
    - Hotel IV: 435 Rooms

1.1.2 Project Application and Status

After submitting the permit application for the proposed project on September 17, 2019, it was determined that an Environmental Impact Assessment (EIA) was required. In compliance with the Terms of Reference (TORs) approved by the National Environment and Planning Agency (NEPA), CL Environmental Co. Ltd. conducted the Environmental Impact Assessment (EIA), with the report submitted in January 2020.

Following the approval of the EIA, Inco Land Limited was granted the following permits for the project on August 26, 2020, and subsequently amended January 7, 2021:

- Environmental Permit for Hotel or Resort Complex of 2001-3000 rooms (Environmental Permit number 2019-09017-EP00237)
- Environmental Permit for Construction and Operation of Overwater Rooms (Environmental Permit number 2019-09017-EP00238)

Construction commenced in February 2021 and is still ongoing.

1.1.3 Phase 2 Roadway

To facilitate Phase 2 at Princess Hotels and Resorts, Cove, Hanover, an access construction roadway must be constructed. The proposed roadway begins near the front gate of the existing road, passes through a goat pen, and extends to the construction area within the project property (Figure 1-1).

1.2 SCOPE OF WORK

A rapid impact assessment of the proposed roadways and alternate routes was undertaken, with the primary objective of examining the vegetative features of the potential roadways. The findings from the ecological surveys were considered alongside other advantages and disadvantages for each alternative to propose the most viable roadway alternative with minimal impact.

Figure 1-1 Proposed Phase 2 construction roadway alignment

2.0 LEGISLATION AND REGULATORY CONSIDERATION

National and international legislation relevant to the ecological assessment and construction of the proposed roadway are described in the below sections.

2.1 NATIONAL LEGISLATION

2.1.1 Development Control

2.1.1.1 The Town and Country Planning Act (TCP Act) 1957 (Amended 1987)

The Town and Country Planning Act (TCP Act) 1957 (Amended 1987) provides the statutory requirements for the orderly development of land through planning, as well as guidelines for the preparation of Development Orders. A Development Order is a legal document which is used to guide development in the area to which it applies, and the TCP Act is only applicable in an area where a Development Order exists. It constitutes land use zoning map/s, policy statements and standards relating to land use activities. Additionally, tree Preservation Areas and Conservation Areas (as specified areas the gazetted Development Orders) are two types of protected areas associated this Act.

The TCP Act establishes the Town and Country Planning Authority, which in conjunction with the Local Planning Authorities (Municipal Corporations and formerly Parish Councils), are responsible for land use zoning and planning regulations as described in their local Development Orders. The TCP Act is administered by the National Environment and Planning Agency. Specific to this project, associated local agencies are:

- Negril Green Island Area Local Planning Authority (NGIALPA) [1]
- Hanover Municipal Corporation (formerly Hanover Parish Council)

The Development Order relevant to this is the Negril and Green Island Area Development Order, 2015, which is "called in" by the TCPA. The Negril Green Island Area Local Planning Authority (NGIALPA) is the local planning authority responsible for the Negril and Green Island Area Development Order area.

[1] It should be noted that the NGIALPA is not a Parish Council, however, has similar planning functions as other local planning authorities. The powers and duties of the NGIALPA are declared to be the powers and duties conferred or imposed on the local planning authority by the Town and Country Planning Act. The NGIALPA Board consists of representatives from the Hanover and Westmoreland Municipal Corporations and Negril organisations, including the Negril Area Environmental Protection Trust (NEPT), Negril Chamber of Commerce (NCC), and the Jamaica Hotel and Tourism Association (JHTA).

2.2 ENVIRONMENTAL CONSERVATION

2.2.1 Endangered Species (Protection, Conservation and Regulation of Trade) Act 2000 and (Amendment of First, Second and Third Schedules) Order 2021

The Endangered Species (Protection, Conservation, and Regulation of Trade) Act was enacted in 2000 to formalize Jamaica's commitments under the Convention for the International Trade in Endangered Species of Wild Fauna and Flora (CITES). This legislation regulates both international and domestic trade in endangered species originating from Jamaica and encompasses provisions for the conservation and management of endangered fauna and flora.

The regulations associated with the Endangered Species (Protection, Conservation, and Regulation of Trade) Act were most recently revised in 2021. These amendments included updates to the listings of endangered species facing extinction, species at risk of extinction, or species requiring effective control. Additionally, it addresses species regulated by contracting Parties within their jurisdiction to prevent or restrict over-exploitation, necessitating cooperation among Parties to control trade in such species.

See section 5.1 for further detail of the flora observed along the proposed route.

2.2.2 Mangrove and Coastal Wetlands Protection - Draft Policy and Regulations 1996

This policy provides a review of the issues affecting wetlands in Jamaica as well as the Government's role and responsibility. Five main goals are outlined which include guidelines for wetlands development, cessation of destructive activities, maintenance of natural diversity, maintenance of wetland function and values and integration of wetland functions in planning and development.

A detailed account of the mangrove species and communities found at site may be found in Sections 5.1.

2.3 INTERNATIONAL LEGISLATIVE AND REGULATORY CONSIDERATIONS

2.3.1 United Nations Convention on Biological Diversity

Signed by 150 government leaders during the 1992 Rio Earth Summit, the Convention on Biological Diversity (CBD) is dedicated to advancing sustainable development. The CBD is considered instrumental in actualizing the principles outlined in Agenda 21, recognizing that biodiversity encompasses more than just flora, fauna, and microorganisms, but also addresses human necessities such as food security, medicines, clean air and water, housing, and a pristine environment. Jamaica acceded to the CBD on April 6, 1995. The country's Green Paper Number 3/01, titled 'Towards a National Strategy and Action Plan on Biological

Diversity in Jamaica', underscores Jamaica's ongoing commitment to fulfilling its obligations as a signatory to the Convention.

2.3.2 Convention on Wetlands of International Importance especially as Waterfowl Habitat, "Ramsar Convention" 1971

The Ramsar Convention, an intergovernmental treaty established on February 2, 1971, in Ramsar, Iran, centres on the preservation of ecological wetland systems and fostering sustainable utilization of their resources. The Convention's mission, endorsed by the Parties in 1999 and revised in 2005, emphasizes "the conservation and wise use of all wetlands through local, regional, and national actions, as well as international cooperation, as a contribution towards achieving sustainable development worldwide." Article 2.2 states:

> Wetlands should be selected for the List on account of their international significance in terms of ecology, botany, zoology, limnology or hydrology" and indicates that "in the first instance, wetlands of international importance to waterfowl at any season should be included.

Jamaica became a contracting party on 7 February 1998 and has 4 sites covering a combined total of 37,847 hectares (378.47 km^2).

3.0 DESCRIPTION OF THE PROPOSED WORKS

3.1 PROJECT SCOPE

The construction roadway serves as a temporary service road planned for Phase 2 of the Princess development. With a proposed width of 12 meters, the road begins before the front gate adjacent to the existing road, passing through a goat pen and extending to the construction area within the project property (Figure 3-1). This road is crucial to facilitate Phase 2 operations at Princess Hotels and Resorts Cove, Hanover, underscoring the need for constructing an access roadway.

The construction road will serve as a vital infrastructure component, facilitating access to and from the project site for construction activities, transportation of materials, machinery, and personnel. With a width of 12 meters, the road will accommodate both vehicular traffic and pedestrian movement, ensuring smooth operations and efficient logistics during the construction phase.

The alignment and layout of the construction road have been carefully planned to optimize functionality, safety, and environmental considerations. The road's alignment will be designed to minimize disruptions to existing infrastructure and natural features while providing convenient access to key project areas.

Design considerations for the construction road will adhere to industry standards and regulations, ensuring structural integrity, durability, and safety.

Figure 3-1 **Orthomosaic image (April 2024) along the proposed Phase 2 construction roadway**

3.2 JUSTIFICATION FOR PROPOSED WORKS

Constructing an access roadway for Phase 2 is crucial for enabling safe, efficient, and environmentally responsible construction activities, ensuring compliance with regulations. The access roadway will facilitate the transportation of construction materials, machinery, and personnel to and from the Phase 2 hotel construction site, streamlining operations. Additionally, by providing a dedicated route for construction traffic, it minimizes congestion, reducing the risks of accidents and potential conflicts with regular traffic, pedestrians (workers and guest of Phase1), and existing infrastructure.

Princess Resort is the largest 1,000 rooms resort in Jamaica. It will have an estimated daily flow of (i) up to 1,800 resort workers; (ii) up to 1800 all-inclusive clients; (iii) up to 600 casino clients; (iv) all the resort suppliers for F&B, maintenance, tours, taxis, leisure, weddings, etc. Consequently, that means a potential traffic flow of **around 4,800 people per day** going in and out of the Princess Resort on a constant basis.

In addition, for the construction of the Casino and the construction of Phase 2, there will be substantial additional traffic of construction workers, vehicles and heavy equipment that is not compatible with the traffic of the Princess Resort workers, clients, suppliers and visitors. The co-existence of both would pose significant safety concerns and severely diminish the quality of clients' experience at Princess Resort.

For Princess Resort to simultaneously conduct construction activities and maintain standard resort operations, it is imperative to establish a functional access road system that: (i) segregates construction traffic flow of vehicles, equipment, and personnel; and (ii) possesses the technical and physical attributes to ensure safe and efficient traffic management.

The chosen alignment for the proposed roadway traverses elevated predominantly dry terrain characterized by weedy Dalbergia. Among the alternatives considered, this route impacts the smallest area of mangrove, and other plant species present are not deemed sensitive or protected. This route offers the least ecological impact while establishing a fully independent entry for clients, construction suppliers and workers. Such an arrangement ensures client safety and promotes the seamless operation of the Phase 1 hotel.

Overall, the proposed construction road project represents a critical component of the larger project initiative, facilitating safe, efficient, and environmentally responsible construction activities. Through comprehensive planning, design, and implementation, the construction road will contribute to the successful realization of the project objectives while ensuring minimal environmental impact and maximum operational efficiency.

4.0 METHODOLOGY

4.1 ECOLOGICAL ASSESSMENT

A rapid ecological assessment was carried out along the proposed roadway footprint, with the primary objective of examining the vegetative features of the potential roadways. The footprint included a 3m buffer along the proposed roadway alignment, within which plots were laid to collect information on the vegetation and hydrological character of each location (Figure 4-1). Within these plots, the following information was specifically collected:

i. Presence/absence of mangrove/wetland vegetation
ii. Presence of special or endemic non-mangrove species
iii. Traits of any mangrove wetlands encountered (tree heights, girth, density)
iv. Presence of standing water and hydrological features
v. Any other features that may affect road construction

The survey of the proposed roadway footprint was conducted on April 15 and December 9, 2023.

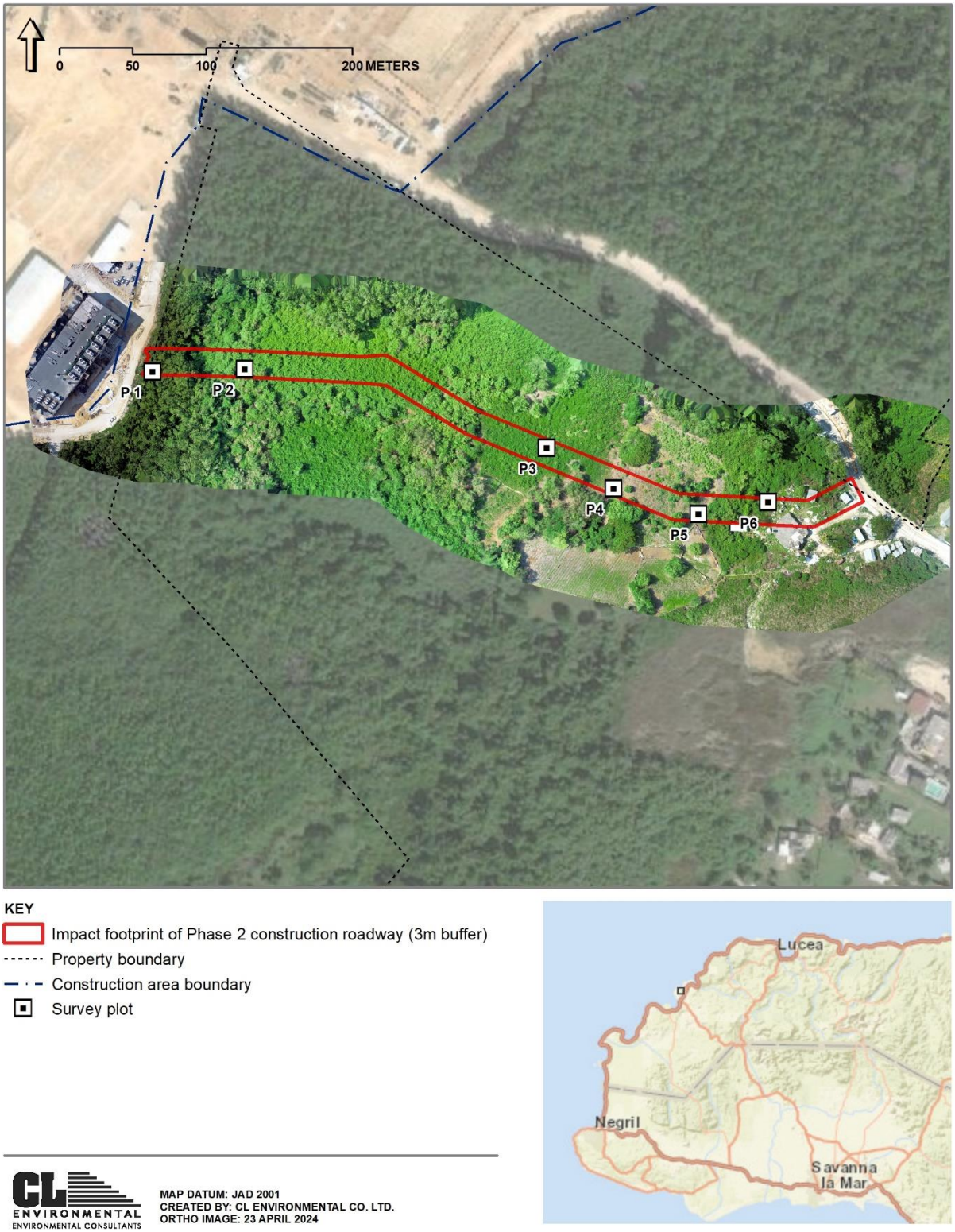

Figure 4-1 Survey plots within the proposed roadway impact footprint

4.2 CONSTRUCTION METHODOLOGY

Construction methods and materials will be selected based on their suitability for the project's specific conditions and requirements. Earthwork, grading, and construction will be executed according to established best practices, utilizing quality materials and modern construction techniques to achieve the desired outcomes.

During Phase 1 construction, similar roads, such as the main access road, were utilized. These roads traversed various terrain types, including mangrove areas, wetlands, and dry conditions. For the proposed construction roadway for Phase 2, which traverses wetland and mangrove areas, the same methodology used in Phase 1 will be employed. This approach has been successfully tested and is fully reliable.

Following vegetation clearance, the proposed methodology involves creating a stable platform capable of accommodating trucks and heavy equipment. This platform is achieved through a combination of marl fills, geotextile layers, and Tensar geogrid mesh.

The methodology consists of the following steps:

1. Conduct a survey to establish construction road limits and obtain NEPA authorization.
2. Clear vegetation on-site.
3. Utilize small vegetation as support for the geogrid and geotextile first layer installation.
4. Apply a layer of marl up to 30 to 40cm, without compaction.
5. Compact the surface with a roller, then install a second layer of geogrid.
6. Add at least one layer of 20cm marl to reach the designed elevation, conducting tests to verify compaction levels. If satisfactory, the process is complete; if not, apply a second layer of 20cm marl.
7. Conduct final testing.

The typical section of the proposed platforms may be seen in Figure 4-2 and Figure 4-3.

An additional task will involve ensuring optimal wet conditions in the mangrove area by installing the necessary culverts according to NEPA specifications. These culverts will facilitate water flow beneath the construction roadway, maintaining the natural hydrological balance. The culverts will be constructed using the same materials as used in Phase 1.

The proposed road will have a width 12 m.

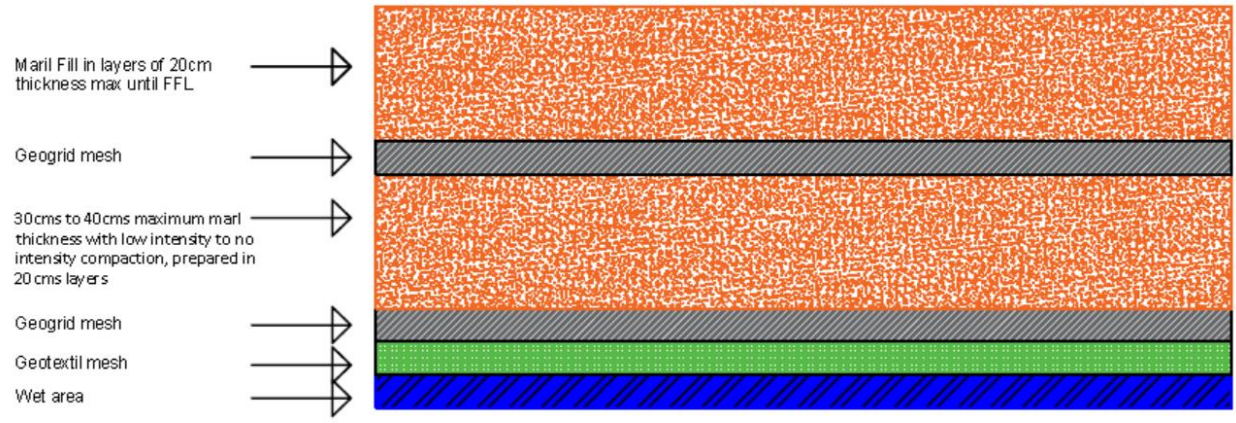

Figure 4-2 Typical section of platform for wet areas

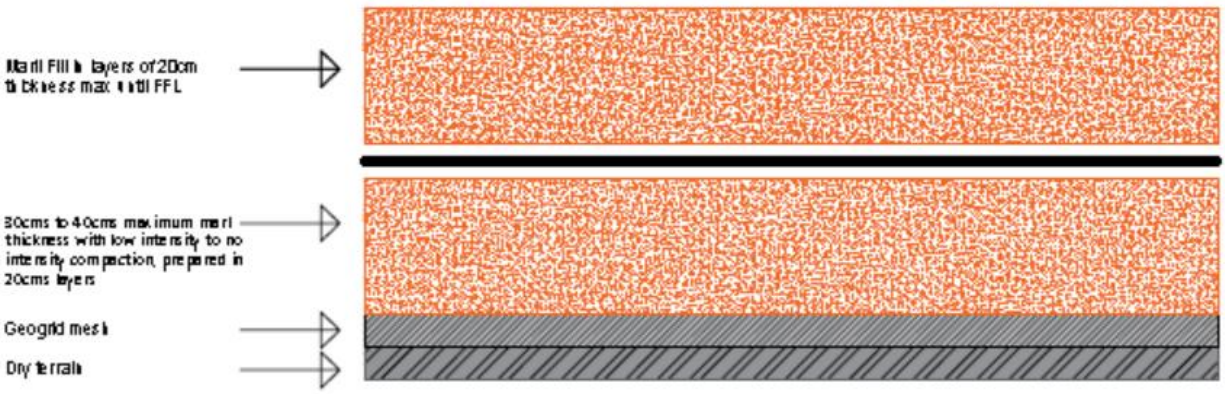

Figure 4-3 Typical section of platform for dry areas

Plate 4-1 Phase 1 roadway construction

Plate 4-2 Phase 1 roadway construction

Plate 4-3 Phase 1 roadway construction

Plate 4-4 Phase 1 roadway construction

Plate 4-5 Phase 1 roadway construction

Plate 4-6 Phase 1 roadway construction

Plate 4-7 Phase 1 roadway construction

5.0 ECOLOGICAL ASSESSMENT

5.1 FLORA AND FAUNA

The footprint of the proposed roadway was predominantly covered by a thicket of Dalbergia vines (Plate 5-1), accompanied by smaller quantities of mangrove ferns and trees such as Bastard cedar and Guango. The thickness of the vine thicket varied in different areas, potentially influenced by goat farming and grazing activities in this location. Additionally, there was a mangrove area (623 m^2) situated at the western boundary (Figure 5-1, Table 5-1,Plate 5-2). The mangrove area had a mean tree height of 12.65 m and a mean DBH of 48.5 cm. The dominant mangrove species were white and black mangrove.

Table 5-1 Data collected in Plots 1 and 2 along the proposed alignment

Plot	Mangrove Species	Mean height (m)	Mean DBH (cm)	Fauna in plot	Standing water-depth and salinity	Non-mangrove species
Plot 1	White	13	44	American redstart	n/a	
	Black	12.3	53	2 crab holes-Cardiosoma		
				Termites		
Plot 2	none			Termites	n/a	Logwood (Plate 5-3), mangrove fern
				9 crabholes-Cardiosoma		
				American redstart		
				warbler		

The site featured fenced goat pens and a presence of numerous goats, seemingly owned by residents of the nearby houses at the commencement of the proposed roadway. While the pens currently occupy the space designated for a section of the proposed route, the landowner has verbally committed to removing the affected structures and halting activities on the land to facilitate the construction of the roadway.

Figure 5-1 **Impacted mangrove within the proposed Phase 2 construction roadway 3m impact footprint**

Plate 5-1 **Thicket of Dalbergia vines typical of proposed roadway footprint**

Plate 5-2 **Plot 1 with black mangrove trunks and breathing roots**

Plate 5-3 Logwood dominating plot 2

5.2 HYDROLOGY

During the surveys, no standing water was observed, and the substrate appeared predominantly dry (Plate 5-4). Although some evidence of crab holes and moisture in specific areas was noted, the vegetation suggested intermittent wetting. Previous studies have identified the area as a wetland, receiving riverine and stormwater from the Green Island main road, which flow southward to the coast.

Plate 5-4 Dry soil typical of proposed roadway footprint

5.3 COMPARISON OF HISTORICAL SATELLITE IMAGRY

A comparison of satellite images (Figure 5-2Figure and Figure 5-3) from 2003 to 2024 reveals a consistently pastoral nature of the area, with low grass and scrub vegetation standing out amidst the mangrove trees. Over time, Dalbergia and other weedy species have overgrown the pasture lands. These routes, devoid of mangrove trees, primarily serve as pastureland, running parallel to a mangrove stand.

Figure 5-2 Proposed construction roadway footprint with Google Earth imagery-2003

Figure 5-3 Proposed construction roadway footprint with Google Earth imagery 2024

6.0 IDENTIFICATION OF ENVIRONMENTAL IMPACTS AND RECOMMENDED MITIGATION

6.1 SITE PREPARATION AND CONSTRUCTION

6.1.1 Vegetation

6.1.1.1 Impact

Six hundred and twenty three square metres (623 m^2) of mangrove wetland will be impacted from the proposed works.

6.1.1.2 Mitigation

To ensure other vegetation outside of the project footprint are not impacted during construction, project area perimeter controls will be erected in the form of silt fencing.

Upon the completion of construction, the area will undergo decommissioning and rehabilitation. Revegetation of mangrove and non-mangrove areas will be conducted as part of the rehabilitation efforts. Native species will be prioritized for replanting as will promote the ecological integrity of the area and biodiversity.

6.1.2 Hydrology

6.1.2.1 Impact

Water flow in the vicinity of the mangroves will be disrupted as a result of the proposed road construction. Water flow disruption may result in degradation or mortality of mangrove trees.

6.1.2.2 Mitigation

Installation of a minimum of three (3) culverts beneath the roadway in the proximity of the mangrove area is recommended to facilitate unrestricted water movement beneath the roadway. This measure will contribute to preserving the hydrological integrity of the surrounding wetland.

6.1.3 Particulates

6.1.3.1 Impact

Site preparation comprises various activities such as clearing and grubbing (digging, loading and removal of material by trucks), as well as the storage of raw materials such as marl, that may potentially have a two-fold direct negative impact on air quality. The first impact is air pollution generated from the construction equipment and transportation of materials. The second is fugitive dust from the proposed construction areas and raw materials stored on or transported to site (potential for materials to become

airborne). Fugitive dust has the potential to affect the health of construction workers, the resident population and the vegetation.

6.1.3.2 Mitigation

- Areas should be dampened every 4-6 hours or within reason to prevent a dust nuisance and on hotter and windier days, this frequency should be increased.
- Cover or wet construction materials such as marl to prevent a dust nuisance.
- Where unavoidable, construction workers working in dusty areas should be provided and fitted with N95 respirators.

6.1.4 Noise

6.1.4.1 Impact

There is the potential for noise generation during site clearance and construction activities. Site clearance necessitates the use of heavy equipment to carry out the job, including bulldozers, backhoes etc. These activities and required equipment possess the potential to have a direct negative impact on the noise climate.

6.1.4.2 Mitigation

- Use equipment that has low noise emissions as stated by the manufacturers.
- Use equipment that is properly fitted with noise reduction devices such as mufflers.
- Operate noise-generating equipment during regular working hours (e.g. 7 am – 7 pm) to reduce the potential of creating a noise nuisance during the night.
- Construction workers operating equipment that generates noise should be equipped with noise protection. A guide is workers operating equipment generating noise of ≥ 80 dBA (decibels) continuously for 8 hours or more should use earmuffs. Workers experiencing prolonged noise levels 70 - 80 dBA should wear earplugs.

6.1.5 Solid Waste Generation

6.1.5.1 Impact

Solid waste generation may occur mainly from general construction activities including site clearance and excavation (vegetation debris, soil etc.).

6.1.5.2 Mitigation

- Skips and bins should be strategically placed throughout the project area
- The skips and bins should be adequately designed and covered to prevent access by vermin and minimise odour.
- The skips and bins should be emptied regularly to prevent overfilling.

- Disposal of the contents of the skips and bins should be done at an approved disposal site – Green
- Island Disposal Site.

6.1.6 Traffic

6.1.6.1 Impact

The potential of increasing probabilities of vehicular accidents, pedestrian/vehicular accidents and also cause a traffic nuisance at the construction entrance is likely.

6.1.6.2 Mitigation

It is recommended that signs be placed along the main road to warn oncoming motorists of the hazards generated such as but not limited to large, slow moving vehicles and construction traffic. It may also be beneficial to implement speed decrease signs or flashing amber signals to prompt road users to slow upon approach to the site entry. Flag persons should also be placed at the site entrance to regulate construction site traffic entrance into and exit onto main road.

6.1.7 Aesthetics

6.1.7.1 Impact

Construction activities may decrease the aesthetic appeal of the area; however, this will be for a short-term period during construction. In particular, trucks leaving the construction site have the potential to deposit marl and mud onto the main road, making the main road aesthetically unappealing and in the process, affecting the conditions of other vehicles traversing the main road.

6.1.7.2 Mitigation

- Good housekeeping activities and adherence to other mitigative measures.
- Sediment-tracking prevention in the form of area of gravel pads should be placed just before exiting onto the main road, to help remove mud/marl from truck wheels.

6.1.8 Employment

6.1.8.1 Impact

Direct, indirect and induced jobs will be created as a result of the proposed project. This represents a significant level of employment within the study area and has the potential to be a significant positive impact. It is anticipated that some labourers will be from sourced from nearby communities.

6.1.8.2 Mitigation

None required.

6.2 OPERATION

6.2.1 Transportation and Access

6.2.1.1 Impact

The proposed route offers a distinct advantage by establishing a fully independent entry for: i) clients; ii) construction suppliers and workers; iii) hotel suppliers. This arrangement serves to guarantee the safety of clients and promotes the seamless operation of the hotel.

The ability to achieve the desired road width with minimal mangrove impact serves a positive impact. In addition, the flexibility of accommodating both entry and exit for guests as well as entry and exit for construction traffic and separating the functions of operation and construction is an advantage.

6.2.1.2 Mitigation

None required.

6.2.2 Particulates

6.2.2.1 Impact

Since the access road will be topped with marl, fugitive dust (potential for materials to become airborne). will have the potential to affect the health of construction workers and the vegetation.

6.2.2.2 Mitigation

- The road should be dampened using a water truck every 4-6 hours or within reason to prevent a dust nuisance and on hotter and windier days, this frequency should be increased.
- Where unavoidable, workers should be provided and fitted with N95 respirators.

7.0 ANALYSIS OF ALTERNATIVES

A total of five (5) roadway alternatives were considered (Figure 7-1). Table 7-1 presents a summary of the data collected for the five roadway alternatives.

- Alternative 1: Presented previously for Phase 1
- Alternative 2: Front gate adjacent road, through goat pen and connecting to Alternative 1
- Alternative2b: Front gate parallel road, shorter and connecting to Alternative 1
- Alternative 3: Gas station road
- Alternative 4: Sewage /maintenance road
- Alternative 5: Main entrance

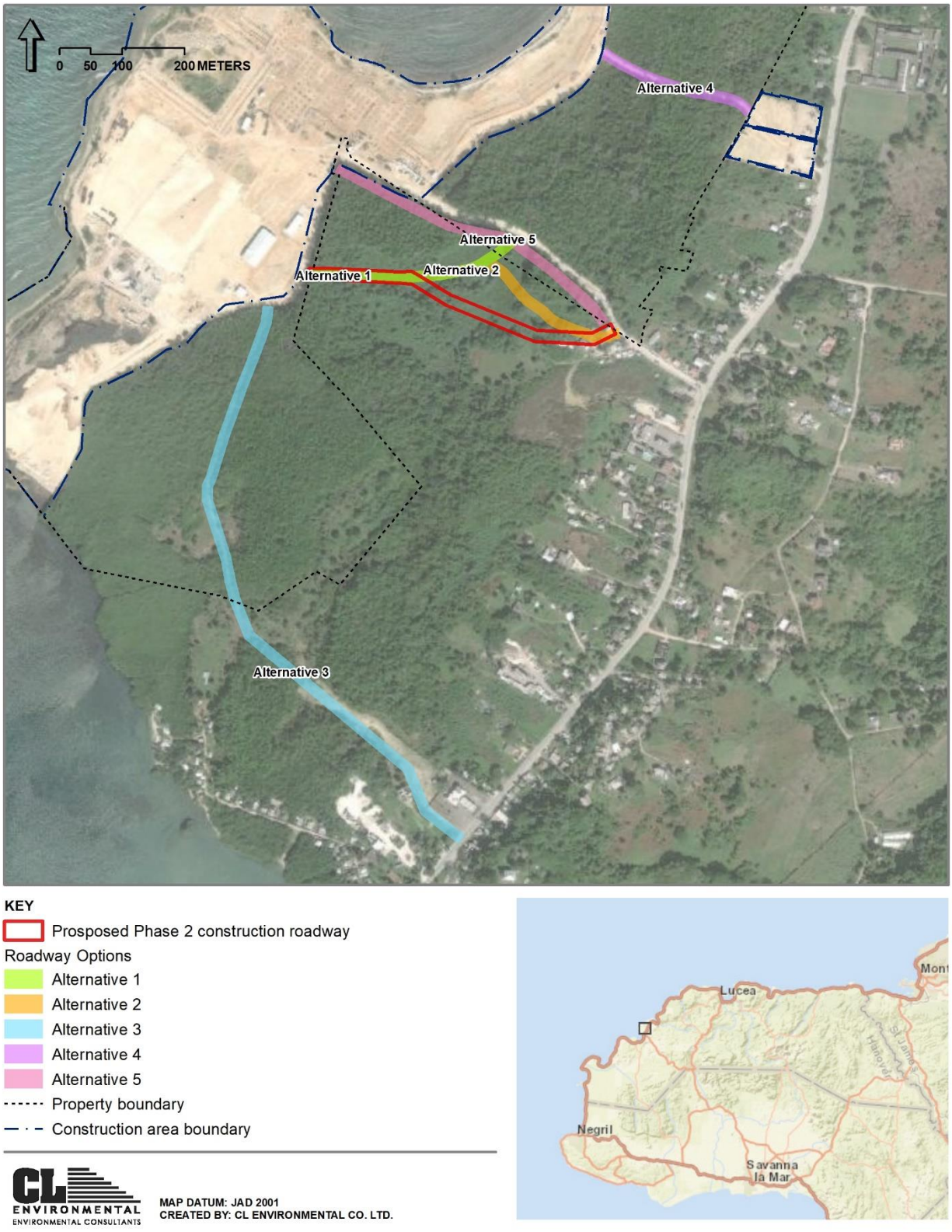

Figure 7-1 Impact footprints of the Phase 2 construction roadway alternatives

Table 7-1 Summary of data collected for the five alternatives and proposed roadway

Alternative	Mangrove area coverage (m^2)	Mean mangrove tree density	Mean mangrove tree height (m)	Mean mangrove DBH (cm)	Dominant mangrove species	Non-mangrove species	Standing water	Threats
Proposed Roadway	623	n/a	12.65	48.5	White and Black mangrove	Dalbergia, mangrove fern, bastard cedar,	No	Structure displacement, goat farming activity impact, mangroves
Alternative 1	623	n/a	12.65	48.5	White and Black mangrove	Logwood, mangrove fern, Coinvine/Dalbergia sp.	No	
Alternative 2	623	n/a	12.65	48.5	White and Black mangrove	Dalbergia, mangrove fern, bastard cedar, guango	No	Structure displacement, goat farming activity impact, mangroves
Alternative 3	5,317	23.67	7.53	8.23	Red mangrove	Lantana, Logwood	Some sections	Designated restoration sites, mangroves
Alternative 4	2,024	23.7	7.5	8.2	Red mangrove	none	Yes	Mangroves, pond 3 restoration sites, transplanted bromeliads
Alternative 5	8,665	9.2	26.3	33.8	Black mangrove	none	Yes	Tallest mangroves on property

7.1 ALTERNATIVE 1

This alternative roadway partially follows that of the proposed roadway (Figure 7-2). The footprint for Alternative 1 is largely composed of mangrove ferns and coin vine plants, signifying a wetland habitat. To be specific, Alternative 1 is anticipated to encompass and affect around 6,265 m^2 of wetlands. Within this wetland area, the dominant features include Dalbergia and mangrove ferns, covering 5,642 m^2, along with a smaller area of mangroves (623 m^2) situated at the western boundary.

No standing water was observed during the survey; the only water identified was within a crab hole, containing fresh water. However, based on prior studies and personal observations, the area is recognized as a wetland and stormwater drains from the Green Island main road flowing southward to the coast. If permission is granted for Alternative 1, the installation of culverts beneath the roadway is recommended to facilitate unrestricted water movement. This measure will contribute to preserving the integrity of the surrounding wetland.

Table 7-2 Data collected each plot in Alternative 1

Plot	Mangrove Species	Mean height (m)	Mean DBH (cm)	Fauna in plot	Standing water-depth and salinity	Non mangrove species
Plot 1	White	13	44	American redstart	n/a	
	Black	12.3	53	2 crab holes-Cardiosoma		
				Termites		
Plot 2	none			Termites	n/a	Logwood, mangrove fern
				9 crabholes-Cardiosoma		
				American redstart		
				warbler		
Plot 3	none			Zebra Longwing butterfly	water in crab hole only	Coinvine/ Dalbergia sp mangrove fern
				Dragonfly	6 ppt	
				Jamaican woodpecker x2		
				West Indian grackle		
				honeybees		
Plot 4	none			honeybees	Soil moist, but no standing water.	Coinvine/ Dalbergia sp mangrove fern

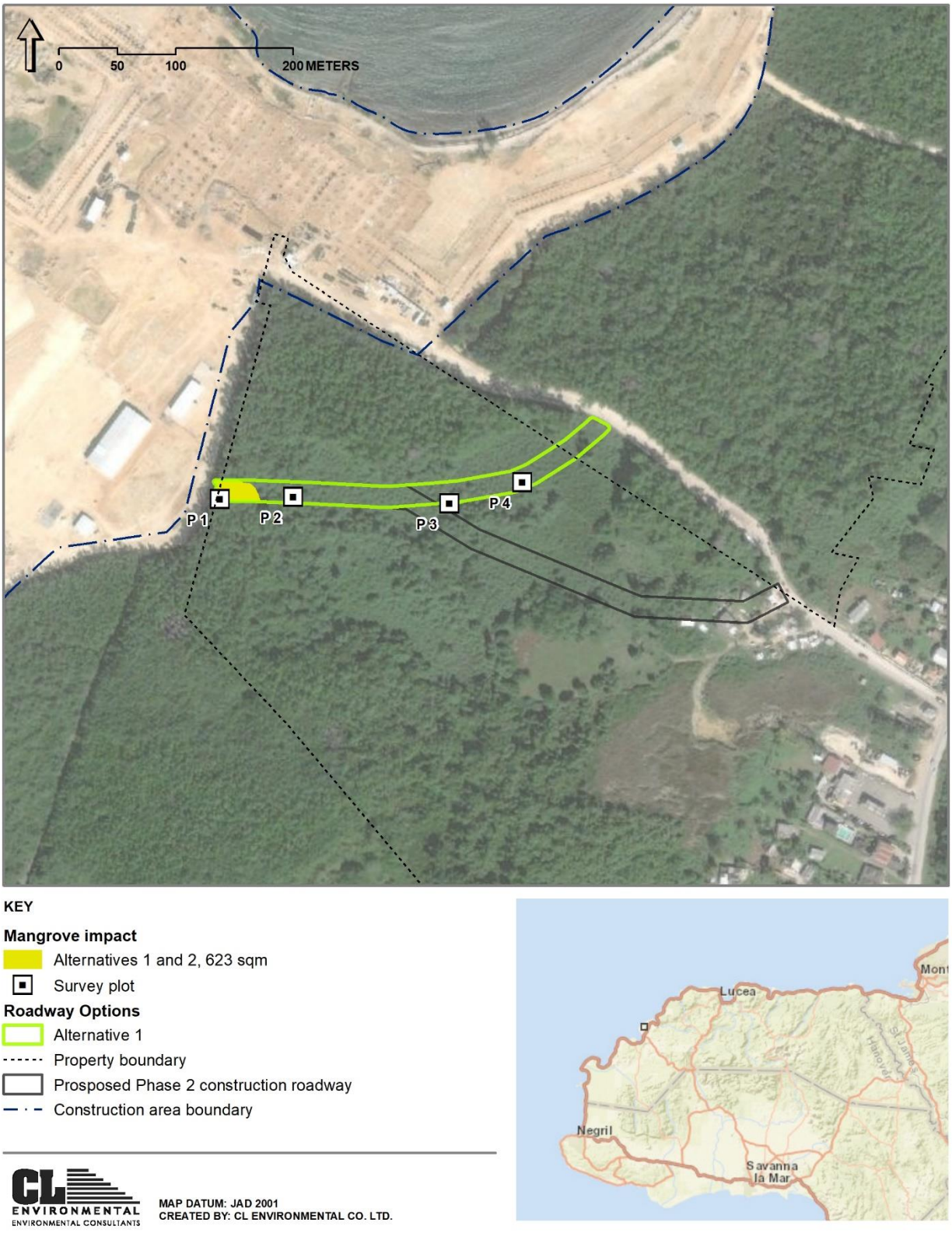

Figure 7-2 Plots and impacted mangrove, Alternative 1

Plate 7-1 Dalbergia dominating plot 3 footprint

Plate 7-2 Plot 3 facing North-dominated by Dalbergia sp

Plate 7-3 Mangrove ferns and Dalbergia observed at Plot 4

Plate 7-4 Proposed roadway intersection with existing roadway-dominated by mangrove ferns and Dalbergia

7.2 ALTERNATIVE 2

The vegetation and overall characteristics of Alternative 2 closely mirror those of proposed roadway alignment. Mangroves were absent, and the dominant presence was Dalbergia. At the termination of this roadway, a thicket of Bastard cedar and Guango trees are present, not mangroves. It is also marked by the presence of dense Dalbergia vines and mangrove ferns. The predominantly dry hydrology was noticeable in this area, even though it is in proximity to mangroves parallel to the main gate. Similar to the proposed roadway, with the connection to Alternative 1, it should be added that mangroves (623 m^2) located at the western end of this Alternative would be impacted.

This proposed roadway passes through residential areas, sheds, and goat farms. However, in comparison to Alternative 1, this roadway is shorter and would have a lesser impact on active goat farming areas and the landowner has verbally committed to removing the affected structures and ceasing activities on the land to facilitate the construction of the roadway.

As previously mentioned, Alternative 2 presents the advantage of creating a separate entry for: i) clients; ii) construction suppliers and workers; iii) hotel suppliers. This configuration ensures the safety of clients and fosters the smooth operation of the hotel.

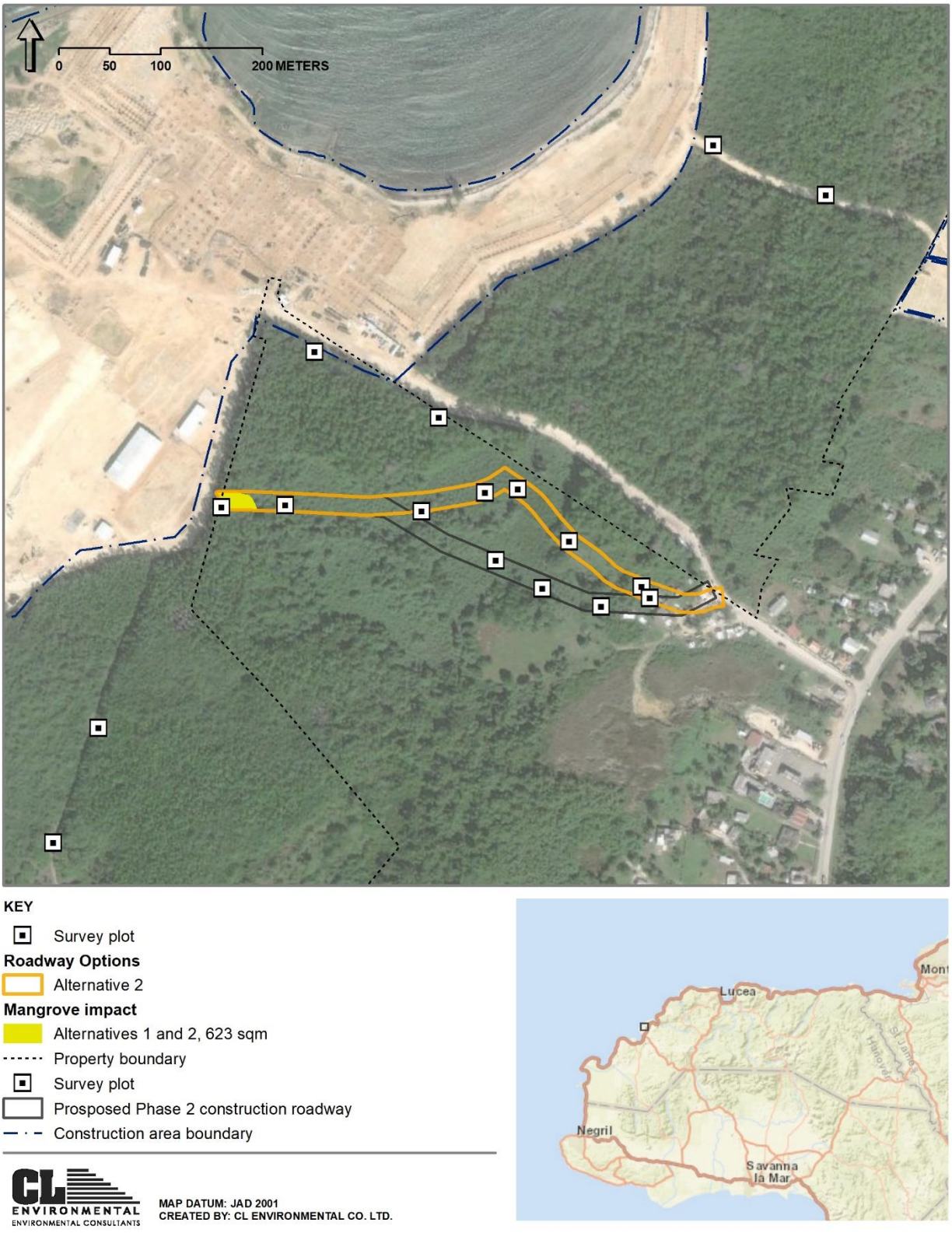

Figure 7-3 Plots and impacted mangrove, Alternative 2

7.3 ALTERNATIVE 3

Alternative 3 features a combination of existing paths, roadways, and elevated areas with mangrove vegetation. Utilizing this Alternative would affect approximately 5,317 m^2 of mangrove forest or wetland vegetation (Figure 7-4). Notably, sections of this roadway (3-4.5 m wide) encompass two areas designated for mangrove restoration by the development. Enlarging this road would undoubtedly have adverse effects on such restoration efforts. The wetland displayed tidal/standing water to the south and drier conditions to the north, suggesting that the roadway was not strategically planned and lacked culverts to connect this historically continuous and interconnected mangrove forest.

Plate 7-5 Current roadway with surrounding mangroves at Alternative 3

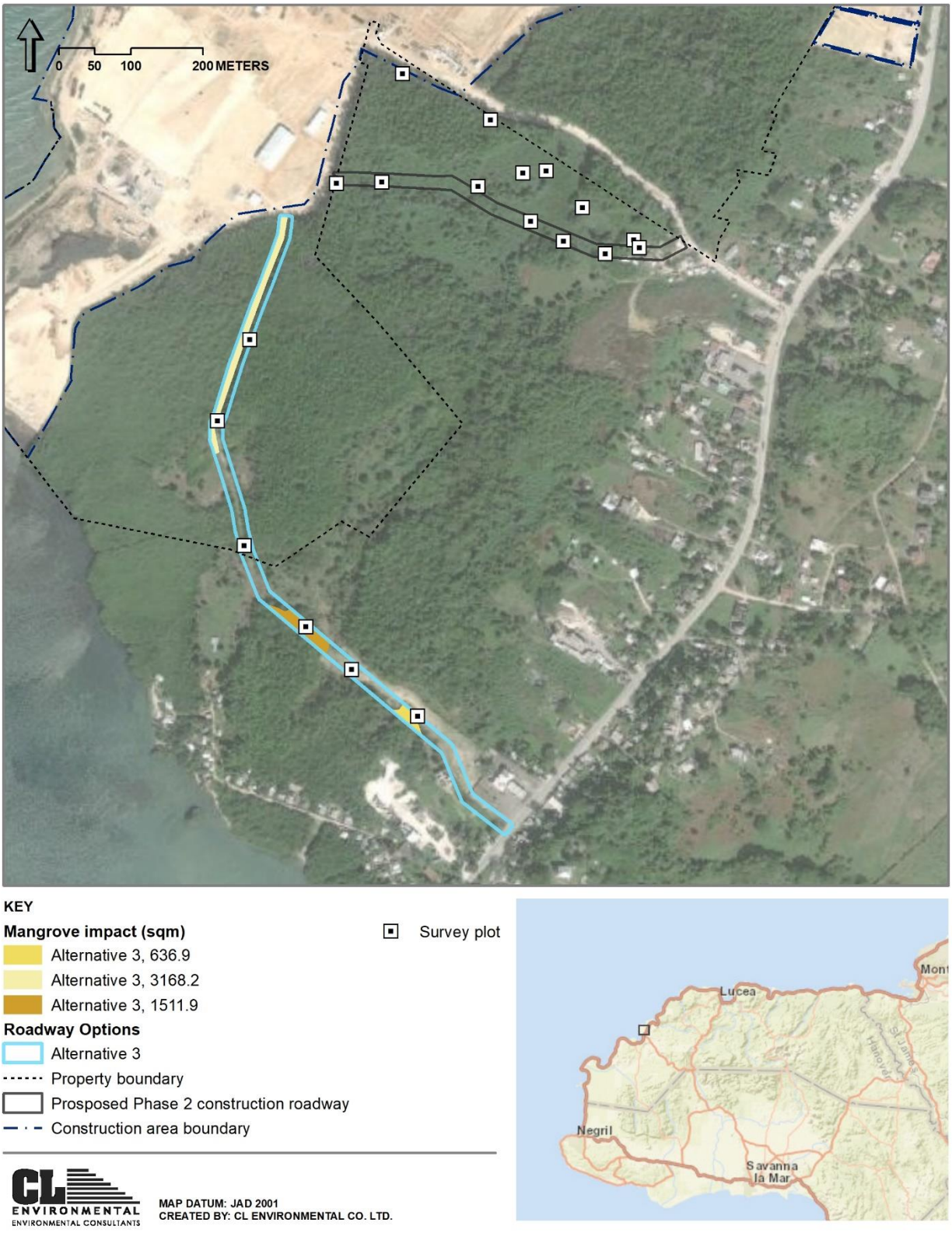

Figure 7-4 Plots and impacted mangrove, Alternative 3

7.4 ALTERNATIVE 4

As depicted inFigure 7-5, Alternative 4 involves expanding the maintenance/service roadway to the East. This undertaking would affect around 2,024 m^2 of mangrove forest and also have repercussions for transplanted bromeliads, as mandated by NEPA. The roadway is primarily characterized by red mangroves, and there is standing water on both sides. Culverts are present beneath this road to maintain connectivity within the mangrove forest.

There are additional drawbacks associated with Alternative 4. The current layout lacks the necessary width for simultaneous entry and exit, requiring the widening of the service road. This becomes evident when considering scenarios such as two client coaches or a coach and a taxi attempting to access simultaneously. Furthermore, apart from the need for two traffic lanes, a dedicated walkway would be essential to serve as the entrance for hotel workers commuting from the staff building and individuals arriving from other locations. Moreover, there is a potential disturbance to clients in hotel 1 due to exposure to heavy traffic involving coaches and continuous taxi movement.

While Alternative 4 initially involves separating clients and suppliers from the construction site, they would eventually converge in the Lobby area of Hotel 1, extending to the large casino roundabout. From there, construction workers and suppliers would proceed to their designated area by turning left.

Plate 7-6 Mangroves and transplanted bromeliads to be impacted with Alternative 4

Figure 7-5 Plots and impacted mangrove, Alternative 4

7.5 ALTERNATIVE 5

The existing roadway will need to be widened to approximately 12m in order to accommodate 2-way construction traffic (entry and exit). The footprint of this Alternative would result in an impact on approximately 8,665 m² of mangrove vegetation (Figure 7-6). Notably, this stand of mangroves appears to be the tallest and most robust on the property, boasting mean heights exceeding 26m (Table). The relatively low tree density is suggestive of a highly mature forest, with limited light penetration.

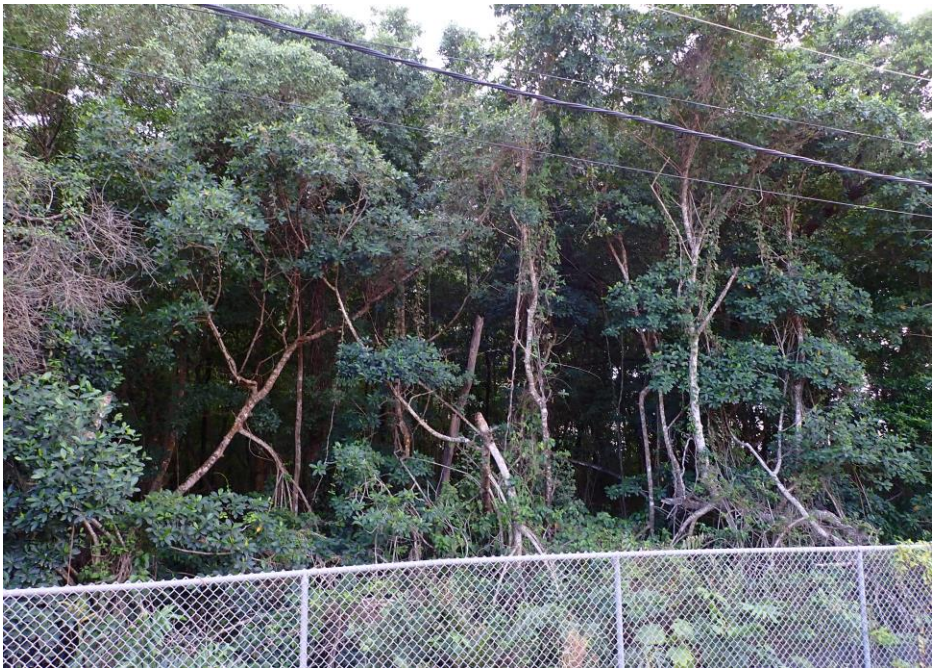

Plate 7-7 Very tall black and white mangroves along Alternative 5 footprint

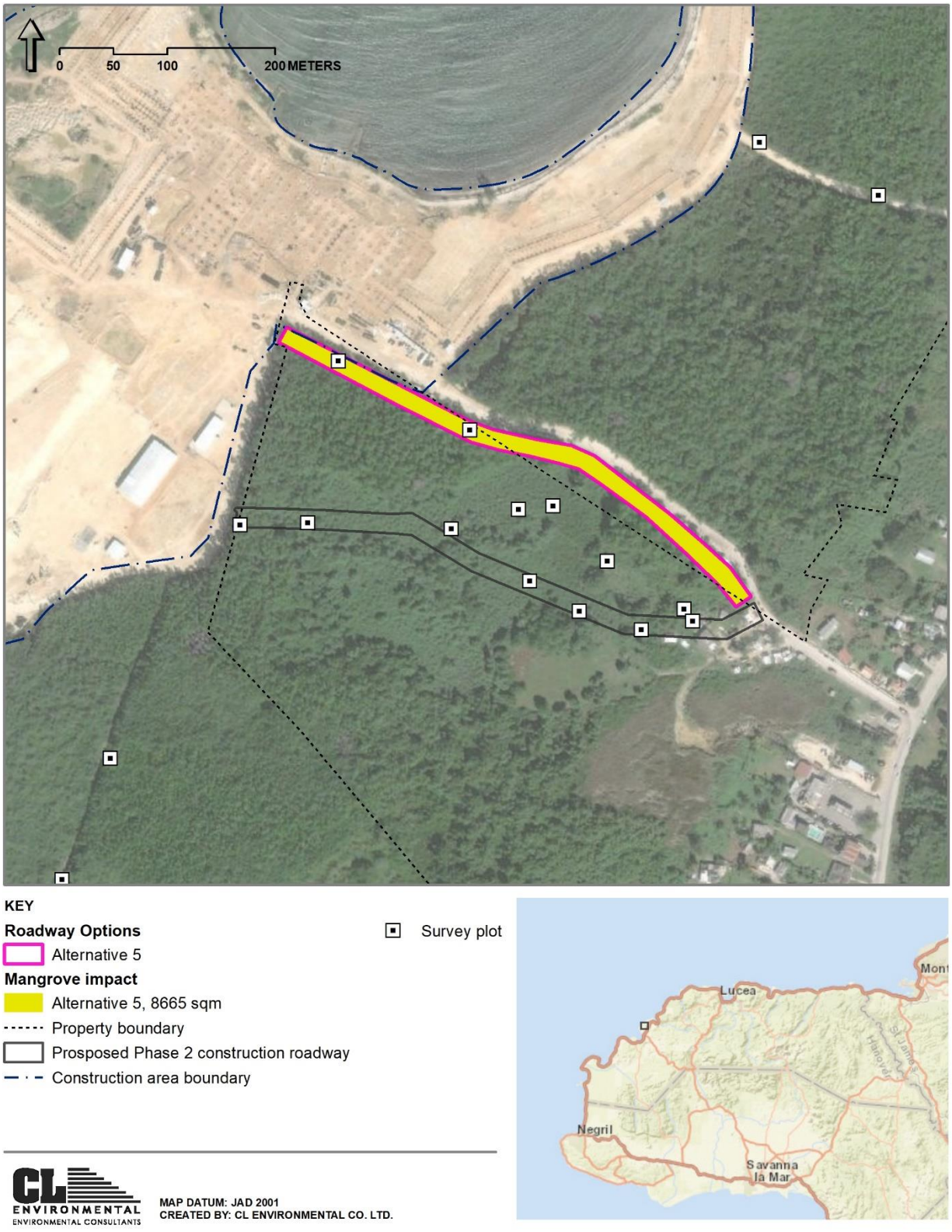

Figure 7-6 Plots and impacted mangrove, Alternative 5

7.6 PREFERRED ALTERNATIVE

Carefully considering the advantages and disadvantages of each Alternative conclusively demonstrates that either the construction roadway, as proposed or Alternative 2 would have the least impact and prove to be the most advantageous choice (Table 7-3). The substrate in these areas is elevated, predominantly dry, and characterized by the prevalence of the weedy Dalbergia. The smallest area of mangrove would be impacted (623 m^2) and other plant species present are not deemed sensitive or protected. Although both Alternatives would impact the pastoral activities and domestic dwellings in close proximity to the main entrance, the landowner has verbally committed to removing the affected structures and halting activities on the land to facilitate the construction of the roadway.

To ensure the most optimal and secure situation, it is logical to refrain from sharing any form of access and, instead, implement three distinct entries for workers, clients, and construction. This approach enhances security and streamlines the entry process for each specific group, which the proposed roadway achieves.

Given the considerations discussed, the project, as proposed, is the preferred route.

Table 7-3 Pros and cons of each roadway Alternative

	Pros	Cons
Alternative 1	• Least mangrove area impacted (623 m^2). • Full 12m width attainable	• Area recognised as wetland; culverts will need to be installed.
Alternative 2	• Least mangrove area impacted (623 m^2). • No standing water, with mostly dry substrate. • Lesser impact to goat farming activities and residential property at commencement of roadway (compared to Alternative 2). Owner of lands have agreed to relocate structures and cease activities at beginning of roadway. • Flexibility of accommodating both entry and exit for guests as well as entry and exit for construction traffic and separating the functions of operation and construction. • Full 12m width attainable	• Alternative 1 recognised as wetland; culverts will need to be installed. • Impact to goat farming activities and residential property at commencement of roadway.
Alternative 3	• Includes a section of existing roadway.	• Second largest area of mangrove impacted (5,317 m^2).

	Pros	Cons
		• Sections of this roadway encompass two areas designated for mangrove restoration by the development, and cannot be widened to desired 12m width. • Existing roadway lacks necessary culverts for interconnectivity of mangrove forest.
Alternative 4	• Follows an existing roadway, with culverts already installed. • Initially involves separating clients and suppliers from the construction site.	• About 2,024 m^2 of mangrove impacted and repercussions for transplanted bromeliads, as mandated by NEPA. • Standing water present. • Current layout lacks necessary 12m width for simultaneous entry and exit, requiring widening. • Potential noise disturbance to clients in Hotel 1 due to exposure to heavy traffic. • Although initially involves separating clients and suppliers from the construction site, they would eventually converge in the Lobby area of Hotel 1.
Alternative 5		• Largest area of mangrove impacted (8,665 m^2). • Standing water present. • Negotiations with private owners will be necessary.

8.0 MITIGATION AND COMPENSATION

Mangroves provide a wide array of ecological services that contribute to the wellbeing of the ecosystem. A list of some ecological services of mangroves, specifically those observed at the proposed project site, are as follows:

- Carbon sequestering
- Biodiversity support
- Water filtration
- Nutrient cycling
- Recreational and cultural values
- Food security

Of the overall project area, 623 square meters are mangroves. The proposed mitigation cost for the loss of mangrove, calculated at J$3944.55 per square meter, amounts to J$2,457,454.65. Additionally, the cumulative loss of ecosystem services over time totals J$2,457,454.65. Therefore, the total suggested compensation is J$4,914,909.30.

9.0 CLOSURE PLAN

9.1 OVERVIEW

Upon the completion of Phase 2 construction, the area will undergo decommissioning and rehabilitation. This will entail a planned and systematic process with careful consideration of environmental, social, and safety factors, ensuring that the process is both effective and sustainable over the long term. Activities will encompass material and infrastructure removal, drainage restoration, silt fence removal, and surface treatment if required, along with salvaging reusable infrastructure and proper waste disposal. Revegetation is a crucial step in rehabilitation efforts. Prioritizing native species for replanting will promote the ecological integrity of the area and promote biodiversity. Well-adapted species will ensure ecosystem compatibility, support local biodiversity, enhance soil health, reduce the risk of invasive species proliferation, provide aesthetic continuity and climate resilience.

Implementing a monitoring and maintenance program will prove valuable in evaluating the success of the decommissioning and rehabilitation process over time and systematically documenting the entire procedure.

9.2 CLOSURE/DECOMMISSIONING ACTIVITIES

At the time of decommissioning, the following activities will aim to satisfy the health, safety and environmental issues associated with the closing of the construction area in a manner which mitigates any adverse environmental impact:

1. Advanced notification (2 weeks) to relevant local authorities (NEPA, Hanover Municipal Corporation) of near completion of construction and potential change in status of the site.
2. Final notification to relevant local authorities (NEPA, Hanover Municipal Corporation) of completion of construction and change in status of the site to that of a fully operational hotel resort.
3. Notification to property the immediate surrounding residential community will occur 1 week before decommissioning activities commence.
4. Security personnel will be present at all times, as it would be during normal construction phase until the decommissioning has been completed.
5. Vehicular and pedestrian access will be restricted to only personnel necessary to carry out the activities associated with decommissioning activities. Flag persons will continue to remain at the entrance to regulate any heavy equipment entering or exiting the area.
6. All access will be via the posted security personnel and recorded in the security log.
7. All equipment and material during construction will be removed from the area. This will include the various layers of marl, geotextile mesh and culvert pipes used to construct the temporary roadway.

8. Removal of perimeter sedimentation controls (silt fencing).
9. Any temporary administrative office structures will be transported off the property (no permanent structures would be constructed).
10. Portable toilets and hand wash facility leased would expire and be returned to the operator/collected by supplier.
11. All material stockpiles will be utilized in the construction process and the remainder removed from the site.
12. All solid waste and debris will be removed and disposed of by licenced contracted municipal waste operators at an approved disposal site. All trash skip/compactors will be collected by the responsible supplier.
13. Monitoring during roadway decommissioning will include but not be limited to: noise and particulate monitoring, water turbidity monitoring in mangrove (when possible), site housekeeping and implementation of best management practices, and aerial/drone imagery.
14. Area will be prepped and graded for rehabilitation. Rehabilitation will be conducted by trained botanical professionals prioritizing native floral species.

The estimated timeline for temporary access road decommissioning activities is 2-3 weeks.

10.0 APPENDICES

National Environment and Planning Agency
National Certification Body of Jamaica
ISO 9001: 2015 CERTIFIED

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29 February 2024

Mr. Rafael Millan
Country Manager Jamaica
Inco Land Limited
Industry Cove
Green Island
Hanover

Re: Appeal to NEPA's letter of 12th February 2024 on Roadway Options, Phase 2 of the Construction and Operation of a Proposed Resort Development (Princess Hotels and Resorts Development) at Industry Cove, Green Island, Hanover by Inco Land Limited

Kindly refer to your letter dated 21 February 2024 in relation to Phase 2 roadway options at Princess Hotels and Resorts, Industry Cove, Hanover, as well as the report entitled '*Environmental Impact Assessment for the Proposed Princess Hotels and Resorts Development, Industry Cove, Hanover, Jamaica*' dated January 2020. Having reviewed the five options proposed in the emailed correspondence and attachment with options appraisal from CL Environmental Company Limited dated 3 January 2024. The NEPA's response was sent with support for option 4 as presented, with no additional width expansion. We acknowledge your letter of 'appeal' of 21 February 2024 and the accompanying analysis, essentially objecting to the Agency's position and the counter proposal.

It is important to remind the owners and developers of Princess Hotels and Resorts - Inco Lands Limited - of the antecedent to the release of 31.58 ha of lands at Industry Cove, Hanover, including the commitment given by the principals and developers, to support the need for conservation of the remaining hectares of lands due to the sensitive and fragile nature of the area. Since receiving those commitments, we have proceeded jointly, and cautiously, to effect measures, beginning with the mandating and completion of an Environmental Impact Assessment and Ecosystem Service and Natural Resource Valuation Assessment reports, public consultation, and intensive review of the proposed development through to approvals. Since receiving approvals, and the necessary permits and licences, the Natural Resources Conservation Authority/National Environment and Planning Agency (NRCA/NEPA) has facilitated requests for wetland modification from Inco Lands Limited for additional lands for the creation of an area for the guard house and utility area to facilitate connections to the National Water Commission and the Jamaica Public Service connections for the project. The request was supported after careful assessment of the impact of the proposed adjustment for development.

Returning to the topic of your "appeal", again, it is to be expressed that the subject lands proposed as the preferred option by you are part of a wider wetland forest which is the focus of several conservation initiatives being undertaken by the NEPA and other government agencies, such as; the Forestry Department (FD). In keeping with the earlier mutually agreed need for conservation, the NEPA has moved to designate the area as a Tree Preservation Order under the Town and Country Planning Act and possible protection by the Forestry Department as a Forest Reserve or Forest Management Unit under the project entitled 'GEF 7 Jamaica Mangroves Plus: Protection and Sustainable Management of Jamaica's Mangrove Ecosystems and Biodiversity'. The designation forms a part of the habitat referenced in the Environmental Permit (Ref # 2020-09017-EP00122) for retention as strict conservation areas in which no development is allowed. Since then, also, the Cabinet of Jamaica in its Decision No. 9/23 dated 13 March 2023, approved, and designated a portion of the wetland as an Ecologically Sensitive Area (ESA), signalling the importance of conservation during development planning.

Notably, your proposal for use of the lands is contrary to government policy (Cabinet Decision), the principle of conservation and the conservation strategies being pursued by the Agency, and the terms and the conditions of the environmental permit and licences granted.

.../2

Mr. Rafael Millan
Country Manager Jamaica
Inco Land Limited
Re: Appeal to NEPA's letter of 12th February 2024 on Roadway Options, Phase 2 of the Construction and Operation of a Proposed Resort Development (Princess Hotels and Resorts Development) at Industry Cove, Green Island, Hanover by Inco Land Limited
29/02/2024
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We respectfully disagree with your proposal as, if accepted and supported, will adversely impact the resources, the functionality of the area's ecosystem and contradicts the Cabinet's approval for retention of the area for no development.

The fact is, the request represents a material change to the information presented to the public during the EIA consultation process, and in accordance with the NRCA/NEPA guidelines underpinning that process - there is need to return to public engagement and consultation on the matter.

Inco Land Limited is herein advised that sensitizing and consultation with the public becomes necessary for the proposed project changes. Inco Land Limited is therefore required to prepare an addendum to the EIA of January 2020, to include but not be limited to:

- Description of the proposed works
  - Project scope and objection
  - Justification for proposed works
- Methodology for
  - Works to be undertaken
  - Ecological assessment
- A comprehensive analysis of environmental impacts of proposed works
- Analysis of alternatives
  - Including alternative traffic management options
- Mitigation and Compensation

We suggest that your environmental consultant translate the above into a ToR for preparing the addendum and obtain approval of same prior to finalizing the studies.

Yours sincerely
National Environment & Planning Agency

Peter Knight, CD, JP
Chief Executive Officer/Government Town Planner