



Environmental Compliance Plan

WRITTEN BY:

THE DEPARTMENT OF THE ENVIRONMENT

PREPARED FOR:

The Ministry of Works

IN RESPECT OF AN

Environmental Impact Assessment

**For the Rehabilitation of the Philip Goldson Highway Project between Miles 8.5 to 24.5
Belize District**

July, 2019

ENVIRONMENTAL COMPLIANCE PLAN
FOR
The Ministry of Works
For
For the Rehabilitation of the Philip Goldson Highway Project
between Miles 8.5 to 24.5
Belize District

The following are the terms and conditions of the Environmental Compliance Plan (ECP) entered into between **The Ministry of Works**, herein after referred as the **Developer**, and the **Department of the Environment**, herein after referred to as the **DOE**, in respect to the Rehabilitation of the Philip Goldson Highway Project between Miles 8.5 to 24.5 Belize District.

The terms and conditions embodied in this ECP are made pursuant to Regulation 22. A (1) of the Environmental Impact Assessment (Amendment) Regulations, “S.I. (No 24 of 2007)” and Section 20 (7) of the Environmental Protection Act, Chapter 328 of the Substantive Laws of Belize, Revised Edition 2011 and all other relevant provisions thereunder. *Environmental Clearance* is being granted under these conditions.

It is hereby agreed that the terms and conditions of this ECP will be binding upon the Developer, its servants, agents, and/or assigns.

PURPOSE

The purpose of this document is to officially institute best practice measures that would prevent, control, and mitigate the environmental degradation that may arise from the project. It must be borne in mind that this ECP was prepared based on the best available information contained in the Environmental Impact Assessment (EIA) report for this project and those gathered by the National Environmental Appraisal Committee (NEAC) and the DOE. The DOE therefore reserves the right to make modifications to this ECP, with prior notifications to the Developer, as the project develops and more information becomes available.

The Developer agrees to adhere to this document during all stages of the development of the project. The DOE and other relevant agencies will conduct periodic monitoring to ensure compliance with the conditions herein. Any material breach of any of the terms and conditions of this ECP which has been brought to the attention of the Developer and which has not been rectified within a reasonable time, may result in the revocation of environmental clearance for this project and/or legal action taken against the Developer.

This ECP is a dynamic one and may be reviewed and revised from time to time as the project develops and more information becomes available. The Developer must note that obtaining environmental clearance does not absolve the need to obtain other permits and approvals from other relevant agencies. Notification of any disregard or violations will be presented to the Developer or its agents or assignees in writing who will immediately take actions to rectify the violation.

The ECP is a non-transferable document; therefore it cannot be transferred to any other company, organization or interested party. This ECP was developed for the sole use by **The Ministry of Works**.

1.0 SPECIFIC ACTIVITIES FOR WHICH CLEARANCE IS BEING GRANTED

1.01 *Environmental Clearance* is hereby granted to the Ministry of Works for the Rehabilitation of the Philip Goldson Highway between Miles 8.5 to 24.5, Belize District, for the following sections:

(i) Section 1: Vista del Mar Junction re-design and 200m East of Airport Junction in Ladyville at mile 8.5 to Burrell Boom Junction at mile 14; This section is further divided into two subsections: 1A Vista del Mar Boulevard Junction to Lords Bank Junction and 1B subsection from Lords Bank Junction to the Burrell Boom Junction.

(ii) Section 2: Boom Junction to mile 24.5, PGH near Gardenia Village. This section is also divided into two subsections: Subsection 2A from Burrell Boom Junction to Old Northern Highway Junction in Sandhill and subsection 2 B from the Sandhill Junction to mile 24.5 in Biscayne.

Environmental Clearance to cover the following works:

- Rehabilitation of existing culverts, pavement, and drainage.
- Construction of new culverts as identified in the EIA, and verified by the recommendations of the Detail Designs.
- Construction or Upgrading of a new bridge/existing bridge respectively at Mexico Creek as guided by the verification of the Hydrological and hydraulic model using LiDAR data now available.
- Restoring original cross section of Mexico Creek, Mussel Creek and Black Creek to improve hydraulic efficiency and reduce the incidence of flooding of surrounding villages. This activity may be carried out by the Developer using equipment procured under CRIP.
- Mitigating the flooding of Mexico Creek and other susceptible areas along the route of the Project.
- Improvement of major junctions.
- Delineation and placement of “cat’s eyes” road marking on the center line.
- Installment of AASHTO certified guardrails / traffic barriers systems, as approved by the Developer.
- Construction of speed control measurements: rumble strips and pedestrian crossings and speed bumps.
- Construction of Roundabout at International Airport Junction, Lord’s Bank Junction, and Burrell Boom Junction.
- Rehabilitation of Vista Del Mar main drain

2.0 ENVIRONMENTAL HAZARD ANALYSIS

Based on the study submitted and other relevant information gathered, the DOE has prepared this environmental hazard analysis. This ECP was then developed to mitigate the potential negative impacts associated with this type of development.

POTENTIAL ENVIRONMENTAL IMPACTS FROM THIS PROJECT:

- A. Contamination of water resources during construction stages (sewage, solid waste, siltation, spill and hazardous waste), and post construction stages.
- B. Changes to the hydrology and drainage characteristics of the area.
- C. Alterations to possible scenic areas.
- D. Alterations to the Ecology of the Area and its related Biodiversity.
- E. Accelerated erosion with subsequent siltation of water resources due to construction of infrastructure unless dissipation devices are introduced.
- F. Potential Social Impacts to Villages and Communities within the Study Area.

This list is by no means an exhaustive list of potential environmental problems that could arise from the said proposed project.

3.0 ENVIRONMENTAL COMPLIANCE PLAN

The implementation of this project will be carried out only for those activities described in section 1.0 of this ECP. The Developer shall implement the project in accordance with the following environmental and social mitigation and management measures:

3.01 General Construction Requirements

- 3.01.1 In areas where lifting/vertical alignment of road is impractical, the use of concrete surfacing shall be employed, as guided by the Detail Design recommendations and approved by the Developer, to avoid erosion and undermining of the road.
- 3.01.2 The Developer will adhere to the proposed activity implementation schedule and the monitoring plan / strategy to ensure effective feedback of monitoring information to both project management and the DOE, so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.
- 3.01.3 The Developer will ensure that noise levels emanating from machinery, vehicles, and noisy construction activities are kept at a minimum for the safety, health, and protection of workers and the general public, particularly within village limits and near schools. If necessary, noise barriers must be erected.
- 3.01.4 The movement of heavy machinery, associated with the project, shall be restricted within a demarcated work area so as to minimize soil compaction, traffic disruption, and dust.

- 3.01.5 Adequate signs in conspicuous areas will be installed to alert on-coming vehicular traffic of on-going works so as to reduce speed for safety and control of dust during construction.
- 3.01.6 The Developer will prepare and implement appropriate human health and worker safety measures during construction.
- 3.01.7 The Developer will set protocols for vehicle maintenance to control contamination by grease, oil and fuels. The Developer will build collection channels leading to oil and/or silt traps, particularly around areas used for vehicle washing or fueling.
- 3.01.8 The Developer will install temporary erosion control and sediment retention measures (check dams and silt curtains) when permanent ones either are not feasible or are delayed.
- 3.01.9 The Developer will implement measures to avoid pollution of waterways with stockpiled construction materials.
- 3.01.10 All solvents, lubricants, oils, and other semi-hazardous and hazardous liquids will be placed over a lined area with appropriate secondary containment in order to contain spillage. An oil water separator is to be built where spillage can occur. The Developer will test the integrity of bulk storage tanks and drums, and secure valves on oil and fuel supplies.
- 3.01.11 Appropriate containment structures will be constructed around bulk storage tanks and materials stores to prevent spillage entering watercourses.
- 3.01.12 The Developer will handle, store, use, and process hazardous materials in accordance with manufacturer's instructions and recommendations.
- 3.01.13 The Developer will minimize burning of waste materials along the highway.
- 3.01.14 The Developer will employ techniques to minimize dust and vapor emissions as practicable (e.g., road speed limits, air extraction equipment, scaffolding covers, road spray).
- 3.01.15 Measures will be introduced to control and minimize the generation of waste along the project site. Work areas must be kept free of litter at all times. Garbage bins will be placed

at all working areas. All domestic solid waste generated must be collected and disposed of at an approved garbage disposal site.

- 3.01.16 The Developer will employ sensitive strategies with regard to trees, watercourses, plant or animal species or habitats, and important historical and archaeological features.
- 3.01.17 As practicable, construction sites will be landscaped in a way that is appropriate to local conditions.
- 3.01.18 The Developer will ensure that the applied technology and new structures will not introduce or increase vulnerability in sensitive areas such as the existing highway already traverses wetlands and areas in floodplain.

3.02 Drains, Bridges, and Culverts Construction Requirements

The Developer shall ensure that existing water flow regimes in streams and other natural or irrigation channels are maintained and/or re-established where they are disrupted due to civil works being carried out. In addition, the Developer is required to:

- 3.02.1 Design, construct, and maintain drains to minimize flooding and overflow onto highway or inundate private property.
- 3.02.2 Construct drainage along all realigned sections of the highway to avoid damming or obstruction of surface runoff on either side of the road.
- 3.02.3 Replace / rehabilitate culverts and/or bridges that are either undersize or compromised according to the recommendations resulting from the EIA, ensuring that culvert and bridge dimensions are based on assessment of project water flows and they meet Ministry of Works' standards.
- 3.02.4 Ensure that the drainage improvement recommendations are implemented for the flood prone areas and that proper drainage form part of the overall road design.
- 3.02.5 Ensure that where there are sections proposed for vertical and horizontal alignments, that these provide proper drainage designs for adjacent properties and landowners.

3.02.6 Abandoned drains will be sealed or removed to minimize water contamination.

3.03 Earth Movement Activities

Road construction activities require the use of material for the construction of base, sub-base, etc. The sourcing of these material may have potential negative environmental impacts if not properly managed. Therefore, the Developer is required to employ Best Management Practices and engineering standards during earth movement operations as well as the following:

- 3.03.1 Obtain appropriate licenses/permits from the Mining Unit of the Ministry of Natural Resources to operate quarries or borrow areas.
- 3.03.2 The material extraction site(s) boundaries shall be clearly demarcated and marked to minimize vegetation clearing and soil compaction.
- 3.03.3 The Developer will ensure that material extraction sites meet the general site criteria recommended in the EIA and shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component. To further mitigate the impacts on any one specific selected site, the extracted volumes, where practical, will be shared among different sites to reduce the environmental impact footprint.
- 3.03.4 Topsoil/overburden shall be removed and retained for subsequent rehabilitation and stored in areas where trees can act as buffers to prevent dust dispersal. Topsoils stockpiles shall not be stored in low mounds not more than 1 to 2 meters high. Soil shall not be stripped when its moisture content is high as this can lead to poor soil compaction and loss of structure.
- 3.03.5 The Developer will ensure that excavation is accompanied by well-engineered drainage to control runoff into the pit. Perimeter drains shall be constructed to surround quarry sites. Sediment and other pollutant traps shall be located at drainage exits.
- 3.03.6 Extraction of materials will be done by leveling sites evenly and preventing ponding. Disturbed areas will be restored to as close as their original natural state as possible.
- 3.03.7 Material from the surface stripping of existing road will be stockpiled at various locations throughout the project site where it will be used to rehabilitate the village streets of communities along the highway.
- 3.03.8 The Developer will implement specific procedures for storing topsoil and for phased closure and reshaping and restoration of the pit when extraction has been completed. This will include plans for segregating gravel and quarry materials by quality and grade for possible future uses. Where appropriate, the Developer will include reseedling or re-vegetation to reduce soil erosion, prevent gullyng, and minimize visual impacts.

3.03.9 The Developer will backfill and/or restore borrow areas and quarries before abandonment, if alternative uses for those sites are not planned. Areas should be restored by creating landforms that are suitable for sustainable use after extraction, minimize the long-term visual impact, and re-establish conformity with the adjacent landscape. To the extent practicable, natural drainage patterns shall be reinstated where they have been altered or impaired.

3.04 Material Storage and Handling Requirements

3.04.1 The Developer will identify sites for temporary/permanent storage of excavated material and construction materials and will implement soil erosion control measures in order to avoid surface run off and prevent siltation.

3.04.2 Aggregate, Material and in particular Bitumen and Fuel Storage facilities will be properly maintained in all construction camps.

3.04.3 The Developer will prepare and implement protocols for vehicle maintenance to control contamination by grease, oil, and fuels, such as establishing a minimum setback of 100 meters from any water body or natural drainage. Oil /water separators are mandatory in these instances.

3.04.4 Fuel shall be stored within appropriated containment structures and bonded by earthen or concrete structures to prevent any spillage from entering watercourses. Collection channels shall be built leading to oil and/or silt traps, particularly around areas used for vehicle washing or fueling.

3.04.5 Spill clean-up kits shall be kept and maintained on site at all times. Any spill will be immediately cleaned up or prevented from entering any watercourse and the matter reported to the DOE immediately.

3.04.6 Construction waste material will be transported to DOE and Developer approved, designated local disposal areas.

3.04.7 The burning of waste material is strictly prohibited within the project area.

3.05 Workers' Camp

3.05.1 As much as possible, the temporary construction of worker camps will be prevented and minimized. Where these are required, the areas, as much as possible, will be restored/rehabilitated to acceptable standards after decommissioning.

3.05.2 Workers' camps, if necessary, are to be located away from schools, churches and areas frequented by community members and away from waterways.

3.05.3 Camp(s) shall be provided with garbage receptacles for the collection of domestic waste, as well as have proper sanitation and drinking water facilities. Camp site(s) are to be maintained free of debris and pollution.

- 3.05.4 Camp(s) are to be secured and access to the general public restricted.
- 3.05.5 The bulk storage of fuel and other hazardous substances shall be located away from workers quarters. Bulk storage facilities must have appropriate signs (no smoking, cell-phones etc.) and access restricted to authorized personnel only.
- 3.05.6 The Developer shall ensure that contractors and construction workers do not engage in the exploitation of natural resources such as hunting, fishing, collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.

3.06 Ecological Requirements

- 3.06.1 The Developer will put in place adequate measures to prevent siltation of watercourses. The washing of vehicles or machinery near or within rivers or creeks is prohibited.
- 3.06.2 The flow of creeks and stream should not be blocked or prevented. Any waterway diversion must be restored to its natural alignment without impacting the hydraulic flow.
- 3.06.3 Where culverts, bridges, and drainage works have been conducted, these areas will be seeded and maintained to minimize potential for die back of vegetation.
- 3.06.4 Culverts and bridges shall be suitably sized to provide in strategic areas for the passage of fauna under road to other side. The approaches of these areas shall be vegetated to blend with the natural surroundings to encourage their use.
- 3.06.5 Wildlife crossing signs shall be posted in areas identified as hot spots.
- 3.06.6 Vegetation along the road sides will be preserved as much as possible. Heavy machinery will be confined to road works area to avoid unwarranted soil compaction and vegetation loss.
- 3.06.7 Camp site(s) area will be re-vegetated and monitored to ensure re-growth.
- 3.06.8 A strict no hunting policy must be established for contractors and employees on work camps and along the project site.

3.07 Vegetation Removal and Re-vegetation Requirements

- 3.07.1 Where significant environmental impacts may occur, the Developer will document and photograph pre-construction and post-construction conditions.
- 3.07.2 If vegetation must be removed during wet periods, it shall be conducted on an “as needed basis” so as to have as little as possible exposed areas to prevent excessive erosion.
- 3.07.3 Topsoil shall be store in stockpiles having adequate measures put in place to prevent erosion. Where possible, removed plant will be preserved for later use.
- 3.07.4 Re-vegetation will be conducted on a continuous basis. As soon as works are completed on respective road sections, and equipment removed, these areas will be re-vegetated with recovered plants and other appropriate local flora.
- 3.07.5 All trees presenting an immediate obstruction to the proposed works along project site or that have the potential to affect road traffic in the event of a natural caused fall must be cleared.
- 3.07.6 The Developer will establish and implement a programme to promote sustainable land use practices among farmers and other property owners to reduce siltation and damming of stream channels, to minimize the potential impact of flash floods.

3.08 Traffic Management Requirements

- 3.08.1 The Developer will maintain a minimum road width open for through traffic at all times.
- 3.08.2 Proper signage will be installed to direct traffic during construction, stating speed, curves, crossings, and junctions. Traffic safety equipment/warning devices and speed indicators will also be used when diverting traffic either to an alternate route or reducing to one lane.
- 3.08.3 Traffic wardens will be contracted and deployed at schools and other sensitive areas to control the movement of both the deviated traffic and construction traffic during the implementation of civil works.
- 3.08.4 Reflectorized safety cones and flag persons will be utilized to separate the construction site from the trafficable areas.

- 3.08.5 Adequate night illumination, warning signs, and decals will be used to alert and warn motorist and pedestrians.
- 3.08.6 Pedestrian crossings will be installed at key areas including busy trafficking areas, schools and clinics, etc., and these locations should be given first priority as long as adherence to AASHTO design code is maintained, in particular but not limited to, proximity between pedestrian crossings.
- 3.08.7 The Developer will require contractor(s) to manage construction activities to ensure that traffic can flow in both directions on the highway, especially at night thereby minimizing risks.
- 3.08.8 The Developer will maintain access to all properties, especially those that are linked with others. Where access restrictions are required, the land owner should be notified as early as possible and such restrictions should be limited to daylight hours.
- 3.08.9 The Developer will ensure that congestion on roads through communities and villages are reduced, thus, improving pedestrian safety (with reduced impact through traffic conflict) and other adverse social impacts associated with congestion, including traffic noise.
- 3.08.10 Improve connectivity between residential development and the social infrastructure and services available.
- 3.08.11 Improve vehicular movement across the road network and vehicular efficiency and provide greater access to alternative routes.
- 3.08.12 Provide pedestrian and cycle carriageways across communities to enable better traffic safety. Where alternative routes are necessary to maintain traffic safety, the Developer will require the contractor to provide proper signage and public notification.

3.09 Utilities Management Requirements

- 3.09.1 The Developer will liaise with Belize Electricity Limited (BEL) and Belize Water Services Limited (BWSL) prior and during construction to ensure that necessary power poles and water pipelines are relocated prior to road construction commencement.
- 3.09.2 The Developer will identify water mains, both rural and governmental pipes, on the road shoulder to ensure that works do not impact these supply lines.

3.09.3 The potential impacts on water supply will be considered in determining the preferred widening alternative in order to avoid potential impacts to existing water mains.

3.10 Community and Worker Welfare, Safety, and Health Requirements

3.10.1 As much as possible, employment opportunities should be made available to women from local communities such as, but not limited to, road wardens etc.

3.10.2 Prior to commencing construction activities within settlement areas (communities), the communities should be duly informed.

3.10.3 Contractors shall record all complaints from communities as well as measures taken to appropriately address these and these records are to be shared with all stakeholders via the Developer.

3.10.4 No works whatsoever shall be conducted within private lands without having a land use/access agreement or prior to the acquisition of any private lands. There should be established a mechanism to ensure early discussion and negotiation between land-owners and the Developer regarding any property acquisition for the alternative routes and road alignment, including acquiring land for the alignment along the project site.

3.10.5 The Developer will implement measures to improve road safety during the implementation phase of the civil works, especially around schools and where the movement of heavy equipment and increase in vehicular movement is inevitable.

3.10.6 In areas where school compounds border the highway, barriers will be constructed to reduce noise and avoid distractions.

3.10.7 The Developer will provide and ensure workers wear Personnel Protective Equipment, including vibration isolation and suspension systems.

3.10.8 Vibration works should be alternated among workers.

3.10.9 The Developer will assess vibration impacts to properties and discontinue where damage/injury is imminent.

3.10.10 Dust suppressant measures will be used where necessary.

3.10.11 Equipment will be shut off when not in use.

3.10.12 The Developer will provide proper sanitation facilities at workers camps and along the project site, in adherence to health & safety standards.

4.0 ENVIRONMENTAL MONITORING AND ENFORCEMENT

During the tendering phase for construction, the Ministry of Works shall include as part of the contract documents the relevant requirements of this ECP as part of the contract clauses. The contractors will be required to implement requirements herein to mitigate any potential negative social and environmental impacts. The contractors are also required to review the mitigation measures with their employees to ensure compliance with the objectives of this ECP. As the project is implemented, the adequacy of mitigation measures will be assessed and where necessary revised in consultation with the Developer.

4.01 ENVIRONMENTAL MONITORING

4.01.1 As further information becomes available, additional environmental protection measures may be incorporated at the detailed engineering stage, to ensure the mitigation of any issue not addressed in this ECP.

4.01.2 The Developer will ensure that other requirements, which are contained as conditions of local licenses/permits or environmental legislation, are stipulated in contracts and sub-contracts and are ultimately implemented.

4.01.3 The Developer shall assume the responsibilities of the Community Relations Focal Point and will ensure to provide information about the project and will act as the principal agents in the lodgment and resolution of grievances.

4.01.4 To ensure that compliance monitoring with respect to this environmental compliance plan and to assist in on-going public awareness efforts on road improvement, the Ministry of Works will contribute five thousand dollars (\$5,000.00) to the Department of the Environment/Government of Belize. This contribution will be made as soon as possible but no later than thirty days before physical works on this project starts.

4.02 REPORTING REQUIREMENTS

4.02.1 The Developer will comply with all of the reporting requirements specified in this ECP.

4.02.2 The Developer will also hold periodic meetings with its contractor(s) regarding the implementation of ongoing environmental considerations.

4.02.3 Updated licenses and permits for all relevant activities will be kept at all times. The Developer will assist duly authorized officers of the DOE in the performance of their duties during site inspections, which are in connection with the project's development.

4.02.4 It is the responsibility of the Developers or its Contractors to immediately report any activity that has the potential to negatively impact or may damage or has damaged the environment, whether accidentally or intentionally, to the DOE and all other relevant agencies.

4.03 POST DEVELOPMENT REVIEW

4.03.1 After the construction period, the exercising of sound environmental ethics will not end, but rather provisions will be made by the Developer for the monitoring of all activities in the post-construction period. A system will be put in place for reporting negative impacts as well as a means of continually implementing corrective mitigation measures where the need arises.

4.03.2 Additional monitoring will be carried out by the Developer to ensure that the various mitigation measures installed are functioning and maintained properly.

4.03.3 As already stated above, wanton disregard for the terms and conditions agreed upon in this legal document may result in the revocation of this ECP, issued for implementation of this project, and in the possible imposition of administrative and/or legal penalties.

WITNESS

Appendix I

