GOOD SUCCESS TO TIMEHRI ROAD INFRASTRUCTURE DEVELOPMENT PROJECT

GY-L1081

FUNDED BY:

DEVELOPER: **MINISTRY OF PUBLIC WORKS**

CONTACT DETAILS: **FORT STREET, KINGSTON GEORGETOWN**

DATE PREPARED: **05 AUGUST 2023**

PREPARED BY: **MINISTRY OF PUBLIC WORKS**

CONTENTS

LIST OF ABBREVIATIONS/ACRONYMS

Abbreviations	*Definitions*
EBDR	East Bank Demerara Road
WSG	Works Services Group
MoPW	Ministry of Public Works
CJIA	Cheddi Jagan International Airport
CIA	Cumulative Impact Assessment
RoW	Right of Way
DAI	Direct Area of Influence
IAI	Indirect area of Influence
IUCN	International Union for Conservation of Nature
EPC	Engineering, Procurement, and Construction
ERM	Environmental Resources Management
ESA	Environmental & Social Assessment
GDP	Gross Domestic Product
GOG	Government of Guyana

SECTION 2

SITE DESCRIPTION

Project Location

The Project will encompass a 23.5 km stretch of the two-lane road from Grove, near the southern outskirts of Georgetown, to Timehri, near the Cheddi Jagan International Airport (CJIA), running along the eastern bank of the Demerara River (EBDR). This road segment traverses both open as well as residential community areas that are constrained for space on either side of the right-of-way due to physical barriers. The corridor is essential for supporting economic activities as the East Bank Demerara Public Road is widely relied on for the transportation of goods from the coast, supporting value chains in sectors including manufacturing, food-processing, construction, mining, and forestry. The Grove to Timehri section specifically, provides essential access to the Airport as it is the only road connecting the airport to the capital city, Georgetown.

Other Location Alternatives

Rehabilitation of the existing roadway is the most feasible alternative. No alternatives for the road are considered as the road is already in use and all rehabilitation work would occur within the existing RoW. WSG has made an analysis to different cross-sections to adjust different alternatives in design in order to affect as little as possible the businesses, residences and other spaces located along the road.

The road is already in operation and WSG is only making improvements to the road within the existing RoW, without changing the road traffic capacity; therefore, no other alternatives were considered except for the location of the utility relocation and drainage system upgrades.

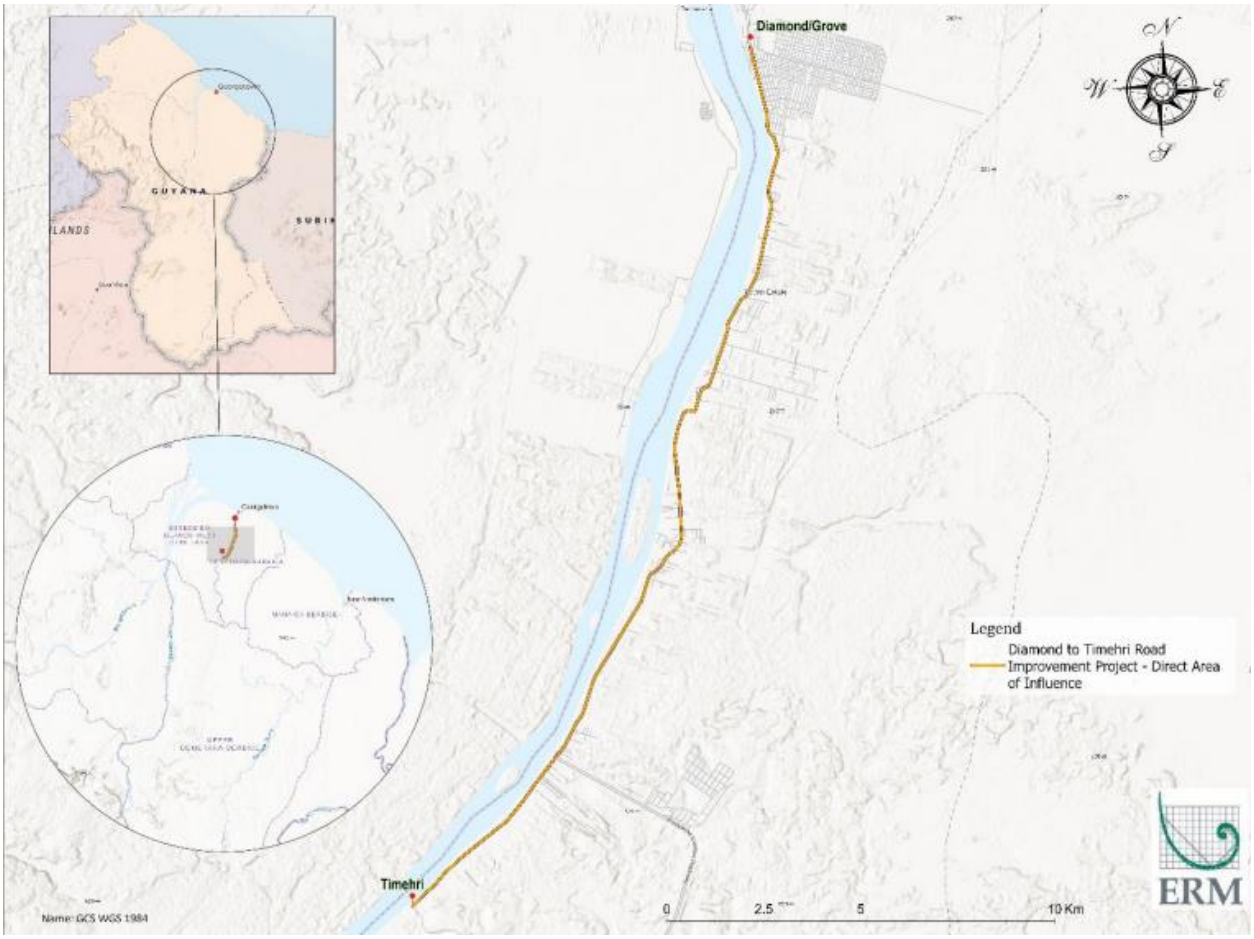


Figure 1.1 The Project's Location

DIRECT AREA OF INFLUENCE

The Direct Area of Influence (DAI) for the Project is defined as the footprint of the Project, where the majority of the impacts from the Project are expected to occur and/or be experienced most acutely, namely:

• Project corridor, 23.5 km of roadway stretching from Grove to Timehri

• Temporary facilities during construction (laydown areas, day camps for workers)

• Associated facilities: upgrade and new utility infrastructure; electricity poles and drainage structures (culverts, sluices).

• Upgrading the two detour roads.

• Installing weigh scales.

At the moment of writing this report, the EPC contractor had not been selected; therefore, temporary facilities such as laydown areas are not defined. Temporary ancillary facilities will be prohibited in areas that require any physical displacement. As such, the DAI only considers the Project corridor, the widening of the roadway within the RoW, the associated facilities along the road, the upgrading of the two detour roads, and construction of the weight facilities station.

INDIRECT AREA OF INFLUENCE

The Indirect Area of Influence (IAI) of the Project is defined as the area within a 500-m radius of the Project footprint where some impacts such as traffic, dust and noise disturbance could occur, but generally with a lower level of intensity than in the DAI. Impacts in the indirect area of influence also include parts of the Demerara River which is at risk of increased sedimentation and erosion on account of Project activities that divert water from the existing drainage infrastructure .In the case of the socioeconomic baseline, affected populations are considered to be those who either reside, travel through, or engage in commercial or recreational activities within the DAI and/or IAI .It is noted, that in many cases secondary sources of baseline data are available only for wider administrative areas. Data at these levels are supported by DAI- and IAI-specific information and data from interviews and field reconnaissance activities to provide as accurate a characterization of the impacted areas as possible.

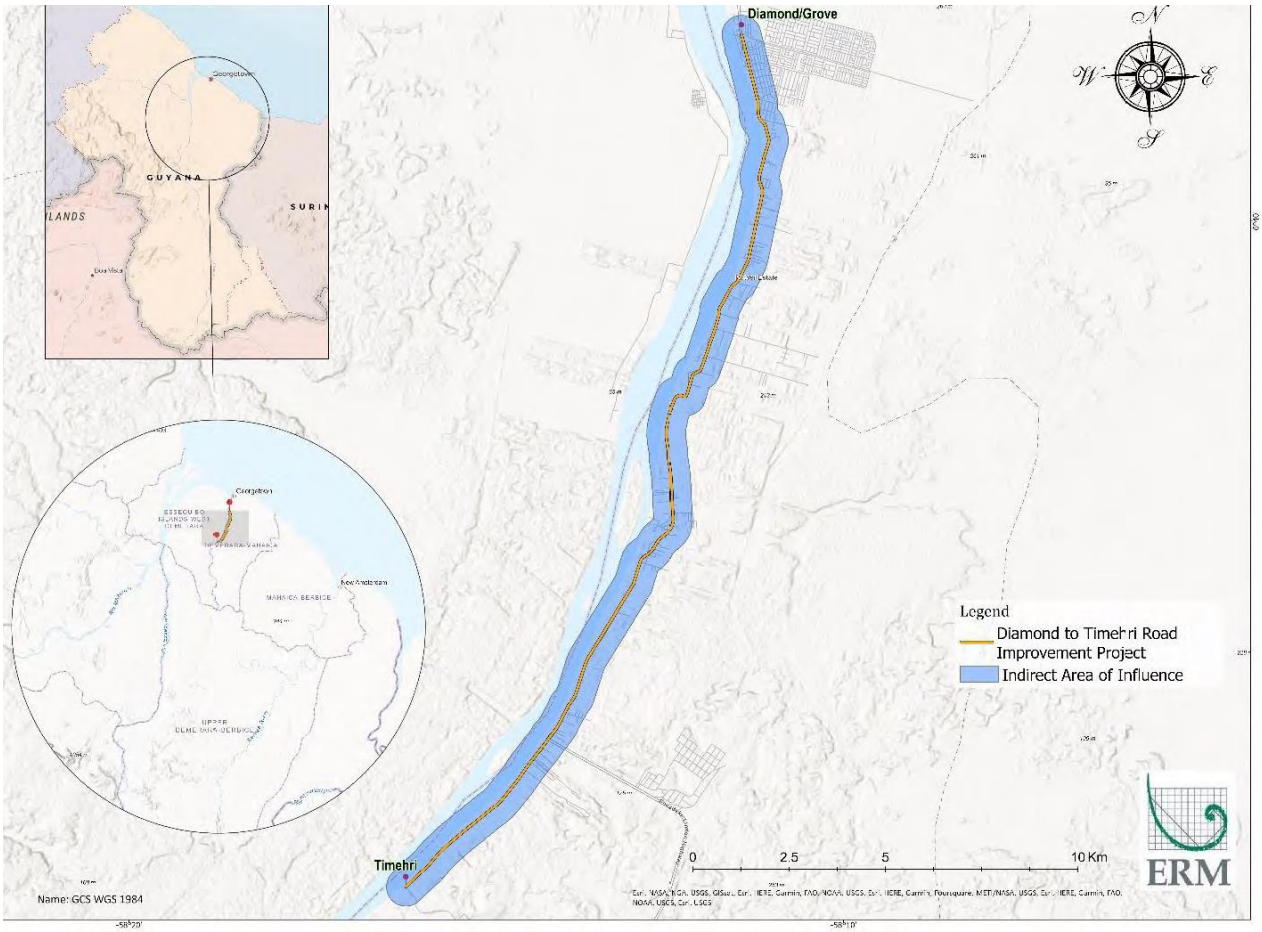


Figure 1-2 Direct and Indirect Area of Influence

BASELINE INFORMATION

The proposed project area is divided into three major sections: physical environment, biological setting (biodiversity), and socioeconomic and cultural setting. This section describes the baseline environmental conditions against which the predicted impacts of the Project are measured in Section 5. Information presented corresponds to primary and secondary information obtained in 2015 during the preparation of the first ESIA. It was complemented by assessment during a site reconnaissance visit conducted in June, 2022.

Air Quality Baseline data

The major air emission sources in the Project Area are attributable to heavy traffic from the roadway itself. Therefore, it can be presumed that average air quality in the Project Area is medium and typical of an urban environment with dense traffic. The major air pollutants likely to be present in the Project Area include inhalable particulate matter (mostly smoking in public places), and combustion/exhaust emissions such as carbon monoxide (CO), Sulphur dioxide (SO_2), nitrogen dioxide (NO_2), and volatile organic compounds (VOC). Most of the roads are paved, which results in low dust generation. Primary data was not collected at the time of writing the 2015 ESA. Traffic activity, wind speed, and direction can have a big influence on pollutant concentrations. Generally, the more traffic, the higher the emissions; however, certain activities like congestion, stop-and-go movement or high-speed operations can increase emissions of certain pollutants. The traffic congestion and stop-and-go movements on the Project Road restrict the proper dispersion of vehicle exhaust emissions, which further increases emissions of some pollutants in the Project Area. Section 19+700 to 25+000 which occurs right after Linden junction experiences a far less destructive traffic regime and therefore will produce lower pollution concentrations.

Growth of passenger carrying and commercial vehicles on the roadway is directly tied to economic activity which can be measured by evaluating Gross Domestic Product (GDP) and GDP per capita (GDP pc), as shown in Table 4.1.

Table 1.1 Traffic Forecast

	Forecast Variable	Growth % 2014-2050	Elasticity Value	Forecast Traffic Growth %
Commercial Vehicles	GDP	3.49	1.09	3.8
Light Vehicles	GDP pc	3.54	1.35	4.8

Source: Economic Appraisal Final Design

The pavement design was informed by estimated equivalent standard axle loads (ESAL[10]) for a period of 10 and 20 years, based on expected GDP growth. A greater increase in vehicles on the road is expected on the rehabilitated roadway at section 0+000-19+900 compared to section 19+900-25+000. Regardless, the number of vehicles is both sections is expected to increase in the next 20 years.

Water Quality Baseline

Untreated stormwater and sewage typically flow directly into the Demerara River and nearby canals, polluting the waterbodies. Mining operations upriver, leaching from agricultural activities, and indiscriminate disposal of solid waste also add to the pollution of the river. To determine ambient pollutant conditions, water quality baseline studies for the Demerara River were conducted in 2015 and are presented in Table 4.4, below. Seven parameters, conductivity, salinity, total dissolved solids, pH, dissolved oxygen, temperature, and turbidity were evaluated at 11 sampling stations throughout the Timheri Corridor. However, water quality impacts resulting from road construction may be difficult to determine when compared against the baseline data collected, due to non-point sources of pollution. Likewise, sustained levels of high turbidity have been noted in the Demerara River but, long-term monitoring data of flow discharge was not available at the time of writing to demine the cause for the phenomenon.

Soils and Geomorphology

The topography of the Project area is typically low–lying and flat. The soils of the area are a combination of Demerara clays, white sand, and pegasse in some areas Dam. The soils are characterized by four different types of clays Mara Clay, Brickery Clay, Tuschen Clay and Lama Muck a combination of the following is expected:

- Mara Clay: Poorly drained soil developed from relatively old marine sediments. It occurs in depressions and is characterized by a shallow peat deposit over thick grey clay underlain by greenish grey clay subsoil.
- Brickery Clay: Poorly drained soil developed in river alluvium. The alluvium may have been deposited over fluvio-marine sediments. It is characterized by a thin dark grey surface over grey clay subsoil mottled with brownish yellow, yellow red and brown. The substratum is soft green grey clay, which may contain numerous bits of partially decomposed organic matter. The soil is strongly acid, slowly permeable and has a moderate level of fertility.
- Tuschen Clay: Poorly drained soil developed in river alluvium. It is characterized by a thin dark grey clay surface over a grey to greenish clay subsoil with mottles of brownish yellow, yellowish red and brown. The soil is strongly acid, slowly permeable and has a moderate level of fertility.
- Lama Muck: Poorly drained organic soil occurring in expressional areas. The soil consists of well decomposed muck underlain by dark reddish-brown peat. The substratum is greenish grey soft clay.

Floral and Faunal Species (Ecological Baseline Data)

The Demerara River originates in the northern slopes of the Makari Mountain and flows north for 346 km until it reaches the Atlantic Ocean in Georgetown. The river flows through a huge area of the hilly sand and clay belt, mainly covered by forest, and the last part of the river lies in the flat alluvial coastal plain, with the most economic activities (mostly sugar) and highly populated areas. This part has a completely human-made water management system, engineered by the Dutch in the 18th and 19th centuries to control the water in the low-lying regions. The substrate consists predominantly of fine white sand, with some clay and organic matter. The Project runs along the east side of the river. The Project team observed mostly mobile and

common species such as lizards, salipentas, butterflies, and ants. In addition, during the site visit conducted on 2022, vegetation alongside the road seemed heavily disturbed. The shoreline along the Demerara River is largely developed with impervious surfaces comprised of marinas, businesses (mostly fishing), and industrial sites. Patches of significantly fragmented and/or degraded riparian habitats characterize the banks where there are no developments. The Flora consists of common weeds and shrubs. Identified species include the carrion crow bush (*Senna alata*), sleep and wake plant (*Mimosa pudica*), wild eddoes (*Colocasia antiquorum)*, and bamboo (*Bambusa vulgari*). Much of the natural habitats are degraded due to Georgetown's poor stormwater drainage infrastructure as well as untreated sewage discharge, as described in Section 4.1.5.1. Due to the River's urban location and its high concentration of pollution, including garbage and raw sewage, it supports minimal flora and fauna biodiverse habitats, and in the Georgetown area, is practically devoid of any benthic, flora or fauna communities. The Cecropia (*Cecropia* spp.) tree is a common vegetation species that grows in disturbed areas throughout Guyana. Similarly, the spectacled caiman (*Caiman crocodilus*) is a common (and IUCN Least Concern) reptile species that is typically found in slow moving waterways and wetlands. Common green iguanas (*Iguana iguana*) are also found throughout the urban environment near and in Georgetown. Baseline work was not updated at the Project site since 2015; however, common species were identified through secondary sources at a regional level. No endangered species or species identified in IUCN species listings or restricted by the CITES listings were identified in the Project area during 2015 field efforts.

Socioeconomic and Cultural Resources

This baseline was developed using a combination of desktop (secondary) and field-based (primary) research. Desktop studies draw upon publicly available information such as the national census, nongovernmental organizations, and multilateral institutions. It is noted that although all efforts were made to locate recent data, in some cases, the available data are relatively dated (e.g., the most recent census was conducted in 2012). Field-based research includes a qualitative stakeholder engagement survey conducted in communities in the Project area over the course of two days: specifically, Grove, Friendship, Soesdyke, and Timehri. Grove was surveyed due to higher levels of encroachment along the RoW and the remainder due to

their highly populated community and significant commercial activity. Stakeholders are therefore selected by their active presence in the Project's RoW, as they have higher chances of being affected from the Project. The survey included questions about basic demographic information and public knowledge/sentiment about the Project, and potential impacted peoples. The surveys took place on July 6 and July 7, 2022, as part of early-stage stakeholder engagement efforts, and involved interviewing 34 people in the Project direct area of influence. The surveys updated and contrasted stakeholder's views of the Project compared the 2015 stakeholder mapping.

Layout of the Project

PLEASE SEE PDF DOCUMENTS PROVIDED. DUE TO THE CAPACITY OF DETAILED MAPS, THIS SECTION OF THE PROJECT SUMMARY HAD TO BE SUBMITTED SEPARATELY.

ALL FOR YOUR INFORMATION!

SECTION 3

Figure 3.1- Cross sections of the Good Success to Timehri Project

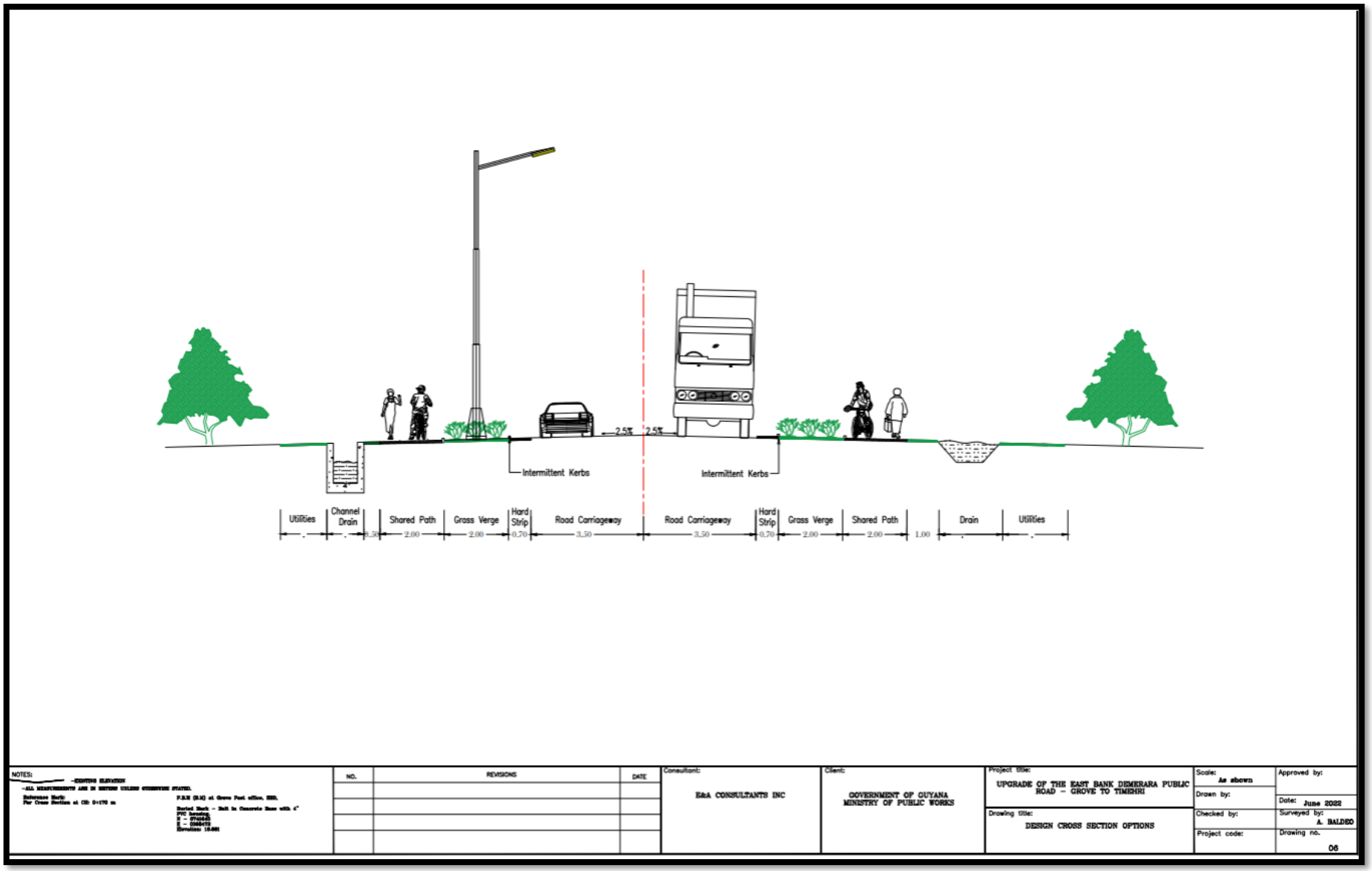


Figure 3.2- Cross sections of the Good Success to Timehri Project

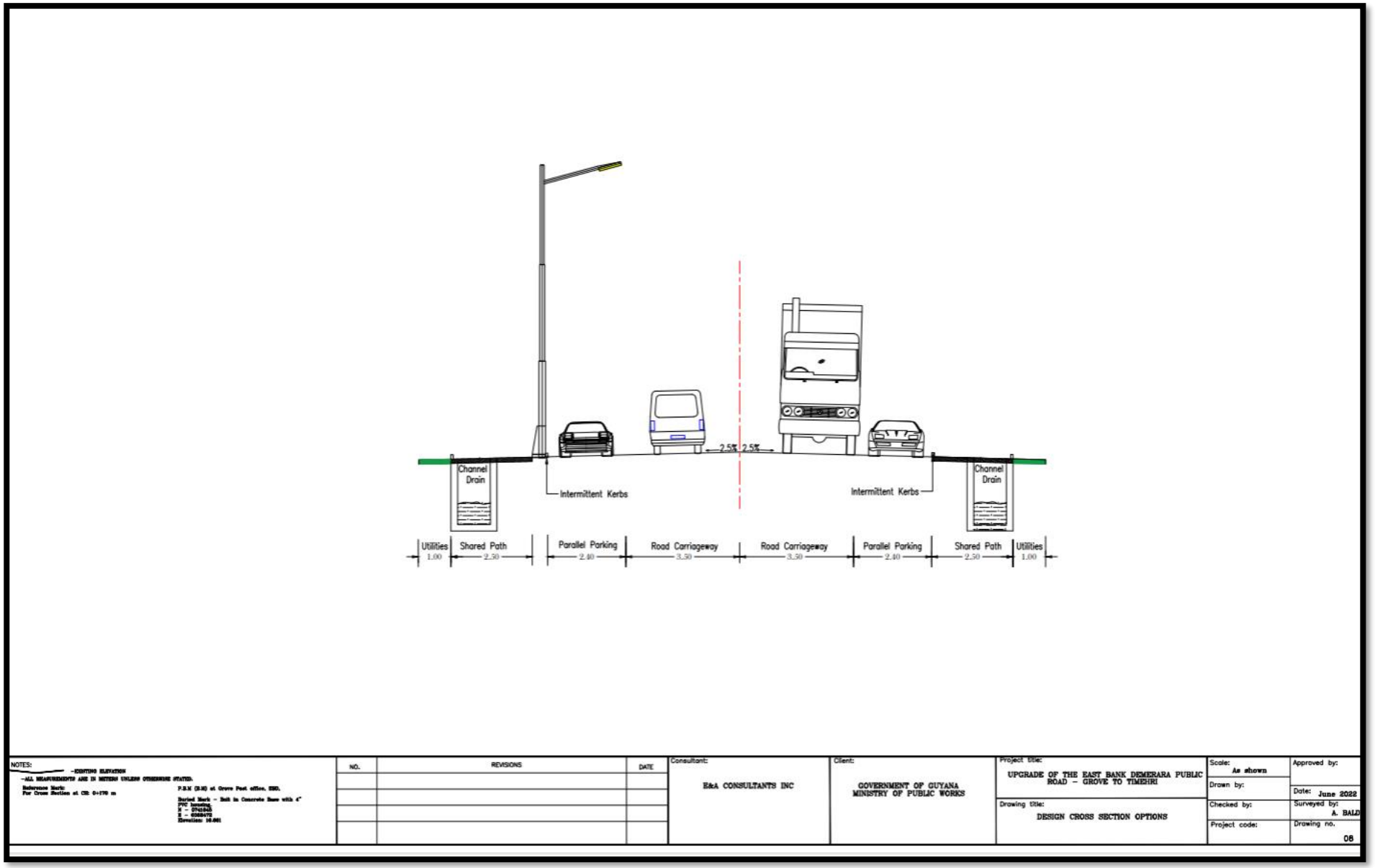
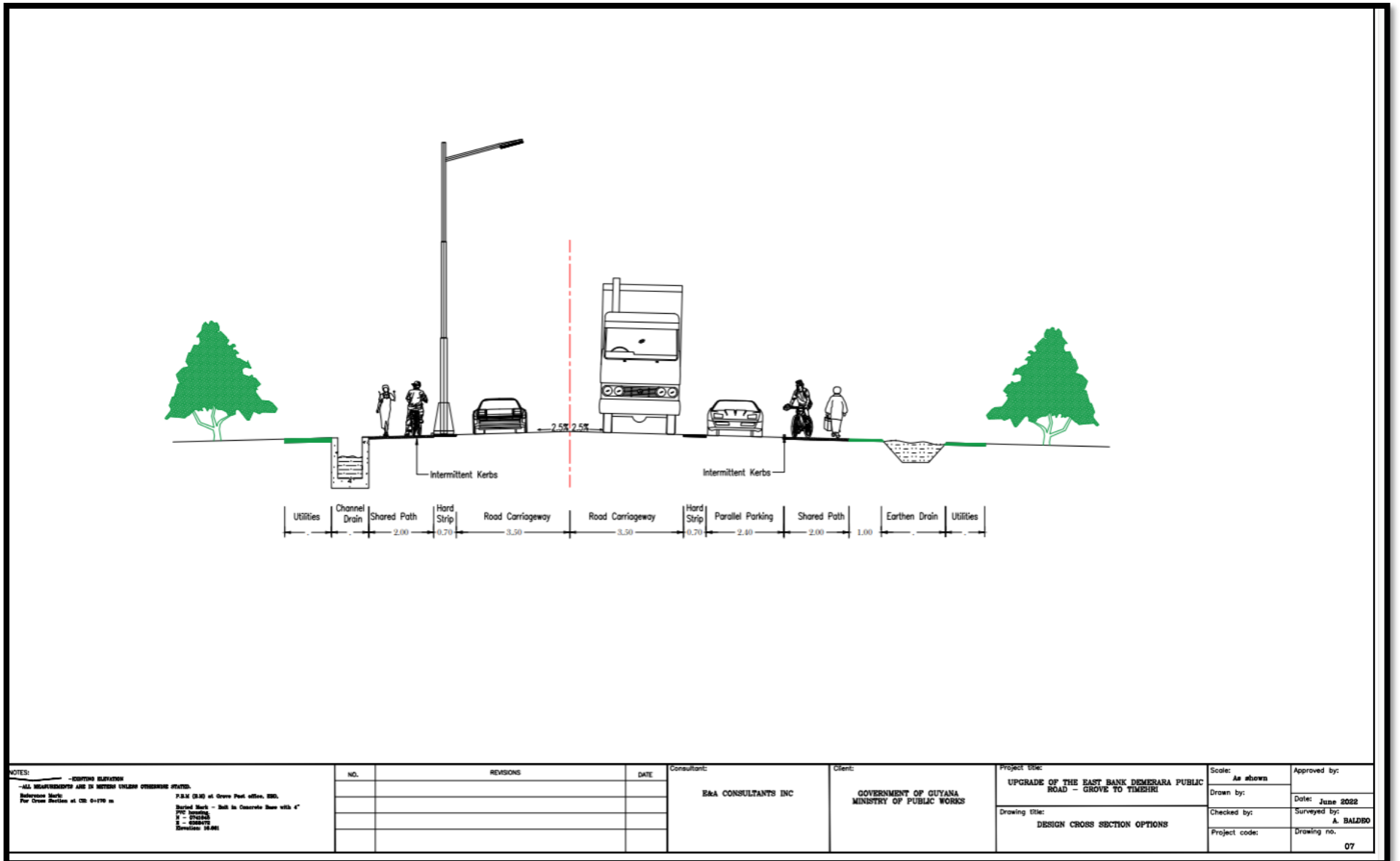


Figure 3.3- Cross sections of the Good Success to Timehri Project



Project Size

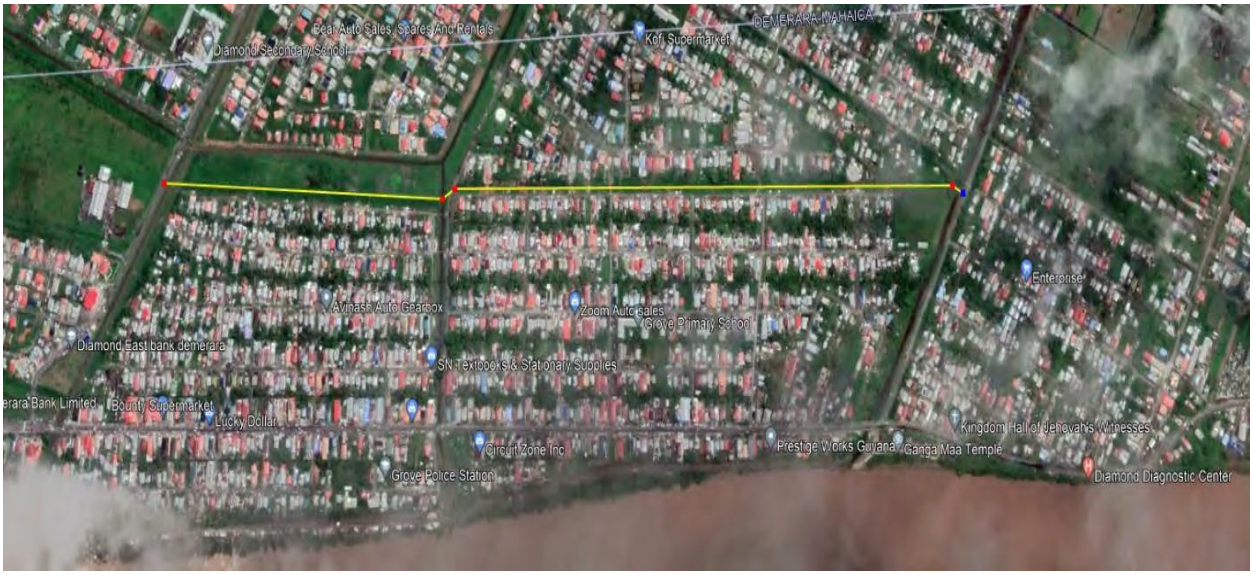
Transportation Route

The road network is used by the approximately 100,000vehicles in the country and relies on a system of bridges and culverts that allow for crossings over the system of canals, drains and sluices along the coast.

Currently, WSG has identified two options for the diversion of traffic during construction:

3. Detour road #1 from Diamond to Good Success.
4. Detour #2 is at Good Hope, in front of the GTT Exchange.

Figure below shows the proposed detour roads; detour #1 would involve the construction of temporary bridges to cross canals that are present in the area. In addition, after the final design of the road is completed and once the EPC contractor is selected, said roads could be modified or more could be added.



Detour Road # 1

Detour Road # 2

Figure 3.4: Proposed Detour Roads to Divert Traffic during Construction

Weight Scale

For this project, a portable scale will be utilized to ensure that all of the operations are executed in compliance with all rules and regulations and also to figure out the quantity of materials required to complete the project.

Project Design

A site reconnaissance visit was conducted on June 10th, 2022, where ERM and the WSG drove around the 23.5 km Project area, took photographs, observed the vicinity of the Project, located important features or areas of interest that could be impacted by the Project. ERM took pictures to document existing infrastructure (pipelines, gutters, lamp posts, telephone lines), delineate/understand the extension of the RoW and presence of commercial or residential buildings within the RoW. The main risk and potential impact of the Project after that first visit was economic displacement of existing inhabitants that are encroached in the RoW.

Although the overall Project footprint has not been determined yet, during the site visit ERM identified the main areas congested, which correspond to the Grove Public Road and at the Soesdyke Junction. In those two areas there where structures such as shops, vegetable stalls, derelict vehicles and other encumbrances were observed in the ROW (as highlighted by the WSG team). In addition, Grove can be considered a hotspot, as it is populated and there is an abundance of businesses ranging from bars, groceries, jewelry shops, telecommunication businesses, vehicle repair shops, hardware stores, schools, clinics and restaurants within the community. Structures such as kokers and culverts which would undergo rehabilitation during the project were also highlighted. Photos taken demonstrate some of the structures in the ROW along the Grove Public Road. Wooden electricity poles were also observed which would need to be relocated The WSG indicated that arrangements with the utility companies – Guyana Power and Light Inc (GPL) and Guyana Water Incorporated (GWI) and the Guyana Telephone and Telegraph Company (GT&T) for relocation of associated infrastructure.

Waste Production

Most waste will be produced during the construction phase and is primarily comprised of domestic, construction (e.g., excavation material, cement, lumber, etc.), and hazardous (e.g., waste oil, lubricants) waste. In addition, there will be sanitary waste (i.e., liquid effluents due to temporary bathroom stalls for workers) and domestic waste from food consumed on site. Construction activities are planned to occur over a period of 36 months, and the amount of waste to be generated has not been determined yet.

The Haags Bosch engineered municipal landfill site in Georgetown is the only permitted sanitary landfill site in the country and that is the only site in which the project will utilize. After its opening in 2011 the facility had operational problems, including a fire in 2015. It was also the subject of several non-compliance notices from the EPA relating primarily to leachate management. Since then, a new operator has been appointed and remediation of the site and upgrading of the operation is underway. The landfill is lined and now has a leachate collection system and a leachate treatment system.

Management Measures in place for Solid waste:

- Implemented the Construction Environmental Management Plan regarding sediment and erosion control and waste management
- Provide appropriate waste bins, type, volume, and service frequency to accommodate anticipated waste streams
- Enforcement of a strict no dumping policy especially in drainage canals and areas nearest the waterways
- Separate hazardous waste from non—hazardous waste.
- Place of trash disposal bins around the construction site and worker day-camp
- Provide information regarding waste management in site specific inductions, including waste separation and importance of securing vehicle loads.
- Ensure licensed contractors are used to collect controlled wastes
- Disposal of all waste in the Haags Bosch Landfill site

- Installation of appropriate fencing and containment in waste management areas
- Implement management measures to prevent and manage spills, per Contingency Plan
  - Storage of excavation material in designated laydown areas away from drainage channels and water bodies
  - Selection of laydown areas by the contractor away from drainage channels and water bodies
  - Appropriate training for staff on waste management practices and safe handling and storage of hazardous materials
  - Implementation of Spill Management Measures established in the Contingency Plan (i.e., Implementation of sumps and oil traps to prevent fuel leaks and spills from contaminated surface water, have spill kits on site, storage of collected material in drums before transport to license disposal site

Resource Efficiency and Pollution Prevention (Project will consume resources and will produce waste and emissions) The following are expected:

- Triggering quantities of GHG emissions are not expected for this Project.
- Implement controls to minimize emissions and waste production
- Implement resource efficiency strategies
- Environmental monitoring should consider most stringent maximum limits.

Duration of the Project for each phase.

TO BE DETERMINED

SECTION 4

Potential Effects of the Environment

(Land, Soil, Water, Air & Natural Resources)

All road signs will be updated to meet US standards and include use of reflective signs and thermoplastic to mark the road surface, increasing night-time visibility. Pooling of water on the road surface following heavy rain was another issue noted by MPW. Drivers will swerve to avoid accumulated waster causing head-on collisions. Improved drainage infrastructure and elevation of the roadway will reduce the risk of pooling and accidents that result from driver's loss of control. Improvements made to drainage infrastructure will also reduce the likelihood of floods which impact cash crop production, making profits more predictable for local farmers.

The Environmental Protection Act was enacted to implement the environmental provisions of the Constitution. The Act is Guyana's single most significant piece of environmental legislation because it articulates national policy on important environmental topics such as pollution control, the requirements for environmental review of Projects that could potentially impact the environment, and the penalties for environmental infractions. It also provides for the establishment of an environmental trust fund.

Impact Significance Rating

Negligible
Minor
Moderate
Major
Positive

Impact	Management Measure	Pre-Management Impact Significance	Post-Management Impact Significance
Air emissions and dust generation from construction vehicles, equipment and increased combustion and exhaustion emissions from private and commercial vehicles	• Implementation of the Construction Environmental Management Plan (CEMP) on the air quality and dust management measures. • Maintain all construction equipment in accordance with manufacturer's specifications; keep the service log up to date. • Suppress dust as needed in unpaved areas (e.g., use of water sprays or water carts). • Where dust is identified as an issue, dust control measures will be implemented. These will primarily be the use of water carts but may include surface treatments • Avoid burning non-vegetative wastes (refuse, etc.) at construction sites. • Avoid unnecessary idling of construction equipment or delivery trucks when not in use. • Keep work vehicles clean (particularly tires) to avoid tracking dirt around and off the site. • Cover work vehicles transporting friable materials to prevent materials being spread around and off the site. • Minimize drop heights of materials. • Area to be disturbed minimized. Clearance lots to be approved by Project Manager. • Implement the external grievance mechanism to follow-up on dust and/or exhaust emissions complaints being received by the community and workers. • Vehicle movements controlled, optimize signaling to reduce traffic congestion (implement Traffic and Pedestrian Management Plan) • Enforcement of speed limit and other traffic laws at the site • Use of dust masks by workers (number of workers wearing them) • Provide dust and air quality awareness talks as part of the environmental induction process	Moderate	Minor
Contamination to surface water	• Implemented the Construction Environmental Management Plan regarding sediment and erosion control and waste management • Provide appropriate waste bins, type, volume, and service frequency to accommodate anticipated waste streams • Enforcement of a strict no dumping policy especially in drainage canals and areas nearest the waterways • Separate hazardous waste from non—hazardous waste	Minor	Negligible

Impact	Management Measure	Pre-Management Impact Significance	Post-Management Impact Significance

	• Place of trash disposal bins around the construction site and worker day-camp
	  • Provide information regarding waste management in site specific inductions, including waste separation and importance of securing vehicle loads.
	• Ensure licensed contractors are used to collect controlled wastes
	• Disposal of all waste in the Haags Bosch Landfill site
	• Installation of appropriate fencing and containment in waste management areas
	• Implement management measures to prevent and manage spills, per Contingency Plan
	  • Storage of excavation material in designated laydown areas away from drainage channels and water bodies
	  • Selection of laydown areas by the contractor away from drainage channels and water bodies
	  • Appropriate training for staff on waste management practices and safe handling and storage of hazardous materials
	  • Implementation of Spill Management Measures established in the Contingency Plan (i.e., Implementation of sumps and oil traps to prevent fuel leaks and spills from contaminated surface water, have spill kits on site, storage of collected material in drums before transport to license disposal site		

Noise generated by construction equipment and activities	• Implementation of the Construction Environmental Management Plan (CEMP) on noise management measures. • Maintain all construction equipment in accordance with manufacturer's specifications. • If possible, schedule construction, modification, and rehabilitation work during daylight hours when increased noise levels are more tolerable. • If possible, schedule construction and rehabilitation work to minimize activity during peak periods of tourism and recreation (weekends, holidays, etc.). • Avoid unnecessary idling of construction equipment and trucks. • Include a communications protocol regarding construction as part of the external communication mechanisms to stakeholders to inform adjacent receptors (e.g., commercial and industrial businesses) of construction activities. • Install broadband spectrum backup alarms on construction vehicles as opposed to the typical single-tone frequency alarms (broadband alarms attenuate more quickly over distance due to the incorporation of higher frequencies). • Pre-start checks and maintenance schedules to ensure equipment performance as required. • Noise-dampening equipment to be used on equipment with excessive noise generating characteristics • Implementation of community grievance mechanism	Moderate	Moderate

Impact	Management Measure	Pre-Management Impact Significance	Post-Management Impact Significance
	• Use of auditive protection equipment by workers (i.e., ear muffs)		
Disruption to drainage and water service, negative alteration of hydrology conditions of runoff water crossing the Road.	• Follow technical specifications for base width, side slope, and invert level for the 58 drainage structures as recommended in Appendix F of the drainage study for the improvement of roadside drainage. • If needed, conduct a flood hazard assessment to finalize the drainage design • If possible, perform relocation of utility infrastructure prior to the start of construction activities. Otherwise, liaison with relevant service providers to limit service disruptionsdisruptions	Moderate	Minor
Erosion and sedimentation	• Disturbance area will be minimized and clearly demarcated. • Works will only be conducted within the works zone. • Vehicle movements will be restricted to the defined roads/tracks. • Where possible, works area will be designed to ensure stormwater runoff drains into the site. • Where required, sediment controls will be put in place. These will include, but not be limited to, rock check dams, sediment basins, sediment fences and silt socks. • Sediment controls will be reviewed during site inspections and/or after significant rainfall (more than 10mm in 24hrs resulting in site runoff). • Strategic location of detention basins to separate sediments in surface water runoff from water discharged to drains • Locate material stockpiles away from waterways and with perimeter berm • Re-routing drainage network to facilitate construction of Kofi Structure and other culverts • Periodic cleaning of drainage canals per maintenance guidelines • Landscaping and revegetation measures	Moderate	Minor
Climate change and natural hazards (flood risk)	• Incorporate into the Project design, results from the drainage study, to inform the design specifications for 58 cross drainage structures, including invert level, soffit level, slope, and base width, as applicable • Installation of manually operated sluice gates (kokers) at the downstream end of the drains to prevent flooding and intake of brackish or salt water during high tide • Consult with the Sea defense Board to inform Project design • Implementation of Construction Contingency Plan for general actions in the presence of floods • Reporting of disaster event(s) to appropriate authorities • Carry out planned maintenance of drainage infrastructure	Moderate	Minor

Impact	Management Measure	Pre-Management Impact Significance	Post-Management Impact Significance
Climate change and natural hazards (flood risk)	• Implementation of contingency plan in the event of floods • Reporting of disaster event(s) to appropriate authorities • Carry out planned maintenance of drainage infrastructureCarry out planned maintenance of drainage infrastructure	Positive	Positive
Disturbance to surrounding vegetation	• Minimization of the construction footprint by refraining from the removal of vegetation • Demarcation of work area with fencing to minimize disturbance of natural vegetation • Minimization of temporary and permanent construction footprints during the design phase. • Plan equipment access locations that minimize impacts, where possible; avoid areas with less stable structure such as steep banks. • Revegetation as necessary	Minor	Negligible
Wildlife injury or mortality.	• Minimize lighting • Implement above measures to minimize noise and air pollution, • Implementation of construction contingency plan (CCP) • CCP includes measures such as proper training for workers and appropriate materials to deal with spill incidents (absorbent material, safety equipment, containers for collected materials, ect.). • Implementation of the Traffic and Pedestrian Management Plan will further reduce risk of injury or mortality resulting from vehicle collision with wildlife by (i) ensuring routes are planned to reduce the need for excessive vehicle movement, (ii) eliminating the need to reverse, (iii) ensuring adequate visibility for drivers	Negligible	Negligible
Degradation of aquatic habitat	• Implementation of drainage system to direct surface runoff to the stormwater systems • Implementation of construction waste management plan • Installation of sediment and erosion controls • Avoidance of vegetation disturbance.	Minor	Negligible

Impact	Management Measure	Pre-Management Impact Significance	Post-Management Impact Significance
Occupational Health and Safety and Working conditions	• Implement the Construction Health and Safety Management Plan: • Training for the safe use of construction equipment and machinery to all workers. • Conduct Job Hazard Analysis before conducting a task. Assure Work Permits are issued for hazardous work, as required • Use of appropriate protective clothing and safety gear including hard hats, hearing protection, goggles, and other devices; consider individual fitting of PPE for women and employs who do not fit one-size-fits-all and purchase safety helmets equipped with chin straps to improve fit • Application of signage such as reduced speed in work zone and presence of workers. Signage must be in appropriate language (i.e., other than English if workers who speak other languages are present) • Provision of ample supply of potable water and required number of sanitary facilities on site; ensure women have separate facilities. • Waste bins should be available near temporary camps and rest areas to minimize working in excess heat • Communicate with local hospitals to determine protocol in the event of an emergency • Maintain first aid kits on site that are fully stocked at all times. • Implement workers' grievance mechanism to raise concerns regarding H&S or working conditions. • Conduct H&S meetings as needed to discuss issues or incidents. . Incidents resulting in fatalities must be reported immediately • Implement COVID-19 protocol	Moderate	Minor
Provision of construction jobs to local companies and materials sourced from the local economy	• Implement job quotas for local employment and sourcing requirements for construction contractors based on the size and scope of the Project. • Encourage hiring women • Attract local workers, suppliers and contractors	Positive	Positive
Temporary economic displacement to local businesses	• Implement a Livelihood Restoration Plan, that accounts for all stakeholders impacted on their means of living. • Design a compensation program for eligible stakeholders	Minor	Positive

Impact	Management Measure	Pre-Management Impact Significance	Post-Management Impact Significance
Impacts on health and safety of the community	• Develop and implement a Construction Health and Safety Plan and the Traffic and Pedestrian Management Plan • Appropriate and timely engagement of stakeholders, to ensure that they are well informed of the nature and duration of Project activities, and have a good understanding of associated safety risks. • Implement good housekeeping practices in and around the Project construction sites including elimination of standing water or, if not practicable, treatment of standing water to kill mosquito larvae • Implement stakeholder outreach to vulnerable subpopulations or to those responsible for maintaining their safety • Establish and publicize a Grievance Mechanism to receive and respond to grievances. • Develop a Code of Conduct that strictly prohibits SGBV of any kind within the workforce and community. • Implement the COVID-19 protocol	Moderate	Minor
Infrastructure damage	• Conduct an assessment of properties along the RoW to determine the physical state of property (including fencing and walls) prior to the start of construction activities in order to determine if damaged occurred resulting from construction activities • Cover material transport truck to prevent air borne debris that could damage property • Enforcement of Traffic and Pedestrian Management Plan to reduce the likelihood of vehicles colliding with infrastructure	Minor	Negligible
Community Health and Safety	• Regular maintenance of the road • Use of reflective traffic signs and road markings • Sufficient street lighting • Installation of raised pedestrian cross walks • Universal access features • Road safety campaign • Implementation of contingency plans for natural hazards	Positive	Positive
Restricted access to cultural heritage sites	• Construction of concrete access bridges to religious and cultural sites • Improved parking and drainage infrastructure • Location of bus stop and pedestrian crossings in consideration of proximity to access for cultural sites • Implementation of the Chance Find Procedure	Negligible	Negligible

Impact	Management Measure	Pre-Management Impact Significance	Post-Management Impact Significance
Living cultural heritage	• Include cultural heritage during the public consultation event. i.e., to understand churches mosques, mandirs, or other living heritage sites to understand operating hours and minimize disruptions.	Negligible	Negligible
Increased pedestrian and vehicle traffic congestion and disruption.	• Maintain the traffic and schedule activities, to the extent possible, to be conducted not during peak times (e.g., early in the morning). • Provide advance notice of scheduled construction activities and major traffic constructions via public service announcements (radio, TV, newspaper) • Coordinate the delivery of construction materials at times that minimize impacts to the existing traffic • Deploy traffic, safety, and road detour signs in appropriate language and close cooperation with the authorities. • Maintain one lane of carriageway open at all times to facilitate the flow of traffic • Install beams, retention walls and temporary passageways as needed (e.g., road safety barriers to facilitate safe access during construction) • Site H&S and security will be maintained during the construction phase by fencing will be erected to form a secure construction site to prevent entry by children, members of the public, trespassers and vandals. Warning signage to be placed at strategic points on the perimeter fencing. Information signage to be placed at the site entrance. • Development and implementation of a Traffic and Pedestrian Management Plan in consultation with Police, residents, and NDC. Update the Plan as needed during construction.	Moderate	Moderate

These regulations require, among other matters the registration and environmental authorization by any person/entity whose construction, installation, operation, modification or extension of any facility cause the discharge of effluents. It establishes that the EPA shall, at any time after the commencement of the Regulation, establish parameter limits of effluent that may be discharged into any inland or coastal waters or land of Guyana. Guidelines on the discharge of effluents and disposal of waste are detailed in these regulations. Includes reporting requirements, penalties for violations of standards, and permitting requirements for discharges. Additionally, standards for drinking water quality have been developed by the Guyana National Bureau of Standards (GNBS). However, no standards have been developed for surface or sub-surface water, and more specifically, for discharges to receiving waters from road rehabilitation operations.

The EPA shall, at any time after the commencement of the Regulation, establish limits for any of the contaminants specified in the Regulation. Sets ambient air quality standards, reporting requirements, penalties for violations of standards, and permitting requirements for stationary and mobile sources of air emissions. However, elements related to parameter limits on air contaminants and emission samplings are not stated in the regulations as these have not been developed by the EPA as the leading agency on environmental matters in Guyana.

SECTION 5

Plans to Mitigate Environmental Impacts

The project activities (i.e., lane widening, multi-use path, drainage, and utility relocation) will occur within an existing, widely used ROW. In general, the anticipated impacts are typical of construction projects un urban and peri-urban areas and are temporary and localized. Typical impacts of these activities will occur during construction, and include emissions from equipment, noise, temporary disruption of traffic, and temporary disruption of access to businesses and residences. Given the status of the ROW, no impacts to biodiversity or cultural resources are predicted. Potential economic impacts are being quantified and are anticipated to be moderate to minor. No physical displacement is planned Mitigation is put in place after avoidance and minimization measures.

SECTION 6

Minutes of Public Consultations/meetings held by the Project Proponent.

Date (DD/MM/YYYY): 25/08/2022	Name of the event: Public Meeting
Location: Friendship Secondary	

No.	Stakeholder	Question / Comment	WSG answer
1	**Katwaroo Bobby- Resident**	Good initiative. For the infrastructure that is being put up, we hope that people involved in construction gives us value for our money. The road will be 2- lane with a lot of areas with encumbrances and the back and front movement of trucks on the east bank. Are we sure with the type of trucks traversing and people walking, there is ample space for that or pedestrian crossings? When you will commence the operation of this road, as you know it is already congested both ways, how do you propose to commence? Will there be 2-way traffic allowed or are you going to shut the road? Proposal is for construction to occur during the night when people are asleep to allow a little more access to the road. There is also need for enforcement for persons dumping garbage.	The road will not be closing, but constructions will be done in segments. Diversions will be facilitated. Trucks will not be allowed to go into community/ small streets, they will all be through one lane during construction. Contractors working at nights is a consideration. Garbage will be addressed during project.

	Stakeholder	Question / Comment	WSG answer
2	**De Santos**	Currently, the traffic situation on the East Bank is total chaos, if the project start it will result in slower traffic where persons may be stuck in traffic for an entire day to get to Georgetown. With every new floating and production vessel (FPSO) launched in the Atlantic the traffic will increase exponentially. Have you considered or contemplated the chaos that will rein when the project is started? Suggested for the new roads to be completed before contemplating this current project. Roads needs to be maintained temporarily until new roads are being built before commencement of activity (progressive continuous maintenance), as it is the only road that takes you to Linden, interior, airport etc. It is important for other roads to be completed before starting with the road. Having been living on the east bank and it take hours to get to Georgetown or out of traffic.	Two new roads will be cut east of this road one from Linden Highway and the second the one coming from Mandela. Hence there is need for the upgrade/ work on the road.
3	**Daniels**	Procedure is not bad, but fence to fence construction is not good. There is concerns of safety issues, loss of lives, vehicles traveling into persons houses.	There will be designs of drainage, intermittent curbs. An Assessment will be done prior.
4	**Nigel Phoenix**	There are 50+ structures from Grove to Timehri. Do you have a map of the reserve? What sort of adjustment is needed?	The project will be done on a design-build manner. In relation to persons on the reserve, there is the Livelihood Restoration plan which is being worked on, it will address persons on the reserve.

No.	Stakeholder	Question / Comment	WSG answer
5	**Kevin**	What is the traffic count for the corridor? And for the community what it is now and what is projected? You spoke about all plans; are these plans accessible to the community? How does the plan intend to manage drainage? Suggested for the documents to be prepared in a simplified form – easy to read and understand for persons in community. According to the website the proposed load is 115 million for rehabilitation, will this be the actual cost for the road?	We have the axel load which is 29 million in easels and 40 million axels. Traffic count will be taken into consideration. Plans such as the ESMS and ESMP are on the Ministry's website. When the other plans are prepared, they will become available. When the contractor proposes the design of the road - the value will be subsequently determined.
6	**Clifford Cato**	Is there anything for cost rehabilitation wise process versus adding 2 lanes on the road? After completion of project will there by any other development? What is the idea for the next 4 lane road? Will there be other infrastructure such as traffic lights? Proposed for them to be at school crossings.	The project is design-built and the government is getting a loan from the IDB. Road will be done by the Indian Government and Central Housing and Planning Authority (CHPA.) No, there will not be. Where do you propose traffic lights to be placed?

No.	Stakeholder	Question / Comment	WSG answer
7	**Insan Ally**	For the last 20-25 years I have been planting fruits and vegetables and selling on a mobile stand, do business owners need to move/ will they be facilitated?	Apart from the restoration plan, the construction will be done in phases. Business owners/ vendors will be given enough time to move from location, team will be working along with persons to facilitate same.
8	**Percival Daniels**	What is in store or planned for utility companies? Will be bridges for businesses be demolished?	There are specific designs for specific areas, for example the Coverden area there is plan, as well as the Grove – Soesdyke area. Systems will be put in place for utilities. If a bridge is demolished it will be reinstated.
9	**Resident**	What are the objectives and what will be achieved at the end of the meeting?	It is focused to solicit feedback and concerns from residents on the project.
10	**Resident**	What compensation is there for persons on the road for the vibration, shaking of homes? Suggested for the bypass at the back instead of front to prevent worry and pollution, similar to what has been done for the Mahaica road, the old and the new roads.	The road at the back is being done by the Indian Government as well as there is a consultant on board by Central Housing Planning authority who is currently to doing the road at Diamond/ Mocha area.
11	**Patricia (Supply Resident)**	Will there be one drainage system? Or will there by drainage on both side of the road? How to mitigate flood from run off? There is need to ensure that the culvert is very deep. Will all kokers be repaired?	There will be both side drainages. Road will also be elevated by 12 inches. Grievance mechanism will be institutionalized in the Ministry. No koker, just the drainage will be done. Yes, consultations will be done.

No.	Stakeholder	Question / Comment	WSG answer
		Will the residents have a say in the design after the contractor prepared the design? 3 years is too long for the Project Suggested to start at the highway where the material is available. Do you have a draft plan of the 4-lane road from diamond to Timehri?	36 months. Need to take into consideration the length of the road. Five sections are envisioned. Bypass at Samantha Point, Goose neck at bridge and bridge at Craig, Gimbo and Diamond. The road which is being built further east – the Project will be done by CHPA.
12	**Chris Persaud**	Will the road be asphalt or concrete? Will there be weight control? Will there be any toll for paying back the IDB?	It will be asphalt. Two weight scales will be set up. The government will be dealing with that.

SECTION 7

Assumptions, Uncertainties, and Gaps in Knowledge

NOT APPLICABLE

SECTION 8

Non-Technical Project Summary

The Inter-American Development Bank (IDB) is supporting the Government of Guyana through the funding of the upgrade of the two-lane East Bank Demerara Public Road, specifically the section that runs from Grove to Timehri ("The Project"). The scope of works addresses increased economic activity and population growth in the area by providing safe access for pedestrians and vehicles, improving traffic flow, and regularizing parking. The Project is developed to deliver benefits from the rehabilitation of the roadway given the improvements in quality, accessibility, climate change resilience (i.e., considering rise in sea level), and safety conditions of Guyana's road transport infrastructure.

Road improvements for the Project aim to increase paved road coverage, support climate resilient interventions, and rehabilitate and upgrade the national roads that connect the capital Georgetown to the Cheddi Jagan international airport (CJIA). Investment from the IDB finances: (i) implementation of upgraded two-lane road infrastructure from Grove to Timehri at 23.5 Km of length, widening of shoulders, constructing a share path for bicycles and pedestrians, and where possible, adding space for parking; (ii) reconstruction of the entire lateral drainage system along the road; (iii) works including bridges and 58 perpendicular culverts and a sluice gate; (iv) reconstruction of the potable water distribution network along the 23.5 km of the route as well as the relocation of electricity and telecommunication utility networks; (v) covering of the parallel drains concrete drains in urbanized areas to form a pedestrian walkway; (vi) other complementary works, including the entire traffic plan and its interventions (v) and technical and socio-environmental supervision.