



Name of Project: Kings and Queens Multi- Complex Mall

Name of Developer: Kirtis Davis

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1 Site Description

The site for the developmental works is located at Plantation Soesdyke on the East Bank of Demerara, the address of the parcel of land is Sublot "C" of Lot "W" 20 Plantation Soesdyke, East Bank Demerara. The Linden Soesdyke Highway runs East/West of the proposed Multi-Complex Mall. The land for the proposed construction is 0.48 acres and is currently unoccupied. The underlying material at the site is sandy clay. The Multi-Complex Mall will receive all utility connections (GWI, GPL, GTT etc) to ensure the Mall is functional with low environmental impacts. The developer will construct concrete drains around the perimeter of the property to ensure adequate drainage of the Multi-Complex Mall and more importantly stop any run off from contaminating primary and secondary drains in the vicinity of the Mall.

Project Design

1.1 Overview

The project was envisaged by Mr. Kirtis Davis, proprietor of Safe Security System who was inspired by the emerging oil sector in Guyana and the increasing demand for a high quality state-of-the-art Multi- Complex Mall that will serve the general public but moreso the residents on the East Bank of Demerara and Linden Highway. The name Kings and Queens Multi- Complex Mall was inspired by Mr. Davis which adds to homely, efficient service, ambiance and welcoming atmosphere which the project was designed around. The architecture of the building was done with a lot of emphasis to ensure it blends into the surroundings and at the same time allow it to stand out as a prominent structure at the beginning of the Linden Soesdyke Highway.

The developmental budget for the project is 300 million Guyana dollars and is financed through a private bank loan. The building sits on a plot of land 0.48 acres), the building dimensions are 118' (L) x 111' (W). The Multi-Complex Mall will have 17 self-contained rooms (hotel), 30 rental spaces, restaurant and bar and fast food outlet.

As with most developmental project there are basic steps required for the successful implementation, for Kings and Queens Multi- Complex Mall the following is envisaged:

- Design phase.
- Pre-construction phase
- Construction phase
- Operation phase

1.2 Design Phase

The preliminary design for the Multi- Complex Mall was an iterative process as is the case with many projects, the aim was to balance cost with expectations. The design process investigated the feasibility of several building types and construction materials however in the end the final product was a four storey concrete structure with the fourth floor being an open space as a roof garden or to be used for special functions. The engineer for the project has prepared all design drawings for the project which has been sent to the Central Housing and Planning Authority for approval. An important step in this process was also to acquire all the relevant construction approvals from the NDC, EPA and CH&PA. The duration of this phase is expected to take 3 months.

1.3 Pre-Construction Phase

This phase will encompass the site development works which includes clearing all vegetation and small trees from the plot, excavation in the sub grade. Construction of all external RC drains will also be done at this stage to allow for backfilling of the plot to the desired construction levels. During these works it is expected that approximately 2000 cubic yards of white sand will be required for bring the site up to design grade. As a consequence, in this

phase sand trucks and a small wheel loader (bob cat) will be prevalent on the site. This duration of this phase is expected to be 1 month.

1.4 Construction Phase

During this phase the 13,098 square feet Multi-Complex building will be erected. Almost all of the construction will be reinforced concrete and hollow concrete blocks including the roof. Works will start on the foundations first and proceed up to the roof level in stages. It is anticipated that 30- 40 construction workers will be full time on the project during this stage. After the roof is installed, electrical and plumbing technicians will start on the installation of cables and pipes, after these are completed finishing and external works will commence, it is expected to have the building completed in December 2023. This duration of this phase is expected to be 15 months.

1.5 Operation Phase

The operational phase of the project will entail the services provided by the 17 self-contained rooms (hotel), 30 rental spaces, restaurant and bar and fast food outlet. The design life for the project is 50 years.

1.6 Utilities

The main electricity supply will come from the Guyana Power and Light (GPL) with backup power provided by a 300KVA stand by diesel generator. The generator will be equipped with the necessary mufflers and located in a sound proof enclosure. Water will be provided by Guyana Water Inc (GWI) and there will be at least 10,000 gallons of storage provided on the property to cater for interruptions in the service. Communications and data will be provided by Guyana Telephone and Telecommunications (GTT).

All grey water effluent will be drained using perimeter reinforced concrete drains with the primary discharge point being the drainage ditches along the Linden Soesdyke Highway. Black water effluent will be addressed with a septic system; the design of the septic system will follow recommendation by the GNBS and EPA.

2 Environmental Impacts

Most if not all the impacts of this project will be during the pre-construction and construction phases, these impacts and the appropriate mitigation / management measures are addressed below.

2.1 Air Quality (Exhaust Emissions and Fugitive Dust)

2.1.1 Fugitive Dust

The project has the potential to generate dust at levels which can significantly affect the air quality within the project area. However, most of these impacts are expected to be localized and can either be prevented or reduced.

Dust will also be generated from several aspects of construction including but not limited to:

- a) Vehicles transporting aggregates, loading and off-loading of trucks and excavation activities.
- b) Construction and operation of support facilities such as material stockpiles area.
- c) Debris deposits from vehicles exiting construction zone.

2.1.2 Impacts associated with Fugitive Dust

- Dust generation would be greater during dry periods and will be influenced by construction activities, soil type, moisture content and wind speed.
- Workers and public exposed to prolonged dust pollution can develop acute respiratory ailments and eye irritations.
- Dust emissions may also impair the line of sight of workers and road users which increases the possibilities of vehicle accidents and other safety concerns.
- Dust can also be generated from material stockpile as a result of wind, especially during dry conditions.

These impacts are controllable and are expected to be short-termed and localised. When not managed they may present significant impacts.

2.1.3 Mitigation measures to reduce potential impacts associated with Fugitive Dust

The following measures would be implemented to reduce the impact of dust within the project environment:

- Equipment that produces significant quantities of dust to be sited away and downwind from homes and working environments.
- Personnel working within dusty environments (e.g. stockpile area and cement ransom) would be required to use dust masks or respirators or other necessary personal protective equipment (PPE).
- During dry periods, the access route to be monitored for dust particles becoming airborne while vehicles and equipment are traversing. Periodic soaking will be administered if dust pollution arises.
- Loaded Trucks tray are to be covered when transporting material to minimize dust emission.
- Material stockpile to be kept to a minimum height to reduce wind action on materials. Maximum stockpiling height of 10 feet is recommended for materials susceptible to wind, and maximum stockpiling height of 15 feet for materials impervious to wind.
- All material stockpiles are to be properly covered, prevented any loose material to be carried away from wind or rain.

2.1.4 Exhaust emissions

Construction works will result in combustion emissions from the use of diesel and/or gasoline fired heavy duty equipment. Combustion emissions will be minimal, short-term and localised to the area of the vicinity of construction activities. Emission impacts are also expected to be unavoidable.

2.1.5 Mitigation measures to reduce potential impacts associated with exhaust emissions

- Maintaining construction equipment in accordance with manufacturer's specifications in order to operate at optimal efficiency to reduce excessive emissions.
- Maintenance log for equipment/machinery shall be utilised, documenting all maintenance actions that are performed.
- All equipment and machinery to be turned off once inactive.

2.1.6 Noise

Noise will be generated mainly from the use of fuel powered generators and heavy duty equipment and machinery during construction phase. These impacts are unavoidable and expected to be short-term and localised.

2.1.7 Impacts associated with Noise

Exposure to noise levels above the internationally accepted level of 90 decibels can cause noise induced hearing loss. Noise levels above the tolerable threshold of 72 decibels can result in fatigue, tiredness, low morale and decreased productivity.

2.1.8 Mitigation measures to reduce potential impacts associated with noise

During the construction phase, the Developer will mitigate the potential impacts from noise by:

- Keeping Noise levels within the EPA's established limit of 90 decibels during the day and 75 decibels at night.
- Employing best practices on-site to minimise occupational noise levels and provide noise protection equipment to employees.
- Procuring hearing protection such as ear plugs to employees exposed to high noise levels.
- Efforts will be made to ensure machinery and equipment are working efficiently and have installed the manufacturers required muffler devices where practical.
- Night works will be avoided, to the most practical extent.

2.2 Surface Water

Soil erosion and sedimentation could result from earth works associated with construction activities such as excavation of the building foundation and or primary and secondary drains. Improper disposal of waste (liquid and solid) and mismanagement of fuel/lubricants can also pose threat to existing water body which will be avoided by the Developer.

2.2.1 Mitigation measures to reduce potential impacts associated with surface water pollution

In order to protect water courses and the quality, the developer shall:

- Locate and properly cover material stock-piles and excavated materials in a designated area, away from water bodies to prevent excessive soil deposits.
- Waste storage stockpiles or stockpiled material shall not be placed within 10m of any watercourse and shall have a toe berm construction around.

- Minimize and contain suspended sediment (i.e., Non-Filterable Residue, NFR) within the immediate zone of construction.
- Undertake appropriate containment measures during concrete pours to ensure that uncured concrete or concrete leachate does not enter any watercourse or drainage. Preventative methods include sediment traps.
- Place pumps and generators on bermed polyethylene sheeting to prevent hydraulic fluid and/or fuel leaks from entering water Bodies.
- Ensure that a perimeter reinforced concrete drain is constructed in the early stages to collect all run off from the project site.

2.3 Management of liquid and solid waste

The project will generate waste during the construction stage, if not managed properly, can result in soil and water contamination, contribute to ill health, and affect the aesthetic of the area. This plan will ensure that waste generated during construction is handled and mitigated appropriately and according to the guidelines of the EPA.

The following are some of the materials that can be expected to be generate during construction:

- Stripped Vegetation
- Concrete forms
- Dimension lumber
- Packing materials
- Containers for various construction materials (e.g. concrete and steel)
- Pallets
- Plastics
- Waste oil, filters, lubricants and hydraulic fluids
- Concrete
- Food
- Sewage

2.3.1 Impacts associated with the improper disposal of waste

- Waste heap piles often present an eye sore and can affect the aesthetic of any environment.
- The improper disposal of waste, especially food waste can increase the potential of Occupational Safety & Health hazards and also result in unpleasant odours and the attraction of vermin.
- Mismanagement of waste can lead to secondary sources of pollution and contamination of land and water.

2.3.2 Mitigation measures to reduce potential impacts associated with improper waste disposal

- Reduce the amount of waste required to be managed. Therefore, avenues of reusing 'waste' materials will be explored in situ.
- Waste generated will be segregated into organic wastes (vegetation, top-soil); inert waste such as plastics, food boxes, rubber, etc.; and hazardous waste. Inert and hazardous wastes will be stored in covered bins.
- Waste generated at the construction site will be collected and transported to designated Landfill by the Developer. Preferably, Hags Bosch Landfill.
- Segregated waste disposal bins will be maintained at ancillary facilities.

2.3.3 Domestic waste

- Burning of waste materials and littering around construction zone will be prohibited.
- Frequent clean-ups will be done by the Developer to ensure work ground is kept tidy.
- Daily housekeeping to be done.
- Bins will be available onsite for storage of waste materials. Domestic Waste will not accumulate for more than 7 days on site. The Developer will transport waste materials to designated Landfill weekly.
- Poorly kept garbage receptacles may harbour pest and even diseases carrying vectors. Developer is advised to do weekly washing of garbage receptacles.

2.3.4 Sanitary waste water/sewage waste

- Suitable number of Portable Toilet will be installed at the worksite and will be routinely (weekly) serviced.
- Waste storage area will be located away from water body to prevent secondary entry and possible pollution/contamination.

2.3.5 Construction Waste

- Construction debris and other waste will not accumulate on the construction site for more than 30 days.
- The developer will remove twice weekly to prevent accumulation. The Developer must be cognizant of the fact that storage space on the site is limited and storage of large stockpiles is not ideal.
- The developer will explore all possible avenues for the reuse of construction waste as far as possible.

2.3.6 Concrete Waste

- Fresh concrete or cement will be isolated from any designated watercourse for 48 hours after placement. Containers or trucks carrying cement or fresh concrete will be washed at an approved site.

- Concrete waste, including wastewaters from batching or cleaning, will only be disposed of at approved and designated disposal sites. All cement-contaminated wastewater from cleaning or mixing is to be considered toxic, and must be prevented from entering any watercourse for at least 48 hours to allow the water to reach neutral pH.

2.3.7 Cleared Vegetation

- Cleared vegetation and other debris within the construction zone during mobilisation will be stockpiled and later transported to the Designated Landfill by the Developer. The 30-day rule applies here as well.