Introduction

This document presents a summary of the above project containing the details to enable an understanding of the project activities.

The Gorchum Housing Scheme Development project is currently being established at Gorchum / Wilhelmina, Mahaica Village, East Coast Demerara. The area utilised was earlier established as an Old Coconut Estate occupying approximately 177 acres of land that will be transformed into a residential, commercial and recreational zoned community. It is estimated that approximately 700 house lots will be available within the community which will have modern amenities.

A&S General Contractors Inc. during its execution of construction activities has ensured that its activities do not negatively impact the surrounding environment by means of implementing as reasonable as possible, pollution control measures and safety and health best practices. The Operator continues to maintain a positive track record of environmental stewardship and social corporate responsibility within the communities where its projects are undertaken. As such, the Contractor will be committed to implement the necessary steps to ensure that the environmental requirements outlined under the Environmental Protection Act and the Environmental Protection Regulations and other national regulations are complied with to mitigate any negative affect on the surrounding environment.

Project Site

The project area under preparation for the housing development is situated along the new East Coast Public Road that extends east from the Mahaica bridge all the way to the old road (market bypass) intersection that leads to the Mahaica Market. Appendix A Site Location Map with layout of development works and Appendix B Land Use Map provide illustrations of the project site.

The area has a ‘right angle triangular’ shape whose topography is flat consisting predominantly clay soils that earlier contained vegetation mainly coconut trees and sparse secondary successors flora species. The flat area will be elevated to reduce the possible occurrence of seasonal flooding during periods of persistent heavy rainfall. The drainage system developed will also support channelling flow within the site and along its perimeter. The surrounding area has some residential settlements, poultry and rice cultivation activities and abandoned lands.

The entire area comprises of 177 acres previously utilised for coconut Estate before the Estate ceased operations a few decades ago. The land is highly disturbed and contained beds and drains that are associated with the land use of farmland cultivation. There are no know threaten or endangered species within the area. A North-Eastern access to the project site is facilitated by the East Coast Public Road that extends east from the Mahaica bridge all the way to the old road (market bypass) intersection that leads to the Mahaica Market.

The Developer has attained from the Woodland/Farm NDC on objection to establish the housing development activity for Lot 2&3 Plantation Gorchum/Wilhelmina, Mahaica E.C.D. The CH&PA also issued an approval for the development activity, see attached

appendix C&D respectively. So far, approximately 70% of infrastructural works are completed with internal road network prepared and awaiting surface material; while concrete culverts for drainage system are all completed with ex-situ concrete drain construction ongoing. Potable water main pipelines were installed and a permit for the establishment of a groundwater well was obtained from the GWI. Several house lots were allocated to home owners.

The layout of the proposed Housing Development caters for green spaces, residential (gated and open communities) and commercial zones for settlement. All weather access road network has been prepared (awaiting surface material) and drainage system will be controlled by culvert and mini sluices. Basic utilities including potable water, telecommunication and electricity will be installed.

Illustrations below provide a vivid understanding of the site activities.

Photo 1: Land clearing at the project site

Photo 2: Access from ECD Public Road

Photo 3: Drainage preparation

Photo 4: ex-situ drainage construction

Photo 5: Administrative building within the site

Photo 6: Hand wash Station

Photo 7: Existing Mini Concrete Plant

Photo 8: Earthen material stockpiled

Impacts to the Environment

Construction is one of the major contributors to environmental impacts resulting in pollution risks - air pollution, waste pollution, noise pollution, and water pollution. The risks to the environment are particularly high when work is undertaken in sensitive areas such as on highlands, steep slopes, significant water ways and where persons resides.

Works comprise of cutting top soil and stockpiling materials; de-watering and excavation of existing internal drainage systems; creation of access to transport and store excavated materials to designated location on site; shaping of land to required elevation; construction of

concrete culverts; preparation of internal roadways and accesses and drains and allocation of house lots to home owners.

The main environmental impacts anticipated from the preparation of the housing development are anticipated to be minor noise nuisance and particulate matter emission; traffic and access safety; workers' safety; accidental spillage of petroleum based products, improper waste management and deposition of materials adjacent to existing water ways.

Environmental management of the following parameters during construction include, but not be limited to, the following:

- Air Quality, Dust and Noise
- Traffic Management
- Waste Management
- Health and Safety
- Hazardous Materials Management
- Water Quality

AIR QUALITY, DUST AND NOISE

Engine Combustion Emissions

The use of heavy-duty equipment and generator will result in combustion emissions from the use of a diesel generator with minimal, short-term and contained to the area of the vicinity of works. Emission impacts are also unavoidable.

Mitigation measures

✓ Maintaining construction equipment in accordance with manufacturer's specifications in order to operate at optimal efficiency.

Dust

Dust can be generated at levels which can affect the air quality within the project area. However, most of these impacts are expected to be localised and can either be prevented or reduced.

Dust will also be generated from several aspects of construction including:

- Emissions of dust particles from off-loading aggregates from trucks and
- Location of material stockpiles.
- Dust nuisance can be accelerated due to climatic conditions especially in dry and windy conditions

Impacts associated with dust nuisance

- Workers exposed to prolong dust pollution can develop acute respiratory ailments.
- Further, dust can pose a nuisance to nearby residents in the immediate area of construction activities.

These impacts are controllable and are expected to be localised and short-termed since a small percentage of works are located near residents. When not managed they may present significant impacts to the surrounding areas.

Mitigation measures

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

- ✓ Material stockpile will be positioned away and downwind from residents, offices and working environments.
- ✓ Personnel working within dusty environments would be required to use dust masks or respirators or other necessary personal protective equipment (PPE).
- ✓ Loaded Trucks tray will be covered when transporting material to site in order to minimise dust emission.
- ✓ Material stockpile will be kept to a minimum height to reduce wind action on materials.
- ✓ Employing dust suppression techniques such as applying water to bare surfaces especially in dry and windy conditions.

Noise

Noise will likely be generated mainly for power generation and the use of heavy-duty machinery. These impacts are unavoidable and are expected to be short-term and localised.

Impacts associated with noise nuisance

- Exposure to noise levels above the internationally accepted level of 90 decibels[1] 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.

Mitigation measures

- ✓ Employing best practices on-site to minimise occupational noise levels and provide noise protection equipment to employees.
- ✓ Hearing protection will be provided to employees exposed to high noise levels.
- ✓ The generator to be used will have built-on sound proofing installed by the supplier.
- ✓ Noise levels will be controlled at the source via installation of silencers and mufflers on exhaust systems where practical. Efforts will be made to ensure machinery and equipment are working efficiently and have installed the required muffler devices.
- ✓ Night works will be avoided, to the extent practical.

TRAFFIC MANAGEMENT

Temporary Traffic Control Plan

It is anticipated that during works there will be some level of periodic change in traffic flow along the roadway leading to the entrance/exit of the construction zones. An a site-specific Temporary Traffic Control Plan (TTCP) to address traffic and accident risk during construction activities will be developed and implemented. Furthermore, TTCP is also expected to address pedestrian traffic, addressing road safety and minimal disruption of

[1] 90 dB is the level recommended for eight hours exposure to avoid hearing loss by a number of national and international institutions worldwide including the Ontario Regulation 488/01 under the Occupational Health and Safety Act.

commuter traffic road and river safety management considerations, access restriction management during construction as well as driver's awareness and evaluation programme.

Throughout the course of the works the A&S General Contractors Inc will be responsible for the safety of all persons present on the site of the works. As such, workers shall ensure, as far as is reasonably practicable and to the satisfaction of the engineer, the health, safety and welfare of employees, including those of sub-contractors and all other persons on the site. The responsibilities undertaken shall include.

- The Contractor is required to perform work in a manner that ensures the safety and convenience of the public and protects the residents and property adjacent to the site.

- Construction works must be conducted in a manner as to offer the least possible obstruction to the safe and satisfactory movement of traffic over the existing roads. All drivers/operators of project vehicles will be licensed and will obey all country driving requirements.

- The Contractor will procure, erect, and maintain traffic signs, barricades, and other traffic control devices necessary for the maintenance of traffic along the road corridor. Barricades, warning signs, lights, temporary signals, other devices, flagmen, and signalling devices will meet the minimum requirements of the traffic management guidelines of the Ministry of Public Works.

WASTE MANAGEMENT

Some activities will generate waste which, if not managed properly, can result in soil and water contamination, contribute to ill health, and affect the aesthetic of the area.

Waste to be generated includes:

- Sanitary waste water/toilet waste
- Surplus/ waste soils from construction works.
- Food waste.
- Hazardous waste from the maintenance of construction machinery and equipment such as used batteries, waste oil, filters, oil containers and contaminated soils.

Impacts associated with the improper disposal of wastes

- 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 result in odour and attraction of vermin.
- Mismanagement of waste can lead to secondary sources of pollution and contamination of land and water.
- Increase in the potential of Occupational Safety & Health hazards.

Mitigation measures

- ✓ Waste generated within the facility will be collected, segregated and transported to an approved off-site waste disposal/landfill site.
- ✓ Waste generated will be segregated into wastes that are reusable; inert waste such as plastics, food boxes, rubber, etc.; and hazardous waste.
- ✓ Waste will not be allowed to accumulate at facility's fronts and will be removed weekly or depending as the need arise to the dedicated waste storage area or waste bins.
- ✓ Littering will be strictly prohibited.
- ✓ Toilet fitted with septic tank treatment is installed on site.
- ✓ General refuse and litter will be temporarily stored in enclosed bins separate from hazardous wastes.
- ✓ Segregated waste disposal bins will be maintained.
- ✓ Workers will receive training on waste classification and segregation.

HEALTH AND SAFETY

COVID 19 Preparation

In light of the COVID-19 Pandemic, it is necessary for construction activities to incorporate the COVID-19 National Emergency Measures published by the National COVID-19 Task Force (NCTF) Ministry of Health (MoH) at the entry of the construction site. The following mitigation measures are required to reduce the exposure and transmission of COVID-19 at the construction site.

Site preparation – erection of an area (tent) to consist of a hand washing station at the entrance, a screening area (temp testing and observation), and an isolation area for suspected cases of COVID-19.

The area will have adequate ventilation. The screening area will be fitted with a desk and 2 chairs where interviews and temperature testing will be conducted with personnel entering the site. This section will also be equipped with the COVID-19 kit containing the necessary materials such as face masks, hand sanitizers, liquid hand wash soap, sanitizing sprays, gloves, paper towel, infra-red thermometers, data sheets, etc.

Hand washing station will be fitted sufficient water and liquid soap that is dispended by hand pump. Paper towel will also be available at the sink and a waste bin will be foot operated to reduce direct handling. The isolation area will be a designated area inside the tent with a plastic (transparent) curtain readily available to be active when required. A chair will also be placed in the area.

Signage - displaying information and guidance on safety measures to be adopted during works. COVID-19 information signage will be erected at the site office to include:

- Hand washing procedure signage
- Temperature testing importance
- Order not to report work
- Isolation area

- Directional (temperature testing area, hand washing area) and instructional signs (how to wash your hands, sneezing and coughing procedure)
- COVID 19 Emergency contact information
- Safe distancing
- NO ENTRY TO UNAUTHORIZED PERSONS

General Occupational Safety

In order to ensure the safety of all workers on the site, the following measures will be in place to protect workers' health and safety at all times:

- ✓ Provide relevant safety gear for each worker base on work condition. Gears include; Helmets, Safety boots, Reflective vests, Goggles, Respirators and Earplugs.
- ✓ Train workers on the proper use of the safety gear.
- ✓ Provide notices and signs at construction site on the proper usage of safety gears.
- ✓ Provide safe working conditions at all times. Caution would be taken if workers are in proximity of equipment, electricity, water and at unsafe heights and depths.
- ✓ Provide First Aid kits at active construction site and Concrete Plant.
- ✓ With respect to workers coming into contact with toxic substances, A&S General contractors Inc. will inform workers of the relevant steps to be taken such instances occur.
    a) For skin contact, clothing would have to be removed immediately followed by a dry cleaning of the skin to remove the substance. The skin would then be washed thoroughly with soap and water. Contaminated items are to be securely discarded.
    b) For eye contact immediate washing of the eyes are required.
    c) For ingestion medical attention would be required immediately.
- ✓ The Contractor will arrange with medical instituting in the environs of de Hoop (High Dam Health Centre) to deal with emergency cases.
- ✓ Adequate amounts of water for drinking and washing will be available on the site in sealed and safe water tanks.
- ✓ Toilet facilities is available on site.
- ✓ Garbage bins would be provided on all sites to promote proper disposal methods. These bins would be emptied on a regular basis as needed.
- ✓ If an unfortunate incident occurs A&S General contractors Inc. will ensure workers receive immediate medical attention.

HAZARDOUS WASTE

Fuel (gasoline, kerosene, and diesel) and lubricants (oil and petroleum products, waste oils and grease) are classified as hazardous materials and require special consideration in terms of transportation, storage and handling.

Fuel/lubricants will be transported via 5 gallon containers when the need arises for equipment and generator. However, refuelling of heavy-duty equipment can also present a spill risk to soil and surface water contamination.

Impacts associated with hazardous material management

- Fuel, lubricants and waste oil, if not properly managed, can spill which can result in water and land contamination.
- Water can also be contaminated from fuel and waste oil from leakage that may occur.
- Fuel leaks can also increase the potential of Occupational Safety & Health hazards, such as fires, explosions, etc.

Mitigation measures

Refuelling areas will be sited at a safe distance from any waterways, offices and work areas.

- ✓ Care would be taken to prevent spillage and leakage of fuel during refuelling. When refuelling is completed, all funnels, hoses and other materials should be stored in a proper manner to avoid secondary spills.
- ✓ Oil changes from maintenance works and repairs from vehicles and machinery will be collected by pans/trays and transferred to storage drums located in a designated area. Drums will be stored within an impervious and contained area.
- ✓ Oil changes, and/or major maintenance to equipment and machinery will be conducted a designated area in staging yard at the construction fronts. Only routine/minor maintenance activities will be allowed outside the staging yard.
- ✓ Regular maintenance of machinery would be done to avoid leakages.
- ✓ Used drums would be reused as much as possible, or would be stacked on pallets and returned to the supplier.
- ✓ Employees would also be trained in the management of hazardous materials to reduce the risk of contamination from spillages.
- ✓ Spill kits would be provided onsite to assist in any clean up as a result of accidents.
- ✓ Spill kits would be made available in the event of spillages. The kits will be placed in strategic locations that are accessible to key personnel including drivers, security officers, and foreman.
- ✓ Workers, mechanics and other staff will be trained in the proper use of these kits through the executions of drills.
- ✓ Appropriate fire extinguishers will be suitably placed.
- ✓ Adequate signage would be installed in the refuelling area such as ‘No Smoking’ and ‘Highly Flammable’ and ‘Hot Areas’.

WATER QUALITY

The surface water quality can become contaminated or affected from potential threats such as:

- Fuel, lubricant/oil spills;
- Sediment deposition;
- Blockage of existing drainage system from erosion and sedimentation; and
- Improper solid waste disposal by workers such as food wrappers, boxes etc.

Mitigation measures

- ✓ Care will be taken during the re-fuelling process and when transporting fuel from the storage tanks/trucks to the machines to avoid unnecessary spills and reduce the risk associated with contamination.
- ✓ Regular maintenance of machines and equipment must be carried out frequently to ensure proper functioning as this reduces the potential for oil leaks.

- ✓ Waste debris, especially surplus concrete, will have to be removed from the site in a timely manner.
- ✓ Any blockage of waterways as a result of sedimentation would be removed immediately.
- ✓ Care will be taken by all workers to correctly dispose of any solid waste material generated.

SOCIAL BENEFITS

This housing development project will enable home ownership in a beautiful country side setting. A well organised setting with modern amenities will propel socio-economic and environmental benefits in a rural community.

Appendices

Appendix A – Site Location Map & Layout of Gorchum Housing Scheme Development Project

Appendix B – Land Use Map

Appendix C _ No objection letter from Woodlands/Farm NDC

Appendix D – CH&PA Letter of approval for Housing Development Activity