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ENVIRONMENTAL IMPACT ASSESSMENT



For: JAMALCO



*Halse Hall
Clarendon*

FOR PROPOSED
EXPANSION OF MINING
OPERATIONS IN NORTHERN
MANCHESTER
BY JAMALCO

Submitted to: NEPA



10-11 Caledonia Avenue
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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

This EIA Report provides component details for a segment of the 2.8 million metric tonne per year efficiency upgrade at Jamalco. The upgrade project has received blanket approval from NEPA, however specific components are being addressed in greater detail. This EIA seeks approval for the following:

1. Establishment of mining operations in North Manchester
2. Establishment of a bauxite loading station and associated infrastructure (offices, sewage treatment plant, fuel storage, vehicle and equipment maintenance, water storage, etc.) at Green Vale, Manchester
3. Upgrade, rehabilitation and construction of a railroad corridor from Green Vale in Manchester through Williamsfield and Porus terminating at the existing St. Jago Railhead in South Manchester.
4. Installation of a water supply line from Evergreen, Manchester to Green Vale, Manchester to provide well water for NWC to treat and supply local communities and for mining operations
5. Temporary trucking of bauxite from Green Vale, Manchester to St. Jago Railhead in Manchester (preferred option) or trucking from Green Vale to the alumina refinery at Halse Hall in Clarendon in the event of special conditions (e.g. as flooding at Harmons, which has happened before).

BACKGROUND

Jamalco is a 50/50 joint venture Alumina refining company owned by the Government of Jamaica and Alcoa Minerals of Jamaica LLC. The operations comprise the Clarendon Alumina Works refinery located in Halse Hall, Rocky Point Port Facilities, the Lands and Mining operations in Woodside and South Manchester respectively, and a Traffic office in Kingston.

Clarendon Alumina Works is currently a two-digester refinery with a production capacity of 1.27 million tonnes of alumina annually. Bauxite is currently mined in Harmons Valley, South Manchester and transported to the refinery via rail. Shipping facilities are located at Rocky Point and commodity movement between the refinery and the port is via rail, which is operated by Jamalco. The operation currently employs approximately 600 persons and is managed by Alcoa Minerals of Jamaica for the joint venture.

Between the third quarter of 2005 and 2008, the facility will be upgraded to produce 2.8 million tonnes of alumina annually. The refining and port operations will be modified/expanded in order to facilitate this upgrade. The mining and residue handling operations will also be upgraded to meet the refinery's increase demand for bauxite and residue disposal storage space respectively.

Currently the 1.27 Mtpa of smelter grade alumina is produced from 4.5 Mtpy of bauxite, which is sourced solely from the mines in Harmons Valley. This bauxite is transported by trucks to the South Manchester railhead in St. Jago, from where the ore is transported by rail to the refinery.

It is expected that the Harmons deposits will be depleted in the third quarter of 2007, and as such, bauxite will be required from other permitted mining areas such as North Manchester.

LOCATION AND SETTING

The mining activities proposed in the North Manchester area, inclusive of the mines, loading station and portions of the transportation corridor will be undertaken within the boundaries of Special Exclusive Prospecting License (SEPL) 530 (as depicted in Figure 1-1). The areas available for mining are found throughout the SEPL extending from Skiddaw and Heavitree in the northwestern corner across to Devon and Ticky Ticky in the northeastern corner, through Green Vale and Mile Gully leading to Medina and Chudleigh in the southwestern and southeastern corners respectively.

The Transportation Corridor includes all roadways, haul roads and means of conveyance including the railroad tracks that will facilitate the movement of bauxite from the mining areas to the refinery for processing. It is proposed that sections of railroad tracks that were abandoned by the Jamaica Railroad Corporation (JRC) will be upgraded and

refurbished along with the addition of some new areas of track. The northern transportation corridor will extend from the new Loading Station in Green Vale through Mile Gully, Williamsfield, Porus, St Jago to the refinery in Halse Hall, Clarendon.

GREEN VALE LOADING STATION

A new railcar loading station will be established in Green Vale, Figure 1-2. This loading station is designed, and will be built with all the appropriate amenities and facilities necessary to operate the facility comfortably and within the rules and regulations of all relevant authorities. The facility will include; office buildings, canteen and change rooms, mobile equipment service area, fuel storage/dispensing area, sewage treatment system, weather station, security post and parking areas to service an estimated maximum workforce of 100 individuals at peak operation. The loading station is being established to transport bauxite from North Manchester mining operations to the Jamalco plant in Halse Hall, Clarendon. The existing Jamalco rail network will be extended/upgraded to allow service between the Green Vale loading station and the refinery. Sections of the railroad in North Manchester have been abandoned for over 20 years by the Jamaica Railroad Corporation (JRC). Bauxite delivery to Green Vale will be by trucks from local mine sites.

The loading station will require clearance of approximately 53 acres, demolition of some structures, major excavation and filling to proposed site levels, implementation of drainage and retaining walls, and the realignment of roadways.

WATER SUPPLY TO COMMUNITY AND MINING AREA

The North Manchester Mines and the Green Vale Loading Station will require a capacity for 700,000 gallons of water per day with required storage of 2,500,000 gallons at the loading station. Amongst other uses, this water will be used for dust suppression on mine roads. Plans are in progress between Jamalco, The National Irrigation Commission (NIC) and the National Water Commission (NWC) for the provision of potable water to the communities in the area.

A new well is proposed for the Evergreen area (Water Resources Authority is involved in the selection of the location) in proximity to the existing Windalco well. A feasibility study (Evaluation of Water Availability and Water Quality for Mile Gully, Manchester) was

completed by the WRA in April 2005, which indicated the availability of water resources within the underlying aquifer to provide the volume and quality of water needed for the area. The study took into consideration growth, etc. up to a period of 2025. There is a small (1½ inch main) supply of water from the existing well in Evergreen, with the new well, the proposal is to upgrade to a 8"-12" main which be adequate to supply the communities and the mining operations.

The plan is for NIC to make the water available, Jamalco will provide the resources to get the water into Green Vale, while the NWC will be responsible for the storage, treatment and distribution to residents of the area. A new booster pump station is proposed for the Derry area close to the existing Windalco reservoir from which the pipeline will continue to the loading station at Green Vale where a reservoir will be established. Figure 1-3 shows the layout and routing of the proposed water supply.

Jamalco will establish a storm water collection and storage system at Green Vale using artificial ponds, with the water being used for dust suppression on the haul roads.

TRANSPORTATION

The rail system from St. Jago to Green Vale (See Plate 1-1) will be rehabilitated, upgraded and extended to support the efficient transport of bauxite from the North Manchester mines to the refinery in Clarendon. Railroad operation will be 6-7 days per week, 24 hours per day. Rolling stock inventory will be established to support the North Manchester mines. Sidings along the rail system will be redesigned, upgraded and/or extended to accommodate the rail system required logistics and maintenance requirements.

The rail communication system will be upgraded to allow safe and effective use of the rail system by Jamalco and by others.

New transmitter boxes will be installed at a new tower and back-up tower, plus new equipment will be placed at the JRC Kingston control center and a duplicate control center at the refinery.

The locomotive/railcar maintenance and repair shop at the refinery will be upgraded to support the rolling stock required for the operation. Figure 1-4 shows the proposed railroad corridor with details of the rehabilitation, upgrade and new construction.

POLICY, LEGISLATION AND REGULATIONS

TABLE EXEC. 1: SUMMARY NATIONAL LEGISLATION AND RESPONSIBLE AGENCIES

LEGISLATION	INSTITUTION RESPONSIBLE
NRCA Act, 1991	Natural Resources Conservation Authority
Wildlife Protection Act, 1945	Natural Resources Conservation Authority
Watershed Protection Act, 1963	Natural Resources Conservation
Mining Act, 1975	Ministry of Agriculture & Mining Jamaica Bauxite Institute Mines and Geology Division
Minerals (Vesting) Act, 1947	Ministry of Agriculture & Mining Jamaica Bauxite Institute Mines and Geology Division
Bauxite & Alumina (Special Provisions) Act, 1978	Ministry of Agriculture & Mining Jamaica Bauxite Institute Mines and Geology Division
Bauxite & Alumina Encouragement Act, 1950	Ministry of Agriculture & Mining Jamaica Bauxite Institute Mines and Geology Division
Town & Country Planning Act, 1987	Town Planning Department
Forestry Act, 1937	Forestry Department
The Water Resources Act/UWC Act, 1959	Water Resources Authority
Ja. National Heritage Trust Act, 1985	Jamaica National Heritage Trust
Ja. Railway Corporation Act	Jamaica Railway Corporation
Beach Control Act, 1956	Natural Resources Conservation Authority
Public Health Act, 1985	Ministry of Health/Environmental Control Division
Disaster Preparation & Emergency Management Act, 1993	Office of Disaster Preparedness and Emergency Management
National Solid Waste Management Authority Act, 2001	National Solid Waste Management Authority
Manchester Parish Provisional Development Order, 1974	Town Planning Department

ENVIRONMENTAL IMPACTS

POTENTIAL IMPACTS & PROPOSED MITIGATIVE STEPS

TABLE EXEC. 2: IMPACT AND MITIGATION TABLES

Action		Potential Impact	Mitigative Steps
Sedimentation	Mining	Minor Negative	Channel run-off to storm water ponds for sedimentation
	Construction Activities (Loading Station, road and railroad)		Channel run-off to storm water ponds for sedimentation and regular road maintenance
	Rehabilitation	Major Positive	Rehabilitation will be done to off-set any potential sedimentation problems through the use of contouring and revegetation.
<p>Conclusion: With proper systems and monitoring in place this potential impact can be kept at a minor negative should it occur.</p>			
Leaching	Mining	Minor Negative	Minimize exposed stockpiles; construct Storm Water Run-off Collection Pond. Collected pond water will be used for dust suppression.
	Rehabilitation	Major Positive	Rehabilitation will be done to off-set any potential leaching.
<p>Conclusion: Bauxite is a chemically stable soil of neutral pH. Therefore will be no exposure of any mineral substance which will be dissolved by rain to critically change the soil pH</p>			

Action		Potential Impact	Mitigative Steps
Fugitive Emissions	Mining	Major Negative	<p>Supplement natural moisture content of ore, fast cleaning up of spilled bauxite, limiting stockpile time at mine site and sprinkling with water if necessary. Jamalco will adhere to Government of Jamaica Standards, ISO 14001 Principles and Jamalco’s Spill and Release Protocols.</p> <p>This is not an expensive mitigation that is already practiced</p>
	Transportation of ore to Plant, spillage on roadways, unattended stockpiles, blending activities	Minor Negative	<p>Jamalco will adhere to Road Traffic laws for transportation of materials on public roads. Maintain and irrigate haul roads, cover trucks, limit time stockpiles are unattended, quick cleanup of spilled materials.</p> <p>Standard procedures at Jamalco that will be maintained</p>
	Construction Activities (Loading Station, road and railroad)	Minor Negative	<p>Properly plan and coordinate activities, educate and use contractors who are trained and will comply with Jamalco’s principles and standards, monitor activities closely</p> <p>Monitoring of contractors is ongoing and incurs no new costs</p>
	Rehabilitation	Major Positive	<p>Rehabilitation activities including recontouring of mined out areas and revegetation will significantly reduce, if not eliminate the potential for emissions. Haul roads (where practical) may be converted to parochial roads or will be rehabilitated also.</p>
<p>Conclusion:</p> <p>With proper systems and monitoring in place this potential impact can be kept as a minor negative. It is practically impossible to eliminate this impact and Jamalco will conduct periodic monitoring of the ambient air quality throughout the mining area and surrounding communities for particulate matter.</p>			

Action		Potential Impact	Mitigative Steps
Noise & Vibration	Mining	Minor Negative	Mining activities will be primarily away from major residential areas and settlements. In areas where blasting will be required, blasting surveys will be conducted. We will comply with the laws governing the use and storage of explosive and use expertise to localise the effects of blasting. Active monitoring of noise levels in communities and continuous communication will be practiced throughout.
	Transportation by Rail and Truck	Minor Negative	Implement and enforce train speeds to minimize noise. Upgrade tracks to better accommodate weight of ore. Train and monitor truck drivers in maintaining speed limits, use of compression, horns, etc. Utilise dedicated haul roads as much as possible. Jamalco will comply with all rules and regulations related to road and rail transportation. These are activities that are part of Jamalco's principles and protocols for this type of activity and will incur no additional cost to implement.
	Loading Station Operations	Minor Negative	Remote location of load station will offer buffer from communities and settlements. Equipment will be acoustically engineered to reduce noise impacts and monitoring of noise levels will be conducted at fence lines. Jamalco will meet National and Alcoa Standards for noise.
<p>Conclusion:</p> <p>It is practically impossible to eliminate impacts related to noise and vibration from occurring. However, based on implementation of procedures, protocols, proper planning, training and monitoring of employees and their activities, this impact can be maintained easily as a minor negative.</p>			

Action		Potential Impact	Mitigative Steps
Loss of Biodiversity	Mining and Load Station Siting	Major Negative	<p>Jamalco has signed a Memorandum of Understanding with the Forestry Department to develop a land cover revegetation and habitat creation plan through technologies involving preservation and creative conservation. Jamalco is committed to maintaining the guidelines from the Bauxite Mine Rehabilitation Standards & Guidelines (1994).</p> <p>While cost has not yet been fully determined, the expansion budget of Jamalco has made accommodation for implementation of this MOU.</p>
	Rehabilitation	Major Positive	<p>Through the MOU with Forestry, the area will be rehabilitated with native vegetation that will over time recolonize.</p>
<p>Conclusion:</p> <p>The loss of biodiversity is an unavoidable negative impact of mining activities. Systems have been put in place to assess, identify and preserve any rare, endemic or otherwise valuable species that may be found in the mine areas. While it is agreed that bauxite soils do not support high levels of diversity in vegetation because of its infertility, care has been taken to complete the necessary assessments and to identify and preserve all valuable features of the lands biodiversity.</p> <p>Jamalco has significant experience in rehabilitation and revitalization of mined out areas and has developed and continues to conduct research and development work on its science & technology.</p>			

Action		Potential Impact	Mitigative Steps
Subsistence Farming	Mining	Major Negative	Farmers who leased lands from Jamalco or the Government will be relocated to other available lands and assistance will be provided by Jamalco in re-establishing their plots. The replacement situation will be the same or better than before.
	Rehabilitation	Major Positive	In many cases, affected lands will be returned to a condition where it can be used for various types of farming activities. Animal husbandry and tree crops may be two of the more suitable options.

Conclusion:

The displacement of farmers is an unavoidable impact. Jamalco has always worked with the people of the communities in which they operate to ensure that any negative impact caused by the operation has a suitable remedy or solution. This situation will be no different.

Action		Potential Impact	Mitigative Steps
Loss of natural features such as habitats, niches and species	Site Clearance and Preparation	Major Negative	Bauxite is found in the open fields between the hillocks. Areas to be cleared will therefore be kept to the open fields. All precautionary measures will be put in place to ensure habitats on hillocks are not affected.
	Mining Operations	Major Negative	During mining operations all steps will be put in place to ensure heavy machinery and workers do not damage the hillocks and the habitats therein. This may include at a minimum red tagging at foot of hillocks.
	Rehabilitation	Major Positive	Jamalco has signed a Memorandum of Understanding with the Forestry Department to develop a land cover revegetation and habitat creation plan through technologies involving preservation and creative conservation. Jamalco is committed to maintaining the guidelines from the Bauxite Mine Rehabilitation Standards & Guidelines.
<p>Conclusion:</p> <p>The loss of biodiversity is an unavoidable negative impact of site clearance and mining activities. Systems have been put in place to assess, identify and preserve any rare, endemic or otherwise valuable species that may be found in the mine areas. While it is agreed that bauxite soils do not support high levels of diversity in vegetation because of its infertility, care has been taken to complete the necessary assessments and to identify and preserve all valuable features of the lands biodiversity. The biological diversity of the hillocks will be maintained at all cost, as these areas hold the major floral and faunal species of the region, as well as providing niche communities for the various species known to inhabit the area.</p> <p>Jamalco has significant experience in rehabilitation and revitalization of mined out areas and has developed and continues to conduct research and development work on its science & technology.</p>			

Action		Potential Impact	Mitigative Steps
Water Supply	Mining Operations	Minor Negative	Rehabilitation will lessen impact on the watershed through reintroduction of vegetation. Ore deposits are well above the water table and mining should not impact groundwater. Artificial ponds will be constructed to hold stormwater for reuse in dust suppression activities. The control of fugitive dust will allow for the protection of tanks and open water catchment.
	Potable Consumption (Communities)	Major Positive	Jamalco will work with NIC and NWC to provide potable water to communities and settlements in North Manchester
<p>Conclusion:</p> <p>While mining activities will have a potential minor negative impact on water supply, Jamalco will be providing potable water solutions to communities in the area through the provision of potable water in conjunction with the NIC and NWC. At present the majority of communities rely on rain water or water delivered by trucks.</p>			

Action		Potential Impact	Mitigative Steps
Waste Management	Mining	Minor Negative	Waste materials will be sorted and managed in keeping with Jamalco standards. Certain vegetative matter and mining rejects will be used as backfill during mine rehabilitation. Vehicle maintenance waste from mining equipment will be managed in keeping with Jamalco standards and procedures.
	Loading Station	Minor Negative	Defined waste collection areas with proper labelling and instructions will be located at the mining offices. Jamalco will utilize its existing waste collection protocols and will continue to manage and dispose of all grades of waste in keeping with its current standards and procedures. Proper training and direction will be provided to all employees in waste handling and management at the site. All waste generated at Green Vale will be transported to and disposed at the Clarendon Alumina Works Landfill for proper disposal.
<p>Conclusion:</p> <p>Generation of solid waste is unavoidable. The quality of the systems, standards, procedures and training is the determining factor in how well the management programme works. Jamalco has a solid reputation for proper handling and management of all varieties of waste materials at all its operations.</p>			

Action		Potential Impact	Mitigative Steps
Sewage	Mining	No Impact	<p>Sewage generated at the mines will be managed through the use of portable chemical toilets or the construction of temporary facilities. These will be managed using Jamalco's time tested approaches and within the regulations.</p> <p>Minimal Cost and recognised aspect of the mining operation</p>
	Loading Station	No Impact	<p>A tertiary level sewage treatment system will be designed and constructed at the loading station. The proven SRC biodigester system is proposed.</p> <p>Cost – approx. JA\$ 4M – 6M</p>
<p>Conclusion:</p> <p>Sewage handling, treatment and disposal resulting from Jamalco's operations will not present any negative impacts to the environment or communities within the project area.</p>			
Labour	Mining	Major Positive	Increased employment will be welcomed in the communities. No mitigation required.
	Loading Station	Major Positive	Increased employment opportunities and support for satellite businesses.
<p>Conclusion:</p> <p>The proposed hiring of approximately 100 new employees for mining and load station positions represents a major positive impact to these communities. Additional employment in areas of transportation (consideration is being given to the utilization of smaller over-the-road trucks rather than large 100 tonne trucks sub-contracted from the surrounding areas) to move bauxite from mines to load station among other informal job and opportunity creation will be important to the communities in the area.</p>			

Action		Potential Impact	Mitigative Steps
Aesthetics	Mining	Major Negative	Aesthetics in the mining areas will be affected significantly. Mitigation involves minimize the clearance of areas only to what is absolutely necessary. Jamalco's track record and commitment to a proper rehabilitation and revitalization program along with their MOU with the Forestry Department.
	Bauxite Transportation	Minor Negative	The proposed RopeCon conveyor will be visible and may detract from the natural look of the area. However, 70% of the structure is reusable and will be removed from the landscape upon completion of mining activities.
	Rehabilitation	Major Positive	Through the MOU with Forestry, Jamalco will work to rehabilitate the mined areas with a view to restore them to a similar look as existed prior to mining.
<p>Conclusion:</p> <p>The impacts related to aesthetics are reversible. Jamalco's commitment to rehabilitation and revitalization will ensure that the mined out areas are returned to visual and physical usefulness in keeping with local and their own corporate rehabilitation guidelines.</p>			
Archaeological & Historical Heritage	Mining	No Impact	All known and identified archaeological or historical heritage resources will be avoided or preserved. Any unknown resources or artefacts unearth will be managed as directed by the Jamaica National Heritage Trust (JNHT) approved guidelines for managing archaeological and historical heritage items discovered during such activities, It includes specific methods of operation including necessary contacts and procedures to follow.
<p>Conclusion:</p> <p>A lot of work has gone into the identification of heritage resources in the mining area, Jamalco is committed to the preservation of all such items and will work with the JNHT to this end.</p>			

Action		Potential Impact	Mitigative Steps
Residential Relocation	Mining	Minor Negative/ Minor Positive	The negative impacts surround change of traditions and lifestyle. Housing solutions provided by Jamalco have been consistently of high quality, cost and standard and will remain so. In most cases relocated individuals are placed in better living conditions than before. Dialogue will be maintained between those likely to be relocated to assist in their reintegration with as little disturbance as possible.
	Railroad Rehabilitation and Upgrade	Minor Negative/ Minor Positive	Housing solutions provided by Jamalco have been consistently of high quality, cost and standard and will remain so. In most cases relocated individuals are placed in better living conditions than before. Dialogue will be maintained between those likely to be relocated to assist in their reintegration with as little disturbance as possible.
	Rehabilitation	Major Positive	Upon completion of rehabilitation activities, many of the rehabilitated lands will be suitable for residential developments and will be a benefit to the development of the communities.
<p>Conclusion:</p> <p>Circumstances will occur that require relocation of residents of the various communities impacted through mining and railroad upgrade. The best possible situation is for dialogue and implementation of Jamalco's proven relocation programme. This may be an unavoidable impact, however, suitable mitigation is readily available.</p>			

Action		Potential Impact	Mitigative Steps
Utility Relocation	Mining	Minor Negative	Displaced utilities will be replaced in a timely manner, with service that is the same or better than before. This includes potential electricity, water and road impacts. All efforts will be made to minimize disruption to the communities. Where possible the replacement will be put in place before the existing service/utilizing is impacted.
	Railroad Rehabilitation and Upgrade	Minor Negative	Displaced utilities will be replaced in a timely manner, with service that is the same or better than before. This includes potential electricity, water and road impacts. All efforts will be made to minimize disruption to the communities. Where possible the replacement will be put in place before the existing service/utilizing is impacted.
<p>Conclusion:</p> <p>In many cases this is an unavoidable impact. Where service can be maintained or restored with the least amount of discomfort it shall be done. With effective management, this impact may not be realized as a negative.</p>			

Action		Potential Impact	Mitigative Steps
Natural and Stormwater Drainage	Mining	Major Negative	Natural drainage regimes will be impacted during mining. This is unavoidable and through Jamalco's mine rehabilitation programme the mined out areas will be restored to a usefulness incorporating both natural and stormwater drainage.
	Transportation Rehabilitation and Upgrade	Minor Negative	Rehabilitation and upgrade of the railroad corridor will involve soil movement in some areas that will impact upon natural or designed drainage areas. These are unavoidable impacts, however, care will be taken to insure that where necessary new drainage regimes are designed into the works and that the solutions are suitable for the relevant areas of interest.
	Loading Station Construction	Major Negative	Many areas of natural drainage will be modified to construct the loading station. This is unavoidable. The comprehensive plans and designs will take drainage into consideration as it is important to the stability of the areas and to the protection of surrounding communities.
	Rehabilitation	Major Positive	Rehabilitation plans will incorporate designs for natural drainage and stormwater management.
<p>Conclusion:</p> <p>While It will be impossible to eliminate impacts related to drainage, Jamalco possesses the technology and know-how to properly design and construct alternative drainage solutions that will serve to eliminate potential problems. In some cases, flood prone areas can be alleviated through this process.</p>			

Action		Potential Impact	Mitigative Steps
Transportation and Travel Disruption	Mining	Minor Negative	Mining areas are usually away from public roadways and where necessary bypass roads are always constructed to service or avoid the surrounding communities. Road realignment at the Loading Station at Green Vale will be done to limit traffic disruption and to regularise the movement of vehicles through the community in light of the station being located as proposed. This will be designed to minimise walking distances and the temptation and risk associated with crossing active railroad tracks.
	Transportation Rehabilitation and Upgrade	Minor Negative	Sections of the railroad corridor are used by other bauxite companies. Jamalco will coordinate all work on the corridor with these companies to insure no or very little impact on their service. In two areas (the bridge where the train goes under the Melrose Bypass, and a small rail bridge near Broadleaf), there is the potential for traffic disruption during work on bridges. In both cases, solutions will be fully constructed prior to making any changes to the existing situation to limit any disturbance to users.
	Temporary Transportation of bauxite by Truck	Minor Negative	The use of trucks to transport bauxite for a temporary period will add to the congestion on roadways. However, Jamalco has made a concerted effort to reduce the frequency of movement, and the number of trucks to 10; and will not dispatch trucks during peak hours. Appropriate signs and flag men will be placed at strategic locations to minimise disruption.
<p>Conclusion:</p> <p>Temporary transportation disruption will occur with this project. However, all systems are in place from the early planning stages to limit this disruption. Constructing bypass roads, constructing solutions fully before making changes and limiting the number of trucks on the roads will go a long way towards limiting transportation and travel disruptions. Jamalco will comply with the laws and regulations of Jamaica regarding traffic management, including the operation of vehicles on public roads.</p>			

Action		Potential Impact	Mitigative Steps
Infrastructure Improvements in Communities	Water Supply	Major Positive	Jamalco is working with NIC, WRA and NWC to provide potable water to the communities in the project area. No mitigation required.
	New School – Mile Gully	Major Positive	The Government of Jamaica through the Ministry of Education will be constructing a new school in the Mile Gully area and Jamalco will be actively participating in the process. Positive impact no mitigation required.
	New and Improved Roadways	Major Positive	Jamalco will construct bypass roads, upgrade existing roads and build bridges/tunnels at key locations to alleviate impacts associated with travel disruption, delays and poor road condition. Positive impact no mitigation required.
<p>Conclusion: These are positive impacts associated with the project. In many ways, the implementation of this project is a win-win situation.</p>			

Action		Potential Impact	Mitigative Steps
Socio-Economic Benefits	Permanent Employees	Major Positive	Jamalco will employ a maximum of 100 new employees at the Green Vale Loading Station/Mining Operations. Many of these persons will come from the surrounding communities. A positive impact, no mitigation required.
	Truckers	Major Positive	Private truckers will be hired for hauling bauxite from both the mines and during the temporary period to St. Jago. Many operators will be from local communities. No mitigation required.
	Temporary Workforce	Major Positive	Jamalco will hire skilled/unskilled employees during preparation and construction activities to provide various services. Employees will be sourced from local communities for these positions. This includes work at the loading station, railroad. Positive impact, no mitigation required.
	Indirect Benefits	Major Positive	Stimulate economy of area through physical, economic and social development. Sub-regional development will impact various other townships externally.
<p>Conclusion:</p> <p>These are positive impacts associated with the project, which are in keeping with the Government's integrated development, policies and plans facilitated by improvements such as Highway 2000 and South Coast Development Plans. In many ways, the implementation of this project is a win-win situation.</p>			

