SOCIAL ENVIRONMENT

4 Social Environment

4.1 Introduction

As mentioned several times in this report, the project is relatively non-intrusive and would therefore have a very narrow sphere of physical influence on people or communities. It is for this reason that the socio-economic survey was not issued to smaller groups of people who are in the closest proximity to the project sites. It was estimated that each Enumeration District (ED) in its entirety would have been a much larger sphere than necessary. The ED populations were therefore halved and a sample of approximately 5% was taken.

4.2 Methodology

15 surveys each were administered in St. Mary and Montego Bay, while 18 were administered in the 7-mile Bull Bay area. These numbers were more than adequate in comparison to the figures calculated using the reasoning stated above. Please see the calculations in the table following.

Enumeration District	Total Population	Estimated # Total House Holds	Sample Population
Tower Isle, St. Mary			
W2	235	67	
W3	551	157	
W4	546	156	
Total	***1332***	***380***	9.5
Montego Bay, St. James			
WC79	318	91	
WC80	528	151	
WC81	1407	402	
Total	***2253***	***644***	16
7-Mile, Kingston			
ER84	703	201	

ER85	1197	342	
Total	***1900***	***543***	14

Note
The estimated number of Total Housing Developments was calculated with the assumption that there are 3.5 people per household.
The sample population is approximately 2.5% of the Estimated Total Housing Developments

4.3 Survey Analysis

4.3.1 St. Mary

4.3.1.1 Summary

The focal location in St. Mary was the community of Tower Isle, in the vicinity of the Couples Ocho Rios Resort. As a result, the Enumeration Districts (EDs) surveyed were W2, W3 and W4. (Please see Figure 4-1 for clarification.) In general, the survey revealed that the majority of those interviewed viewed the project in positive terms, with some admitting to limited knowledge of the technology. The results are presented below.

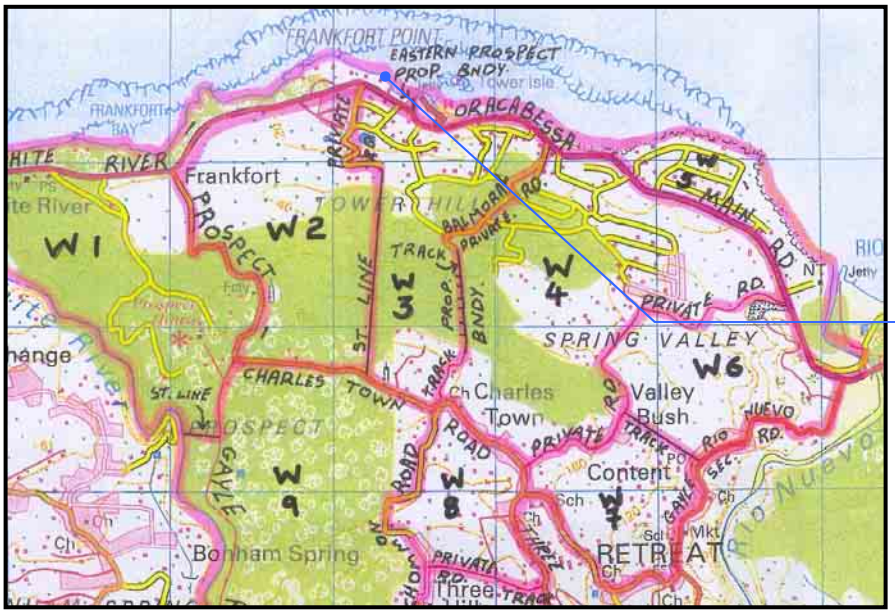

FIGURE 4-1: ED AREAS SURVEYED FOR ST. MARY

4.3.1.2 Demographic

Of the 15 people surveyed, 10 were male and 5 were female. All were more than 22 years old. 8 of the respondents had been living in the community for more than 20 years. 1 resided there for 6-10

years while the other 6 were equally divided with 3 having lived there 0-5 years and 3 for 10-20 years.

4.3.1.3 Technology

100% of the respondents owned cellular phones. 11 had land phones while 9 had cable TV and 9 Computers.

4.3.1.4 Internet

7 of the 15 respondents (46.7%) had access to the Internet at home. Of all 15 respondents, 14 of their households had members who used the Internet regularly either at home, school, work, or the library.

4.3.1.5 Fiber Optics

75% of respondents admitted not knowing what fiber Optic cables were, in contrast, almost 50% said they were aware of it's benefits. Although only 50% knew of the benefits, 80% thought it would benefit them, mostly because of access to better services.

They also thought it would impact their finances by causing them to spend less or improving business and speeding up transactions. Two people pointed out that more money might have to be spent in obtaining new equipment.

4.3.1.6 Effect of the cables

Only one person thought that the cables would impact air quality. 10 respondents thought that there would be no effect while the remaining 4 respondents required more information in order to decide.

Although 4 people rely on the sea for their livelihood by fishing and 3 use it for swimming, no one stated that they would have a problem with cables being present in their communities, 3 persons required more information to decide.

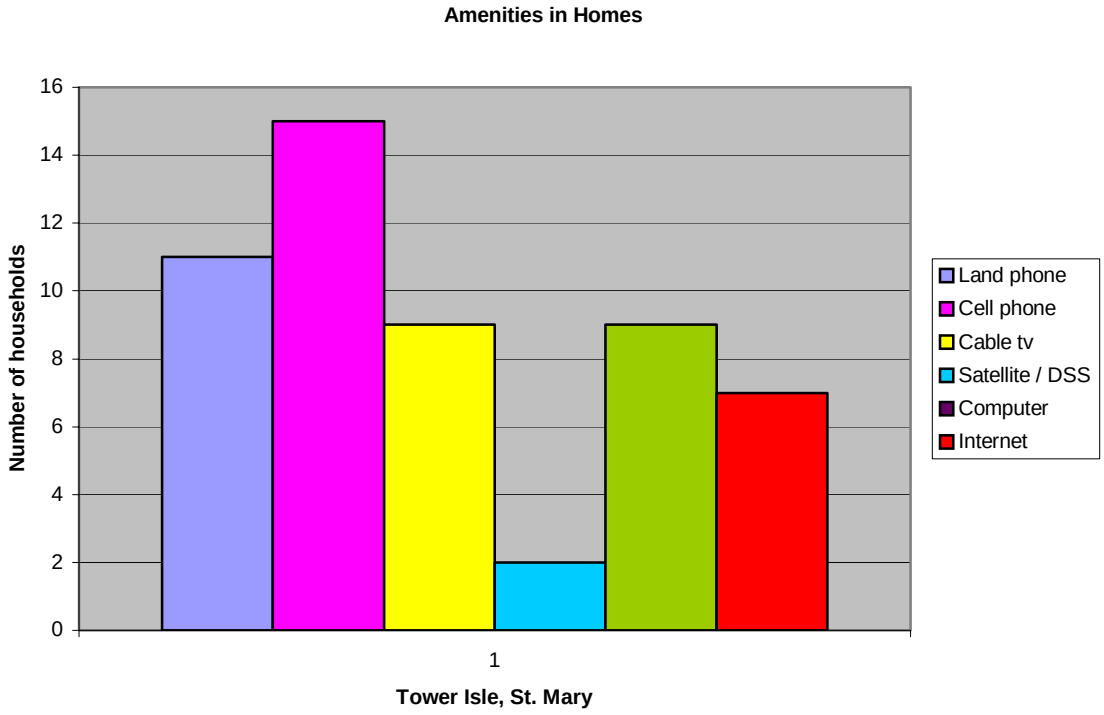

FIGURE 4-2: AMMENITIES IN HOMES

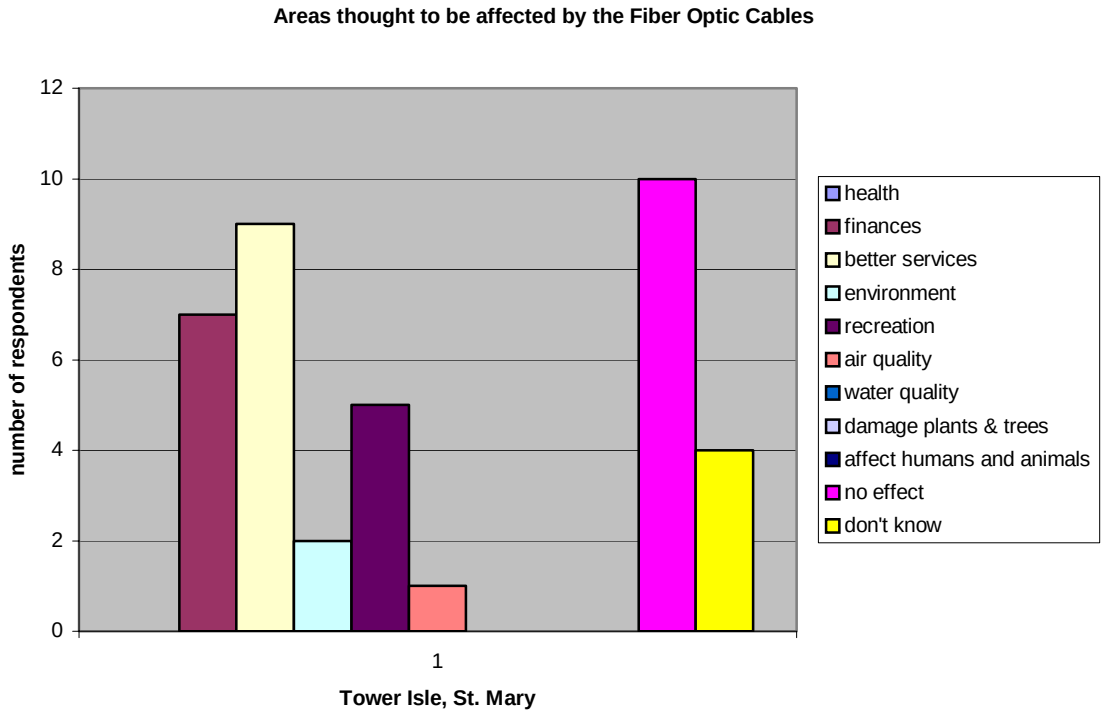

FIGURE 4-3: AREAS THOUGHT TO BE AFFECTED BY THE FIBRE OPTIC CABLES IN ST. MARY

4.3.2 Montego Bay

4.3.2.1 Summary

Locations of interest were Reading and the Great River. The EDs surveyed were WC 79, WC 80 and WC 81. (Please see Figure 4-4 map for clarification.) As with the St. Mary location, there appears to be limited knowledge of the fibre optics and the project specifically, however, many respondents are of the belief that the project may be beneficial to their quality of life.

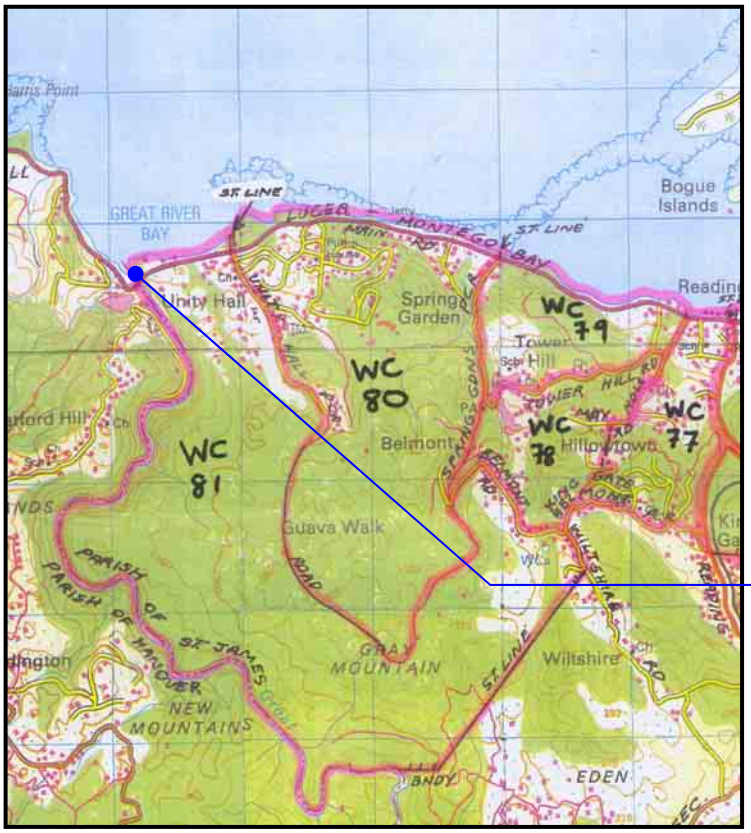

FIGURE 4-4: EDS SURVEYED IN MONTEGO BAY

4.3.2.2 Demographic

Of the fifteen people surveyed, 10 were male while 5 were female. The majority of respondents (8) were between the ages of 36 and 50 years while 5 were older than 50 years. One respondent was between 16 and 21 years old while the other was between 22 and 35 years old.

67% (10/15) of respondents were living in the area for more than 20 years. 3 have lived there between 10 and 20 years. The other 2 have lived there for less than 10 years.

In the 15 households represented by the respondents, there were 24 persons between 5 years old and 20 years old.

4.3.2.3 Amenities

80% of respondents owned cellular phones while 60% had land telephones at home. Nearly 50% (7/15) owned computers with 5 of them having Internet access at home. 11 Respondents had Cable TV and/or DSS systems.

4.3.2.4 Internet

Besides the 5 respondents who use the Internet at home, 2 others reported that they or members of their households use the Internet at work. Members of 9 households used the Internet regularly either at home, school, work or the library. Only one person did not know what the Internet was.

4.3.2.5 Fiber Optics

Ten respondents admitted to not knowing what fiber optic cables were. Three knew, while two persons did not respond. In spite of this, 11 said they knew the benefits while 14 (almost 100%) thought it would benefit them. One person did not respond to the latter two issues.

4.3.2.6 Effect of the cables

Thirteen respondents said that the cables would have no environmental effect. The other two required more information. Twelve said it would bring better services, 8 indicated that it would affect their finances while health, recreation and environment were nominated by one person each, as aspects which might be affected by the cables.

Similarly, 14 respondents said they would have no problem with the cables in their communities. One person required further information in order to make a decision.

Five people use the sea for fishing, while two use it for swimming.

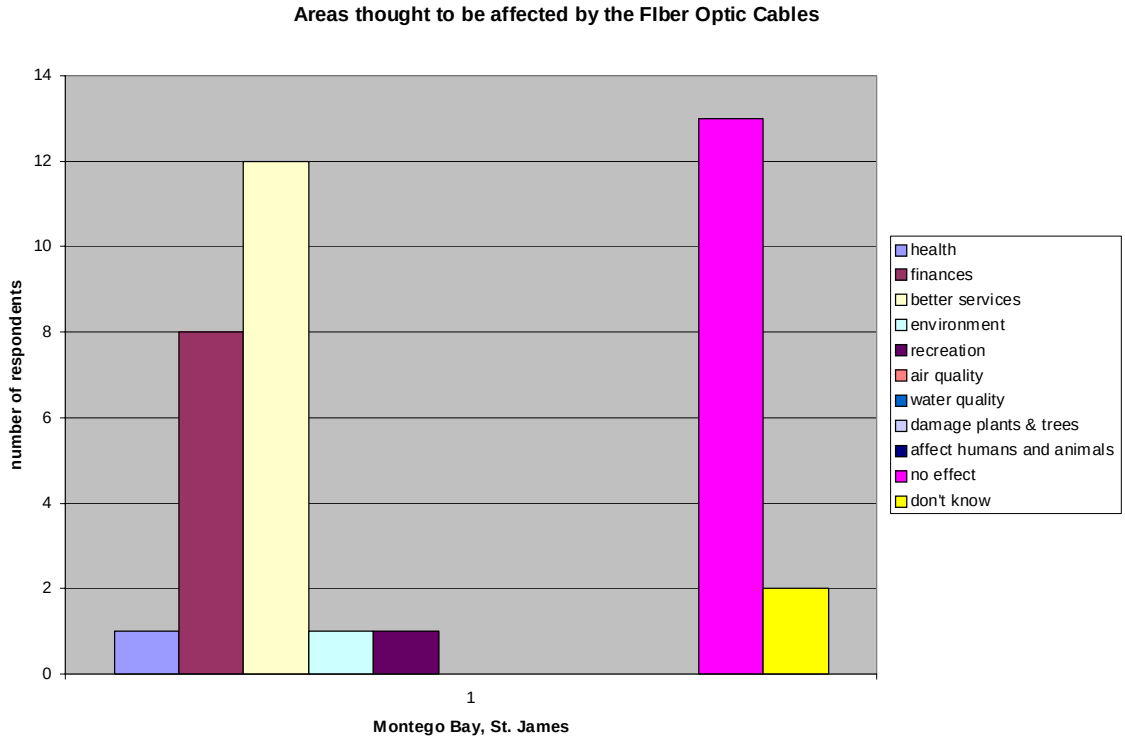

FIGURE 4-5: AREAS THOUGHT TO BE AFFECTED BY THE FIBRE OPTIC CABLES IN MONTEGO BAY

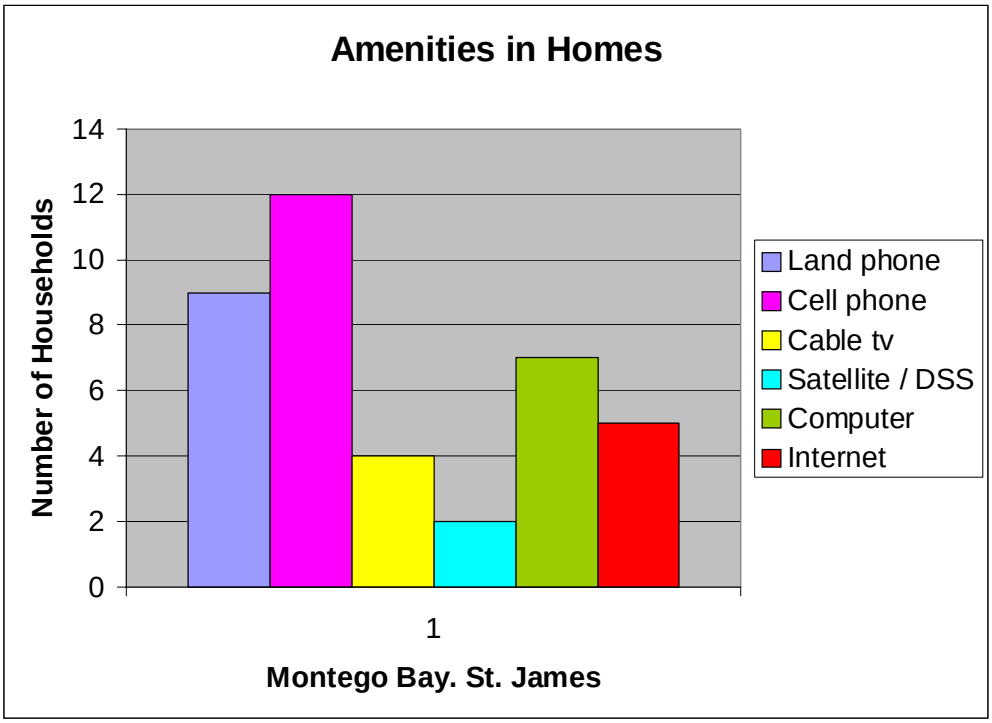

FIGURE 4-6: AMENITIES IN HOMES (MONTEGO BAY)

4.3.3 Seven mile

4.3.3.1 Summary

The focal location was the border of EDs ER 84 and ER 85. These were therefore the two EDs surveyed. Please see Figure 4-7 for further clarification.

FIGURE 4-7: EDS SURVEYED IN 7-MILES

4.3.3.2 Demographic

Of the eighteen persons surveyed, 7 were male and 11 female. One person was between 16 and 20 years old. 8 were between 22 and 35 years old while 7 were between 36 and 50 years old. 2 persons did not give their age range.

In the 18 households represented, there were 36 members between the ages of 5 and 20 years old.

4.3.3.3 Technology

All 18 respondents owned cellular phones. Cable TV was also very popular, found in 12 of the respondent's homes. Only four households were equipped with land telephone lines. None of the respondents had Internet access, computers or satellite/DSS systems at their homes.

4.3.3.4 Internet

Members of 11 households use the Internet regularly at school, work or the library. Members of 14 of the households represented in the survey use the Internet at school.

4.3.3.5 Fiber Optics

Only 3 respondents (20%) knew what fiber optic cables were, however 11 respondents said they knew its benefits and 14 thought that fiber optics would benefit them. 5% people admitted not knowing its benefits while 2 said it would not benefit them. In both cases, 2 persons did not answer.

All 14 who thought they would be benefited highlighted better services as one of the benefits.

4.3.3.6 Effect of the Cables

Six respondents said that they thought that the cables would impact their health with several of them citing possible cancer and respiratory illnesses as results of the cables' presence. Health, finances, better service, environment and recreation were nominated as aspects that would be affected by the cables. All 15 respondents also said they thought that air quality, and/or water quality, and/or humans, and/or animal, plants and/or trees would be affected. Four did not know and 7 said there would be no effect.

Fourteen respondents said they would have no problem with the cables in their communities, while the remaining 4 were equally divided between needing more information and believing that they would have a problem with the cables in their communities.

Three people rely on the sea for their livelihood by fishing.

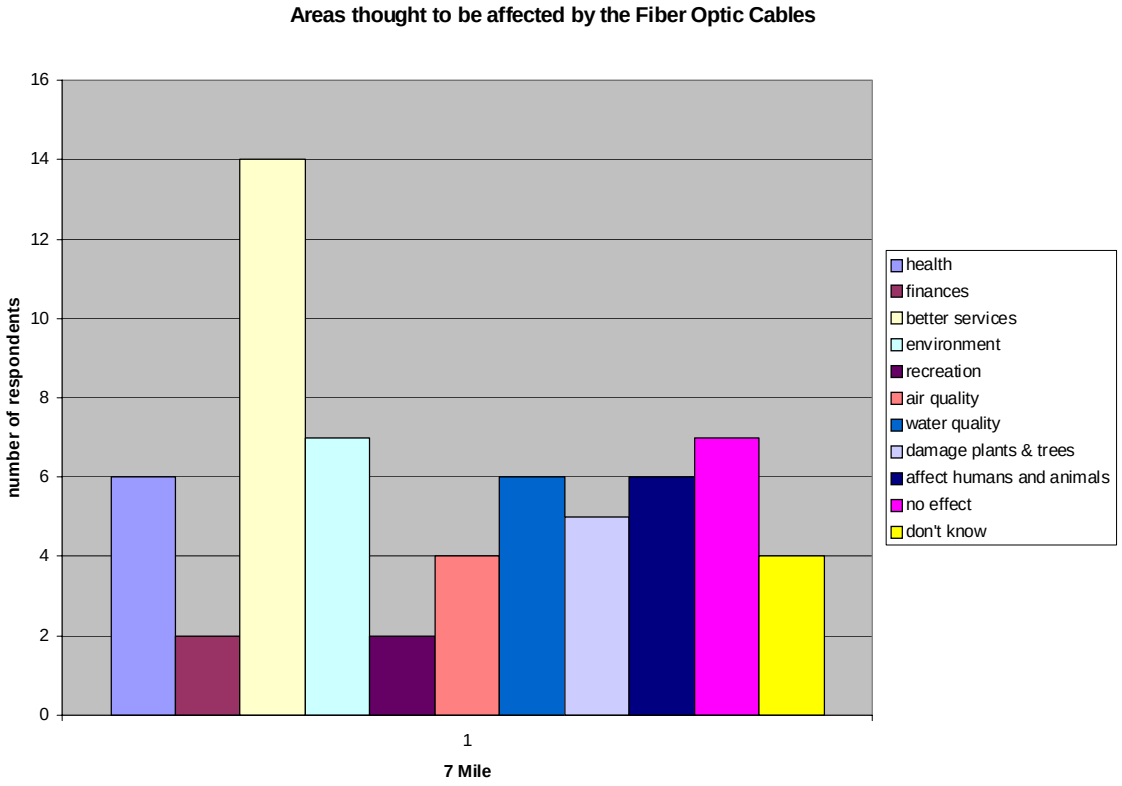

FIGURE 4-8: AREAS THOUGHT TO BE AFFECTED BY THE FIBRE OPTIC CABLES IN SEVEN MILES

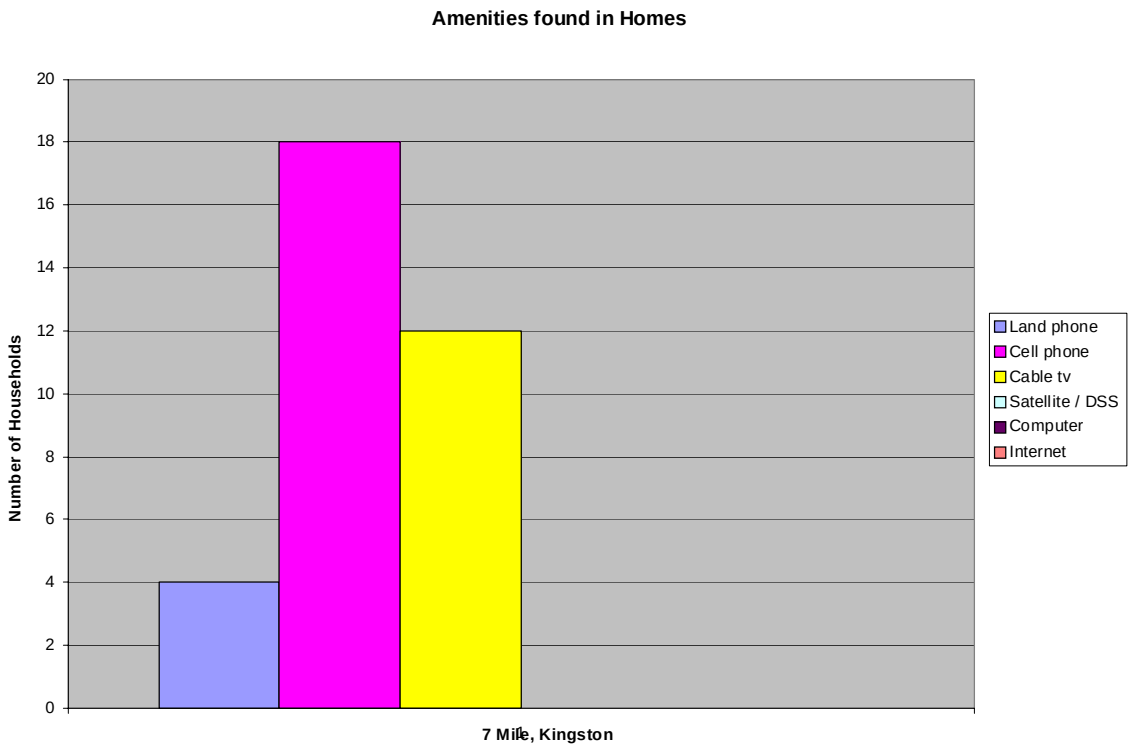

FIGURE 4-9: AMENITIES FOUND IN HOMES IN SEVEN MILES

4.3.4 Interpretation

The majority of the total residents surveyed are open to the installation of the fiber optic cables. They are willing to learn more about the opportunities and effects, and believe that it will generally make a positive impact on them.

Many highlighted that Businesses would be boosted by this new development, as a result of faster transactions internationally and locally, and also the reduced maintenance cost of the cables in comparison to traditional wires. Some felt however, that more would have to be spent on purchasing new equipment. This did not seem to be a deterrent though.

From past occurrences, cancer is a major concern of residents in proximity to cables, cellular towers etc. In this survey it was seen that health (cancer and respiratory illnesses) was a concern to mostly the residents of the 7-mile area. As a point of note, these residents all had cellular phones, which are also alleged

to cause cancer. This possibly reflects the attitude that supports the response that the majority of them would still not have a problem with the cables being in their communities.

One of the concerns raised prior to the survey was how the installation of the cables would affect those who depended on the sea for livelihood. 12 of the 48 persons surveyed (25%) said that they relied on the sea for their livelihood by fishing. Their methods of fishing were not specified, however, approximately 17% indicated that they thought the fibre optic cable would impact on their livelihood. This is further assessed in the Impact Identification section of this report.

POLICY, LEGISLATION, AND REGULATORY FRAMEWORK

5 Policy, Legislation, and Regulatory Framework

5.1 National Policies

5.1.1 THE NRCA ACT

The NRCA Act addresses the designation of National Parks and Protected areas, and their development. It is also concerned with

Designation of national park, protected area, etc

5.-

(1) The Minister may, on the recommendation of the Authority after consultation with the Jamaica National Heritage Trust, by order published in the Gazette designate-

a. any area of land as a national park to be maintained for the benefit of the public;

b. any area of land or water as a protected area in which may be preserved any object (whether animate or inanimate) or unusual combination of elements of the natural environment that is of aesthetic, educational, historical or scientific interest; or

c. any area of land lying under tidal water and adjacent to such land or any area of water as a marine park.

(2) The Authority shall cause any order made under subsection (1) to be published once in a daily newspaper circulating in Jamaica.

Permit required

9.-

(1) The Minister may, on the recommendation of the Authority, by order published in the Gazette, prescribe the areas in Jamaica, and the description or category of enterprise, construction or development to which the provisions of this section shall apply; and the Authority shall cause any order so prescribed to be published once in a daily newspaper circulating in Jamaica.

(2) Subject to the provisions of this section and section 31, no person shall undertake in a prescribed area any enterprise, construction or development of a prescribed description or category except under and in accordance with a permit issued by the Authority.

(3) Any person who proposes to undertake in a prescribed area any enterprise, construction or development of a prescribed description or category shall, before commencing such enterprise, construction or development, apply in the prescribed form and manner to the Authority for a permit, and such application shall be accompanied by the prescribed fee and such information or documents as the Authority may require.

(5) In considering an application made under subsection (3) the Authority-

a. shall consult with any agency or department of Government exercising functions in connection with the environment; and

b. shall have regard to all material considerations including the nature of the enterprise, construction or development and the effect which it will or is likely to have on the environment generally, and in particular on any natural resources in the area concerned and the Authority shall not grant a permit if it is satisfied that any activity connected with the enterprise,

construction or development to which the application relates is or is likely to be injurious to public health or to any natural resources.

(6) The Authority may-

a. grant a permit subject to such terms and conditions as it thinks fit; or

b. refuse to grant a permit, and where the Authority refuses to grant a licence it shall state in writing the reasons for its decision and inform the applicant of his right under section 35 to appeal against the decision.

(7) Any person who contravenes any provisions of subsection (2) shall be guilty of an offence and shall be liable on summary conviction before a Resident Magistrate to a fine not exceeding fifty thousand dollars or to imprisonment for a term not exceeding two years or to both such fine and imprisonment, and-

a. where a person defaults in the payment of a fine imposed under this subsection, he shall be liable to imprisonment for a term not exceeding one year; and

b. where the offence is a continuing offence, he shall be liable to a further fine not exceeding three thousand dollars for each day on which the offence continues after conviction.

Power of Authority to request Environmental Impact Assessment, etc

10.-

(1) Subject to the provisions of this section, the Authority may by notice in writing require an applicant for a permit or the person responsible for undertaking in a

prescribed area, any enterprise, construction or development of a prescribed description or category-

a. to furnish to the Authority such documents or information as the Authority thinks fit, or

b. where it is of the opinion that the activities of such enterprise, construction or development are having or are likely to have an adverse effect on the environment, to submit to the Authority in respect of the enterprise, construction or development, an environmental impact assessment containing such information as may be prescribed, and the applicant or, as the case may be, the person responsible shall comply with the requirement.

(2) A notice issued pursuant to subsection (1) shall state the period within which the documents, information or assessment, as the case may be, shall be submitted to the Authority.

(3) Where the Authority issues a notice under subsection (1), it shall inform any agency or department of Government having responsibility for the issue of any licence, permit, approval or consent in connection with any matter affecting the environment that a notice has been issued, and such agency or department shall not grant such licence, permit, approval or consent as aforesaid unless it has been notified by the Authority that the notice has been complied with and that the Authority has issued or intends to issue a permit.

(4) Any person who, not being an applicant for a permit, refuses or fails to submit an environmental impact assessment as required by the Authority shall be guilty of an offence and shall be liable on summary conviction before a Resident Magistrate to a fine not exceeding thirty thousand dollars.

Revocation of permit

11.-

(1) Subject to subsection (2), the Authority may by notice addressed to the person to whom a permit was issued revoke or suspend the permit if it is satisfied that there has been a breach of any term or condition subject to which the permit was granted, or if such person fails or neglects to submit to the Authority, in accordance with section 10, any documents, information or assessment required thereunder.

(2) Except as provided in subsection (3), the Authority shall, before revoking a permit, serve on the person to whom it was granted a notice in writing-

a. specifying the breach or default on which the Authority relies and requiring him to remedy it within such time as may be specified in the notice, and

b. informing him that he may apply to the Authority to be heard on the matter within such time as may be specified in the notice.

(3) The Authority shall not be obliged to serve a notice pursuant to subsection (2) in relation to any breach if a cessation order pursuant to section 13 or an enforcement notice pursuant to section 18 is in effect in relation to that breach.

Cessation order

13.-

(1) Without prejudice to the provisions of section 9 (7), 10 (4),11 and 12 (3)-

a. where a person fails to comply with the provisions of section 9 (2); or

b. where the person responsible fails to submit an environmental impact assessment within the time specified by the Authority; or

c. where a person fails to comply with the provisions of section 12 (1),the Authority may issue an order in writing to such person directing him to cease, by such date as shall be specified in the order, the activity in respect of which the permit, licence or environmental impact assessment, as the case may be, is required.

(2) Where the person to whom an order is issued under subsection (1), fails to comply with the order, the Minister may take such steps as he considers appropriate to ensure the cessation of the activity to which the order relates.

(3) Where authorized by the Minister acting pursuant to subsection (2), a member of the Jamaica Constabulary Force may use such force as may be necessary for the purpose of ensuring compliance with an order referred to in that subsection; and any person who hinders or obstructs any such member acting as aforesaid shall be guilty of an offence and shall be liable on summary conviction before a Resident Magistrate to a fine not exceeding ten thousand dollars or to imprisonment for a term not exceeding one year.

5.1.2 The Watershed Protection Act, 1963

This Act governs the activities operating within the island's watersheds, as well as protects these areas. The watersheds that are designated under this Act include all three water sheds

5.1.3 The Beach Control Act (1956)

This act was passed in an effort to properly manage the coastal and marine resources of Jamaica. This occurs through the necessary licensing of activities on the foreshore and the floor of the sea.

The Act also addresses access to the shoreline, fishing, public recreation, and the establishment of marine protected areas.

5.1.4 THE TOWN AND COUNTRY PLANNING ACT

The Town & Country Planning Law (1987)

The Town and Country Planning Act covers the development and use of land. In accordance with this law, the Town Planning Department is the Agency that reviews any plans involving industrial development.

This law allows specific conditions to be stipulated and imposed on any approved plans. This planning decision is based upon several factors including;

- the location of the development
- the nature of the industrial process to be carried out
- the land use and zoning
- the effect of the proposal on amenities and traffic among other things.

Applications to local planning authority for permission

11.-

(1) Subject to the provisions of this section and section 12, where application is made to a local planning authority for permission to develop land, that authority may grant permission either unconditionally or subject to such conditions as they think fit, or may refuse permission; and in dealing with any such application the local planning authority shall have regard to the provisions of the development order so far as material thereto, and to any other material considerations.

(1) (A) where the provisions of section 9 of the Natural Resources Conservation Authority Act apply in respect of a development which is the subject of an application under subsection (1), planning permission shall not be granted unless-

a. an application to the Natural Resources Conservation Authority has been made as required by such provisions as aforesaid; and

b. that Authority has granted or has signified in writing its intention to grant, a permit under that Act.

(2) Without prejudice to the generality of subsection (1), conditions may be imposed on the grant of permission to develop land thereunder-

for regulating the development or use of any land under the control of the applicant (whether or not it is land in respect of which the application was made) or requiring the carrying out of works on such land, so far as appears to the local planning authority to be expedient for the purposes of or in connection with the development authorized by the permission;

(3) Provision may be made by a development order for regulating the manner in which applications for permission to develop land are to be dealt with by local planning authorities, and in particular

a. for enabling the Minister to give directions restricting the grant of permission by the local planning authority, during such period as may be specified in the directions in respect of any such development, or in respect of development of any such class, as may be so specified

b. for authorizing the local planning authority, in such cases and subject to such conditions as may be prescribed by the order, or by directions given by the Minister thereunder, to grant permission for development which does not appear to be provided for in the order or in any plan or statement deposited with the order and is not in conflict therewith;

c. for requiring the local planning authority, before granting or refusing permission for any development, to consult with such authorities or persons as may be prescribed by the order or by directions given by the Minister thereunder;

d. for requiring the local planning authority to give to any applicant for permission, within such time as may be prescribed by the order such notice as may be so prescribed as to the manner in which his application has been dealt with;

e. for requiring the local planning authority to furnish to the Minister and to such other Persons as may be prescribed by or under the order, such information as may be so prescribed with respect to any application for permission made to them, including information as to the manner in which such application has been dealt with.

f. Every local planning authority shall keep, in such manner as may be prescribed by the development order a register containing such information as may be so prescribed with respect to applications for permission made to such authority, including information as to the manner in which such applications have been dealt with; and every such register shall be available for inspection by the public at all reasonable hours.

Applications to determine whether permission required

14.-

(1) If any person who proposes to carry out any operations on land or make any change in the use of land wishes to have it determined whether the carrying out of those operations or the making of that change in the use of the land would constitute or involve development of the land within the meaning of this Act, and, if so, whether an application for permission in respect thereof is required under this Part having regard to the provisions of the development order, he may, either as part of an application for such permission, or without any such application, apply to the local planning authority to determine that question.

(2) The foregoing provisions of this Part shall, subject to any necessary modifications, apply in relation to any application under this section and to the determination thereof as they apply in relation to applications for permission to develop land and to the determination of such applications.

5.1.5 Jamaica National Heritage Trust Act (1985)

The Jamaica National Heritage Trust, formerly the Jamaica National trust, administers the Act. This Act provides for the protection of important areas, including the numerous monuments, forts, statues, and buildings of historic and architectural importance in Jamaica.

This Act will prove applicable if any structures of archaeological and/or architectural importance are located on the site, affected by the site activities or unearthed during site activities. Since this project is in an area that may contain items of archaeological importance, an Archaeological Retrieval Plan is included as part of this document.

5.2 International Policy

5.2.1 Agenda 21

Jamaica is signatory to the convention (Agenda 21) which came out of a United Nations hosted conference on the Environment and Development, held in Rio de Janeiro in June 1992 (EARTH SUMIT '92). Twenty-seven (27) environmental principles were outlined. Not all these principles are applicable to the project, but those deemed relevant and appropriate are outlined below:

Principle 1 Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

Principle 3 The right to development must be fulfilled to equitably meet developmental and environmental needs of present and future generations.

Principle 4 In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

Principle 10 Environmental issues are best handled with the participation of all concerned citizens, at the relevant level, each individual shall have appropriate access to information concerning the environment that is held by

public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.

Principle 11 States shall enact effective environmental legislation, Environmental Standards, management objectives and priorities should reflect the environmental and developments context to which they apply.

Principle 5 In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

IMPACT IDENTIFICATION & MITIGATION

6 Impact Identification & Mitigation

6.1 Potential Impacts

6.1.1 Socio-Economic Impacts

- Due to the services which can be received via installation of Fiber Optic cables, such as, faster remittance, faster transmission of data (sending and receiving), over broad band internet, better telecommunications, safer and less vulnerable international connections etc., there will be several positive impacts on the entire island. These include:
  - Remittances would be received more quickly, therefore there could be an increase in the number of remittances sent to the and the security of this and other such businesses island. This would in turn mean an increase in revenue for the country.
  - Due to easier access to information (internet), the scope of knowledge of individuals would increase. Also, the less time spent obtaining this information, the more time would be left available for other activities.
  - Jamaica would become an example in the Caribbean of high quality international telecommunications. I
  - In inclement weather, the risk of service disruption would be very lowered due to the technology and the redundancy factor of having two (2) lines into the island. This ensures that productivity is not disrupted.
  - The establishment of the island as a leader in Call Centers, data management services is a

strong possibility as a result of the technological capacity that this project will offer.

- Cheaper communication service. With this decrease in cost, the service would be affordable to more people, improving the overall standard of living.

THESE ARE POSITIVE IMPACTS, THEREFORE, NO MITIGATION IS REQUIRED

- Employment

  - When fully implemented, i.e. the cable has been installed and the infrastructure has been prepared, the project will result in significant job creation across the island. Jobs will be realized though increased telecommunication and other related industries on the island.

  - All the phases of the project implementation will generate local employment (some more than others) but the cumulative impact will be significantly and positive for the Jamican economy.

    POSITIVE IMPACT – NO MITIGATION REQUIRED

6.1.2 Environmental

- Noise nuisance

  - It is not expected that the project will cause a prolonged noise nuisance at any point, that is, neither during installation nor operation. Where necessary, work requiring heavy equipment will be scheduled for day-time and will be brief to minimize the potential for disruption of

residents and guests. Operation will not produce any significant noise.

MITIGATION: All equipment used will be properly serviced and in good working condition. Any equipment that is deemed to be too noisy will be removed from service for repair or replacement. Work will be scheduled to minimize the potential for impacting the people. Personnel should wear ear protection (e.g. ear plugs)

- Air Quality

  - Fugitive Dust: It is possible that a small amount of fugitive dust may be produced during manhole construction at the landing site. If trenching along the roadway must be done, then there is a potential for observable fugitive dust. Otherwise, this project should not result in any negative air quality events.

    MITIGATION: Excavated soil and exposed soil surfaces will be sprinkled as necessary and not allowed to dry out enough to become entrained in wind. Soils will be removed or reused for backfill in a timely manner to lessen the possibility of fugitive dust formation.

  - Gaseous Emissions: limited heavy equipment will be used and only for short periods. Emissions will therefore not be prolonged, and this is

confined to the installation period. Operation will not generate any appreciable amounts of emissions.

MITIGATION: Heavy equipment will be maintained in proper working condition to produce minimal emissions.

- Water Quality

  - It might be suggested that the presence of the cables in the water may decrease the water quality; however, they should pose no threat and will not alter the quality of the water since they are built to exist in, and survive the harshest marine environment without decay and are usually colonized by local plant and animal life if exposed. Temporary impacts on water quality may be realized during the cable landing operations. This however, should be short in duration and limited in the amount of sedimentation that it causes. No chemical impacts are anticipated on water quality.

    MITIGATION: Where necessary, proper mitigative devices, such as silt curtains, etc will be used to contain sedimentation in the water.

- Visual Aesthetics:

  - There will be very little change to the visual aesthetics due to this project. The small buildings that will house the equipment will be of low profile and footprint (except for the Bull Bay site which is existing), and fit into the existing surroundings.

MITIGATION: Landscaping and building orientation will be utilized where necessary to enhance the visual aesthetics of the areas.

- Silting/Sedimentation: May occur as a result of excavation of soil for the manhole, trenching for laying the cable, or from directional drilling (which may be required).

MITIGATION: The timely removal of stockpiled soils and the use of containment (berms, bunds or containers) to secure soils and avoid siltation, etc. during incidence of rainfall. Proper securing of stockpiles

- Loss of vegetation, loss of habitat:
  - The landing site does not require any land clearance. The manhole to be constructed is not large and is mostly underground. Directional drilling used will not disturb the soil surface.
  - The cable station will be constructed on land that currently has buildings on them. There may be need to remove vegetation but since the properties are not primarily vegetative, the loss of habitat will not be significant.

  MITIGATION: Limit the amount of vegetation to be removed to a minimum. Introduce landscaping as necessary to the area.

- Disruption of Sea Grass and other marine life on the sea floor:
  - It may be assumed that laying of any form of cables on the sea floor would disrupt marine

life, however, it is in the best interest of those laying the cables to avoid corals or other structures in order to protect the cable. The cable is to be laid completely flat on the sea floor. In the case of the Tower Isle, St. Mary landing site, there is a small area of sea grass that may be unavoidable. Every effort will be made to minimize the areas of sea grass interrupted and mitigation measures will be implemented.

MITIGATION: In few areas where sea grass is unavoidable it is proposed to utilized a knife to cut the sea grass causing a narrow opening that can be raised and the small fibre-optic cable placed just below the sea grass mat, the sea grass is replaced and in places where necessary it will be held in place by weights. Otherwise, the cable could be laid across the sea grass bed and the grass allowed to grow over the cable.

6.2 Summary of Potential Impacts

There are no adverse unavoidable negative environmental impacts related to the proposed project. The potential environmental impacts identified for the pre-construction, construction and operating phases of the proposed project includes:

Negative

- Minimal suspended solids during cable laying
- Minimal noise and vibration during construction
- Minimal aesthetics and transient change of land and marine use

Positive

- Improved broadband access by connection to other islands
- Potential vast increase in investment revenue and job creation due to improvements in the telecommunications industry from this project.
- No loss of biodiversity
- No loss of archaeological and historical heritage resources
- No loss of aesthetic appeal
- No loss of commercial and recreational fishing needs.

TABLE 6-1: POTENTIAL SOURCES OF ENVIRONMENTAL IMPACTS

No.	Types of likely environmental issues	Construction Phase	Operational Phase
1	Gaseous emissions	✓	×
2	Dust	✓	×
3	Odour	×	×
4	Noise	✓	×
5	Night-time operations	×	×
6	Traffic generation	×	×
7	Liquid effluents, discharges, or contaminated runoff	×	×

No.	Types of likely environmental issues	Construction Phase	Operational Phase
8	Generation of waste or by-products	×	×
9	Storage, handling, transport or disposal of hazardous materials or wastes	×	×
10	Risks of accidents which would result in pollution or hazard	×	×
11	Loss of vegetation	✓	
12	Disposal of spoil material	×	×
13	Disruption of water movement or bottom sediments	✓	×
14	Unsightly visual appearance	×	×
15	Ecological impacts (Marine)	✓	×
Key	Potential to cause concern	✓	
	Unlikely to cause concern	×	

TABLE 6-2: IMPACT IDENTIFICATION TABLE FOR BULL BAY PROJECT SITE

	EIA Activities															
	Landing Site Preparation				Cable Installation				Cable Station Construction							
	Site Surveying	Site Clearance	Solid Waste Disposal	Manhole Construction	Cable Laying (marine)	Cable routing (land)	Trenching	Materials Sourcing	Materials Transport	Construction Camp/Materials Storage	Construction Works	Solid Waste Disposal	Sewage Treatment	Increased workforce	Landscaping	**Cable Station Operation**
TOPOGRAPHY																
GEOLOGY																
VIBRATION																
GASEOUS EMISSIONS/ ODOUR																
AMBIENT NOISE																
DUST																
DRAINAGE																
TEMPERATURE																
NATURAL HAZARD VULNERABLITY																
Water Quality																
SEDIMENTATION																
CHEMICAL IMPACT																
Ecological Parameters:-																
TERRESTRIAL ECOSYSTEMS																
VEGETATION																
BIRDS																
OTHER FAUNA																
AQUATIC ECOSYSTEMS																
VEGETATION																
FAUNA																

	EIA Activities															
	Landing Site Preparation				Cable Installation				Cable Station Construction							
	Site Surveying	Site Clearance	Solid Waste Disposal	Manhole Construction	Cable Laying (marine)	Cable routing (land)	Trenching	Materials Sourcing	Materials Transport	Construction Camp/Materials Storage	Construction Works	Solid Waste Disposal	Sewage Treatment	Increased workforce	Landscaping	**Cable Station Operation**
SENSITIVE HABITATS																
Socio-Economic Parameters:-																
AESTHETICS																
LAND USE COMPATIBILITY																
EMPLOYMENT																
FOREIGN EXCHANGE EARNINGS																
IMPROVED SERVICE																
STRUCTURES/ROADS																
WASTE MANAGEMENT																
TRAFFIC																
INCREASED CRIME																
HAZARD VULNERABILITY																
SOLID WASTE GENERATION																
SEWAGE																
FISHING INDUSTRY																
Occupational Health & Safety																

KEY

	Major Negative
	Minor Negative
	No Impact
	Major Positive
	Minor Positive

TABLE 6-3: IMPACT IDENTIFICATION TABLE FOR TOWER ISLE PROJECT SITE

	EIA Activities															
	Landing Site Preparation				Cable Installation				Cable Station Construction							
	Site Surveying	Site Clearance	Solid Waste Disposal	Manhole Construction	Cable Laying (marine)	Cable routing (land)	Trenching	Materials Sourcing	Materials Transport	Construction Camp/Materials Storage	Construction Works	Solid Waste Disposal	Sewage Treatment	Increased workforce	Landscaping	**Cable Station Operation**
TOPOGRAPHY																
GEOLOGY																
VIBRATION																
RAINFALL																
GASEOUS EMISSIONS/ ODOUR																
AMBIENT NOISE																
DUST																
DRAINAGE																
TEMPERATURE																
NATURAL HAZARD VULNERABLITY																
Water Quality																
SEDIMENTATION																
CHEMICAL IMPACT																
Ecological Parameters:-																
TERRESTRIAL ECOSYSTEMS																
VEGETATION																
BIRDS																
OTHER FAUNA																
AQUATIC ECOSYSTEMS																
VEGETATION																
FAUNA																
SENSITIVE HABITATS																
Socio-Economic Parameters:-																
AESTHETICS																
LAND USE COMPATIBILITY																
EMPLOYMENT																
FOREIGN EXCHANGE EARNINGS																
STRUCTURES/ROADS																
WASTE MANAGEMENT																
TRAFFIC ON THE ACCESS ROAD																

	EIA Activities															
	Landing Site Preparation				Cable Installation				Cable Station Construction							
	Site Surveying	Site Clearance	Solid Waste Disposal	Manhole Construction	Cable Laying (marine)	Cable routing (land)	Trenching	Materials Sourcing	Materials Transport	Construction Camp/Materials Storage	Construction Works	Solid Waste Disposal	Sewage Treatment	Increased workforce	Landscaping	**Cable Station Operation**
INCREASED CRIME																
HAZARD VULNERABILITY																
SOLID WASTE DISPOSAL																
SEWAGE DISPOSAL																
FISHING INDUSTRY																
Occupational Health & Safety																

KEY

	Major Negative
	Minor Negative
	No Impact
	Major Positive
	Minor Positive

TABLE 6-4: IMPACT IDENTIFICATION TABLE FOR MONTEGO BAY PROJECT SITE

	EIA Activities															
	Landing Site Preparation				Cable Installation				Cable Station Construction							
	Site Surveying	Site Clearance	Solid Waste Disposal	Manhole Construction	Cable Laying (marine)	Cable routing (land)	Trenching	Materials Sourcing	Materials Transport	Construction Camp/Materials Storage	Construction Works	Solid Waste Disposal	Sewage Treatment	Increased workforce	Landscaping	**Cable Station Operation**
TOPOGRAPHY																
GEOLOGY																
VIBRATION																
RAINFALL																
GASEOUS EMISSIONS/ ODOUR																
AMBIENT NOISE																
DUST																
DRAINAGE																
TEMPERATURE																
NATURAL HAZARD VULNERABLITY																
Water Quality																
SEDIMENTATION																
CHEMICAL IMPACT																
Ecological Parameters:-																
TERRESTRIAL ECOSYSTEMS																
VEGETATION																
BIRDS																
OTHER FAUNA																
AQUATIC ECOSYSTEMS																
VEGETATION																
FAUNA																
SENSITIVE HABITATS																
Socio-Economic Parameters:-																
AESTHETICS																
LAND USE COMPATIBILITY																
EMPLOYMENT																
FOREIGN EXCHANGE EARNINGS																
STRUCTURES/ROADS																
WASTE MANAGEMENT																
TRAFFIC ON THE ACCESS ROAD																

	EIA Activities															
	Landing Site Preparation				Cable Installation				Cable Station Construction							
	Site Surveying	Site Clearance	Solid Waste Disposal	Manhole Construction	Cable Laying (marine)	Cable routing (land)	Trenching	Materials Sourcing	Materials Transport	Construction Camp/Materials Storage	Construction Works	Solid Waste Disposal	Sewage Treatment	Increased workforce	Landscaping	**Cable Station Operation**
INCREASED CRIME																
HAZARD VULNERABILITY																
SOLID WASTE DISPOSAL																
SEWAGE DISPOSAL																
FISHING INDUSTRY																
Occupational Health & Safety																

KEY

	Major Negative
	Minor Negative
	No Impact
	Major Positive
	Minor Positive

ENVIRONMENTAL MONITORING PLAN

7 Environmental Monitoring Plan

7.1 Outline

Any scale of operation that is being started without any existing infrastructure is generally divided into three phases:

1. Pre-construction phase
2. Construction phase
3. Operational Phase.

All of these phases require independent monitoring regimes in order to ensure that the integrity of the environment is preserved.

The type of development being proposed in this EIA is estimated to have minimal impact on the environment in all three of its phases. In fact, the only phases which really require monitoring are the pre-construction phase and the construction phase. The operational phase is automated and does not involve any extensive operations that require human intervention or the use of chemicals, physical tools, etc. The operation is also a zero discharge operation and does not require any frequent input of raw materials other than electricity for sustained operations.

All data recorded, all observations made, and all analytical techniques employed will be documented, summarized, compiled and submitted to NEPA according to the accepted terms outlined for each phase of this development, and according to any additional terms outlined in the permit license, if granted.

7.2 Pre-construction Phase

This phase involves the preparation of the proposed sites for the facilitation of the development. Site preparation will occur on the on-shore areas.

For the preparation of the onshore sites, the following measures are proposed:

- During site clearing activities, any animals or plants that are in the area designated for the buildings must be evaluated to ensure that no endemic, rare or protected species will be affected. Any such species identified will be documented and the proper authorities notified so that the best relocation practice can be employed or if necessary the location of the building changed to accommodate the species.

- Where identified, endemic and rare species should be preserved in place or collected for transplanting (As Observed)
- Stockpiles of soil and vegetative debris generated during site clearing activities should be monitored and maintained to eliminate generation of fugitive dust. (Daily Monitoring)
- Noise levels along the perimeters of the project area should be monitored and recorded to insure that activities at the site are not exceeding standards. (Daily Monitoring)

7.3 Construction Phase

Construction is slated to occur on both near-shore and onshore areas. Directional drilling may be employed to bring the cable in from the sea to the low tide line where it will be trenched to a manhole that will be constructed onshore. Such an activity will warrant the monitoring of turbidity levels of the near shore areas for the duration of the construction phase. The turbidity levels will provide insight on the magnitude of the occurrence of processes such as siltation and sedimentation, which may be caused by the drilling and the on shore construction activities.

Construction at each landing site is estimated to be daily. During the construction process on the onshore areas the following areas will be monitored:

- Solid Waste Management - Ensure that solid waste management plan is prepared, and that workers are aware that no solid waste material should be scattered around the site. Monitor

availability and location of skips/dumpsters. (daily monitoring)

- Exposed soil areas must be monitored to determine potential for erosion, silting and sedimentation particularly during storm events. (daily monitoring)
- If erosion, silting or sedimentation is a potential or occurs, immediate steps must be taken to negate the impact on the coastal waters and other receptors where applicable. (As Needed)
- Equipment staging and parking areas must be monitored for releases and potential impacts. (Weekly Monitoring)
- If any cultural heritage resources are unearthed during construction activities, activities should be stopped and an Archaeological Retrieval Plan implemented. (As Needed).
- Noise levels along the perimeters of the project area should be monitored and recorded to insure that activities at the site are not exceeding standards. (Daily Monitoring)

APPENDICES

APPENDIX I

APPENDIX I: TERMS OF REFERENCE

FibraLink Jamaica Limited proposes to install, commission and operate a fibre optic network linking Jamaica to the USA via the Bahamas. This project will involve the laying of fibre optic cables on the sea floor, terminating in Jamaica for the provision of broadband services to the island. This EIA seeks to identify all environmental, socio-cultural, ecological, physical and natural resources that may be impacted (positively or negatively) by this project.

FibraLink has been awarded a licence to install and operate the fibre optic system by the Office of Utilities Regulation in Jamaica. FibraLink seeks to identify two (2) landings for its fibre optic cable on Jamaican shores with locations in Bull Bay, Kingston and Port Antonio, Portland being the two areas under consideration.

On September 11, 2004, the country experienced a serious disruption of services from damage caused by Hurricane Ivan to the existing single fibre optic cable servicing the island. This project will present the country with another option for linking with the outside world and provide a level of redundancy to the network to safeguard against total disruption of services in the event of significant natural disasters, representing great economic and social potential. It will serve to drive the cost of e-services down, creating a more affordable environment for commercial and personal broadband communication availability in the island.

STUDY AREA

The study area will include to some extent Jamaica's territorial waters and two (2) landing sites, namely in the Bull Bay (Kingston) and Soldiers Cove (Portland) areas. The projected sphere of influence of the study sites is expected to be no more than 2km in radius of identified sites. The Bull Bay site is presently used as a fibre optic landing site by AT&T and will be utilized in its existing configuration for the new fibre optic line proposed in this project.

SCOPE OF WORK

The Scope of Work requires that an Environmental Impact Assessment must be carried out. The Scope of Work is listed under the tasks to be undertaken below.

TASKS TO BE UNDERTAKEN

The tasks to be undertaken are structured to meet the requirement of the National Environment and Planning Agency (NEPA), Ministry of Health (Environmental Health Unit), Office of Disaster Preparedness and Emergency Management (ODPEM) and all other relevant governmental and regulatory agencies.

Task 1: Policy, Legislative and Regulatory Framework

All International and Government of Jamaica policies, legislation and regulations relevant to the project will be identified and analysed. This will be a comprehensive analysis from which FibraLink will be advised as necessary to ensure that all phases of the project maintain compliance.

Task 2: Project Description

CD&A will identify all the critical activities, equipment and procedures that will be implemented throughout the major stages of the project. The project designs, specifications, and schedules will be clearly presented in this section. The completed project description will include at a minimum, details such as:

- Description of the materials of construction and structure of the fibre optic cable. Method of linkages and securing along its alignment as well as linkages from sea to land
- Project implementation schedule, descriptions of preconstruction, construction and occupational activities
- Detailed description of project components, with special emphasis on those that may cause potential environmental impacts during each phase.
- Review of designs with details to show how FibraLink will be able to maintain environmental compliance and not negatively impact the environment. This includes structural, operational and emergency safeguards
- Mode of operation, hours of operation and types of machinery and equipment to be used. Special emphasis will be placed on activities that involve the generation of waste materials
- the number of employees proposed for the operation
- Description of the role of regulatory agencies, NEPA, Parish Council, Marine Police and others in terms of inspections and follow-up visits

The relevance of the project to national development will also be evaluated.

Task 3: Description of Current Environmental Baseline Data

This task seeks to identify the principal parameters of the natural and human environment which may be sensitive to the project, and to compile, analyse, assess and document the present (baseline) status of this environment. This database will provide an invaluable baseline against which future impacts on the environment may be measured. The environmental setting and baseline parameters will address primarily the bio-physical environment and the socio-cultural environment.

The Bio-Physical Environment

- Topography, basic land, and marine conditions.
- geomorphology and earth surface processes
- natural hazard vulnerability and risk
- hydrogeology (surface and ground water)
- marine environment (territorial waters)
- rainfall characteristics
- wind speed and direction
- temperature profiles
- relative humidity
- ambient air quality
- background noise levels
- water quality surveys
- floral and faunal types and their distribution
- the ecology of the area (identification of any rare, endangered and threatened species, and habitats)

These studies will incorporate the two (2) proposed landing sites and the surrounding environment/communities that may be impacted. A potential environmental sphere of influence will be developed based on the information collected and the potential for impact.

The socio-cultural environment

Both primary and secondary data sources will be developed involving: documentation of the existing human environment will include a review and analysis of census data. Populations in the environs of the landing sites will be taken into account in compiling the socio-economic baseline information. A coded, pre-tested socio-economic survey instrument will be developed and administered in the communities located within the anticipated sphere of influence of the project. The findings will be presented in a manner to categorize and identify socio-economic impacts (perceived and real) in terms of positive and negative.

Among the key elements which will be addressed are:

- the spatial distribution of populations
- demographic profile
- use/dependence on natural resources
- knowledge of the proposed project and their disposition towards it
- occupations and skills
- employment levels
- economic activity
- relevant historical heritage in the vicinity of the site

Task 4: Description of Current and Proposed Broadband Systems in Jamaica

CD&A will utilize both graphical and descriptive approaches to describe and compare the existing fibre optic equipment and capabilities on the island against those of the proposed upgrade, to highlight effectively the benefits both environmentally and economically of the proposed project. This will include at a minimum:

- Characteristics of the methods, equipment and processes
- Designs, size, scale and capacity
- Equipment and machinery

Task 5: Analyses of Alternatives

Alternative landing sites and plans (inclusive of the preferred and no action alternatives) will be evaluated in terms of the economic, logistical, and environmental selection criteria, inclusive of their potential for positive and negative impacts, and the degree to which the negative impacts may be mitigated. In the case of each alternative reviewed a rationale will be provided for selection or non-selection.

Task 6: Impact Identification

All potential impacts on the receptors and attributes of the environment, both adverse and beneficial, will be identified and their duration, magnitude, reversibility, and extent described and quantified. In addition, in the case of positive impacts, recommendations will be made on their maximisation. This will cover all phases of the project. This will include qualitative as well as quantitative assessments. Areas to be addressed will include at a minimum:

- Human population of the area
- Flora and fauna
- Soil

- Ground and surface water
- Marine environment
- Weather and climate
- The landscape
- Cultural Heritage Resources

Cumulative impacts will also be addressed by taking into account existing operations in the area, particularly in respect of their contribution to the baseline and the incremental changes which will be caused by the proposed works, if any.

Task 7: Impact Mitigation

An impact mitigation plan will be developed. This will include the measures to be implemented in the environmental action plan for each potentially negative impact identified. These will also include mitigative measures to be applied during all phases of construction and operation to minimise or eliminate any identified negative impacts. Estimated costs to implement the mitigation items in the plan will be presented. Additionally a Disaster Preparedness Plan for the project will be developed based on findings of the Natural Hazard and Vulnerability section of the report.

Task 8: Environmental Management and Training

CD&A will work to develop management and training protocols to govern the actions of employees and contractors within Jamaica's territorial waters and on land during all phases of the project. The protocols developed will address all the steps which will be taken during the site preparation, construction and operating phases of the project to avoid, or mitigate potential impacts, as well to maximise beneficial impacts. Where necessary, required training activities will be defined and in conjunction with FibraLink these will be developed and tested. This is an important step in the project as it speaks to issues of regulatory compliance, liability, and occupational health and safety.

Task 9: Environmental Monitoring Plan

CD&A will develop an environmental monitoring plan in which all the parameters to be monitored and the methods to be used will be identified and described. This plan will include at a minimum:

- An organizational/responsibility chart
- Institutional arrangements for carrying out the work
- Parameters to be monitored
- Methods to be employed
- Standards, guidelines or protocols to be used

- Evaluation of results
- Schedule and duration of monitoring
- Initiation of mitigative actions
- Format and frequency of reporting

Task 10: Risk Assessment/Natural Hazard Vulnerability

All potential physical risks associated with the proposed project, such as hurricanes, earthquakes, fires, explosions, spillages, flood events and landslides will be identified and addressed. Methods to address these will also be documented.

A Disaster Preparedness Plan/Emergency Response Plan for the construction sites will be developed based on the findings of this task and through consultation with the Office of Disaster Preparedness and Emergency Management (ODPEM).

Task 11: Public Participation

CD&A will follow international and national guidelines for public participation that the public, particularly those who may be impacted (negatively or positively) by the project. This will begin as an early stage in planning and project implementation. Public participation will provide early indications of public perception and potential areas where problems may arise and what it may take to handle those situations. While the socio-economic survey will introduce the project to the community through a fact sheet, informal meetings and collaborations will be held with community leaders and members to explain the project.

CD&A recommends the following procedures and schedule for meeting with communities in the estimated radius of influence of the facility:

Procedures:

- Identify and classify the various communities in the radius of influence
- Identify and involve "community leaders" early in the process
- Listen carefully and record the ideas, needs, and wants of the communities (where possible implement their input into the process)

CD&A recommends that this type of interface with the community continue as long as the project is being implemented and beyond if practicable, to foster good community relations.

The EIA Report will take the following form:

- Executive Summary
- Policy, Legislative and Regulatory Framework
- Project Description
- Description of Current Environmental Baseline Data
- Analyses of Alternatives
- Impact Identification
- Impact Mitigation
- Environmental Monitoring Plan

- Environmental Management and Training
- Risk Assessment/Natural Hazard Vulnerability
- Public Participation
- Appendices/List of References

APPENDIX II

APPENDIX II: SIGNATURE PAGES FOR FIBRALINK LICENSE

MINISTRY OF COMMERCE, SCIENCE AND TECHNOLOGY
(with **ENERGY**)
PCJ Building, 36 Trafalgar Road, Kingston 10, Jamaica, W.I.
Tel: (876) 929-8990-9 **Fax:** (876) 960-1623
E-mail: admin@mct.gov.jm Website: http://www.mct.gov.jm

December 20, 2004

The Managing Director
Fibralink Jamaica Ltd.
24-26 Grenada Crescent
Kingston

Dear Sir/Madam,

I am pleased to inform you that you have been granted a license for the construction and operation of a Submarine Fiber Optic Cable Network.

Enclosed is the signed license.

Yours truly,

Phillip Paulwell
MINISTER

Encl.

such renumbering of those Parts or sections in the Act, as a result of amendment or repeal of that Act.

DATED this 20th day of December 2004

.....

MINISTER OF COMMERCE, SCIENCE AND TECHNOLOGY

APPENDIX III

APPENDIX III: PROJECT TEAM

Information and data for this EIA was compiled from work done by the following people:

- Dr. Conrad Douglas
- Mr. Paul Thompson
- Mr. Orville Grey
- Mr. Vance Johnson
- Ms. Deonne Caines