

Heavy Industrialization in Trinidad - the expansion into south-western peninsula and the problems of processes, constitution, law, national policy, international obligations and carrying capacity

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Abstract

It is argued that the processes employed regarding establishment of aluminium smelters in Trinidad and Tobago are deeply flawed, contrary to constitution and planning law, inconsistent with the revised national environmental policy as well as requirements of certain treaties. It points out that the authority of the Parliament of the country has been completely subverted while Government agencies such as the NEC and the EMA acting on behalf of Cabinet may in fact be in breach of planning law and acting contrary to Treaties. It points out certain deficiencies of the Environmental Management Act that negatively impact on process. It argues that the unilateral establishment of industrial estates on the south-western peninsula is inconsistent with the revised national environmental policy that requires community participation in decision making, as well certain treaty requirements. The paper reviews the broad physical and ecological characteristics of the south-western peninsula and makes a range of conclusions based on the general submissions.

INTRODUCTION

There has been much public comment during the past two years regarding Government's proposal to facilitate the establishment of two aluminium smelters in Trinidad and Tobago. Much of the public comment has been on the subject of the safety of aluminium smelters, especially the health hazards while some coming from Alcoa on the subject of wastes are not reassuring (Appendix 1). This paper looks at the broader issue of the official process of handling applications, particularly the legal framework, treaty obligations, official policy, the general and unique characteristic of the south-western peninsula and makes a range of conclusions based on these considerations.

LEGAL

Constitutional Law

The relationship between Cabinet and Parliament is laid down in Section 75.(1) that states "*There shall be a Cabinet for Trinidad and Tobago which The (sic) Cabinet shall have general direction and control of the government of Trinidad and Tobago and shall be collectively responsible therefor (sic) to Parliament.*"

Planning Law

Existing planning law consists to the Town and Country Planning Act CH.35.01. Attempts have been made recently to replace this Act with a new piece of legislation. The Planning and Development of Land Bill was some fifteen years in the making and progressed through three different administrations and Joint Select Committees of Parliament being passed unanimously by the Senate in 2001. The Bill lapsed and has not been re-laid.

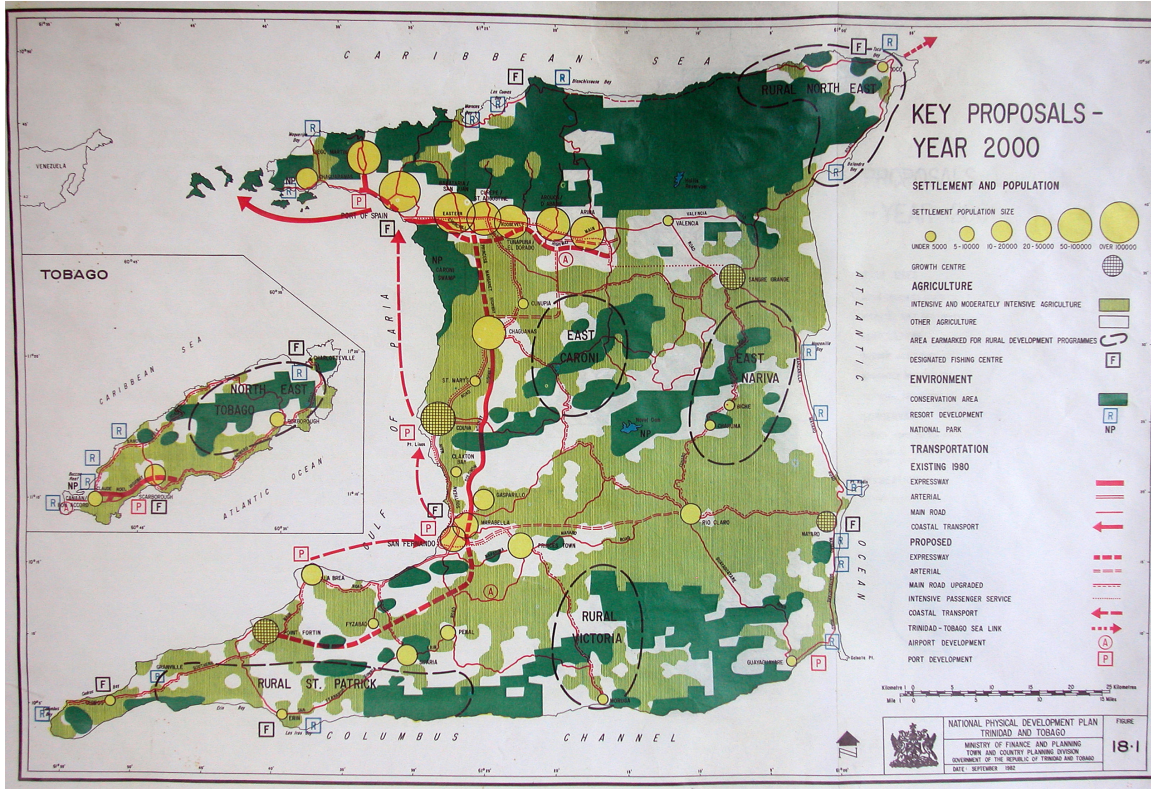
Of particular note is the mandated statutory National Physical Development Plan (Figure 1) required by the Town and Country Planning Act and approved by Parliament in 1984 after several years of preparation and public consultation. Although not revised every five years as required by the Town and Country Planning Act, Government has recently invited tenders for review and updating of the plan. If the argument of the Rule of Law is accepted then the TCP Act must be currently applicable. In this plan the area being considered for aluminium smelters is designated for agriculture, forestry and rural development (Figure 1).

In administering the TCP Act Section 3 requires the Minister as follows - **“shall secure consistency and continuity in the framing and execution of a comprehensive policy with respect to use of all land in Trinidad and Tobago in accordance with a development plan prepared in accordance with the provisions of Part II.”**

Section 5 (2) of Part II requires the Minister as follows - **“Not later than seven years after the commencement of this Act, or within such extended time as Parliament may by resolution allow, the Minister shall submit for approval of Parliament a development plan consisting of a report of a survey together with a plan indicating the manner in which he proposes that land in Trinidad and Tobago may be used (whether by the carrying out of development or otherwise) and the stages by which any such development may be carried out.**

Section 5. (3) sub-sections (a) and (b) provides for defining the sites for roads, public and other buildings and works, airfields, parks, pleasure grounds, nature reserves and other open spaces; allocation of lands for use for agriculture, residential, industrial or other purposes etc.

Section 6 (1) requires the Minister as follows – **“At least once in every five years after the date on which a development plan for any area is approved by Parliament, the Minister shall carry out a fresh survey of that area, and submit to Parliament a report of the survey, together with proposals for any alterations or additions to the plan that appear to him to be required having regard thereto.”**



Environmental Law

There are several conservation, environmental management and protection laws that have accumulated over the past several decades. The Environmental Management Act 2000, originally enacted in error in 1995 without the required majority, is a broad umbrella act that is aimed at coordination the efforts of various agencies of the State, as well as empowering the Environmental Management Authority as a regulatory body with clearly mandated responsibilities. These are generally stated in the Preamble to the Act. The regulatory powers and functions are specified in part V of the Act that cover management and Part VI that covers Compliance and Enforcement.

During the past ten years the Authority has been preparing subsidiary legislation required by the EM Act. Subsidiary legislation that has been laid and accepted by Parliament includes Certificates of Environmental Clearance Rules, Designated Activities under these rules, Sensitive Areas Rules and Sensitive Species rules. Some Sensitive Areas and Sensitive Species have either been designated or are in the process of designation. Noise Pollution Rules have been laid and are in force through legal notices in 2001. Water Pollution Rules were laid in error in but lapsed. What is laid in Parliament is determined not by the Authority but by Cabinet. **There are no air pollution rules, water pollution rules, hazardous or toxic wastes rules in force.**

There are several defects in the Environmental Management Act. One such defect as currently in effect in the Certificate of Environmental Clearance Designated Activities schedule is that the rules permit fragmented consideration of developmental proposals

that may include related integrated activities. There is also some considerable ambiguity regarding the application of the terms and conditions that may be applied by the Authority in a CEC approval and the need for parliamentary approval of environmental standards. There is a further complication in that while the Authority may monitor conditions that may be laid down in a CEC it does not have the resources to monitor all industrial activity

TREATY OBLIGATIONS

Trinidad and Tobago is signatory to about twenty international conventions generally related to conservation and environmental protection. The pertinent ones are as follows:

Convention on International Trade in Endangered Species (CITES) was signed in 1984. This treaty requires domestic legislation that is yet to be laid in Parliament. The south-western peninsula is an established corridor of illegal movement of wildlife from Venezuela. Trading sanctions are applicable where a country does not follow convention agreed procedures.

Convention on Wetlands of International Importance Especially as Waterfowl Habitat, (Ramsar), was signed in 1992. This requires domestic legislation that is yet to be laid in Parliament. There are no sanctions. There are now three Ramsar sites designated in Trinidad and Tobago. The Los Blanquizales swamp is a large and relatively un-perturbed wetland along the southern margin of the peninsula west of Chatham.

UN Convention on Biological Diversity, (CBD) was signed in 1992. This requires specific initiatives and legislation that is yet to be acted upon. The principal objective of the CBD is conservation of biological diversity, the sustainable use of its components internationally. Article 8 encourages signatories to establish protected areas for *in situ* conservation (Appendix 2). Signatories are required as far as possible and as appropriate to meet certain objectives but there are no sanctions.

Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal (Basel) was acceded to in 1994 (Appendix 3). This requires domestic legislation that is yet to be laid in Parliament. The United States has signed but not acceded to or ratified the Basel Convention. Non-party states may arrange bilateral agreements but may not ship wastes through the jurisdictions of parties to the convention. Shipping wastes contrary to the provisions of the Convention are regarded as criminal acts.

Protocol to the United Nations Framework Convention on Climate Change (Kyoto) was signed in 1999, the sixth signatory amongst the World's countries. The Convention aims to reduce the levels of emissions of the greenhouse gases – carbon dioxide (CO₂); methane (CH₄); nitrous oxide (N₂O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); sulphur hexafluoride (SF₆). The proposed levels apply to certain developed countries but the United States and Australia have refused to ratify on the grounds of the negative effects on their economies. There is no limit assigned to Trinidad and Tobago.

NATIONAL POLICY

The national policy regarding general conservation of the environmental and its natural resources has grown gradually and consistently from the adoption of colonial laws such as the Forest and Fisheries ordinances that date to early in the twentieth century to development of a range of legislation in post-colonial times aimed at a wide range of objectives. The Environmental Management Act 2000 aims at coordination of the enforcement of this legislation. In addition proposals have been developed over twenty-five years ago for protection of some selected areas made, while more recently there has been preparation of Parks and Protected Areas legislation. The general national objective appears in the preamble of the EM Act that adopts sustainable development as the primary objective in development. One requirement of the Act is the preparation and adoption of a National Environmental Policy. The NEP adopted by Parliament in 1998 has now been further refined in 2006 and adopted by Parliament.

Regarding citizen participation the policy states as follows:

“Local communities, environmental non-governmental organizations and community-based organizations provide the easiest channels for people to express their concerns and take action to create sustainable societies. However, such groups need the power to act. Communities should be given an opportunity to share in managing their local resources and the right to participate in decisions”.

The last two paragraphs of the foreword are as follows:

“The environment is an essential pillar of economic and social development and consequently environmental sustainability is a key objective of economic development planning.

In formulating this policy, the Government focused on sustainable management of the country’s environmental assets rather than the narrower concept of environmental protection, which tend to bring into conflict environment and development. The policy therefore assures that economic development is not undermined by unsustainable use of our environmental assets.”

The policy does not explain how a wasting asset may be exploited sustainably nor does it adequately treat with carrying capacity. The policy refers to carrying capacity but mainly in terms of population numbers. Carrying capacity has to take into account a host of factors including population density, space, renewable resources, the physical and biological characteristics of the area of sovereignty, the nature the path of development selected, the demands of international markets and indeed the very culture of the country.

THE SOUTH-WESTERN PENINSULA

Landform and general ecology of the south-western peninsula

The south-western peninsula is taken to be that area lying between La Brea in the north and Palo Seco in the south and the land to the west of this line. Geologically the area is young and is dominated by a major fault that runs in a west north-westerly direction, the Los Bajos Fault (Figure 2). The area is dominated by the Erin formation consisting of clays, sandy clays, lignite and porcellanite, with outcrops of sandstone, as well as occasional beds of oil sand. The lignite beds have been burning for centuries producing porcellanite that is exposed in places such as Red Cliff on the Columbus Channel coastline and Point Rouge and Cedros Point on the Gulf of Paria coastline near Bonasse Village. There is a major aquifer underlying the area and WASA extracts and treats water from several boreholes in the area.

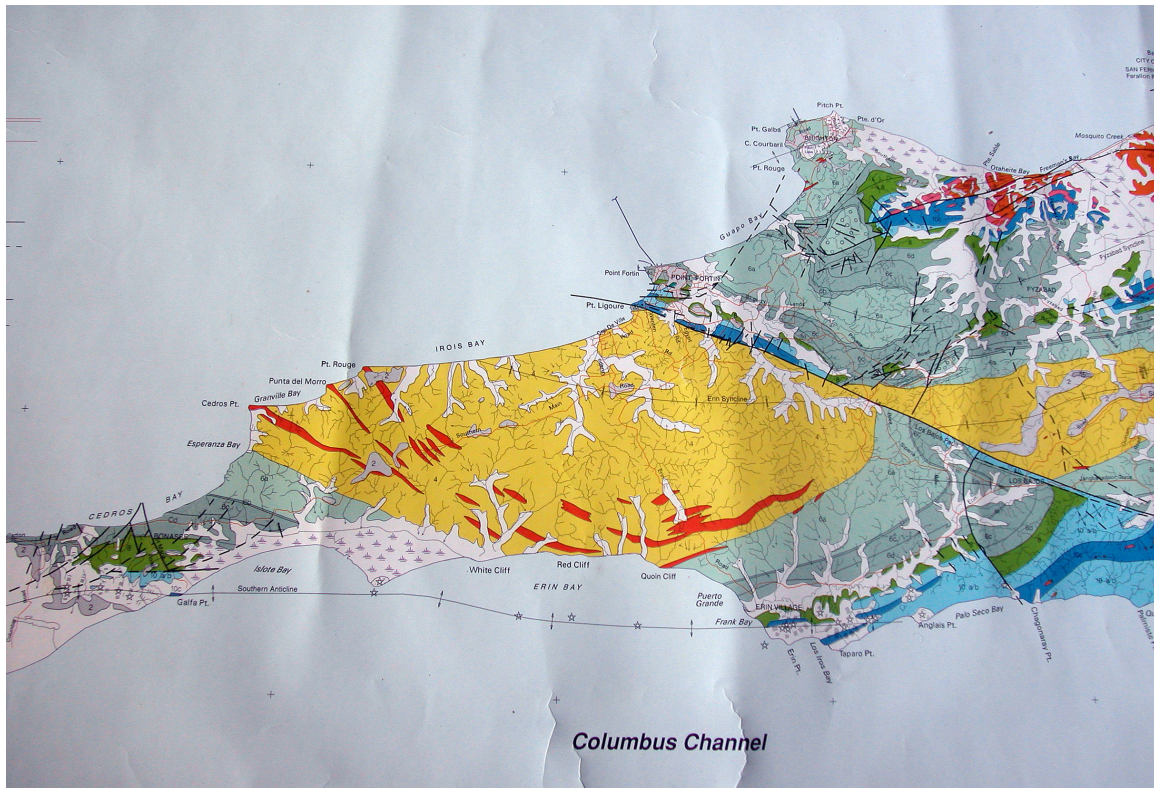


Figure 2. Geology of south-western peninsula. Saunders, Ministry of Energy

The coastline of the south-western peninsula consists mostly of unconsolidated sediments and is much prone to erosion. The general physical oceanography of the Gulf of Paria is well documented in the scientific literature but nearshore circulation patterns have not been studied in detail. There is a permanent clockwise gyre that results in severe erosion forces to the coastline, especially between Point Ligoure and Icacos. At Icacos shoreline regression rates of up to 4 metres per year have been measured. Similarly there is a permanent westerly flow in the Columbus Channel that also applies severe erosion forces

along the south coast, especially between Erin and Icacos. The area is also subject to mud and gas eruptions and occasional submarine eruptions in the Columbus Channel, especially at Despatch Reef south of Chatham area.

Originally the natural vegetation consisted mainly of evergreen, seasonally evergreen and deciduous forests with tracts of herbaceous swamp and mangrove forests. Much of the land has been converted to agriculture but crown forests and forest reserves are still preserved and managed by the Forestry Division of the Ministry of Agriculture (Figure 3). The extreme western tip of the peninsula has been converted to coconut estates since earliest colonial days.

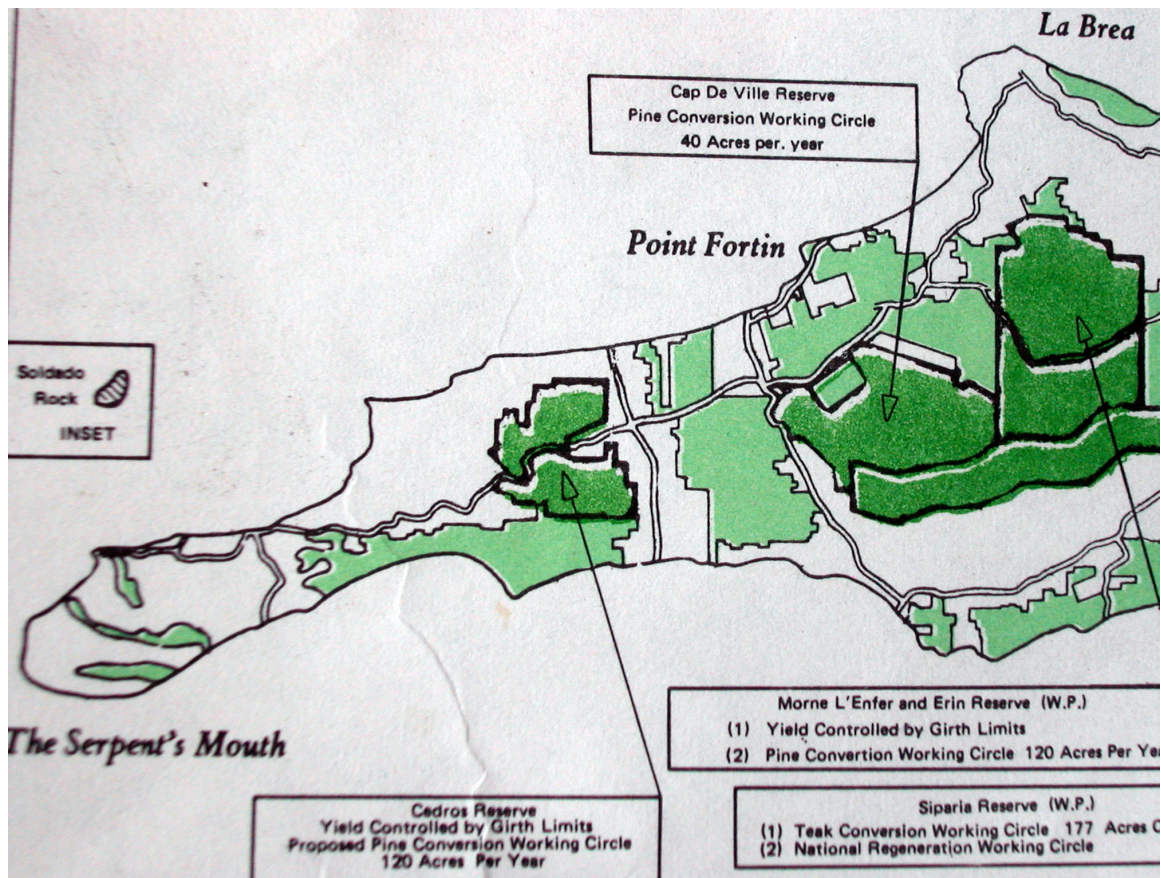


Figure 3. South-western peninsula forest reserves and state forests

Owing to the proximity to the Orinoco Delta several species of mainland plants and animals have become established as area endemic species on the peninsula, enriching the biological diversity of the area. Notable plant species include the epiphytic orchid species *Oncidium lanceanum*, the Cedros Bee, *Oncidium haematochilum*, a hybrid between the former and another native species, *Schomburgkia gloriosa*, *Heliconia marginata*, the Cedros Balisier and *Astrocaryum aculeatum*, the Cuyule palm. Notable animal species include *Gasteropelecus sternicla*, the silver hatchet fish, *Erythrinus erythrinus*, the Cedros Guabine, and *Moenkhausia bondi*, the head and tail light tetra *Leptodactylus macrosternum*, the slender toed frog, *Hyla miniscula*, a tree frog and *Thamnodynastes*

strigatus, a colubrine snake. In addition, there are records of other South American animals that have been found on the south-western peninsula whose status continues to be uncertain. These include the keyhole cichlid, *Aequidens maronii*, the characid fishes *Triportheus elongatus* and *Brycon seibenthalae*, the mata mata *Chelus fimbriatus*, and the mammals, the capybara *Hydrochaeris hydrochaeris* and the tapir *Tapirus terrestris*. The beaches on the peninsula are used as layovers by migratory birds, particularly terns.

Apart from the species listed above there is one species of plant, a new species to science *Aristolochia boosii* Panter first described in 1981, found on the peninsula. It was collected from two localities on the south-western peninsula at Palo Seco and Grand Ravine and not recorded from any localities on the mainland of South America or elsewhere.

The NPDP approved by Parliament (Figure 5) retains the general area for agriculture, forestry and rural development.

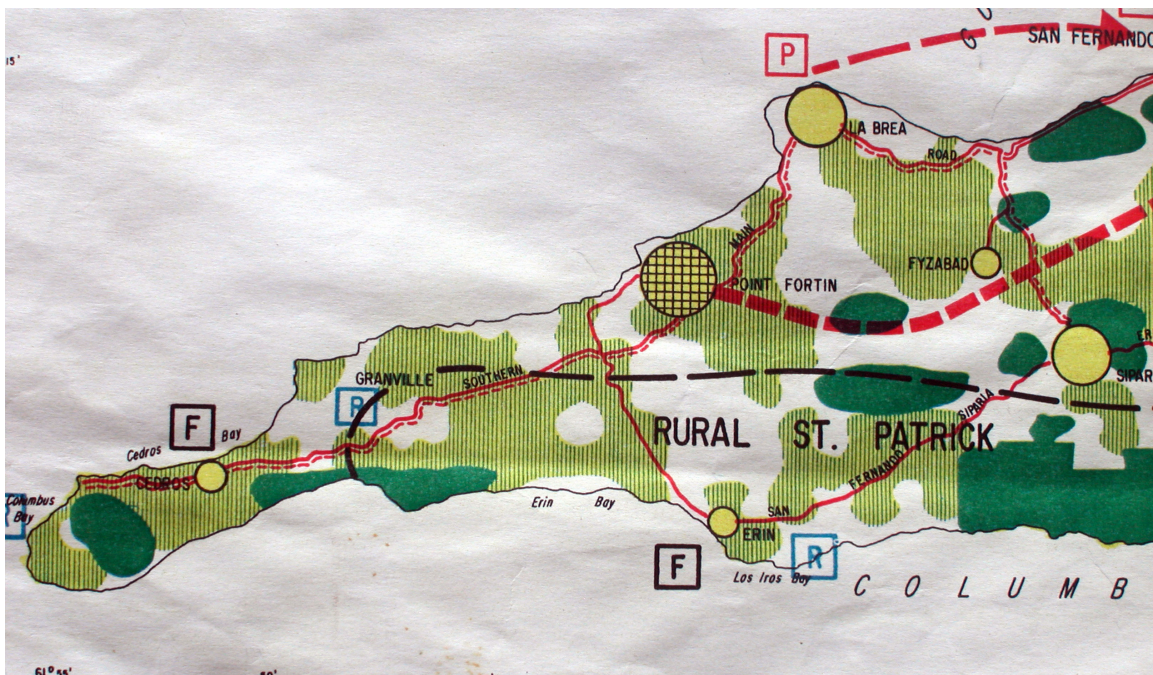


Figure 5. Development and land use proposals for south-western peninsula in NPDP

Industrialisation of the south-western peninsula

The information that follows is compiled from print and media reports during the past two years. Essentially policy is to expand the industrialization of the country into the south-western peninsula, a process that has already materialized at La Brea and Union Estate, to be extended further into the Cap de Ville/Chatham area. The total area earmarked for industrial estates is about six square miles (Union 800 acres, Cap de Ville 2000 acres and Chatham 1100 acres), a significant percentage of the landmass of the peninsula. And it has been widely reported that the Prime Minister has stated that the

expansion will extend all the way to Icacos. It is of interest to note that these proposals arise as initiatives from Cabinet and have not as far as I am aware been communicated to the Parliament. Indeed, the Joint Select Committee of Parliament chaired by Senator Mary King that investigated the proposals for establishment of aluminium smelters was unable, through the non-cooperation of officers of the NEC and NGC and non-attendance of other parties, to secure reliable information on the projects (Appendix 4).

The Union Industrial Estate

The Union estate measures approximately 800 acres straddling the Southern Main Road, the main access road to the peninsula. Originally it was mixed cover and use and there were a few artificial impoundments. The NEC applied for a CEC to establish an industrial estate. It was subjected to an EIA and was granted a Certificate of Environmental Clearance by the Environmental Management Authority. It warrants little comment as it has been clear felled and graded, except for a narrow strip of roadside vegetation. Originally the site was offered to Alcoa but later declined for the Cap de Ville site.

Of considerable significance is that on the southern side of the western part of the estate clearing has exposed a large hillock of oil sand. The estate will be the site of the Alutrint smelter and an Urea Ammonium Nitrate plant. The Alutrint plant will smelt Alumina to Aluminium and produce about 150,000 tonnes per year (mtpy). It has been reported in the media that the aluminium will be used in downstream industries, to be established elsewhere in the country. Originally Union Village of about 150 persons on the northern side of the estate is to be resettled but it now seems that they will remain.

The Cap de Ville site

The Cap de Ville site is of approximately 2000 acres and consists of undulating lands and extremely variable vegetation cover, including secondary forests, scrub, lastro, grassland and small agricultural holdings, including tree crops. The northern boundary of the site is Irois Bay. The eastern boundary is the Southern Main Road while the southern boundary is a branch road that runs to Irois Bay. The northern boundary is uncertain. Several pipelines from the Soldado Field come ashore on Irois Bay.

Alcoa is to be the sole tenant and sole investor on the industrial estate. A smelter of 341,000 mtpy, with an associated anode plant and cast house, electricity generation plant and port facility for receiving Alumina and exporting Aluminium. The Government of Trinidad and Tobago will provide infrastructure including the necessary port.

The President of Alcoa, Alain Belda, stated publicly on February 16th 2006 in New York that it had signed an agreement in principle with the Government of Trinidad and Tobago to build a smelter at the Cap de Ville site and that an EIA would begin for location of the facility and that the first metal would be poured in late 2008.

The Chatham site

The Chatham site lies at the head of the Chatham valley that drains to the south of the Southern Main Road. This, according to public consultations, is to straddle the Chatham Beach Road and include about 1100 acres. The Chatham Valley is the least perturbed of the three sites consisting of undulating lands covered mainly with Crown Forests on either side of the road, some open pasture land on which Petrotrin once managed a dairy herd, several small agricultural holdings, scattered housing, churches, a community centre, a village on the main road and a few beach front properties. Two rivers, the Quaragoon and the Carlisle drain the valley to the sea at the south. The Cedros Forest Reserve to the west borders the proposed industrial estate. To the east of the proposed site is the Cap de Ville reserve.

The Quaragoon and Carlisle rivers represent the best examples of tropical intermittent streams in the country and have been extensively studied by Dr M. Alkins-Koo and other freshwater ecologists. Of considerable significance is the fact that, although intermittent streams, more than fifty percent of the freshwater ichthyofauna of Trinidad is found in the system while several stray South American species such as the capybara, the mata mata turtle, the fresh water fishes *Triporthus* sps and *Brycon* sps have been recorded in the streams. The stability of the stream fauna depends entirely of forest cover of the catchment maintaining refuges during the dry season.

It has not yet been made public by the National Energy Corporation what industries are proposed for the site.

CONCLUSIONS

In the light of the foregoing it is argued as follows:

1. Cabinet is **in breach of its constitutional duty to account to Parliament** regarding an industrialization programme in the south-western peninsula, especially in the light of its failure to ensure that its agents in the NEC and NGC attended to requests by the Joint Select Committee chaired by Senator Mary King and provided answers to all questions put to them by a constitutionally appointed committee of Parliament (Appendix 4).
2. Cabinet is **in breach of the Town and Country Planning Act** by not ensuring that the Minister responsible has met the mandatory requirements of Sections 3 and 5 and prepared the necessary amendments to the National Physical Development Plan and submitted them for the approval by Parliament.
3. Cabinet in deciding to establish smelters **violates its Revised National Environmental Policy in (a) abandoning its adoption of the Precautionary Principle and (b) by refusing to permit NGOs from the south-western peninsula to participate in its decisions to establish smelters** in their region of the country.

4. In deciding to extend gas based industrialization to the south-western peninsula **Cabinet is acting in conflict with the terms of Article 8 of the UN Convention on Biological Diversity** as well as its Revised National Environmental Policy that requires protection of unique ecosystems.
5. The south-western peninsula is a unique ecosystem owing to its proximity to the mouth of the Orinoco River. There are several continental plant and animal species that are found in the country only on the south-western peninsula. The peninsula **has a significantly larger number of area endemic species than that of the Nariva Swamp**, which at best might claim perhaps three animal species. Moreover the Carlisle and Quarahoon rivers of the Chatham Valley are the only stable examples of tropical intermittent streams in the country. **The peninsula would meet all the requirements for declaration as an Environmentally Sensitive Area under the Environmental Management Act and fulfil requirements of obligations under the United Nations Convention on Biological Diversity**. The scientific base knowledge required for management of the south-western peninsula is relatively sparse and certainly cannot be filled by a six month Environmental Impact Assessment.
6. The uniqueness of the biota of the south-western peninsula and the many rural communities there, **reasonably demands a statutory regional plan under the Town and Country Planning Act 35:01, and one within the spirit of the lapsed Planning and Development Bill passed by the Senate in 2001**. Such a plan must involve thorough scientific investigation and wide local and national consultation, taking into account alternative development strategies and especially the wishes of citizens of the area. A regional plan under Ch 35:01 Section 5. (8) necessarily requires parliamentary approval.
7. Much of this area is designated for agriculture and forestry under the statutory National Physical Development Plan and that **further alienation of agricultural land would seriously compromise the country's agricultural future**. Many human settlements in the area will be seriously affected by displacement and life style changes from rural self-sufficiency to factory wage dependency.
8. **Cabinet has refused to acknowledge receipt of an alternative regional developmental plan conceived by citizens, NGOs and CBOs based on sustainable use of the renewable natural resources of the south-western peninsula**.
9. The proposed Alcoa smelter will require a port as well as an extension of the cross-country gas pipeline, integral to the operation of the smelter. Both these facilities require a Certificate of Environmental Clearance (CEC) and while the rules for CECs permit individual applications for components of developmental proposals it is extremely unreasonable of the Environmental Management Authority not to deal with the proposal **as a single development and to require**

the simultaneous application for CECs for the extension of the pipeline as well as the establishment of the port, commitments of the Government.

10. While the aluminium smelting technology has made considerable advances in the control of pollution, and while the Environmental Management Authority is apparently proposing standards for emissions, effluents and wastes, there are as yet under the EM Act no standards required by the Act, nor is there a hazardous/toxic waste facility in the country. The country signed the Basel Convention on Transboundary Movements of Hazardous Wastes and their Disposal, in 1994 but has not passed the necessary domestic legislation. It would be unreasonable for the Authority to grant a CEC on the grounds of future export of spent pot liners **in the absence of the required legislation and without formal agreements with the countries that may be affected.**
11. About 45 of 192 countries have aluminium smelting industries (Appendices 5,6,7 & 8). And four, China, Russia, Canada and the United States account for 50% of world production of primary metal. Many of the developed countries that either produce negligible quantities of primary aluminium, for example Japan, **have significant down stream aluminium fabricating industries using imported aluminium ingots.** Accepting Government's objective of development of down stream aluminium fabricating industries the question of the use of this pathway to downstream industries locally remains unanswered. **Downstream aluminium industries will require less energy and will produce minimal wastes.**
12. Consideration should be given to **termination of any proposals to smelt primary aluminium in Trinidad and Tobago but instead to move directly to downstream aluminium manufactures by importing aluminium ingots from the world markets.** The Union Industrial Estate that has now been cleared of vegetation and graded might be considered the prime site for such industries, a savings in scarce land and energy.
13. Consideration should be give to establishment of a regional aluminium industry producing primary aluminium metal as well as downstream aluminium fabricating industries, as envisaged by the late Dr Eric Williams. **The primary aluminium smelting industry might best be developed in Guyana** that has the space while the energy might be supplied initially as natural gas piped from Trinidad and later with hydropower. Downstream industries might be developed both in Trinidad and Tobago as well as Jamaica.
14. Finally, **consideration must be given to the practicality and desirability of establishment of heavy industry in a country with one of the highest population densities in the world** and one that has an extremely poor record of environmental management or protection.

Julian S. Kenny
November 5th 2006

APPENDIX 1

Extract of press release by Alcoa in the United States

“Alcoa will hold 100% interest in the smelter with the Government of the Republic of Trinidad and Tobago an active partner in the provision of requisite structures”

Alain Belda Chairman and CEO Alcoa, February 16th 2006, New York

Extracts of information conveyed to the Media by Randal Overbey, President, Primary Metals, Alcoa.

“How much carbon dioxide is produced by a 340,000 tonne smelter? Quite honestly, I’d have to go look at that data; I don’t have that at the tip of my fingers.”

“Does 1.7 tonnes of CO2 to every tonne of aluminium sound about right? I’d have to look at my data to make sure. Ballpark? I’d have to ...Call it even then one to one? (Chuckling) I’d have to take a quick look at my data to give you a direct answer. We are talking about a minimum of 340,000 tonnes every year – and its more like four times that in effect.”

Extracts of interview of Randal Overbey by B.C. Pires Trinidad Express April 9th 2006

“Randall Overbey, president of Alcoa’s primary metals development insisted spent potliners that would be generated by the operations would not be buried in or disposed of in T&T. He also said it was far too early for the company to consider entering discussions with another country, be it Brazil or the USA about the transfer of this waste material. Nor had the technology which he said could turn the pot liners into cement, been as yet perfected, he said”.

Shaliza Hassanali Trinidad Guardian April 9th 2006

“Let me set the record straight. Alcoa will pay for every drop of gas that we will use. I can’t say how much we will pay but it certainly won’t be free”

Shaliza Hassanali Trinidad Guardian April 9th 2006

APPENDIX 2

Article 8. In-situ Conservation

Each Contracting Party shall, as far as possible and as appropriate:

- (a) Establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity; (b) Develop, where necessary, guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve biological diversity;
- (c) Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas, with a view to ensuring their conservation and sustainable use;
- (d) Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings;
- (e) Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering protection of these areas;
- (f) Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, inter alia, through the development and implementation of plans or other management strategies;
- (g) Establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking also into account the risks to human health;
- (h) Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species;
- (i) Endeavour to provide the conditions needed for compatibility between present uses and the conservation of biological diversity and the sustainable use of its components;
- (j) Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices;
- (k) Develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations;
- (l) Where a significant adverse effect on biological diversity has been determined pursuant to Article 7, regulate or manage the relevant processes and categories of activities; and
- (m) Cooperate in providing financial and other support for in-situ conservation outlined in subparagraphs (a) to (l) above, particularly to developing countries.

APPENDIX 3

Extract of Basel Convention

2. Each Party shall take the appropriate measures to:

(a) Ensure that the generation of hazardous wastes and other wastes within it is reduced to a minimum, taking into account social, technological and economic aspects;

(b) Ensure the availability of adequate disposal facilities, for the environmentally sound management of hazardous wastes and other wastes, that shall be located, to the extent possible, within it, whatever the place of their disposal;

(c) Ensure that persons involved in the management of hazardous wastes or other wastes within it take such steps as are necessary to prevent pollution due to hazardous wastes and other wastes arising from such management and, if such pollution occurs, to minimize the consequences thereof for human health and the environment;

(d) Ensure that the transboundary movement of hazardous wastes and other wastes is reduced to the minimum consistent with the environmentally sound and efficient management of such wastes, and is conducted in a manner which will protect human health and the environment against the adverse effects which may result from such movement;

(e) Not allow the export of hazardous wastes or other wastes to a State or group of States belonging to an economic and/or political integration organization that are Parties, particularly developing countries, which have prohibited by their legislation all imports, or if it has reason to believe that the wastes in question will not be managed in an environmentally sound manner, according to criteria to be decided on by the Parties at their first meeting;

(f) Require that information about a proposed transboundary movement of hazardous wastes and other wastes be provided to the States concerned, according to Annex V A, to state clearly the effects of the proposed movement on human health and the environment;

(g) Prevent the import of hazardous wastes and other wastes if it has reason to believe that the wastes in question will not be managed in an environmentally sound manner;

(h) Co-operate in activities with other Parties and interested organizations, directly and through the Secretariat, including the dissemination of information on the transboundary movement of hazardous wastes and other wastes, in order to improve the environmentally sound management of such wastes and to achieve the prevention of illegal traffic.

3. The Parties consider that illegal traffic in hazardous wastes or other wastes is criminal.

4. Each Party shall take appropriate legal, administrative and other measures to implement and enforce the provisions of this Convention, including measures to prevent and punish conduct in contravention of the Convention.
5. A Party shall not permit hazardous wastes or other wastes to be exported to a non-Party or to be imported from a non-Party.

APPENDIX 4EXPRESS Article**A smeltered reality check!**April 18th 2006

Any doubts that I may have had of the value of the recently established Joint Select Committees of Parliament looking at the workings of government ministries and agencies being televised have now have been completely swept aside. Indeed, I think that the work of these committees really ought to be broadcast live on television and radio. I have come to this conclusion after spending three hours in the public gallery observing the proceedings of hearings on the proposed aluminium smelters on the southwestern peninsula, attended by a group of top state energy sector executives and the Managing Director of the Environmental Management Authority.

And the reality check? Or should I say checks? Do you know that at Union Estate there were no forests, only grass, abandoned wells and a few roads? And that the energy experts were not sure of the status of the monkeys that lived there, whether or not they were a protected species? And do you know that CEC's may be granted for land clearing before it is determined what industries would be placed at the site? And do you know that the Institute of Marine Affairs, a state agency that does EIAs for the Ministry of Energy, is competent in the field of terrestrial ecology, an institution that has produced little original marine science in twenty-five years? And that they had no idea of what Alcoa, or indeed Alutrint, was to pay for the gas? And whether or not Alcoa was to be given a tax holiday? And that one expert was unaware of any move to import Chinese labour, while another admitted that because we lack the expertise to build a smelter it will be necessary to have the Chinese technical expertise to build and operate the smelter. And do you know that a pressure group or pressure groups were creating the problems in the area. And do you know, and get this, that the Chatham people actually want to move?

Let's make two simple statements that I wish the experts to refute publicly.

The first, The Chatham environmental protection group is a fully indigenous community group born of concern arising from experiences with a social impact survey being conducted in the area over a year ago in which citizens, and let us stop calling them villagers, were given brief fliers and parties called on them about smelters and the need for relocation. The Cedros group is another entirely indigenous group originating in Bonasse which became concerned at the time when it learnt from a statement by the Prime Minister of a wave of industrialization running all the way to Icacos. Nobody from "outside" manipulated these groups and it is only more recently that other concerned citizens and NGOs fused with the Chatham and Cedros groups, in the common national purpose of conserving and protecting the environment of the southwestern peninsula. Is this not the fundamental right of citizens? Is this in any way inconsistent with the first sentence of the revised National Environmental Policy?

The second. There were three separate sites for industrial estates. Union (800 acres), south of La Brea on the north side of the Southern Main Road opposite Guapo Bay, Cap-de-Ville (2000 acres), on the north side of the Southern Main Road opposite Irois Bay, and Chatham, (1100) acres, a triangular wedge of the south of the Southern Main Road in the northern part of the Chatham Valley straddling the Chatham Beach Road. There is a paper trail. This third site was proposed because Alcoa declined the Union site and wanted sole tenancy of the Cap-de-Ville site, and it was therefore necessary to have another site to accommodate other applicants. It is the Chatham site that has churches, cemeteries, community centres, homes, farms, beach houses, and of course forests on either side of the road, for all to see. One would have thought that the energy experts would have gone to great pains to explain this. Perhaps they thought that were involved in some support of the Alcoa PR blitz that has dominated the media over the past days. Perhaps also they are so preoccupied with facilitating their superiors that they do not appreciate that they were appearing before a committee of the Parliament of the Republic and that it is possible that in their responses to the committee that they may have misinformed or misled Parliament itself. Are they aware of the consequences, whether or not it is deliberate?

And the concerns about health? We heard a lot about standards that the EMA established. This is all very reassuring. But at the same time, we are told that emissions are monitored by the factories and plants and that these data are routinely reported to the Authority. But, tell us, how can the Authority initiate a prosecution against an offender when there are no effluent or air pollution rules in our laws a full ten years after the EMA was established?

APPENDIX 5

<u>COUNTRY</u>	Population density sq km	GDP per capita \$US PPP	Production (1000) tonnes	% Total
AUSTRALIA	2	20340	54024	38
GUINEA	33	1930	15300	11
BRAZIL	20	3490	13189	9
JAMAICA	236	3440	13120	9
CHINA	133	860	12000	8
INDIA	307	450	9647	7
VENEZUELA	27	4980	5191	4
KAZAKHSTAN	0.6	5490	4377	3
SURINAME	2	3480	4002	3
RUSSIA	9	1730	3800	3
GREECE	80	10670	2492	2
GUYANA	Not listed	Not listed	1690	1
INDONESIA	111	730	1283	0.9
HUNGARY	107	11990	720	0.5
GHANA	81	1910	684	0.5
SERBIA & MONTENEGRO	104	2840	612	0.4
BOSNIA & HERZEGOVINA	78	1700	75	0.05
MALAYSIA	67	8330	40	0.03
MOZAMBIQUE	23	800	9	0.001
PAKISTAN	177	1860	8	0.001
<u>TOTAL</u>			143000	

Source – United States Geological Survey Mineral Resources Program & Economist

Note US Figures not available

World Bauxite Production 2002

APPENDIX 6

<u>COUNTRY</u>	Population density per sq km	GDP per capita \$US PPP	Production (1000) tonnes	% Total
AUSTRALIA	2	20430	16,382	30
CHINA	133	860	5450	10
UNITED STATES	30	34940	4340	8
BRAZIL	20	3490	3962	7
JAMAICA	236	3440	3631	7
RUSSIA	9	1730	3131	6
INDIA	307	450	2800	5
VENEZUELA	27	4980	2100	4
SURINAME	2	3480	1900	4
KAZAKHSTAN	0.6	5490	1386	3
UKRAINE	82	640	1351	3
CANADA	3	22370	1125	2
IRELAND	54	24740	1100	2
SPAIN	79	14150	1100	2
GREECE	80	10670	750	1
GUINEA	33	1930	670	1
GERMANY	230	22800	550	1
ITALY	191	18620	500	1
ROMANIA	94	1640	350	0.5
JAPAN	336	38160	333	0.5
SERBIA & MONTENEGRO	104	2840	180	0.3
TURKEY	86	3060	152	0.3
FRANCE	107	21980	150	0.3
HUNGARY	107	4550	150	0.3
SLOVAKIA	110	3540	110	0.2
IRAN	43	1650	102	0.2
UNITED KINGDOM	243	23680	74	0.1
AZERBAIJAN	91	5490	67	0.1
BOSNIA HERZEGOVINA	78	1700	50	0.1
SLOVENIA	98	9120	30	0.05
TOTAL			54000	

Source United States Geological Survey Mineral Resources Program & *Economist* 2003

World Alumina Production 2002

APPENDIX 7

COUNTRY	Population density per sq km	GDP per capita \$USPPP	Production (1000) tonnes	% Total
CHINA	133	860	4300	16.5
RUSSIA	9	1730	3347	12.8
CANADA	3	22370	2709	10.4
UNITED STATES	30	34940	2707	10.4
AUSTRALIA	2	20340	1836	7.1
BRAZIL	20	3490	1318	5.1
NORWAY	10	36020	1096	4.2
SOUTH AFRICA	35	2940	707	2.7
INDIA	307	450	671	2.6
GERMANY	230	22800	653	2.5
VENEZUELA	27	4980	605	2.3
UNITED ARAB EMIRATES	31	16300	536	2.1
BAHRAIN	600	17400	519	2.0
FRANCE	107	21980	463	1.8
SPAIN	79	14150	380	1.5
UNITED KINGDOM	243	23680	344	1.3
NEW ZEALAND	14	13030	335	1.3
TAJIKSTAN	42	1090	308	1.2
NETHERLANDS	388	22910	284	1.1
MOZAMBIQUE	23	800	273	1.05
ARGENTINA	13	7700	269	1.0
ICELAND	3	28710	264	1.0
ITALY	191	18620	190	0.7
EGYPT	68	1540	190	0.7
ROMANIA	94	6360	187	0.7
IRAN	43	5910	169	0.6
GREECE	80	10670	165	0.6
INDONESIA	111	730	160	0.6
GHANA	81	1910	117	0.45
SERBIA MONTENEGRO	104	2840	112	0.4
SLOVAKIA	110	3540	112	0.4
UKRAINE	82	640	112	0.4
BOSNIA HERZEGOVINA	78	1700	104	0.4
SWEDEN	20	25630	101	0.4
SLOVENIA	98	9120	88	0.3
CAMEROON	31	600	80	0.3
TURKEY	86	3060	63	0.2
POLAND	119	4080	51	0.2
SWITZERLAND	174	33390	40	0.15
JAPAN	336	38160	6	0.02
TOTAL			26,000	

Source United States Geological Survey Mineral Resources Program & Economist

World Aluminium Production 2002

APPENDIX 8

Aluminium 2003

Top ten producers '000 tonnes Top ten consumers '000 tonnes

United States	3,668	United States	6,080
Russia	3,247	China	3,499
China	2,794	Japan	2,225
Canada	2,374	Germany	1,490
Australia	1,762	South Korea	823
Brazil	1,271	Canada	799
Norway	1,026	France	780
South Africa	683	Italy	780
India	649	Russia	748
Germany`	644	India	602

Source *The Economist* 2003

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