LAND USE POLICY AND ADMINISTRATION PROJECT (LUPAP)

FINAL REPORT

Land Administration Activities and Issues

in Trinidad and Tobago

Their Potential Influence on Land Management

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1. Introduction – Land Use Policy and Administration Project

As part of the overall Agricultural Sector Reform Program (IADB Loan 881/OC-TT), the Government of Trinidad and Tobago has retained the services of consultants (University of Wisconsin-Madison, Land Tenure Center and affiliated sub-contractors) to conduct the Land Use Policy and Administration Project (LUPAP). LUPAP is directed at providing technical assistance to land management agencies within the Ministry of Housing and Settlements. The first of three major components is:

> "Developing the conceptual framework and an implementation plan for the establishment of an entity responsible for land management." (page 1, LTC 1999)

1.1 Terms of Reference – LUPAP Land Management Entity

In recognition of the integral role that land information plays in land management, LTC has included in the scope of work a review of public agencies involved in the creation, management and dissemination of land and geographic information pertinent to land management issues. This includes land records collection, management, automation and dissemination activities (hereinafter called land administration, *sensu* LTC 1999) both within the land management agencies and within other agencies that provide needed data. Attention is focused on automated land and geographic information systems (L/GIS) which might provide more accessible, efficient and useful information for land planning, management and enforcement of laws and leases.

During reconnaissance for this preliminary report, some interviewees appeared to have the misconception that the scope of work for this consultancy included comprehensive information and operations reviews that would support the development of a national L/GIS. As detailed in section 2 of this report, activities toward this goal are underway as part of other initiatives. Although the findings and recommendations of this report may be of value in developing a national L/GIS, they are primarily focused on the narrower requirements of land management agencies.

1.2 Terms of Reference – L/GIS Consultant Steve Ventura

The goal of developing a policy objective framework for land administration includes a goal of integrating land information and land management functions among institutions. This is both because land information is necessary to support land management plans and decisions, and because land administration and land management responsibilities and mandates are scattered through several organizations. Information integration is one means to improve efficiency and effectiveness. Therefore "since the information linkages among these land management and land administration agencies are of critical importance, the L/GIS experiences of agencies in Trinidad and Tobago will be assessed by Ventura…" (page 6, LTC 1999). In addition, the terms of reference include an expectation to explore options for a Board of Directors for a Land Management Entity, and how such an entity might be structured. As this activity is something that must be done in close consultation with other team members, it is not addressed in this report, but will instead be the subject of subsequent reports.

1.3 Approach

The findings for this preliminary report are based on review of documents listed in Annex 1 and interviews with persons listed in Annex 2 between January 9 and 19, 2000. Interviews were generally informal and semi-structured. Notes were taken but conversations were not recorded so interviewees would feel comfortable and willing to speak 'off the record' on issues significantly affecting their agency or their position.

In general, interviewees were quite helpful and responsive, though arranging meetings was occasionally difficult given limited numbers of phone lines and lack of email (this, as much as any other recommendation, could lead to substantial improvement in communication between agencies). In addition, the government-provided office for the LUPAP has restricted phone lines, significantly restricting international consultants' communications.

2. Major Activities and Reports Affecting Land Management

Reforms in land administration are not a new topic in Trinidad and Tobago. Even prior to a major study by Land Tenure Center about land regularisation in the early 1990s, several agencies including Town and Country Planning (T&CP), Water and Sewerage Authority (WASA), Central Statistical Office (CSO) and others had invested in GIS. The 1992-3 LTC study included a description of the uses and benefits of L/GIS for land administration. Since then, several reports and additional pilot projects have supported these findings. A recent report by the Interim National Physical Planning Commission listed 19 public agencies in "what is believed to be a complete list of those State agencies with either a GIS in operation or for which serious consideration has been made" (INPPC 1999). L/GIS research, outreach and instruction flourishes at the St. Augustine campus of the University of the West Indies, and private sector interest is small but growing.

The need for coordination of L/GIS activities between at least public sector agencies has long been recognized, as has the desire to work toward a nationwide system of some sort. However, a broad array of technical (e.g., lack of up-to-date and complete data, unique parcel reference number), fiscal (e.g., sustained funding for software, hardware, and particularly staff retention and training), and particularly organisational hurdles (e.g., incomplete or overlapping authority, conflicting mandates) has prevented significant progress toward these goals however. As a subset of this general malaise, the need for a coordination of data acquisition, management and automation within and between land management agencies is also commonly recognized, with similar lack of significant progress until recently.

Since 1998, several significant initiatives potentially affecting L/GIS for land administration have commenced. This is part of a broader public sector reform policy of the current government. Several bureaucrats expressed the view that this is no longer "business as usual" and that a true desire to implement significant changes exists at high levels, up to and including the Cabinet. Companies in the private sector are reported to have an interest in participating in joint public-private efforts as well. The activities that have or potentially will affect the creation, maintenance, and dissemination of land information are described in the following section.

2.1 Accelerated Land Distribution Programme (ALDP) and Agricultural Sector Investment Programme (ASIP).

Through these two programs, the government intends to regularise tenancy of farmers on State lands (about 2700 parcels under ALDP and 15,000 under ASIP). The very ambitious rate of regularisation called for under these programs is a reflection of the governments desire to significantly accelerate what has been an extremely slow process. A consultant's report (Ernst and Young 1999) identified bottlenecks in the existing procedures. These included at least three directly involving land information – searching Registries for lease and deed information, cadastral surveys of parcels and land valuation.

A process re-design was proposed by the consultant, as well as re-deployment of staff resources. This has resulted in slight improvement in processing, though some agency staff noted that redeployment has not addressed what they perceive to be significant bottlenecks. It is clear that without changing information requirements of the current process, the order of magnitude gains in efficiency that must be achieved to realise the goals of the ALDP or ASIP will not be achieved. For example, a second detailed land survey has been ordered for many parcels in order map drainageways, even in well-settled areas where drainageways are well-known and protected, or in areas where drainage is not a significant issue.

Under the umbrella of a land management entity, ALDP and ASIP information should be revised and simplified so as to remain compatible with a national L/GIS. If the three land bills described in section 2.5 are enacted, information requirements for regularising leases should parallel those required for regularising settlements under the bills. The State Agriculture Land Information System (SALIS, discussed further in section 3.3) is an appropriate and useful tool for managing the relevant information. It should be considered as a prototype for a broader set of land management software applications, though some modification will be needed.

2.2 Interim National Physical Planning Commission, Working Group on National Land/ Geographic Information System

A new group to "develop the National Land/Geographic Information System Plan of Action" was formed in late 1999. Noting the lack of progress of the previously appointed Technical Advisory Committee, a Note for Cabinet (Ministry of Housing and Settlements, 1999) created a Public Sector Advisory Group and a National Land/Geographic Information System Working Group. The members of the latter were named in the Cabinet Note per recommendation in a report from the Interim National Physical Planning Commission (INPPC, 1999). Members included representatives of land administration and land management agencies, and the private sector. The group has not yet convened as of this writing (January 2000).

The terms of reference for the Working Group include review of existing studies, policies and initiatives, development of a national L/GIS policy, and evaluation of potential for private sector participation in the national system. The group is expected to make an initial report within the first quarter of 2000.

A consensus exists among interviewees that the goals of the Working Group are appropriate and desirable, and that the INPPC has a sufficiently broad mandate to make progress on the issues that have stymied similar efforts in the past. However, two inter-related concerns have been expressed in various ways about the Working Group.

These concerns arise out of the composition of the working group, particularly the significant involvement of the private sector in the early formation of a government function (the group is comprised of two civil servants, one public agency contract employee, one public agency consultant, one academic and two private sector members).

The first concern is that the national L/GIS will be too narrowly cast, that it will be oriented to solving problems related to land tenure transactions, not the broader problems of land management and planning let alone spatial-domain problems in sectors such as environment, economic development, transportation, and infrastructure management. This concern is based on the expressed interest in systems and applications developed by TERANET (a public/private consortium from Ontario, Canada). TERANET installations have been primarily oriented to land records management. Though this may provide a solution to some of the data management issues in developing a national L/GIS, the Working Group will need to take a more comprehensive approach if they are to create a system that will address a broad array of national needs. Because of pressing national needs, initial focus on land records (which support applications such as land management and regularisation of land tenure) may be justified. However, the Working Group should make it clear to interested parties that this should not be construed as an attempt to limit the eventual scope of the system nor as an indication of which agencies will ultimately be involved.

The second concern is the apparent lack of recognition (at least in written documents to date) for an existing conceptual framework for a national LIS. As part of their consultancy on the ASIP, Terra Institute (1999) provided initial specifications for developing a strategic plan for a national land information system. While this too may be characterised as primarily oriented toward solving problems of land records administration for land management, the procedures and framework for system development it outlines should be given serious consideration by the Working Group. If nothing else, it serves as a useful indication from a reputable international GIS consulting firm about what level and type of effort is necessary for the analysis leading to, and the design of, a national L/GIS.

The major implication of the Working Group activity for the design of a land management entity is the need for careful and continuous communication between the groups. Decisions about how to structure the land management entity may depend on how the national L/GIS is conceived. Decisions about overall architecture (e.g., distributed vs. centralized), custodial responsibilities, standards promulgation authority, coordination and oversight mechanisms, and many other technical and institutional choices will influence how effectively land management agencies are able to obtain necessary data. Fortunately, because of overlapping personnel and reporting structures, the channels for this communication are readily available. Timing will also be critical. If the land management entity is to be proposed in the time frame currently scheduled, the delivery of an initial report from the Working Group within the first quarter of 2000 is essential.

2.3 Automation and Capacity Building in Lands and Surveys Division

Within the last few years, Lands and Surveys Division (L&SD) has begun to adopt modern information technologies, including some that will streamline the production of data pertinent to land management.

They have just begun to receive products that will comprise a new nationwide base map (last done in 1969) from a foreign contractor. This is a digital product produced from aerial photography acquired in 1998. Base features will include transportation features, hydrographic features, selected land cover features (e.g., forested canopy, fence lines and other occupation boundaries), and contour lines (derived from a new digital terrain model). They will also receive digital orthophotos. The project is expected to be done near the end of 2001, including quality checking and additional annotation (e.g., road and jurisdictional names).

L&SD is also automating lease related information. Geographic data are being captured from existing surveys and sub-division plans and registered using new GPS-based field work, supplemented by data from existing Ward sheets. Lease information is derived from lease folios held by L&SD and encoded in a digital data base. The information captured in the data base is primarily that needed for their Lands Division to administer the leases, but should be valuable to other land management agencies as well. Corrections and updates to lease information are being made as part of the process. UPRNs are assigned to parcels as part of the process. L&SD is in the process now of trying to project how long it will take to complete this task based on current procedures. Some outside the agency have expressed apprehension that the pace will be too slow to make a meaningful contribution to a national need for parcel data.

As of September, 1999, a consultancy report was completed for the organisational restructuring of Lands and Surveys Division (Ordnance Survey International 1999). This initiative is primarily aimed at changes in internal organization, effected by changes in job titles, functions, training, and chains of command, to correct some widely acknowledged issues and inefficiencies within the Division. It also includes recommendations about equipment acquisition and maintenance, data automation, publication and pricing, and other measures that will improve the performance and service orientation of the Division.

The findings of the report dealing with Land and Lands Acquisition Sections generally parallel the findings of Mr. Wijetunga of the LTC consultancy, including the observation that the work of these Sections are being carried out by land surveyors not trained in land administration or management. In addition to personnel reforms, recommendations include the implementation of a computer-based property management system (as noted above, in pilot testing) and a process performance monitoring system (currently working out details of how to do this). These are needed reforms and will considerably enhance the value of L&SD information to other land management agencies, though these must be done in conjunction with the emerging strategy for a national L/GIS.

2.4 Automation of Land Records at the Registrar General's Department

Despite repeated phone calls and promises from them that someone of returning calls, it was not possible to arrange an interview with technical staff at the Registrar General's Deparment during the January 10 – 19 investigation period. Therefore the activities of this Department are based only on second-hand information from other agency personnel and from the report of a 1998 consultancy (Land Titles Office 1998). Apparently, the Registrar General's Department (RGD) has begun implementation of a land records management system. This system builds on and improves an existing computer-based grantor-grantee indexing system, implements a document image

management system, and improves digital access to records through a network server architecture.

It is unclear how much of the consultants recommendations have been implemented to date and what time frame completion is expected. Information about other details such as system and network configurations, remote/Web access mechansims, priorities for data automation, use of barcoding of documents, use (or non-use) of UPRNs, content of attribute information and data base format, linkage between document images and data base information, and so forth should also be determined.

Some concern has been expressed about a focus primarily on document scanning and image management, to the exclusion of improving the indexing of documents or creating a parcel data base. The consultants report called for extensive automation of attribute information from documents (they called for perhaps even an overly ambitious amount of text data to recorded in a relational data base management system – over 40 attributes in five related tables).

When and if the proposed system is fully implemented, it will substantially improve the efficiency and effectiveness of searches for title, deeds and leases within the Registry, removing a significant bottleneck in current processes that utilize land information for land management. Network and database technology currently exists (though not implemented locally) that would entirely eliminate the need for land management personnel to visit the Red House in person. Both database records with a subset of pertinent land tenure information and images of recorded instruments could be retrieved via digital networks, either as a subscriber service or through a data-base driven Website. The implementation of client-server technology within the Registry and corresponding network capacity in at least the central offices of land management agencies (and the new land management entity) should be a high priority. This will require synchronization of property identification numbers for efficient retrieval.

2.5 Pending Legislation – Land Adjudication, Tribunal and Registry

Three land tenure related bills were introduced by the Government in 1999 in response to an IDB conditionality. As part of the LTC consultancy, Ramkissoon (1999) briefly reviewed these bills. A few additional comments are warranted, particularly about the potential effects of these on land management and administration.

The Land Adjudication Bill would establish a process for regularising all land within declared "adjudication areas." A process would be established for reviewing claims to land. Claimants would be required to make written or in-person claims and to demarcate boundaries. These boundaries would be surveyed, mapped, and numbered. The state would also delineating rights-of-way, reserves, and so forth, and compensate resulting losses of land. Based on strength of evidence, land holders would receive absolute, qualified, or provisional title to land. Claims would be evaluated by an adjudication officer, and disputes resolved by the officer or the Land Tribunal. Unclaimed land would be deemed State land.

This bill is silent on which agency will be responsible for conducting the adjudication process. It is also silent on the stipulation of land management provisions (e.g., compliance with environmental or planning policy). On the presumption that one of the land management agencies reviewed under the LTC consultancy (and/or a new land

management entity) will have a role in the process, consideration should be given to 1) what information needed for land management purposes could be gathered as part of the adjudication process, and 2) what conditions or restrictions might be imposed as conditions of granting title to facilitate land management policies.

It is interesting to note that the adjudication record would include a unique parcel reference number and the "approximate area of the parcel as shown in the demarcation map" (Sec. 18.(1)(a)). Since adjoining owners would demarcate boundaries themselves and differences between abutters would be resolved through adjudication, one possible interpretation of this is that the Government wishes to eliminate the need for a high precision cadastral survey, and instead would use more rapid but less accurate mapping methods. If this interpretation is correct, it may have implications for other similar processes, such as the regularisation of state leases.

The second bill would establish a Land Tribunal as a standalone body. Presumably, land administration agencies would provide staff services and information for the Tribunal's decisions. It will be helpful for a new land management entity to have close working relations with the Tribunal, both so the Tribunal understands the intentions of land policy and so the entity is aware of precedent-setting decisions.

The third bill would establish a Land Registry for land regularised under the Land Adjudication bill. The bill anticipates the creation of digital record-keeping systems similar to that described in section 2.4.

The Land Registry bill would create a third class of private land, with a separate registry (presumably because the evidence required under the Real Property Ordinance (RPO) is considered excessive or time-consuming). The Land Registry would supercede lands currently registered under the RPO or the Deeds Act; these latter two would "cease to apply." As long as the evidentiary trail created in the adjudication process links back to the earlier registries, this should not create significant land administration problems. What may create problems, however, is the treatment of State lands found within adjudication areas. The bill calls for these to be registered in the new system, potentially exacerbating an already scattered set of records. For example, agricultural lease information now potentially exists in the Land Administration Division of MALMR, the Lands Section of Lands and Surveys Division, and the Red House Registry. Rationalisation of these record systems should be a priority of the land management entity in conjunction with the implementation of a national L/GIS.

2.6 Freedom of Information Act

The Freedom of Information Act (Act 26 of 1999) was passed late last year. The law is quite similar to various United States "open records" laws. It provides access to government records in any form, except as restricted for various reasons including protection of privacy. Agencies may charge fees commensurate with the cost of reproduction.

A few aspects may be of interest from the LUPAP project standpoint, particularly related to creation and access to land information.

Although the Act is silent on digital data bases (compilations of records, rather than individual data points), it explicitly includes maps and "machine readable records or any

record which is capable of being produced from a machine-readable record by means of equipment or a programme…" (Part 4). So, the act could be interpreted to include access to all the data in large data bases. In the U.S., this is a highly contentious issue, as there is considerable commercial value in such compilations, and some units of government are looking to see if such access can be restricted. In the T&T land management context, it means that, for example, a bank or construction company might get maps depicting locations where land agencies are attempting to regularise leases or to issue squatters certificates of comfort, and then target these areas for marketing their services. Legislation establishing a new land management entity should clearly spell out when (at what point in decision-making processes) information should become available to the public. When released, this information should be made readily available in multiple formats to anyone, so that vested interests cannot obtain a competitive advantage. This is particularly important since the Act also specifies that the agency cannot refuse to release a record based on the stated use intentions of the requestor (21.4.a.&b.). In other words, agencies will not be able to ask requestors why they want the data or what they will do with it.

The Act requires every agency to annually publish a "statement of the categories of documents that are maintained in the possession of the public authority" (7.1.a.ii). In addition, the authority must provide "manuals, rules of procedures, statements of policy… " (8.1.a.ii). One of the challenges faced under the GIS-related TOR is finding out just what each agency is collecting, what form these records are in, and what they consider to be private information. Enforcement of this provision would not only have made the GIS consultancy easier, but will be very important in the coordination of data between land management agencies. Many individuals were asked if they have "design documents" or "data dictionaries" for the information they collect and/or automate, and with very few exceptions, the answer is no. This portion of the Act could be a good forcing function to get agencies to properly document their data holdings… so-called metadata.

While the Act does provide exemptions from public disclosure for privacy protection reasons, it does allow release of information if portions of the document/data that identify individuals can be removed: "… the public authority shall, except as impracticable, cause to be prepared, a corresponding document, altered only to the extent necessary to exclude the exempt information" (8.3). This could be interpreted as a very strong argument in favor of putting data now held only on paper forms (e.g., leases, valuations, etc.) into digital data bases, where redaction of identifying information is as simple as removing a data base field from the information that is transmitted or printed. Agencies will no longer be able to hide behind the "we can't release that because it's private information" shield. They will be able to provide the portion of a record that is necessary for another agency to do their job, while still protecting privacy.

3. Agency GIS Activity

Terms of reference for the this consultancy call for "review of the experiences building GIS in the land management agencies. Preliminary review was conducted by interviews with key personnel in five of six listed agencies. In addition, discussions were held with the Director of Lands and Surveys Division and with another LTC consultant stationed with L&SD (though inadvertently not listed in the LUPAP inception report as a land management agency). In addition, discussions were held with GIS staff at Town and

Country Planning and Environmental Management Authority. No contacts were feasible with Tobago personnel. Additional agencies should be contacted as well, particularly the Water and Sewerage Authority (WASA), which may have information quite useful for land management. It is reported by others that WASA continues to pursue a cost recovery strategy for GIS data; this reticence to share data with public agencies may have implications for both land management and national L/GIS.

Below is a brief description of GIS activity in these agencies. Final specifications for a land management entity may require additional detail on data management, particularly the nature and form of information flows to and from the agencies. This is the proposed activity for a research assistant attached to this consultancy, in conjunction with what are presumed to be similar needs of the Working Group on a National Land/Geographic System. As previously noted, few agencies have written data dictionaries, documentation describing what data are collected, how it is recorded and stored, and what the meanings of codes and classifications may be. Ultimately, a national system will be served by a "metadata" standard that standardises the form and content of descriptions of data holdings. In addition, information is needed about how information moves between agencies – what is the transaction that triggers data flow, what kind of information forms and procedures are used, what is the form of data sent or received (and is subsequent re-processing necessary), how is receipt of information acknowledged, and so forth.

Before a land management entity is created, each agency must identify "mission critical" data – data which are essential to support decisions. As discussed in section 4.x, data are collected, automated, or transmitted that may not have any value. One possible followup to this consultancy would be workshops or meetings with decision-making staff of key agencies to help identify mission critical data.

3.1 Land Settlement Agency, Housing and Settlements

The main GIS activity of Land Settlement Agency (LSA) is the creation of their "Land Bank Unit." This group has digitised State lands from L&SD ward sheets. It appears that the vintage and completeness of data have not been carefully tracked. The resulting products have been used primarily for broad area purposes. Verification of data through cross-checking other records, particularly in the Lands Registry, is proceeding as needed for project support. This is estimated at 10 – 20 percent complete. State land boundaries created for the Land Bank have not been reconciled with equivalent boundaries in SALIS. Minimal attribute data has been included thus far.

3.2 Land Registry of the Registrar General's Department

Land records automation in the Land Registry are detailed in section 2.4, as one of the major activities potentially influencing the design of land management entity.

3.3 Land Administration Division, Agriculture, Land and Marine Resources

Land Administration Division has created what they hope is a complete inventory of State lands leased for agricultural purposes – the State Agriculture Land Information System (SALIS) (LAD 1996, LAD 1997). Spatial features were digitised from L&SD Ward sheets and more accurate maps where available. Attribute information is extensive and based on best readily available data. Lease-holders as reported by field

staff have not been reconciled with lease data filed in the Red House Registry. Because a nationwide scheme for unique parcel reference numbers (UPRN) had not been implemented when the SALIS pilot project was underway, Land Administration uses its own number, though the data base contains a field for it.

SALIS contains all information needed to manage leases. It is currently used in the central office, and implementation in field offices is underway. This may help with a current problem with the system – updating the data base as changes in lease or land use occur. Gathering this information is primarily the responsibility of field staff, but it is not always effectively completed or reported. Complete resolution may require organisational restructuring.

The SALIS data base also contains fields for all the information necessary for ASIP and ALDP, though as noted in section 2.1, creation of new leases depends on survey information from L&SD and land value information from Valuation. The high degree of accuracy in the information these agencies provide does not appear to be commensurate with the information requirements necessary to create agricultural leases. General boundaries and values may be sufficient to create leases; more precise information can be gathered over time if justified.

3.4 Land Valuation Division, Finance

Attempts at comprehensive data bases and automation of records at Land Valuation Division have met with limited success. Land inventories have not been kept current and automation efforts have succumbed to obsolescence. Organisational restructuring within Valuation is probably warranted. However, for land management purposes, it will also be fruitful in the short-term to evaluate the basis and specificity of land value information required for decision-making. If and how Valuation provides information for land management purposes should be determined. The information and possibly the expertise to make reasonable approximations of land value across project areas (as opposed to a per parcel basis, necessary for property taxes) may better reside in agencies with specific expertise in agriculture or housing.

3.5 Interim National Physical Planning Commission, Ministry Housing and Settlements

By note of Cabinet (July 14, 1999), the Interim National Physical Planning Commission (INPPC) was given responsibility for the establishment of an "integrated National Land/Geographic Information System" for Trinidad and Tobago. Toward this goal, a First Working Group has been appointed, with terms as described in Section 2.2. It is anticipated that a second working group will be appointed following the First Working Group's activity to determine the scope and authority of the agency responsible for a national L/GIS.

The Chairman of INPPC expects that the working groups will recommend creation of a new agency, under the authority of a permanent NPPC, with a mandate to guide the national L/GIS, distribute "core" data sets, and engage the participation of public agencies and private organisations in the national L/GIS. Policy development, standards promulgation, enforcement, and so forth would be vested in a broadly representative standing committee of the INPPC so that the new agency focuses exclusively on implementation and management of the national L/GIS.

The Director of INPPC envisages a land management entity parallel to the national L/GIS agency – a central "land policy" agency or unit would be mandated to coordinate the activities of multiple land management agencies and provide a conduit from Cabinet and the Legislature to the agencies. Obviously, effective communication between the land policy entity and the national L/GIS agency will be paramount to success of both groups. This could be accomplished in a variety of ways, including through organisational structure, overlapping staff and committee memberships, regularly scheduled meetings, and so forth.

As primarily a policy and coordinating body, INPPC itself is expected to have limited GIS capacity. Some GIS staff may reside in a research and development unit to assist in policy analysis and generate information products.

3.6 Lands and Survey Division, Housing and Settlements

Digital mapping and capacity building in the L&SD are detailed in section 2.3, as one of the major activities potentially influencing the design of a land management entity.

3.7 Town and Country Planning, Housing and Settlements

Though one of the earlier GIS innovators in Trinidad and Tobago, Town and Country Planning (T&CP) has not evolved a comprehensive approach to GIS. It appears to be largely project driven and limited in scope, though some of these projects have been quite successful. As a planning agency, they are substantially dependent on data from other organisations. Cost considerations and lack of cooperation may be limiting factors.

3.8 Environmental Management Authority

The Environmental Management Authority expects to implement a GIS within the year, using a consultant to assist in the process. Such a system was part of their original mandate. The system will be built on an existing "mapping unit." The system will have five modules – environmental certification, water and air resources, environmentally sensitive areas and species, complaints, and "green" space (note: these categories are approximations, not official titles).

As there is clearly common interests between EMA and other land management agencies, the design and development of the EMA system should be tracked. EMA intends to hire a data base specialist as soon as possible who will also be the GIS manager. This individual should be invited to brief appropriate staff and commissioners concerned with a land management entity and participate in discussions of a national L/GIS.

4. Issues and Recommendations

The following section provides brief summaries of some GIS and information management issues to consider in the development of a land management entity. Possible solutions for some are presented, though it must be noted that these are based on rapid appraisal, and in some cases, sketchy information.

4.1 Parallel development of a national L/GIS

From the perspective of land management entity, land administration is a subset of their domain. Tools such as land and geographic information systems may be useful for a broad range of functions which use land information, including policy, analysis, administration and enforcement. From the perspective of a national L/GIS, land management is one of many application areas that the national system should be able to support. Therefore, in an ideal situation, these two functions should evolve in an independent but mutually supportive fashion. In actual fact in Trinidad and Tobago, much of the current interest in a national L/GIS is driven from land administration and management agencies, and several of the land management agencies have significant portions of their effort devoted to activities that would eventually fall under the rubric of a national L/GIS.

The major implication from a land management perspective is that deliberations about the land administration component of land management should not get too far ahead of the national L/GIS discussion. The land management agencies should take an active role in the national L/GIS discussion, particularly in being explicit and detailed about the kinds of data that could be part of a national system that would allow them to function more efficiently. The time frame of both initiatives should allow this parallel development.

From a national L/GIS perspective, it may be helpful for participants to do some "public relations" – to make sure that parties interested in their deliberations understand that land administration may be an *initial* application area to aid in system conceptualization, it will not be an *exclusive* area.

4.2 Parcel index mapping

A consensus seems to have emerged that an effort to create a digital parcel index map is worthwhile. This parcel index map would be digitised from best currently available data – surveys, sub-division maps, etc., and where nothing else exists, from Ward sheets. These data would then be updated and corrected as better information becomes available. The benefits of this exercise are broadly recognized and considered to be substantial.

Remaining questions include:
- who will pay for the effort and who will do the work?
- how will current data bases such as SALIS be integrated?
- what parcel attributes should be automated?
- who will manage the data, including updates and dissemination?

Because such parcel index maps would be of considerable value to land management agencies, these questions should be discussed. Consensus recommendations should be reported as part of LUPAP to its overseers and other interested groups.

4.3 Unique Parcel Reference Number

The Unique Parcel Reference Number (UPRN) has long been recognised as a key to information exchange about parcels between agencies and with individuals. Absent comprehensive creation and dissemination of a UPRN, several agencies have

developed their own parcel identification schemas. Forward thinking agencies have at least created a field in their data bases for eventual capture of a UPRN, and this should continue until the exercise is completed. It appears that inter-agency rivalry which may have hindered previous closure on a numbering scheme has been resolved. Orders from Ministerial levels may be necessary to assure compliance. Numbering should be completed as part of parcel index mapping.

4.4 Information Required for Land Management Decision Support

A detailed cataloguing of the information production of land administration agencies has not been conducted (nor is it clear that this was intended under the terms of reference). However, such information certainly is needed for the design of a national L/GIS, and will be useful in thinking about how to structure the interaction of a land management entity with both land management and land administration agencies.

As a continuation of the GIS consultancy, a research assistant should be hired under the supervision of the GIS consultant to document, in standarised format, data creation in land administration agencies. So as not to burden agency staff who may have already participated in such exercises, this should be based on existing documents to the extent practicable. The level of detail should be sufficient to answer questions that may arise in the creation of a land management entity about:
-   what data exists
-   in what format(s) is it managed and disseminated
-   who is producing and maintaining it
-   across what geographic extent
-   at what scale and attribute detail.

Annex 3 provides draft terms of reference for the assistantship. Given limited time/funding, it is unlikely that the assistant would be able to complete all steps for each land management agency. However, the methods and forms the assistant develops may be used on a subsequent visit by this consultant and/or could be used by the Working Group for a national L/GIS to gather similar information about land administration agencies.

4.5 Reconciling Information Requirements with Information Collection

The information requirements analysis specified in Section 4.4 focuses primarily on *current* data and procedures. It appears that some agencies are collecting data that have little or no value for either record-keeping or decision-support purposes. The restructuring of land management agencies and/or the creation of a land management entity should be used as an opportunity to determine what data and procedures are needed in the *future.* Review of data collection procedures should identify:
  - data that have no apparent purpose or value, and the original reason for collection is unknown or obsolete;
  - data that have no apparent purpose or value, and are collected only because of a statutory requirement;
  - data that are collected at the behest of another agency.

In the first case, these data should be considered for elimination. In the second case, requests for elimination should be routed through appropriate channels for legislative or ministerial approval. In the last case, discussions about the continuing usefulness of

data collection should ensue. In all cases, the potential for use of data as part of occasional analyses, e.g., time series or trend analysis should be considered before the data are eliminated from collection forms.

In the long term, any system that depends on hand-written field forms followed by transfer for coding and checking will be less efficient than fully automated procedures. Particularly agencies whose data management and update procedures are highly dependent on field officers may want to consider laptop or handheld computers at some time in the future.

4.6 Reconciling Information Requirements with Data Automation

Data automation efforts should undergo review similar to the review of data collection. Not all field or form data needs to be included in automated data bases, particularly where statutes require continued storage of hardcopy records such as leases. Many land management activities depend on a limited subset of information, not the entire record. Such status and tracking information is all that is needed in a data base. Some agencies have a done a good job in determining what should go in a data base; others may want to go through an evaluation of this.

It almost goes without saying that one of the primary functions of a land management entity, in conjunction with a national L/GIS agency, is coordinating data automation and management activities to eliminate redundant activities and duplicated data sets. Annual publication of metadata about data holdings required under the Freedom of Information Act should be expanded to include annual reporting of expected data creation or automation activities. This would facilitate coordination with other agencies with similar interests.

4.7 Web-enablement

Although bandwidth and other technological limitations currently restrict the use of the WorldWideWeb and other Internet based communications between agencies, this is clearly the direction of the future if trends in more technologically advanced countries are any indication. When the government is prepared to make a major investment in Web-enablement of land management agencies, including providing sufficient server capacity for a distributed network of data-providing nodes, another study should be undertaken to determine the best way to configure a network geared to providing these data amongst the agencies.

Annex 1   Interviews Conducted Jan 9 – 19, 2000

10 Jan 2000
   Allan Williams, Economic Policy Analyst, ACT Consulting

11 Jan 2000
   A.A. Wijetunga, Land Management Specialist, Terra Institute

12 Jan 2000
   Jacqui Ferrell, Director, Land Administration Division, MALMR
   Thackwray Driver, Senior Implementation Officer, MALMR

13 Jan 2000
   Kenneth Subran, Director, Valuations Division, Ministry of Finance
   Robin Rajack, Land Economist, Land Settlement Agency
   Desmond Dougall, Consultant, Land Settlement Agency
   Kishan Kumarsingh, Technical Coordinator, Environmental Management Authority
   Joan Ferreira, Manager, Information and Communication Services, Environmental
      Management Authority
   Jacob Opadeyi, Senior Lecturer, University of West Indies

14 Jan 2000
   Alan Ludwig, Consultant, Town and Country Planning

17 Jan 2000
   Asad Mohammed, Chairman, Interim National Physical Planning Commission

18 Jan 2000
   Eva Chin, former employee, Town and Country Planning
   Tyrone Leong, Acting Director, Land and Surveys Division

Annex 2 Documents Reviewed:

Barnes, Grenville 1995. "An Assessment of the Cadastral Surveying and Land Registration System in Trinidad and Tobago" Report submitted to Inter-American Development Bank.

Elder-Alexander, Stephanie 1996. "An Automated Parcel-based Land Records Model Suitable for Trinidad and Tobago" MS Thesis, University of the West Indies

Ernst and Young 1999. "Report on the Procedures to Regularise the Occupation of Farmers on State Agricultural Land" Project Report to Ministry of Agriculture, Land and Marine Resources.

Interim National Physical Planning Commission 1999. "Towards a National Geographic and Land Information System" Report to the Ministry of Housing and Settlements, May 25, 1999

Land Administration Division 1996. Land Administration Operations Manual. LAD internal document.

Land Administration Division 1997. State Agricultural Land Information System Data Collection Manual. LAD internal document.

Land Tenure Center 1999. "Land Use Policy and Administration Project, Inception Report" Project Report to Ministry of Agriculture, Land and Marine Resources.

Land Titles Office of New South Wales 1998. "Land Information Specialist for the Institutional Strengthening of the Registrar General's Department, Software Specifications Report" Project Report to Registrar General.

Ministry of Housing and Settlements 1999. "The Establishment of a National Land/Geographic Information System in Trinidad and Tobago" Note for Cabinet, HS: 1/1/7, Vol. 1., June 22, 1999

Opadeyi, Jacob 1999. "Assessment of State Agencies with Responsibilities for Land and Other Real Properties – Property and Development Company of Trinidad and Tobago" draft LUPAP working report.

Ordnance Survey International 1999. "Lands & Surveys Division Strategic Plan, 1999-2003" Final Report to Ministry of Housing and Settlements.

Ramkissoon, Kelvin, 1999. "Legislative Enactments Relating to Land Management and Land Administration in Trinidad and Tobago, 1994-1999" draft LUPAP working report.

Terra Institute 1998 "Development of a Strategic Plan for National LIS Implementation" Annex 14 of Land Component: Agriculture Sector Investment Programme, draft final report to MALMR.

Republic of Trinidad and Tobago 1999. "Land Adjudication Bill," "Land Tribunal Bill," and "Registration of Titles Bill", No. 6,7 & 8 of 1999 respectively, Fourth Session, Fifth Parliament.

Republic of Trinidad and Tobago 1999. "The Freedom of Information Act" Act No. 26 of 1999, Fifth Session, Fifth Parliament.

Wijetunga, A.A. 2000. "Assessment of the Commissioner of State Lands, Ministry of Housing and Settlements" first draft LUPAP working report.

Annex 3 Terms of Reference for Research Assistant to Continue L/GIS Consultancy

The following terms of reference will be for work conducted in cooperation with agencies specified by LUPAP coordinators.

1. Assist in the development of a form or questionnaire to better understand data creation and management within selected land administration agencies. The form should be used to compile information about (but not limited to):
   - type, specificity, currency, and accuracy of data created within the agency
   - data upon which land management information is based, including source, form, and format;
   - any type of processing such as transformation, conversion, aggregation, or summarization use to improve the utility of data
   - procedures used to update existing data, including transaction triggers, recording mechanisms, data flows, and data receipt acknowledgements;
   - description of data managed in automated form, including software systems, data base structures, and automation methods;

2. Gather existing reports, memoranda, procedure manuals, data base specifications, data dictionaries and other documents useful for compiling information specified in item 1.

3. Fill out forms to the extent feasible from existing documents.

4. Conduct in-person interviews with key informants to complete the forms.

5. Develop word-processing or data base tables summarizing agency information requirements.