

TECHNICAL REPORT – EXECUTIVE SUMMARY



Report D9

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**Philippines-Australia
Land Administration and Management Project**



Land Administration and Management Project

Executive Summary for Prototype Implementation Office 2

Quezon City, Philippines

31st December 2002

EXECUTIVE SUMMARY

Structure of the report

The overall objective of Prototype Implementation Office 2 (PIO2) is to develop and test alternative approaches for land record management and associated institutional arrangements that will improve the protection of rights to land and public confidence in the system. This program is being carried out over a three year period and this report covers the developments between June 2002 and December 2002 or more specifically in relation to deliverable 22 of the Inception Report. The main objective of deliverable 22 is in consultation with the responsible agency and government and non- government stakeholders, work to identify all methods that have potential for the effective and efficient identification of fake, duplicate and missing titles, the resolution of those title anomalies, and for improving the integrity and completeness of title and associated records. In partnership with the PMO, LRA and other relevant agencies the Prototype aims to address any issues related to any inconsistencies in the land records system among different agencies and look at alternative methods to improve the overall land records management system in the country.

The Prototype operates in Quezon City and covers the following five barangays: Commonwealth, Payatas, Bagong Silangan, Holy Spirit and Batasan Hills.

The Prototype aims to achieve the following at the end of the learning and innovation phase:

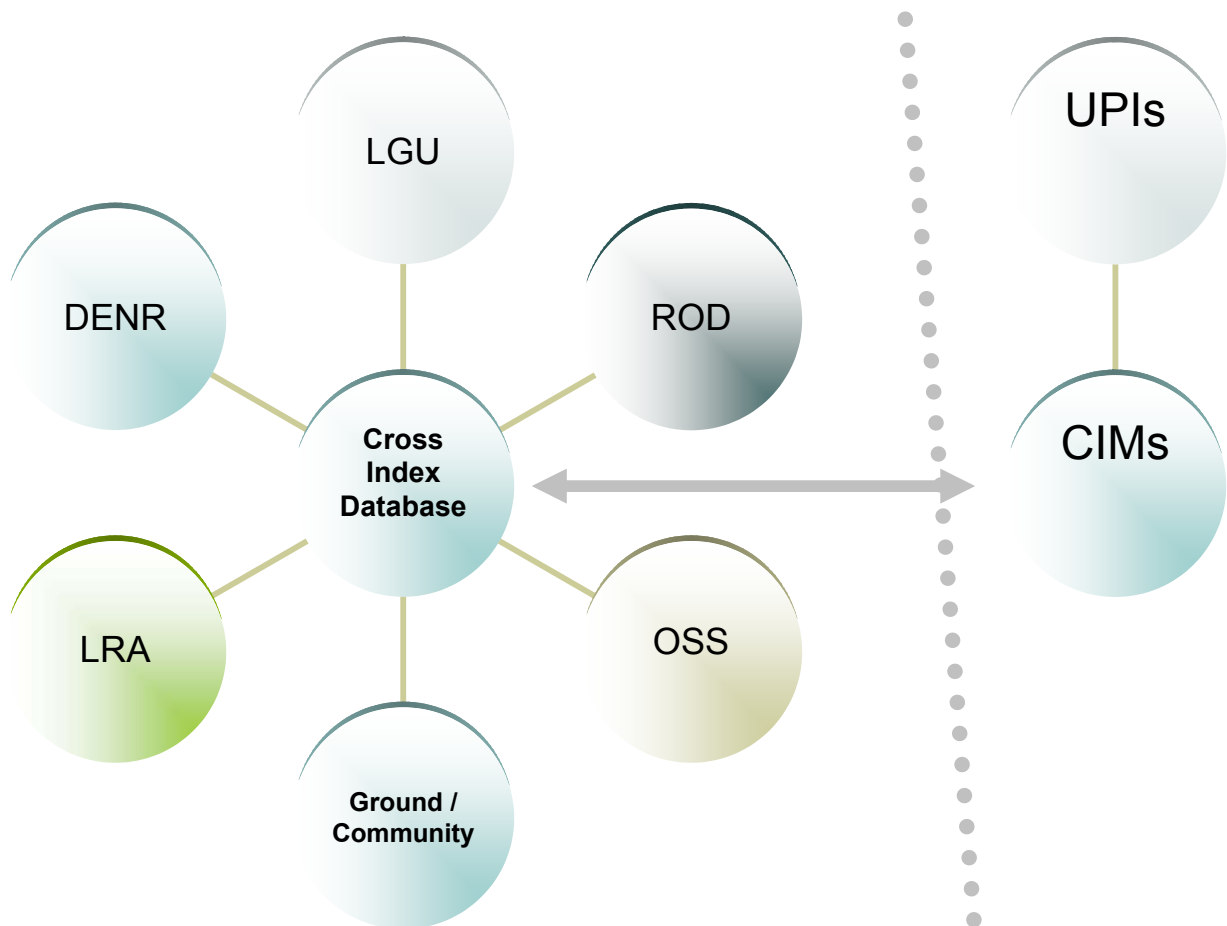
- Improved land record management systems and procedures developed, tested and documented (this would cover procedures to detect fake, duplicate and missing titles and resolution of anomalies);
- Systems and institutional arrangements for streamlined, efficient and cost-effective delivery of land transaction services and associated information developed and tested, through the establishment and operation of a One Stop Shop;
- Community consultation, customer relations and services strategies developed and tested to support the operations of the Prototype and the longer term LAM Program; and
- A national land records management strategy formulated, based on lessons learned from the project.

The prototype is working in many different areas and has reached a milestone in the deliverables expected from the project. This report contains a section on the overall progress, that shows the relationship between the activities in deliverable 22 and the actual activities that PIO2 carried out; then individual sections on the technical activities of the prototype up until the end of December 2002. Set out within each activity is major achievements and outputs, major lessons learnt, issues and constraints and major recommendations, for the short term PA-LAMP and the longer term LAM program.

A: Overall Progress of Prototype

The Technical Assistance team has been providing assistance to the staff from the government agencies and the contractual staff in the development of the prototype in Quezon City. Prototype Implementation Office 2 (PIO2) is developing land administration and management procedures in an urban environment predominately covered by informal settlements. The title records held by the registry of deeds in this area were largely destroyed by fire in June 1988 and the records of other agencies are fragmented. PIO2 is attempting to bring together a set of records that will establish the ownership of parcels in the area and help restore public confidence in the land system.

PIO2 has been involved in testing different methods for the validation of records using both office and field verification of records, CIM production and identification of fake, duplicate and missing titles. Manuals have been produced in all areas and form attachments to this report, each manual has gone through several iterations and the procedures documented within have been tested and signed off. The prototype is working towards introducing worlds best practices to develop a Land Information System linking CIMs to a database of land record information (as shown below).



Deliverable 22 sets out that:

The Contractor shall, in consultation with the responsible agency and government and non-government stakeholders, work to identify all methods that have potential for the effective and efficient identification of fake, duplicate and missing titles, the resolution of those title anomalies, and for improving the integrity and completeness of title and associated records. In partnership with the PMO, LRA and other relevant agencies, this work includes the tasks set out in the following table.

| Deliverable 22 task | PIO2 Activity | Status |
|---|---|--|
| Identification of methods that have potential to detect fake, duplicate and missing titles, and to resolve the title anomalies; | Workshops Fake Title manual Office Validation Field validation CIM production | Manuals have been produced for detection of Fake Titles, Office Validation, Field Validation and CIM production. Workshops have been held and several methods have already been trialled and tested in office field and CIM production. These methods have been evaluated and the method which is currently most suited is being adopted. A technical working group is being established with partner agencies to develop a national strategy for dealing with the fake titles. Further methods will be tested and evaluated during 2003 and a national strategy will be developed. |
| Facilitating wide consultation to ensure that the views of all stakeholders including direct customers and the wider community, are considered and integrated in the process | Field Validation Workshops Community Relations Services | A range of community dialogues have been conducted by the prototype within the five barangays. Community and stakeholder agency representatives have been invited to workshops on Field Validation, Office Validation, One Stop Shop and Fake Title identification. A Non Government Organisation (NGO) has been appointed to assist in carrying out the community dialogue activities in 2003. |
| Technical assistance to develop a range of objective criteria (i.e. time, budget, equipment, human resources and skills, costs, affordability, agency capacity and capability, stakeholder and community acceptance, regulatory changes required before adopting, suitability, sustainability) by which the proposed methods could be compared. | All activities within the prototype. | The technical assistants have been working with the different PIO2 units and the Monitoring and evaluation staff to develop the criteria. These results will be added to the evaluation report to be completed by 2 nd and 4 th Quarters of 2003 for the long term LAM program. Where possible the evaluations will use the current system as a base to allow measuring how the trialled methods compare. Also the evaluation will be between the methods trialled. |

| Deliverable 22 task | PIO2 Activity | Status |
|--|--|--|
| Obtaining all necessary material, including the results from Output 3.1, and conduct an evaluation, including opportunities and constraints that would need to be overcome before adopting the methods | Evaluation Workshops for each unit. | The PIO2 production units have been carrying out evaluation workshops at the end of each activity. In these workshops they evaluate the opportunities, constraints, issues and lessons learnt from the activity. The workshop output also includes updates required to produce new versions operational manuals. An overall evaluation report is being developed and is being updated as each new method is trialled. When all methods have been tested a full evaluation report will be produced covering all PIO2 activities. |
| Assisting to conduct workshops on the results and gain consensus for recommended improvements | Workshops | PIO2 have held internal workshops and workshops with the stakeholders to gain consensus for recommended improvements. The workshops have covered CRS, Field Validation, Office Validation, One Stop Shop and Fake Title identification. |
| Providing technical assistance to drafting any required modifications to laws/regulations and seeking approval | Assisting the Land Law TA in investigating the possibilities | A draft strategy document has been prepared by the Land Registration Law Adviser. |
| Documenting the selected methods and procedures; | Production of Operational manuals for all PIO2 activities | Operational manuals have been developed through workshops and consultations with the operational teams. As new methods are adopted or activities modified the manuals have been updated and reviewed by the operation teams. The Manuals produced are: <ul style="list-style-type: none"> ▪ Fake Title Investigation ▪ One Stop Shop operations ▪ CIM production ▪ Field Validation ▪ Office Validation ▪ Cross Index User manual ▪ PIO2 manual of operations ▪ Manual for Densification PIO2 |

| Deliverable 22 task | PIO2 Activity | Status |
|---|---------------|--|
| Assist to develop and operationalise the One-Stop-Shop. | OSS | PIO2 have worked with the agencies involved to get agreement on the functions to be carried out within the OSS and have been able to facilitate agreement between the agencies to work together for a common goal. The OSS activities have been agreed to and a draft Memorandum of Agreement prepared. Staff to be employed in the OSS have been identified and are now undergoing a series of training activities in the OSS operations. Process now depends on getting the site ready and the equipment procured. |

B: Titles Validation

Titles Validation is carried out by the Titles Validation and Reconstitution Unit (TVRU) and consists of two activities:

1. Office validation of Land Title Records; and
2. Field Validation of Land Title records

Office validation is the consolidation of records for land parcels from various sources to create a single consistent set of land records. The information is gathered from the Registry of Deeds (ROD) the City Assessors/Treasurers (LGU), the Land Registration Authority (LRA), the Department of Environment and Natural Resources (DENR) and the Bureau of Internal Revenue (BIR).

Office validation is the next step after the production of the preliminary Cadastral Index Map (CIM) for a particular area. The office validation and CIM production processes have relied heavily on the records from the Assessor's Office to identify the TCTs/plans in the prototype area. Only with the co-operation of the Assessor's/Treasurer's Office, ROD, LRA and DENR the prototype has been able to gather the records needed. Data capture operators have been trained to validate the records and update the crossindex. The office validation manuals have been developed as the capture process have been evaluated and refined.

The field validation process was added to the prototype activities as an opportunity to locate records that were no longer available in the agencies. With the burning of the Registry of Deeds in 1988 many titles were destroyed and the only record was the owner's copy. According to ROD 95% of the Quezon City deeds have been reconstituted, however the majority of the remaining 5% is within the five Barangays covered by the prototype. Three pilot studies were carried out to determine a strategy for gathering information from the field. From the evaluation of these pilots, a field validation manual has been produced and lessons learnt documented. Further approaches including running field validation in multiple barangays, using NGO's and PIO2 facilitating the field enumeration will be trialled in 2003.

Major achievements and outputs for Office validation

- The cross index now contains 5628 TCT records and 6394 parcels have been linked to the CIM with a UPI.
- User manuals for the Cross index, Office validation and Field validation have been produced, reviewed and after evaluation by the TVRU staff, accepted for use in daily operations.
- A strategy for testing different methodologies for field validation has been developed and funding has been made available to carry these activities out.
- Office validated CIMs have been produced for the pilot areas to allow the field enumerators to complete the work started in the pilot studies.
- Representatives from the Barangays have been assisted in evaluating the results of the field validation and assessing lessons learnt.

Technical Transfer and New Practices

- Technology transfer in the last two quarters has included training new employees who were added to the office validation team.
- A manual tracking system to monitor the gathering of TCTs from the registry.

Major Lessons Learnt

- Titles validation cannot proceed satisfactorily if it does not have the proper equipment and staffing.
- The Office validation process has wasted a lot of time and effort replicating what the BOO project is doing, in any further projects the government needs to ensure that only a single data capture occurs and that the data is shared.
- A full capture of a registry in a systematic way would be far better than attempting to isolate TCTs based on an area which is unknown to the registry, ie Barangays.¹
- The quickest method is to capture all the TCTs for a registry, then match the TCT record to the CIM, rather than attempting to locate TCTs on pulling lists and match them.
- Field validation cannot be carried out without a CIM record to join the record to.

Issues and Constraints

| Issue/Constraint | Strategic response |
|---|---|
| There is still a serious lack of equipment, space and staff available for office validation. As a result the staff cannot effectively test the different methods of data capture. A hybrid system has been operated to compensate for these difficulties and the result has been that limited progress could be achieved and the number of additional TCTs added has been less than 2000! | With the proper equipment and staff the number of office validated TCT's held in the database can be significantly increased. |
| PMO have offered the loan of equipment to assist PIO2, however, the equipment offered has limited potential. It lacks LAN cards and does not have the capacity for OV work. Also given past history, PMO will have been pleased to dump the equipment on the prototype, then replace it with the new equipment when it arrives leaving the prototype worse off. | PIO2 management and PMO must work together to ensure that the prototype gets the equipment it requires. An agreement should be reached before PIO2 accepts any equipment from PMO. |
| Field validation lacks the staff, funding and equipment | The budget for 2002 which was revised in January 2002 was not approved until late in the year and by the time the necessary paper work was completed work could not commence until the 1 st Quarter of 2003. |

¹ Titles are not filed or indexed by Barangay therefore, recovering titles within a particular Barangay is very tedious and time consuming.

| Issue/Constraint | Strategic response |
|--|---|
| Field validation is reliant on CIM production and office validation. This will require a backlog of work being held. Without a backlog the field validation teams will be sitting around waiting for work. | The proper planning of the entire prototypes activities will ensure that the workflow between units is maintained at the required rate. |

Recommendations

The following are the recommendations for the PA LAMP;

- Office validation must be better supported with computer equipment that they do not have to share with the rest of the PIO2 staff.
- A program for orienting new staff is required; this should include how the operations fit together with emphasis on the importance of the office validation and the pulling of the correct titles. Any further development of the system must be under a controlled change request system and all changes will not be released until staff are properly trained and the change is fully documented.
- A standard training program should be designed for all field enumerators working in the prototype. This training should be one day activity, highlighting the LAM project-its activities and objectives; basic public relations skills that provides different approaches in dealing with respondents from different socio-economic classes; relevant information on laws/policies related to land; and conflict resolution.

The following are the recommendations for the LAM Program;

- Capture of TCTs must be carried out in each Registry in a systematic manner and if the data is to be used by BOO and LAMP then a data sharing arrangement must be put into place. TCTs must only be captured once and the updates transmitted to the appropriate system(s).
- Databases were developed without a national strategy being considered and rework will be required in the future. A proper data management system will be required for a more extensive development. The equipment and the structures will need to be fully specified, as well as more work being carried out on transaction rates, file sizes, etc. to determine the database capacity required.
- CIMs must be completed before starting any Office or Field Validation.
- Proper linkages to other systems are required with a system that updates the Cross index with the latest information from the agencies, this can form part of the duties of staff from the various agencies working within the OSS.
- Field validation will not be required in all areas, only where the records have been lost or destroyed and/or there is a high incidence of informal settlement.
- Adequate funding must be available for the activity and the funding must be easy to access.
- A separate approach must be used for established subdivisions and informal areas. The informal areas should incorporate a CRS information program that helps the residents understand how they can access the ownership records for the land they are residing on. In the established areas the information to be gathered should focus on establishing ownership and assisting those owners who need to reconstitute their titles. This can be achieved through the field inspection report by the Field validation Team; issues raised during community dialogues under the Community Relations and Services unit; Community Based Monitoring and Evaluation Baseline Study by the M & E unit; through coordination with LAG members and other government agencies; from Barangay Advocacy Group (BAG) and field enumerators from the area.
- Alternate government strategies will be required for properties where owners have abandoned their rights and no longer pay land tax or have reconstituted their titles.

C: One Stop Shop

The OSS is a primary part of the institutional objectives of the Project and the need for a OSS has been accepted and endorsed by the agencies concerned. The OSS will be established through the co-location of staff from the relevant agencies – LRA, DENR, ROD, BIR and LGU. The OSS will provide a structure that will enable the land titling, reconstitution, registration, tax collection and documentation and recording activities to be developed into an efficient process.

PIO2 has formed a Technical Working Group (TWG) with representatives from the agencies. The TWG has been able to develop a set of transactions that will occur within the OSS. The functions have been presented to the senior management of the LRA, DENR, ROD, BIR, Treasurer's Office and Assessor's Office and agreement has been reached between all the agencies involved.

Staff who will be working in the OSS have been identified by the agencies and training of the staff has commenced.

The OSS-TWG were taken to Leyte to review the operations of the PIO1 OSS. This provided them with the opportunity to see a OSS in operation and to learn from the experiences of PIO1 in developing their OSS.

Major achievements and outputs of the OSS

- The processing of documents within the One Stop Shop has been agreed upon by all agencies.
- The renovations for the OSS have been approved and the budget made available.
- A Memorandum of Agreement for the OSS has been agreed to and after some minor adjustments will be signed by all agencies involved in the OSS.
- The training of the OSS staff has commenced and they will be fully trained before the OSS becomes operational.
- The initial User Manual for OSS operations has been documented and is being reviewed ready for being signed off.
- OSS TWG review of the PIO1 OSS operations and building.

Technical Transfer and New Practices

- Training of OSS staff in change management and OSS operations.
- Development of new operational procedures for OSS operations.

Major Lessons Learnt

- Securing of the site for the OSS needs to be one of the first activities carried out. Once this is secured any plans and building works need to be followed up as these activities take the longest period of time to complete.
- LRA should not be depended on to create the floor plan for the OSS.
- The equipment requirements for the OSS must be worked out and the request included in the budget as early as possible.
- The scheduling of workshops must leave sufficient time for notification to be sent to the participants.

Issues and Constraints

| Issue/Constraint | Strategic response |
|--|---|
| The current PIO2 manager is struggling to motivate and lead the prototype and he will find it hard to manage or motivate a multi-agency team within the OSS. | The management of the prototype is not working, other options need to be investigated. LRA needs to find a replacement for the current manager. |
| The renovations for the OSS have been delayed. The building may not be ready until after February. | The OSS is now well accepted by the agencies that will be involved within it, with the possible exception of LRA. The setting up of the OSS is delayed waiting for the renovations of the building. Alternative suitable site could not be located that can be used immediately. PIO2 must keep up the enthusiasm of the OSS participants until the OSS can be completed. |
| With the OSS being in only 5 of the Barangays within Quezon City, there will be confusion with the public as to when they can and can't use the OSS. | While signage will be displayed in the OSS and the ROD, people will still be confused. At this stage a community education program and the signage are planned to assist the public. But once the OSS becomes operational this will be reviewed to determine its' effectiveness. |
| Given that all CIMs will not be completed when the OSS begins operation how do we verify a property in that area | Until the CIM is finished we will be forced to rely on the cross index. Where no details are held, the staff should be prepared to search the mother units records for details. |
| The OSS Memorandum of Agreement (MOA) needs to be finalised and signed off | PIO2 management will be visiting all agencies to get final amendments and to facilitate the signing off. |
| The equipment for the OSS is still not available | The budget for 2002 which was revised in January 2002 was not approved until late in the year and by the time the necessary paper work was completed work could not commence until the 1 st Quarter of 2003. |

Recommendations

The following are the recommendations for the PA LAMP;

- The OSS must be started as soon as the staff can be detailed and the training completed. The MOA and the procedure manual must be completed.
- All efforts must be exerted to get the equipment required for the OSS and to fund the CRS campaign for its opening.

The following are the recommendations for the LAM Program;

- The management of any future OSS needs to be reviewed and a decision made as to whether it will be independently managed or managed by one of the agencies.

- Rural and Urban OSS deal with different agencies and have unique problems related to their areas. The national strategy will need to take these factors into account.

D: Identification of Fake Titles

There are different forms of fake or spurious titles. The causes are many and varied. One of the major undertakings of the prototype is to identify these titles and assist in the early detection of fake records.

- Patently fake or spurious certificates of title are those that have not gone through the process of registration or have not been duly issued and signed by the Register of Deeds.
- Fraudulently issued certificates of title are those issued and signed by the Register of Deeds but their issuance is tainted with fraud or irregularity.
- Workshops to determine the current system have been held with Government agencies, who are involved in fake or spurious title investigation and with non government organisations, including Banks and Real Estate companies.

Major achievements and outputs of the Fake Title investigation

- A Fake Titles identification manual covering the current system has been produced. This will be reviewed by the TWG when it is set up.
- Workshops have been carried out with the major stakeholders and the current practices documented.
- A TWG is being setup to investigate co-ordinating activities and creating a national strategy.
- Investigation of fake records that were lodged in RODs outside of Quezon City

Technical Transfer and New Practices

- In the field the enumerators have been trained to identify fake records and to advise the residents of their authenticity.
- The cross index has been used in the field to authenticate the resident's records.

Major Lessons Learnt

- Fake title investigation cannot be affective if it does not have a GOP counterpart. If the TAs investigate the procedures and learn the issues, constraints and requirements, this knowledge is lost when they leave at the end of the project, with no benefit to the GOP.
- There are many types of fake and spurious titles/rights held in the community.
- There is not a clear strategic action plan for the passing of information of fake records and attempts to register fake records in the Philippines.

Issues and Constraints

| Issue/Constraint | Strategic response |
|---|--|
| The main issue is the inability of the prototype to supply a counterpart for this activity. | The TA's should not be working independently of the prototype gathering information and establishing contacts. TWG may have to substitute for a counterpart. |

| Issue/Constraint | Strategic response |
|---|---|
| A very major issue is the effect of court decisions on land ownership, reconstitution and other land related matters. The latest is the OCT 333 case, the implication being that many titles within the prototype area could become null and void. Also the senate hearing on Forestry land could have a large impact on land tenure in the prototype area. | The prototype must be aware of these developments and formulate strategies to deal with them. However work in the area needs to continue and should not be held up waiting on a court decision. |

Recommendations

The following are the recommendations for the PA LAMP;

- A PIO2 counterpart must be appointed to this activity.
- As quickly as possible a TWG needs to be established, with members from the agencies that are involved in fake title investigation and a set of counterparts elected.

The following are the recommendations for the LAM Program;

- A national strategy should be prepared by the TWG that develops links between the separate agencies and uses a uniform guideline for dealing with fake titles.

E: Survey and Mapping

The overall task in the prototype is to assist in the development, documenting and training on methodologies and processes to create CIM from existing map data in the offices of participating agencies, using survey information and orthophoto maps to control the mapping process. Evaluate and report on the quality and completeness of existing survey data held by various agencies. Include a method to ensure that any land parcel subdivisions/consolidations are captured onto the CIM. The CIM is fundamental to the identification of fake, duplicate and missing titles in the Quezon City pilot area and the processes should be integrated with other prototype processes. In particular, the CIM and associated database records as they are finished are then handed over to the Office and Field Validation steps, within PIO2. The integration of the CIM into the OSS and ROD is a key task in order for the quality of the records to be sustained into the future. The approach will involve feedback from community groups in all stages of the work in addition to PIO2 and other agencies in:

- procedures;
- technology;
- organisational arrangements;
- staffing and training;
- resource sustainability;
- quality assurance and management.

Recommendations

Considering the way in which this report is written and that it mainly deals with concerns and recommendations for LAM Program, the recommendations need to be read in conjunction with the entire report.

The main recommendations are:

- Considering the limited capacity of NAMRIA and the failure to adhere to contractual deadlines, it should be considered that for the LAM Program, international tenders be obtained for both the GPS and orthophoto map production;
- The way in which the metes and bound are presented in any documentation and survey plans be changed to the international convention, ie 265°35' not N85 35E for modern equipment read 265°35' and N85 35E needs to be calculated. This is a left over from the period early last century where some horizontal circles in the instrument (transits) were by quadrant;
- Allocated time given to an International Consultant to review DENR Administrative Order No 98-12 and to rewrite the order into act, regulations and recommended guidelines and practices, prior to the commencement of the LAM Program. This should be done in consultation with the GEP and a parliamentary draftsman so as the wording of the new laws (if redrafted) is succinct;
- A specialist consultant be engaged to review the academic sector and recommend changes into the curriculum so that the new graduates have a more in-depth knowledge of modern and relevant survey methodologies, this is vital for the future LAM Program;

- A governing body established similar to the various Surveyors Boards' found in the various states in Australia, that has teeth that will ensure that the surveying profession adheres to its code of conduct and its registered surveyors comply with the laws related to cadastral surveys and maintain their competence in all aspects of surveying with rigorous Continued Professional Development and to ostracize those who flaunt the laws and professional conduct;
- CIM should not be produced manually if there has not been any formal cadastral project performed in the urban situation. Survey control needs to be available. It is recommended that manual methods are done jointly with the orthophoto maps and survey plans.
- Time allocated for a study using a good quality digital camera for the archiving of documents and survey plans instead of scanning. This method was used for the survey plans on the AusAID funded SIISLAP project in the Solomon Islands with great success. This process is cheap and very fast, also it will only require one visit to the agency (except for data that is updated) and a digital image will be available for the encoding of data into the database and its verification;
- Suitable and accessible EDM bases, to recognized world standards, should be established within each region.
- Tribrach testers should be purchased and installed within each region and should be accessible to the general surveying community.

F: Survey Control

Within Quezon City no systematic cadastral survey was ever performed. Surveys in different parts of the five pilot barangays within Prototype 2 for the Land Administration & Management Project (PIO2) have either been connected to control points (BLLMs) in other municipalities, or are probably not connected to any control. It was therefore assumed that the isolated surveys were unlikely to be homogeneous making the integration of survey and mapping data across the five barangays very difficult.

Accordingly a program was developed to provide accurate homogeneous geodetic control on the national coordinate reference system, throughout the six pilot municipalities.

The main activities of the International Survey Control Adviser in Activity 22 were directed at assisting the survey staff of PIO2 in identifying and evaluating alternative methods for the establishment of geodetic control such that they would be suitable for replication on any future long term LAM program.

The main outputs were defined as follows:

- A report on the alternate survey control methods identified and their evaluation and comparison and workshops completed.

The existing regulations governing surveying are considered, particularly in relation to control survey activities.

CGSD should have completed its survey control activities for PIO2 by 30th June 2002 but had not done so. Accordingly some activities have continued. Control for the Orthophoto Mapping was completed by the end of October. Field inspections were scheduled for December 2002 to resolve some problems with the coordinates for CIM control.

A significant number of reobservations were needed for the monumented 3rd Order control points and they were scheduled to take place in early December, but completion may be delayed.. The completion of the Adviser's assignment raises the question of responsibility for validation of the final adjustment. The Adviser has agreed that the data should be sent to him for evaluation in his own time.

An assessment has been made of the capabilities of CGSD to undertake survey control activities in support of a long term LAMP. CGSD has deficiencies in the area of equipment and software maintenance and in the level of ancillary equipment to support its GPS operations. A lack of adequate supervision has affected some of their field operations. CGSD's adjustment capabilities do not meet the required level of proficiency for the national geodetic survey organisation. In addition, CGSD has not been sufficiently responsive to the project's requirements for geodetic control.

Some of the key recommendations are that:

- CGSD consider the comments regarding both equipment and software, and consider upgrading its equipment and software in line with these comments.
- CGSD should develop its expertise in geodetic adjustments to an advanced level, appropriate for the national geodetic agency.
- A number of other issues relevant to geodetic control matters have been addressed in the report and recommendations made.

- CGSD provide a prompt and efficient response to project requirements for geodetic control and that individual projects are completed without delay.

At a workshop held with representatives of the public and private sectors, and academic institutions the Adviser delivered two presentations titled: “Geodetic Control Approach & Procedures Developed for PIO2” and “Geodetic Control Other Issues for PIO2”.

The various surveying and mapping methods and the cadastral survey techniques that may be appropriate on a long term LAMP have been identified. In turn, the geodetic control requirements have been identified.

In assessing the value of a geodetic network, the absence of such a network is seen as leading to duplication of effort at a long term economic cost to the community. An adequate and easily accessible network therefore provides long term efficiency. The conservative estimate of the ratio of benefits to costs of a network are of the order of 1.7 - 4.5 to 1. A geodetic network is seen as a valuable national resource.

The key recommendations in relation to extension of the geodetic network in support of the long term LAMP are that:

- In urban areas, 3rd Order control points should be established at a maximum spacing of 1km. In establishing control points in a particular area, consideration should be given to the nature of the area. In areas where either streets are short, there are many short straights between bends, there is high density development, or hilly terrain, consideration should be given to establishing control points at a reduced spacing. Each area should be treated on its merits.
- Control points are not established as intervisible pairs.
- To support control of the 3rd Order points, 2nd Order control should be established at approximately 5-7km spacing. These 2nd Order points will be used as reference stations for fast static GPS control.

During November there were two workshops involving GEP members and others from the broader surveying community, including the academic sector. These workshops have started the consultation process and it is important to develop a strong cooperative working relationship with the overall surveying community on a broad range of matters related to surveying and mapping. It is recommended that:

- The project establish a consultative group comprised of: senior project GEs from PMO, PIO1 & PIO2; TAs who are surveyors; GEP representatives; academic representatives (from GE schools); and representatives of other government agencies involved in surveying and mapping activities. The consultative group should meet regularly to discuss matters of interest.
- The establishment of a network of monumented control points within the pilot municipalities should meet the future requirements of GEs for survey control, when working in these areas. For the first time they will have a network of accessible, accurate and homogeneous control as the basis for controlling the position, orientation and scale of surveys. The connection of surveys to this network will facilitate the plotting of surveys on the CIM. Therefore:
- Guidelines must be developed for surveyors working in the pilot municipalities to ensure that all surveys are connected to the two nearest and preferably three control points.

An instruction on the placement and maintenance of survey marks was developed during Activity 11. This instruction will not meet the long term needs in terms of a full mark maintenance program. In addition there is a need to consider the issue of access to property to carry out surveys. Accordingly it is recommended that:

- Consideration should be given to a full study to develop a comprehensive national mark maintenance program.
- As part of this study, the issue of accessibility to property to carry out surveys should be considered. Appropriate provisions should be included in any future Survey Act.

The existing EDM base at the University of the Philippines is inadequate for the proper calibration of modern EDM equipment and is not easily accessible to the national surveying community. There is also a need for tribrach testing facilities. It is recommended that:

- Suitable and accessible EDM bases, to recognized world standards, should be established within each region.
- Tribrach testers should be purchased and installed within each region and should be accessible to the general surveying community.

CGSD's geodetic database is in the process of being upgraded from the system developed under NRMDP. This is essential as it is the repository for all geodetic data in the country and any long term project will generate a very large amount of data. The project will need access to the database for data entry and retrieval, and the general survey community needs good access throughout the country. The issues of accessibility from outside CGSD have not been addressed. It is recommended that:

- The issue of accessibility to the CGSD Geodetic Database to update data and to obtain control information should be investigated and addressed.

The "Revised Manual of Land Surveying Regulations in the Philippines" or DENR AO 98-12 is considered to be outdated and inappropriate. To enable the surveying profession to meet the ongoing needs of a long term LAMP very substantial reforms of survey practices are required. It is suggested that AO 98-12 should be replaced. It is recommended that:

- There be a full study into the control and regulation of surveying in the Philippines and that an appropriate legislative and regulatory framework is established to modernise the practice of surveying.
- As part of the study, draft legislation and regulations should be developed in consultation with the appropriate survey authorities and GEP.

To ensure the success of the proposed long term LAMP, it will be necessary for GEs and other survey personnel within both government and the private sector to upgrade their skills and modernise their equipment and techniques so that they can provide an efficient and effective response to the project's survey and mapping requirements. A proposal is being prepared for survey curriculum development at the vocational, undergraduate and postgraduate levels, in cooperation with an Australian university. It is recommended that:

- The curriculum development proposal is pursued to ensure that appropriate survey education and training is available at each of the three levels.

The Institutional Arrangements Policy Study has made a number of recommendations regarding a possible structure for the proposed Land Administration Authority (LAA). Comments and suggestions are made in relation to geodetic control functions within the LAA. It is recommended that:

- A Geodetic Network Section (GNS) be created in the proposed Mapping & Survey Standards Division.
- A Geodetic Control Section (GCS), Regional Geodetic Control Sections (RGCS) and Mark Maintenance Sections (MMS) be created, in the proposed Mapping & Survey Services Division.