

Government Spatial Information Activity 1999-2000

Pilot Survey

**Office of Economic and Statistical Research
July 2001**

All responses were collected under the Government's Statistical Returns Act (1896) which means that penalties would apply under the laws of Queensland for anyone who releases any responses which would identify individual respondents. Accordingly, the respondent agencies to the survey are not identified in this report.

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1.0 Executive Summary

Background

This project aimed to develop metrics for the measurement of the value of production and use of spatial information in Government.

A better understanding of appropriate metrics for spatial information activity would allow:

- more accurate assessment of the impact on the current economy;
- means to identify potential for export growth in the industry;
- government agencies to consider spatial information initiatives as part of their corporate strategic plan; and
- a more informed base to assist policy on business principles for government operating in the spatial information supply chain.

The project was to deliver to Queensland Spatial Information Infrastructure Council (QSIIC) a framework for collecting metrics for the spatial information industry. The Government Spatial Information Activity Pilot Survey project was conducted by the Office of Economic and Statistical Research for QSIIC.

The aim of this report is to provide an overview of the process and results of the project. As the project was a pilot, the report focuses mainly on the process.

The results

The pilot survey was limited to 12 government agencies, six of which were Government departments, three were government-owned corporations and three were local governments. They were asked to provide responses in relation to databases or activities with a significant spatial component. One government department responded that it did not have databases within the scope of the survey and one government-owned corporation was unable to reply in the timeframe.

There were two survey forms, Part A containing whole of agency questions and Part B which sought data about activities with a significant spatial component.

Part A aimed to provide information at the corporate level for the agency. The agencies responded by either –

1. Able to provide all required data (2 respondents in this category);
2. Able to provide nearly all data (2 respondents in this category);
3. Found it difficult to complete the form and did their best (5 respondents in this category); and
4. Not able to complete the form (1 respondent in this category).

Part B was to be completed for each database or activity that the respondents identified as having a “critical” spatial information component. The agencies responded by either –

1. Able to report separately on each identified database (4 respondents in this category);

2. Not able to report separately on each identified database (4 respondents in this category);
3. Reported data in one Form B for databases that are incorporated into a network system (2 respondents in this category); and
4. Not able to participate in the pilot survey (1 respondent in this category).

The project produced data from those agencies which were able to respond in the time frame. These data indicate that:

- 29 databases with significant spatial elements were identified in the agencies which responded;
- 752.9 full-time equivalent officers were engaged in spatial activities and a further 2250 were identified as substantial users of spatial databases;
- \$17.2m was spent on the spatial databases in 1999/2000, which represented less than 0.5% of the agencies' expenditure. Most of these supplies were from Queensland; and
- \$6.7m in revenue was received for spatial activities related to these databases, a large portion of which came from commercialised units of local government.

Form A data was used for the calculation of percentage of agency activity which is spatial, in terms of staff numbers, expenditure and revenue. A full-scale survey would deliver the distribution of spatial activity for agencies. The respondents surveyed may be unrepresentative.

Conclusions and recommendations

The context of the spatial information activity as defined by the survey needs to be better understood by respondents if data collections are to provide consistent results. Respondents have different levels of understanding of spatial activity. The definition needs to focus on the specific spatial activities which are above and beyond general information activities, if we are to assess the additional impact to the economy of spatial information activity.

Recommendation: The QSIIC Communication Strategy include material clarifying what the “spatial information activity” comprises, in a way which facilitates and is consistent with the collection of data about the activity.

Generally, financial data are not readily available in the detailed formats sought. Agencies do not have reporting systems which allow for disaggregation of data into some key categories. Questions on revenue and expenditure often end up with financial staff who do not have detailed understanding of spatial activity and thus lack the ability to segment total figures.

Recommendation: Undertake further analysis of the possible sources of financial and personnel data about spatial activities, in consultation with officers with intimate knowledge of the operations of their spatial activity.

Some agencies reported multiple databases as one activity while other agencies reported each database separately. This made comparisons of data about individual databases or activities meaningless, as like was not being compared with like. The alternative is to take an “integrated systems” or “whole of agency approach” to the way we collect data on spatial information

activities within an agency. This means that respondents would only be asked to provide data about the integrated system or whole of agency activity, which would simplify reporting by agencies, particularly where the same staff work on many databases or activities.

Recommendation: The unit of reporting of subsequent surveys should be on an agency's total suite of spatial activities.

The pilot survey did not provide much time for respondents, with a range of public holidays, other commitments, officers changing positions and restructuring of departments occurring during the collection period. Also, agencies are organised in various ways in relation to spatial activities. Some have a single budget which spans an area of work which is all spatial, other areas have a budget group within which not all activity is spatial, and in other cases, there are regional components of a spatial activity which are outside the respondent's area of immediate influence. The respondent needs to be able to draw on a number of people including finance/budget, GIS manager and regional officers to complete the returns.

Recommendations:

- Engage respondents in developing their in-house collection strategy and sign off on it; and
- Give respondents adequate time to implement their strategy.

Responding to the survey required a substantial investment of time from agencies. The high level of commitment to the project on the part of the respondents was critical to the level of success. The key contacts for the pilot survey were selected as those involved in the spatial information area and/or members of spatial information organisations. It is expected that the pilot process went more smoothly than might be expected from a general widespread survey. Another factor to consider is possible delays because required information may not be readily available. It may also be useful to consider discussing and working out possible alternative processes with less committed survey participants.

Recommendations: –

- Put emphasis on developing commitment to the project, involve senior management and set up workshops/meet face to face with some or all agencies;
- Develop the questionnaires with a sample of respondents prior to conducting survey to get their ideas on workable strategies;
- Invite some of potential respondents into the project team and work through together; and
- Set achievable timeframes for all respondents.

The staffing data provided useful information on numbers of officers involved in spatial activities. The broad classes of activity of staff appear useful, except that the users of data should be separated from the producers, noting that some folk will be both producers and users. A rule will be required to apportion a person's activities across these categories. It may also be useful to propose a short classification of the occupations of users, including statistician, policy analyst, planner, surveyor and others. This could inform about the value adding activities. The occupation

of the producers may also help to identify which of the industry classification groups is a substantial contributor to spatial activity, such as ANZSIC 7822 Surveying services.

The users captured by the pilot were the in-house users. There maybe some value in considering the potential to obtain information of the external users.

Recommendation: Consider collecting occupations as a means to further understand producers and users of spatial products.

The categories of items of expenditure identified the substantial labour component in spatial activity costs and clarified the balance between current and capital. Notionally the capital expenditure should inform us of the investment in the activity.

To estimate the net contribution of government production of spatial activity to the Queensland economy, we will need the expenditure and revenue figures separately for Queensland, interstate and overseas. These data were not readily available and there was some lack of clarity about the appropriate treatment of the purchase of overseas inputs from a local supplier.

Recommendation: Discussions be held with agencies about means to identify overseas and interstate revenue and expenditure.

The major part of the revenue data captured in this pilot survey was from service agreements between a local government and its privatised corporations.

Recommendation: The treatment of this needs further discussion.

The custodial practices questions were included in the survey as an interest rather than directly in relation to the economic contribution of spatial activities. It indicates that more can be done in some areas, such as charters, to improve the flow of spatial information.

There is no data in the survey which identifies areas within the activity which show potential export or other earnings.

Recommendation: Consider a question for respondents to identify areas of export potential, particularly if surveying private sector.

Overall

Traditional industry classifications are not a good framework for measuring the contribution of spatial information activity to an economy, because spatial activity is an input into many other activities undertaken by government and private businesses in the state. For example, a Geographic Information System for emergency services substantially improves the efficiency and effectiveness of the delivery of emergency services to the people of Queensland. However, quantifying the improvements in efficiency or effectiveness may be better done on a case study

basis for individual services. It may be difficult to add all the benefits together to arrive at an overall efficiency measure of spatial information activity.

Spatial information about Queensland is only applied within Queensland for a range of government and business purposes. That is, while systems may be sold, the spatial data relates only to activity within Queensland. Therefore, exports from spatial information activity would relate only to the systems which may have application in other states or countries.

To assess the impact of government spatial information activity on the Queensland economy, the key measures for government activity should be:

- government expenditure on spatial information activity as a proportion of total expenditure;
- employment in the production and use of spatial information, as a proportion of total government employment; and
- government revenues from spatial information activity as a proportion of receipts for goods and services.

Similar measures would apply if assessing the impact of spatial information activity in the private sector.

It is clear that agencies or businesses consuming spatial information products need to fully understand spatial information activity and its contributions to the efficiencies in the production of other outputs. They would then need to be able to derive estimates of the above measures for the full effect of the spatial information activity to be estimated.

For producers of spatial information products, the production of these measures will be simpler. For example, the Department of Innovation and Information Economy's *Queensland Communication and Information Industry Survey 1999/2000* provided data on employment, revenues and exports.

Recommendations:

- a pilot survey be undertaken of Queensland businesses which produce spatial information products to assess their readiness to provide data on the key measures. This could be achieved as additional questions to the Department of Innovation and Information Economy's *Queensland Communication and Information Industry Survey* if it is repeated; and
- a full survey of the production of spatial information data and products in Queensland government sector, focussing on the measures above be completed with improved methodologies as recommended.

2.0 Background

2.1 Purpose

Ready access to high quality spatial information is critical for strategic management and the ability to plan, implement and evaluate activities and output. There is much said about the value of the spatial information industry to the economy and its potential for export revenues. However, the absence of well-defined metrics undermines these statements.

Government has been focused on the potential for information industries to provide jobs and advance the economy. Government is also a large player in the spatial information field, being a large producer of information and also being a major user of it.

This project aimed to develop metrics for the measurement of the value of production and use of spatial information in Government.

A better understanding of appropriate metrics for spatial information activity will allow:

- more accurate assessment of the impact on the current economy;
- means to identify potential for export growth in the industry;
- government agencies to consider spatial information initiatives as part of their corporate strategic plan; and
- a more informed base to assist policy on business principles for government operating in the spatial information supply chain.

The project was to deliver to Queensland Spatial Information Infrastructure Council (QSIIC) a framework for collecting metrics for the spatial information industry including:

- Register of contacts within the government sector directly interested in or dealing with spatial information;
- Refined methodology for measuring the impact of spatial information;
- Survey definitional parameters; and
- Data set that will provide baseline data for future benchmarking.

It is anticipated that regular conduct of surveys of both the public and private sectors would provide on-going time-series analysis opportunities.

2.2 Stakeholders

The project identified the following stakeholders:

- Queensland Spatial Information Infrastructure Council (QSIIC)
- Spatial Queensland Inc
- Queensland Government Departments and Agencies
- Queensland Government Owned Corporations
- Queensland Local Government Authorities

The Project is managed by the Office of Economic and Statistical Research (OESR) through Qstats and reports to QSIIC through the QSIIC Supply Chain Committee.

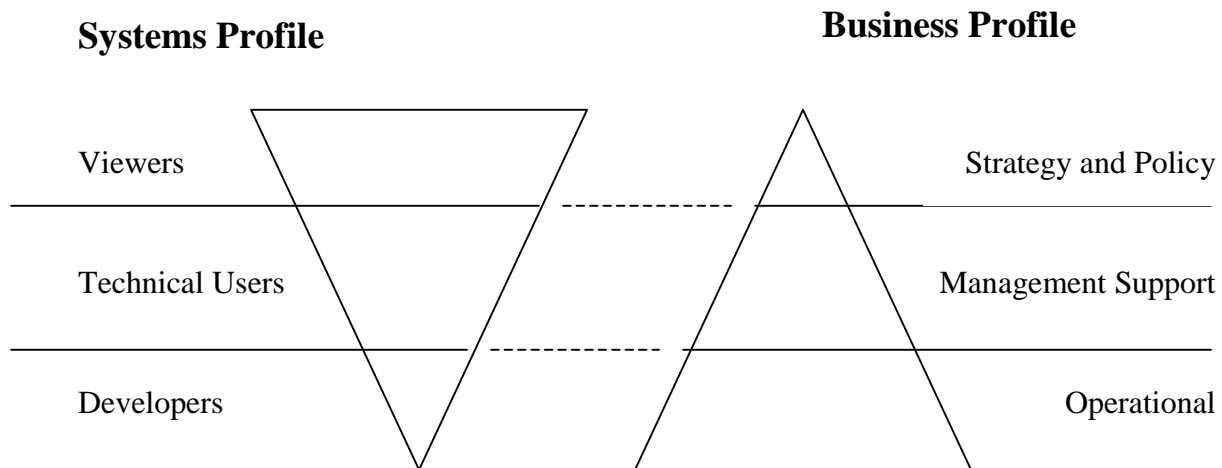
2.3 Scope of Spatial Information Activity for the Survey

The definition and framework for spatial information activity was a challenge for the project team. The term “spatial information” is difficult to understand by those not directly involved in the more traditional areas of mapping and surveying. There are many terms used and their use is often inconsistent. A further complication was that the importance of spatial information is not well communicated nor understood by executive level management.

The typical spatial information system implementation suggests that for every developer (specialist) there will be at least 10 technical users that will manage updates to the system and produce custom outputs. There are 10 times again the number of viewers of the system who will have access over the network or internet.

The business usage of spatial information indicates an inverse profile where it could be argued that at the operational level (designers, field workers, etc..) there are at least 10 times greater uses of spatial information than the management decision support uses. And, perhaps 10 times fewer uses of spatial information applied to strategy and policy issues of an organisation. The following provides a schematic of this relationship.

Spatial Information Application Profile



After due consideration by the project team, the spatial information scope for the survey was stated and endorsed by the QSIIC Supply Chain Committee as follows

Spatial Information Context for this Survey

The information we are asking you to provide in this survey specifically refers to digital databases where **positional attributes** are critical to the use of the data, ie spatial information adds substantial value to the use of the data.

In all the databases or activities that you have identified as having a “critical” spatial information component, the questionnaire covers the spatial information activities of data collection, conversion (digitising), distribution, database maintenance, spatial information products and services, spatial information technology systems, employment to perform these functions, and custodial practices for each dataset.

Spatial Information consists of that *primary spatial information* that provides the necessary graphical framework or locations that users can reference *attribute information*.

The following broad themes are often used to distinguish the many forms of *primary spatial information*. Some examples are provided.

Point – natural feature, reference point, spot height, area centroid, etc.

Line (or connected points) – road, railway, boundary, contour, etc.

Polygon (or connected points forming a polygon) – land parcel, country, region, etc.

For the purpose of this definition, *attribute information* can be grouped into two major themes. Positional – lot/plan, latitude/longitude coordinates, property address, place name, calculated area, survey plans, position details/references, etc.

Non-positional – population statistics, property sale price, property owners, vegetation/soil type, climate, dwelling statistics, etc

We obtained comments from respondents about their usual understanding of the term. These comments broadly support this one used for this project. A list of their comments is included at section 4.2.

2.4 Concepts for measuring Spatial Information Activity

The measurement of the value of spatial information activity using official industry data classification will be difficult. Industries in Australia are classified to various categories using the Australian and New Zealand Standard Industrial Classification (ANZSIC). Industries are classified to a particular category depending on the classification of the main product or service that the industry produces. Within the ANZSIC framework there is no specific industry for spatial information, however, a number of ANZSIC categories include industries which provide spatial services. These industries include ANZSIC 7821, Architectural services which includes town planning services, ANZSIC 7822 Surveying services and ANZSIC 7823, Consulting

engineering services which includes traffic engineering services. In addition, small parts of other industry categories such as ANZSIC 7834, Computer consultancy services which includes software production may be considered as providing spatial information where the software that they are designing is used to store or analyse spatial information. Only the ANZSIC category 7822 seems to consist of industries that could be considered as predominantly producing spatial information.

A further difficulty with measurement of the value of spatial information is that the main users and producers of spatial information are government authorities. These authorities include state government agencies, government owned corporations and local governments. For these authorities the spatial information is not so much an output in itself but an input in the process of delivering their products and services. The value of the information is not equivalent to the value of the service that they deliver although it is some part of it. This is because, as an input, the spatial information improves the efficiency of delivery of the product or service business produce.

The value of using spatial information was outside the scope of this project. Consequently, respondents were not asked to assess the value added by the spatial information or, conversely, what could not be done without it. However, responses from Question 7 identified simply that additional operational costs would occur in *staffing* (19 collections), *data capture* (20), *operational delays* (23) and *other areas* (4) if the database did not exist. Respondents also indicated that it would be difficult to quantify these additional costs.

2.5 Spatial Information Skills

Spatial Information Skills are those needed to describe, communicate, interpret and analyse issues involving locations or known places in the natural and built environments. At elementary levels, spatial information skills may involve two or more people in a verbal communication about a place or a few people in preparing, reading and understanding simple sketch plans. However, within a sophisticated environment of emerging information technologies, description and interpretation involves computers, telecommunication networks, digital data flows and sophisticated data processing. This environment embraces a number of evolving technologies as in geographic information systems, computer-aided design, and various spatial and simulation models for planning and decision support.

Spatial information skills interact with a variety of disciplines where location is an important element of analysis. These disciplines include archaeology, architecture, cartography, earth and environmental sciences, geography, remote sensing, urban and regional sciences and transportation.

The survey did not seek detailed information on the skills of staff but did obtain data on broad classes of activities applied to spatial databases. The existence of skills in this area would enhance the efficiency of producing analysis of data and permits analysis that would not be undertaken otherwise.

The survey also sought data on whether training in this field is offered.

3.0 Methodology

3.1 Process

A sample survey of government departments, government-owned corporations and local government authorities was conducted as a pilot. This would assess the definition of appropriate metrics for measuring value and use of spatial information. As a consequence of this pilot, a follow-up main survey would be conducted at a later date to assess and measure the impact of strategic spatial information in the government sector. The pilot would also inform the refinement of the metrics for inclusion in that main survey.

The project was divided into five main stages:

Stage	Activity	Participant	Contribution
Scoping and definition of metrics	To develop an agreed set of data items with definitions for collection	Mark Watt John Cook OESR QSIIS Information Office	Linkages with private sector and other jurisdictions including national industry initiatives. Market segmentation and impact analysis. Skills, education perspective, academic sector linkage. Economic and industry sector mapping. Historical and future trends perspective. Project management. Industry economic classification. Coordination of information sources and industry contacts.
Survey	Small sample survey to test metrics and to provide baseline data for any subsequent surveys	OESR	Statistical survey design, conduct and data analysis
Assessment and report	Review of the results of the survey and development of recommended future approaches	Mark Watt John Cook OESR QSIIS Information Office	Interpretation of terminology and classifications for consistent application to private sector. Editorial review and expert analysis.
Planning	Implications and planning workshop to identify linkages with existing data (eg <i>Old C&I Industry Survey</i>), the future direction ('where to from here'), and appropriate	OESR QSIIS Information Office QSIIC Supply Chain Committee	Interaction. Consensus. Future direction.

	strategies		
Dissemination	Presentation of the results of the project, including recommendations	OESR QSIIS Information Office	Presentation to QSIIC. Communication with stakeholders.

3.2 Coverage

The pilot survey has been limited to the 12 government agencies. Within these, six agencies were state Government departments, three government-owned corporations and three local governments. The focus in the selection of potential respondents for the pilot survey was on those government agencies that we could identify as having a strong interest or investment in the creation, acquisition, dissemination, analysis or application of spatial information. A further selection criterion of agencies was that agencies were broadly representative of their sector.

3.3 Confidentiality

Respondents were advised that the project would not present material which would allow the identification of individual organisations. As a result, names are not provided in this report.

3.4 Questionnaire Design

Questionnaires were designed by the working group and reviewed by the Supply Chain Committee. There were two parts. These are provided at Appendix 1:

Part A was a whole of agency part aimed to provide information at the corporate level for the agency. It sought data and information on the following:

- the respondents were asked to list their agency’s databases that have an identified “critical” spatial information component. They were to provide information on those databases in the Part B of the survey;
- information on whether an agency is a User, Producer or both, User and Producer of spatial information;
- number of FTE (Full-Time Equivalent) staff employed (male/female/total);
- expenditure (current and capital) for the financial year 1999/2000 and planned 2000/2001 expenditure; employee expenses and other expenses; current and capital expenditure by source – Queensland, Interstate, Overseas; and, for capital and current expenditure/other expenses 1999/2000, a further breakdown by source - Queensland State Government, Queensland Government Owned Corporations, Commonwealth Government, Local Government, Private Sector, Academia;
- revenue for the financial year 1999/2000 by source - Queensland, Interstate, Overseas, with a further breakdown for Queensland State Government, Queensland Government Owned Corporations, Commonwealth Government, Local Government, Private Sector, Academia; and

- at the end of the form, respondents were asked for additional comments they may have that could assist in interpreting the information provided in Part A.

Part B was to be completed for each database or separate activity that has identified “critical” spatial information component. It sought data and information on the following:

- number of FTE (Full-Time Equivalent) staff (male/female/total) engaged in the spatial information database / activity (roles – capture data, data management, distribution, value adding, user for business purposes, other);
- information on staff training in spatial information skills, including whether training is provided by the agency and/or sourced externally, or no training is provided for staff;
- database/activity expenditure (current and capital) for the financial year 1999/2000 and planned 2000/2001 expenditure; employee expenses and other expenses on data, software, hardware, contractors/consultants/including training, other; current and capital expenditure by source – Queensland, Interstate, Overseas, and for capital and current expenditure/other expenses 1999/2000 a further breakdown by source - Queensland State Government, Queensland Government Owned Corporations, Commonwealth Government, Local Government, Private Sector, Academia;
- revenue for the financial year 1999/2000 from spatial information - data, software, consulting/contracting services including training, other; by source - Queensland, Interstate, Overseas, with further breakdown for Queensland State Government, Queensland Government Owned Corporations, Commonwealth Government, Local Government, Private Sector, Academia; percentage of total revenue from the following groups – agriculture, mining, manufacturing, construction, government (local, other state, commonwealth), tourism, other;
- information about the form of distribution of spatial information products to users in the financial year 1999/2000 and over the next 5 years; forms – hard copy, digital, web based; respondents were asked to state percentage of distribution of spatial information products in those forms;
- information on custodial practices regarding informing clients, dataset maintenance and provision of dataset;
- additional information, including comments on what their agency defines as spatial information, what are the benefits of spatial information in database(s) they provided information on, and what additional costs their agency would incur if database(s) would not exist (additional staffing, data capture, operational delays, other); and
- each section of Part B included comments space for respondents to provide any comments they may have about the particular section’s content.

3.5 Administration of the survey Forms

Administration of the forms to agencies followed the following steps:

1. A key contact person for each agency was identified and informed of the incoming survey.
2. Survey Forms (agency Part A, database/activity Part B) were provided to the key contact by post and by email. The survey package included the survey letter addressed to the key

contact for the agency and signed by the Government Statistician, survey Forms A and B, notes on key terms and a reply paid envelope.

3. Copies of Part B were to be provided to each potential area within the agency by the key contact.
4. The key contacts coordinated the responses for their agencies and returned the completed survey forms to the Office of Economic and Statistical Research.

3.6 Communication process

Communication with the key contact person for the agency prior to and during the survey process was as follows:

- The key contact person for agency was identified and informed of incoming survey 4 weeks before the survey commencement. Contact details were obtained.
- The key contact person for agency was contacted (by phone, one contact internal) the day before the survey postout. Contact details confirmed were applicable (successfully contacted 8, left 3 messages on answering machines).
- The survey package was posted and also sent via email on the same day to each of the key contacts for agencies participating in the survey.
- The project officer contacted each key contact person within a week of posting the survey to confirm receipt of the survey, ability to complete within the specified due date and any issues that would require a meeting to discuss with the key contact or persons actually completing the survey. Also confirmed OESR's availability to assist in completion of the survey forms by clarifying identified difficulties or issues as communicated by agencies. Each agency had been given full contact details by OESR in case assistance was required.
- Key contacts were asked for full cooperation in this project and that the two-way communication process should take place during the survey process.

3.7 Enquiries from the respondents

The nature of enquiries received did not require face-to-face meetings to discuss the issues raised. They were dealt over the phone to the satisfaction of both parties. Out of the 12 participating agencies, only one respondent asked to set up a meeting. When more details became available about the nature of his query to the survey, the issues were resolved over the phone.

3.8 Response to the survey

During the time allotted for response, regular contact was made with agency key contacts to check on progress agencies were making in completing the survey. The result of those contacts indicated difficulties with successful completion by the due date for various reasons. These reasons could be categorised into technical and operational/communication issues.

Technical issues included:

- major difficulty in providing data for Part B separately for each database, especially on expenditure and revenue breakdown into more details;
- too many databases to report on;

- agencies' accounting systems do not allow extraction of the data in the formats sought by the survey for each database and for some whole of agency data; and
- difficulties in providing staff numbers to Forms A and B as some agencies' operations are located in regions.

Operational / Communication issues included:

- change of key contact person;
- the survey forms passed onto another person/area;
- lack of cooperation within agencies' different areas - key contact found it difficult to collect returns within his/her agency;
- people generally very busy – low priority for additional requests like this pilot survey;
- not enough time to complete the survey;
- some agencies' operations are located in various regions;
- the survey timeframe coincided with the Easter holiday period and Anzac Day, some people were taking leave from work;
- communication issues – in some cases respondents not coming forward and communicating arising difficulties in completing the survey and unless they are asked questions then appears that issues can be resolved in another way;
- respondents not responding to messages left on agencies' answering machines or messages left with other staff; and
- respondents not communicating difficulties in meeting survey deadline.

3.9 Timeliness of responses

The survey due date was 17 April 2001. One Part B was returned by one of the state Government agencies by this date.

The follow up on the outstanding survey returns commenced on the 17 April by way of phone calls to the survey respondents. A detailed record of the follow up on the non-response including dates of contact, comments and outcome was maintained.

3.10 Data Verification

On the receipt of the completed survey forms manual checks of the information on the forms were undertaken. This was followed by phone calls to the respondents to clarify any issues.

4.0 Results – The Process

4.1 The questionnaire content

The questionnaire development sought to extend agencies to their limits to accurately gauge the ability to respond. The content attempted to consider some of the issues in the QSIIC Strategic Plan, such as including questions on staff and training which might inform the need for skills development and questions on custodial practices..

For all the databases or activities that the respondents have identified as having a “critical” spatial information component, the survey Part B covered the spatial information activities of data collection, conversion (digitising), distribution, data maintenance, spatial information products and services, spatial information technology systems, employment to perform these functions and custodial practices for each dataset.

4.2 Identification of spatial activities – the definition

The information sought in the pilot survey specifically referred to digital databases where positional attributes are critical to the use of the data, ie spatial information adds substantial value to the use of the data. This excluded non-digital mapping.....

The respondents to the pilot survey were asked for their agency’s definition of spatial information. The responses were as follows:

- Spatial information is information that is associated with a position on the surface of the Earth.
- Any data that relates to a location on the surface of the Earth. Thus any data about a feature of or on a road is spatial information.
- Respondent listed the following: mining tenure and exploration title data (including gas and petroleum pipelines), geoscience data (geology, geophysics, boreholes, etc), mine location and mineral occurrence data, mining and coal resource areas, areas subject to mining restrictions.
- Information about the location, shape and relationships among geographic features.
- Spatial information is the graphical representation and spatial definition of objects and data that has a reference to a position on the Earth.
- As per the definition set out earlier in this survey. All data that our agency has collected and added as an enhancement to the base layer DNR’s DCDB.
- Spatial information is not a term in common use at our agency. Most employees experience of (and perspective of) GIS focuses on the uses they can make of GIS functionality available to them. As an institution, our agency is more concerned with operational uses of GIS software rather than specific data.
- Any dataset that has a spatial identifier.

4.3 Agency ability to complete questions

The following relates to the ten (10) agencies which completed the pilot survey. In this, 9 agencies completed Part A and all 10 agencies completed Part B of the survey.

Part A –

Part A of the pilot survey aimed to provide information at the corporate level for the agency.

The agencies responded to this requirement in one of the following ways:

1. **Able to provide all required data**, ie provided answers to all questions and further data breakdown as the form required, no technical difficulties were acknowledged. There were 2 respondents in this category, government owned corporation and local government agency.
2. **Able to provide nearly all data**, ie provided answers to all questions in Part A and further data breakdown with 2 exceptions (1. re revenue - unable to dissect government grants into State and Federal; 2. could not give staff numbers for male/female breakdown. There were 2 respondents in this category, both local government agencies.
3. **Found it difficult to complete the form / did their best**, ie provided answers to all questions in Part A. Problems were experienced with a breakdown of expenditure and revenue, and staff numbers by male/female.

The following comments were received:

- Provided data as per 1999/00 Operating Statement of the agency and from Ministerial Portfolio Statement 2000/01; breakdown provided but as an approximate split; comment re expenditure that in accordance with Australian Accounting Standards expenses are not reported separately for current and capital.
- 1999/2000 expenditure and revenue information sourced from the agency's Annual Report 1999/2000; 2000/2001 revenue and expenditure information sourced from the Ministerial Portfolio Statements 2000-01 State Budget of the agency; the planned expenditure and revenue for 2000/01 are estimates only; a breakdown of expenditure and revenue not available and would require significant analysis of financial records.
- Experienced the following problem completing the survey: breaking 'sourced from' down to employee expenses/other expenses for both current and capital expenditure; this then makes it difficult to breakdown the table 3b which is at a lower level again; same for revenue data.
- The above figures have been taken from the agency's annual report 1999/2000. These figures are the respondent's interpretation and breakdown of the financial statements. They are possibly incorrect from an accounting point of view. As for the male/female breakdown for staff, it would take HR a week to get the figures to respondent. No planned expenditure data was provided.

In this category there were 5 respondents, all state government agencies.

4. **Not able to fully complete the Part A**, ie. late response with only some questions completed. There was only one respondent in this category, one of government owned corporations (completed only Q1 and Q2, no expenditure or revenue data provided).

Part B –

The Part B of the pilot survey had to be completed for each database / activity that the respondents have identified as having a “critical” spatial information component.

The agencies responded to this requirement by either:

1. **Able to report separately on each identified database**, ie one Part B was completed for each database. There were 4 respondents in this category, 3 state Government departments, and 1 government owned corporation. In that, one respondent has only completed 11 Forms B for those spatial databases with a 1999/2000 or 2000/2001 expenditure greater than \$250,000. This respondent has over 10 additional “spatial” databases with a 1999/2000 or 2000/2001 expenditure less than \$250,000 where no B Forms have been completed. This was due to the extensive time requirement to complete the form. Another respondent only partially completed the survey by provided answers only to 2 sections for each of the databases (section 1. Database/Activity, section 2. Staff).
2. **Not able to report separately on each identified database**, ie respondents reported on all identified databases in one Part B. There were 4 respondents in this category, 1 state Government department (257 databases) and 3 local government agencies.
3. **Reported data in one Part B for databases that are incorporated into a network system**, eg MERLIN (Minerals & Energy Resource Location Information Network) incorporates Mining Tenure Database and Geoscience and Resource Database. These databases are linked and would be very difficult to report on each one separately. There were 2 respondents in this category, a state Government department and a government owned corporation.
4. **Not able to participate in the survey**, ie the agency does not have digital databases where positional attributes are “critical” to the use of the data. There was 1 agency in this category, state Government department.

Appendix 2 Summary Assessment of Agency Responses, and Appendix 3 Comments on Project from Respondents, summarises the comments of agencies on all forms and Appendix 4 Analysis of Part B Questions, provides a detailed question by question analysis.

4.4 Conclusions

The context of the spatial information activity as defined by the survey needs to be better understood by respondents if data collections are to provide consistent results. Because of the inconsistent use of terminology by the industry, respondents will require assistance in clarification of meanings of the different terminology.

Recommendation: The QSIIC Communication Strategy include material clarifying what the “spatial information activity” comprises, in a way which facilitates and is consistent with the collection of data about the activity.

Some agencies reported multiple databases as one activity. This indicates that there may be potential for developing an “integrated systems” approach to the way we view spatial information activities within an agency. This would have implications for a consistent approach to the unit of collection in subsequent surveys, noting that respondents would only be asked to provide data about the integrated system. For the purpose of estimating spatial activity, it would be adequate to have data aboutspatial activities at a whole-of-agency level. This may simplify reporting by agencies, particularly where the same staff work on many databases/ activities.

Recommendation: The focus of subsequent surveys should be on an agency’s integrated suite of spatial activities.

Generally, financial data are not readily available in the formats sought. Agencies do not have reporting systems which allow for disaggregation of data into some key categories. Questions on revenue and expenditure often end up with financial staff who do not have detailed understanding of spatial activity and thus lack the ability to segment total figures.

Recommendation: Undertake further analysis of the possible sources of financial and personnel data about spatial activities, in consultation with officers with intimate knowledge of the operations of their spatial activity.

The pilot survey did not provide a lot of time for respondents, with a range of public holidays, other commitments, officers changing positions and restructuring of departments. Also, agencies are organised in various ways in relation to spatial activities. Some have a single budget which spans an area of work which is all spatial, other areas have a budget group within which not all activity is spatial, and in other cases, there are regional components of an activity which are outside the respondent’s area of immediate influence. The respondent needs to be able to draw on a number of people including finance/budget, GIS manager and regional officers to complete the returns.

Recommendations:

- Engage respondents in developing their in-house collection strategy and sign off on it; and
- Give respondents adequate time to implement their strategy.

Responding to the survey required a substantial investment of time from agencies. Commitment to the project on the part of the respondents was critical to the level of success. The key contacts for the pilot survey were selected as those involved in the spatial information area and/or members of spatial information organisations. It is expected that the pilot process went more smoothly than might be expected from a general widespread survey. Other factors to consider included possible delays because required information may not be readily available and it may be

useful to consider discussing and working out possible alternative processes with less committed survey participants.

Recommendations: –

- Put emphasis on the commitment to project, involve senior management and set up workshops/meet face to face with some or all agencies;
- Develop the questionnaires with a sample of respondents prior to conducting survey to get their feedback on workable strategies;
- Invite some of potential respondents into the project team and work through together; and
- Set achievable timeframes for all respondents.

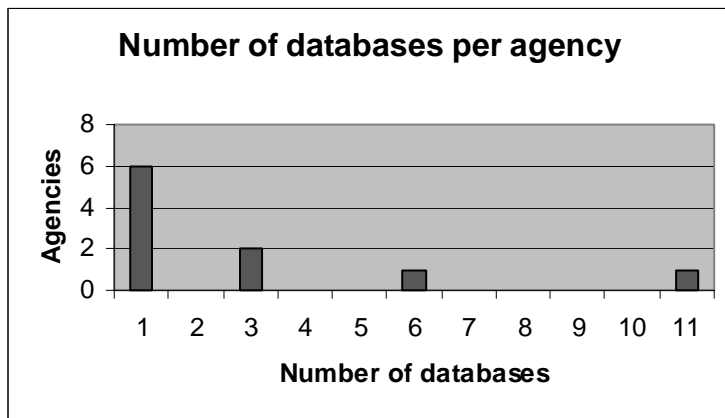
5.0 Results – The Data

The following results are provided as an indication of the data which might result from a full survey. Because of the small sample and agency difficulty in completing the forms, the data should be seen as indicative only. Some of the data received were estimates only. However, they are provided to gauge a reaction from the reports' audience. Appendix 2 contains the survey data and Appendix 1 the response numbers for each cell.

Four respondents reported on multiple databases as one activity because they were unable to separate them. The following analysis regards these as one database/activity.

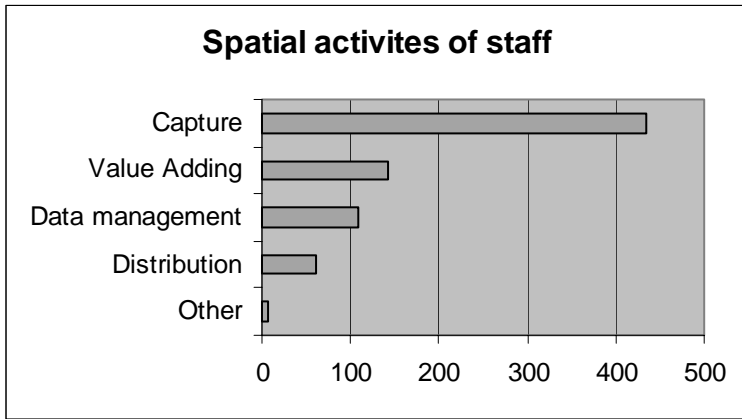
5.1 Databases/activities

There were a total of 29 databases/activities reported as having a significant spatial component. There were 6 agencies which reported having 1 database, 2 reported 3 databases, 1 agency reported 6 databases and 1 reported 11, as shown in the following graph.



5.2 Staffing

Of those agencies which were able to provide data about staffing, the staffing for the databases and activities excluding “user for business” represented a total of 752.9 full time equivalents. Of these, one third were female. The distribution of activities in which staff were engaged is shown in the following figure. The greatest numbers are engaged in data capture.

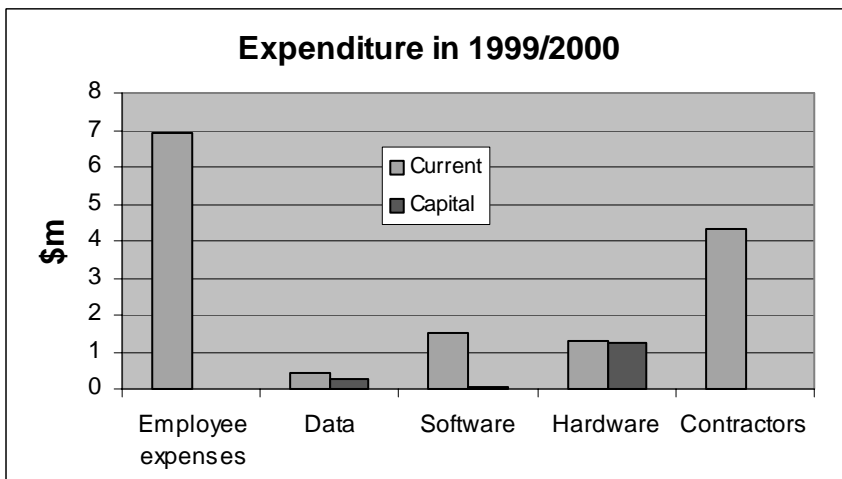


Large numbers (2250) of staff were identified as being users of spatial information for business purposes. The 752.9 full time equivalents engaged in spatial activities represented 2.5% of all staff for organisations responding and the total of 3002.9, including the users, represented 17%.

Training was provided to staff internally for 28 out of the 29 collections and externally by 22 (76%). Staff of only one collection received no training, but this collection only had staff who use the data counted, inferring that whilst it is significant for users it has no major current spatial development or maintenance activity.

5.3 Expenditure

The total expenditure on the databases reported in the survey was \$17,220,000. This represented an average of \$594,000 per database and less than 0.5% of total agency expenditure. The greatest percentage of this expenditure was in staff salaries 40% followed by contractors 25%, as shown in the following chart.

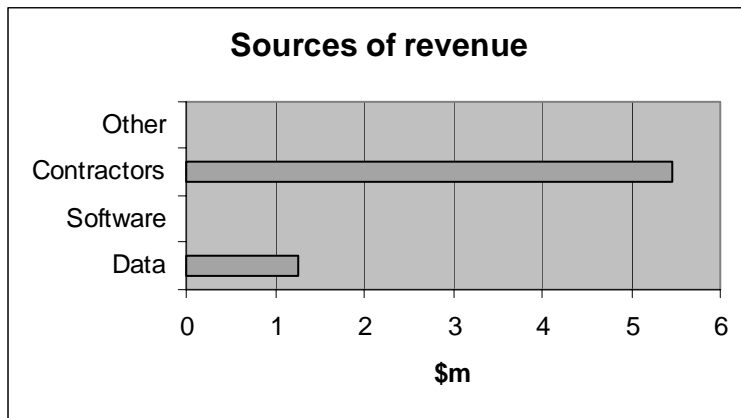


For those agencies which were able to provide the data, the sources of supplies were mainly from Queensland (86%) followed by overseas (12%). Whether those supplies were from Queensland government, other government, private or overseas was not available from most agencies.

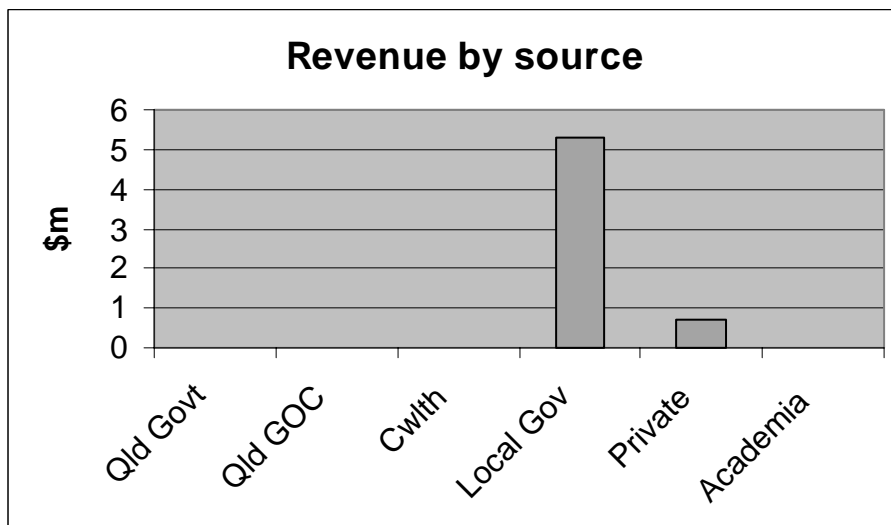
Planned expenditure 2000/01 was provided for 22 databases. This indicated that it would be 11% greater than in 1999/2000.

5.4 Revenue

Information on revenue was available for a number of databases, 7 generating revenue from data, 2 from contracting and 1 from other sources. The total revenue was \$6.7m, less that 0.2% of total agency revenues (though the total revenue figure appears to include budget allocations). The following graph indicates that the greatest amount of revenue is from contractors. The main contributor to this was one local government agency.

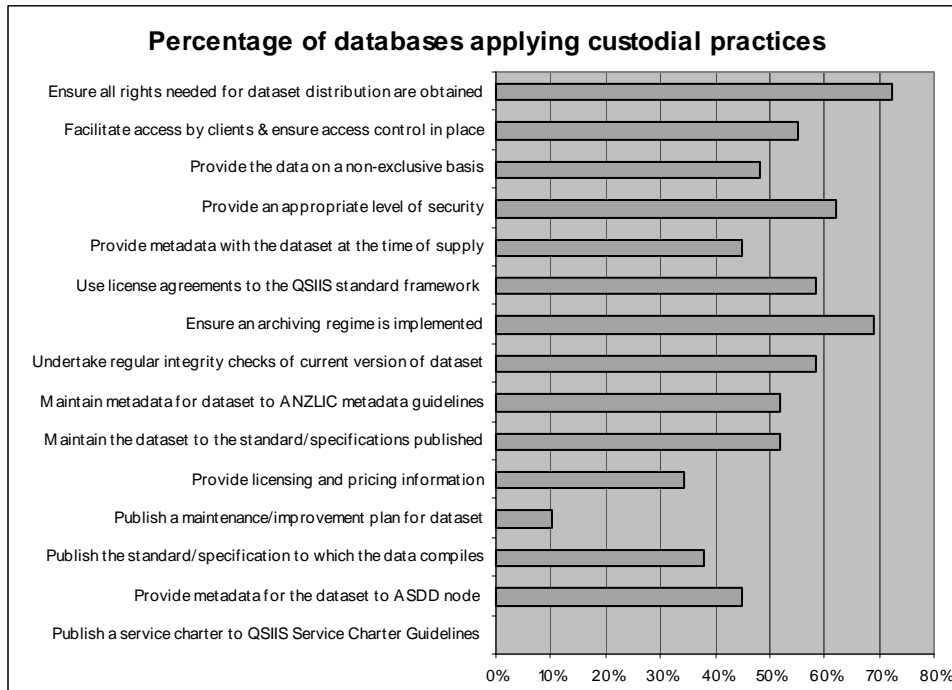


The main purchasers of these services were local government followed by the private sector as shown in the following chart. The local government clients were often commercialised units.



5.5 Custodial practices

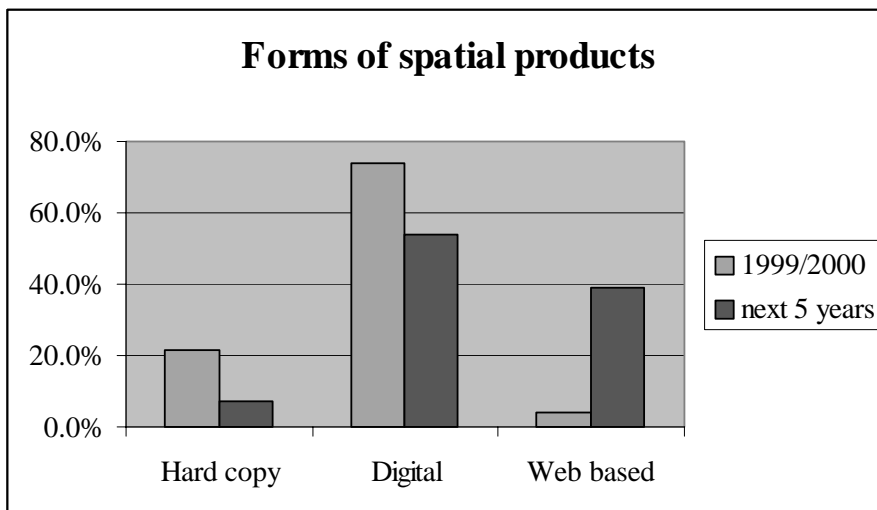
For the databases reported in the survey, the following chart shows the extent to which custodial practices are being implemented. Most databases have all the practices.



(Refer to the survey Form B at Appendix 1 for a full description of the custodial practices, Q6)

5.6 Spatial products

Respondents indicated that the formats in which their products would be available were increasingly moving away from hard copy towards web-based products.



5.7 Conclusions

Form A data was used for the calculation of percentage of agency activity, which is spatial, in terms of staff numbers, expenditure and revenue. A full-scale survey would deliver the distribution of spatial activity for agencies. The ones surveyed may be unrepresentative.

The number of databases turns out to not be useful because agencies may see their spatial activities as separate databases and activities or an integrated activity. This results in the unit of collection being quite different across agencies.

Recommendation: Subsequent surveys could focus on a whole of agency basis.

The staffing data provided useful information on numbers of officers involved in spatial activities. The broad classes of activity of staff appears useful, except that the users of data should be separated from the producers, with the proviso that some folk will be both producers and users. A rule will be required to apportion a person's activities across these categories. It may also be useful to propose a short classification of the occupations of users, including statistician, policy analyst, planner, surveyor and others. This could inform about the value adding activities. The occupation of the producers may also help to identify which of the industry classification groups is a substantial contributor to spatial activity, such as ANZSIC 7822 Surveying services.

The users captured by the pilot were the in-house users. There maybe some value in considering the potential to obtain information of the external users.

Recommendation: Consider occupations as a means to further understand producers and users of spatial products.

The categories of items of expenditure identified the substantial labour component in spatial activity costs and clarified the balance between current and capital. Notionally the capital expenditure should inform us of the investment in the activity.

To estimate the net contribution of government production of spatial activity to the Queensland economy, we will need the expenditure and revenue figures separately for Queensland, interstate and overseas. These data were not readily available and there was some lack of clarity about the appropriate treatment of the purchase of overseas inputs from a local supplier.

Recommendation: Discussions be held with agencies about means to identify overseas and interstate revenue and expenditure.

The major part of the revenue data captured in this pilot survey was from service agreements between a local government and its privatised corporations.

Recommendation: The treatment of this needs further discussion.

The custodial practices questions were included in the survey as an interest rather than directly in relation to the economic contribution of spatial activities. It indicates that more can be done in some areas, such as charters, to improve the flow of spatial information.

There is no data in the survey which identifies areas within the activity which show potential export/other earnings.

Recommendation: Consider a question for respondents to identify areas of export potential, particularly if surveying private sector.

APPENDIX 1: Survey Forms

APPENDIX 2: Summary Assessment of Agency Responses

RESPONSE RATES

Survey Response by Type of Agency

Out of 12 respondents participating in this project ten (10) agencies have completed the survey, one agency was unable to participate (databases not relevant to this survey), and one agency has not completed and returned the survey forms.

The 10 agencies that completed the survey were:

- 2 government-owned corporation (there were 3 in the pilot survey);
- 5 state government departments (there were 6 in the pilot survey); and
- 3 local government agencies.

The agency that was unable to participate in the pilot survey was one of state government departments. The following comment was received:

- The agency does not have digital databases where positional attributes are critical to the use of the data. Considered were 2 other data collections. However, neither dataset is geocoded. In one dataset, region is converted to Local Government Area (LGA), in second dataset statistical division data is produced from available postcodes. In either case the data are not part of ongoing collections and the location is not critical, just another variable.

The agency that has not completed and returned the survey was one of the government-owned corporations.

The survey due date was 17 April 2001 with the response to the pilot survey of one Part B returned by one of state Government departments.

The follow up on the outstanding survey returns commenced on the 17 April by way of phone calls to the survey respondents. A detailed record of the follow up on the non-response including dates of contact, comments and outcome was maintained.

Out of the ten respondents who completed the survey, one respondent still has outstanding Part A to return.

QUALITY ASSESSMENT OF RESPONSES

Please note: A3 Attachment has been provided separately.

APPENDIX 3: Comments on Project from Respondents

The following additional comments may assist in further refinement of the pilot survey instrument:

The survey forms, particularly Part B, take too long to complete and require too much information. In particular, much of the information requested is not readily available or already captured for other purposes and will require significant resources to examine individual financial records etc.

There is a need to focus on what is the minimum level of information required to enable worthwhile analysis to be undertaken. For example is the breakdown of expenditure and revenue source to Qld, Interstate and Overseas really necessary? Is the more detailed breakdown of expenditure and revenue source to Qld State Government, GOC's, Commonwealth Government, Local Government, private sector and academia really necessary or is it a nice to have? This level of information is not currently captured by this Department under the required headings and considerable resources will be required to analyse records to meet this specific survey requirement.

There is a need to consider the availability of aggregated information to respondents or the ability of the respondent to obtain benchmark information across other agencies/organisations in the same/similar industry category. This will require the respondent to nominate a particular industry category in which the respondent belongs. This may encourage higher survey completion rates. The covering letter did not mention whether it is intended that aggregated or benchmark information will be made available to respondents.

Part A Form

Part A does not seek information on total spatial database/activity expenditure in the agency/organisation. There is reliance on gathering this information from the summation of the Part B forms and comparing this information with the total expenditure in the Part A Form. In the case of one Department, an accurate total will not be determined as there are over 10 additional "spatial" databases with a 1999/2000 or 2000/2001 expenditure less than \$250,000 where no Part B form has been completed for this pilot survey.

In addition to the above, consideration should be given to the insertion of an additional question asking information on total spatial database/activity expenditure compared with total database/activity expenditure to determine the profile of spatial versus non-spatial databases/activities.

Part B Form

Many of the databases are textual databases which contain no explicit spatial information, however a spatial position can be derived, eg if there is a Lot and Plan attribute value then it can be linked to the Lot and Plan value from the Digital Cadastral Database (DCDB). Perhaps consideration should be given to the insertion of an additional question asking whether the database contains explicit spatial information or whether the database contains textual information and the spatial position needs to be derived.

Consideration should be given to combining Tables 3a and 3b, as well as Tables 4a and 4b and possibly 4c. Also table 5a and 5b could be combined.

APPENDIX 4: Analysis of Form B Questions

Part B – Questions and Responses

Q1. Respondents were asked to identify the database / activity that they have identified as having a “critical spatial information component.

Response to Q1 –

All 10 agencies responded to Q1 by naming the database / databases they provided the information for.

Q2. Staff numbers and Training

- a. Respondents were asked to provide the number of FTE (Full-Time Equivalent) of staff by sex and engaged in spatial information activities. These activities being data capture, data management, distribution, value adding, user for business purposes and other to be specified by the respondent.
- b. Respondents were asked to indicate whether their staff receive training in spatial information skills and whether the training is provided by agency or is sourced externally.

Response to Q2 – Staff numbers

All 10 agencies responded to Q2 by indicating a number of staff engaged in spatial information activities (data capture, data management, distribution, value adding, user and other category specified by the respondents). In the ‘other’ activities the respondents included system maintenance, system development, administration, application support, and configuration management.

One respondent (state government department) could not provide staff numbers for the activities of capture, data management, distribution, value adding and user as these are not readily available from their current reporting systems. This agency currently collects staff numbers involved in system maintenance and development activities for information management purposes. These numbers were provided.

Two respondents (state government departments) gave estimates on number of staff as they had to account for staff numbers from their regional offices. One of those respondents indicated that district offices capture data and records are brought to Brisbane every night (send electronically).

One of the respondents commented that their survey returns do not include most of the 200 GIS users scattered around the State. These are planners, environmentalists, designers, engineers etc. or the staff that support such officers. They do not create departmental spatial information, although they may add value and combine data for their local use.

The respondents indicated that one person can work on variable tasks, ie data capture, data management etc.

Response to Q2 – Training

All 10 agencies responded to this section. The response was as follows:

- Training provided by agency and sourced externally – there were 8 respondents in this category, 5 state Government departments, 2 local government agencies and 1 government owned corporation.
- Training provided by agency – there were 2 respondents in this category, 1 local government agency and 1 government owned corporation.
- No training provided – reported by 1 state Government department that no training has been provided in case of access to DNR systems.

One of the respondents commented that training provided by agency was more likely to be staff experience in that agency case.

Q3. Database/Activity – Expenditure

Respondents were asked to provide expenditure data on the following:

- a. database/activity expenditure (current and capital) for the financial year 1999/2000; employee expenses and other expenses on data, software, hardware, contractors/consultants/including training, other; current and capital expenditure by source – Queensland, Interstate, Overseas;
- b. database/activity expenditure (current and capital) for the financial year 1999/2000; employee expenses and other expenses on data, software, hardware, contractors/consultants/including training, other; current and capital expenditure further breakdown by source - Queensland State Government, Queensland Government Owned Corporations, Commonwealth Government, Local Government, Private Sector, Academia;
- c. database/activity planned 2000/2001 expenditure (current and capital); employee expenses and other expenses on data, software, hardware, contractors/consultants/including training, other; current and capital expenditure by source – Queensland, Interstate, Overseas.

Response to Q3 – Database/Activity – Expenditure

Nine (9) agencies responded to this section. The agencies responded to this requirement by either –

1. Able to provide all required data as specified in Q3a, 3b and 3c, ie provided answers with data breakdown by source as the form required. There were 2 respondents in this category, both state Government departments.

The following are the comments/additional information received in this category of response:

- Estimates for current employee expenses
- Very difficult to break the employee expenses into current and capital
- The respondent specified current other expenses as ‘miscellaneous’ and capital other expenses as ‘reprographics/photographics’.

2. Able to provide only data on current expenditure as specified in Q3a, 3b and 3c, with data breakdown by source. There were 2 respondents in this category, local government agency and government owned corporation.

The following are the comments/additional information received in this category of response:

- All estimates
- Mostly estimates
- Planned to upgrade mapping software in 2000/01
- Planned expenditure for R&D under current 'other expenses' category

3. Able to provide only Total expenditure data for items as specified in Q3a, 3b and 3c, with no data breakdown by source. There were 2 respondents in this category, both state Government departments.

The following are the comments/additional information received in this category of response:

- A breakdown of expenditure items by source could not be provided. Considerable analysis of financial records would require to identify the source of the data, software, hardware etc., as per headings in table 3a, 3b and 3c. It is likely that the majority would have been sourced from Queensland companies.
 - The requirement of table 3b is unclear. Suggest combine tables 3a and 3b.
 - The figure for software includes a mix of current (facilities management costs for the system) and capital expenditure (cost of software licences).
4. Not able to split expenditure into current and capital. Data breakdown by source provided in table 3a and 3c (all Queensland), no data breakdown in table 3b. There was 1 respondent in this category, state Government department.
 5. Able to provide data on current and capital expenditure as specified in Q3a, 3b and 3c, with data breakdown by source only in tables 3a and 3c (Queensland and Interstate). Further breakdown in table 3b not available. There was 1 respondent in this category, local government agency.

The following is the comment/additional information received in this category of response:

- The respondent specified current expenditure other as materials and sundry.

6. Able to respond only to Q3a and 3c. No response to Q3b. There was 1 respondent in this category, local government agency.

The following is the comment/additional information received in this category of response:

- Accounting for expenditure does not easily translate into the survey required categories.

Q4. Database/Activity – Revenue

Respondents were asked to provide revenue data on the following:

- a. revenue for the financial year 1999/2000 from spatial information - data, software, consulting/contracting services including training, other; by source - Queensland, Interstate, Overseas;
- b. revenue for the financial year 1999/2000 from spatial information - data, software, consulting/contracting services including training, other; with further breakdown for Queensland State Government, Queensland Government Owned Corporations, Commonwealth Government, Local Government, Private Sector, Academia;
- c. percentage of 1999/2000 total revenue received from the following groups – agriculture, mining, manufacturing, construction, government (local, other state, commonwealth), tourism, other.

Response to Q4 – Database/Activity – Revenue

Nine (9) agencies responded to this section. The agencies responded to this requirement by either –

1. Able to provide all required data as specified in Q4a, 4b and 4c, ie provided answers with data breakdown by source and as a percentage of revenue by industry group. There were 2 respondents in this category, 1 state Government department and 1 local government agency.

The following are the comments/additional information received in this category of response:

- Revenue from data sales, consultancy and online access.
 - Revenue data does not include cost efficiencies gained from use of spatial data only direct payment for services.
 - Table 4c: The respondent specified ‘property development’ under ‘other’ industry group.
2. Able to provide: data revenue breakdown by source only in table 3a (all Queensland); totals only in table 4b; and percentage of revenue by industry group. There was 1 respondent in this category, state Government department.
 3. Able to provide: Total revenue data in tables 3a and 3b, with no data breakdown available; and percentage of revenue by industry group for 1 database only. There was 1 respondent in this category, state Government department.

The following are the comments/additional information received in this category of response:

- A breakdown of revenue items by source could not be provided. It is likely that the majority is sourced from Queensland, estimated 90% - 95%. Considerable analysis of financial records would be required to identify the source of revenue items.

- Data are not available on revenue by industry group for other databases. Considerable analysis of every record for the dataset would be required to identify the revenue for each user group.
 - Suggest combine tables 4a, 4b and 4c.
 - Suggest that approximate revenue percentages across the user groups be provided as a indicative distribution profile if figures are not readily available.
4. Able to provide revenue data in table 3a only. No response to tables 3b and 3c as no data is collected as to sources of revenue. There was 1 respondent in this category, local government agency.

The following is the comment/additional information received in this category of response:

- Revenue achieved from sale of maps.
 - The agency does not see GIS as a significant revenue raising function. More so it is an aid to expanded, quicker and more effective operations. Products available for sale are predominantly items that the agency required to or can reasonably be expected to make available to the general public, eg street index, town planning scheme.
5. Not able to respond as no revenue is generated from spatial information. There were 4 respondents in this category, 2 state Government departments, 1 local government agency and 1 government owned corporation.

The following are the comments/additional information received in this category of response:

- User of spatial information unit does not get revenue. It is an integral part of the information use to resume, rent, lease and sell land required for transportation corridors.
- No revenue is generated from spatial information.
- Database is used by the agency only.

Q5. Spatial Information Products

This section sought an information about forms of distribution of spatial information products to users in the financial year 1999/2000 and over the next 5 years; forms – hard copy, digital, web based; respondents were asked to state percentage of distribution of spatial information products in those forms.

Response to Q5 – Spatial Information Products

Nine (9) agencies responded to this section. For details on response by each agency please refer to Appendix 1: Summary Assessment of Agency responses.

The following are the comments/additional information received in this category of response:

- User of spatial information unit does not distribute spatial information as an obvious object. A plan or a copy of a title might be included in correspondence (paper format). Electronic format is increasing internally through email etc.

- Online access system delivers 250,000 digital maps per month. This service will be web based in next 5 years, also transition to self serve mapping through integration with desktop applications.
- The agency's staff only access spatial data in digital form via mapping system. There are no other users. Spatial data is used for property location and information together with asset location and information. The agency has no plans to sell products at this stage.
- It is expected that hard copy will remain the primary form of product in the near future. The agency has capabilities to supply digital and web based products, but will require technical expertise to develop, and the motive / demand / desire.
- Electronic formats are increasing, and web based applications depend on the departmental wide development of the web page and electronic commerce applications. These are beyond the respondent's area of planning.

Q6. Custodial Practices

Recognising that spatial information is a valuable community asset and the need to provide consumer confidence, the Queensland Spatial Infrastructure Council (QSIIC) has published a Custodianship Standard to support a range of activities.

In this section the respondents were asked for information on custodial practices regarding informing clients, dataset maintenance and provision of dataset.

Response to Q6 – Custodial Practices

Nine (9) agencies responded to this section. For details on response by each agency please refer to Appendix 2: Summary of Part B Data.

The following are the comments/additional information received in this category of response:

- The agency has internal charters "Customer Service Agreements" that define the level of service for each dataset. These are not necessarily to a QSIIS standard. Similarly licence frameworks are agency's standard.
- The agency staff are the only users of this data. Standard, security and protocols apply as set by agency.
- The agency is required to make information publicly available and is able to provide "products" /services for sale in the normal course of operations. Only a small proportion of these involve the use of GIS. There is no perceived need to develop a policy or "service charter" regarding GIS related material. We are aware of the standards and the desirability of having and making relevant metadata available. However, we have not experienced an ACTUAL demand for same and this large undertaking remains near bottom of a long list of things to do. The great majority of the data we hold in GIS is a representation of information from other sources. When accuracy is important, then original sources will be used. The primary use of GIS at our agency is as a means of retrieving "non-spatial" information, eg Dimensions of a sewer main, Owner of a property. The next most common use is to produce cartographic output (maps) for use as an aid to officers to locate properties, utilities, dogs etc., and to disseminate information in reports and "products". Access by external parties to agency's "datasets" is only via direct contact with agency's officers. Concerns with licencing

restrictions, intellectual property rights, privacy etc., are considered at the time of developing a “product”.

Q7. Additional Information

In this section respondents were asked to provide comments on: what their agency defines as spatial information, what are the benefits of spatial information in database/s they provided information on, and what additional costs their agency would incur if database/s would not exist (additional staffing, data capture, operational delays, other).

Response to Q7 – Additional Information

Nine (9) agencies responded to this section.

The following are the comments/additional information received in this category of response:

What your agency defines as spatial information -

- Spatial information is information that is associated with a position on the surface of the Earth.
- Any data that relates to a location on the surface of the Earth. Thus any data about a feature of or on a road is spatial information.
- Respondent listed the following: mining tenure and exploration title data (incl. gas and petroleum pipelines), geoscience data (geology, geophysics, boreholes, etc), mine location and mineral occurrence data, mining and coal resource areas, areas subject to mining restrictions.
- Information about the location, shape and relationships among geographic features.
- Spatial information is the graphical representation and spatial definition of objects and data that has a reference to a position on the Earth.
- As per the definition set out earlier in this survey. All data that our agency has collected and added as an enhancement to the base layer DNR’s DCDB.
- Spatial information is not a term in common use at our agency. Most employees experience of (and perspective of) GIS focuses on the uses they can make of GIS functionality available to them. As an institution, our agency is more concerned with operational uses of GIS software rather than specific data.
- Any dataset that has a spatial identifier.

What do you think are the benefits of spatial information in this database you provided information on –

- Very important benefits as digital cadastral data is used widely as a foundation spatial dataset which underpins other spatial information and analysis (DCDB).
- Very important benefits to Local Government for rating purposes and the Queensland property market and the property industry for valuation and sales information and analysis (QVAS).
- Very important benefits as Automated Titling System (ATS) is an electronic register of freehold land, state leases, harbour board leases, reserves and powers of attorney. While ATS is a textual database and contains no explicit spatial information, the Lot and Plan attribute

values from ATS can be linked to the Lot and Plan values from the Digital Cadastral Database (DCDB) to derive a spatial position.

- Enables the location and extent of land claims to be identified (ATSILCS).
- Enables the location and extent of land assets to be identified (LAMS).
- Important benefits as this database is used to identify cadastral survey plans for surveying and other purposes (CISP).
- Enables the location and extent of requests / offers involving State Land to be identified (TAS, LTL).
- Important benefits as this database is used to provide information used to establish and connect to survey control points for the purposes of cadastral surveys (SCDB).
- Important benefits as this database is used to provide information on Government assets, including their location (GAMS).
- Important benefits as this database is used to provide information on water entitlements, including their location (WERD).
- As the information is cadastral information, it is best shown spatially.
- By providing an organised collection of spatial information clients can efficiently store, update, manipulate, analyse and display all forms of geographically recognised information.
- Spatial information allows you to analyse and model data that has no other linkage or relationship other its position on the earth. Digitally available spatial information can be easily accessed and manipulated into products that otherwise would not be possible. Its these intangible benefits that are difficult to quantify.
- Short retrieval time, all data together in one place, satisfies a wide range of customer enquires, replaces numerous manual systems, available to numerous users at the same time.
- The “spatial information” in combination with GIS and other software enables convenient access to graphic representations of data and associated information. This more than the “spatial information” itself, is the greatest benefit to our agency.
- Large benefits are to be gained from utilising the spatial relationships that exist between the data we already possess. This is confirmed by the fact that we now have about 200 users of GIS in the department. This is user driven (ie Business case driven), not head office driven.

What additional operational costs your agency would incur if that database would not exist

All 9 agencies responded to this section by either -

- indicating all 3 items (additional staffing, data capture, operational delays);
- indicating all 3 items plus adding under ‘other’ category items ‘poor decision making’ and ‘service charges’;
- indicating only ‘operational delays’ and under ‘other’ category specified ‘mistakes/errors/failures’ and ‘travel’.

The following are the comments/additional information received in this category of response:

- GIS is now fully integrated with agency’s operation such as Call Centre and Water Supply Control Rooms. Many of the services currently offered by these groups would not be viable without the GIS database.
- There would be marked increases in operational costs to run a ‘manual’ system or to source, collect, record the data again.

- We would not employ extra staff, it would just take longer to provide some of the services. In the case of large projects, work is sometimes let out to contractors as part of the whole project.

APPENDIX 5: Summary of Form B Data

SUM OF VALUES PROVIDED FROM THOSE WHO RESPONDED

Q1

Database / activity:

Q2a Staff FTE engaged in this database

	Male	Female	Total
Capture	281	153.5	434.5
Data management	75.15	32.85	108
Distribution	39.7	17	56.7
Value Adding	101.45	45.25	146.7
User for business	1522	728	2250
Other	5	2	7
Total	2024.3	978.6	3002.9

Q2b Training in spatial

Yes - by agency	28
Yes - external	22
No	1

Q3a Expenditure 1999/2000

	Total	Qld	Interstate	Overseas	Check total
Current					
Employee expenses	6935200	3141600	0	0	
Other	633189	0	0	0	
Data	408563	378563	0	0	
Software	1520271	344971	0	270000	
Hardware	1306780	269780	164000	873000	
Contractors	4335398	2804875	0	0	
Other	422000	422000	0	0	
Sub-total	15561401	7361789	164000	1143000	8668789
Capital					
Employee expenses	0	0	0	0	
Other	85000	0	0	0	
Data	250000	250000	0	0	
Software	70000	25000	0	0	
Hardware	1247600	505000	0	35000	
Contractors	1750	1750	0	0	
Other	5000	5000	0	0	
Sub-total	1659350	786750	0	35000	821750
Total	17220751	8148539	164000	1178000	9490539

Q3b Expenditure 1999/2000

	Total	Qld govt	Qld GOC	Cwlth	Local Gov	Private	Academia
Current							
Employee expenses	0	0	0	0	0	0	0
Other	2234746	0	0	0	0	0	0
Data	407300	188000	80000	10000	5000	16200	0
Software	549700	12000	90000	0	0	272000	0
Hardware	215500	10000	70000	0	0	280000	0
Contractors	1178500	73000	0	0	0	1075000	0
Other	0	0	0	0	0	0	0
Sub-total	4585746	283000	240000	10000	5000	1643200	0
Capital							
Employee expenses	0	0	0	0	0	0	0
Other	607600	0	0	0	0	0	0
Data	0	0	0	0	0	0	0
Software	300000	5000	0	0	0	270000	0
Hardware	620000	0	0	0	0	500000	0
Contractors	1750	0	0	0	0	1750	0
Other	5000	5000	0	0	0	0	0
Sub-total	1534350	10000	0	0	0	771750	0
Total	6120096	293000	240000	10000	5000	2414950	0

Q3c Planned Expenditure 2000/2001

	Total	Qld	Interstate	Overseas
Current				
Employee expenses	8815600	3572600	0	0
Other	0	0	0	0
Data	449414	399414	20000	0
Software	2636050	642000	0	686000
Hardware	1335000	439000	155000	735000
Contractors	2860320	2149500	0	0
Other	842000	842000	0	0
Sub-total	16938384	8044514	175000	1421000
Capital				
Employee expenses	0	0	0	0
Other	0	0	0	0
Data	100000	100000	0	0
Software	307000	262000	0	0
Hardware	1710000	507000	0	58000
Contractors	103000	103000	0	0
Other	5000	5000	0	0
Sub-total	2225000	977000	0	58000
Total	19163384	9021514	175000	1479000

Q4a Revenue 1999/2000

	Total	Qld	Interstate	Overseas
Data	1259381	570000	1138	2000
Software	0	0	0	0
Contractors	5453000	5353000	0	100000
Other	5000	5000	0	0
Total	6717381	5928000	1138	102000

Q4b Revenue 1999/2000

	Total	Qld Govt	Qld GOC	Cwlth	Local Gov	Private	Academia
Data	1258121	23120	0	1100	6360	540041	0
Software	0	0	0	0	0	0	0
Contractors	5453000	0	0	0	5301000	150000	0
Other	0	0	0	0	0	0	0
Total	6711121	23120	0	1100	5307360	690041	0

Q4c Revenue from groups

	% of total revenue
Agriculture	10
Mining	21
Manufacturing	0
Construction	0
Government	22
Local	162
State	45
Cwlth	92
Tourism	33
Total	385

Q5a&b Spatial Products

	1999/2000	next 5 years
Hard copy	21.7	7.1
Digital	74.0	53.7
Web based	4.3	39.2
Other	0.0	0.0
Total	100	100

Q6 Custodial practices

Yes = 1/ No = 0

Service charter	0
Metadata	13
Standard/specification	11
Maintenance/improve	3
Licensing	10
Dataset	15
Metadata	17
Integrity	20
Archiving	17
License agreements	15
Metadata	13
Security	18
Non-exclusive	14
Facilitate access	16
Rights	21

Q7c Additional operational costs if database did not exist

Yes = 1

Additional Staffing	19
Data capture	20
Operational delays	23
Other	4