

Regional Transport Planning: A Direction for the Future

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Abstract:

The Cairns Mulgrave Regional Transport Study represents a variation on the standard Transport Study. The study was a broad analysis of a long term future for the area. A purpose built model was developed for the study. A feature of the model is that analysis of the contribution of various modes has been undertaken in an integrated fashion with inclusion of policy settings in addition to the normal definition of physical facilities.

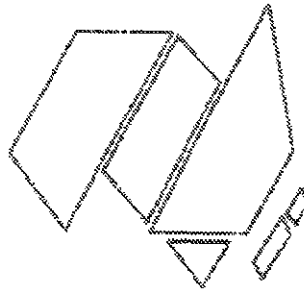
The management of the study involved coordination of separate consultancies providing input in the areas of land use planning, transport modelling, and strategy development and evaluation. A consultative process was adopted to provide lay input into the development of the evaluation criteria and in the evaluation of alternatives.

The outcomes of the study provide an input for ongoing regional planning and the strategic planning for the local authorities and the transport agencies. The scale of the transport problems attaching to continued high growth in the Cairns area are now understood widely both in the interest groups in the community and in the responsible authorities. The contributions of land use controls, public transport services, road systems and policy settings to managing travel demand have been identified. It is clear, however that these tools of demand management are secondary to the growth of population in determining future travel demand in the area.

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1.0 INTRODUCTION

The Cairns Mulgrave Regional Transport Study was undertaken jointly by State and Local Government agencies with responsibility for transport and/or land use in the Cairns area. There were a set of special issues which led to the study being of a different nature from the transport studies which preceded it in the Cairns area. The developable area is heavily constrained by environmental and topographic factors. Large parts of the surrounding ranges are World Heritage areas or with slope stability problems or elevations difficult to service for urban uses. On the narrow coastal plain, large areas are taken up by Trinity Inlet's mangrove covered habitat reserves.

The area has been under sustained development pressure for some time and large parcels of developable land were consolidated for specific resort and residential projects. At the same time opportunities such as conversion of existing corridors used by cane trams were available if these proved useful for future needs. There was a concern on the part of the authorities that options for future transport provision could be lost.

With the change in Government in Queensland in late 1989, the responsibility for transport matters was placed in a single Department (of Transport) which meant that a more integrated approach was possible. This integration needed to cover the various modes of transport represented in Cairns (air, rail, road, bus and sea) but to also integrate policy approaches with the more traditional infrastructure based solutions to transport problems.

These factors led to a study approach which was of a quite different nature to previous studies in Cairns or in Queensland. Features of the approach were that:

- the study had a very long term horizon which was not precisely defined in time but nominally 30-70 years ahead. Analysis was focussed on population levels of 300,000 and 500,000 likely to be applicable in the long term future. These compare to the existing population of around 100,000 people;
- a "Statement of Vision" was established at the outset which established a community view of what Cairns should be like in the future. This relied on non transport aspects to describe a desired future;
- integration of all transport aspects was a requisite part of the approach. This included integration of modal considerations but also a wider integration of infrastructure provision and policies as options for coping with or limiting future demands;

- the study was strategic in its consideration with a focus on establishing future directions for land use planning and transport provision. However there was a need to address corridor level infrastructure requirements. The very limited opportunities for additional routes/corridors allowed this to be achieved in a strategic level study;
- the methodology was based on a sketch planning approach to the quantitative aspects. The assessment relied on significant interpretation of the outputs and desk calculation of additional assessment measures

Scope of Paper

It is not our intention in this paper to provide a description of the study. We provide a very brief overview of the study in Section 2 following. The paper, however, is directed to particular lessons we learnt in the course of the study where these may provide ideas and guidance for others. Readers seeking additional detail are directed to the references where the Principal Report of the study and the various Working Reports covering particular tasks are listed.

2.0 BASIS FOR OUR APPROACH

The methodology for the study was founded on the studies conducted in the late 80's in the UK and referred to there as Integrated Transport Studies. Paraphrasing May (1991), the approach can be summarised as:

- preparation of a **Statement of Vision** - an expression of the type of town or city the commissioning authorities wish to see;
- specifying **Transport Objectives** which fall into categories of efficiency, environmental protection, safety, accessibility, practicability, and financial feasibility. (The Statement of Vision and the Transport Objectives are included at Appendix A);
- identifying potential **Transport Problems** against these objectives;
- developing a range of **Strategies** which combine land use, infrastructure, operational and policy initiatives;
- **evaluation** against the full range of Objectives leading to synthesis of a preferred strategy.

Particularly in the area of Evaluation we were guided by some of the requirements identified from these UK studies. The Study also sought to differentiate between assessment and evaluation. Assessment is used in this paper to describe the technical process of preparing performance indicators and comparing for any objective an assessment of performance. Evaluation on the other hand was used for the value laden process of indicating preferences for particular options on the basis of performance indicators and some weighting of multiple objectives

May (1990) indicated requirements for evaluation to:

- *be disaggregate in nature. The need for this arises from the emphasis on a range of potentially conflicting objectives, none of which is to be afforded priority. This in turn implies that performance against each objective needs to be assessed separately. Moreover, the treatment of impact groups requires that evaluation against each objective must be assessed both overall and for each of the relevant impact groups;*
- *include a range of inputs to the evaluation process, at different levels of analytical detail. Some attributes ... can be estimated from predictive models. Others, such as noise and pollution levels and numbers of accidents, can be related at a broad level to model outputs, but require careful interpretation. Impacts on perceived danger, personal security, townscape, image and hence economic activity are not adequately understood in analytical terms, and have to be inferred. Thus the evaluation process must be a combination of analysis and professional judgment. This is a marked change from the 1960s studies, in which the main focus was the model and its outputs, largely taken at face value.*

These evaluation aspects shape the methodology in that the model is then a simplistic and flexible tool which does not attempt to cover every aspect. This reduced emphasis on the model outputs tolerates different levels of precision, allows wider scope in non-build options and for resources to be directed at the strategic considerations rather than to transport modelling as an end product

3.0 OVERVIEW OF THE STUDY

The study dealt with the areas of existing and potential urbanisation in the Cairns area. Figure 1 shows the study area which includes all of Cairns City and Mulgrave Shire and parts of Mareeba Shire surrounding Kuranda. The constraints on future development were particularly important not only in the limitations imposed on future development

but also in the requirements placed on modelling. Figure 1 includes the principal constraints.

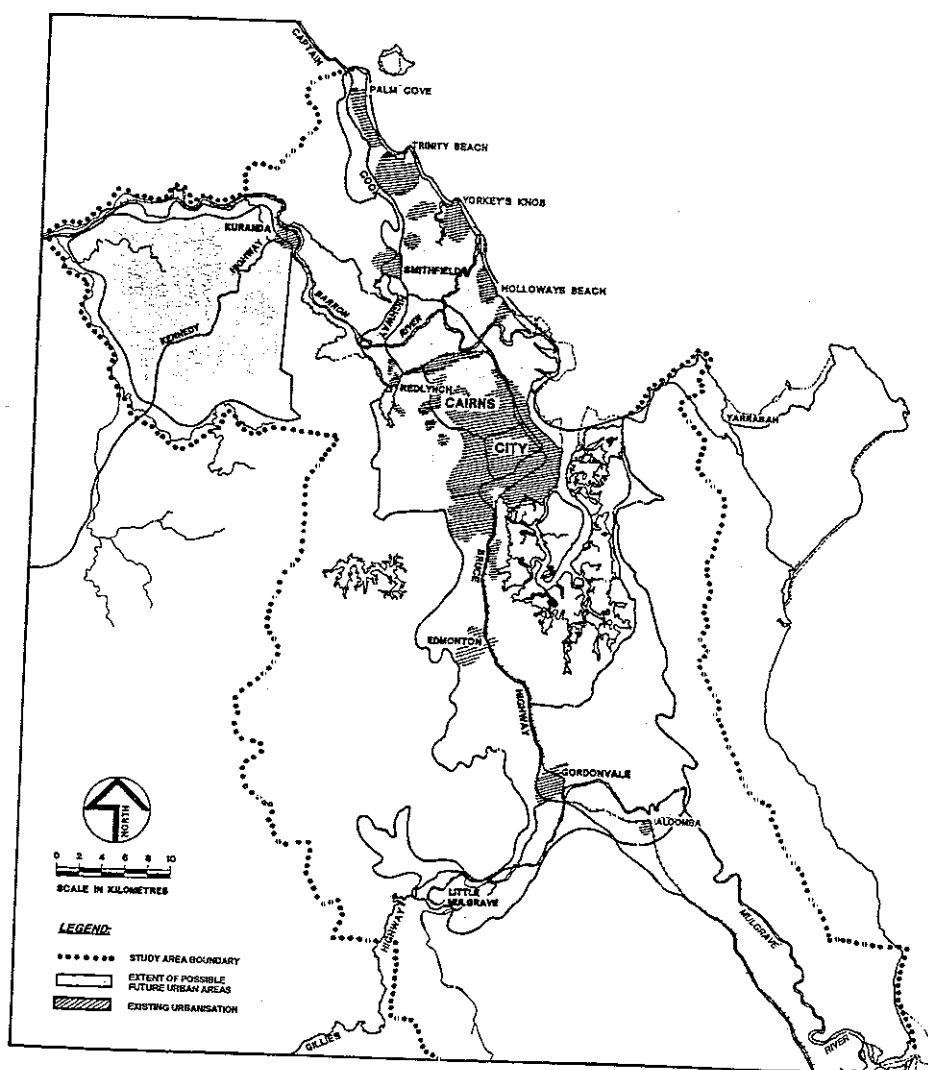


Figure 1. Study Area

The study administration was structured as shown in Figure 2. Formal responsibility for the study rested with a Steering Committee which included State Government officers and both political and senior officer level representatives of the Local and Statutory Authorities involved in the study. Day to day management of the study rested with a small management team which supervised the consultant input to the study and was responsible for compilation of the Principal Report.

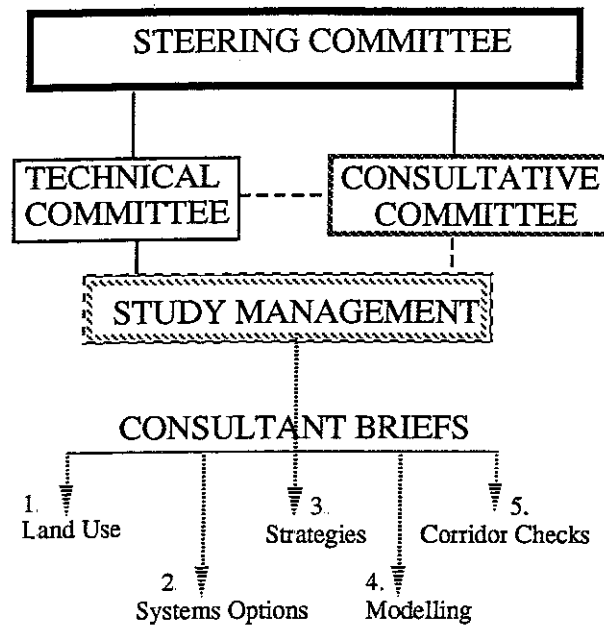


Figure 2. Study Administration

The Consultative Committee was charged with three main responsibilities:

- providing lay input to the study, particularly in the evaluation processes;
- representing a wider community viewpoint by disseminating information to the wider community and providing community feedback to the study;
- developing the Statement of Vision and transport objectives early in the study to guide further work.

The study management structure was designed around maximal involvement of the Consultative Committee and officers of the participating agencies. The option for a single multi-disciplinary consultancy was not adopted by the Committees and consultant commissions were for separate and specific tasks in the study. Integration of the results of the separate studies was undertaken by the Management Team and the Technical Committee rather than being undertaken by a "lead consultant". This has widened and enriched the decision making processes of the study. Importantly it has created the

situation where the final report of the study is not received in the participating agencies with the response "Yes, but what's it all mean?" The considerations within the study committees have allowed the implications to be understood within the study rather than subsequent to the tabling of a report.

The study used a spreadsheet based model to examine the transport performance of various transport and policy options with different land use scenarios. Scenarios were based on five different urban forms (Dispersed, linear nodal, consolidated, and 2 levels of centralisation) for two population levels. The model allowed public transport systems and road networks to be tested simultaneously with the performance of one affecting its share of the travel market and for congestion to affect choice of destinations. A rudimentary capacity to reflect policy controls was provided by the model.

The study outcomes are framed as:

ACTIONS where transport or planning authorities should act to preserve corridors, refine alignments, or take the study findings into consideration on specific planning initiatives;

PRINCIPLES which are policy matters suggested to Authorities for inclusion in guiding development.

Both types of recommendations are directly relevant to the participating authorities and require no change to jurisdictions or legislation.

4.0 WHAT WE LEARNT

Main Lessons

There is specific information relating to Cairns' future needs which comes from the study. In this paper we have concentrated on aspects of process or approach which are different from other studies. The principal of these are:

- need for flexibility in Study targets;
- the pace of a strategic study varies from frenetic production to a necessary and slower digestion phase;
- the role of the strategic models is as a supplement to evaluation processes;

- critical assumptions must be validated early in the process;
- effort must be directed to keeping short term problems separate from the strategic problems;
- strategic transport studies need to be seen as part of a wider regional Planning process;
- community consultation has a different role in strategic studies and requires special support;
- more distant problems appear more difficult to solve.

Flexibility Issues

The Cairns Mulgrave Regional Transport Study was undertaken over a period of nearly two years. Within this time frame there were changes in some key areas which meant variations to study targets. Principal among these was the introduction of a State level involvement in land use planning seeking to give regional coherence to the sometimes disparate plans of the separate Local Authorities in a region.

At the outset of the study, the participating agencies comprised all the authorities with direct responsibility in land use and/or transport planning in the region. It was the intention at the outset of the study that an evaluation of transport options would be part of the study. It was intended that this would rely heavily on the Consultative Committee views to evaluate how well transport objectives and the wider community Statement of Vision were met.

With the introduction of a formal regional planning process for the region, it was then seen as more appropriate that the evaluation process be undertaken in that context where better information on non transport aspects can be part of the evaluation.

This change in responsibility was accepted more readily by the bureaucrats and technocrats involved than it was by the Consultative Committee who felt that the change reduced the value placed on their input.

The process of defining the cases or scenarios to be analysed involved a good deal of toing and froing. Establishing the future population levels to be examined and the land use forms involved was difficult. The constraints on future transport provision are such that action to secure future options is needed now and those decisions will shape development into the foreseeable future. The study therefore was examining needs over

a long time frame. This was never fully defined but was colloquially expressed as 40-70 years hence.

Suggestions on the population levels to be examined ranged from over 1 million based on "wall-to wall high density" development on available land to minor growth based on local desires to constrain growth to retain amenity and environmental qualities of the area. A useful input to this stage was a broad brush assessment of the transport implications of some of the higher population levels.

The study made assessments of two population levels - 300,000 and 500,000. It was particularly useful to have different population levels examined and for one scenario a 200,000 population with a land use form based largely on extending existing patterns was also tested. These allowed a range of thresholds to be identified for introduction of additional corridors either for fixed track transit systems or for roads.

Study Stages and Progress Rates

A Project Plan including a study timetable was prepared at the commencement of the study. The Plan defined the separate commissions under which the analytical work proceeded and also the interrelationships between the consultant tasks and the committees. In hindsight it is clear that the study progressed in 4 stages:

Establishment stage where the agency involvements and cost sharing were agreed and the various Committees were established. The Project Plan was part of this establishment stage. This process took about 4 months but it is hard to imagine a more compressed timetable being achievable for a multi-agency study.

Technical Groundwork stage where the key assumptions were made on Statement of Vision and transport objectives, population levels and land use forms for testing, and development of a suitable model was undertaken. This process took about 7 months.

Analysis stage where the key quantitative assessment took place. This was the stage where the productive effort could be closely directed and rapid progress was made in about a three month period.

Enlightenment stage where the agencies and the Committees came to understand the analytical work and what it meant. Appropriate directions for infrastructure provision and policy settings were resolved. This was a process which could not be pushed along and took about 8 months to produce a final report of the study.

There was also a post study phase within each of the participating agencies where the formalities of release of a major report were undertaken. This part of the study was possibly shorter than usual at about 4 months.

It is important to recognise that the pace of a strategic study varies. There are some activities which can be tightly constrained in time, but with a complex strategic study there are other aspects where time for reflection is needed.

Modelling

The concept of the model was based on the sketch planning models developed for recent studies in the UK (May (1990)). That work suggested that models appropriate to a strategic study need to be readily explained, simple and focus on relative performance of options rather than absolute accuracy.

Initial work for the Brisbane Traffic Study by Denis Johnston & Assoc(1988) also suggested that "*in transport planning studies the analytical techniques are not nearly as important as the study organisation in achieving an acceptable/ implementable outcome.*"

Relationships were imported from other Australian studies and supplemented with local data where it existed. The model was not "data hungry", and was not calibrated for a base year in the usual manner. Avoiding the calibration effort was a significant resource saving for the study and considered appropriate in that the situations being tested for the long range future were quite dissimilar to the existing local situation.

The constraints on possible future corridors made special demands on the model but also offered opportunities to meet these demands in a simple strategic model. The constraints imposed the requirement that corridor level assessment of needs be modelled. At the same time the limited number of possible routes and corridors meant that a simple model sufficed. The model was based on only 14 internal zones and two external zones. Skeletal networks were used for analysis with a road network serving auto and on road transit connections, and a separate transit network where "own right of way" transit systems were tested. The model relied heavily on relationships from studies elsewhere in Australia with some use made of local data collected in the late 80's for a road network study. The model therefore was based on a limited amount of data and provided a simplified analysis.

There were expectations held in the Community Consultative Committee and by members of the public in Workshops that very high levels of public transport usage could be used to largely avoid future infrastructure needs. The model was very useful

in showing the achievable levels of public transport and the relative attractiveness of various systems. Another significant indicator was the way in which travel attracted to a public transport system was taken from several road corridors and did not always translate into a commensurate reduction in road system needs.

Early Validation of Critical Assumptions

It seems trite to suggest that the critical assumptions or building blocks of a study should be validated before proceeding to the next stage. There is a temptation to adopt assumptions and proceed to the interesting analysis stage. In this study this manifested in developing land use scenarios. It is clear that if the study had proceeded further with some of the options almost agreed at various stages the outcomes would have been dismissed.

Separating Short Term from Strategic Issues

It was useful in this study to keep the strategic focus of the study and not allow day to day issues to detract from the strategic importance. Strategic issues can be diluted and lost if solutions to immediate problems are sought. Another aspect of the short term issues was the potential to disrupt the cohesion in the Committees. Agencies can take a wider view on longer term issues but with short term issues are often competing for funds or furthering particular interests and have greater difficulty reaching consensus.

This study was initiated with a detailed Project Plan in place. This plan was useful in identifying specific responsibilities of participants, and keeping the goals focussed. Where short term issues did arise these were directed to other forums for resolution, although it was made clear that genuine efforts were to be made to solve them.

One particular short term issue, introduced into the study by the Consultative Committee and reiterated in wider public consultation, was the inadequacy of existing public transport services in the area. This was addressed in the course of the strategic study by a separate investigation although the strategic study reinforced the need for good public transport services now as the seed for achieving the target levels of use in the longer term.

Transport as part of Regional Planning.

There is a strong trend towards a "whole of Government" approach to planning and a move to regional planning to coordinate the Local Government plans. This study commenced when there was no formal regional planning in the area. A regional

Planning process commenced during the course of the study.

The message provided by the strategic studies reported from UK is that transport can not be isolated from considerations of Land use form, lifestyle, environment, and other factors. This presented some difficulties at the outset of the study when no regional plan existed. The Statement of Vision and transport objectives included non transport aspects in line with the kind of objectives which might apply to a Regional Plan. In this way the proposed transport evaluation was not limited to the transport sector. There was also no identified preferred development areas nor accepted notions of density or urban form. In the absence of a Regional Plan, the study constructed scenarios which were aimed at covering a wide range of development forms.

It was probably fortuitous that the regional planning process commenced in the course of the study. Transport is only one of the aspects to be considered in the regional planning process. However the CMRTS has directed attention to the real difficulties in the transport area and ensured that transport is a key factor in the process. With the commencement of the regional planning process, a complete evaluation was not attempted in the transport study. Rather the transport study has provided one set, albeit a very comprehensive set, of data on the transport implications of alternative development forms. The evaluation process is proceeding in a wider forum and with greater attention to non transport aspects than would have been possible in the Regional Transport Study. It is to be expected that when the regional planning is further advanced, assessment of options at a more detailed level than the scenarios adopted will be needed.

There is a limited data set for Queensland but it appears that the early start to the transport aspects in advance of the regional planning process has led to a greater emphasis on policy as a tool in future transport solutions.

Different Role for Consultation

There are substantial differences between the appropriate consultation for strategic studies compared to shorter term projects:

- the consultative process in short term studies often must address the direct threat to some sections of the community which implementation involves;
- it is difficult to generate interest in options which are hazy, and distant in time so consultation in a strategic study requires more in-depth contacts. Workshops and the Consultative Committee were effective;

- with a study which is poorly understood in the community there may arise a need to deal with single issue concerns about aspects of the study. In this case there was a concern that the study was a vehicle to advocate high growth in population. This was addressed directly with a newsletter to all households;
- there is an ongoing challenge in keeping a strategic focus in consultation. The public is much more interested in the immediate issues. Public displays and newsletters generated comment on short term problems. Good facilitation and direction of effort to specific targets made the workshops effective.

An important element of the consultation was carried out by the consultative committee. The group committed a substantial effort to the study with their reward being the opportunity to help shape the future of their area. The independence of the Committee was important in demonstrating that they had some influence and were not following a prescribed path. At the conclusion the Committee's report was included in the final study report verbatim and is made a direct input to the Regional Planning process.

Distant problems appear more difficult

There is a fluidity about the long term which is difficult to deal with. Constraints often make problems easier to solve by limiting options. There is also a well founded practice of using experience as a guide to problem solving which leads to a tendency to be constrained by current behaviour and operating conditions.

The scale of the transport task with sustained high growth is beyond current experiences. In locations where a 2 lane road now exists the study suggested that 2 or 3 corridors each of 6-8 lanes would be needed for the highest population levels analysed. The funding position also becomes very unclear in the longer term.

These issues lead to the need to provide links back to current situations. The path through intermediate population levels was examined. This was particularly useful when expressed in terms of thresholds which were attained at different levels of population. Implementation is unlikely without a link back to current issues which can be progressed. In this study these were the current land development processes; issues of spread of development across existing barriers; and current debates on public transport in Cairns.

5.0 CONCLUSIONS

The Cairns Mulgrave Regional Transport Study has established the role of strategic transport planning for applications elsewhere in Queensland. Key items are the confirmation that the process:

- is analytically achievable within reasonable resource/data limits;
- can be done in a reasonable time. Major elements took 15 months although there is a deliberation phase in advance of this where the resolve to pursue such a study is built;
- doesn't replace more detailed corridor and project planning, but allows these to take place in a clearly defined and consistent framework;
- has the flexibility to adapt to different regional planning administration arrangements.

The modelling and supporting analytical work have a role in overall strategic planning processes. These tools provide a basis for policy development and an imperative for implementation. Importantly a long term view allows recognition of long term changes which are contrary to current trends.

ACKNOWLEDGEMENT

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APPENDIX A**STATEMENT OF VISION**

To identify future transport needs, an idea of future land use development is required. To assist in developing possible future land uses, a State of Vision was prepared. The Statement of Vision is a list of goals on how the people of Cairns and Mulgrave wish to see the area develop. The following Statement of Vision was prepared by a Community Consultative Committee for the purpose of this study:

- To conserve and enhance the physical environment of the region; maintain its tropical appeal and to conserve the green mountainous backdrop.
- To encourage balanced economic growth and a diversified economic base whilst strengthening Cairns' role as the regional centre of Far North Queensland and its role as an international gateway.
- To provide choice in accessible, well serviced residential lifestyles.
- To encourage a quality of life that is clean, safe, and quiet.

APPENDIX B**TRANSPORT OBJECTIVES**

- Maximise energy and resource efficiency of the transport system.
- To have an appropriate and effective public transport service which people will choose to use.
- To minimise the impact of the transport system on the environment.
- To provide reasonable access and mobility for all.
- Facilitate economically diversified development. (That is, to develop an efficient land use transport system which generates acceptable levels of travel demand).
- To have an appropriate and effective transport system for the movement of people and goods.

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