

D.L. Higgins  
Director  
Transport Planning and Development  
Metropolitan Transit Authority  
Fortitude Valley

*Abstract:*

*Under its Act, the Metropolitan Transit Authority (M.T.A.) was required to prepare a 5 year Development Plan for public transport for its Declared Region. This paper is based on the recent experience of the author in the formulation of this Development Plan for the M.T.A. in Brisbane. The plan was published in September, 1979.*

*It touches on the planning process involved and also gives an overview picture of transit improvements proposed for the Brisbane Region within the next 5 years.*

*Some aspects concerning implementation are also discussed.*

*The author believes the Development Plan provides a framework which helps bridge the gap between Planning/Research and Implementation/Development.*

The author wishes to acknowledge the co-operation and assistance given during the formulation of the Development Plan by Queensland Railways, Department of Transport, Main Roads Department, Brisbane City Council, Commonwealth Department of Transport, and contiguous cities and local authorities. In addition, acknowledgements are due to the Consultants, the Working Committee, the Planning Advisory Committee and the Authority members and Chairman, who were involved in this interesting planning process. The work of staff members is also gratefully acknowledged.

The views expressed in this paper are those of the author and do not necessarily reflect those of the Metropolitan Transit Authority.

INTRODUCTION

The formulation and production of a 5 year Development Plan is a mechanism whereby Planning and Research (P. & R.) can be directed towards appropriate goals and targets. Furthermore it provides the framework wherein P. & R. can take place in a rationalized, de-politicised environment with clearly defined priorities.

Whilst the author had the privilege of preparing this paper it will be seen from acknowledgements that it was a rather massive team effort.

In formulating a Development Plan we must look seriously at the results of P. & R. and decide what appropriate action to take - thus avoiding the "P. & R. only produces thick reports" syndrome.

It is the comprehensive sequencing of research, planning, decision making and action implementation that demonstrates the real value and payoff of P. & R. and of course we must monitor and evaluate to establish the results from our actions. Each of these elements are vital building blocks bonded together in a total process within a Development Plan.

The Metropolitan Transit Authority (M.T.A.) was established by the Metropolitan Transit Authority Act 1976. One of the major tasks set the Authority was to prepare *"a plan for the development of an integrated and efficient system of public passenger transport including ferry services for the declared region."*

The Act goes on to specify -

*"..... every approved plan shall contain particulars of plans for improving and co-ordinating passenger transport services within a period of five years from the publication of the plan."*

This paper briefly outlines the planning process that was used to produce the Development Plan, outlines the recommendations and then looks at implementation - possibly the most important aspect of all.

The declared region of the M.T.A. is shown in Fig. 1.

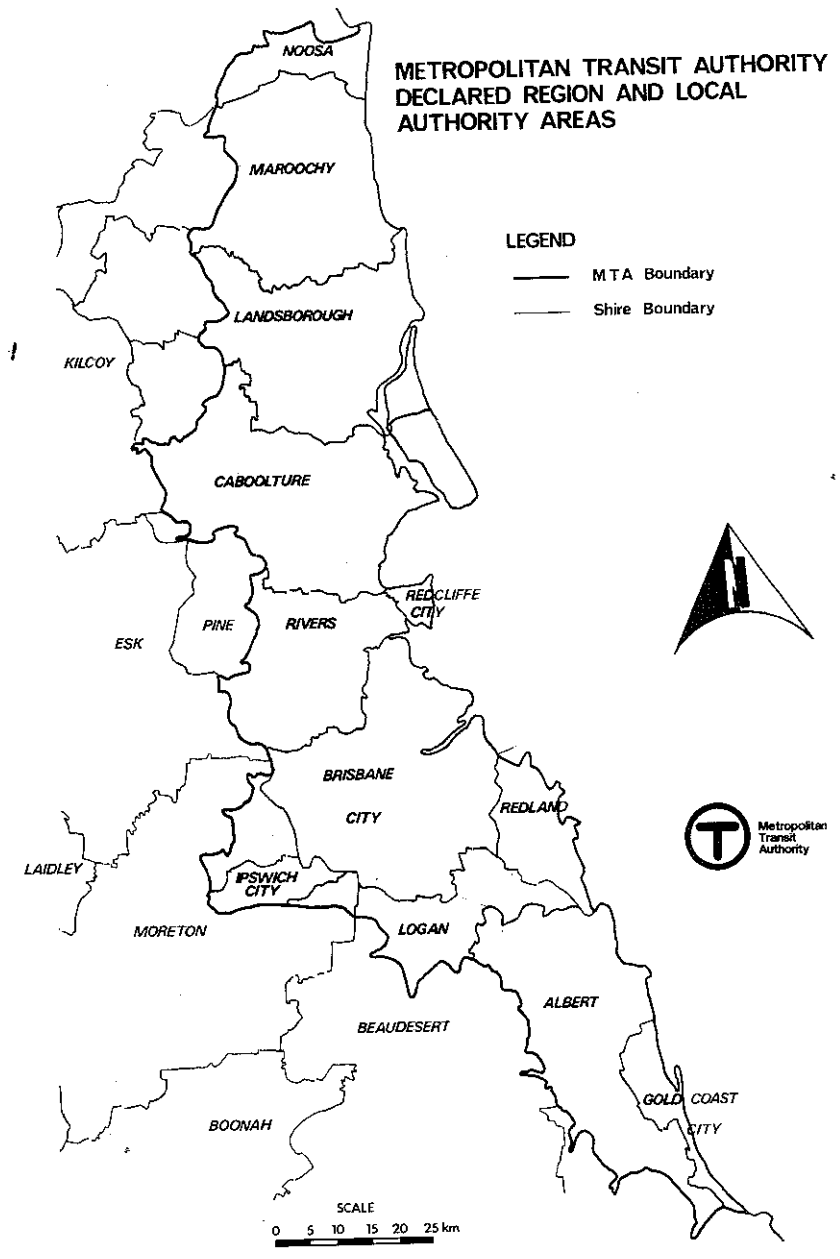


Figure 1

## BACKGROUND

(a) Previous Studies

Table 1 is a brief summary of Planning and Research work carried out prior to the Development Plan. This lists the major studies, but anyone interested could refer to the annual P. & R. progress report (Department of Transport 1980) to obtain further details. An interesting feature is how planning in Brisbane has been through the cycles of intermediate, long term and now 5 year time horizons. It seems as if we too have discovered the power of incremental forward leaps - consistent with Mao!

The two most influential documents in the author's view have been the "South East Queensland Brisbane Region Public Transport Study" (Wilbur Smith 1970) and the "Moreton Region Growth Strategy Investigation" (Cities Commission and the Co-ordinator General's Department 1976). The first because it had recommended a total public transport system upgrading and had given us a comprehensive view of the future to the year 2000; the latter for it was a detailed alternative land use growth analysis, along with the recommendation as to how development should proceed.

MTA officers also reviewed all recent town plans and strategic plans of the local authorities (Lucas and Doolan 1977). The collective aspirations of some of these were worrisome - a new wave of "baby booms" would have to occur to meet some of their population projections!

(b) Institutional Setting

At the time the Plan was formulated the following agencies were involved in Public Transport operations in the MTA's Region.

Department of Transport - administered the licensing of all bus modes and provided subsidy funding to private bus operators.

TABLE 1  
BACKGROUND STUDIES

| STUDY TEAM  | STUDY NAME   | DURATION    | HORIZON TARGET YEAR | TIME SPAN YEARS |
|---|--|-------------|---------------------|-----------------|
| WILBUR SMITH & ASSOCIATES                                     | BRISBANE TRANSPORTATION STUDY                                      | 1963/<br>65 | 1981                | 16              |
| WILBUR SMITH & ASSOCIATES                                     | SOUTH EAST QUEENSLAND<br>BRISBANE REGION<br>PUBLIC TRANSPORT STUDY | 1968/<br>70 | 2000                | 30              |
| CO-ORDINATOR-GENERAL'S<br>DEPARTMENT<br>AND CITIES COMMISSION | MORETON REGION<br>GROWTH STRATEGY                                  | 1974/<br>76 | 2000                | 24              |
| AGENCIES & VARIOUS<br>CONSULTANTS                             | PLANNING & RESEARCH<br>DISCRETE TRANSPORT<br>STUDIES               | 1974/<br>80 | IMMEDIATE           | NIL             |
| M.T.A. STAFF, AGENCY STAFF<br>AND CONSULTANTS                 | M.T.A. DEVELOPMENT<br>PLAN   | 1976/<br>79 | 1984                | 5               |

Brisbane City Council - who operated approximately 545 urban buses with some 21 in reserve along with 8 cross river ferries under contract.

Queensland Railways who were running 48 diesel hauled trains with a total fleet of 360 coaches (248 wooden, 112 stainless steel) and 12 rail motors.

Private Bus Operators - who operated 230 urban buses in the region.

A private up/down river ferry operator who was under contract with the M.T.A.

The annual patronage of the various modes is shown in Table 2.

This might be considered a somewhat fragmented setting, with a high probability towards unilateral decision making. Each operator had his own fare system and cost recoveries from the fare box varied considerably. Very little service co-ordination existed.

The M.T.A.'s Development Plan had to take due cognisance of these roles as well as its own, when considering how to fulfill its service co-ordination mission.

#### PUBLIC TRANSPORT DEMAND CHARACTERISTICS

The total demand pattern was a typical 2 peak situation with the morning peak being some 50% higher because of the coincidence of work and education trips. This is shown in Fig. 2. The supply situation was also examined at the same time.

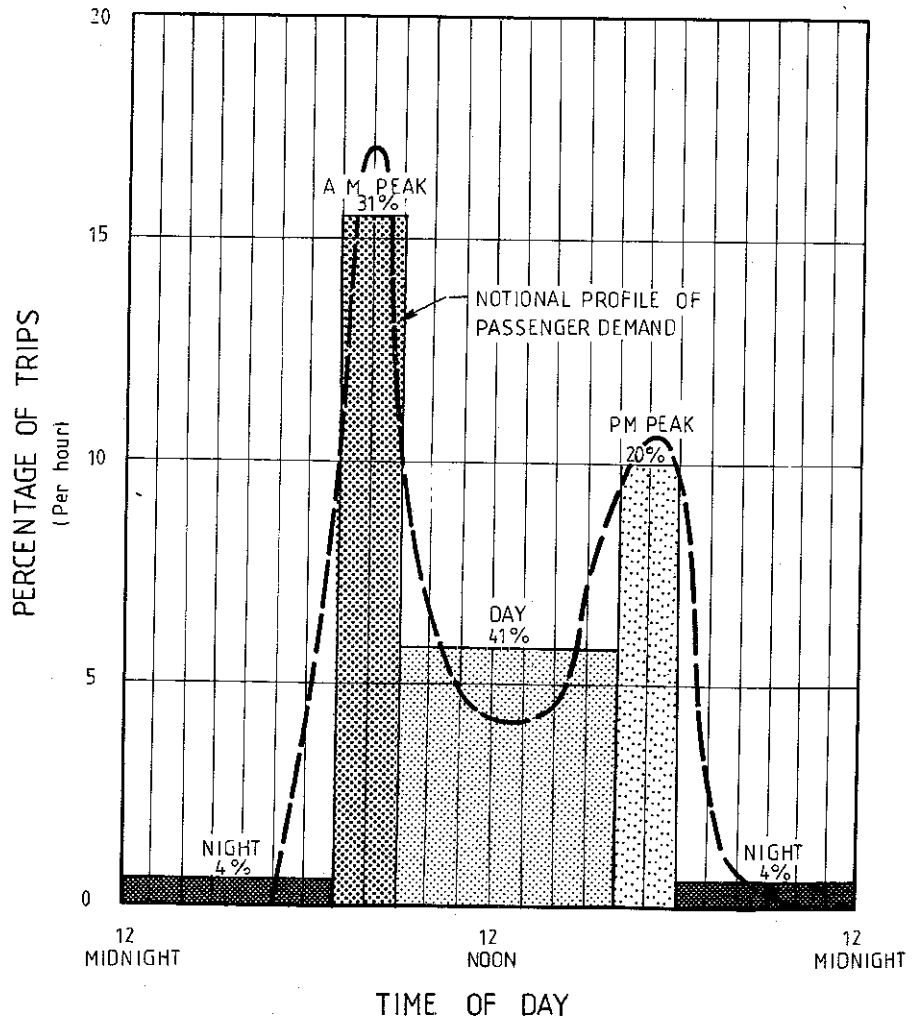
The mode choice characteristics for different trip purposes in the Brisbane Statistical Division (BSD) and the Central Business District (CBD) are shown in Fig. 3. Public Transport caters for only 13% of total travel in the BSD but 38% of travel to the CBD. Buses cater for 68% of the market in the BSD whilst rail caters for 52% of the Public Transport market of the CBD.

A 1977 home interview survey showed that 60% of Public Transport patrons were female and 45% of patrons were under 18 years old. A further study indicated 35% of patrons were either pensioners or children. These statistics highlighted the social service provided by Public Transport in the region.

**Table 2**  
Public Transport Services — 1978

|                 | km          | Route Km<br>% | Annual Patronage<br>(000,000) | %          |
|-----------------|-------------|---------------|-------------------------------|------------|
| Rail (1)        | 190         | 19            | 27.5                          | 30         |
| BCC (2)         | 619         | 60            | 48.7                          | 54         |
| Private Bus (3) | 207         | 20            | 13.0                          | 14         |
| Ferry (4)       | 10          | 1             | 1.4                           | 2          |
| <b>TOTAL:</b>   | <b>1026</b> | <b>100</b>    | <b>90.6</b>                   | <b>100</b> |

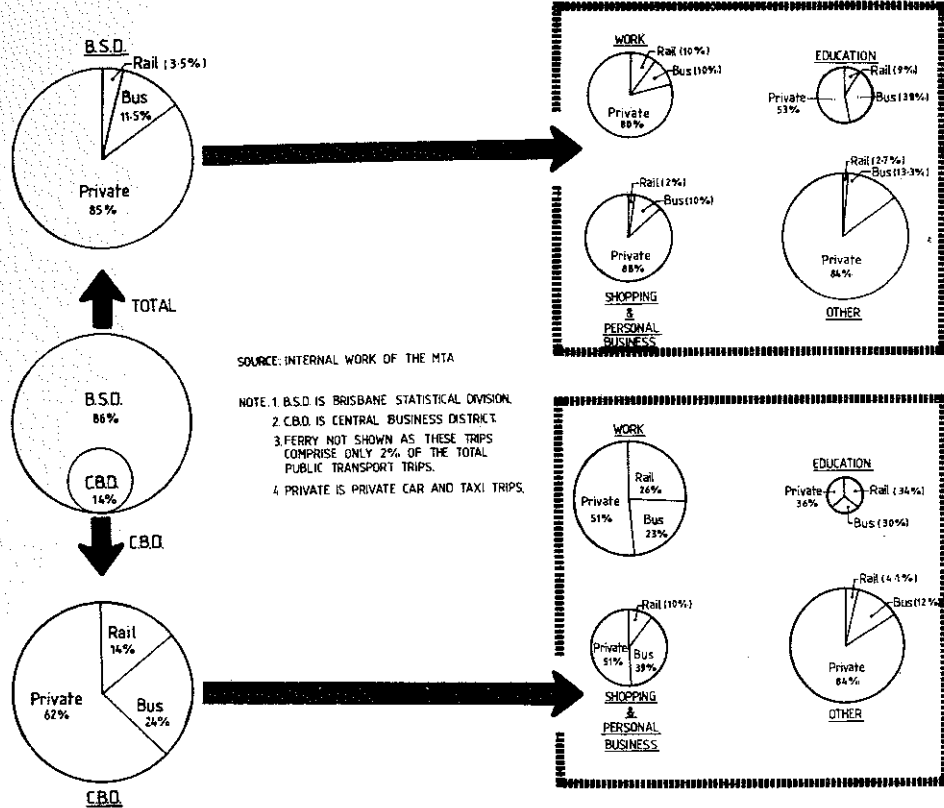
Sources: (1) Queensland Railways  
(2) Brisbane City Council  
(3) Australian Bureau of Statistics  
(estimate of private bus  
operations)  
(4) Internal MTA work



SOURCE: INTERNAL WORK  
OF THE M.T.A.

EXISTING DEMAND CHARACTERISTICS  
Figure 2





MODE CHOICE CHARACTERISTICS

Figure 3

PROJECTIONS (BY TRENDS)

Given such a complex system and given we were keen to examine integrated service networks, our initial thought was to undertake a major modelling effort. A 3 part effort involving -

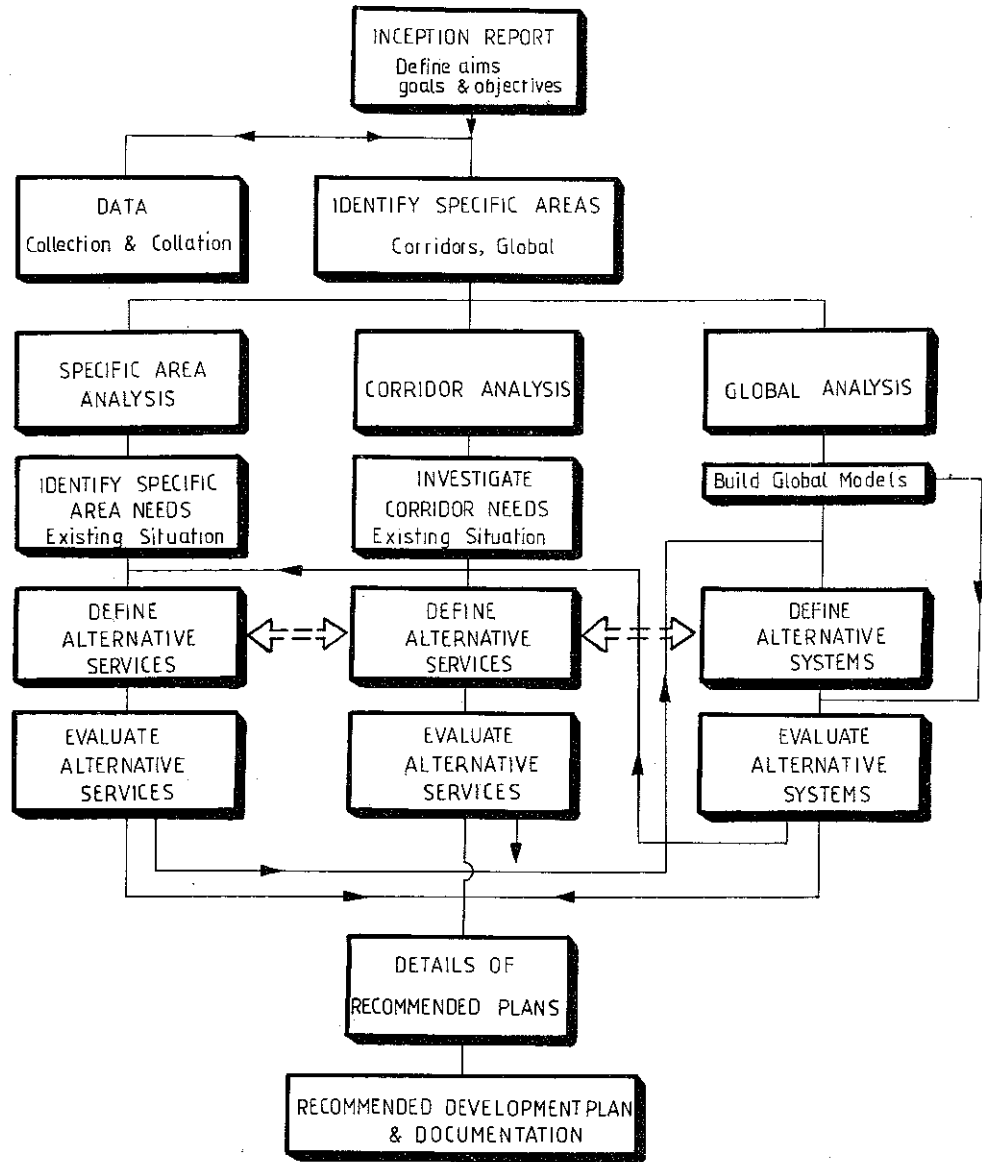
- .. global analysis
- .. corridor analysis
- .. specific area analysis

was contemplated and is depicted in Fig. 4. However suitable models were not readily available or calibrated and it soon became clear that to meet our timing deadlines we would have to resort to a simplified manual approach. Incidentally our modelling endeavours are still proceeding in conjunction with Main Roads Department, but usable results are still not to hand. Thus a computer aided approach was not undertaken for the Dev. plan, but quite serious consideration was given thereto.

Given that we were looking at a 5 year horizon and given we had good historic figures it was decided to carry out a series of trend analyses. These predicted:-

- (a) Patronage would probably continue its downward trend from over 90.6 million annual trips to about 75 million (Sinclair Knight 1978).
- (b) Financial losses (deficits) would increase from about \$36 million to \$65 million (Economics Group M.T.A. 1979).
- (c) Growth and employment trends were away from the City of Brisbane to outer suburbs and to adjacent shires.
- (d) Car ownership trends were increasing and were almost the inverse image of public transport downturn trends.

The low density residential pattern which has resulted from the outward movement of population makes it increasingly difficult to provide efficient public transport. The employment trends away from the CBD have also contributed to the decline in public transport usage. Only 10% of work trips to destinations outside the CBD are made by Public Transport, as many new job opportunities have been created in areas where private vehicles meet the journey to work demands.



PROCEDURE FOR DETERMINING DEVELOPMENT PLANS

Figure 4

PLANNING FLOW DIAGRAM

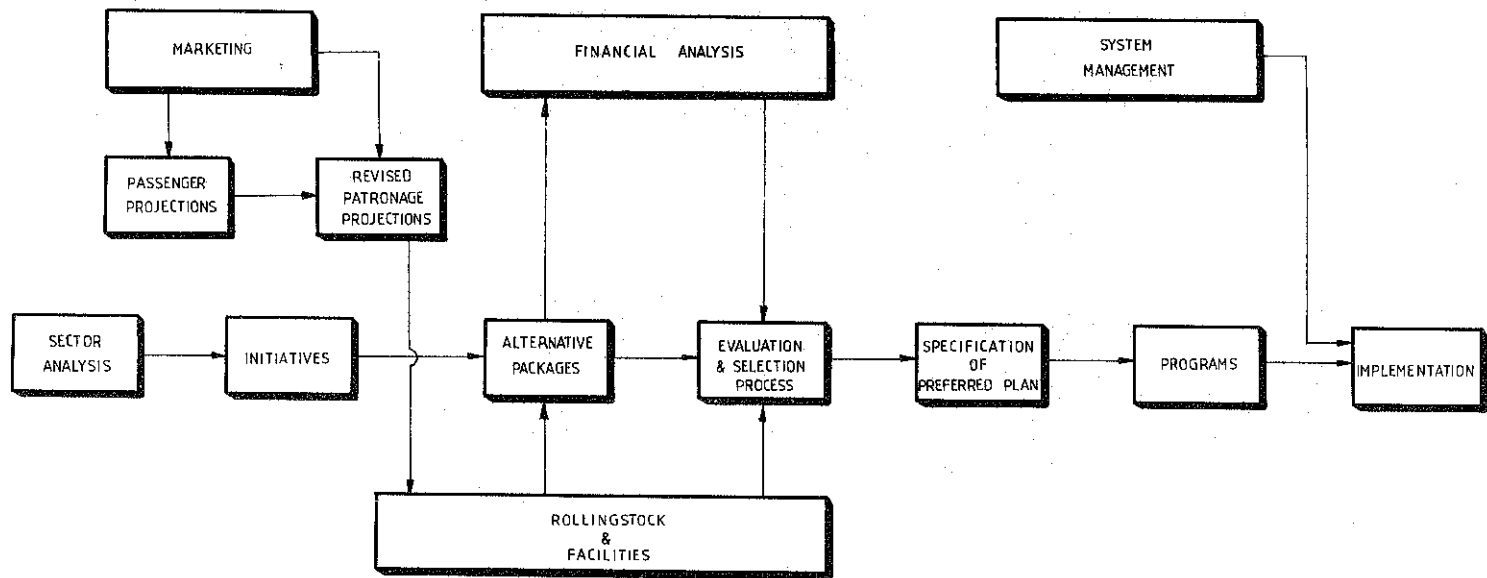
For "Planning the Plan" a flow diagram of activities was developed and specific task duties assigned. A simplified version of this is shown in Fig. 5.

Commenting on the more important features -

- (a) we examined the effect of marketing on Patronage Projections - with the assistance of Professor R. Layton (1978).
- (b) patronage projections were used to determine the rollingstock requirements for 1984 (Sinclair Knight 1979).
- (c) the declared region was cut into a series of sectors and all possible Public Transport initiatives worthy of consideration, were listed for each of these sectors by various study teams.
- (d) review of these initiatives provided input to the detailing of Policy initiatives.

The primary goal of the M.T.A. is to provide a properly integrated and efficient system of public transport for the region. This requires emphasis on expenditure requirements for different levels of service, as well as co-ordination mechanisms necessary to ensure that services are integrated, thereby providing greater trip options to the travelling public.

First it was recognised there were two very different strategies - a zero or no fare situation - which it was predicted, would lead to larger deficits. The alternative view was to adopt the policy of "user shall pay". Each of these were seen as being undesirable in economic terms, and probably politically unacceptable, so it was decided to produce two policy stances that withdrew somewhat from these. As our predicted trends in deficits increases were rather large we felt a policy to contain deficits to present levels in real terms would be reasonable, for they were being accepted at the then levels. This would require operational initiatives aimed at cutting the cost of providing services. In certain cases this could lead to reductions in services.



PLANNING FLOW DIAGRAM

Figure 5

## DEVELOPMENT PLANNING

The second policy was to not concern ourselves too much with existing levels of costs or cost containment, but rather look towards ways of increasing the social welfare and benefit to the community.

Investigations of standards of service had highlighted areas where desirable standards were not being attained.

We then listed all the major initiatives under consideration for the plan and proposed implementation scenarios for each initiative. Thus we had two policy packages and these were debated at some length with Authority members. A simplified version of some of these are shown in Table 3. The evaluations undertaken in support of these initiatives aimed at highlighting the cost implications associated with different approaches to the provision of service as well as the benefits accruing to the operators, users and community.

Fortunately we had carried out two detailed corridor analyses (G.H.D. Parsons Brinckerhoff 1979) (Voorhees 1978) and these had indicated benefits could be gained from bus-rail co-ordination. The results of these studies were "extrapolated" and the total system evaluation looked at both the existing Public Transport network as well as ones with rationalized bus services and emphasis given to integrated bus/bus and bus/rail services.

Evaluations were made of the implications of each of the initiatives and thereafter of the total policy package. As would be expected it became impossible to preserve either of the Policy packages and Authority members, when convinced they had been exposed to sufficient support analysis decided what elements they preferred and and this decision process yielded what we termed the Preferred Strategy. This when fleshed out with the associated programmes became the Development Plan.

TABLE 3

DEVELOPMENT PLAN OPTIONS

| <u>Item</u>                             | <u>Deficit Containment Package</u>  | <u>Increased Benefit Package</u>  |
|---|---|---|
| 1. Levels of Services and Co-ordination | <ul style="list-style-type: none"> <li>. re-organize with bus/bus and bus/rail co-ordination</li> <li>. frequency per route as is</li> <li>. bus kilometres reduced</li> </ul>  | <ul style="list-style-type: none"> <li>. re-organize plus many cross town Links</li> <li>. increase frequency</li> <li>. bus kilometres increased</li> </ul>  |
| 2. Electrification                      | <ul style="list-style-type: none"> <li>. Ferny Grove - Ipswich</li> <li>. Shorncliffe - Kingston</li> <li>. 66 electric cars</li> <li>. 33% wooden carriages replaced</li> <li>. frequency as is</li> <li>. Air conditioning &amp; carpets</li> </ul> | <ul style="list-style-type: none"> <li>. all urban lines electrified by 1984</li> <li>. 100% electric cars,</li> <li>. 100% wooden cars replaced</li> <li>. 30 minute clock face</li> <li>. retain A/C &amp; carpets</li> </ul> |
| 3. Fares                                | <ul style="list-style-type: none"> <li>. Cost recovery for fare box to 50% ie. 25% fare increase, fare increase indexed to CPI</li> </ul>   | <ul style="list-style-type: none"> <li>. fares retained as is with tie to index</li> </ul>  |
| 4. Marketing                            | <ul style="list-style-type: none"> <li>. Moderate</li> </ul>  | <ul style="list-style-type: none"> <li>. High effort</li> </ul>   |
| 5. System Management                    | <ul style="list-style-type: none"> <li>. High effort</li> </ul>   | <ul style="list-style-type: none"> <li>. Need not as great</li> </ul>   |
| 6. Bus Priority Measures                | <ul style="list-style-type: none"> <li>. Measures give operator benefit</li> </ul>  | <ul style="list-style-type: none"> <li>. Majority of projects</li> </ul>  |

RECOMMENDATIONS OF THE PREFERRED STRATEGY

Our investigations of the Ferny Grove corridor, carried out under the P. & R. program, had shown that potential existed to improve services and operating efficiency without increasing overall costs via service rationalization and integration. The broad strategy of the Development Plan is one of rationalization and integration of the Public Transport system. Where reductions in operating costs can be obtained from rationalization measures, these could be reinvested in other parts of the system to improve levels of service, eg more cross-town bus services.

The overall target of the MTA as specified in the Development plan was -

- (a) to maintain and, where possible, to improve overall levels of service
- (b) to hold the expenditure on the operation of the Public Transport system at its existing level in real terms.

Thus we were walking a tightrope between improving levels of service and holding costs. Flexibility in this balancing act was important, especially considering the financial and economic climate.

In rail corridors far greater bus/rail co-ordination was recommended - subject to real benefits and efficiencies being proven in the field progressively. In bus corridors bus/bus co-ordination was recommended where such lead to operating efficiency. To support this integration, a network of passenger interchanges to facilitate mode transfers, were recommended. Besides this bus/bus and bus/train co-ordination the introduction of circumferential bus services is also proposed.

For levels of service we recommended frequencies during peak periods be based on actual demands. The criteria on seat availability at peak is yet to be finalised. For off peak we suggested a minimum 30 minutes off peak service where this is not currently provided. At weekends, public holidays and evenings reduced services to meet the limited demands was suggested.



The Development Plan recommended rail electrification by 1984. At the time we wrote the Plan, fund availability was not assured and we examined two interesting options.

- 1) Erecting all overhead wiring and limiting the purchase of electric cars.
- 2) Elimination as far as possible of all wooden carriages, replacing them with electric cars for use on a more limited electrified rail network.

The Plan also suggested the order for completion of electric stages after Ferny Grove - Darra - Ipswich.

|             |   |             |
|-------------|---|-------------|
| Roma Street | - | Kingston    |
| Mayne       | - | Shorncliffe |
| Northgate   | - | Petrie      |
| Park Road   | - | Lota        |

Roma Street to Kingston was required for the Commonwealth Games. The remaining stages were based on the number of people benefited.

On new rail extensions, having due regard of the financial requirements for electrification, and given our detailed studies (Cameron McNamara 1978) (Pak-Poy 1978) had not demonstrated any clear cut economic case for immediate rail line extensions, we accepted the prudent recommendation of the research studies to examine ways and means of reserving transit corridors in advance of future development.

As reported to the 5th ATRF (Hooper & McCallum 1979) our detailed studies of bus replacement traded off maintenance costs with replacement and a life of 15 to 20 years determined. Taking due cognisance of marketing impacts and passenger appeal the policy suggested was to replace buses as soon as possible after 15 years - this meant about 40 new buses each year.

Two detailed bus priority investigations were carried out on the South East and North West Corridors (Pak-Poy 1976 & 1979) and the impacts of one of these is the subject of another paper to this ATRF (Sayeg & Dudgeon 1980).

The Plan recommends that bus priority measures be introduced on a corridor by corridor basis in order to reap the accumulated benefits along the whole corridor. Brisbane City Council have initiated a programme of such work.

An M.T.A. study (Hooper & Hiew 1978) showed operational benefits of introducing two-way radios in BCC buses. This communication system was recommended to improve the reliability of services, assist with service integration and improve breakdown recovery.

Following our review of private bus operators (Dunne & Di Tullio 1978) some route rationalizations were recommended in order to focus more on rail or trunk bus routes. After initial examinations of alternatives and a submission made by the Private Bus Association, the Development Plan outlines that the M.T.A. would be pursuing possible new subsidy schemes covering urban operations as well as assisting private bus operators to acquire new buses.

In scattered and developing areas, trial bus services and possible para transit services would be tried.

A study commissioned by the Authority (Pretty, Grigg et al 1976) suggested that the present cross river ferries be retained, but that several existing terminals needed replacing or improving. It further suggested we extend the up/down river service probably to Bulimba or Hamilton initially and if successful, possibly extend from the city up-river to maybe St Lucia and the University.

Following a fares study (Rendel et al 1979) and other internal studies we recommended increasing fares, indexing them, making fares more uniform and introducing a zonal fare system that would permit far more service integration. Further it would recognise the complete trip, origin to destination, without the need for new tickets with each new mode.

A series of investigations, (Roy Morgan Research 1976), (Layton 1977), (Marketing Systems 1978) researched the marketing area. The changes recommended to the network, and the new fares system foreshadowed in the Plan would require a conscious marketing effort to ensure favourable public response.

The prime objective of our marketing is to bring about a far more favourable attitude towards public transport by both users and non-users and to increase the number of people using the system. Easy to understand user information as well as ready access to it is high on our marketing efforts. As improvements are introduced, active promotional effort will be undertaken. We are also keen to increase the level of commitment within the system to better meet the customers needs.

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INSTITUTIONAL ARRANGEMENTS

Historically the management of public passenger transport services in the declared region has been fragmented with little overall co-ordination. It was not until the creation of the Metropolitan Transit Authority that any agency has had the unique responsibility for ensuring service co-ordination.

While the Metropolitan Transit Authority has been given this overall responsibility, the key to the achievement of this long term objective is the establishment of an institutional framework within which all parties can effectively operate and co-operate.

During the formulation of the Plan three options were examined reflecting differing levels of Metropolitan Transit Authority participation in the provision of public passenger transport services in the declared region. In summary these options were -

- a) Policy and advisory role
- b) Initiator of change
- c) Operator

In the policy and advisory role the M.T.A. would provide policy formulation advice with the respective operators maintaining independent discretion for the funding and implementation of change. This option has minimum impact on the status quo. However, M.T.A. has the responsibility for over-viewing the total public passenger transport system and advising Government and the operators of potential initiatives aimed at improving the total system integration and efficiency.

The M.T.A. already has the responsibility for the capital works and Planning and Research Programmes associated with the public passenger transport systems in the declared region. The initiator of change option would enable M.T.A. to directly fund new operational initiatives. The adoption of this option would enable the M.T.A. to assume a positive role in the overall funding of the public transport operations and to initiate change in the systems.

## DEVELOPMENT PLANNING

The operator option reflects the situation where the M.T.A. assumes responsibility for the provision of all public transport services in the declared region and would become the sole operator for all services with the exception of rail mode which would be operated under contract by the Queensland Railways.

After considerable discussion it was recommended that the existing operators retain day-to-day management and operational responsibility, while the M.T.A. provides an overall policy and advisory function, supported by an ability to initiate change through capital works and the funding of demonstration projects and other operations initiatives.

The proposed institutional framework essentially dictates a co-operative effort by all parties with the M.T.A. being the prime agency for integrating and rationalizing total system requirements and for initiating action relating to these requirements. The key to its success is the development of an overall environment of mutual co-operation and understanding, wherein the respective roles and responsibilities of each party are recognised.

### IMPLEMENTATION

Government approval was a vital step and their decision essential for on going actions. The Minister for Transport was informed of progress and involved at various stages. Cabinet accepted the Development Plan on 29 October 1979 and directed that we proceed to implement it.

To demonstrate the full meaning of the preferred strategy we had in the Plan outlined 3 programmes covering -

- (a) Operations initiatives
- (b) Capital Works
- (c) Planning and Research

Subsequently we have drawn up a detailed action Programme which covered all tasks envisaged on the Plan and these were discussed and agreed with the agencies

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Next we concentrated on those activities requiring MTA staff inputs and these we subdivided into major and minor activities. Project and team leaders were assigned and activities flow diagrams and schedules developed with these. Some staff re-organization became necessary. The major activities we are concentrating on are -

- (a) Electrification
- (b) System Integration
- (c) Fares System
- (d) Improving ferry services and facilities
- (e) Private Bus Rationalizations which include Para-Transit innovations
- (f) Marketing

As mentioned earlier, integration will be carried out on a corridor by corridor basis and the speed and extent of this is somewhat dependent on the degree of success achieved at Enoggera, the first major Public Transport (BCC/QR) Interchange in the Ferny Grove Corridor.

#### CONCLUSION

The implementation of the policies and programmes of the Development Plan will be a complex undertaking and will have major financial, administrative and operational repercussions on the agencies involved. The detailed planning, design and implementation activities associated with these policies and programmes will accordingly involve complex technical issues and a high level of decision making on significant policy issues.

While actions have been taken by the MTA to ensure that it has resources to effectively manage and co-ordinate the implementation of the Development Plan, it must be recognised that the key to implementation of the actions in this Plan lies in the co-operation of all parties involved in the provision of public transport in the region. Without such co-operation the Authority is not capable of achieving the objectives stated in this Plan.

In summary one must appreciate that Public Transport is a dynamic system thus vigilant alertness is essential, along with a certain flexibility to deal with variations. The Development Plan to me is a framework which takes Planning and Research, helps you get decisions and thence sets up a point of reference for on going activities. Our on going planning must check and monitor the effectiveness of these programmes and be flexible enough to accommodate changes and make appropriate adjustments where deemed necessary.

## DEVELOPMENT PLANNING

In so far as it was a rational process, a priority ordering emerged for the next 5 years. It is to be hoped the aspirations of our Development Plan will be realised within the allotted period. Certainly we at MTA will be trying to achieve the targets set!

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