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Transportation Planning Past, Present and Future in NZ

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ABSTRACT

Part 1 of the paper traverses New Zealand's transportation planning experience over the past 50 years. There have been three planning statutes, three generations of transportation reforms and in December 2002 the government's announcement of the New Zealand Transport Strategy. This paper briefly describes the demand and supply of land transport over the period from 1960 to 1980 and then 1980 to 2003. It considers the level of transportation planning activity throughout the past 50 years. It includes comments on associated planning for urban form, environment, regional planning and the role of Regional Land Transport Strategies.

Part 2 describes possible changes in transport demand in the next half-century. It considers the issues of transport supply and the lessons we can learn from the present arrangements for the technical planning, implementation and a regional framework of relevance to the future. It states a case for more strategic planning, which unequivocally falls with regional planning the central function of the Regional Land Transport Strategy in the transportation structures. This change in emphasis and additional funding is essential to match the transportation needs for 2050.

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PART 1. THE PAST 50 YEARS

1.1 Three Generations of Transportation Planning.

a) Historic and 1940 to 1960

Developing transport networks has always been a vital part of central and local government activity from the outset of European settlement in New Zealand. The highway system has emerged from pioneering bridal trails, to bullock tracks, to roads, to highways, to motorways. It now comprises about 10,700 kms. of State Highway and 80,000 kms. of Local Government road. During the late 1800s and early 1900s an extensive rail network was developed which, following some closures, now comprises 3,900 kms. The total port system of over 20 harbours was developed by the 1860s. The 13 major ports were expanded to match the post 1960s containerisation. The 27 all weather airports and the sealed runways have been put in place since the 1960s. The 1950s also saw the demise of the urban tram systems and their replacement by public transport buses.

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In the post WW-II period there were 15 years of overdue repair and maintenance of our transport systems. A period of great energy from the engineers and builders who had plied their craft through 5 years of war. The call was to tar seal the network of 2lane roads and a major programme of modern reinforced concrete bridge replacements. By 1950 the need for higher standards of engineering, stronger pavements and improved geometric design for both rural and urban main roads had emerged.

During the 1950s these physical elements were being overtaken by a demand for traffic signals, car parking management and increased traffic regulation. The on-rush of the increase in motor vehicle ownership gave rise to the need to better understand the land use traffic generation relationships and to introduce the need for forecasts of long term traffic growth in our cities.

b) 1960 to 1980

Traffic demand, highway and transportation planning moved rapidly forward in the 1960s. The first National Roads Symposium in 1961 recognized traffic engineering as a new and major specialty as part of civil engineering. From that time the profession and practice of 'transportation engineering' and 'transportation planning' became an established part of community development and transport infrastructure development. This discipline was first identified by government (In the MoW and MoT), then adopted by city councils and later supported by an extensive consultant network.

During the 1960 to 1970 period there was a commitment by the National Roads Board (NRB) and Regional Planning Authorities to press forward with New Zealand's first series of comprehensive regional land use and transportation planning studies. Some were undertaken by US consultants others, e.g. in Christchurch, were staffed locally. They provided an opportunity for soundly based survey and research led by regional planners, engineers and urban geographers to undertake analysis, modeling and assessments.(Ref. CRPA-Johnston et al, Christchurch 1965).

Over 22 years, from 1954 to 1976, 33 transportation studies were undertaken, 18 covering the largest urban areas. Other special studies, including two mass Transit studies for Auckland and also the National Transport Policy study, were also undertaken. These resulted in the preparation of regional transportation plans in Auckland, Wellington, Christchurch, Dunedin, Hamilton and joint city/district transportation plans in other cities and towns. Regrettably this level of survey, analysis and transportation planning was not sustained and has never since been repeated .

The principles adopted by the planning authorities tended to rely on US experience for the technical modeling and traffic assignments and on English town planning practice of 'traffic corridors and environmental rooms' for the spatial provision of access and land use zoning. The tradition of the integration of the transport policies within the overall portfolio of regional planning policies was strongly advocated and accepted at the Government's NDC Physical Environment Conference (Ref NZ.Govt May 1970).

By the mid 1970s, in some communities, there had been two rounds of transportation planning. Many innovative variations in assumptions on modal split and variations in land use options had been tested as part of the scenarios for alternative regional growth strategies.(CRPA – Second Transport Study – 1975).

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This period of technical and planning effort was recorded in Road Research Unit Bulletin No. 33 (Ref. NRB-1977) and the general conclusion was that *"the innovative attitude shared by most of the road controlling and planning authorities, supported by the study team and the competence of staff in Roading Division, (NRB), has meant that New Zealand has enjoyed extensive use of the best transportation study techniques available during the 1954 to 1976 period."*

That report also noted: *"the incidental benefits to town planning attendant on the New Zealand Transportation Studies have been considerable. Transportation studies have provided the only major quantitative analysis and (planning) modeling of New Zealand's urban areas."*

Parallel with these comprehensive transportation studies the Councils throughout the country were developing their District Planning Schemes under the 1953 Act. By the early 1970s most councils had rationalized their transportation policies and included road hierarchy classifications with corresponding rules (ordinances) in their town plans. This was a major step forward and a useful and productive interface between the engineering and town planning professions.

c) 1980 to 2003

One could well ask why the widely based and comprehensive platform of transportation studies faded and became "non-u" during the 1980's and 90's. Needless to say it was a combination of institutional change of emphasis, central government and local government reform, and political 'fashion'. In addition to the changing statutes there was the loss of advocacy agencies (such as the Ministry of Works and Development 1988) and a reducing budget for major strategic road works. This was overlain with the re-focussing of government functions and responsibilities on asset management and short term programme horizons..

Auckland, Wellington and Christchurch reviewed their Regional Transportation Plans in the 1980s (Ref. CRC Transport Section Two – 1990) but the RM Act 1991 did not recognize those Regional Plans and by 1995 they ceased to have effect.

Up to the mid 1980's the transport system as a whole was largely managed by central government through regulation, subsidy, planning and also government air, rail and road operations. Both national and local government also provided, until 1989, all ports, airports, passenger transport, road networks, national airline and railway services. The transfer of the operations and ownership of ports, rail, and public bus systems to private enterprise, SoEs, and council owned companies also dramatically altered responsibilities and attitudes. During the 1986 to 1992 period there was a resulting dramatic reduction in the number of professional people employed by government and local government in transportation planning.

1.2 Changing Demands

While the proportion of the population directly employed in the transport sector has reduced in the post 1980s the insatiable appetite for transport demand continues to increase. Today the average household expenditure on transport and travel is 18%. In the recent past this has been increasing about 1% every 5 years. (Ref. Statistics Year Book.) The 1959 equivalent figure was about 10%.

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Some idea of the scale of the urban transport issue can be appreciated from a comparative selection of 1959-1996 statistics based on the Christchurch metropolitan area. Shown in Table 1.

The Christchurch statistics in Table 1 and Table 2 are included as being representative of the nation urban areas. It is a region with 10% of New Zealand's population, commerce, and rural resources and is typical of much of the nation's mixed urban and rural activity, which gives rise to transport demand.

Table 1 Christchurch Urban Area Changes in Travel 1959 and 1996

Whole City	1959	1996	Change Ratio
Population	216000	319000	1.48
Car Registrations	54000	213000	3.94
Goods Vehicles	10300	39000	3.78
Bus trips (pa)	21 Million	12 Mill.(2001)	0.57
Daily Vehicle Trips	240000	865000	3.60

New Zealand has always had a high ratio of car ownership and still ranks fifth in the world. For Christchurch in 1959 there were 3.35 vehicles per 10 people rising to 8.2 in 1981 and 8.4 per 10 people in 1996. The growth of vehicle numbers is illustrated in the graph of Figure 1.

The proportion of commercial vehicles has risen from 10,000 in 1959 to 37,000 by 1996 i.e. a 3.7 times increase. The number motorcycles scooters and power cycles grew from 10,000 in 1959 to 24,000 in 1981, but with the drop in fuel prices and the advent of cheaper imported cars this figure fell in 1996 to only 6,500 for the Christchurch area. The number of buses and taxis has doubled from a modest 900 in 1981 to 2000 in 1996. This is, in part, due to taxi and bus deregulation. (Ref. CCC – '40 Years of Change' - Douglass 2001).

The total Christchurch employment in 1959 had reached 76,000 of which 42,900 were in the central city area. As shown in Figure 2. This had lifted to 144,300 by 1999 of which 37,700 (i.e.5000 less than in 1959) were in the city centre. Thus the travel patterns for all activities, production and sales, have become more diverse moving all over the suburban areas. The nature of employment has also altered dramatically with a significant increase in professional and administration services (to 38%) and retail clerical (to 32%) and industry falling (from 38% to 30%). The trips generated by retail uses are several times greater (typically 10 vehicle trips per employee per hour) compared to offices (3/emp/hr) and industry (1/emp/hr). Thus the decrease in industrial employment trip making has been more than offset by trip growth related to the retail, professional and administrative sectors.

The relative changes in travel modes for the whole urban area (i.e. car drivers, bus, bicycles and walk trips) between 1959 and 1996 are set out in Table 2 and for the city centre are illustrated in the charts of Figure 3.

TABLE 2. Changes in Modal Split 1959 - 1996

Mode of Travel	1959	1996	Ratio of Change
Car Drivers + Goods	40 percent	71percent	1.77
Vehicle Passengers	11 percent	18 percent	1.72
Bus Passengers	13 percent	5 percent	0.30
Bicycle+M/Cycle	28 percent	6 percent	0.27

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It is concluded that between 1959 and 1996, while population and household numbers have increased steadily (an increase of about 1.5 times in population and 1.8 times in households in Christchurch) the growth in vehicle trip making was dramatic. (a 4 fold increase in daily vehicle trips in 40 years).

The contribution of non-vehicle modes (bus, bicycle and walk) has decreased to a half of their earlier proportion and now together all three modes represent only 13% of total person trips. While all our metropolitan areas are staging a measure of recovery in public transport at present the figures of public transport travel as the trip to work for our metropolitan regions is currently (2001) :- Wellington 16%, Christchurch 9%, Auckland 8%, Dunedin 6% and Hamilton 3%.

The travel mode changes show, as we enter the 21st century, the major increases in vehicle use and reflect the nature and mobility of a modern city with its typically dispersed pattern of land uses and diverse travel patterns. In 1959 the vehicle driver and car passenger trips represented 51% of all trips, by 1969 this had increased to 67% and by 1996 to 88% of all trips in the Christchurch urban area. This results from major growth in non-home based travel (23% to 51%) and trips to shops, schools and recreation increasing at a much faster rate.

The results of surveys undertaken in 1969 and 1996, shown in Table 3, reflect the vehicle trip changes for the four cordons or geographic distribution of trips.

TABLE 3 – Geographic Purpose of Travel by Car 1969 and 1996.

	<u>1969</u>	<u>1996</u>	<u>Ratio 1996/1969</u>
• External travel to/from ChCh.	27,600 vpd	99,000 vpd	3.57
• Central Area travel	146,800 vpd	275,000 vpd	1.87
• Travel between suburbs	153,000 vpd	590,000 vpd	3.85
• Travel within suburbs	78,000 vpd	115,000 vpd	1.47
• Total daily vehicle trips	405,400 vpd	1,079,000 vpd	2.66

Note:-The Christchurch urban area is the main urban area excluding the townships north of the Waimakariri and west of Templeton.

These show dramatic increases for the external travel and travel between suburbs. These are growing at a very much faster rate than trips to the centre and also faster than population and vehicle ownership. Our high levels of mobility, and the ever-increasing desire for individual destinations, have dramatically increased travel demand in the past half-century. It seems set to continue in the next 50 years as well..

(Note: A complementary more detailed paper by Bill Barclay identifies, for the whole of NZ, the demographic, economic, energy and travel demand changes over the past 50 years and likely future trends.)

1.3 Changing Supply

Some Regional Plans for Transportation (Ref. Transportation Section 2 – CRPA 1971), included provisions for standards of design, programmes of work, the control of abutting land use and provided the essential frame-work for joint state highway and city/district council co-ordination.

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Many good improvements have been undertaken, including some new strategic links on the regional road network. Slow traffic precincts have been created in the centre city and the one way streets have enabled safe areas for major pedestrian malls. These projects brought with them open spaces, opportunities for urban renewal and general upgrading of a city's physical structure to match the needs of the late 20 th. Century.

Some progress has also been made latterly in the enhancement of the public transport bus systems and the regional councils have worked hard to gain this turn around. Since 1999 bus trips in Christchurch and other cities have enjoyed a modest increase.

Cycle travel is being encouraged. It has appeal to a relatively small part of the population. This is in contrast to cycle use in the 1950's when for school children and people generally in their trip to work cycling comprised up to 20% of the travel mode. Unfortunately cycling is perceived as an unsafe travel mode, but the creation of cycle lanes and cycle -ways may help to overcome that.

Car parking was obviously deficient in 1959. Over time the matter has been corrected and in Christchurch the following situation applies: -

- In the city centre a steady increase in supply has occurred to match the demand rate. This has been supported with improved city centre traffic management, parking pricing, and council initiated parking buildings. In addition the private sector has provided both commercial parking and met its own offstreet parking needs. Auckland and Christchurch are two of the highest parking supply cities in Australasia at between 1.7 to 2.0 spaces per 100 sq.ms.
- The new suburban centres and supermarkets have supplied free offstreet car parking space to match estimated demand. For large new centres the demand varies on peak season days from 5 to 6 spaces per 100 sq. ms.
- For residential areas the parking is typically at an average level of 1.27 to 1.6 cars per household. However the variation is quite wide when individual households and small inner city suburbs are surveyed. For example in inner Wellington an average figure of 0.8 to 1.0 occurs and in such suburbs the non-car households increase from a national average figure of 10% to a local high of 35%.

There is no doubt that in our cities both the owners and visitors to all activities are generally well served with all forms of parking space. Outside the inner city central core of Wellington and Auckland, there is no physical restraint on car use because of any significant parking difficulties.

Since 1980 a shortage of funds, reflecting a hostile political attitude toward vehicle travel, has caused the supply of new roads to slow down. For reasons of diplomacy and expediency improvements have been confined to safety and congestion relief measures only. The works now included in annual budgeted programmes have to meet a B/C ratio of no less than 4. Few major new strategic road improvements, which significantly change or add to a regional network, can ever reach a B/C ratio of 2 let alone a B/C of 4 which is now required. Network improvements have therefore become confined to 'high scoring' trouble spot and peak hour congestion relief only. The non-traffic, civic design, environmental and urban strategy reasons for having a logical and quality designed set of networks for all modes (including roads for vehicles, cycle ways and bus lanes stretching out ahead of demand), have been overlooked and forgotten.

These broader objectives are not currently part of either the national or regional land transport strategies or encompassed in Transfund's current B/C priority setting.

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1.4 The Environment

Linked with the integrated transportation planning exercise it is necessary to define the effects on the environment as well as the nature and changes in land use activities, traffic loading on the network, and emerging community attitudes in the region. Some of these relationships including the establishment of "rooms and corridors" were propounded strongly in the British Report by Colin Buchanan report. (Ref. "HMSO. Traffic in Towns" 1961)

Tragically in this country the withholding of funds during the 1970's and 80's has meant that a full generation of urban development has occurred without a corresponding effort to segregate traffic from the suburban community 'rooms ' or to provide separate networks for each mode..

As Professor Colin Buchanan in his 1966 report to the Christchurch City Council stated:-

"There is only one principle where by an urban area can cope with large volumes of traffic and yet preserve acceptable environmental conditions. This is the deliberate canalization of the longer movements onto a network of road corridors designed for movement, and the deliberate creation and investment in environmental areas (or rooms within the network) where the needs of the environment can predominate."

This objective is just as relevant today. These overall good design practices have not been pursued very energetically or successfully. At the more detailed level of design, layout, landscape, visual mitigation, noise protection and civic design there are, however, some good examples of individual developments. Sites where adequate space has been set aside and environmentally satisfactory design solutions have been found, including buffer landscape zones and other mitigation measures.

Increasing property purchase costs and a slavish adherence to Benefit /Cost analysis has latterly resulted in a steady decline in motorway and arterial road corridor widths and space standards. Even compared with those of some earlier motorways, memorial avenues and boulevards built in the 1960s and 70s. Such restricted corridor width leads inevitably to lower environmental qualities for the neighbours, poor landscaping treatment and a lack of sustainable corridor width for improvement to match future needs. This has serious and detrimental effects on the adjacent environment.

1.5 Consultation and Sustainability

While some economic benefits may have emerged from the government and local government restructuring processes of the 1980s and 1990s at the same time there were certainly severe technical dislocations resulting in a lessening of long term planning. During the past 20 years, we have coasted along relying on the quality of planning undertaken in the earlier 1960-80 period. Now in the 2000s with transportation planning resources below that which is necessary, communities are running out of both transportation leadership and ideas. Even in our largest cities we may 'have lost the plot' on the 30 year transportation horizon.

Another major change, since 1960, is the increased extent of public consultation, public meetings and substantial Environment Court references and hearings. What is certain is that there is now

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more public consultation, more submission processing, more public relations and 'spin doctoring' associated with public authority planning and infrastructure programmes, than ever before. There has, as a result, also been a reduction in the resources and planners allocated to long term research and development type work in the areas of regional planning and in particular for major future transportation solutions.

This rise in the need and extent of consultation and submission coincides with the period when central government, through its agencies (MfE and EECA) is endeavoring to explore and define 'sustainability'. The pursuit of a definition of sustainability is a difficult quest at the best of times. It is, however, providing an opportunity for conferences, seminars and traveling road shows.

Most of our international guests tend to reflect strong and 'fashionable' support for detailed design solutions. This includes improved urban areas including pedestrian malls, walking cities, higher density housing, more central living, light rail, increased support to bus, cycle and (not surprisingly but rather illogically), opposition to anything that might improve accessibility for the motor vehicle modes of travel.

I am familiar and support good urban design standards both at the micro and the macro level.. However many of the designs and city situations described, at these seminars over the past 2 or 3 years, instance cities with little in common with our New Zealand situation. They are very different population densities (100 to 200 units/hectare compared to NZ's 10 to 20 units/hectare), have high central city residential populations, quite different land use patterns, different supply/reliance on public transport and different government structures to those which prevail in New Zealand. In addition their transport and infrastructure investments are frequently contributed from central or state governments.

New Zealand cities are fundamentally different. Different in density and activity patterns and reflect different social and cultural demands. Our infrastructure and housing does not enjoy state subsidies or funding support. In New Zealand solutions have now to be found at the local/regional level and our regional communities will more and more have to take greater responsibility for their projects in urban infrastructure, urban form, transport and the other elements of urban planning. Councils in NZ would be unwise to 'adopt' off the shelf solutions from other jurisdictions, cultures and environments without careful study and 'adaptation' to match the NZ circumstances.

Planning does, of course, ultimately involve convincing the constituency, who pay for the privilege. However the really difficult big transportation planning issues require detailed careful, multi-disciplined and robust analysis. Further they are not issues easily resolved by overseas examples, political expediency and councillor preferences or 'gallup' poles and home interviews. They require clear strategic objectives, long lead times, careful and consistent analysis, and answers that match each community's actual needs while meeting high environmental standards..

Our biggest issue in the past 50 years, and it will continue to be for the next 50 years, is to meet the demand for personal travel, by individual vehicles (in one form or another and powered by muscle, solar energy, fossil fuels, electricity, and hydrogen cells in a variety of ways), on a land based network. The solutions involve detailed regional analysis of sustainability and regional consultation. These are big challenges where decisions on the broad framework should be made early so the community can adjust to any plans and changes proposed.

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1.6 The NZ Transport Strategy 2002 (NZTS)

The government published, in December 2002, the NZ Transport Strategy. Parallel with the NZTS the government introduced the Land Transport Management Bill which provides for a more flexible funding framework for land transport so that the needs of all users are taken into account.

The strategy is not a strategy under any legislation, eg the Land Transport Act 1998 Secs. 170-174, or a National Policy Statement under of the Resource Management Act.1991 Secs. 45-55. Thus it is a 'white paper' or a policy statement designed primarily for the government's transport family (MoT, TransitNZ, LTSA, CAA, MSA, TAIC, Transfund). It has no statutory status or enforcement in any statutory planning process. The NZTS will not constrain the Environment Court but it will presumably provide the basis of submissions and evidence for any government witness.

The NZTS is a vision of the government's transportation intent in respect of economic, safety, mobility, public health, and environmental implications. It is a comprehensive government policy statement as the basis of non spatial aspects of transport policies. The NZTS places some emphasis on energy conservation, fuel use and pollution but these are the only environmental indices identified. The strategy includes only incidental references to the implications of development alongside arterial roads, the issue of environmental capacity analysis (ECA). and to the structuring of urban development to achieve sustainable settlement forms. It is a statement that may assist regional or district planning and council programmes in a general way only.

The NZTS has no reference, to regional policy statements, regional planning, land use planning or to spatial strategic planning. It does not refer to the integration of land use and transport, to transport corridors as multiple function spaces for integrating transport networks, or the transport corridors as structuring influences in urban development. No mention is made of the imperative to define network hierarchies and to seek to integrate policies between modes for both goods and people travel. The NZTS proposes a planning time horizon of only 10 years, which is quite inadequate for strategic transportation planning.

The focal role of Regional Land Transport Strategies (under the Land Transport Act) prepared by each regional council is also to be reviewed to link with wider issues of resource management and infrastructure planning. Curiously Transit and Transfund are to be charged with 'focus on land transport as a whole'. However this is already a task the responsibility of Regional Councils.

Regional Councils such as Auckland, Wellington, Canterbury and Hamilton, while welcoming this broader government interest, are probably observing that such issues are already incorporated in their operative third generation RLTS and have been covered generally in their Regional Policy Statements. Perhaps the time has arrived for these regional councils to prepare their own Regional Transportation Plans, under the RMAct, so as to establish the relevant strategies and context for transportation planning at the regional level.

The strategy has, therefore, several omissions and does not mesh well with the other transportation policy documents at the regional and district levels. Perhaps this NZTS (2002) should be seen as Step 1 in the further development of a national strategy which would, in the future, have some mandatory effect.

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1.7 The Regional Land Transport Strategy (RLTS)

The Land Transport Act 1998(LTA) sets out the requirement for Regional Councils to prepare a Regional Land Transport Strategy (RLTS). The RLTS may not be inconsistent with any Regional Policy Statement (under the RMA) and also annual monitoring reports must be prepared. Presumably, in so far as government input is relevant, it will now be required to reflect the NZ Transport Strategy 2002..

All regions have an RLTS and some of them, e.g. the four main cities, are sophisticated and being pursued and reviewed regularly. (Ref. WRC –RLTS Realistic Transport Options – 1999) They are all subject to annual reports and the quality of the annual monitoring programmes are improving steadily. These RLTSs are generated in the regions and the source of valuable transportation objectives, information and proposals.

The RLTS is, however, only one of several instruments establishing the policy environment within which the regional transportation system operates. It must consider State Highway and City/District Council plans and strategies as well as those of the LTA and Transfund procedures. It also considers all land modes including rail, public transport, the conveyance of goods the conveyance of people and safety issues.

While the RLTS's prime purpose is to reconcile the operational roles of all these agencies it is , at present, the only instrument required by statute which links these policy documents together and relates them to significant land use, growth programmes and strategic regional planning issues. It is also where the government through Transit, the LTSA and Transfund currently have policy contact with the regions, i.e. Regional and City/District Councils, on an annual basis.

The RLTS can also provide an indication, but not a binding commitment, to any proposed programme of land transport changes and strategic improvement programmes for all land based modes of travel. The content and issues included in current RLTSs and the associated instruments under other legislation are too lengthy to include here. (Ref. DCS - 'Contents and Functions of RTPs and RLTSs' - 2003)

The RLTS has proven to be a valuable and effective document for focussing attention on the strategic transportation issues affecting each region.. However it has not got the status or effect to ensure the strategic directions and programmes it contains are implemented by the many transport agencies involved. (Not just the ambiguous precept 'of avoiding being inconsistent with ' as the Act states at present.) This is a major handicap identified in the Wellington Regional Council's 'Wishbone Study ' which seeks to underline the need for amendments to the legislation to make the RLTS more effective. (Ref. WRC 'The Wishbone Study' 2000).

PART 2 THE NEXT 50 YEARS

2.1. The Fate of Existing Long Term Strategic Projects.

Transport investment and improvements in the recent past have placed emphasis primarily on projects that meet existing and immediate deficiencies and local congestion points. Current programmes also include a subsidy support to existing public transport bus and rail facilities. Modest extensions of cycle and pedestrian facilities are also currently receiving greater attention .

Surface transport, including the re-establishment of rail corridors, the integration of multiple mode networks for both people and goods travel, has not been the subject of comprehensive city-wide or region-wide investigation and scheme planning in the recent past. It is only through a balanced mix including longer-term strategic improvements alongside short-term expedient and congestion solving projects, that a livable level of traffic service and an acceptable environment for the future can be achieved.. In this way, assisted by effective analytical models and transportation planning tools, we can test the real options for strategic improvements in transportation, reduce energy use and achieve other environmental benefits.

Not only in Auckland but throughout the country we have , in the past 20 years, regrettably lost a lot of ground on the overall situation of congestion, safety and enhanced environment. Because of a lack of transportation planning, a lack of political commitment and a lack of funding for longer term network improvements, few really significant strategic transportation improvements and/or programmes have been initiated. Some dramatic improvements are now required to materially alter or improve travel patterns as a pre-requisite to matching the dramatic growth in vehicle traffic,

From the economic Benefit/Cost (B/C) priority experience the big-ticket items on strategic motorway improvements have all failed to even enter the B/C project lists. This includes major items e.g. in the Wellington region, (the strategic Inner City By -Pass and Transmission Gully), in Christchurch (the development of an effective northern arterial route through St Albans and a southern motorway around Wigram to Rolleston), and the Auckland situation (urgent need for the completion of a continuous urban motorway network and development of a public transport and light-rail system).

There is something dramatically wrong with the present system of priority setting where the critical big strategic changes to the network do not enter the programme queue. In addition little research and no real investigation of the integration of road, rail, air and sea transport is currently sponsored by government or the regions.

In summary, a mixed bag of about half of the recommended new road links derived from the earlier regional transportation plans have, between 1960 and 2003, been initiated. But the most of the really expensive links that make a significant difference remain to be done. The coherent multi modal networks, proposed in the 1960s and 1970s have not yet been achieved.

Obviously there must be dollars spent in a continuous and agreed plan/programme of long term strategic network elements, parallel with the other basket of dollars spent on good housekeeping and congestion hot spots of local improvement of the existing system.

2.2 Trends in Future Travel Demand

Turning to the future. The growth of vehicle travel and goods movement by road continues to increase, even without great growth in population. Car driver and truck travel represents over 80 percent of all travel and these have increased five fold in 50 years. While the vehicle trip growth rates may tend to level off in the years ahead it will not abate or go away. On present evidence there will be a further doubling, at least, in trip making and vehicle travel on our road networks by 2050. For the Christchurch urban area this is an increase from 1.05 million vehicle trips in a 24 hour day in 2000 to about 2.0 million trips in a 24 hour day for a population of 500,000 expected around 2050. This is illustrated in Fig 4. This is a massive increase and challenge coming on top of our present increasingly congested network and an existing network that needs additional strategic improvement already.

The subsidies to public passenger funding nation wide is of the order of \$ 160 million p.a. This is about the same figure as the four main cities spend on their street maintenance each year. Even with subsidy increases and greatly improved systems, bus and rail seem unlikely to have more than a marginal effect on total trip making. or vehicle travel by 2050.

Vehicle motive power will undergo a major revolution with the increase in use of hybrid engines and hydrogen fuel. A return to smaller sized cars and more efficient engines is also desirable. These changes will help in environmental and marginally in capacity terms. But they represent a replacement rather than causing an alteration in total trip generation rates. A major gain in efficiency and reduction in vehicle flows could be to increase the number of car passengers and car occupancy rates. This ride sharing will require a habit change and may also compete with public passenger transport and other minor modes. However it is the one significant mode shift that can be achieved without any further capital or subsidy expense.

At this stage it may be assumed that the minor or non vehicle modes will retain their present share of mode split. In the graph we have assumed an increase from about 8 % to 10% for bus and bicycle use. But even that will require a lot of effort and vigilance to keep non vehicle mode use at these levels. A recent example of an unplanned and dramatic mode shift has been the change in student trips to school where about 40% have shifted from cycle and pedestrian to car passenger trips in the past 15 years.(Ref. Heike, Lincoln University –2003))

Much effort will continue to be placed in detailed design for pedestrians, for footpaths and malls, cyclists and cycle lanes and community roads or 'living streets'. These are desirable and certainly are very attractive political options at budget and ballot box time. It would be hoped that the art of providing pedestrian, cycle and open space continuous networks through the 'rooms' of our cities can be rediscovered and also required in future residential subdivision. If this is achieved across all urban areas there could be a return to more trips on foot and cycle.

The travel situation will become more diverse in temporal, geographic, work and recreation habits in the future. It is desirable to continue efforts in education, training and all the modern influence and 'spin doctoring' in public information, so as to alter attitudes, habits and travel demand. However even when taken all together the non-vehicle modes will alter mode split and travel demand only a few percent at the margins. I expect car drivers and goods vehicle drivers will represent at least two thirds of all trips in 2050 , just as they do at present.

2.3 Lessons from the Past Half Century

What are the lessons from the past 50 years of relevance to transportation planning in the next half century?

High standard of networks. New Zealand has a reputation for a high standard of construction and operation of its transportation networks. For the existing roading infrastructure the institutional arrangements between central and local government, Transfund, Transit and the LTSA have evolved uniquely and are well understood. This paper's concern is for the lack of progress on longer term planning for new strategic improvements. i.e. concern for the future shape of the networks rather than their operation and management. The reputation is well founded for the population up to 3 million, but gets very shaky as we move to 5 million.

The benefits of integrated transportation planning are great when this process occurs consistently at national, regional and district levels. It does assume the resources for a systematic and ongoing strategic regional planning and modeling process. It cannot rely on ad hoc tactical project scheme planning at the programming stage. With the latter alternative the future outlook is drifting from congestion crisis to crisis without knowledge of the causes of such transport demand. Without regional strategic planning of growth and land use changes, we cannot avoid the worst features of traffic conflict and congestion. Especially in our major urban areas.

Regional structuring and urban design benefit from strategic land use and transportation planning which provides the frame work for the 'corridors' and 'rooms' and points to identifying compatible and timely transportation solutions.

Regional monitoring of transport and the effects of change is essential. It must be measured consistently against transport demand and use indices embracing agreed regional objectives.

Strategic projects and programmes may in the past,(1950s and 1960s), have been too ambitious. But they were soundly based and should have been continued, even if delayed, and not abandoned. The political withdrawal and funding limitations have led to unilateral government, council and Transit abandonment of key network elements. This ability for transport agencies to ignore, at their convenience, essential strategic projects must be corrected. There is a need for national and regional strategic agreements as to ten year programmes within the longer 30-40 year planning.. Such agreements should only be altered after thorough testing of alternatives and deliberate amendment of the relevant RLTS or RTP. It should not be possible for an agency to unilaterally refuse to undertake a strategic project or programme.

Benefit/Cost processes while being essential for establishing overall priorities do not reflect the importance of some key strategic transport corridor developments. Major strategic transport improvements seldom have a high B/C ratio sufficient to place them in priority ahead of local congestion relief. B/C priorities can, in some cases, be used to repeatedly delay the commencement of big and essential longer term strategic links in a network.

Ample Corridor widths are essential to achieve multi purpose facilities with multiple use corridor margins (eg cycle ways, pedestrian ways, grade separation, on occasion bus lanes, HOV lanes and light rail tracks) as well as improved landscaping, improved buffer areas and integration with adjacent development.

14.

Resource Management processes including 'requirements' for transport designations are generally working satisfactorily. However the absence of an effective 'national policy statement' and the generality of present 'regional policy statements' have frustrated many worthwhile transportation projects. A more structured approach supported by systematic longer-term research embraced within Regional Plans and RLTS is necessary for the future.

2.4 Trends in Future Transport Supply.

Obviously not all matters can be solved by building our way out of our 'dilemmas'. Extension and enhancement of the networks is only a part of the answer. However we begin this millennium with a backlog. After 50 years of road network development, since 1953, we have achieved, at best, 30 years of the envisaged improvements. Thus we are about 20 years behind on selected major strategic works in all regions.

The biggest problem facing us is to solve the arterial road issues so as to meet the needs of the more mobile, more active and larger trip making communities of the next 50 years. There must be conscious design to segregate the different modes and functions in a network system. This must be supported by a clear distinction, or hierarchy of road types, cycle and pedestrian ways. Such policies are needed for safety, convenience, environment and urban form as well as yielding transport efficiency.

Colin Buchanan stated to the Christchurch City Council in 1966

"The essence of the problem is to establish a hierarchy of networks related to different situations within each part of the metropolitan region. Such a hierarchy would guarantee the exclusive rights of individual links to have different types of movement and different levels of activity from pedestrian areas through to high speed rapid transit corridors."

Nothing, since 1966, has changed as to these principles. The concepts are simple and effective but require major and systematic studies, planning, funding and implementation to be successful. Only in this way can we recover the environmental, community standards and safety the NZ Transport Strategy espouses.

Traffic Demand Management is much espoused in the international literature. Outside the inner 1 or 2 km city centre cordon our NZ cities will, generally, not reach the density, intense traffic or the restricted parking and traffic levels that will require major restraint or warrant a severe policy of traffic demand management. If it is required the most effective methods will be the economic tools such as parking tariffs, separation of long term parking from short term locations, road tolls, and area wide levies.

In coping with the urgent need for road improvements we must also consider the ongoing role of rail. Obviously a 'rail track authority' could emerge to build up the system and also enable a number of licensed operators to match the needs of an increasingly diverse freight traffic and metropolitan passenger rail traffic. This would also provide some relief to goods vehicles travelling on the inter-city road highway system and commuter traffic in the metropolitan areas..

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It is also possible for the 27 airports and the 13 commercial seaports to share an increase in internal freight tonnage in the years ahead, so reducing in some minor measure the land freight transport volumes.

2.5 Positioning the Regions for the Next 50 Years

There are many institutional arrangements and instruments involved in transportation planning and transport network operations. Those existing in New Zealand are unique and match the needs of network management well. They have emerged by a process of trial and legislation. They are not at present suited to the Transportation Planning process.

One area that can be 'tuned' to better match the transportation planning and programming needs of the next half-century is to strengthen the regional dimension. Regional mechanisms of the type suited to research and planning have worked well in NZ and overseas in the past. They enable a 'whole catchment' view of all modes, rather than a restricted reference on trouble spots and property issues. A regional framework for transportation planning is essential to secure quality in resource management, environmental protection, urban development, sustainable development, adequate testing and monitoring of long term future transportation options.

Government's adoption of the NZ Transport Strategy, and moves in the regions to reinstate transportation planning studies, together with Transit's commitment to developing corridor management plans are timely. A renaissance in these essential strategic transportation planning studies is overdue.

Improved legislation that places regional planning, regional land transport strategies and regional funding for key innovations, as in the centre of future transportation programmes is likely to be a key to future success. These relationships are illustrated in Fig. 5.

New Regional Transportation Plans under the RMA Act should be key 'anchors' in the development of the future land use/transport system. This would have a complementary role with the existing RLTS and a clear linkage with District Plans. The RTP will deal with the higher level relationships to growth strategies, environmental objectives, land use planning and rules to be included in District Plans. The RLTS will set specific objectives for mode and network improvements and identify the strategic projects, programmes for change. These are two complementary instruments that should also be written to require the operating agencies to implement the agreed programmes. This general structure fits with the resource management framework, the transportation framework, including the recently announced NZ Transport Strategy and also alternative institutional frameworks for future road reform. (Ref. NZPI – Road Reform Douglass 2000).

To achieve this outcome a new style of cooperation and agreement must be built between regional councils, district councils and the other transport agencies involved. It seems, the regional forum type agreement, such as that which has emerged in Auckland, could commit the necessary resources and be a suitable prototype for such work on a joint basis. The new Local Government Act certainly envisages joint agreements and these types of arrangements between regions and city/districts.

16.

It is only through a higher level of regional planning, coordination and commitment that successful programmes will emerge. The statutory and institutional requirements appear, briefly, to be:-

- (1) Central government providing guidance with a commitment to a 'NZ Transport Strategy'.
- (2) Each Regional Council should prepare and maintain a Regional Transportation Plan under the Resource Management Act.
- (3) Each regional council or 'cluster' of regions/district/city councils must prepare their Regional Land Transport Strategy under the Land Transport Act.
- (4) Regional Land Transport Strategies should be placed central in the system and increased in status.
- (5) An effective RLTS monitoring programme must be pursued in each region or cluster of regions.
- (6) The more detailed aspects relevant to 'requirements' under the RMA and Environment Court must still be sorted out by each transport agency, i.e. Transit and the city/district councils.
- (7) There is a need for binding agreements between the councils as planning and roading authorities, and also Transit and Transfund, on the rolling 3 and 10 year road programmes.
- (8) Over the next 50 years it will be essential to obtain additional funds, probably collected from within the regions, for transportation purposes.

There must be general support to the principle of such systematic investigations in the preparation of Regional Transportation Plans and Regional Land Transport Strategies appropriate to each region. It is essential that elected representatives, community leaders, chief executives and senior staff in local government, and other planning and transport agencies affected, accept the importance of establishing such regional transportation planning teams.

2.6 Future Role for Planners.

The support of all professions is required to achieve the higher level of performance envisaged here. This includes Planners, Engineers, Economists, Sociologists, Landscape Designers, Architects, Resource Managers, Transport Managers and Lawyers all of whom have an interest in this area of regional strategic planning. In the context of this conference it is appropriate to recall the planners contribution in this process.

These regional programmes are essentially shared tasks best managed as a planning exercise including planners, transportation engineers and other professionals from several fields. The use of the R.M. Act to secure and monitor natural and physical environmental standards is now widely accepted by the community and the professions. The parallel and complementary frameworks, outside the RMA, for technical investigation and development of systematic models suited to establishing integrated and tested strategic transportation policies also needs greater support.

It would seem now is the time to be applying the intellectual effort and planning skills in particular, at a regional level, to develop a better and creative philosophy on growth strategies, community development policies, land use projections, long term strategic transportation packages and strategic transportation investments.

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These should be as part of well developed regional planning strategies for sustainable regional and metropolitan growth so as to produce robust longer-term transportation plans. The last 50 years has shown that this is necessary and that performance in this area should be lifted. Such regional strategic planning recognizes the inevitable processes of change. Change which is triggered more by changing community activity patterns and attitudes not just simple population growth.

Most importantly planners are the profession that should understand the parameters and risks of long term projections, be capable of articulating the long term goals and objectives. More planning professionals should be involved in this transportation field. You should be occupying positions that help lead the way, with clearer objectives and methodology, of the future transportation planning undertaken in this country.

It is a big challenge with potential for an exciting journey. Come aboard.

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(Authors Note: - The paper is contributed in recognition of a score of New Zealand town planners and transportation engineers, the pathfinders who carried the 'transportation planning baton' over the past half century. A list of these identities is tabled.)

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