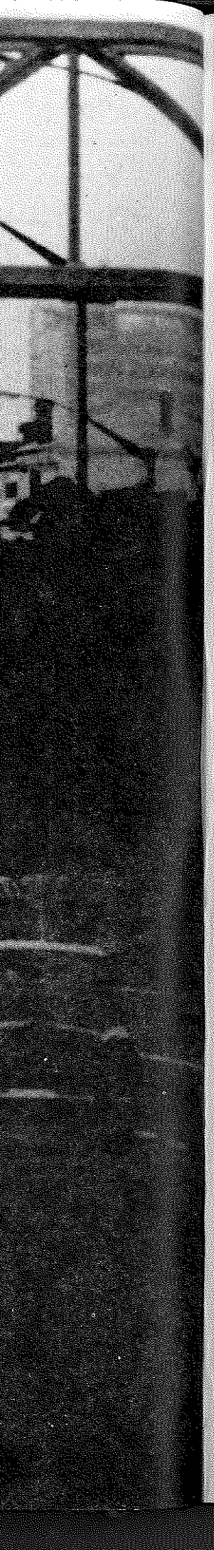

Mobil



1. SURVEY SUMMARY

1.1 Traffic in the city

The growth of Auckland, together with increases in the ownership and use of cars, will result in a continuing and rapid growth in traffic.

In 1963 there were 579,000 vehicle trips per day, and by 1986 it is projected that there will be 1,633,000 vehicle trips per day . In 1963, 78% of all trips were by motor vehicle, and by the later part of the century it is expected that over 90% of all trips will be by motor vehicle.

To provide for future traffic needs, a motorway network has been planned, which was estimated to cost $7,000,000 a year over a 20 year period. The DeLeuw, Cather Report also suggests that other necessary roading improvements over the same period would cost an equivalent amount.

The planned motorway network focuses on the Central Area. Motorways from the north and south have already been constructed, and are now being continued to link around the Central Area.

The motorways will increase the number of vehicles that will be able to come to the Central Area, and at the same time reduce the amount of traffic passing through it. However, not all through traffic will be eliminated, as the motorway system does not cater for traffic between the North Shore and the Eastern Suburbs.

1.2 Traffic to the Central Area
(based on 1963 data)

Of the 110,000 people arriving in the Central Area daily:

55,000 (50%) travel by public transport;
2,000 by motor cycle;
53,000 by private motor car (40,000 drivers and 13,000 passengers).

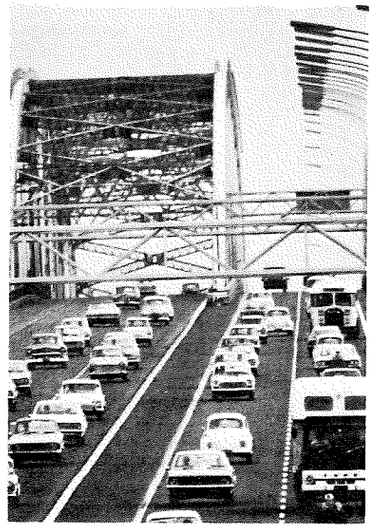
Work trips constitute 80% of peak hour vehicle trips, and 50% of the total daily trips by car.

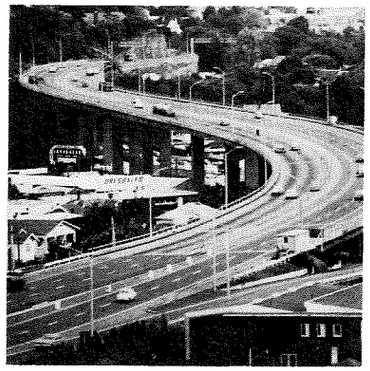
Off-peak vehicle trips to and from the Central Area drop to approximately 30% of the peak hour totals. During off-peak periods, work, shopping and business are the main purposes for trips by car. In the evening, social and recreation are the important purposes.

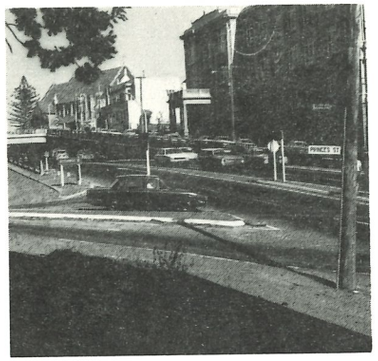
Approximately 25% of peak hour vehicle trips to and from the Central Area are taxis, trucks and buses. At off-peak periods, taxis, buses and trucks make up nearly 50% of all vehicle trips to and from the Central Area.

Buses make up a very small proportion of the total vehicle trips, even though they carry nearly half of the people coming to and leaving the Central Area.

Approximately 66% of all vehicle trips which both begin and end in the Central Area are made by trucks or vans.







2. FINDINGS

The city is committed to a motorway system and all projections indicate that an increasing number of people will want to drive to the Central Area.

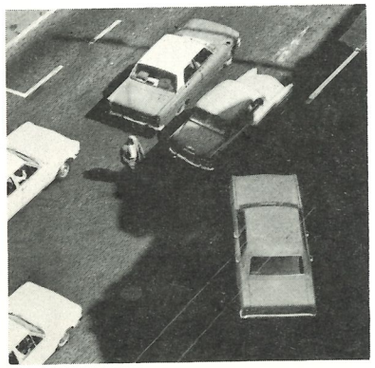
It is essential to appreciate that a person's choice is not necessarily limited to either driving his car or using public transport to come to the Central Area. There is also the choice of driving to some other part of the city to shop, do business, or find employment or entertainment. Therefore, a restriction on the number of cars able to come to the Central Area will tend to limit the growth of the Central Area.

2.1 Limits to traffic in the Central Area

It is known that there is a limit to the capacity of the planned motorways and arterial streets leading to the Central Area, as well as to the ability of the Central Area streets to distribute the traffic which arrives there.

It is calculated that, on completion of the motorways as currently planned, 75% more vehicles can be brought to the Central Area. (It would seem that these additional vehicles could be handled by the Central Area streets, but it is necessary to await more detailed Central Area traffic assignments to be certain of this).

It is expected that the planned motorways will be operating at capacity soon after their completion, i.e. by about 1990.



If the system is to operate efficiently, it must be operated at a level which does not cause undue congestion. If severe congestion is allowed to occur, travel times in the Central Area will be increased enormously, bus services will be affected, and the attractiveness of the Central Area will be seriously reduced. The amount of traffic entering the Central Area must therefore be controlled.

2.2 Long term possibilities

It would be possible, but technically difficult and expensive, to provide additional motorway or road access to the Central Area after the completion of the currently planned facilities. The streets within the Central Area also form a fixed system, and only limited additions could be made to this sytem because of high land costs.

Additional motorways will be necessary within the city, and it has already been proposed, both in the DeLeuw, Cather Report and the Proposed Regional Plan, that there should be an expressway loop around the Central Area, outside the motorway loop which is now being constructed. This second loop would be connected with a second harbour bridge.

It is possible that spurs could be brought from this second loop to the Central Area. However, because the Central Area streets may themselves be operating at capacity (still to be tested) some may have to be found to link the spurs directly to parking structures.

Additional motorway access to the Central Area must be given detailed consideration in future city transportation plans.

2.3 Apportioning vehicular access to the Central Area

It is assumed, for current planning purposes, that upon completion of the motorway system a relatively fixed system of roading will exist.

Additional vehicular access to the Central Area is provided at great expense by public funds. It is necessary that, if there is a limit to the access that can be provided, it should be apportioned so that it is most beneficial to the city.

It is considered that vehicular access for business, shopping, recreation, social and cultural trips, is most essential and that vehicular access for work trips is the least necessary. Essential traffic would include trucks, servicing vehicles, buses, taxis and some cars used for business purposes.

Work trips form a large proportion of peak hour trips, when congestion is greatest and when a transfer to public transport would be most beneficial.

Also, it is considered that there is more leverage available in persuading workers onto public transport without forcing them away from the Central Area. In many fields, the best job opportunities are in the Central Area, and many workers would choose a more rewarding job there even if they cannot drive their cars to work.

In the inner parts of the Central Area, in the immediate future, it can be expected that few employers will be able to provide additional all-day parking for their staff (other than for salesmen or representatives, etc.) and few staff could afford the cost of all day parking. In the more distant future, with increasing affluence, more workers will be able to pay for all day parking. If essential traffic carrying goods, servicing the port, public transport, etc., is involved in congested traffic conditions created by commuting workers, heavy costs will be incurred and the functioning of the Central Area will be adversely affected.

It is therefore desirable that congestion should not be allowed to develop. Cars coming to the Central Area must be able to park, and it is considered that the most viable way to ensure that severe congestion is not reached is by the use of parking controls to limit non-essential traffic.

3. PROBLEMS OF CENTRAL AREA TRAFFIC

3.1 Problems due to congestion

At the present time there are seldom serious problems of congestion, and most of them that do occur are the result of the uneven distribution of traffic caused by the staged connection of the motorways to the Central Area. The completion of the motorway system will resolve this situation.

However, the growth in traffic coming to the Central Area will, to some extent

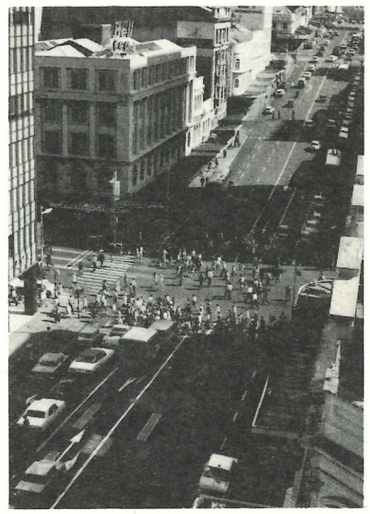


Fig. 68 Traffic flows, 1986

(yet to be tested), cause congestion on streets, with resultant delays, difficulty of servicing, and reduction in accessibility of the Central Area. (The traffic flows produced by assigning the predicted 1986 trips to the street network, assuming all the motorways are built, are shown in Fig. 68.

3.2 Environmental problems

These problems are largely with us at present, and action on these is not only to handle a changing situation, but also to correct the present situation. Areas having the greatest problems are those where there is the greatest number of pedestrians, such as Queen Street, Karangahape Road and the University.

3.3 Specific problems

(a) Conflict with pedestrians: Where it is desirable to improve pedestrian conditions, and provide a more pleasant environment for pedestrians, traffic may have to be restricted.

(b) Motorway connections: Problems will be created by the high volumes of traffic on streets connecting to the motorways. The motorways are designed so that Victoria and Wellesley Streets and Hobson and Nelson Streets are to be the main Central Area connections, and it is proposed that they should operate as one-way pairs. Wide, heavily trafficked, one way streets create environmental problems, and dangerous pedestrian conditions.

(c) Problems created by parking location: Parking must be distributed and designed so that it minimizes traffic movement in the Central Area and reduces congestion.

(d) Bus movement: Bus routes must be arranged so that they conflict to a minimal extent with other traffic, make efficient use of kerb-side space, and, most important, so that they are not themselves delayed by other traffic.

(e) Servicing of Development: This is a necessary activity, but present truck servicing with one man for one large truck double parked is disruptive to other traffic, and inefficient.

(f) Port Area: This must be adequately served, and at the same time traffic servicing the port must not unduly affect other traffic or interfere with Central Area amenities.

(g) University: No student parking is planned. Public transport must play an important part in servicing the University.

(h) Trains: The effect of trains in Quay Street must be allowed for.

(i) In the motorway system traffic from the harbour bridge bound for the east and vice versa is not catered for, and must make the movement on surface streets. This could cause environmental and traffic problems in Wellesley and Victoria Streets. A strong link across the bottom of the city may be justified.

(j) The Britomart Place complex is a critical part in the approaches from the east and must be resolved.

(k) A Cook Street-Union Street link appears necessary on completion of the motorway to the harbour bridge.

(l) The western reclamation is poorly served with street connections, and with other activities replacing the oil installations problems could arise.

(m) There is a lack of continuity in the street system to the east of Queen Street, and the Kitchener Street extension or alternative needs further consideration.

4. PROGRAMMED WORKS

To ease some of the above problems and to complement the motorway construction, the following works are currently programmed and are shown in Fig. 69.

(a) Completion of the motorway ring around the city with connections at Wellesley Street, Grafton Bridge, East Street, Nelson-Hobson Streets and Cook Street.

(b) The conversion of Nelson and Hobson Streets and Wellesley and Victoria Streets, as far west as Hobson Street to one-way streets, and installation of co-ordinated traffic signals on these routes.

(c) The construction of the Vincent

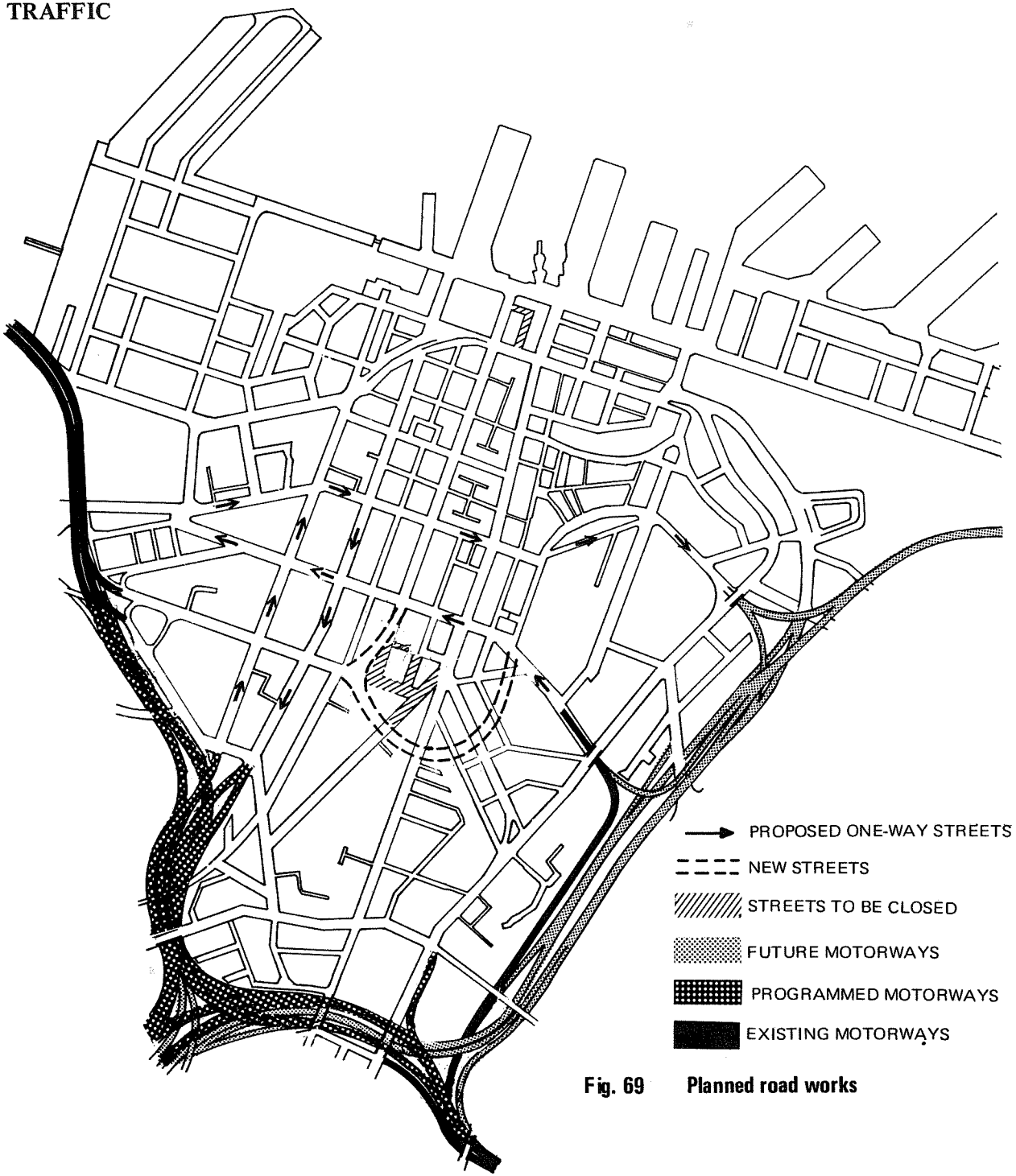


Fig. 69 Planned road works

Street-Albert Street link and the Quadrant Road as far east as Wellesley Street.

(d) The Hopetoun Street-Vincent Street link to replace Nelson Street extension.

(e) Street widening and intersection improvement in the vicinity of Victoria Park to assist traffic to the harbour bridge.

(f) The Upper Queen Street-Dominion Road link with an underpass of Queen Street at Karangahape Road.

5. PROPOSALS

The following proposals have also been developed to alleviate the existing and anticipated traffic problems in the Central Area.

5.1 Total or partial closing of Queen Street to traffic

Four proposals for various degrees of closure of Queen Street are fully described in the section on environment and pedestrians, and the benefits evaluated.

Computer assignment of the 1986 trip patterns has been carried out to give a preliminary assessment of the effect of closing Queen Street. This testing indicates that no particular problems will arise, under predicted travel for 1986, if Queen Street is closed.

Servicing of existing development would take place in much of the present form for the schemes with partial closure of Queen Street, but where complete closure of portions of the street is proposed, special arrangements will be required. This will involve restrictions on time of servicing.

The costs of these proposals are given in the Environment and Pedestrians section.

5.2 Kitchener Street extension and alterations

An addition to the street system immediately to the east of Queen Street has been considered several times in the past. Such a street would provide a relief to Queen Street for longer trips, and would improve access into the High Street, Courthouse Lane area.

A number of alternative routes have been considered and these are shown on Fig. 70. The alternative routes have been treated as a number of sections.

Sections 1 and 2: These form a link from Kitchener Street near the Magistrate's Court to Customs Street. There would be an at grade intersection with Shortland Street but the routes would be elevated over Fort Street and possibly Customs Street. A carriageway of 60 feet is envisaged, and the use of the air space over the roadway, at least in the Chancery Street area, for parking or office structures is anticipated.

Section 3: This would also link from Kitchener Street, just east of the Magistrate's Court, to Customs Street, but further to the east than Sections 1 and 2. There would be a tunnel portion from Kitchener Street under Shortland Street to emerge in Emily Place, from where an elevated section over Beach Road would join into a modified Britomart Place-Quay Street intersection.

Section 4: In this proposal, a more direct link is to be formed from Wellesley Street to Quay Street. The link would consist of a tunnel section from east of the old library in Wellesley Street to Princes Street, and then from the northern end of Princes Street to Quay Street in a similar form to Section 3 above. This link would involve some works in Albert Park, but could result in part of Princes Street being closed and included in the Park.

Section A: To allow adequate capacity for full two-way flow from Wellesley Street to Victoria Street, Kitchener Street will need widening in this area. This proposal is for widening by taking property on the west side.

Section B: This is an alternative to A, and allows for widening on the west side in the vicinity of the library only. The remainder of the carriageway would be widened within the existing reserve, with a footpath formed within Albert Park.

Section C: In this proposal, a link between the Quadrant Road at Wellesley Street and Sections 1, 2 or 3 is formed by a tunnel under Albert Park. This would start just east of the library and finish in the vicinity of Courthouse Lane. The tunnel would carry southbound traffic,

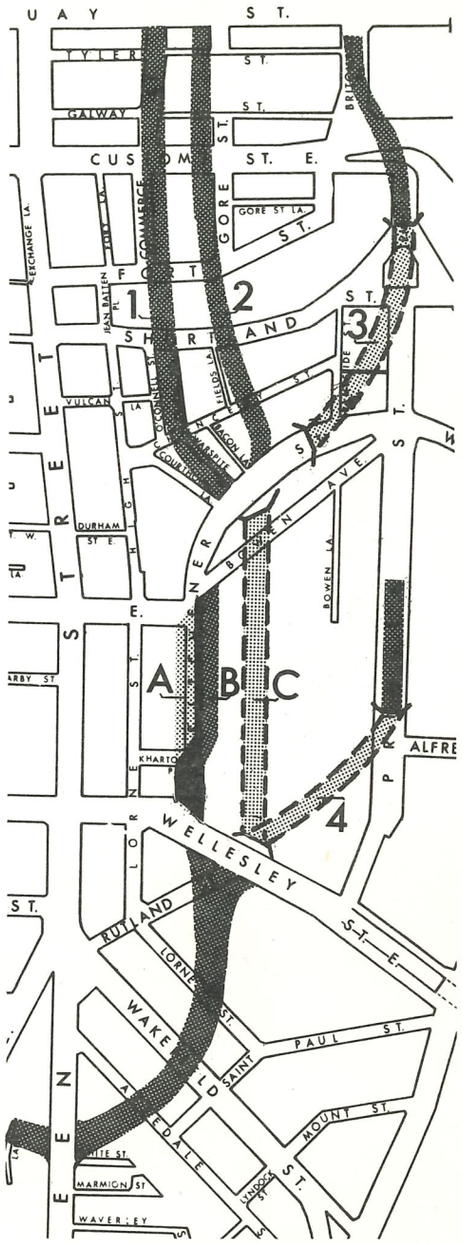


Fig. 70 **Proposed alternative routes for Kitchener Street extension**

Fig. 71 Costs of Kitchener Street extension sections

Section	Cost assuming sale of air rights $	Cost assuming no sale of air rights $
1	4,000,000	6,354,000
2	3,800,000	5,658,000
3		5,350,000
4		7,000,000
A	1,300,000	1,944,000
B		686,000
C		2,334,000

Fig. 72 Costs of combinations of Kitchener Street extension sections

Combination of Sections		Cost assuming sale of air rights $	Cost assuming no sale of air rights $
1	A	5,300,000	7,700,000
1	B	4,700,000	6,500,000
1	C	6,400,000	6,400,000
2	A	5,100,000	7,500,000
2	B	4,500,000	6,000,000
2	C	6,200,000	6,200,000
3	A	6,700,000	9,100,000
3	B	6,100,000	7,600,000
3	C	7,800,000	7,800,000
4		7,000,000	7,000,000

and the existing Kitchener Street the northbound flow.

The estimated costs of the various sections are given in Fig. 71.

To provide an effective route, Sections 1, 2 or 3 must be combined with either A, B or C. Section 4 is a complete route in its own right. The estimated costs of the combinations are shown in Fig. 72.

(a) Multiple Use of Land, Kitchener Street Extension:

Figs.61, 63, 64 illustrate the use of space above and below a possible Kitchener Street extension aligned along route 2A. Parking buildings are proposed above the carriageway, with access ramps leading directly to them, and structures for other activities could be constructed above the parking levels, or in some places, instead of the parking floors.

A linear bus terminal is shown on a basement level below the carriageway (see Public Transport, page 91). This is an additional possibility, and need not necessarily be part of such a development.

The amount of property which will be required for parking buildings in this part of the city (see Fig. 79) would be close to the amount which would be required for a Kitchener Street extension. The proposal is, in effect, to plan these buildings in a line, and to use the same land for a Kitchener Street extension. It is

estimated that a Kitchener Street extension provided in such a way would cost an additional $3 to $4 million to the cost of providing the necessary parking in this part of the Central Area in a more conventional manner.

(b) Traffic Evaluation, Kitchener Street Extension:

Preliminary assignments of 1986 traffic to a road network including a Kitchener Street extension, show that such a route would attract moderate traffic volumes of the order of 15,000 vehicles per day south of Shortland Street. The traffic flows produced by 1986 trips, on a network including a Kitchener Street extension, are shown in Fig. 73. However, this traffic is mainly on-traffic to the motorway, diverted from Beach Road and other routes and could be better handled on these other routes. No major relief of overloaded streets appears to result, but instead more traffic is drawn into the core of the area. Assignments still to be made for later traffic predictions may show more advantage in a Kitchener Street extension.

Of the alternative Sections 1 or 2, combined with A or B, offer the best service and would cause least traffic problems. Sections C and 4 would result in very difficult intersections at Wellesley Street.

Fig. 73 Traffic flows, 1986, with Kitchener Street extension

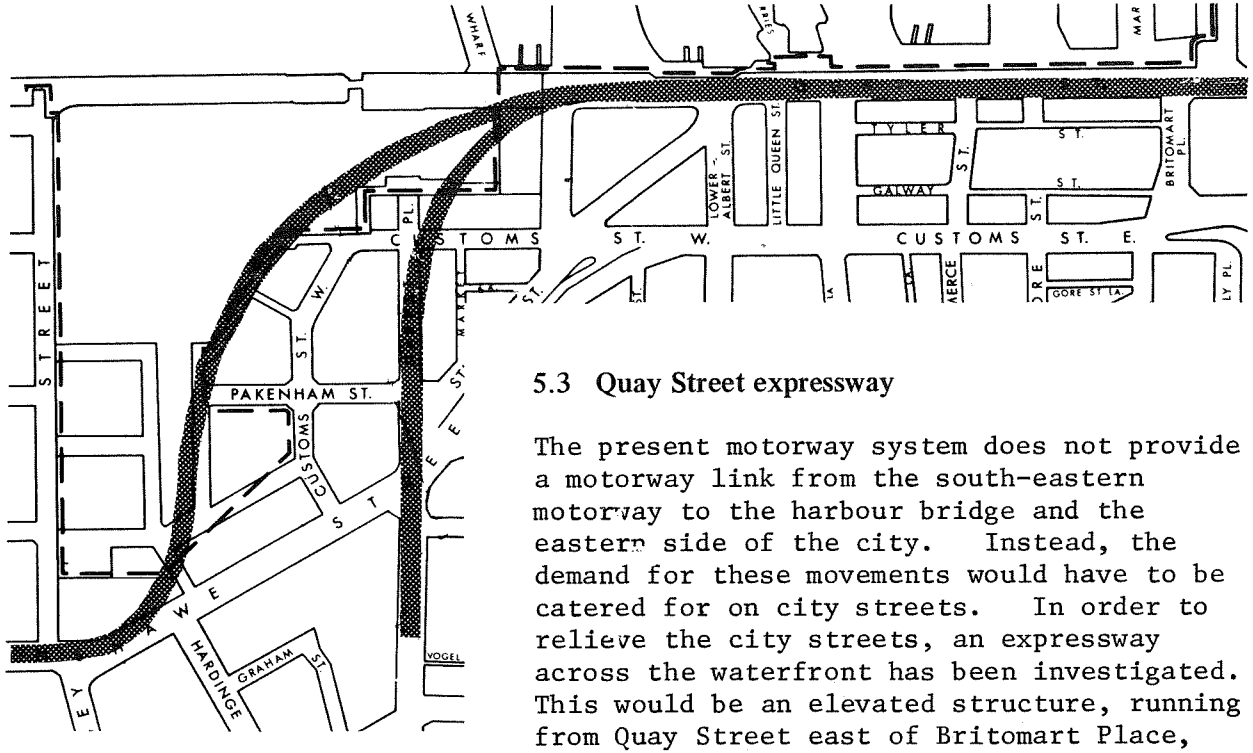


Fig. 74 Quay Street expressway

5.3 Quay Street expressway

The present motorway system does not provide a motorway link from the south-eastern motorway to the harbour bridge and the eastern side of the city. Instead, the demand for these movements would have to be catered for on city streets. In order to relieve the city streets, an expressway across the waterfront has been investigated. This would be an elevated structure, running from Quay Street east of Britomart Place, above Quay Street and the Lighter Basin to join Fanshawe Street west of Halsey Street. A connection would be made into Nelson Street for traffic to and from the east. The route is shown on Fig. 74. The estimated traffic flow on the link in the Quay Street area in 1986 is about 12,000 vehicles per day, 50% of which would be bound for the harbour bridge. This would relieve Quay Street and the Wellesley Street-Victoria Street routes. The estimated cost is $6,800,000

The main drawbacks of the scheme are the cost and the visual impact of the overhead link in the downtown area.

5.4 Karangahape Road bypass

Karangahape Road shopping centre is expected to remain as an important shopping area, but serving a different clientele to the Queen Street retail area. In the Environment and Pedestrian section the problems arising in the area due to the amount of traffic are considered, and proposals put forward for alternative treatments of Karangahape Road. These rely on the creation of an effective bypass. A number of proposals have been considered (Fig. 75).

(a) A bypass to the south of Karangahape Road: In this a new route from Karangahape Road, at East Street, would follow East Street, Canada Street, and link through the cemetery

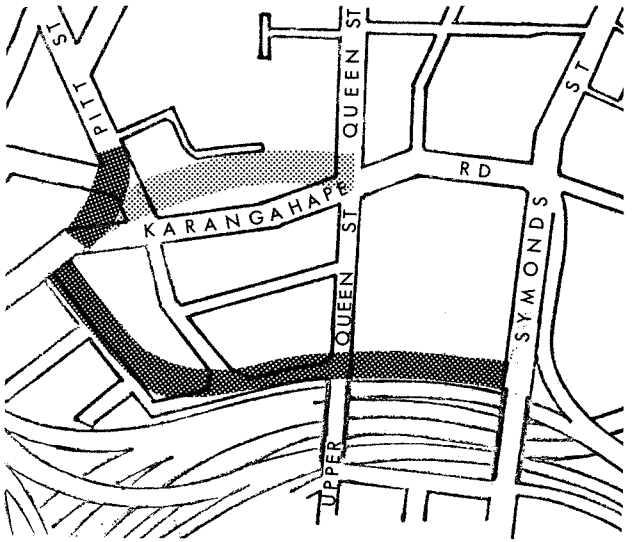


Fig. 75 Possible routes for Karangahape Road bypass

to Symonds Street. Grades on this route would be up to 7%. In conjunction with the Upper Queen Street underpass under Karangahape Road, and an easing of the Pitt Street corner, this route would provide an effective bypass. The only movement not well catered for by this bypass is that from the western end of Karangahape Road to Grafton Bridge. Modifications to the motorway on ramp would be required.

The estimated cost of the bypass is $2,080,000.

(b) A Bypass to the North of Karangahape Road: This route runs from Queen Street to Pitt Street through the existing development on the north side of Karangahape Road. Comprehensive development of the whole area would be required, and it is visualised that part of the existing street would be covered by the development. The redevelopment would include retail, residential and office space, and could be tiered to take advantage of the outlook to the north.

The cost of the roading associated with the redevelopment is $2,440,000. This includes property purchase.

If the Pitt Street-Karangahape Road corner on the western side was also eased, as in scheme (a), an extra $560,000 would be incurred.

5.5 Pakenham Street extension

The western reclamation area has poor road accessibility. To assist in the internal circulation of the area and improve accessibility, it is proposed that, when further development takes place in the area, the two portions of Pakenham Street should be linked as shown in Fig. 76.

5.6 Grade separation at intersections

Because of the topography, the opportunity exists at a number of intersections in the Central Area to grade separate conflicting movements. This opportunity has been appreciated for some time, as can be seen by the illustration of a proposal for the Queen Street-Karangahape Road intersection.

The provision of overbridges over Queen Street at Victoria Street and Wellesley Street for traffic is mentioned in Environment and Pedestrians, as is the underpassing of Bowen Avenue-Waterloo Quadrant under Princes Street, when this route becomes a motorway access. These proposals are mainly to reduce the pedestrian vehicle conflict.

The possibility also exists of Cook Street being tunnelled through under Hobson and Nelson Streets, but this would be to reduce traffic conflict.

As no property is involved, and other functions are not affected, it is not considered that these proposals need be definite policies, but can be borne in mind so that they can be carried out at any time if conditions warrant them. The exception would be the Bowen Avenue underpass under Princes Street, which should be incorporated in the motorway construction

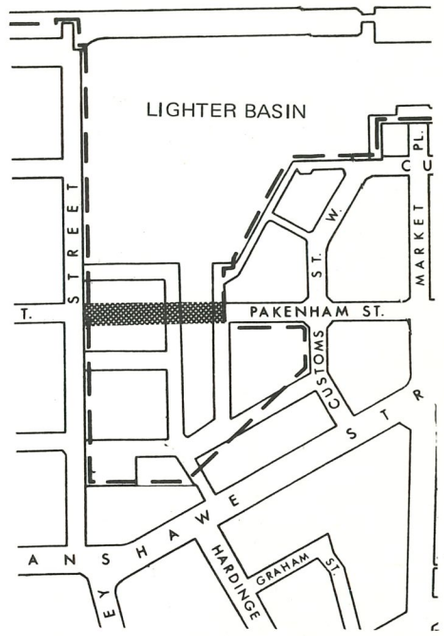
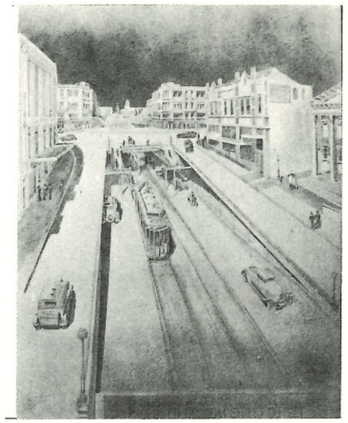
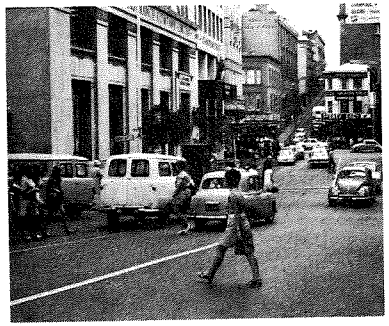
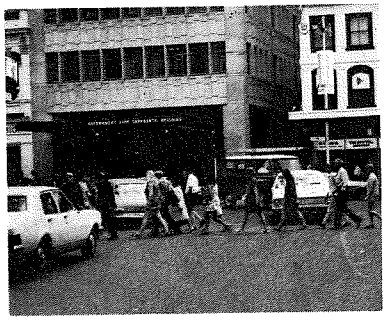
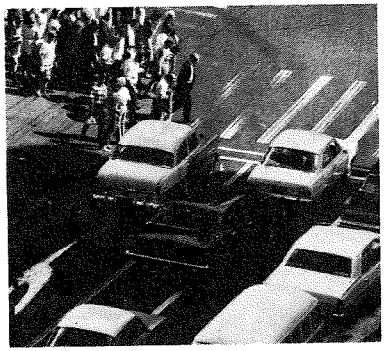


Fig. 76 Pakenham Street extension









when the connections to Waterloo Quadrant are built.

6. MANAGEMENT POLICY PROPOSALS

6.1 Relative priorities for pedestrians

It is proposed that, in the Central Area in and adjacent to Queen Street, and in the Karangahape Road area, where there are high pedestrian concentrations, traffic management policies must be such that the level of service to pedestrians is given highest priority.

It is proposed that, in the outer areas of the Central Area, where there are few pedestrians, and the main traffic distribution functions occur, the level of service to motorists should be of high importance.

6.2 Priority for the use of kerbside space

1st priority: bus stops
loading zones
taxi stands

2nd priority: short-term parking

3rd priority: long-term parking

6.3 Servicing proposals

To be effective, the Central Area requires a considerable quantity of servicing traffic. This is traffic supplying the goods and services essential to the operation of the Central Area activities, which also includes taxis and private cars delivering people to Central Area activities. Goods handling includes:

goods to and from warehouses;
parcel delivery;
goods deliveries to shops and offices;
wares to and from department stores;
bulk delivery of petrol and beer;
raw materials to manufacturers and distribution of products.

Requirement for servicing:

(a) The point of servicing should be close to the business being serviced.

(b) The point of servicing should be readily accessible.

(c) Servicing must cause minimum disruption to normal traffic flows.

(d) Servicing must not cause breaks in retail frontages.

(e) Servicing must cause minimum interference with pedestrian movements.

Current problems arising from servicing activities include:

(a) traffic congestion due to double-parked vehicles, often left for considerable periods while drivers take orders as well as deliver goods;

(b) traffic congestion caused by goods vehicles reversing into truck docks from busy streets;

(c) congestion on street and inconvenience on footpaths caused by freight depots loading and unloading vehicles on the street, often with fork lifts, and by parking vehicles on streets at these depots while awaiting their turn. This is caused by operating from inadequate premises, and using the street to make good the deficiencies of the site. Such activities occur in Beach Road and The Strand;

(d) taxi services are difficult to locate;

(e) inadequate room is often provided for dropping passengers at the kerbside.

It is therefore necessary to adopt a policy which adequately services the development and also minimises inconvenience to the community at large. The proposed policy to achieve these objectives is:

A. Servicing of Shops - Small Developments:

It is not considered feasible to service small retail developments through truck docks off the retail street as these would break up the shopping frontage. Nor is it feasible in most cases, due to street patterns and topography, to develop rear lot servicing. It is therefore proposed that small retail development be serviced across the footpath, through the front door, the problems created being solved by:

(a) Adequate policing of double parking at all times, to prevent abuse.

(b) Control of double parking, so that it is not permitted at all at peak hours.

(c) Limiting all servicing in certain streets at certain times.

(d) Provision of adequate goods service loading zones at the kerbside.

(e) Control of vehicle size in certain streets.

B. Servicing of Shops - Large Developments:

It is proposed that retail development in areas which are comprehensively redeveloped, and large department stores, should provide adequate facilities for off-street servicing, which should conform with all current ordinances.

C. Servicing of Office Development:

With many office developments on small sites, frontage is only available to a main street. In these cases the provision of truck docks to the main street would be undesirable, due to pedestrian-vehicle conflict, and the breaking up of the frontage. In these cases servicing through the front door should continue.

However, in cases where alternative servicing is available, i.e. back streets or service lanes, off-street servicing should be provided. It is essential that such facilities be adequately connected to the internal distribution system within the building, usually the lifts.

It is proposed that the servicing policy for offices be that off-street loading be provided where back streets or service lanes are available, and such loading facilities, where provided be linked with the lift system in the building.

D. Servicing of Manufacturing and Warehousing:

These activities are adequately catered for with existing ordinances which cover provision of off-street loading facilities and control of crossing location and on-street manoeuvring.

E. Bulk Deliveries by Tanker:

This covers delivery of supplies of beer to hotels and oil for air conditioning systems. The use of bulk oil supplies is increasing rapidly with the construction of new office blocks. These are normally handled by a filler point at the kerb. It is not considered feasible to provide goods service loading zones at all these points.

It is proposed that the practice of kerb-side filling points be retained but controls will be necessary on:

(a) location of filling points, i.e. away from intersections;

(b) hours of use, i.e. out of peak traffic hours, and in some cases, during night time only.

F. Trucking Depots:

These are generally inappropriate in the Central Area as break bulk depots, but some trucking depots are needed for servicing the Central Area. It is proposed that trucking depots should be a conditional use in the Central Area, with appropriate controls on manoeuvring and access for trucks.

G. Passenger Handling:

It will be necessary to make adequate provision for taxis, and for dropping and picking up passengers from private cars.

In the long term it is expected that cruising taxis will be introduced, reducing the need for taxi stands. In the interim, it is proposed that taxi stands be located conveniently to the major pedestrian generators.