North Eastern Metropolitan Regional Roads Strategy

March 1997

Banyule CITY COUNCIL

MANNINGHAM

Maroondah City Council

NILLUMBIK Shire Council

CITY OF WHITEHORSE

SHIRE of YARRA RANGES

vicroads

NORTH EASTERN METROPOLITAN REGIONAL ROADS STRATEGY

Prepared by:

Ratio Consultants Pty Ltd
Planning, Engineering and Urban Design
'Riverwalk', First Floor, 649 Bridge Road, Richmond, 3121

in association with:
Maxine Cooper and Associates Pty Ltd
Social Research and Management

March 1997

TABLE OF CONTENTS

EXECUTIVE SUMMARY

(1) The Strategy Study was initiated by the Councils of Banyule, Manningham, Maroondah, Nillumbik, Whitehorse and Yarra Ranges, together with VicRoads, to:-

- *recommend actions to ensure that a long term network of regional road linkages is created leading to and emerging from the study area;*
- *address inherent transport deficiencies in the network; and*
- *meet municipal, VicRoads, community and business expectations.*

The strategy is seen as being targeted at individual Councils for collective adoption and supportive action, at State and Federal funding agencies and Members of Parliament, at developing an understanding on the part of the regional community and businesses, and at engaging the active support of the two Regional Economic Development bodies (Business East and Northern REDO) especially their transport committees.

(2) In working towards the formulation of a Regional Roads Strategy, the Consultants have:-

- *reviewed and re-analysed previous traffic forecasts and road planning studies for various parts of the Region;*
- *carried out new traffic surveys, particularly for circumferential truck movements across the Yarra River;*
- *liaised with Commissioners and Senior Officers of the six component Councils, individually and as a group;*
- *surveyed the attitudes of over one hundred and thirty community groups;*
- *liaised directly with Business East and New Edge (Northern REDO);*
- *conducted in-depth discussion groups as part of project evaluation and priority setting.*

(3) The key findings of the Study, in relation to existing and likely future land use and travel patterns are as follows:-

- *Currently the most congested regional arterial routes include Maroondah Highway in Ringwood, Canterbury Road in Bayswater, Lower Plenty Road in Rosanna and Mitcham Road. Other problem locations are the railway level crossings along the Ringwood Railway Line in Whitehorse.*
- *The greatest systematic capacity problem is for circumferential travel across the Yarra River. Existing roads are already used beyond their reasonable capacity.*

- *There are numerous sections of road and intersections with histories of repeated accidents, such as Diamond Creek Road and the Warburton Highway.*

- *Truck operators consistently stress the need for improved routes through the Region, such as from Scoresby to Melbourne Airport/Hume Highway, and from Scoresby to the Melba Highway.*

- *Tourist operators require better road access through the Yarra Valley, Dandenong Ranges and Yarra Ranges National Parks, and improved route signage.*

- *The Region's population is expected to fall marginally from now to year 2011, but employment is expected to grow by 60,000 jobs. This growth in local employment, and rapid urban growth outside the region to the north-west and south-east, will rapidly increase circumferential travel needs into, out of and through the Region. Travel demands across the Yarra River are forecast to increase by 40 percent from now to year 2011, and demands crossing the Ringwood Railway Line and Springvale Road by 25 percent each.*

- *The trend towards "just-in-time" manufacturing will increase the need for reliable travel times on the road network, and will decrease the size of the individual freight consignments. Future employment growth will therefore generate demands for better connected and higher capacity sub-regional arterial roads, rather than long-distance high-speed freeways.*

(4) *The following eight principles were formulated as a basis for the Regional Road Strategy:-*

- *protect the capacities of existing arterial roads, and where feasible increase them by modifying frontage land use and access;*

- *build the future road network around projects already committed by State government/VicRoads, such as Eastern Freeway extension to Ringwood (plus Ringwood Bypass Stage 2);*

- *give high priority to new projects which "plug the gaps" in the existing network, such as duplicating Templestowe Road from Bulleen Road to Thompsons Road;*

- *ensure adequate north-south capacity pending commitment to construction of the Scoresby Freeway;*

- *increase circumferential road capacity by increasing capacity of approaches to the Banksia Street bridge, and by improving secondary routes through Greensborough and Montmorency (ie. Para Road and Bolton Street);*

- *assist business, tourism and freight transport by upgrading circumferential roads, such as links from Scoresby to the Melba Highway and Healesville-Koo Wee Rup Road;*

- *work towards an improved grid network of regional arterial roads, so as to maximise simplicity, continuity and route choice (eg. Northern Route);*

- *give priority to projects which at the one time address both local problems and regional problems, such as duplication of Williamsons Roads which would assist local capacity and safety, as will as improving regional circumferential capacity (as a feeder to Fitzsimons Lane).*

(5) *The first priority for the Region is to expedite delivery of committed projects, principally the Eastern Freeway extension to Ringwood (including the Ringwood Bypass Stage 2). A related high priority is to achieve a commitment to extending the freeway further south, preferably to link up with a Scoresby Freeway.*

(6) *The next priority is for Regional Council's and VicRoads to proceed jointly towards the completion of other arterial road projects which will improve the regional network's capacity and safety, namely:-*

- *Melba Highway upgrading and Yarra Glen Bypass;*
- *Templestowe Road duplication;*
- *Swansea Road duplication;*
- *Bulleen Road duplication;*
- *Dorset Road duplication;*
- *Thompsons Road duplication;*
- *Greensborough Highway duplication;*
- *Healesville-Koo Wee Rup Road upgrading;*
- *Lower Plenty Road widening (between Rosanna Road and Greensborough Highway);*
- *Railway level crossing upgrading in City of Whitehorse.*

(7) *Finally, it is recommended that further investigations proceed into the demand for, feasibility and cost of two additional road projects:-*

- *a Northern Route to provide an eastern extension of Reynolds Road to the Maroondah Highway at Chirnside Park*
- *further upgrading of circumferential road capacity across the Yarra River, including requesting that a study incorporating an Environmental Effects Statement be undertaken as soon as possible, preferably within two (2) years, to evaluate the need for improved transport links between Greensborough and Ringwood.*

(8) *Further planning and research should also be undertaken into procedures for protecting and enhancing the traffic capacity of existing arterial roads, and into land use/transport trends which influence the scale and type of demand for arterial road capacity.*

1.0 INTRODUCTION

1.1 Background and Objectives

In April 1996, Ratio Consultants Pty Ltd were commissioned to prepare a North Eastern Metropolitan Regional Roads Strategy (NEMRRS).

The Strategy Study was initiated by the Councils of Banyule, Manningham, Maroondah, Nillumbik, Whitehorse and Yarra Ranges, together with VicRoads, to:-

- recommend actions to ensure that a long term network of Regional road linkages is created, leading to and emerging from the Study Area;
- address inherent transport deficiencies in the network; and
- meet municipal, VicRoads, community and business expectations.

The strategy is seen as being targeted at individual Councils for collective adoption and supportive action, at State and Federal funding agencies and Members of Parliament, at developing an understanding on the part of the Regional community and businesses, and at engaging the active support of the two Regional Economic Development Organisations (Business East and Northern REDO), especially their transport committees.

The strategy's main timeframe is the next ten years, with some broad attention to the period beyond.

The Study Area and Regional road network are shown in Figure 1.1.

1.2 Study Process

In working towards the formulation of a Regional Roads Strategy, the Consultants have:-

- reviewed and re-analysed previous traffic forecasts and road planning studies for various parts of the Region;
- carried out new traffic surveys, particularly for circumferential truck movements across the Yarra River;
- liaised with Commissioners and Senior Officers of the six component Councils, individually and as a group;
- surveyed the attitudes of over one hundred and thirty community groups;
- liaised directly with Business East and New Edge (Northern REDO);
- conducted in-depth discussion groups as part of project evaluation and priority setting.

1.3 Reporting

Three Progress Reports were prepared during the study period, for presentation to and discussion with the Steering Committee. A Draft Strategy Report was then prepared, with the main recommendations being circulated within the regional community seeking feedback before this final Strategy Report was prepared.

Section 2 of this Strategy Report summarises existing and future population and employment characteristics in the Region, together with an indication of travel demand effects. Section 3 provides an analysis of existing and future road needs. Section 4 develops a set of principles for a Regional Road Strategy, then sets out priorities for road development projects; it also identifies a number of issues which were considered to be beyond the scope of the Regional Road Strategy Study, but which justify further investigation.

2.0 STRATEGIC LAND USE REVIEW

2.1 The Existing Urban-Rural Land Use System

The North East Metropolitan Region extends from Box Hill and Heidelberg in the west through to Lilydale and Belgrave in the east, and includes the rural areas of the Yarra Valley and Dandenong Ranges.

The urban area includes some of the longest established suburbs of Melbourne and can be generally described as a maturing urban area, with only a few remaining residential pockets yet to be developed. There are no major urban growth areas in the study Region.

The rural areas are of high agricultural, environmental and tourism value. Viticulture is a specific tourism and agricultural resource of the Yarra Valley.

The North East Region includes a number of important activity/employment precincts as follows:-

- the major **activity centres** of Greensborough, Doncaster Shopping Town, Box Hill and Ringwood (the latter two include major transport interchanges);
- the **industrial areas** of Ringwood/Croydon/Bayswater, Nunawading and West Heidelberg;
- the Maroondah Highway as a **commercial arterial** (with a range of activity centres, peripheral sales and industrial activities).

In their study of the Scoresby Transport Corridor (which includes part of the North East Region), FDF Management noted that industrial activity in their Study Area was of metropolitan importance. Their research showed that the Scoresby Region was increasing its proportion of total commercial trips generated in metropolitan Melbourne[1].

Planning policy for this Region has been consistent in the support of existing land use patterns in the area, as set out in the recently released "Living Suburbs".

2.2 Population Change

In 1991 the North East Region (Study Area) contained approximately 661,000 people, which was 21% of metropolitan Melbourne's total population (refer Table 2.1).

By 2011 the population is forecast to **fall** by approximately 14,800 people. Furthermore, the Region's share of total metropolitan population will fall to approximately 18%.

[1] FDF Management Pty Ltd "Strategic Planning Investigation of the Scoresby Transport Corridor", October 1994.

Table 2.1

North East Metropolitan Region

Summary Population Forecasts

Source: Preliminary Population Forecasts From the Department of Planning & Development, August 1995

Municipalities	Year		Change	
	1991	2011	No.	%
Banyule	120,334	111,515	-8,819	-7
Manningham	111,524	107,128	-4,396	-4
Maroondah	92,443	90,250	-2,193	-2
Nillumbik	52,057	61,786	9,729	19
Whitehorese	145,435	136,187	-9,248	-6
Yarra Ranges	139,198	139,370	172	0
Sub-total	**660,991**	**646,236**	**-14,755**	**-2**
Melbourne Statistical Division (MSD)	3,156,706	3,635,452	478,746	15
Region as % of MSD	**20.9**	**17.8**		**-3.1**

While there will be population loss there will still be an increase in the number of households in the Region, due to falling household sizes (number of people per dwelling), and by 2011 it is anticipated there will be a 10% growth in the number of households in the Region (refer Table 2.2).

Therefore, it would appear that locally-generated traffic will not significantly increase regional arterial road requirements.

2.3 Employment Change

In 1991 the Study Area contained 12.9% of metropolitan Melbourne's employment (refer Table 2.3);

By 2011, it is forecast that the Region will attract an additional 60,730 jobs. This equates to 13.5% of metropolitan Melbourne's forecast total jobs;

Research by Ratio Consultants and others shows that approximately 70% of the new jobs will be in the finance and business services and community services sector.

The key point is that, despite the central area of metropolitan Melbourne retaining its focus as the major area of employment growth (45%), the Study Area will retain its "market share" of jobs and job growth. With increased employment activity, business and commercial trips will increase.

2.4 Additional Pressures for Land Use Change

In addition to employment growth, a number of other factors will influence land use change in the Region; these include increased accessibility created by new arterial road development. Initially this opportunity will arise from the opening of the Eastern Arterial extension. Two factors are relevant:-

- the traffic consequences will result in improved amenity along Doncaster Road and Maroondah Highway. These areas have previously been sought-after locations for commercial development and the improved amenity is likely to result in a resurgence of interest in these areas. It should also be noted that the respective Councils are actively planning for change to these areas and there are indications that the suburban commercial/office sector is now recovering well;

- research by FDF and others has shown that increased accessibility increases the density of development, due to increased land prices. Such forecast changes would be compatible with the forecast trend for growth in the services sector, which have higher employment densities compared to historic industrial activities.

In addition, the retail sector is seeing a major and rapid change in the peripheral sales sector. The focus is again for highway commercial frontage and, due to large site requirements, these cannot usually be located in activity centres. It is not just the type of change which is significant, but also the speed at which it has occurred.

Table 2.2

North East Metropolitan Region

Summary Households Forecasts

Source:Preliminary Population Forecasts From the Department of Planning & Development, August 1995

Municipalities	Year		Change	
	1991	2011	No.	%
Banyule	37,917	39,688	1,771	5
Manningham	31,721	34,410	2,689	8
Maroondah	29,487	32,667	3,180	11
Nillumbik,	14,388	19,326	4,938	34
Whitehorese	47,847	50,740	2,893	6
Yarra Ranges	41,673	46,832	5,159	12
Sub-total	**203,033**	**223,663**	**20,630**	**10**
Melbourne Statistical Division (MSD)	1,023,593	1,308,568	284,975	28
Region as % of MSD	19.8	17.1		-2.7

Table 2.3

North East Metropolitan Region

Summary Employment Forecasts

Source: Ratio Consultants - 1994

Municipalities	Year		Change	
	1991	2011	No.	%
Heidelberg	22,750	27,070	4,320	19
Diamond Valley	8,230	12,570	4,340	53
Eltham	8,020	12,070	4,050	50
Box Hill	22,590	29,540	6,950	31
Donc. & Temp	17,950	27,030	9,080	51
Croydon	14,400	20,350	5,950	41
Nunawading	28,770	38,110	9,340	32
Ringwood	13,880	19,380	5,500	40
Healesville	2,410	3,340	930	39
Lillydale	18,160	24,470	6,310	35
Sherbrooke	5,700	8,450	2,750	48
Upper Yarra	2,840	4,050	1,210	43
Sub-total	**165,700**	**226,430**	60,730	37
Melbourne Statistical Division (MSD)	1,286,560	1,674,230	387,670	30
Region as % of MSD	**12.9**	**13.5**		**0.6**

Note: Finance Property & Business Services account for about 18-25% of new employment.
And Community Services & Recreation, Personal & Other services account for about 40-60% of new employment

The key conclusion is that there is likely to be significant pressure for replacing obsolete industrial activities with service industries. This may put pressure on the land use regulatory system. Experience has shown that to delay such regulatory changes in some cases results in areas missing windows of opportunities for change.

2.5 Prospects For Land Use Change within the Region

2.5.1 Activity Centres

For each of the four major activity centres, the respective Councils are committed to further expansion. In each case it is suggested that current major road works (the Western Ring Road, Ringwood Bypass and Eastern Arterial) will improve accessibility within each centre and/or potentially increase the trade catchment area of the centre. The Greensborough District Centre is especially likely to have an increased catchment (as a result of the Western Ring Road).

Current known changes to these major activity centres include:-

- Greensborough : retail expansion of 20,000m^2 floor area;
- Doncaster Shopping Town : retail expansion of 44,000m^2, plus a new Town Square;
- Box Hill : expansions to the TAFE and Hospital; Council is receiving numerous enquiries for cinema and office developments;
- Ringwood : two major cinema developments.

2.5.2 Commercial Arterials

The City of Whitehorse is committed to the ongoing development of activities on Maroondah Highway, and a strategy plan is currently being developed for the area. Opportunities include commercial/office development at Blackburn, where recent Planning Scheme changes will allow for 40,000m^2 of development.

The City of Manningham is aware of the opportunity which will be created for activity on Doncaster Road on the opening of the extension of the Eastern Arterial extension. Council has commenced an extensive planning process, which involves significant community input, to identify options. At this stage, planning is still in the ideas phase, and there is no pre-conceived notion to an activity future.

2.5.3 Industrial Activity

Within the North East Region, there remains only one major area with vacant industrial land, namely Bayswater North. However, the remaining area is not large.

2.5.4 Infill Development

An emerging activity in the Region is infill development. These developments, however, are fairly small and range from residential to commercial projects. Known developments include:-

- the Monier site in Mitcham - an industrial development;
- the Olympic Village - residential redevelopment in West Heidelberg;
- Banyule High School - redevelopment;
- Mont Park - while just outside the Region, this is a reasonably major residential development (for 5,000 people).

2.6 Prospects for Land Use External to the Region

The Plenty Valley Growth Corridor is one of Melbourne's designated growth areas, where future residential development is to be absorbed. Current forecasts suggest that over the next 15 to 20 years this area will attract approximately 70,000 additional persons. Its influence on the study area will be through residents of that area moving into the study area to seek employment, goods and services. Because of a poor radial arterial road network in that area, it is expected that traffic will utilise roads such as Yan Yean Road to access the Greensborough Centre.

The Knox to Dandenong industrial area is among the major industrial employment locations in Melbourne. As mentioned earlier, this area would appear to have the highest growth of all industrial areas in recent times. The importance of this area is likely to be magnified if and when the Scoresby Freeway is developed, since some 45% of Melbourne's industrial floor space located along the alignment of the Scoresby Freeway, in the areas of Bayswater North, Knox, Monash, Dandenong and Frankston. The development of the Scoresby Freeway will allow development synergies to occur due to the increased accessibility between these areas. It must be recognised that the completion of the Scoresby Freeway, if approved, is still some time away. But the changes which may be caused by the Scoresby Freeway, may still effect what is likely to occur during the planning period for this study.

To the west of the study area, the completion of the Western Ring Road is likely to act as an employment attractor for people within the study area. Already, areas such as the Janefield site and the Defence land in Broadmeadows are being recognised as potential employment locations. It is evident from the completed sections of the Western Ring Road (ie further to the west), that it is not until the "asphalt is on the ground", and the road is open, that the real estate/property development market responds. That is, even though it has been known for a considerable period of time, (ie over a decade), that the Western Ring Road would be developed, and would increase accessibility for a whole range of industrial activities along its path, it was not until the initial sections had been opened that the private sector reacted and realised the potential that the Ring Road offered. It is anticipated that when the Ring Road is fully completed, the increased circumferential accessibility which will influence the Greensborough area will change the work habits and perceptions of those in the western part of the study area.

2.7 Transport/Road Network Implications

The following transport and land use issues, which have been identified in recent research, are directly relevant to the future transport/road needs of the North East Region:-

- increasing influence towards "just in time" industries, and a recognition that customers now only provide "window" delivery times, and if these are not met the customers are lost. This is reflected in the work by FDF, which identified that good transport and telecommunications infrastructure is seen by local industry as the key requirement to ensure the viability of commercial activity in the area;

- the importance of benefits achieved through an improved traffic network are now receiving greater attention, as indicated from the work by FDF in relation to the Scoresby Corridor, which identified that the businesses in the Scoresby Region would receive a benefit of approximately $143 million per annum due to the increased accessibility achieved through the Scoresby Freeway;

- congestion on local roads is imposing significant costs to business; for example Linfox provided information to Business East which showed that congestion on local roads costs Linfox approximately $1,000 per day per semi-trailer;

- it should be recognised that tourism is an important employment generator for parts of the study area. That tourism is based on the natural resources of the Region and is therefore more fixed than, say a Theme Park, which could be located in any Region. This means there is a need for transport in the Region to accommodate the tourism resources, since they cannot be relocated to more accessible positions.

The more specific implications are as follows:-

- the most significant influence on transport from land use changes, will result from employment growth in areas external to the Region. In particular, research has shown that the commercial areas in the vicinity of the Scoresby Freeway source 45% of their inputs from overseas or interstate destinations, and 41% of their outputs are to these locations. Work by Business East indicates that some businesses in the area generate almost 60% of their despatches north to the Hume Highway;

- hence, there is very strong pressure from the cross-regional circumferential traffic demand, through the study area from the areas around the Scoresby Freeway, and it is likely that the development of the Scoresby Freeway would significantly accentuate that demand;

- due to reduced traffic volumes on the Maroondah Highway and Doncaster Road as a result of the Eastern Freeway extension, the potential to develop additional commercial activities in the major activity centres is going to increase. This is likely to create a number of localised points of traffic congestion, as developments seek to maximise the access and egress potential;

- much of the new employment in the North East Region will be in service industries (rather than in traditional manufacturing). The work by FDF indicates that such industries generate high levels of "business" traffic, mainly localised personal travel and small deliveries, rather than long distance heavy load transport (the trend to "just in time" manufacturing has similar effects). Future growth may therefore generate travel demands mainly for higher-capacity and better connected sub-Regional arterial roads, rather than long-distance, high-speed freeways.

3.0 EXISTING AND FUTURE ROAD NEEDS

3.1 Regional Road Network

Figure 1.1 identifies the arterial roads in the Study Area which are considered to perform Regional functions. This network comprises:-

- all freeways and State Highways;
- those declared/main roads which are part of continuous routes across municipal boundaries;
- all roads which have Metropolitan or State Route Numbers.

In Banyule, Figure 1.1 shows two roads connecting Main Street in Greensborough to Main Road in Lower Plenty, namely:-

- Para Road in Montmorency,
- St Helena Road/Karingal Drive/Bolton Street in Eltham.

These routes are the ones recognised by Banyule City and Nillumbik Shire as the routes being used for Regional through-traffic, including trucks.

The network also shows various proposed or possible future Regional roads, namely:-

- the Eastern Freeway under construction to Springvale Road;
- the Eastern Freeway extension to Ringwood;
- the Scoresby Transport Corridor;
- the full Ringwood Bypass;
- the Northern Route;
- the Healesville Freeway reservation;
- the Lilydale Bypass;
- the Melba Highway upgrade/bypass of Yarra Glen.

3.2 Existing Traffic Conditions

3.2.1 Congestion Locations

Each of the participating Councils was asked to provide information on parts of the Regional road network where traffic delays currently occur due to inadequate road capacity. The RACV was also asked to identify "red spot" locations based on observed delays (typically in peak hours and in situations where delays over the identified road sections exceed 10 minutes). The information is summarised in Figure 3.1, indicating that current problems are mainly with the **radial** road links (the notable exception being Mitcham Road between Springvale Road and Maroondah Highway and the level crossings on the Ringwood Railway Line).

It was beyond the scope of NEMRRS to undertake a detailed analysis of current (or expected future) traffic conditions over the whole arterial road network. Nevertheless, it is necessary to provide some quantitative analysis of the ability of the network to cope with current (and future) travel demand patterns. An appropriate and convenient method is **screenline analysis**, where existing volumes and theoretical capacities of roads crossing imaginary "screenlines" are aggregated; this provides a general indication of whether the network as a whole is sufficient (providing that travel movement has some ability to divert from more congested roads to less congested roads).

Table 3.1 provides existing (1991 to 1995) daily traffic flows on arterial roads crossing a series of screenlines, the locations of which are shown in Figure 3.2; the data was derived from various VicRoads and Council sources. The screenlines were selected to coincide with natural barriers such as rivers and railway lines, so that errors due to through-traffic on local (ie. non-arterial) streets are minimised and could be ignored.

The table also shows daily capacities on each of the roads, based on the typical existing mid-block cross-section or at the most constrained point on each road (such as a bridge or a railway level crossing). The capacities were derived from those indicated by NAASRA/Austroads as "typical" or "desirable" one-way hourly volumes for urban arterial roads with interrupted flow conditions, converted to two-way daily volumes as follows[2]:-

- the one-way flow was factored up by 66 percent to account for contra-flow (non-peak direction) travel to give a two-way hourly capacity;
- the two-way hourly flow was multiplied by 11.0 to give an equivalent daily capacity.

The resulting capacities were:-

- 2- lane undivided road ..... 16,500 v.p.d
- 4-lane undivided road ..... 27,500 v.p.d
- 4-lane undivided road with clearways ..... 33,000 v.p.d
- 4-lane divided road with clearways ..... 34,500 v.p.d
- 6-lane undivided road with clearways ..... 44,000 v.p.d

[2] Refer Table 7.1 in Guide To Traffic Engineering Practice, Part 2, "Roadway Capacity", NAASRA 1988.

- 6-lane divided road with clearways ..... 53,000 v.p.d

The screenline volume/capacity ratios in Table 3.1 show that the most overloaded series of roads is those across the Yarra River, for which current demand exceeds "reasonable" capacity by 13 percent; this suggests an undesirable level of congestion.

Table 3.1
Screenline Analysis Results As (Vehicles Per Day)

Screenline Location	1991/1995 Volume (v.p.d)	Traffic Capacity (v.p.d)	Volume/Capacity Ratio
Yarra River			
• Banksia Street Bridge	60,000	53,000	
• Fitzsimons Lane Bridge	45,000	34,500	
• Warrandyte Bridge	13,000	16,500	
	118,000	104,000	1.13
Ringwood Railway Line			
• Elgar Road	40,000	34,500	
• Station Street	35,000	27,500	
• Middleborough Road	25,000	27,500	
• Blackburn Road	18,500	27,500	
• Springvale Road	54,000	53,000	
• (Rooks Road)	13,000	27,500	
• Mitcham Road	21,000	27,500	
• (Heatherdale Road)	12,000	16,500	
• Wantirna Road	35,000	34,500	
	235,500	276,000	0.92
Plenty Road/Darebin Creek			
• Ring Road	-	-	
• Grimshaw Street	38,000	33,000	
• Kingsbury Drive	21,000	34,500	
• Southern Road	18,000	34,500	
• Bell Street	51,000	44,000	
	128,000	146,000	0.87
East of Springvale Road			
• Burwood Highway	61,000	53,000	
• Healesville Freeway	-	-	
• Canterbury Road	39,000	53,000	
• Maroondah Highway	60,000	53,000	
• Mitcham Road	36,500	27,500	
• Eastern Freeway Extn.	-	-	
• Reynolds Road	12,000	16,500	
	208,500	203,000	1.03
North of Bell Street			
• Rosanna Road	45,000	34,500	
• Upper Heidelberg Road	33,000	34,500	
• Waterdale Road	12,000	27,500	
	90,000	96,500	0.93

*(non-arterial roads shown in brackets).

The screenline east of Springvale Road is marginally over-capacity (volume/capacity ratio of 1.03); it would be much more over capacity if not for the major contribution of Mitcham Road which, for most of its length, would be more appropriately classified as a secondary/collector road.

The Ringwood Railway Line screenline incorporates level crossings at Middleborough Road, Blackburn Road, Springvale Road, Rooks Road , Mitcham Road and Heatherdale Road, all in or bounding on the City of Whitehorse. Most of these are near railway stations, so can experience substantial delays, especially in the morning and evening peak periods when the trains are longest and the headways the shortest.[3] Effective capacities are much lower than implied in Table 3.1, and the resulting volume/capacity ratios are much higher. This situation is exacerbated by:-

- the configurations of the level crossings, which are usually narrower than the approaches and which have irregular pavement surfaces, both of which reduce traffic throughout;
- the lack of effective alternative north-south routes.

The other screenlines indicate high volume/capacity ratios, between 0.87 and 0.93, with the Ringwood Railway Line only achieving the 0.92 value with the assistance of non-arterial roads (ie. Rooks Road and Heatherdale Road).

3.2.2 Frequent Accident Locations

Councils were similarly asked to nominate accident locations on the regional road network. Information was either provided from published sources (eg. Manningham's Road Strategy Report) or was collated specially for this report.[4]

As shown in Figure 3.3, the problem locations are principally at intersections on the heavily-trafficked inner urban area roads, and on the poorly aligned outer area roads such as Diamond Creek Road (the Windy Mile) and the Warburton Highway.

3.2.3 Needs of Truck Operators

Discussions with the two Regional Economic Redevelopment Organisations, namely Business East and New Edge, have consistently stressed the need for improved truck access through the Study Area for :-

- travel from the Outer East to the Melbourne Airport, Melbourne Ports and the transport terminals in the Somerton area and the Hume Highway;
- travel from the Scoresby/Dandenong industrial areas across the northern areas of Melbourne, or to the Melba Highway (and hence to the Hume Highway at Seymour).

---

3 Ratio Consultants' surveys in 1988 found that the Blackburn Road level crossing was closed to traffic for up to 35 percent of the time in weekday afternoons from 3.00 to 6.00pm.

4 These locations are not necessarily coincident with "black spots" as defined by Vic Roads. They are locations currently considered dangerous, rather than those with statistically significant accident records.

Surveys have recently been carried out to quantify these needs; they are as follows:-

- for the Shire of Yarra Ranges, as background data for its Arterial Road Strategy;
- especially for NEMRRS, comprising an origin/destination survey focusing on the Banksia Street and Fitzsimons Lane bridges over the Yarra River on Wednesday, 10 July 1996.

As summarised in Figure 3.4, the two surveys in combination emphasise the importance of the following:-

- Maroondah Highway and Canterbury Road/Swansea Road, connecting with the Melba Highway;
- Bell Street/Banksia Street/Grimshaw Street and the Northern Ring Road, with links across the Yarra River through Banyule, Nillumbik and Manningham to Springvale Road and Mitcham Road.

The truck movements across the Yarra River at the Banksia Street bridge were readily identifiable as travelling via Manningham Road and Doncaster.

The movements across the Fitzsimons Lane bridge were less easy to trace, especially through Banyule. In order to research this issue further a supplementary classification count and truck origin/destination survey was carried out on Wednesday, 18 September, 1996. The results clearly demonstrated that Para Road, between Main Street in Greensborough and Main Road in Lower Plenty, is the principal route for through truck traffic. Further details of both truck surveys are provided in Appendix 1.

Nillumbik Shire Council identified other truck routes as being Bannons Lane/Haleys Gully Road and Ironbark Road, although these are more likely to be local rather than regional routes.

The economic importance of minimising truck operating costs means that operating characteristics on those roads, both in terms of reducing delays and maximising the predictability of trip times, should be optimised.

3.2.4 Tourist Road Needs

Discussions with each of the six Councils, and with KPMG as consultants for two tourism development plans in the Region, indicate that the main tourist facilities in the Study Area are:-

- the Yarra River, with its metropolitan parks in the inner areas and broader Yarra Valley attractions further out;
- the Dandenong Ranges and Yarra Ranges National Parks;
- the Kinglake National Park.

Figure 3.4 identifies the roads which provide the principal access routes for the tourist areas. The growing importance of tourism, as part of the regional economy, means that user convenience of the routes, not only capacity and safety but also signage and visual appeal, must be optimised.

3.2.5 Business East Road Priorities

Business East has recently published its (draft) Regional Economic Development Strategy. The report includes an "infrastructure audit" which identifies regionally significant road projects as being (not in priority order):-

- Scoresby Freeway
- Eastern Freeway (and extension to Maroondah Highway/Scoresby)
- Ringwood Bypass
- Healesville Freeway
- Outer Ring Road
- Northern Route
- Lilydale Bypass
- Williamsons Road duplication
- Templestowe Road duplication
- King Street duplication
- Bulleen Road duplication
- Dorset Road duplication
- Bayswater Road duplication
- Mountain Highway duplication
- Heidelberg-Kinglake Road duplication ("Windy Mile")
- Melba Highway deviation and upgrade
- Maroondah Highway/Springvale Road/railway level crossing upgrade
- other level crossings on Belgrave-Lilydale railway line in Whitehorse.

Business East also identified the road project of highest priority, especially with reference to economic, environmental and strategic effects, and feasibility of implementation. The resulting priority road projects were identified:-

- Priority 1 - Eastern Freeway Extension to Ringwood
- Priority 2 - Scoresby Freeway
- Priority 3 - Access to Port of Melbourne, Tullamarine Airport, South Dynon Rail Freight Terminals, Hume Highway.
- Priority 4 - Level crossings on the Belgrave-Lilydale Railway Line
- Priority 5 - Lilydale Bypass
- Priority 6 - Melba Highway Upgrade.

3.3 Forecast Future Road Needs

3.3.1 Screenline Volume Growth

There have been various forecasts prepared for future traffic volumes on the arterial road network in the Study Area, principally:-

- VicRoads in-house TRIPS modelling, prepared for various land use distribution and network configurations at year 2001 and 2011;
- Ratio/DJA forecasts prepared as part of the North West Melbourne Arterial Road Strategy;
- Arup Transportation Planning forecasts prepared for the Springvale Road/Maroondah Highway/Mitcham Road Principal Traffic Route Strategy;
- Veitch Lister Consulting for the Scoresby Transport Corridor EES.

These forecasts have generally assumed a complete freeway network, at least to year 2011, that is including the extension of the Eastern Freeway to Ringwood (ie. assuming the Scoresby Corridor and Ringwood Bypass Stage 2 are completed). The VicRoads networks also included Southern and Western Bypasses of the CAD.

Some of the VicRoads and Ratio/DJA forecasting also included Outer Ring Roads, with connections into Springvale Road or into the northern end of the Scoresby Corridor. The inclusion of the freeway links always tends to divert longer-distance trips from slower arterial roads, so can artificially inflate the "demand" for such links.

None of the TRIPS analysis allowed for any acceleration of land development in the vicinity of the future freeway routes. Even though pressures for such development would inevitably occur, and could be given rapid effect if suitably zoned land was available (as has occurred along the Western Ring Road), the NEMRRS forecasts do not incorporate any such land use/transport interaction effects.

Data was extracted from the various forecasts to identify the main components and locations of traffic growth over the period 1991/95 to year 2011, Totals were calculated for the various radial and circumferential screenlines shown in Figure 3.2. The results, as shown in Table 3.2, indicate:-

- moderate growth (18 percent) across the Plenty Road/Darebin Creek screenline;
- substantial growth (25 to 26 percent) across the Ringwood Railway Line and the Springvale Road screenlines, both resulting from major regional diversions to the Eastern Freeway/Scoresby Freeway route;
- highest growth (40 percent) across the Yarra River screenline, probably resulting in part from the inclusion in the analysis network of a North East Access (outer location).

The high travel demand growth across the Yarra River could be **partly** due to the inclusion in the analysis network of a North East Access (Outer Ring Road). This hypothetical link would tend to attract some long distance trips which, for the 1991/95 base case, would be using other arterial roads outside the Region (such as the South Eastern Arterial). The attraction of a North East Access would, however, be counteracted by the inclusion in 2011 by VicRoads of the Southern and Western Bypasses (ie. as per City Link, but with no tolls). **The 40 percent growth forecast for cross-Yarra travel does, therefore, appear to be a real prospect.**

Table 3.2 also includes a comparison of the forecast year 2011 volume across each screenline, compared to the 1995 (ie. existing) network capacity.

This shows that the existing roads along the Ringwood Railway Line, Plenty Road/Darebin Creek and North of Bell Street screenlines should have sufficient capacity to cater for year 2011 travel demands, but with very little capacity to spare. The East of Springvale Road screenline would be substantially over-capacity, but that deficiency will be met by the committed Eastern Freeway extension to Ringwood.

The most extreme over-capacity situation will be along the Yarra River screenline. Without any capacity increase in prospect, it is forecast to have a volume/capacity ratio in year 2011 of 1.59. "Transporting Melbourne" indicates that existing transport links must cater for this demand for the foreseeable future, but recognises the prospect of further study of upgrading options in this area.

Table 3.2
Screenline Analysis for Traffic Growth
Based on TRIPS Analysis

Screenline Location	Estimated 1991/1995 volume (v.p.d)	TRIPS Forecast 2011 volume (v.p.d)	Traffic Growth 1991-2011	2011 Volume / 1995 Capacity
Yarra River	118,000	165,000	+40%	1.59
Ringwood Railway Line	219,800	277,000	+26%	1.00
Plenty Road/Darebin Creek	128,000	146,000	+14%	1.00
East of Springvale Road	208,500	236,000	+25%	1.16
North of Bell Street	90,000	92,000	+2%	0.95

3.3.2 Influence of Land Use and Travel Trends

The Strategic Land Use Review documented in Section 2 produced several conclusions which should be considered in the context of the screenline forecasts outlined above, namely:-

(a) The Region's population is not expected to rise, over the period to year 2011, it is in fact expected to fall marginally. There will thus be a marginal reduction in home/work travel by residents of the Region.

(b) As with most other non-CAD Regions of Melbourne, the North East Region's share of metropolitan employment will increase over the period to 2011. The majority (70 percent) of the new jobs will be in finance, business services and community service sectors.

(c) The Eastern Freeway and Ringwood Bypass will divert substantial volumes of through-traffic away from Doncaster Road and the Maroondah Highway/Whitehorse Road allowing both to be active redevelopment corridors for office and commercial development. This may accentuate the employment growth trends expected in this Region, both in quantity and industry type.

(d) Following on from the land development impetus discussed in (c), it is possible that much of the "released" capacity on existing arterial roads will be absorbed by the local traffic generation of increased office, other employment and retail development. Other proposals, such as the introduction of bus-only lanes on Doncaster Road, would have similar effects. It is important that such land use and transport proposals are carefully planned, to prevent traffic congestion building up again to undesirable levels.

(e) The biggest land use/transport influence on the Region, however, will result from external employment growth, particular in the Scoresby Corridor. That growth will generate increased circumferential traffic demands through the Region.

(f) With no proposals for additional circumferential road links in the foreseeable future, it is essential that the capacities of existing circumferential roads are optimised, both by removing intersection "bottlenecks" and by carefully controlling mid-block access.

(g) The trend towards "just-in-time" manufacturing will increase the need for reliable travel times on the road network, and will decrease the size of the individual freight consignments. Future employment growth may therefore generate travel demands mainly for better connected and higher capacity sub-regional arterial roads, rather than long-distance high-speed freeways.

4.0 FORMULATION OF REGIONAL ROAD STRATEGY

4.1 Principles

The analysis of existing networks and future traffic travel patterns, outlined in previous sections, indicates the principles which should be applied in the formulation of a road strategy for the North East Region. The relevant principles, which should provide a basis for decisions about individual projects, are considered to be as follows (also refer Figure 4.1):-

(1) Optimise the Capacity of Key Regional Arterial Roads

There are numerous arterial roads in the Region which will, for the foreseeable future, need to play a major through-traffic-carrying role. That is, there is no prospect of them being "relieved" by new high-capacity roads. For example, Banksia Street/Bell Street and Rosanna Road in Banyule or Springvale Road in Nunawading will probably always have high and growing volumes of traffic, including high proportions of trucks (on the other hand, Mitcham Road in Nunawading has the prospect of "relief" from its major through-traffic role when the Eastern Freeway Extension is constructed).

Some major arterials, such as the outer parts of the Maroondah Highway, have extensive frontage/service roads, which minimise the traffic capacity effects of changing land use. Roads such as Bell Street and Springvale Road, however, can have their capacities severely affected by a small number of redevelopments of fronting properties such as:-

- redevelopment of industrial sites, formerly with low traffic generations, to peripheral sales and other similar semi-retail uses with very high peak period traffic generation;
- conversion of conventional residential sites into blocks of residential units, medical centres or other more intensive uses.

There has been considerable debate in recent years about access control on urban arterial roads in Victoria[5]. It appears that tighter control of access to frontage properties has conclusive traffic capacity and safety effects, without significant urban design or security disadvantages. One preferred treatment is to develop "back up" lots along arterial roads, which have their vehicular access from other local streets, and with building siting and design which minimise the noise and amenity affects of close proximity to high-volume arterial roads.

The Regional Strategy should ensure that, where feasible, land use planning controls or other mechanisms are implemented which facilitate such treatments on the key regional arterial roads. This will ensure that their traffic-carrying capacity is not compromised by inappropriate redevelopment of frontage properties but that, indeed any redevelopment which does occur achieves the optimum mix of arterial road efficiency and corridor land use amenity.

---

[5] For example, as discussed by Brindle in "Arterial Road Access Management : Source Document", ARR 271, ARRB Transport Research Pty Ltd (1995).

(2) Build on Committed Projects

VicRoads has indicated that the following major projects can be considered as committed, and that they will be completed in the near future:-

- Eastern Freeway extension to Springvale Road (under construction);
- Eastern Freeway extension beyond Springvale Road to Ringwood;
- Ringwood Bypass Stage 2;
- Bulleen Road duplication south of Manningham Road;
- Williamsons Road duplication (George Street to Reynolds Road);
- Dorset Road (Canterbury Road to Mountain Highway).

Given the shortage of road funding, it is essential that maximum reliance is placed on the committed projects, and that the augmented regional road network is built around them. This means, for example, maximising the capacity of feeder roads to the extended Eastern Freeway and its interchanges, especially in the period pending the construction of the Scoresby Corridor. This would be achieved by continuing the Eastern Freeway "extension" as far south as possible, such as to Canterbury Road or Burwood Highway and by increasing the capacity south of the freeway of:-

- Middleborough Road;
- Blackburn Road;
- Springvale Road.

If the freeway extension terminates at Maroondah Highway, it may be necessary to rely on Heatherdale Road for additional feeder capacity.

(3) Plug the Gaps

Maximum value for money is achieved by constructing or upgrading alignment or capacity continuity of existing roads. Duplicating Templestowe Road from Bulleen Road to Thompsons Road, for example, provides a continuous westward extension of Reynolds Road (and the proposed Northern Route) and a high capacity link to the Eastern Freeway.

(4) Contingency Planning Pending Major New Roads

Despite its substantial economic merit, a Scoresby Freeway or Arterial Road may not be constructed for many years, and possibly not at all. It is essential that the regional strategy has the ability to cope with the absence of a Scoresby Freeway or Arterial for the foreseeable future, and possibly indefinitely, by upgrading alternative north-south roads, such as:-

- Middleborough/Blackburn/Springvale Roads as outlined above, and particularly the railway level crossings which so heavily penalise their capacity;

- Dorset Road as a feeder for the north-east routes such as Swansea Road and Maroondah Highway/Melba Highway.

Similarly, it is important that Canterbury Road is developed sufficiently in the event that no road is constructed in the foreseeable future within the Healesville Freeway reservation.

It is important in this context also, that the "commitment" to the Eastern Freeway extension continues as far south as possible, or at least that upgrading of feeder roads such as Heatherdale Road are included in the package of committed works.

(5) Increase Circumferential Road Capacity

In **Linking Melbourne** (February 1994) "Ringwood to Greensborough" was identified as a weakness in Melbourne's road network. **Linking Melbourne** stated that:

"The Government will commission a study on how best to provide for circumferential metropolitan traffic and regional traffic needs through the north east of Melbourne".

Transporting Melbourne : A strategic framework for an integrated transport system in Melbourne prepared by the Department of Infrastructure and released for public comment in September 1996, proposes seven specific transport corridors for consideration. The Eastern (Doncaster) Corridor and Metropolitan Orbital Transport Corridor would be located within the region covered by this Study.

The Metropolitan Orbital Transport Corridor is proposed as a continuous corridor fully circumscribing the metropolitan area. With respect to the question of the long term need to investigate the upgrading of links in the north east referred to in Linking Melbourne, Transporting Melbourne proposes that it is necessary to ensure that:

"Any study includes detailed and careful consideration of all relevant issues, close consultation with the community, and assessment of net community benefit; for the foreseeable future, any links will utilise existing roads and the Eastern Freeway under construction".

At the same time **Transporting Melbourne** suggests that any strategy for investigation and development of the corridor would involve "applying the Metropolitan Orbital Transport Corridor philosophy to major investigations" and "making optimum use of the existing network and services to connect components of the corridor (especially in the north and north-east)".

There is an obvious need to improve circumferential travel conditions through the Region across the Yarra River. In the absence for the foreseeable future of a new alternative route or routes, this may best be achieved by improving the five main existing alternative routes, namely:-

- Banksia Street to Bell Street;

- Banksia Street/Jika Street/Rosanna Road to the Greensborough Highway and the Northern Ring Road;

- Fitzsimons Lane to Main Road, Lower Plenty Road, Greensborough Highway and the Northern Ring Road (or via Para Road and Bolton Street, but only for cars and light commercial vehicles);
- Melba Highway through Yarra Glen and north-west to the Hume Highway at Seymour;
- Healesville-Koo Wee Rup Road.

The other circumferential crossing of the Yarra River, that is at Warrandyte, is not considered relevant or appropriate for increased regional or truck traffic. It should, however, continue to play an important role in the regional tourism road network.

(6) Assist Business, Tourist and Freight Transport

The economic development of the North East Region will be optimised by improving the transport efficiency of business, tourism and freight transport. This will be achieved by improving access to Melbourne Airport, Melbourne ports, road and rail freight terminals and the Hume Highway/Ring Road system. Improvements to outer regional roads, such as Eltham-Yarra Glen Road and Healesville-Koo Wee Rup Road, will also assist rural and forestry industries.

(7) Provide Network Flexibility

With the move towards more diverse regional business and travel patterns, and greater needs for travel time reliability, it is important to achieve a grid network which provides **simplicity, continuity** and **route choice.** These characteristics also assist user information systems, such as route signage, which is important for local users as well as for visitors and tourists.

(8) Address Local Problems

Where possible, road projects should be implemented which can solve **both** regional **and** local needs. The completion of the duplication of Lilydale-Montrose Road (Swansea Road) for example, would assist local safety and capacity, as well as improving the regional link between the Scoresby Corridor and the Melba Highway.

4.2 Projects and Priorities

4.2.1 Council and VicRoads Projects

Throughout the NEMRRS Study, a listing was compiled of road improvement projects which had some status with one or more of the six participating Councils or VicRoads. Those 31 projects are listed in Appendix 2 together with a brief description of each project and its purpose, its traffic characterisation, its costs and benefits where known, and any other characteristics or issues which may affect is evaluation.

Projects which are understood to have committed funding (but not necessarily timing) are:-

- the extension of the Eastern Freeway to Ringwood;
- Stage 2 of the Ringwood Bypass;
- Bulleen Road duplication south of Manningham Road;
- Williamsons Road duplication;
- Dorset Road duplication south of Canterbury Road.

4.2.2 Community Consultation and Evaluation

The NEMRRS Study incorporated a range of community consultation processes, namely:-

- advertisements or public notices, in the local press, advising of the Study's scope and program, and calling for written submissions;
- direct discussions with the two Regional Economic Development Organisations (ie. Business East and New Edge) as representatives of business and industry in the Region;
- a questionnaire survey of about 130 community groups, identified by Councils as having an interest in road planning issues;
- the formation of a Discussion Group which worked through the Goal Achievement Method to evaluate the candidate road improvement projects;
- circulation of a brochure summarising the draft strategy with supporting press advertisements, seeking written responses or calls to a telephone "hotline".

The community group survey focused on local projects and had a relatively low response rate (about thirty five percent). The indicated priorities for road projects are shown in Table 4.1.

Table 4.1
PROJECT PRIORITIES FROM COMMUNITY GROUP SURVEY

Rank	Road	Project
1	Thompsons Road	Duplication north of Manningham Road
2	Dorset Road	Duplication of balance
3	Swansea Road	Duplication
4	Healesville-Koo Wee Rup Road	Upgrade
5	Bulleen Road	Duplication at northern end
6	High Street	Duplication of southern end
7	Williamsons Road	Duplication north of Manningham Road
8	Lower Plenty Road	Widen Rosanna Road to Greensborough Highway
9	Bell Street	Widen to 6-lanes east of Waterdale Road
10	Colchester Road	Duplication of Balance

As well as seeking views on individual road projects, the community group questionnaire surveys sought nominees for a Discussion Group on project evaluation. A group was established which comprised representatives of:-

- Business East;
- Banyule Residents Traffic Action Committee;
- RACV;
- City of Manningham Commissioners Advisory Group;
- Macedon Square Traders Association;
- Yarra Glen Traders Association;
- Templestowe Village Traders Association;
- Shire of Nillumbik Commissioners Advisory Group;
- Warburton Ranges Tourism Inc;
- Australian Conservation Foundation Mullum Branch;
- Private Residents/individuals.

The group met on four occasions and successively established objectives and criteria to be used as the basis for project evaluation. The final structure of objectives and criteria, and their respective weightings are shown in Table 4.2.

Each of the projects in Appendix 2 was given a score out of ten against each of the criteria, and the scores were multiplied by the criteria weightings. The aggregate score for each project was then computed, leading to the following "top ten" list of projects, in declining order of priority:-

- Melba Highway upgrading and Yarra Glen Bypass;
- Templestowe Road duplication;
- Swansea Road duplication;
- Bulleen Road duplication;
- Dorset Road duplication;
- Thompsons Road duplication;
- Greensborough Highway duplication;
- Healesville-Koo Wee Rup Road upgrading;
- Lower Plenty Road widening (between Rosanna Road and Greensborough Highway);
- Railway level crossing upgrading in City of Whitehorse.

The draft strategy brochure, and associated media coverage, generated considerable interest. Table 4.3 summarises the written and telephone responses, together with an indication of the responses provided (where relevant).

The public responses were not considered to raise any new matters, or to provide arguments sufficiently compelling to cause the initial assessment of project needs and priorities to be changed.

Table 4.2

GOAL ACHIEVEMENT METHOD
OBJECTIVES, CRITERIA AND WEIGHTINGS

Objective	Wo	Criteria	Wc
Social	25	▸ Support a regional strategy where it exists.	2
		▸ Minimise impact on communities.	4
		▸ Improve accessibility (all modes).	3
		▸ Maximise amenity (rat runs).	3
		▸ Maintain or improve sense of community.	2
		▸ Improve security/certainty of tenure.	3
		▸ Minimise impacts on property acquisition.	4
		▸ Retain integrity of existing land use.	2
		▸ Minimise cultural/recreational impacts.	2
Road Safety	25	▸ Minimise pedestrian/cyclist exposure.	5
		▸ Reduce blackspots.	10
		▸ Match road characteristics to trip types.	5
		▸ Minimise downstream congestion/danger.	5
Environmental	25	▸ Support a regional strategy where it exists.	5
		▸ Minimise traffic noise impact on people.	5
		▸ Maintain heritage aspects and values.	3
		▸ Minimise atmospheric pollution.	3
		▸ Minimise visual impacts.	3
		▸ Minimise impacts on ecology (flora and fauna).	3
		▸ Retain natural features/systems.	3
Economic	25	▸ Support a regional strategy where it exists.	8
		▸ Optimise benefit/cost ratio.	9
		▸ Improve freight network efficiency.	4
		▸ Improve tourist network efficiency.	4

4.2.3 Other Project Needs

The road project priorities identified through the consultation processes, as discussed in Section 4.2.2, tend to address:-

- the network improvement needs discussed in Sections 3;
- the regional road strategy principles outlined in Section 4.1.

Table 4.3
NEMRRS Community Consultation Responses to Public Notice, Press Releases and Summary Brochure Circulation (as at 23 January 1997)

DATE	NAME	ADDRESS	AREA	TEL. No.	QUESTIONS OR COMMENTS	RESPONSE GIVEN
4/12/96	Noel Howard	Not Given	Not Given	9532 9713	- Wanted to know where to get a copy of report - Wanted to know about the Northern Route and outer link, whether it had been discussed much, and whether alignments were discussed. - Wanted to know what VicRoads would do with the strategy	VERBAL RESPONSE GIVEN - Referred to Council for copy of report - Explained that the Northern Route had been discussed in the past but nothing made definite - Explained that VicRoads would use the strategy with the Councils to give priorities to road projects
6/12/96	Ivan Peter	Northern Route area	Manningham	9844 3540	- Required copy of draft report	VERBAL RESPONSE GIVEN - Referred to Council for copy of report
6/12/96	Mark Lewis	Croydon Hills	Maroondah	9419 4250	- Has a home near the Northern Route proposal - Wanted a copy of report, said he would write to Ratio	VERBAL RESPONSE GIVEN - Referred to Council for copy of report
6/12/96	Jan Marsh	Doncaster	Manningham	Not Given	- Confused with report saying further investigation is required for High Street when the road is being constructed at present from the Freeway to Eltham	- None required
9/12/96	George Crawford	Lower Templestowe	Manningham	Not Given	- Doesn't think the selected projects achieve improved traffic flow from the Banksia Street Bridge to the Hume Highway and the Airport - No mention of upgrading other routes such as Rosanna and Greensborough Roads - Need to provide a link through Rosanna Road and Greensborough Road to the Ring Road - Need to complete the total Ring Road, not cross through Bulleen and Templestowe roads	WRITTEN RESPONSE GIVEN - Explained that the report does suggest the upgrading of Rosanna and Greensborough Road - Explained that the report discusses the F18 link - Acknowledged the need to undertake a study into the outer Ring Road but explained it was not part of this study
11/12/96	Gordon Williams	Not Given	Yarra Ranges	Not Given	- Member of Community Reference Panel (infrastructure) - Wanted a copy of the report	VERBAL RESPONSE GIVEN - Referred to Council for copy of report
11/12/96	Not Given	Eltham North-Diamond Creek area	Nillumbik	Not Given	- Full support of the Ring Road from Greensborough to Ringwood	- None required
11/12/96	Eric Sette	Bulleen	Manningham	9850 2568	- Expressed need for duplication of Manningham Road - Supports the Scoresby Freeway as a north-south link - Supports an outer eastern link connecting to Scoresby - Supports the Northern Route proposal	- None required
16/12/96	Not Given	Not Given	Not Given	Not Given	- Hang up	- None required
16/12/96	Not Given	Not Given	Not Given	Not Given	- Hang up	- None required

DATE	NAME	ADDRESS	AREA	TEL. No.	QUESTIONS OR COMMENTS	RESPONSE GIVEN
16/12/96	James Breheny	Doncaster East	Manningham	9842 9068	- Wanted to know where to get a copy of report so that he could comment on the report	VERBAL RESPONSE GIVEN - Referred to Council for copy of report
16/12/96	Bruce Plain	Business near Banksia St Bridge	Manningham	98505155	- Concern as to whether bridge widenings would affect his land	VERBAL RESPONSE GIVEN - Explained that there was no plans to widen the bridge
16/12/96	David Perrin MP	Bulleen	Manningham	9850 7983	- Believes the North Eastern Region Road Strategy should not differ from the road strategy separately prepared by Manningham Council	WRITTEN RESPONSE GIVEN - Explained that the Strategy was for the whole region, ie, six Councils and not just for Manningham
17/12/96	Taylor	Bulleen-Templestowe Residents Association	Manningham	9850 1803	- Wanted to know why they hadn't been consulted as a community group - Wanted to know about details of truck survey - Felt that all the road projects were targeted to the Bulleen area and that they would increase traffic in the area - Report requires more detail on Manningham Rd/Bulleen Rd proposed works - Doesn't think it is possible to have projects at Lower Heidelberg Rd/Rosanna Rd Intersection and at Banksia St/Manningham Rd - Stated that Templestowe Rd duplication is not a possibility for the next 10 years - She stated that the traffic volumes on Rosanna Street had grown significantly from 25,000 in 1992, and that promoting the area as a traffic route was not good - Not in favour of the Northern Route proposal as the topography is too difficult - In favour of the Outer Eastern Orbital link for traffic to bypass other areas and without it the other projects are pointless - Concerned where the trucks carrying toxic goods would travel when they are prohibited to use the City Link routes - In favour of the Melba Highway/Yarra Glen Bypass	VERBAL RESPONSE GIVEN - Explained the consultative process - Explained where to get a copy of the report
17/12/96	Silvana Predebom	Carlton-Interested in water management and land use		9345 4174	- Required a copy of the draft report	VERBAL RESPONSE GIVEN - Referred to Council for copy of report
8/12/19	Not Given	Eltham	Nillumbik	9439 9015	- Alarmed at forecasts of 40% growth of traffic crossing the Yarra River - Difficult to cross Main Road Eltham at present and increasing it's capacity will create more noise, pollution, and amenity problems particularly for the elderly and disabled - Increasing capacities in the area will also require historical trees to be cut down - No suggestion on how to manage population growth and development - Concerned that the Outer Ring Road did not get a high priority when it is needed to get traffic out of other areas	VERBAL RESPONSE GIVEN - Explained that these figures were based on extensive research

DATE	NAME	ADDRESS	AREA	TEL. No.	QUESTIONS OR COMMENTS	RESPONSE GIVEN
19/12/96	Not Given	Not Given	Not Given	Not Given	- Roads are congested in areas due to inadequate planning, and a road strategy is no the complete answer - Planning should include public transport, cycling, and walking - To ease congestion on roads in the area the extension of the railway line to East Doncaster should be considered	- None required
19/12/96	Not Given	Not Given	Not Given	Not Given	- Hang up	- None required
19/12/96	Not Given	Not Given	Not Given	Not Given	- Hang up	- None required
19/12/96	Not Given	Not Given	Not Given	Not Given	- Hang up	- None required
19/12/96	Adrian Trouchet	Not Given	Yarra Ranges	9752 5226	- Wanted a copy of the draft report	VERBAL RESPONSE GIVEN - Referred to Council for copy of report
19/12/96	Ian Murray	Mitcham-Koonung Mullum Forestway Assoc.	Whitehorse	Not Given	- Wanted a copy of the draft report	VERBAL RESPONSE GIVEN - Referred to Council for copy of report
19/12/96	Julie Parkes	Not Given	Not Given	9850 5892	- Wanted to know what community consultation was undertaken to generate the road projects and whether the Bulleen-Templestowe Residents Assoc. was contacted. Wanted to know the process of contacting community groups - Wanted to know whether Bulleen Road would be designated as a truck route from Greensborough to Ringwood and if so should they sell up - Objects to roads being built linearly along river valleys b/c they pollute waterways	VERBAL RESPONSE GIVEN - Explained the consultative process - No further action taken as she was going to send a letter to Ratio
19/12/96	Feehan	Greensborough	Banyule	Not Given	- Wanted to ensure that the duplication of the Greensborough Highway included provision for upgrading Noise Attenuation Barriers along the Highway b/w Grimshaw Street and the roundabout at Diamond Creek to meet VicRoads standards	WRITTEN RESPONSE GIVEN - Explained that the report focuses on a strategy for the region by identifying missing links and inefficencies and did not go into the design details
19/12/96	City of Whitlesea	Bundoora	Whittlesea	9217 2224	- Concern that adjacent Councils not consulted - Claim that New Edge only telephoned once (actually one meeting plus invitations to all Discussion Group meetings plus circulation of all documents) - Concern that Greensborough-Ringwood travel demands cannot be accommodated on existing roads.	- Letter discussed at Steering Committee Meeting - Some points were found to be inaccurate - Manningham Council was to issue written response
20/12/96	Mark Lewis	Croydon Hills	Manningham	9879 0364	- Strong support for Northern Route, with suggestion of an interim link between Falconer Road and Wonga Road.	WRITTEN RESPONSE GIVEN - Explained that the report gave priority to the Northern Route and that something needs to be done in the region
23/12/96	Gerald Ashman MP Koonung Prov	1/426-430 Burwood Highway Wantima South	Knox	9887 0255	- Sees no justification for classifying Canterbury Road in Bayswater North as an area of congestion - Believes Canterbury Road from Forest Hill Chase to Middleborough Road should be classified as a congested area - Observes significant delays on Whitehorse Road approaching Station Street	- Information justifying the classification of Canterbury Road in Bayswater as a congested area was sent to Whitehorse City Council to pass onto the MP

DATE	NAME	ADDRESS	AREA	TEL. No.	QUESTIONS OR COMMENTS	RESPONSE GIVEN
31/12/96	Helen Jeske	P.O Box 184 Woori Yallock	Yarra Ranges	Not Given	- Need to eliminate railway level crossings on the grounds of safety, delay and pollution - Need to give high priority to duplicating the Warburton Highway - Healesville-Koo Wee Rup Road needs to go ahead on safety grounds - Suggested inexpensive options to increase safety and reduce delays	WRITTEN RESPONSE GIVEN - Explained that funds are not always available for new structures, and existing infrastructure is often upgraded - Explained that the community consultation gave higher priority to other roads in the region such as Melba Hwy
2/1/97	Banyule City Council	PO Box 51 Ivanhoe 3079	Banyule	9490 4222	- Report fails to recommend key findings - There is a need to discuss the Outer Ring Road in the final report - Report needs more discussion on the North East access - Need to identify new projects and road deficiencies	- Letter discussed at Steering Committee Meeting - Final report will include modifications addressing these issues -Banyule Council to suggest emphasis of wording in the final report
23/1/97	Fiona Mc Cartney	Not Given	Whitehorse	9244 3401	- After a copy of the draft report	- Referred to Council.Library
23/1/97	Not Given	Not Given	Not Given	Not Given	- Hang up	- None required
23/1/97	Chris Adams	2 Fredrick Street Docasler 3108	Manningham	9840 3108	- Required a copy of report	- Referred him to Pat Meehan

In order to give full effect to the identified priority projects, there are various other complementary or related projects which would need to be implemented. These can be grouped as follows (also refer Figure 4.2):-

(1) Bulleen Road/Greensborough Highway Route

In order to facilitate circumferential travel between the Eastern Freeway and the Northern Ring Road along the Bulleen Road/Rosanna Road/Greensborough Highway route, the two main projects are:-

- widening Lower Plenty Road between Rosanna Road and Greensborough Highway;
- duplicating Greensborough Highway north of Grimshaw Street.

In order to fully utilise the available route capacity, and to reduce delays to commercial vehicles, four extra projects would be required:-

- widening of the Banksia Street/Bulleen Road intersection to maximise turning capacity between south and west approaches (this is already proposed as part of the Bulleen Road duplication, refer layout plans at Appendix 3);
- upgrading the Banksia Street/Jika Street and Banksia Street/Lower Heidelberg Road/Rosanna Road intersections to maximise turning capacity between east and north approaches;
- introducing extended period Clearways (eg. 6.30 a.m. to 6.30 p.m.) on Rosanna Road so as to provide sufficient mid-block capacity;
- duplicating Greensborough Highway south of Yallambie Road.

The widening of Waterdale Road, through West Heidelberg to Kingsbury Drive, would provide north-south traffic capacity assistance to Rosanna Road.

(2) Through-Traffic Routes in Montmorency and Greensborough

The duplication of Greensborough Highway (south of Yallambie Road) and the widening of Lower Plenty Road (between Rosanna Road and Greensborough Highway), as recommended in (1) above, will assist circumferential connections between Greensborough Highway and Fitzsimons Lane/Main Road. In particular, the turning movements between north and east at the Greensborough Highway/Lower Plenty Road intersection will achieve increased capacity. In addition, the two identified secondary through-traffic routes, that is Para Road and Karingal Drive/Sherbourne Road/Bolton Street, should both be upgraded to facilitate through-traffic (and some commercial traffic, at least light trucks). Desirable projects would be:-

- localised widening of the Para Road/Main Road intersection to assist turning traffic, and alignment upgrading of adjacent parts of Para Road;
- reconstructing the Karingal Road/Sherbourne Road intersection to give priority to the preferred through-traffic route;

- upgrading the vertical alignment and cross-section of Bolton Street.

(3) Truck Route Via Swansea Road and Melba Highway

As well as the duplication of Dorset Road and Swansea Road, and the upgrading of Melba Highway, there are two key intersections on this route which should be widened to assist turning movements and to facilitate route capacity and continuity, namely:-

- the Dorset Road/Canterbury Road intersection;
- the Anderson Street/Maroondah Highway intersection in Lilydale.

The first intersection will receive additional use with the proposed upgrading (outside the Region to the south) of the Dorset Road/Boronia Road railway level crossing. The second intersection will be upgraded if the Lilydale Bypass proceeds in the near future, so interim works to facilitate turning volumes would be useful as a first stage.

(4) Windy Mile Upgrading

The "Windy Mile" section of Diamond Creek Road is an important part of an outer regional route connection between Greensborough and Yarra Glen. Although its upgrading raises local problems relating to loss of roadside vegetation, the project is important in reducing accident and congestion problems.

(5) Railway Level Crossings in Whitehorse

Even if a decision is made immediately to proceed with a freeway or arterial road in the Scoresby Corridor, it will be many years before design and construction could be complete. This means that, for many years, the existing north-south arterial roads must cope with growing traffic volumes.

Once the Eastern Freeway is completed to Springvale Road, the most effective southern feeder routes will be Springvale Road and Mitcham Road. Then, when the freeway extension is completed (eg. to Maroondah Highway) Mitcham Road will be bypassed, but Heatherdale Road may become an important north-south feeder. Blackburn Road and Middleborough Road currently play less of a role in north-south through movements, but will be used more as congestion levels on Station Street and Springvale Road increase.

For each of the existing north-south roads, it is therefore important to increase capacity, especially through the level crossings which currently provide major constraints on throughput.

The most immediate upgrading option is to modernise the boom gate controls so as to minimise the time for which the crossing roads are closed. Other options may include revised scheduling of trains to minimise the need for extended closures. The most extreme option, involving either the lowering of the railway lines or the elevation of the crossing roads, may need to be investigated further if lower cost improvements are not feasible.

(6) Short-Term Traffic and Road Use Management (TRUM) Projects

In preparation for most of the major "corridor" improvement projects set out above, particularly for (1), (2) and (3), there are various short-term and relatively low-cost projects which could be carried out to assist traffic capacity and safety. Generally, these comprise:-

- modifying traffic signal phasing to assist turning movements which are being encouraged for regional route continuity reasons;
- approach widening and new channelisation at intersections, so as to increase throughput capacity and safety;
- installing signals or roundabouts to reduce intersection delays and danger.

Each of the six Council's provided lists of such projects. Those which are located on the Regional arterial network, and which have the highest apparent cost-effectiveness, are included in Table 4.4.

4.3 Further Investigations

The NEMRRS Study was not intended to investigate in detail or resolve all of the road planning issues in the Region. Rather, it was intended to identify the more obvious needs and to determine priorities acceptable to the various stakeholders, and to identify areas requiring further investigation, monitoring or research. The specific areas where such further work is required are as follows:-

(1) Improving Land Use Planning Controls Along Arterial Roads

Metropolitan Planning Schemes are going through major restructuring, towards fewer standard zones which provide a greater level of flexibility. This trend is likely to lead toward less restrictive land use planning controls in general, with increased prospects for developments with access needs which compromise arterial road capacity and safety.

Clause 17 of the Regional Section of the Planning Scheme requires a permit for the opening construction or alteration of access to any road designated in the Planning Scheme as a Main Road Reservation. Such an application would also be referred to VicRoads for comment. State Highways have the added protection of Statement of Planning Policy Number 5, but that applies to relatively few roads in the urban arterial network. In order to achieve more tightly-controlled frontage access on arterial roads, in the interests of protecting or even increasing the capacities of existing arterial roads, more decisive planning controls or properly researched VicRoads policy documents are needed. This is especially the case if a significant trend towards frontage/corridor site redevelopment (eg. with service roads or "back up" lots along arterials) is to be initiated.

A comprehensive assessment of current and emerging planning control options should be undertaken, to ensure that the long-term viability of the arterial road network is protected.

TABLE 4.4

SHORT-TERM TRUM PROJECTS

Council	Location	Brief Project Description
Banyule	▸ Lower Plenty Road/Rosanna Road. ▸ Lower Plenty Road/Greensborough Highway. ▸ Bell Street/Waterdale Road. ▸ Banksia Street/Dora Street. ▸ Jika Street/Rosanna Road.	▸ Modify signals to increase turning capacity between south and east legs. ▸ Modify signals to increase turning capacity between west and north, and east and north legs. ▸ Provide extra turn lane or extended queue length for east to north right turn. ▸ Modify signal phasing to increase turning capacity between east and north legs. ▸ Modify signal phasing to increase turning capacity between east and north legs.
Manningham	▸ Warrandyte Road/Harris Gully Road. ▸ Warrandyte Road/Blackburn Road. ▸ Warrandyte-Ringwood Road/Milne Road. ▸ Foote Street/Anderson Street. ▸ Reynolds Road/Springvale Road.	▸ Install roundabout. ▸ Install traffic signals. ▸ Install traffic signals. ▸ Install traffic signals. ▸ Install traffic signals.
Maroondah	▸ Canterbury Road/Armstrong Road. ▸ Canterbury Road/Dickersons Road. ▸ Maroondah Highway/Mines Road. ▸ Maroondah Highway/Oban Road. ▸ Mt Dandenong Road/Clegg Avenue. ▸ Canterbury Road/Great Ryrie Street. ▸ Dorset Road/Allambanan Drive. ▸ Maroondah Hwy/Dublin Road. ▸ Maroondah Hwy/New Street. ▸ Mt Dandenong Road/Lusher Road/Anzac Street. ▸ Warrandyte Road/Loughnan Road.	▸ Left turn improvement (south to west). ▸ Channelise and kerb realign. ▸ Channelise median opening. ▸ New U-turn treatment. ▸ Left turn lane (west to north), right turn lane (east to north). ▸ Install traffic signals. ▸ Install traffic signals. ▸ Install traffic signals. ▸ Traffic signal remodel. ▸ Traffic signal installation. ▸ Traffic signal realignment.

Council	Location	Brief Project Description
Nillumbik	▸ Eltham-Yarra Glen Road. ▸ Eltham-Yarra Glen Road/Pitt Street ▸ Eltham-Yarra Glen Road/Dudley Street. ▸ Eltham-Yarra Glen Road/Mt Pleasant Road. ▸ Yan Yean Road (bend south of depot). ▸ Eltham-Yarra Glen Road/Luck Street. ▸ Yan Yean Road (Sutherland Road to River Avenue). ▸ Eltham-Yarra Glen Road/Bolton Street. ▸ Heidelberg-Kinglake Road/Sunrise Drive. ▸ Heidelberg-Kinglake Road/Collins Street. ▸ Heidelberg-Kinglake Road (Ninks Road to Shire Boundary). ▸ Eltham-Yarra Glen Road (Aqueduct to K.G.-St Andrews Rd).	▸ Upgrade pedestrian signals at Eltham Station. ▸ Install traffic signals. ▸ Install traffic signals. ▸ Construct roundabout. ▸ Realignment. ▸ Install traffic signals. ▸ Realignment. ▸ Fully control right turn. ▸ Install traffic signals. ▸ Install traffic signals. ▸ Safety improvements. ▸ Seal shoulders.
Whitehorse	▸ Middleborough Road/Springfield Road. ▸ Mitcham Road/Springfield Road. ▸ Station Street/Thames Street. ▸ Station Street (Wimmera to Shannon). ▸ Station Street/Riversdale Road. ▸ Elgar Road/Belmore Road.	▸ Five-lane treatment. ▸ Five-lane treatment. ▸ Five-lane treatment. ▸ Road widening and 5-lane treatment. ▸ Replace signals with roundabout. ▸ Five-lane treatment.
Yarra Ranges	▸ Mt Dandenong Road/Mt Dandenong Tourist Road. ▸ Swansea Road/Hull Road. ▸ Swansea Road/Birmingham Road. ▸ Swansea Road (Trevallyn Close to Cambridge Road). ▸ Wellington Road (approaches to Lysterfield Landfill).	▸ Install traffic signals. ▸ Install traffic signals. ▸ Intersection upgrade. ▸ Wider northern carriageway. ▸ Slow left lanes.

(2) Further Evaluation of Projects Already Identified

As indicated in Appendix 2 many of the road upgrading projects being considered in this strategy were not supported by current or complete benefit/cost analysis. Further work should be undertaken to confirm that the projects do (or do still) merit implementation. Volume/capacity analysis would also be necessary for the "extra" intersection upgrading projects identified in Table 4.4.

The main project which appears justifiable, but for which no information is available on alignment feasibility, cost or traffic justification, is the Northern Route. This new arterial road would provide strong east-west continuity through the Region, between Lilydale and the Bell/Banksia Route via Reynolds Road; it would also provide good access to the Eastern Freeway and the Northern Ring Road. It would be desirable for a detailed Planning Study to be carried out to determine the project's feasibility and merit.

(3) Study of Additional Circumferential Road Capacity

Factors including:-

- the strong pressure from the cross regional circumferential traffic demand through the study area from areas around the Scoresby Freeway (refer Section 2.7);
- the traffic forecasting results, summarised in Section 3.3.1, which demonstrate the likely need for additional circumferential road capacity across the Yarra River; and
- the congestion on the existing roads which Transporting Melbourne suggests will be utilised for circumferential travel for the foreseeable future;
- warrant a study of options for increasing circumferential road capacity.

A study as described in Linking Melbourne and Transporting Melbourne, together with an Environmental Effects Statement should be undertaken to determine longer term needs and options for meeting such needs. The study and EES should be undertaken as soon as possible, preferably within two (2) years and have regard to relevant reports including the report prepared by FDF Management Pty Ltd and released in January 1997 outlining the economic benefits of a Metropolitan Ring Road.

In the shorter term, options for extracting greater operating capacity from the existing Yarra River crossings by methods such as increasing the capacity of their approach roads and intersections should be investigated, for example:-

- improving traffic operations along Rosanna Road, being a major feeder to the Banksia Street bridge;
- upgrading the signalised intersections on Banksia Street both east and west of the existing bridge (ie. at Bulleen Road and Dora Street);
- upgrading or converting the roundabout at the northern and southern ends of the Fitzsimons Lane bridge (ie. at Main Road and Porter Street).

(4) Monitoring of Emerging Land Use/Transport Trends

There are various land use and transport trends which should be monitored over time, to determine the effect they may have on road needs in the North East Region, such as:-

- the population and employment structure trends of the Region, both in magnitude and type;
- the trend (if any) towards people working more from home and hence imposing lesser demands on the road network in peak periods;
- the likelihood that future commercial vehicle travel will be more localised and will involve a higher proportion of small vehicles than currently applies;
- the strength and duration of the land development response in the western and northern suburbs to the Western Ring Road, and the prospects of that phenomenon being repeated in the North East Region or in the Scoresby Corridor, as a response to major new road projects;
- the user response to the City Link toll roads, specifically the effect those new roads have on traffic volumes in the north-east (ie. do the toll roads attract regional through-traffic because of their direct routes and continuity, or do they divert travel to more circuitous but free alternative routes?).

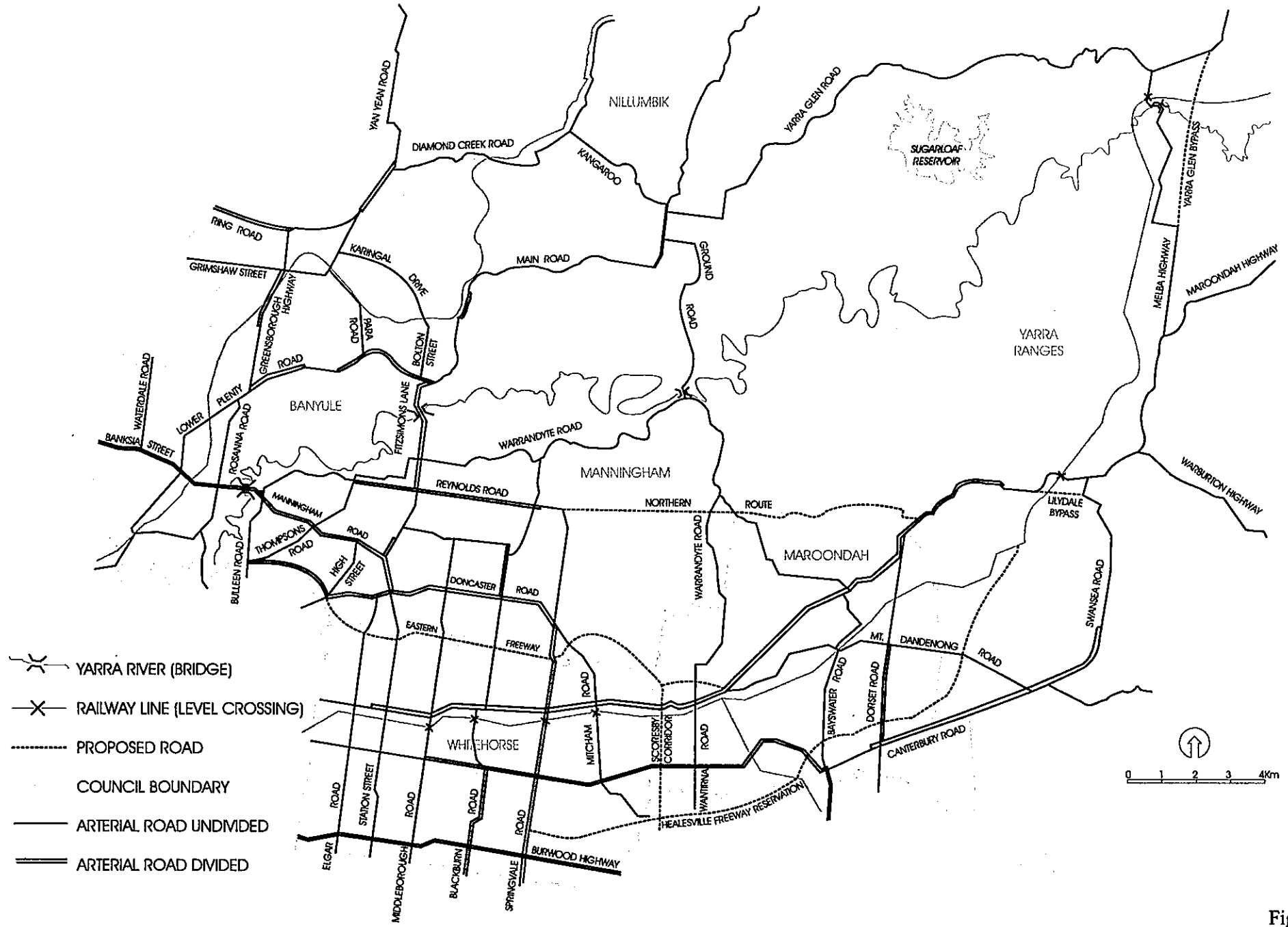


Figure 1.1

REGIONAL ROAD NETWORK

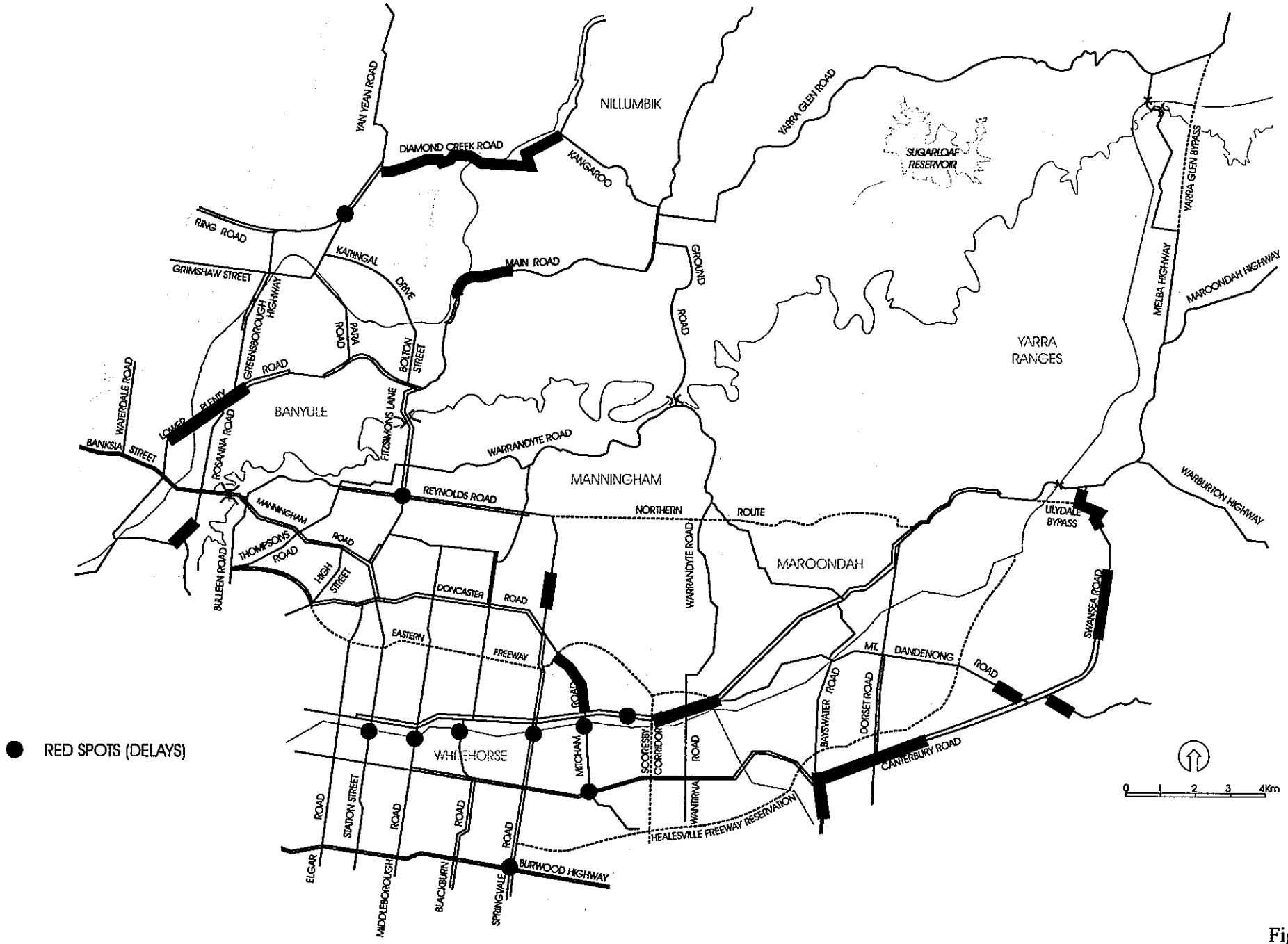


Figure 3.1

EXISTING TRAFFIC CONGESTION LOCATIONS

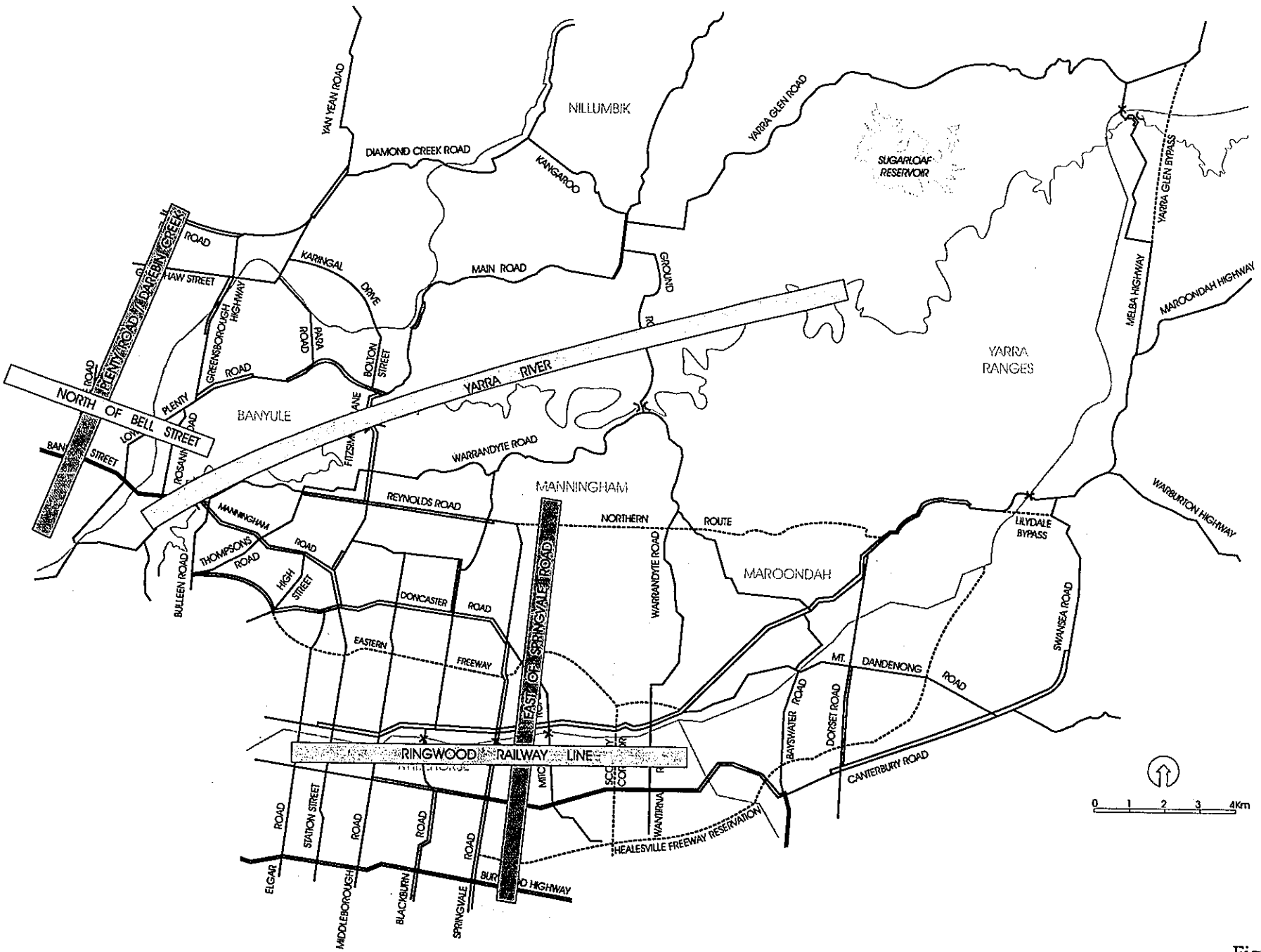


Figure 3.2
SCREENLINE LOCATIONS

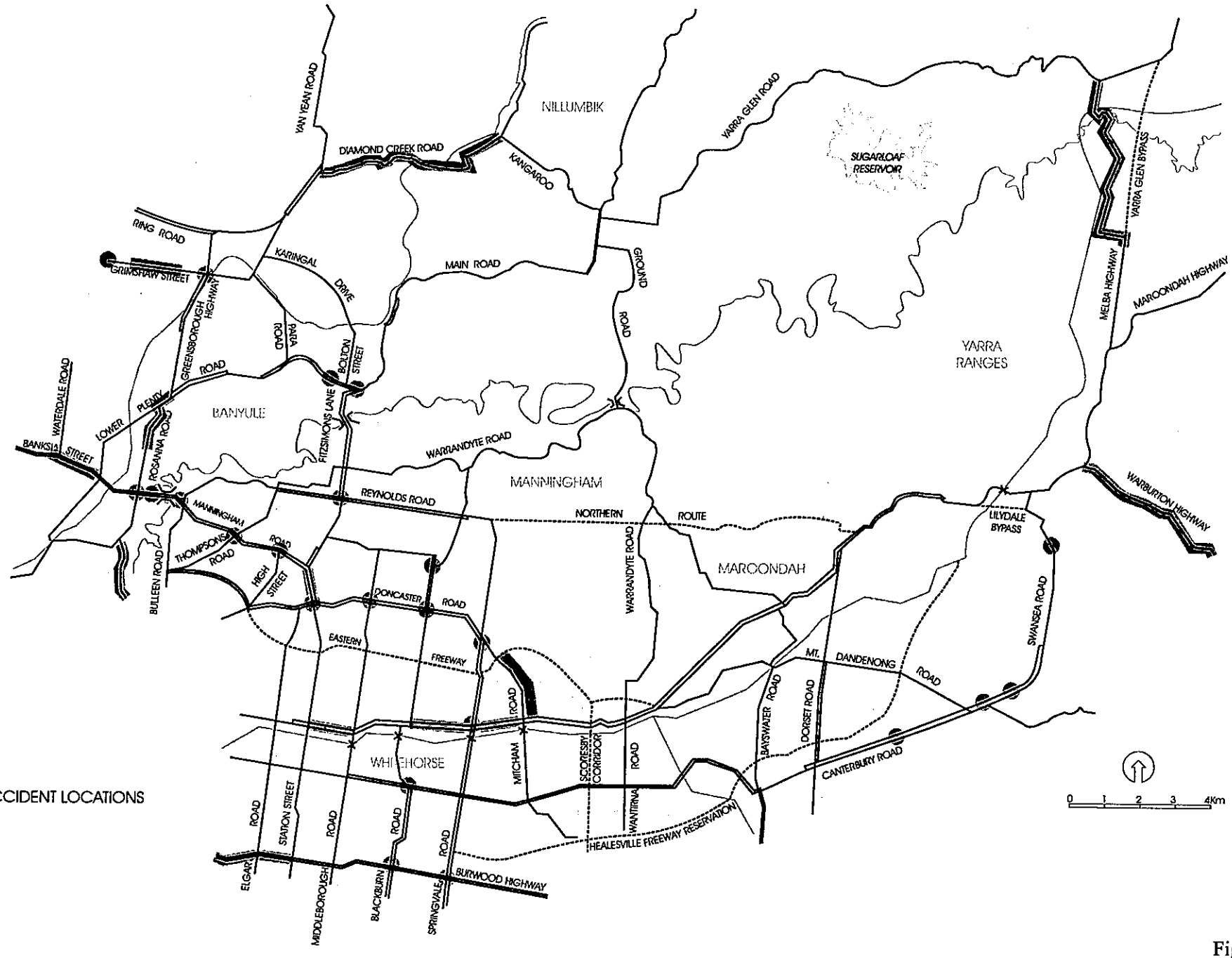


Figure 3.3
EXISTING ACCIDENT LOCATIONS

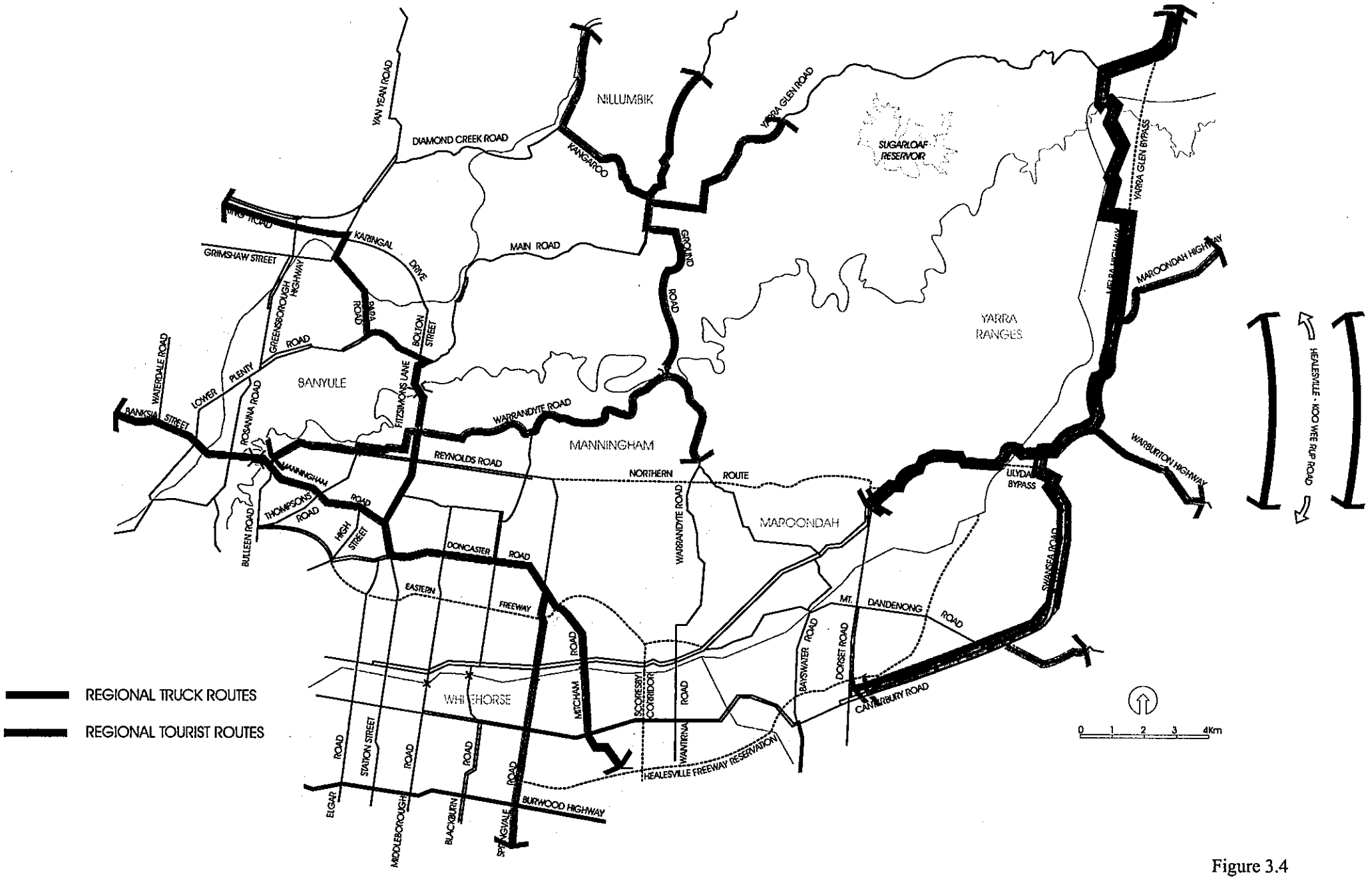


Figure 3.4

MAIN FREIGHT & TOURIST ROUTES

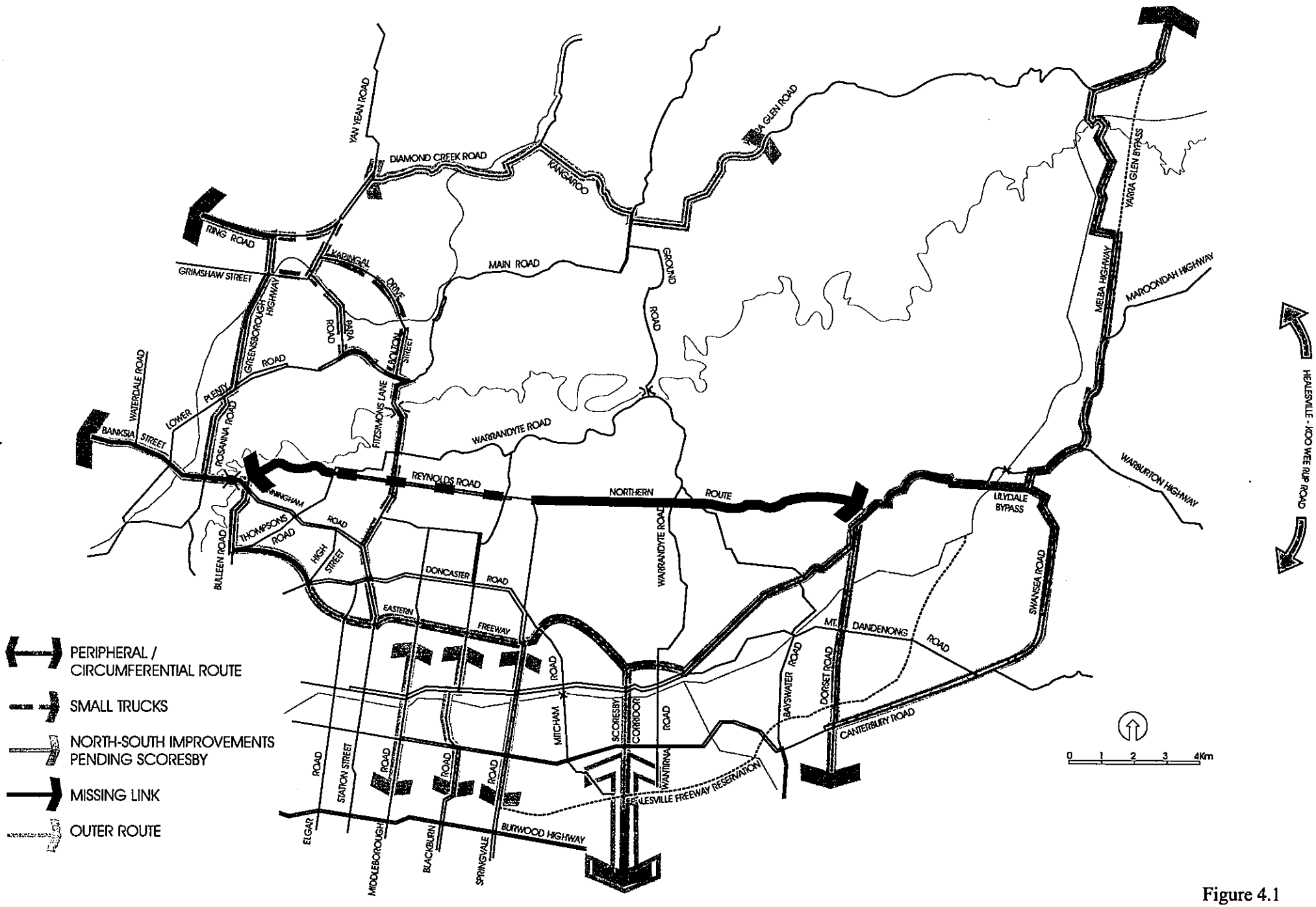


Figure 4.1

REGIONAL ROAD STRATEGY PRINCIPLES

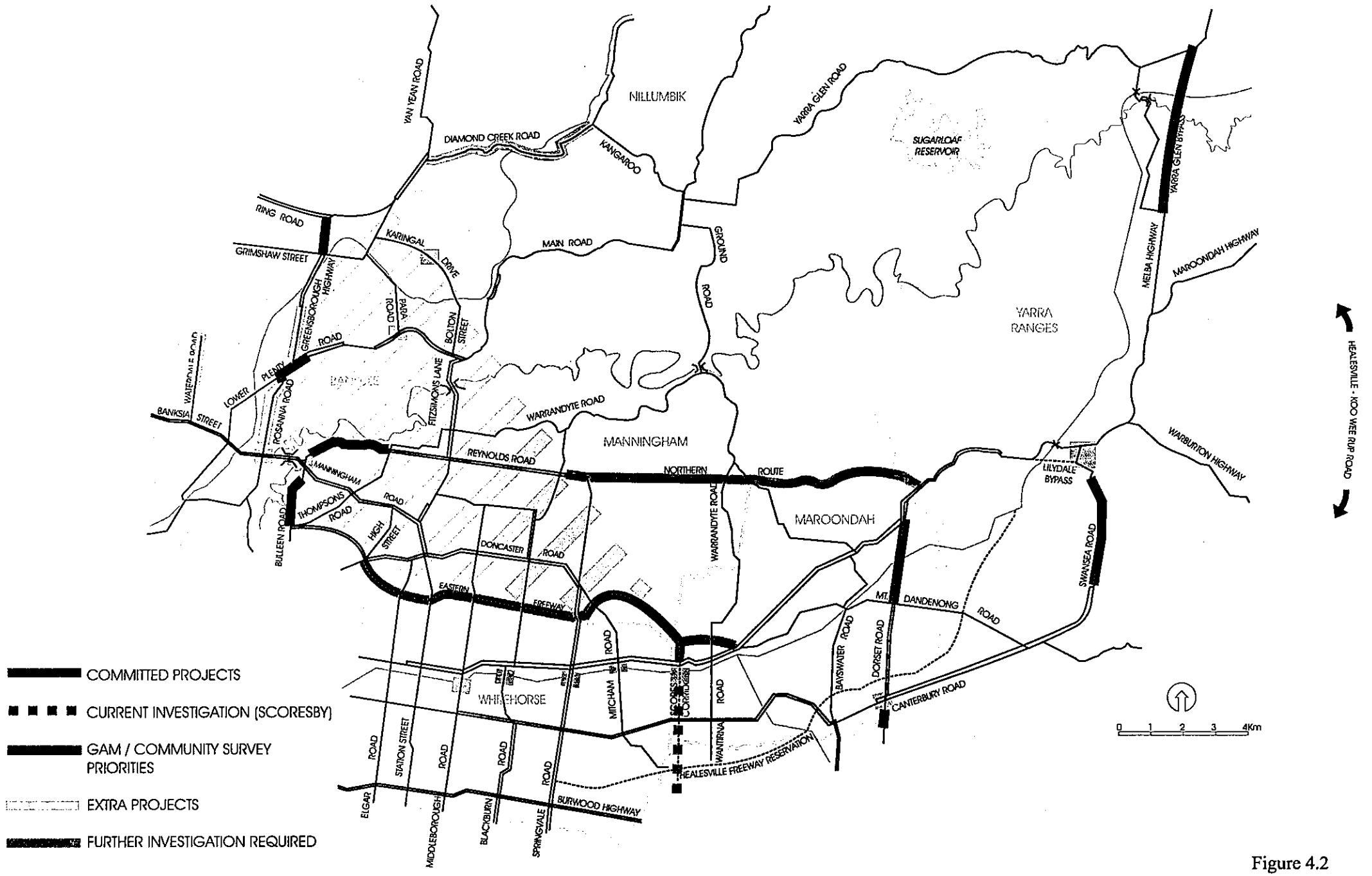


Figure 4.2
RECOMMENDED PROJECTS

APPENDIX 1

Survey of Trucks Across the Yarra River

1.1 Context

There are numerous valid arguments against the provision of new or upgraded roads which principally serve private vehicle (car) travel. For example:-

- car travel is concentrated in weekday peak periods, mainly for home-work commuter movements and can often be suitably provided by public transport;
- car travel is wasteful of resources and should not be "encouraged" by reducing congestion via road / traffic improvements;
- much car travel is undertaken in private (ie. non-work) time so is not "productive".

Accordingly, many new or upgraded road projects are vulnerable to attack on such grounds, especially if those projects are already under attack due to adverse environmental impacts.

The same arguments are much more difficult to sustain against roads with substantial forecast truck use. Although such projects are often attacked as creating "truck sewers"; improving truck operating conditions is more difficult to criticize because:-

- truck travel continues throughout the day and night, so uses road infrastructure more evenly and efficiently than car travel;
- very few truck consignments can be suitable carried by train (especially where both origins **and** destinations are within the urban area);
- truck traffic should be encouraged to use major arterials, because its impact on local streets is so devastating (in both amenity and pavement impact respects);
- truck operating economics are highly sensitive to congestion, so any measures to reduce travel times or reduce unpredictable delays are very valuable in direct economic and financial terms (refer to the main text discussion of "just-in-time" deliveries).

There has not recently been any extensive survey of truck movements in the North East Region. Some data was collected in 1985, as part of the Eastern Arterial Road EES, but that is now out-of-date; in any event, no origin-destination data was collected. Similarly, there is no detailed truck movement sub-model in the TRIPS model, so it is not possible to simulate existing truck movements, or forecast future truck movements, with any real accuracy.

So as to assist in the formulation of a North East Region Road Strategy, it was considered necessary to have data on current truck movements within and through the region, especially circumferential movements between the Scoresby Corridor and the Hume Highway / Western Ring Road.

There are five main truck routes for crossing of the Yarra River in Melbourne's north-east, these are:-

- Burke Road North, just north of the Eastern Freeway, on the border of Banyule and Boroondara City Councils;

- Banksia Street (Manningham Road West), on the border of Banyule and Manningham City Councils;
- Fitzsimons Lane at the point where the three councils of Banyule, Manningham and Nillumbik meet;
- Kangaroo Ground-Warrandyte Road, just north of Warrandyte-Ringwood Road, on the border of Nillumbik and Manningham City Council; and,
- Melba Highway, just south of the Yarra Glen township in the Shire of Yarra Ranges.

Previous surveys by Ratio Consultants had provided data for the Maroondah and Yarra Ranges areas (plus Knox, as part of previous work for those three Councils), so it was considered necessary to collect new data only for the Whitehorse / Manningham and Banyule / Nillumbik areas. Within those areas, the main need was seen to be data on travel movements across the Yarra River, that is at:-

- Banksia Street bridge;
- Fitzsimons Lane bridge;
- Warrandyte bridge.

Vic Roads data for the Warrandyte bridge showed that total volumes were very low compared to the other locations (about 13,000 v.p.d. at Warrandyte, compared to 60,000 v.p.d. on Banksia Street and 45,500 v.p.d. on Fitzsimons Lane); the roads served by the Warrandyte bridge were also not considered to operate as circumferential truck routes. Surveys were therefore only carried out at Banksia Street and Fitzsimons Lane.

1.2 North-Eastern Region Origin-Destination Survey

To provide information on the origins and destinations of cross-Yarra truck movements, truck registration numbers were recorded at convenient regional screenlines namely (refer Figure 1):-

- along the northern side of the Maroondah Highway;
- along the eastern side of Plenty Road and the Darebin Creek.

The surveys were carried out over the period 12.00 noon to 4.00pm on Wednesday, 10 July, 1996 and the principal summary results are provided in Table 1 and Figure 2. This shows:-

- the main truck movements across the Maroondah Highway screenline were at Springvale Road and Mitcham Road (707 and 489 trucks in the four-hour period respectively);
- the main truck movement across the Plenty Road / Darebin Creek screenline was at Bell Street (740 trucks in the four-hour period);

FIGURE 1
SURVEY LOCATIONS

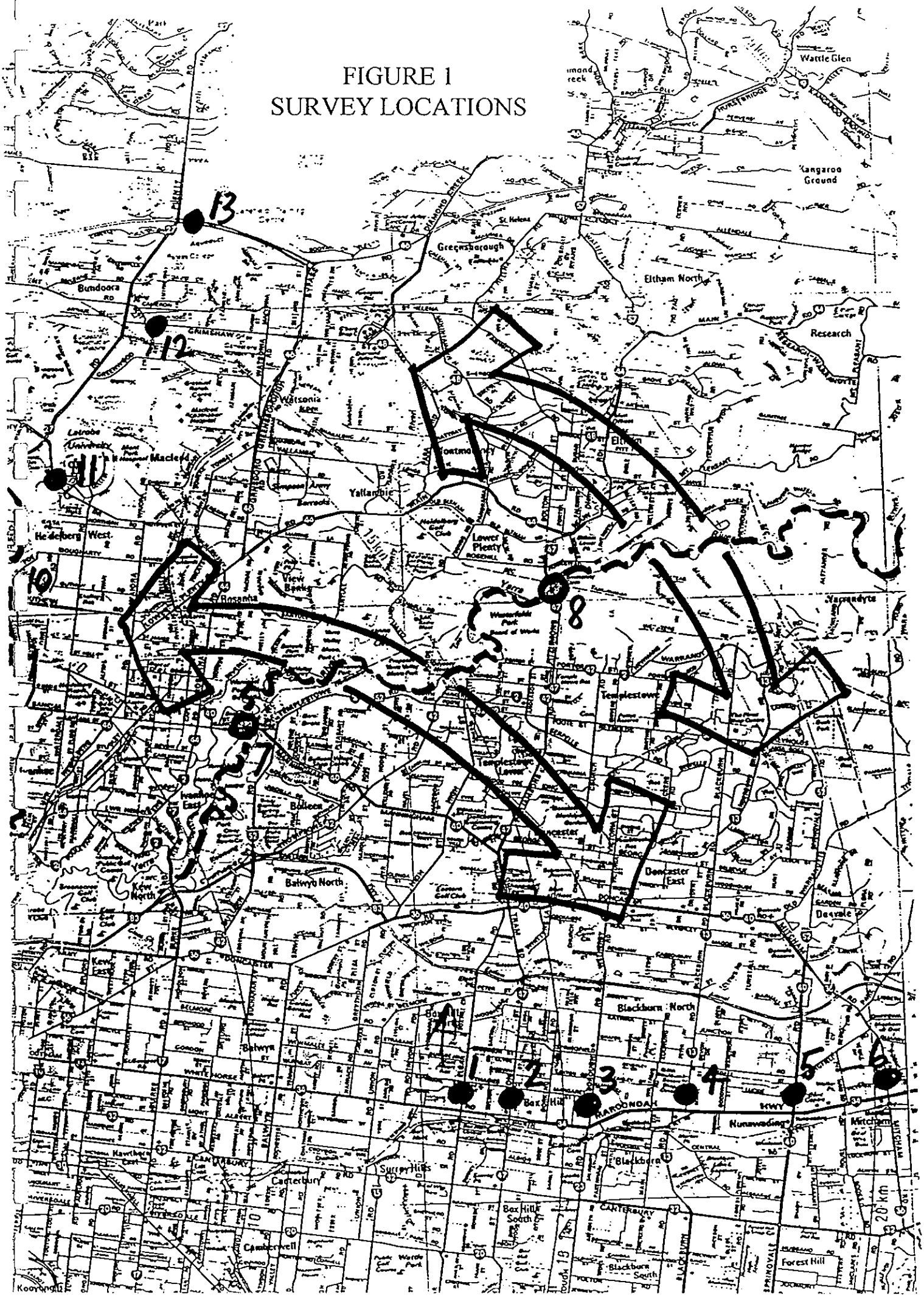
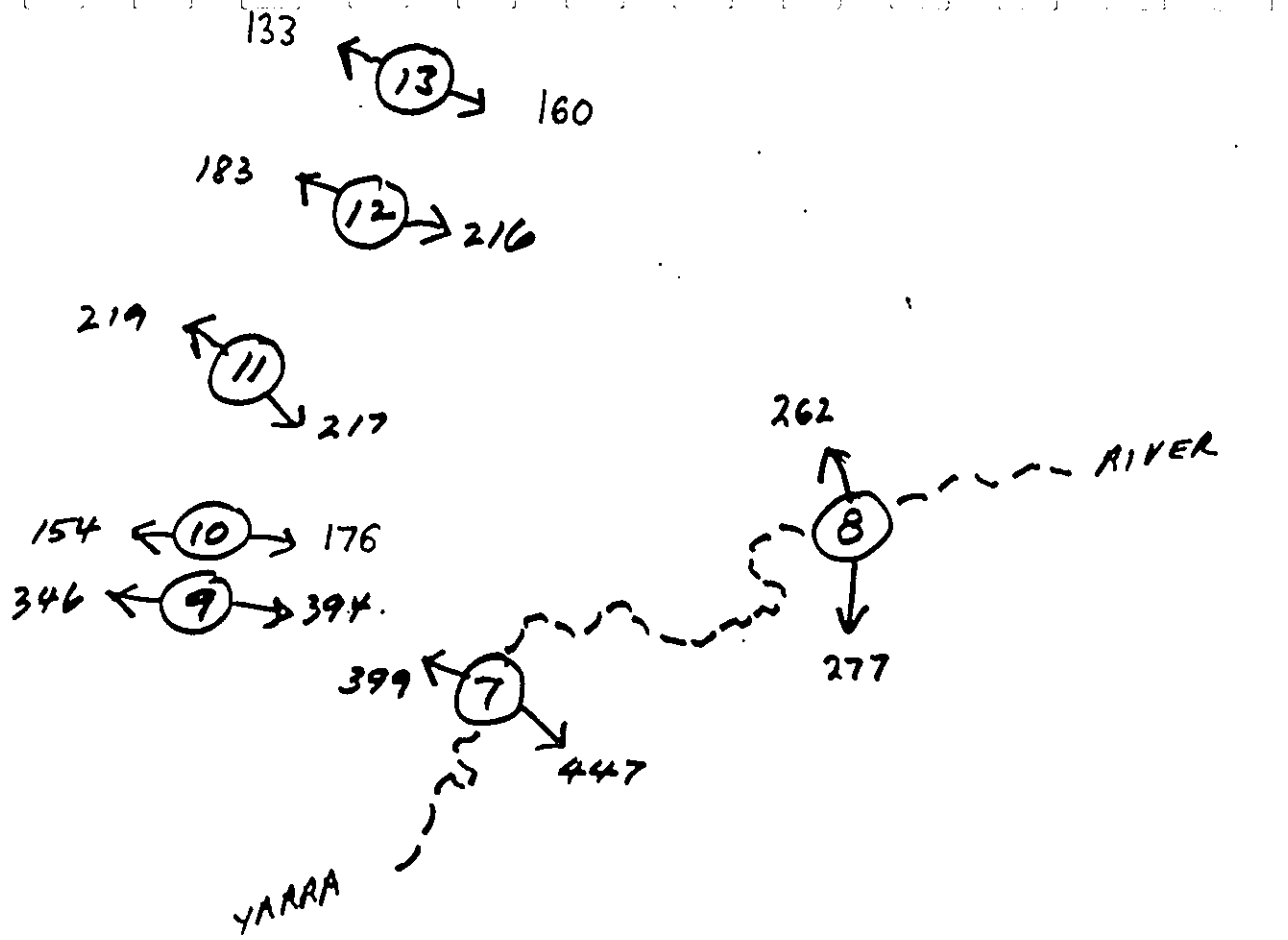


Table 1
NORTH EASTERN REGION
VOLUME OF TRUCKS SURVEYED BY TYPE
WEDNESDAY 10 JULY 1996, 12PM - 4PM

Station Number	Location	Light Trucks			Heavy Trucks			Semi Trailers			Truck and Trailers			Total		
		In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
1	Elgar Rd Sth of Kenmare	110	67	177	12	10	22	3	3	6	5	8	13	130	88	218
2	Station St Sth of Irving	87	87	174	8	4	12	8	2	10	8	1	9	111	94	205
3	Middleborough Rd Near Davey	138	129	267	32	24	56	13	8	21	4	5	9	187	166	353
4	Surrey Rd Near Fir St	65	74	139	17	14	31	3	1	4	5	4	9	90	93	183
5	Springvale Rd at Tunstall	213	240	453	43	58	101	62	47	109	23	21	44	341	366	707
6	Mitcham Rd Near William	151	160	311	32	24	56	44	60	104	5	13	18	232	257	489
7*	Banksia St East Dora	292	333	625	47	50	97	37	49	86	23	15	38	399	447	846
8*	Fitzsimmons Lane at Yarra	195	195	390	28	35	63	16	23	39	23	24	47	262	277	539
9	Bell St Near Swanston St	316	266	582	41	32	73	28	39	67	9	9	18	394	346	740
10	Southern Rd East Chifley	150	131	281	23	19	42	3	1	4	0	3	3	176	154	330
11	Kingsbury Dve East Plenty Rd	154	144	298	50	61	111	10	10	20	3	4	7	217	219	436
12	Grimshaw St Near the Concord	171	155	326	23	11	34	12	10	22	10	7	17	216	183	399
13	Northern Ring Rd E G'Borough	96	94	190	17	20	37	24	9	33	23	10	33	160	133	293
Total		2138	2075	4213	373	362	735	263	262	525	141	124	265	2915	2823	5738

* Internal Stations; "in" means heading north-west, "out" means heading south-east



SURVEYED TRUCK MOVEMENTS
ALL TYPES COMBINED
FOUR-HOUR SURVEY PERIOD

Figure 2

- the Banksia Street bridge over the Yarra River was more heavily trafficked than the Fitzsimons Lane bridge (846 and 539 trucks respectively);
- out of the total 5,728 observed trucks, 4023 (70 percent) were "light trucks"[1];
- the greatest proportion of "heavy trucks" was on Kingsbury Drive (25 percent of total trucks observed on that road);
- the greatest proportion of "semi trailers" was on Mitcham Road (21 percent of total trucks observed on that road);
- the greatest proportion of "trucks and trailers" was on Mitcham Road (6 percent of total trucks observed on that road);
- the highest volumes of heavy trucks, semi trailers and truck / trailers were observed on Springvale Road, Mitcham Road, Kingsbury Drive and Banksia Street.

The results of the registration number matching to provide information on origin / destination for south to north, and north to south patterns were separately transmitted to VicRoads. The results for the four hour time period, for **south to north** through truck traffic show that:-

- 210 trucks were matched travelling across the cordons (ie. screenlines) , with about 72% of these being "light trucks", about 12 % being "heavy trucks", and about 12% being "semi-trailers";
- Banksia Street Bridge was the preferred river crossing for all truck types, where the number of trucks ("all types") crossing the Banksia Street Bridge was about 2.3 times that using the Fitzsimons Lane Bridge;
- 33% of the matched trucks at the cordon borders were not observed travelling over the Banksia Street Bridge, or Fitzsimons Lane Bridge, (suggesting they were either missed at the internal stations or used another crossing, such as the Warrandyte Bridge);
- the major through movements were observed to originate at Springvale Road (71 observations out of a total of 210) and Mitcham Road (61 observations out of a total of 210);
- most through truck travel originating at Springvale Road and passing over the Banksia Street Bridge continued to Bell Street, whilst most of the trucks passing over the Fitzsimons Lane Bridge continued to Grimshaw Street;
- most through truck travel originating at Mitcham Road and passing over the Banksia Street Bridge continued to Bell Street, whilst most of the trucks passing over the Fitzsimons Lane Bridge continued to Grimshaw Street and the Northern Ring Road; and,
- most "semi-trailer" through movements originated at Springvale Road and continued to Bell Street, via the Banksia Street Bridge.

[1] The survey did not identify utilities, vans or four wheel drives as trucks; "light trucks" were classified as those with single rear axles and dual tyres, "heavy trucks" were those with twin rear axles.

The results for the four hour time period, for **north to south** through truck traffic show that:-

- 273 trucks were matched travelling through the cordon border (ie. streamlines), with about 71% of these being "light trucks", about 10 % being "heavy trucks", and about 14% being "semi-trailers";
- Banksia Street Bridge was the preferred river crossing for all truck types, except for "truck and trailers", where the number of trucks ("all types") crossing the Banksia Street Bridge was about 2.0 times that using the Fitzsimons Lane Bridge;
- 18% of the matched trucks at the cordon borders were not observed travelling over the Banksia Street Bridge or Fitzsimons Lane Bridge, (suggesting they were either missed at the internal stations or used another crossing, such as the Warrandyte Bridge);
- the major through movements were observed to originate at Bell Street (119 observations out of a total of 273) and Grimshaw Street (56 observations out of a total of 273);
- the trucks originating at Bell Street, and crossing over the Banksia Street Bridge were observed to disperse fairly evenly over Station Street, Middleborough Road, and Mitcham Road, with Springvale Road having about double the observations than the others with 33 trucks;
- no trucks were observed originating at Bell Street and crossing Fitzsimons Lane Bridge;
- most through truck travel originating at Grimshaw Street crossed at the Fitzsimons Lane Bridge and continued to Springvale Road and Mitcham Road; and,
- most "semi-trailer" through movements originated at the Ring Road and Bell Street and exited the cordon border at Springvale Road and Mitcham Road, with the trucks originating at Bell Street using the Banksia Street Bridge, and the trucks originating at the Ring Road using the Fitzsimons Lane Bridge.

1.3 Greensborough/Montmorency/Eltham O-D Survey

The survey locations as shown in Figure 1 only had internal stations at the Fitzsimons Bridge and Banksia Street Bridge, therefore an additional origin-destination was undertaken in the Banyule City Council and Nillumbik Shire Council areas, (ie. the Greensborough, Montmorency, and Eltham area) to determine which routes trucks used through this region when connecting to the Northern Ring Road and Grimshaw Street via the Fitzsimons Lane Bridge.

The survey was undertaken on Wednesday 18 September, 1996, between 11:30am and 4:00pm (ie. covering the same survey period as the previous survey). Figure 3 shows the locations of the survey stations. The same survey stations at Fitzsimons Lane, Northern Ring Road, and Grimshaw Street were used for both surveys. The principal summary results are provided in Table 2 and Figure 4. This shows:-

- total truck movements in and out of the external stations was almost equal;

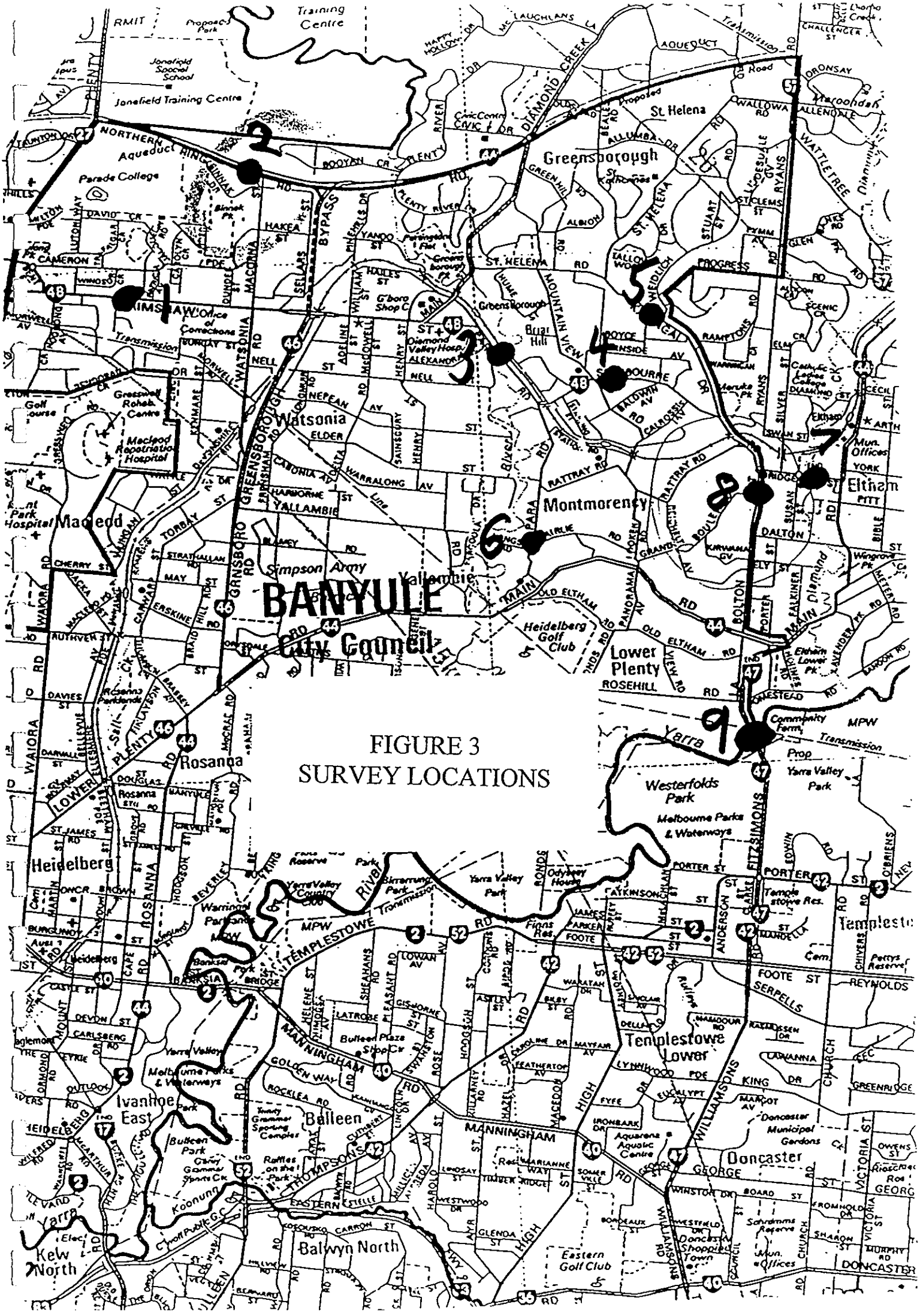
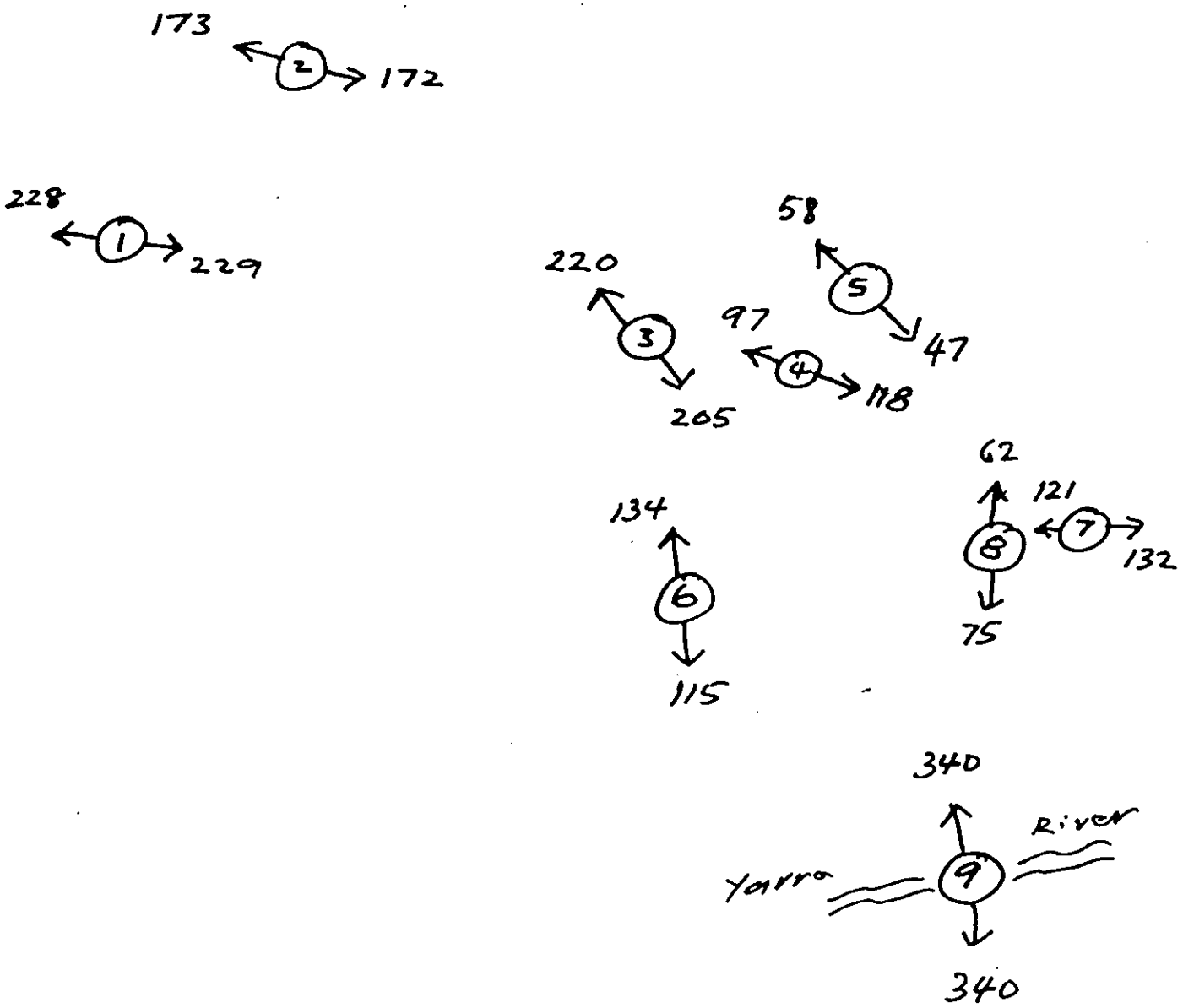


FIGURE 3
SURVEY LOCATIONS



SURVEYED TRUCK MOVEMENTS
ALL TYPES COMBINED
WEDNESDAY 18 SEPTEMBER 1996
11.30 am – 4.00 pm
Figure 4

Table 2
BANYULE COUNCIL REGION
VOLUME OF TRUCKS SURVEYED BY TYPE
WEDNESDAY 18 SEPTEMBER 1996, 11:30AM - 4PM

Station Number	Location	Light Trucks			Heavy Trucks			Semi Trailers			Truck and Trailers			Total		
		In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
1	Grimshaw Street West Watsonia	171	184	355	22	15	37	28	22	50	8	7	15	229	228	457
2	Nth Ring Rd West Greensborough Bypass	95	115	210	32	27	59	35	26	61	10	5	15	172	173	345
3	Para Rd South/East Grimshaw	91	160	251	21	27	48	17	17	34	76	16	92	205	220	425
4	Sherbourne Rd East Mountainview	102	84	186	8	6	14	7	4	11	1	3	4	118	97	215
5	Karingal Drive East St Helena	35	52	87	5	3	8	5	1	6	2	2	4	47	58	105
6	Para Rd South Airlie	82	60	142	24	29	53	18	15	33	10	11	21	134	115	249
7	Bridge Street at Alistair Kox Park	98	107	205	15	13	28	5	7	12	3	5	8	121	132	253
8	Bolton Street near Grand Blvd	65	56	121	5	3	8	5	2	7	0	1	1	75	62	137
9	Fitzsimons Lane South Bridge	228	244	472	54	59	113	30	26	56	28	11	39	340	340	680
Total		967	1062	2029	186	182	368	150	120	270	138	61	199	1441	1425	2866

- the heaviest truck internal road was Para Road North (this road was busier than the Northern Ring Road);
- out of the total 2,866 observed trucks, 2,029 (71 percent) were light trucks;
- the greatest proportion of "heavy trucks" was on Para Road South (21 percent of total trucks observed on that road);
- the greatest proportion of "semi-trailers' was on the Northern Ring Road (18 percent of total trucks observed on that road);
- the greatest proportion of "truck and trailers" was on Para Road North (22 percent of total trucks observed on that road);
- Para Road South, Sherbourne Road, and Bolton Street all had similar truck volumes; and,
- the least used roads are Bolton Street and Karingal Drive.

Comparing Figures 2 and Figure 4, it is seen that the numbers for the external stations in the second origin-destination survey are slightly higher than those observed at the same stations in the first origin-destination survey . This is mainly due to the survey period being 30 minutes longer in the second survey.

The results of the registration number matching to provide information on origin / destination for south-east to north-west, and north-west to south-east patterns were separately transmitted to VicRoads. The results for the survey period show that:-

- 52 trucks were matched travelling from the Fitzsimons Lane Bridge to Grimshaw Street (45 of these being light trucks), and 39 trucks were matched travelling from the Fitzsimons Lane Bridge to the northern Ring Road (20 of these being light trucks);
- 64 trucks were matched travelling from Grimshaw Street to the Fitzsimons Lane Bridge (49 of these being light trucks), and 43 trucks were matched travelling from the Northern Ring Road to the Fitzsimons Lane Bridge (21 of these being light trucks),
- for all truck types, by far the preferred truck route is along Main Road, along Para Road to The Circuit (and vice versa);
- Karingal Drive is rarely used by any trucks travelling through the region; and,
- Bolton Street and Sherbourne Road are only used by "light truck" types to travel through the region.

APPENDIX 2

List of Potential Road Projects

COUNCIL VIC ROADS NOMINATED ROAD PROJECTS

(Shading denotes Committed funding)

ROAD PROJECT OR ISSUE	BRIEF DESCRIPTION AND / OR PURPOSE	EXISTING TRAFFIC VOLUME (v.p.d.)	2011 TRAFFIC VOLUME (v.p.d.)	PROJECT COST	BENEFIT / COST VALUE	OTHER EVALUATION ISSUES
Ringwood Bypass, Stage 2	Construction of link from Ringwood Street to Maroondah Highway.	-	?	?	?	• Important project to maximise investment to date on Stage 1?
Eastern Freeway Extension (Springvale Road to Ringwood)	Connection between Eastern Freeway and Scoresby Corridor and Ringwood Bypass.	-	65,000 - 100,000	$300m	0.5 - 1.0	• Springvale Road and Maroondah Highway cannot cope as alternative routes. • Environmental impact on Mullum Mullum Creek.
Scoresby Freeway (part of Maroondah)	Freeway construction in existing reservation.	-	80,000 - 100,000	?	5	• Integral part of overall Scoresby Corridor and/or Eastern Freeway Extension.
North-East Access (Inner)	High-capacity link between Greensborough Highway and Bulleen Road .	-	?	?	?	• F18 reservation too narrow for full impact remediation. • Environmental impact of new bridge over Yarra River (Warringal Parklands and Heidi Park) .
North-East Access (Outer)	High-capacity link between Eltham North and Ringwood (via Warrandyte).	-	53,000	$600m ?	2.7?	• No reservation so no prospect of achievement in foreseeable future. • Environmental impact across Yarra River valley. • Amenity impact through residential areas.
Healesville Freeway Reservation Arterial	Construct arterial road instead of freeway, for Scoresby access.	-	40,000	$270m	3.6	• Sell or re-use remnant land? • Strong relationship to Scoresby Freeway.

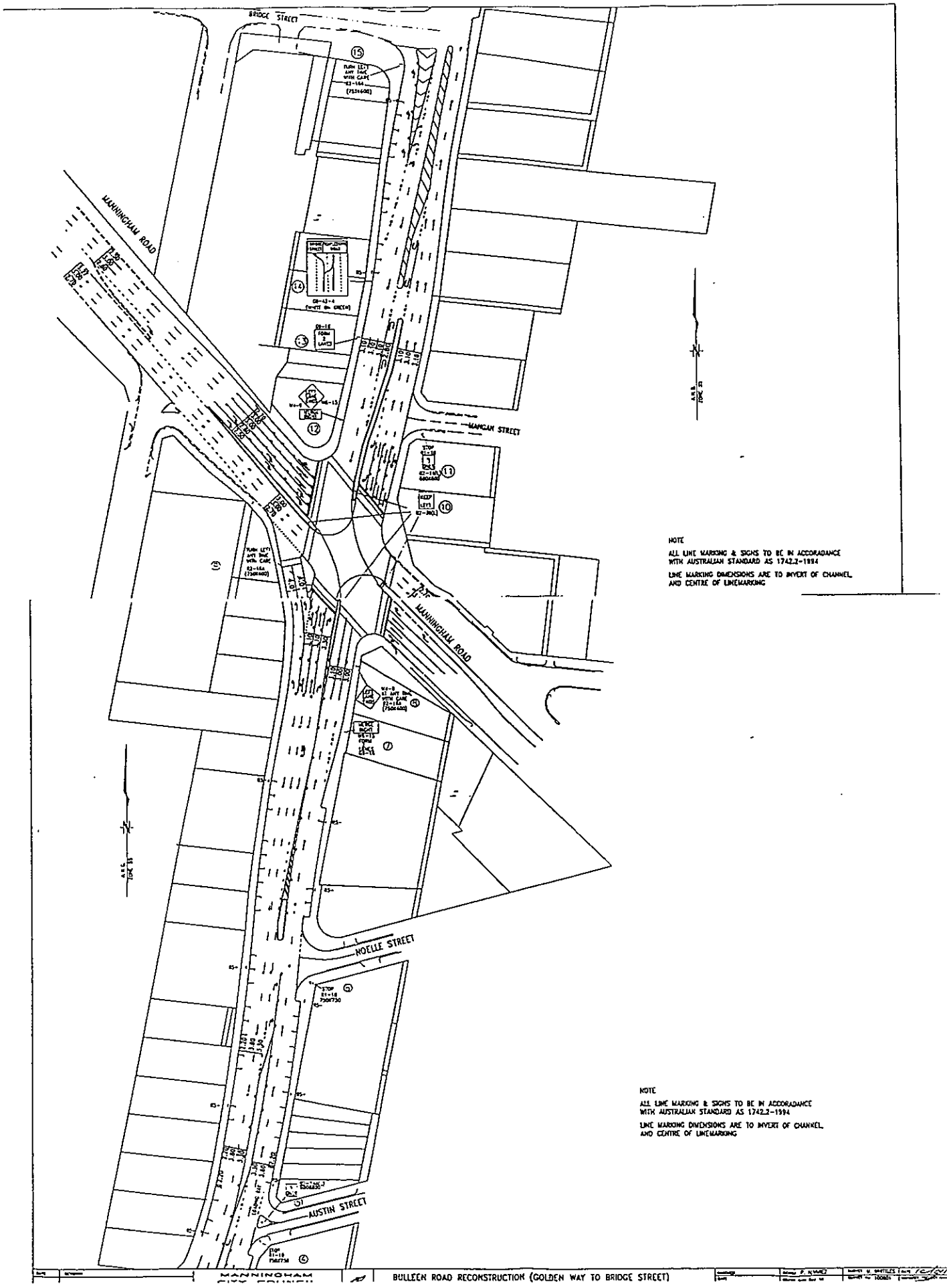
ROAD PROJECT OR ISSUE	BRIEF DESCRIPTION AND / OR PURPOSE	EXISTING TRAFFIC VOLUME (v.p.d.)	2011 TRAFFIC VOLUME (v.p.d.)	PROJECT COST	BENEFIT / COST VALUE	OTHER EVALUATION ISSUES
Northern Route	Arterial extension of Reynolds Road east to Maroondah Highway.	2,000 - 12,000	?	$50m?	?	• No continuous reservation.
Lilydale Bypass	New road south of shopping centre, connecting to Anderson Street.	-	?	$6.0m	?	• Strong support from some local traders.
Bell Street (Waterdale Road to Bell-Banksia)	Widening to 6-lane divided to match capacity and improve safety.	40,000	55,000	$4.0m	1.2	• Requires acquisition of Hospital, MFB and commercial / industrial properties. • Part of Principal Traffic Route program.
Lower Plenty Road (Greensborough Highway to Rosanna Road)	Widening to 6-lane divided to match capacity and improve safety.	45,000	50,000	$6.0m	?	• Funding committed (1 - 5 years). • Planning, design and acquisition complete, but implementation related to North-East Access (Inner). • Requires extra capacity for Rosanna Road and Jika Street or Burke Road North.
Greensborough Highway (north of Grimshaw Street)	Duplication to match capacity north to Ring Road.	15,000	26,000	$3.0m	> 1.0	• Reservation and earthworks complete.
Greensborough Highway (Ring Road to Diamond Creek Road)	Duplication to match capacity south of Ring Road.	15,000	24,000	$9.6m	?	• Reservation and earthworks complete.
Bulleen Road (Golden Way to Manningham Road)	Duplication to match capacity south to Eastern Freeway.	17,000	30,000	?	?	• Funding committed (1 - 5 years). • Functional requirement once eastern ramps complete at Eastern Freeway. • Key link at North-East Access (Inner).
High Street (Doncaster Road to Manningham Road)	Duplication to reduce congestion problems.	18,500	18,000 - 25,000?	$3.2m	2.4	• Construction within existing reservation. • Frontage access / amenity issues.
Williamsons Road (George Street to Foote Street)	Duplication to match adjacent sections for capacity reasons.	22,000	28,000 - 35,000?	$6.3m	4.2	• Funding committed (1 - 5 years). • Construction within existing reservation. • Frontage access / amenity issues.

ROAD PROJECT OR ISSUE	BRIEF DESCRIPTION AND / OR PURPOSE	EXISTING TRAFFIC VOLUME (v.p.d.)	2011 TRAFFIC VOLUME (v.p.d.)	PROJECT COST	BENEFIT / COST VALUE	OTHER EVALUATION ISSUES
Thompsons Road (Manningham Road to Foote Street)	Duplication to reduce congestion and safety problems.	18,000	28,000?	$3.1m	1.8	• Construction within existing reservation. • Frontage access / amenity issues.
Springvale Road (Mitcham Road to Reynolds Road)	Duplication to reduce congestion and safety problems.	13,000 - 17,000	10,000 - 30,000?	$8.9m	1.2	• Construction within existing reservation. • Frontage access /amenity issues.
Reynolds Road (Andersons Creek Road to Springvale Road)	Duplication to reduce congestion and safety problems.	25,000	10,000 - 35,000?	$3.5m	1.9	• Construction within existing reservation. • Frontage access / amenity issues.
Templestowe Road (Bridge Street to Thompsons Road)	Duplication to reduce congestion and safety problems.	21,500	36,000	$10.3m	0.9	• Important tourist route to Yarra Valley.
Dorset Road (Hull Road to Lincoln Road)	Duplication to reduce congestion and improve safety.	16,000	20,000	$2.0m	0.9	• Construction within existing reservation. • Major local / regional access for commercial / industrial areas.
Dorset Road (Canterbury Road to Mountain Highway)	Duplication to improve capacity and safety.	29,000	31,000	?	?	• Part of overall upgrading strategy for Dorset Road.
Colchester Road	Duplication north and south of Canterbury Road to reduce congestion.	?	?	?	?	• Construction within existing reservation. • Major local / regional access for commercial / industrial areas.
Mt.Dandenong Road (Dorset Road to Colchester Road)	Duplication to reduce congestion and safety problems.	22,800	30,000?	$2.2m	3.3	• Construction in existing reservation.
Diamond Creek Road (Windy Mile)	Realignment and duplication to address congestion and major safety problem.	15,000	25,000	$3.4	4	• Strong opposition from some local residents due to visual / environmental impact.
Yan Yean Road (Diamond Creek Road to Mernda)	Widening to accommodate traffic generated by South Morang / Mernda / Doreen growth in Whittlesea.	5,000	8,000	?	?	• Complements role of (upgraded) Plenty Road, for access to Greensborough District Centre. • Environmental impacts along existing road (?).
Aquaduct Road / Wallowa Road / Wattletree Road	Improved connectivity as circumferential route through Greensborough and Eltham North.	14,000	18,000	?	?	• Partial and mainly local alternative to North-East Access (Outer). • Local amenity impacts?

ROAD PROJECT OR ISSUE	BRIEF DESCRIPTION AND / OR PURPOSE	EXISTING TRAFFIC VOLUME (v.p.d.)	2011 TRAFFIC VOLUME (v.p.d.)	PROJECT COST	BENEFIT / COST VALUE	OTHER EVALUATION ISSUES
Multiple Railway Level Crossings in Whitehorse	Improve or replace crossings at Station Street, Middleborough Road, Blackburn Road, Springvale Road, Mitcham Road, to improve safety and reduce delays.	9,000 - 40,000	9,000 - 39,000	?	?	• Overpass or underpass solutions create major urban design problems, especially in commercial areas.
Swansea Road (Cambridge Road to Maroondah Highway)	Duplication to resolve congestion and safety problems, plus various intersection upgradings.	17,000 - 30,000	25,000 - 40,000	?	?	• Major truck route connecting Scoresby / Dandenong area with Melba and Maroondah Highways. • Part of Dandenong Ranges tourist circuit and access for Yarra Valley.
York Road (Currajong Avenue to Birmingham Road)	Realignment and localised widening?	19,000	30,000	$4.2	> 1.0	• Local tourist route, as access to Warburton Highway.
Melba Highway	Various localised alignment and safety improvements including new bridge over Yarra River just south of Yarra Glen, with bypass of the town north of the river via Healesville-Yarra Glen Road..	3,500	4,000?	$7.4m	~ 5	• Major tourist route to Yarra Valley and snowfields. • Major truck route as alternative to North-East Access to Hume Highway.
Healesville - Koo Wee Rup Road	Localised widening and upgrading.	2,100	3,000?	?	?	• Major log truck route. • Tourist route.

APPENDIX 3

Proposed Layout, Manningham Road/
Banksia Street/Bulleen Road


BRIDGE STREET
MANNINGHAM ROAD
MANGAN STREET
MANNINGHAM ROAD
NOELLE STREET
AUSTIN STREET
NOTE
ALL LINE MARKING & SIGNS TO BE IN ACCORDANCE WITH AUSTRALIAN STANDARD AS 1742.2-1994
LINE MARKING DIMENSIONS ARE TO INVERT OF CHANNEL AND CENTRE OF LINEMARKING
NOTE
ALL LINE MARKING & SIGNS TO BE IN ACCORDANCE WITH AUSTRALIAN STANDARD AS 1742.2-1994
LINE MARKING DIMENSIONS ARE TO INVERT OF CHANNEL AND CENTRE OF LINEMARKING
MANNINGHAM
BULLEEN ROAD RECONSTRUCTION (GOLDEN WAY TO BRIDGE STREET)