Department of Infrastructure

Northern Central City Corridor Study
Land Use/Macroeconomics Component
Scenario Appraisal Report

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Northern Central City Corridor Study

Land Use/Macroeconomics Component

Scenario Appraisal Report

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1.1   Study Objective

The overall study objective of the Northern Central City Corridor study (NCCCS) is to produce:

> 'An integrated transport and land use strategy to improve the amenity and sustainability of the inner north whilst meeting the travel needs of people and goods (DoI 2001)'.

To meet this objective, the main aim of the study is to significantly improve public transport services in order to increase public transport usage and to reduce congestion levels within the NCCC study area.

This report presents the findings of an appraisal of the potential land use and local/regional economic impacts of various strategy elements which are being tested as part of the development of an integrated transport strategy for the inner north.

The results of this assessment, together with the results of assessments undertaken by other technical specialists, will provide a multi-disciplined approach to a 'triple bottom line' assessment of the strategy options.

1.2   Scope of Work

Seven strategy elements have been developed for assessment as follows:

Strategy element A: Improved Public Transport
Strategy element B: Reduced Traffic on Local Streets
Strategy element C: Improved Pedestrian and Bicycle Networks
Strategy element D: Reduced Car Dependency
Strategy element E: Land Use Changes to Reduce Travel
Strategy element F: Rapid Transit on the Eastern Freeway Corridor
Strategy element G: Improved Arterial Road Network

These strategy elements are indicative only and are intended to provide examples of possible initiatives that could be implemented to meet the overall study objective. In particular, these strategy elements aim to improve public transport services and to reduce congestion levels within the study area. Further details of each of the strategy elements and the testing scenarios adopted are provided in Section 2.

This report evaluates each of the seven strategy options against a number of goals which have been defined for land use planning and local/regional economics. The goals represent targets that a successful strategy would aim to achieve.

This appraisal report is organised as follows:

Section 2 - Assessment Framework: provides a description of the assessment framework which has been adopted to evaluate strategies for the study area In terms of land use and local/regional economic impacts.

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Section 3 - Land Use Impacts: assesses strategy elements A to G in terms of their potential impacts on land use in the study area, and identifies key land use issues associated with the appraisal.

Section 4 - Local/Regional Economics: assesses strategy elements A to G in terms of their potential impact on the local and regional economies in the study area.

This report should be read in conjunction with the Maunsell McIntyre *Northern Central City Corridor Study – Land Use & Regional Economics Component, Existing Conditions Report* dated September 2001.

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2.1   Strategy Goals

As part of the study, a number of strategy goals were developed in line with the overall study objective to improve the amenity and sustainability of the inner north. The strategy goals are based on a triple bottom line approach covering social, environmental and economic categories, and represent targets that a successful strategy would aim to achieve. The overall goals for a successful land use and transport strategy for the study area are presented in Table 2.1. A description of relevant goals and performance indicators associated with land use and regional economics is provided in Section 2.4.

Table 2.1:   Goals for NCCC Transport and Land Use Strategy

Primary Category[1]	Goals
Social	**Improve amenity and liveability of the inner north by:**
	▪ Significantly reducing the impacts of noise and air pollution from transport
	▪ Improving safety – reducing fatalities/casualties to or beyond state targets
	▪ Significantly enhancing urban landscape and heritage values in key areas
	▪ Minimising through traffic on local streets
	▪ Improving access and travel choices for residents, visitors and workers, including disadvantaged groups
	▪ Providing facilities for people with mobility disadvantages
Environmental	**Protect and enhance environmental sustainability in the inner north by:**
	▪ Ensuring a contribution to overall reductions in greenhouse gas emissions
	▪ Reducing car use for travel through, to/from and within the inner north
	▪ Substantially increasing public transport mode share
	▪ Increasing the use of walking and cycling
	▪ Protecting and enhancing biodiversity
Economic	**Support growth in economic activity, especially in and around Melbourne's CBD, by:**
	▪ Enhancing access for commercial activities including tourism and recreation
	▪ Catering for increased residential population in the inner north and surrounding areas
	▪ Providing for commercial travel movements, including safe, efficient primary routes for freight
	▪ Efficiently serving travel needs through, to/from and within the inner north
	▪ Maximising the economic return on investment in transport and land use initiatives

Note [1]: Most goals have implications for all three 'triple bottom line' categories (social, environment, economic); they are shown here in their primary categories.
Source: DoI (2002) NCCCS Study Goals. Assessment Framework and Strategy Elements Discussion Paper

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2.2   Strategy Initiatives

Seven strategy elements for increasing public transport usage and reducing congestion levels within the inner north were developed for the study as follows:

Strategy element A: Improved Public Transport
Strategy element B: Reduced Traffic on Local Streets
Strategy element C: Improved Pedestrian and Bicycle Networks
Strategy element D: Reduced Car Dependency
Strategy element E: Land Use Changes to Reduce Travel
Strategy element F: Rapid Transit on the Eastern Freeway Corridor
Strategy element G: Improved Arterial Road Network

These strategy initiatives have been proposed in order to achieve the broader goals of the study, and include measures that:
▪ attract people onto public transport and non-motorised transport modes
▪ induce people to use cars less
▪ identify potential major infrastructure initiatives that could assist in achieving the desired changes in transport, land use and amenity.

Each of the strategy initiatives progressively builds on the 'Base Case' or 'Do-Nothing' scenario for 2021. The Base Case scenario for 2021 represents a forward projection of expected travel and land use trends within the study area, based on currently committed or highly likely transport infrastructure, and forecasts for population and employment prepared by DoI. Note that the forecasts reflect the successful outcome of Metropolitan Strategy objectives associated with land settlement patterns in Melbourne.

The Base Case scenario includes the transport initiatives listed in Table 2.2.

Table 2.2:   2021 Base Case Scenario

Public Transport	Roads
Existing services as at 2001 plus:	**Existing road links as at 2001 plus:**
	Western Ring Road upgrades (West Gate to
Rail:	Greensborough)
Sydenham rail extension	Monash Freeway extension to Narre Warren
South Morang rail extension	(Hallam bypass)
Airport transit link?	Geelong Road upgrade
	Eastern Freeway extension to Ringwood
Tram:	Western Freeway (Deer Park Bypass)
Box Hill tram extension	Hume Freeway (Craigieburn Bypass)
Knox tram extension	Scoresby Freeway
Route 109 upgrade (franchisees'	Dingley Arterial (Warrigal Road to Boundary
commitment)	Road)
	Calder/Tullamarine Freeway interchange
Bus:	Frankston Bypass
Smartbus routes 1 & 2	Pakenham Bypass
Doncaster Road park and ride	Cooper Street duplication
	Pascoe Vale Road duplication

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Public Transport	Roads
All modes: Other public transport franchisee commitments (new rolling stock, service level improvements etc – from business plans/contractual obligations) Other public transport elements of Scoresby package (Wellington Road tram, for example)	Western Ring Road widening stages Tullamarine Freeway – additional EB lane, Calder to Bulla Calder Freeway - Keilor Park Dr to Melton Hwy - 4 to 6 lanes Mickleham Rd duplication Bell St - Quinn to Liberty - 6 lanes divided Somerton Rd - Hume to rail crossing - duplication Greensborough Bypass - 6 lanes Western Freeway/Leakes Rd - all movements interchange Western Freeway/Hopkins Rd - all movements interchange Princes Freeway - West Gate to Maltby - 8 lanes Princes Freeway - Maltby to Geelong - 8 lanes Point Cook Road - 4 lanes Palmers/Robinson/Sayers to Western Hwy - 4 lanes Maribyrnong River crossings (VicRoads NW Metro) Plenty Rd - Centenary to McDonalds - duplication Macedon St - Horne to Evans - duplication Mickleham Rd - Alanbrae to Barrymore - duplication Greensborough Hwy - Lower Plenty to Yallambie - widening Kingsbury Dr - Plenty to Waiora - duplication Eltham-Yarra Glen Rd - upgrade to C class Edgars Rd - Kingsway to Cooper - duplication Melton Hwy - duplication
Bicycle/pedestrian commitments	**Road/rail freight initiatives**
Committed works from local council plans, VicRoads and Bicycle Victoria	Somerton interchange Container parks

Source: DoI (2002) NCCCS Study Goals. Assessment Framework and Strategy Elements Discussion Paper

A brief overview of each of the proposed strategies is provided below. Further details of each strategy are presented in reports prepared by Veitch Lister and Sinclair Knight Merz.

2.2.1   Strategy A: Improvements to Public Transport
The aim of this strategy is to significantly improve public transport services in order to increase public transport usage and to reduce road congestion levels within the study area. Key elements of the strategy include:

- Improved frequency of services (all modes)
- Upgraded signalling to improve transfer penalties, etc
- Improvements in station access to improve coordination of services
- Route 109 upgrades
- Improvements at modal interchanges in study area
- New bus routes and improved bus network coverage

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- Priority bus services at Hoddle Street

2.2.2   Strategy B: Reduced Traffic on Local Streets
The primary aim of this strategy is to divert through traffic from local residential streets to the arterial road network. The strategy includes area-wide Traffic Management measures that are designed to reduce the extent of through-traffic on local streets. Note that actual measures to achieve these outcomes have not been designed.

2.2.3   Strategy C: Improved Pedestrian and Bicycle Networks
The aim of this strategy is to increase bicycle routes and pedestrian routes within the study area. The strategy is based on various improvements and programs to encourage walking and cycling. Examples include:

- Enforce dog leashing
- Development of shared path codes
- Consideration of pedestrians in development applications
- Demolition of driveways included in demolition permits
- Reduction in footpath clutter
- New shared paths in parks
- Navigation and signage improvements
- New pedestrian operated signals
- Improved street lighting
- Pedestrian priority at traffic signals
- Increased footpath repair and replacement
- Improvement to laneways for pedestrians
- Verandahs in shopping precincts
- Additional seating
- Legalise bikes in MCC gardens
- Improved signage to assist navigation
- Improved bicycle parking at places of employment
- Provision of showers at work places

2.2.4   Strategy D: Reduced Car Dependency
The aim of this strategy is a reduction in the volume of car travel within the study area. Key elements of the strategy include:

- Changes to Local Parking - limited free parking space and limited duration of parking, CBD parking price increases
- Behavioural Changes - targeted marketing to achieve a mode shift to green transport modes (eg TravelSMART) [1]

2.2.5   Strategy E: Land Use Policies to Reduce Travel
The aim of this strategy is the introduction of land use policies that can be implemented in order to increase public transport usage and to reduce congestion levels within the study area. Key elements of the strategy are:

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[1] The TravelSMART program is aimed at encouraging people to choose sustainable travel alternatives such as cycling, walking or catching public transport, and reducing their dependency on the car. The TravelSMART program is currently being piloted in the City of Moreland, the City of Greater Dandenong and the City of Port Phillip.

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- Policies that limit road and parking supply – through allocation of space and pricing
- Policies that improve alternative transport modes – development of specific strategies and development improvement plans to increase public transport, cycling and walking
- Policies intended to change behaviour – land use strategies that promote greener transport (eg TravelSMART)

2.2.6   Strategy F: Rapid Transit Service on Eastern Freeway Corridor

This strategy involves the addition of a new rapid transit service from Doncaster Hill to the CBD, known as Doncaster Area Rapid Transit (DART). The strategy is based on the development of a guided bus-way, light rail or heavy rail system from Doncaster Hill to Alexander Parade. The strategy also includes:

- Major interchange at Doncaster Hill
- Interchanges at Doncaster Road, Bulleen Road and Chandler Highway
- Park and ride facilities
- Extension of dedicated bus lanes on Alexander Parade

The introduction of a toll on the Eastern Freeway has also been considered as an option within this strategy.

2.2.7   Strategy G: Improved Arterial Road Network

The aim of this strategy is a reduction in congestion levels within the study area through the implementation of road building projects to provide for the major north-south, east-west and CBD access movements.

The strategy is based on a dual two lane deep tunnelled link from the Eastern Freeway east of Hoddle Street to near Flemington Road. Options include a tunnel with, or without, interchanges. Where interchanges are included, exit and entry portals to the tunnel have been located at Royal Parade and Nicholson Street.

A tunnel link commencing on the Eastern Freeway near Hoddle Street and terminating in the vicinity of Victoria Parade/Nicholson Street intersection in order to provide access to the CBD has also been considered as an option within this strategy.

2.3   Strategy Testing Scenarios

The strategies listed above were grouped into a set of scenarios (A to G) for testing purposes. Details of the testing scenarios are presented in Table 2.3 below.

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Table 2.3:   Intitatives and Scenarios for Testing

Types of initiative/Strategy	Strategy Scenarios for Testing						
	A	B	C	D	E	F	G
Significant improvements to bus, tram and rail routes/services	✓	✓	✓	✓	✓	✓	✓
Measures to remove traffic from local streets and reduce community severance effects		✓	✓	✓	✓	✓	✓
Improvements to bicycle and pedestrian networks, encouragement of cycling and walking			✓	✓	✓	✓	✓
Measures to reduce car use such as parking, pricing, policy and behavioural initiatives - CBD parking price increase - TravelSMART behavioural program				✓	✓	✓	✓
Land use-related measures to accommodate growth and reduce or minimise the need for travel					✓	✓	✓
Doncaster rapid transit system - Bus - Light rail - Heavy rail - Toll on Eastern Freeway						✓	✓
Options within the inner north to improve the efficiency of the arterial network - E-W tunnel - E-W tunnel without intermediate interchanges - Tunnel to CBD							✓

Source: DoI (2002) Northern Central City Corridor Study – Study Goals, Assessment Framework and Strategy Elements Discussion Paper.

The testing scenarios A to G represent the strategy initiatives on a cumulative basis as detailed in Table 2.4. The scenarios have been expanded incrementally to gauge the possible effects of a range of components. To assist the appraisal, scenarios A, B, C, F and G were modelled using the Melbourne wide Zenith transport model. The modelling was conducted by Veitch Lister Consulting. The results of the modelling provide an indication of likely transport effects of the strategies on mode share and average trips within the study area.

Table 2.4:   NCCCS Testing Scenarios (as improvements to Base Case 2021)

Scenario	Description
Scenario A	Public Transport Improvements
Scenario B	Scenario A + Local Street Management
Scenario C	Scenario B + Cycling and Walking Initiatives
Scenario D1	Scenario C + CBD Parking Prices Increase
Scenario D2	Scenario D1 + TravelSMART Implementation

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Scenario	Description
Scenario E	Scenario D2 + Land Use Policies
Scenario F	Scenario E + Doncaster Area Rapid Transit (Light Rail)
Scenario F1	Scenario F + Toll on Eastern Freeway
Scenario F2	Scenario F1 + Doncaster Area Rapid Transit (Heavy Rail)
Scenario G	Scenario F2 + E-W Road Tunnel
Scenario G1	Scenario G + Intermediate interchanges
Scenario G2	Scenario G1 + Tunnel from Eastern Freeway to CBD

2.4   Performance Indicators

Appropriate performance indicators were developed as part of the Study to enable assessment of each of the strategy scenarios in terms of the identified goals listed in Section 2.1.

The specific performance indicators for land use planning and local/regional economics are presented in Table 2.5. These indicators have been used to address the performance of each of the strategy scenarios against land use and economic related goals. However, it should be noted that there are land use and economic impacts/issues associated with many of the remaining study goals.

Table 2.5:   Indicators for Land Use and Local/Regional Economic Related Goals

Goal	Indicator
Enhancing access for commercial activities including tourism and recreation	Accessibility to recreational, cultural and commercial areas in and around CBD and in the inner north
Catering for increased residential population in the inner north and surrounding areas	Area of existing or potential residential land affected (if applicable)
	Changes in land use (eg from commercial to residential)
	Accessibility to/from residential areas
Maximising the economic return on investment in transport and land use initiatives	Regional economic effects (effect on businesses etc)

2.5   Assessment Framework

The above assessment framework has been used to assess each of the strategy scenarios listed in Section 2.3 against achievement of the goals listed in Table 2.1.

The specific assessment methodology and results of the assessment undertaken for Land Use and Local/Regional Economics are presented in Sections 3 and 4, respectively.

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3.1   Introduction

The Existing Conditions phase of the NCCC study was important for setting the scene for the development of land use/transport options for the study area. From a land use perspective, this phase facilitated an understanding of:

▪ government land use planning policies and strategies affecting the study area;
▪ community aspirations and issues for the land use within the study area; and
▪ land use considerations emanating from other study workstreams such as transport planning, social impact, heritage etc.

Each of these 'influences' plays a role in shaping the land use goals and objectives that the study is working towards. The study's land use and regional economic assessment should also have regard to these policy goals and land use/regional economic context, as well as considering each of the strategies based on the land use/economic indicators developed for the project.

3.2   Assessment Methodology

An assessment framework that identified key land use and economic indicators most relevant for the study area was developed as part of the *Northern Central City Corridor – Land Use Component Assessment Procedures Report*, (Maunsell McIntyre, 2000). Performance indicators were developed to enable the land use goals to be measured. Given that the amenity impacts resulting from the existing traffic congestion problems in the study area have been the key impetus for the NCCCS, the land use assessment framework focused on the key criterion of amenity as the overriding goal that the land use study stream is seeking to promote and improve.

Land use goals and indicators have been outlined in Table 2.5.

Whilst some of these detailed goals and indicators have land use implications, most may also relate to other NCCCS workstreams.

3.3   Assessment

Each of the strategy scenarios A to G was assessed in terms of the amenity, land use policy and physical land use impact indicators presented in Table 3.1 above, as well as the specific land use and economic indicators presented in Table 2.5.

The analysis is based on a qualitative assessment of impacts. Appraisal of the strategy scenarios in terms of protection and enhancement of amenity was undertaken by comparing the performance of each of the scenarios against the existing conditions (2001) as reported in *Northern Central City Corridor Study – Land Use & Macroeconomics Component, Existing Conditions Report* (Maunsell McIntyre, September 2001).

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It is important to note that the strategy elements are indicative only. As such, the potential impacts of each of the strategies on protection and enhancement of amenity as identified below are indicative only, and some cases generate positive and/or negative amenity benefits at the local neighbourhood level.

3.3.1   Base Case (2021)

The future Base Case scenario represents a projection of expected travel and land use trends, with currently committed or highly likely transport infrastructure included. The initiatives listed under the future Base Case scenario are as presented in Table 2.2.

3.3.2   Strategy A - Improved Public Transport

The aim of Scenario A is to significantly improve public transport services in order to increase public transport usage and to reduce road congestion levels.

Scenario A has minimal potential land use impacts. Impacts may include an increase in the demand for car parking surrounding public transport facilities that have been upgraded or improved and reduced accessibility to some commercial centres with increased competition for road space.

The increase of train, bus and tram frequencies and coverage has the potential to attract greater demand for car parking around railway stations on the affected rail lines. Although an increase in car parking demand may occur, such impacts can be mitigated to ensure minimal conflict and disruption to existing land use patterns via Strategy D – Reduced Car Dependency. Residential areas could be protected via car parking measures restricting time and nominating residential parking only.

Consideration to urban design initiatives would also be required for any new bus stops and for the proposed pedestrian bridge at Melbourne University.

Strategy A would greatly improve the level of service, accessibility and attractiveness of the public transport system and therefore contribute to a reduction in car dependency in the study area.

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Table 3.1: Improved Public Transport – Assessment of Potential Impacts on Land Use

Strategy Component	Elements	Potential Impact	Enhancement Opportunities
Frequency Improvements	Increase in frequency of rail, tram and bus services	Potential increased demand for car parking around train stations, residential areas within the study area on the Epping, Upfield, Hurstbridge and Ringwood rail lines and the residential streets surrounding major tram and bus routes. Frequency improvements may result in reduced accessibility to some local activity centres through greater competition for road space. Improvement of the train, bus and tram system may reduce through traffic in the local street networks.	Increased accessibility to recreational, cultural and commercial areas in and around the CBD and in the inner north.
Station Access Improvements - bus and tram access stations	Improved security fences and lighting, improved bicycle storage and weather protection on walkways	Reducing the impacts associated with all day car parking surrounding railway stations and other major transport routes within the study area. The demand for car parking in residential streets would also be reduced	Would encourage more users of the public transport system including those accessing the system via bicycle and pedestrian routes.
Improve Tram Frequencies	Increase in frequency of trams	See previous comments. May limit the opportunity for on street parking in major commercial strips such as Smith Street, Nicholson and Lygon Street. Improvement of the tram system may reduce through traffic in the local street networks.	Would encourage greater use of the public transport system, encouraging more PT trips to study area's main commercial areas along Smith, Brunswick and Lygon Streets.
Route Upgrades	Reduced travel times, increased reliability	Potential to reduce car dependency in the study area.	Would encourage greater use of the public transport system.

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Strategy Component	Elements	Potential Impact	Enhancement Opportunities
Various Bus improvements	Increase in frequency of buses	Increase in the number of bus stops within the study area. Consideration would need to be given to urban design impacts associated with the development of new bus stops.	Opportunities to incorporate innovative urban design treatments with the study area (new bus stops and proposed pedestrian bridge at Melbourne University).
Modal Interchanges - Melbourne University	Pedestrian overbridge. Below-ground bus interchange and walkway.	Visual impacts associated with pedestrian overbridge.	Potential to reduce land use conflict between cars, pedestrians and cyclists.

3.3.3   Strategy B – Strategy A + Reduced Traffic on Local Streets
The aim of Scenario B is to reduce the attractiveness of local streets for through traffic.

Scenario B has minimal potential land use impacts. Impacts may include a disruption to local residents accessing and using the local road network. However the strategy would greatly improve residential amenity in the study area by reducing the attractiveness of local streets to through traffic and would create a safer pedestrian environment.

Consideration would need to be given to the urban design qualities of traffic management measures.

Table 3.2:   Reduced Traffic on Local Streets – Assessment of Potential Impacts on Land Use

Strategy Component	Elements	Potential Impact	Enhancement Opportunities
Diversion of traffic away from local streets	Implementation of kerb stand-outs, small roundabouts etc	Consideration would need to be given to urban design impacts associated with the development of traffic management measures. May cause disruption to local residents in accessing and using the local road network. Will increase traffic on main roads which will adversely affect access to local businesses and community facilities.	Opportunity to improve residential amenity of the local neighbourhood road network through traffic management measures.

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3.3.4   Strategy C – Strategy B + Improved Pedestrian and Bicycle Networks

The aim of Strategy C is to improve the pedestrian and bicycle networks within the study area.

Initiatives in Strategy C include the development of programs to encourage walking, making walking safer, improving lighting, signage and footpath repairs. The strategy also includes improvements to the bicycle network such as the legalisation of bicycle riding in MCC gardens and initiatives to encourage more bike parking and showers at places of employment.

Open space networks within the study area are greatly important and therefore Bicycle use in MCC parks should be carefully considered and planned as there is potential conflict between cyclists, pedestrians and dog walkers.

There is not expected to be any major land use impacts however consideration should be given to existing pedestrian, vehicle and cycling networks and their cross compatibility.

Table 3.3:   Improved Pedestrian and Bicycle Networks – Assessment of Potential Impacts on Land Use

Strategy Component	Elements	Potential Impact	Enhancement Opportunities
Improved pedestrian network	Improved surfaces, footpath repair and replacement Reduced footpath clutter, sitting and propping places	Disruption to existing pedestrian, vehicle and cycling network during both construction and implementation	Potential for enhanced urban design and added vibrancy and enjoyment of the area for local residents and visitors
Improvements to the Bicycle Network	Road resurfacing Delineation of bicycle lanes, etc Build exclusive paths	Potential disruption to existing access during construction Minor potential impact on some car parking provision	Opportunity to reduce car dependency and increase bicycle usage within the study area. Opportunity to improve the visual aesthetics of the area by introducing urban design measures

3.3.5   Strategy D – Strategy C + Reduced Car Dependency

The potential impacts of Strategy D on land use impacts include those resulting from a reduction in the volume of car travel within the study area.

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Reduced car dependency includes changes to local parking by limiting the amount of free parking space (increased metering) and the duration of parking (shortened parking times) throughout the study area. Reduced car dependency also includes behavioural changes resulting from targeted marketing to achieve a mode shift to green transport modes (eg TravelSMART). There is potential for impacts on land use to occur as a result of Scenario D, fewer cars may indeed enhance the local amenity of the study area by reducing car trips both within and through the study area.

Outlined below in further detail are a range of different policy responses aimed at ensuring greater usage of public transport and alternative modes of transport including walking and cycling, whilst reducing car usage. The opportunities are discussed below and relate to:
▪ Limiting Road and Parking Supply;
▪ Improving Alternatives; and
▪ Changing Behaviour

Limiting Road and Parking Supply
Limiting road and parking supply relates to the allocation of space and pricing. The allocation of space and pricing is controlled/managed through Council polices, Planning Schemes, protocols relating to issuing of residential and visitor permits, on-street parking restrictions and local laws. Outlined below is a discussion of these management mechanisms.

Planning controls related to car parking provision offer a means of influencing transport patterns and usage within the NCCCS study area. However pricing policy for the use and parking of cars would be a more direct mechanism for influencing transport usage.

Importantly, the nature of the planning controls within and external to planning scheme will vary depending on the type future growth. For example residential growth will require a different level and type of car parking policy initiatives and controls than industrial (high tech) growth.

With the exception of the CBD, planning schemes set minimum standards for the provision of car parking. In most cases in the NCCCS area this car parking requirement cannot be met onsite. Some provision of offstreet parking has been undertaken (e.g. the car parks provided by the City of Melbourne around Lygon Street). The availability of suitable sites is limited by land values and the historic nature (and controls) of the area. However this has not meant that responsible authorities have refused or modified non-residential applications for changes in land use because the offstreet car parking component is insufficient, even though these changes in land use generate demand for car parking.

In addition, the gentrification of the inner northern suburbs of Melbourne has resulted, amongst other things, in an increase in household income and car ownership.

Policies to encourage the use of public transport must, to some extent limit the availability of car parking or restrict the operations of uses generating a demand for car parking.

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Note, the **Melbourne University Master Plan, 2000** does not provide any direction and/or guidance for reducing car usage and encouraging the use of public transport. The Masterplan clearly conflicts with a number of planning policies, which seek to discourage car usage and encourage public transport, walking and cycling as preferred modes of transport.

Some policy responses could include:

- Eliminating provision of off street car parking in new residential developments

- Reviewing the car parking provisions as detailed in Clause 52.06, Particular Provisions in the Victoria Planning Provisions (VPPs). The VPPs remove a lot of discretion relating to car parking controls. An opportunity exists to review these provisions to ensure that they are site responsive and can provide local government planners with the tools to facilitate an increase public transport patronage by controlling on site car parking. For example Clause 53.05 of the VPPs does not distinguish between different types of "office" uses and their impact on car parking, as a bank may generate completely different parking requirements to sales office. There is limited scope with the current tools to confidently enforce different parking requirements for a range of office uses.

- Opportunity to develop a Site Specific Overlay for the study area to specifically control car parking. A Site Specific Overlay would be able to match the exact parking requirements for the study area ie. there would be an opportunity to cap car parking within the study area. The car parking cap would need to based on the projected type of growth including residential, industrial (high tech industries), commercial, retail, and so on. Both local and state government will need to develop the strategic directions in terms of the nature and type of growth for the study area prior to developing the Site Specific Overlay.

- Permitting only one resident permit per dwelling, or allowing a second or third but at a substantially increased cost, and only on "proof of residence".

- Refusing planning approval for changes in use where the additional car spaces cannot be provided on site. This could be tempered, in some areas and for some issues, by a substantial contribution to a parking fund (to build a parking station to serve the area, eg Lygon Street).

- Encouraging a greater mix of uses in commercial areas, such as high parking generating uses (such as restaurants and hotels) and low generating uses such as offices.

- Altering parking restrictions and permit only areas to limit the availability of non residential parking.

- Limiting the number of visitor permits available to each dwelling.

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- Using pricing mechanisms so that on-street parking permits are priced to reflect their cost.

- Pricing mechanisms to reflect the cost of car usage – through petrol pricing, road usage, etc. Smart pricing is intended to create differential pricing for peak and off-peak car usage, but is generally only applied on toll roads. Other options could include "unlimited access pricing" whereby car owners/users pay a monthly fee. This may not directly discourage driving, but at least it makes users see that there are ongoing costs associated with car usage.

- Pricing mechanism for non residential cars, ie those without a residential permit are required to pay to park on street (meters in strategic locations).

- Car sharing – relates to the development of a neighbourhood scheme to allow access to cars through a booking scheme and billing users for their use of the car(s). This is a good way of turning car usage into a variable cost as opposed to the current model where car costs are up-front in purchasing the car, thereby encourage high usage.

- Other behavioural examples such as Travelsmart.

Examples
Clause 22.09 of the Local Planning Policy Framework of the Melbourne Planning Scheme relates to car parking in the Capital City Zone. In general it states that:

- Unnecessary commuter car parking is discouraged to avoid congestion in city streets, to encourage public transport and for environmental reasons.

- Short-term parking is permitted when justification can be established.

- Car park entries should be discreetly designed and avoid domination of street.

Port Phillip Council has developed two Council wide documents, which are:
- Parking Plan 2010; and
- Integrated Transport Strategy, 1998

These documents highlight future actions to ensure that new development is self sufficient in terms of provision of car spaces, encouraging public transport as opposed to car dependency.

In addition, Port Phillip Council developed a series of Parking Precinct Plans in 1998. These Parking Precinct Plans encourage new uses and developments to be self sufficient with regard to car parking. These Precinct Plans were referred to an Independent Panel in 1999, which recommended that they not be incorporated into the Port Phillip Planning Scheme until Department of Infrastructure has developed a Practice Note on the Preparation of Car Parking Precinct Plans.

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Improving Alternatives

Improving alternatives involves the development of specific strategies and development implementation plans to improve:

- Public Transport coverage and quality (Bus, Tram and Train Plans);
- Cycling; and
- Walking (Walking Action Plan)

Changing Behaviour

Changing behaviour relates to changing people's perception of the public transport and reliance on car usage through education and promotion on other alternatives. Specific programs include "Travelsmart", which focuses on educating a relatively small area of households about alternative modes of transport.

This is discussed in more detail in the Social Paper prepared by Bridget Cramphorn from Sinclair Knight Mertz Pty Ltd.

Strategy D provides a range of planning policies and actions to reduce car dependency which have been outlined above.

3.3.6   Strategy E – Strategy D + Land Use Policies

The potential impacts of Strategy E include those resulting from land use changes within the study area designed to increase public transport usage and to reduce congestion levels.

Outlined below are a number of land use changes, which highlights opportunities, and areas where specific car parking controls could be introduced. This should be read in conjunction with Figure 1.

- A number of the areas within the study area including North Fitzroy, Clifton Hill, and North Carlton have unrestricted all day parking in a significant portion of side streets that are located off identified public transport routes. Limiting or controlling all day parking in these side streets would reduce the volume of trips made by commuters into the study area. It would also reduce the demand for parking in surrounding streets.

  Both Yarra and Melbourne City Councils would need to ensure that any changes to further restrict the availability of all day parking opportunities within the study area would need to be actively enforced to ensure that commuters are discouraged from ignoring parking restrictions.

- If areas such as Fitzroy and Collingwood achieve their projected forecasts for a combined total of 3428 additional dwellings by 2021, the implications for car parking within the area will be significant as potentially another 6856 car spaces may be required based on the assumption that on average each households will have two cars. As shown on Figure 1 these areas have been identified as the "core parking area" indicating that significant steps are required at the local level to develop clear management polices and strategies to address this situation. In

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addition there is a forecast growth in employment in Fitzroy which would only add to the problem.

▪ If Abbotsford and Carlton achieve their projected forecasts for a total of1202 and 925 additional dwellings respectively by 2021, the car parking implications include the potential for another 4254 car spaces based on the assumption that the majority of households will have two cars. As shown in Figure 1 Abbotsford and Carlton have been identified as "fringe car parking areas" indicating that specific car parking policies/strategies and measures are required to manage the future supply of car parking spaces. As discussed above, Strategy D outlines a number options relating allocation of space and pricing. Although, the measures adopted for the areas identified within the "fringe parking area" will be less intensive that those adopted for areas with the "core parking area". It is still very important that local government commence the development of initiatives to reduce the potential number of cars and demands for spaces.

Strategy E provides significant opportunity for the introduction of specific land use changes in relating to car parking controls to reduce car dependency.

3.3.7   Strategy F – Strategy E + Rapid Transit on Eastern Freeway Corridor
The potential impacts of Strategy F on land use include those resulting from the addition of a new rapid transit service from Doncaster Hill to the CBD, known as Doncaster Area Rapid Transit (DART).

DART is based on the development of a guided bus-way or light rail system from Doncaster Hill to Alexander Parade. DART also includes:

▪ Major interchange at Doncaster Hill
▪ Interchanges at Doncaster Road, Bulleen Road and Chandler Highway
▪ Park and ride facilities
▪ Extension of dedicated bus lanes on Alexander Parade

As outlined in the table below the land use impacts include visual and acoustic treatments along proposed routes and increased demand for car parking and increased traffic associated with the introduction park and ride facilities. However, these impacts will be able to be mitigated against through appropriate planning and management measures.

Strategy F provides the opportunity to encourage both greater use of public transport to the CBD form the eastern suburbs of Metropolitan Melbourne and to reduce traffic through the study area.

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Table 3.4:   DART – Assessment of Potential Impacts on Land Use

Strategy Component	Elements	Potential Impact	Enhancement Opportunities
Guided Bus Way or Light Rail System	Concrete guided way for buses or light rail system within existing road reserve	Consideration should be given to visual and acoustic impacts along the proposed route. May generate transit orientated development/activity at either end of the rapid transit route which is consistent with state planning and land use policies.	Reduce the number of car trips through the study area. Encourage greater use of public transport to the CBD from the eastern suburbs of Metropolitan Melbourne.
Major interchanges	Underground interchange at Doncaster Hill	Potential for increased traffic and demand for car parking surrounding the proposed Doncaster Hill interchange area. Requirement for an integrated local bus/DART interchange.	Encourage greater use of public transport to the CBD from the eastern suburbs of Metropolitan Melbourne. Opportunity to reduce traffic through the study area.
Park and Ride Facilities	Provision of parking spaces: Doncaster Road – 400 spaces, Bulleen Road – 300 spaces, Chandler Highway – 200 spaces	Potential land acquisition issues associated with the development of car parking facilities. Consideration should be given to visual and acoustic impacts along the proposed route.	Encourage greater use of public transport to the CBD from the eastern suburbs of Metropolitan Melbourne. Opportunity to reduce traffic through the study area.

3.3.8   Strategy G – Strategy F + Improved Arterial Road Network
The potential impacts of Strategy G resulting from the construction of a dual two lane deep tunnelled link from the Eastern Freeway east of Hoddle Street to near Flemington Road include those relating to residential amenity near surrounding entry and exits to the tunnel, however, enhanced amenity to residences along surface roads with reduced through traffic.

As identified in the table below Strategy G would reduce surface road congestion, thus facilitating greater use of public transport to the CBD from the eastern and northern suburbs of Metropolitan Melbourne and opportunity to reduce traffic through the study area.

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Table 3.5:   Tunneled Link – Assessment of Potential Impacts on Land Use

Strategy Component	Elements	Potential Impact	Enhancement Opportunities
Tunnel Connection	Dual two lane tunnel approx 25-30 m below ground level from the Eastern Freeway east of Hoddle Street to near Flemington Road Entry/exit portals at Eastern Freeway and Elliot Avenue	Potential impacts to residential amenity surrounding entry and exits to tunnel. Potential noise and vibration issues associated with tunnel.	Facilitate greater use of public transport to the CBD from the eastern and northern suburbs of Metropolitan Melbourne. Opportunity to enhance amenity along surface roads carrying reduced traffic through the study area.

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4.1   Introduction

This Chapter presents an examination of the proposed Strategy elements in terms of their potential impact on the local and regional economies operating in the study area. The analysis also identifies economic effects that occur *outside* the study area as a result of the strategy elements where this is relevant for the analysis.

The analysis of economic impacts has been undertaken against a "base case" scenario which represents the prevailing circumstances in 2021. An examination of the base case scenario in terms of forecast population and employment numbers, and the implications in terms of land use and economics has been prepared as a separate report.

4.2   Assessment Methodology

The analysis of local and regional economic impacts has been undertaken in accordance with the *Assessment Framework* that has been developed for the study as a whole, and which identifies the following goals and indicators that are relevant to the economic component of the study:

Table 4.1:   Goals and Indicators – Assessment Framework for Local/Regional Economic Analysis

Goal	Indicator
Enhancing access for commercial activities including tourism and recreation	Accessibility to recreational, cultural and commercial areas in and around CBD and in the inner north
Catering for increased residential population in the inner north and surrounding areas	Area of existing or potential residential land affected (if applicable)
	Changes in land use (eg from commercial to residential)
	Accessibility to/from residential areas
Maximising the economic return on investment in transport and land use initiatives	Regional economic effects (effect on businesses etc)

For each of the assessment indicators, the potential economic effects have been assessed in terms of the effect on the following economic activities:

- Residential activity - effect on the attractiveness of residential property, and consequences in terms of property market adjustment
- Retail/commercial activity - effect on the operation of commercial businesses, including retail businesses at shopping strips, commercial offices, etc; includes potential effects on businesses serving tourism and entertainment markets; includes effects on owners and employees
- Industrial activity - effect on the operation of industrial businesses, including impacts on commercial vehicle access, effects for employees, etc

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- Institutional - effect on institutions operating in the study area such as hospitals, tertiary institutions, research facilities, etc, including effects on student access, employee access, etc

The analysis of potential effects at the local level is based on a detailed examination of the results of modelling of the strategy elements (noting that Strategies C, D (behavioural component), and E are not modelled using the Zenith model). The detailed findings are used with caution, however, since the model has unpredictable results at the small area (micro) level.

4.3   Appraisal of Strategy Elements

The following sections present the analysis of local and regional economic effects resulting from each of the Strategy elements. In each case the analysis reflects the likely effects of the strategy element in relation to the Base Case scenario.

An overview of the Base Case in terms of the expected transport outcomes is provided in section 4.3.1 below.

4.3.1   Base Case (2021)

The Base Case reflects an assumed set of prevailing conditions in 2021, including assumptions with regard to population and employment forecasts (which are inputs to the Zenith model), and assumptions regarding transport infrastructure developments that would otherwise occur in the absence of any other policies.

A detailed description of the Base Case is provided in *Technical Note 1: Northern Central City Corridor 2021 Base Case Scenario* (Veitch Lister Consulting, April 2002). The key features in terms of the expected transport outcomes include:

- An overall 20% increase in the total number of trips (all modes) through, to/from and within the study area compared to 2001
- An overall 35% increase in public transport trips, compared with 17% increase in total car trips, and 16% increase in walking trips
- A 27% increase in through traffic, compared with 18% increase in to/from trips and 10% increase in trips within the study area

These trip outcomes have very little effect on overall mode share, with car trips accounting for 62% of all trips in the study area in 2021 (compared with 64% in 2001).

It is important to note that the Base Case context for 2021 is likely in itself to have a significant impact on economic activities and economic performance in the study area when compared against the current (2001) circumstances. In particular, there are likely to be adverse impacts associated with the following factors:

- Increased congestion as a result of increased number trips, leading to reduced accessibility to residential areas, reduced access for workers, shoppers and other visitors to retail/commercial centres, and reduced access to institutions and other places of employment

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- Accessibility implications are likely to be exacerbated by competition for road space, particularly given that the Base Case assumptions include a 20% frequency improvement for public transport services - these impacts are likely to be greatest where road traffic competes with tram lines (eg Lygon Street (north), Brunswick Street, Smith Street, Nicholson Street, etc)
- Economic impacts on activity centres associated with reductions in car access will depend upon the extent to which activity centres rely on car access - generally, the impacts are likely to be greatest where centres serve large regional catchments which are not well-served by public transport networks (eg Brunswick St, Lygon Street, etc)
- Significant land use changes are required in order to achieve the population and employment forecasts developed by DoI; these changes are likely to have implications associated with reduced accessibility to local roads, competition for car parking, redevelopment of former industrial land for residential or mixed use development, and so on (note that these land use changes are reflected in the Strategy E element)
- The above outcomes - reductions in amenity and accessibility, and land use conflict - are likely to have an adverse effect on businesses in the study area, although this needs to be viewed in the context of a growing market for retail and other businesses (in terms of workers and residents). The actual outcomes are unlikely to be negative in comparison with existing revenues for businesses in the study area (indeed, there is likely to be significant market growth), however the effects may have downward pressure on market shares achievable by existing businesses, may restrict new business opportunities, and so on.

The following sections provide an assessment of the Strategy Elements against this Base Case scenario for 2021.

4.3.2   Strategy A = Significant Improvements to Public Transport Services

Strategy A comprises a set of transport-related measures that are intended to improve the attractiveness of public transport services as an alternative to cars, thereby promoting public transport usage at the expense of car trips.

The specific measures reflect the following types of service improvements:

- Improved coverage/introduction of new services/routes
- Improvements in service frequency
- Improved travel times through reductions in transfer penalties
- Improvements in reliability of services
- Improved interchanges and station access arrangements
- Changes in signalling prioritisation for the benefit of trams and buses

Details of the transport measures are presented in the Strategy A description by Veitch Lister.

It is important to note that the actual measures to achieve the service improvements summarised above have not been designed, and in some circumstances it may be difficult to achieve the improvements which are described by the results of the Zenith model. Nevertheless, the Zenith outputs are used for the purposes of this analysis as

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a summary of the potential effects associated with a significant improvement in public transport services.

The results of the Zenith model indicate that Strategy element A is relatively successful in achieving a considerable shift in mode share, including:

- 37% increase in public transport trips in the study area
- 10% decline in car trips
- increase of 8 percent in mode share of public transport, from 22% of all trips (Base Case) to 30%
- reduction of 6 percent in mode share of cars, from 62% of all trips (Base Case) to 56%

At the local level, the Zenith results indicate that the Strategy is expected to lead to a reduction in the growth in car traffic along key commercial streets such as Brunswick Street, Lygon Street and Johnson Street. However, to achieve this result, additional road space would be required for public transport through improved priority at intersections, extended clearways and the like.

To the extent that the strategy measures favour public transport in terms of use of road space and prioritisation of signalling, there may be adverse impacts on commercial centres and institutional employers that rely on good levels of accessibility by cars. Conversely, centres and employment locations which have high levels of public transport access (particularly those which serve easily defined regions along a single public transport spine) can be benefited by such measures.

The public transport measures include significant station infrastructure improvements located outside the study area, which are likely to promote increased patronage at premium rail stations. This is likely to provide a stimulus for economic activities at these locations, including the types of mixed use and high density settlement patterns that are supported in the Metropolitan Strategy.

A summary of the assessment of Strategy A is provided in Table 4.2.

Table 4.2: Assessment of Strategy A

Goal	Indicator	Possible Outcome
Enhancing access for commercial activities including tourism and recreation	Accessibility to recreational, cultural and commercial areas in and around CBD and in the inner north	Adverse impact for centres which rely on good car access to the extent that measures favouring public transport inhibit good access by private vehicle Improved access for centres which have catchments that are well-served by public transport Economic stimulus at premium stations located outside the study area
Catering for increased residential population in the inner north and surrounding areas	Area of existing or potential residential land affected (if applicable)	
	Changes in land use (eg from commercial to residential)	
	Accessibility to/from residential areas	Improved amenity due to improved PT services has positive effect on property

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Goal	Indicator	Possible Outcome
		market
Maximising the economic return on investment in transport and land use initiatives	Regional economic effects (effect on businesses etc)	Some adverse impacts for centres which particularly rely on car access (see above), but positive effects where amenity improvements and improved services reflect the characteristics of the centre

4.3.3   Strategy B = Strategy A + Reduced Traffic on Local Streets

Strategy B comprises local traffic management measures which are intended to reduce the extent to which through traffic uses the local street network in the study area.

The Strategy has been tested using the Zenith model where a number of identified local streets have been "set" an average traffic flow speed of 10 kmh. The actual measures that are required in order to achieved these very low average speeds have been addressed in the engineering and transport report.

The key Zenith model results are as follows:

▪   No significant overall effect on mode shares throughout the study area - the measures only affect the distribution of traffic on the street network
▪   Very significant reductions in traffic on local streets are achieved, in some circumstances representing an elimination of all through traffic
▪   The reductions in through traffic on local streets are accompanied by an increase in traffic levels on the key arterial roads
▪   For some main roads the increase in traffic is considerable - many arterial roads are expected to experience an increase in daily traffic of over 25%

At the local level, the Zenith model forecasts significantly increased traffic volumes (and therefore congestion) for many transport routes which run through key commercial centres, including:

▪   Brunswick Street - increase in daily traffic around 25%
▪   Lygon Street - increase around 70%
▪   Rathdowne Street - increase around 30% for southern part
▪   Victoria Street - increase around 20%

An increase in congestion at these centres is likely to have an adverse impact on accessibility to shopping, business and other activities. Moreover, the changes in the road network are likely to further exacerbate these adverse impacts at shopping centres as a result of restrictions in access due to local road management effects. This effect is particularly pronounced for the study area because many of the shopping centres are small, so that residents tend to visit a number of centres on the one shopping trip, using the local road network to provide convenient and congestion-free access between the centres.

For some smaller centres which primarily serve a walk-in catchment, the effect of local street measures are likely to be positive due to improved amenity associated

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with removing through traffic from the local road network. It is important to appreciate that these amenity benefits are significant given that the Base Case assumes significant growth in the extent of through traffic on local streets in the study area.

Local road measures have in some instances been applied to streets on which there is commercial activity - including, for example, Errol Street, Smith Street, and Queensberry Street. It is not clear how the significant reduction in traffic volumes on these streets can be achieved without creating a significantly adverse impact on commercial activities undertaken at thee centres.

While the impacts on retail, commercial and other business and institutional activities are likely to be generally negative as a result of local street measures, there are likely to be significant positive effects on the residential property market as a result of improved amenity as road traffic is taken off local streets.

Table 4.3: Assessment of Strategy B

Goal	Indicator	Possible Outcome
Enhancing access for commercial activities including tourism and recreation	Accessibility to recreational, cultural and commercial areas in and around CBD and in the inner north	Generally adverse impact on access to centres and other activities, etc due to increased congestion on main roads and restricted access via local roads Potential positive effects for local shops which serve a walk-in catchment, associated with amenity improvements Potential positive impacts for some recreational activities associated with amenity improvements (subject to access)
Catering for increased residential population in the inner north and surrounding areas	Area of existing or potential residential land affected (if applicable)	
	Changes in land use (eg from commercial to residential)	
	Accessibility to/from residential areas	Improvements in amenity for residential areas; improved accessibility for residents
Maximising the economic return on investment in transport and land use initiatives	Regional economic effects (effect on businesses etc)	Adverse impacts on local business and other a\economic activities that rely on good accessibility by private vehicle

4.3.4   Strategy C = Strategy B + Improved Pedestrian and Bicycle Networks
Strategy C relates to the development of a Pedestrian and Bicycle Strategy for the study area, comprising a number of measures relating to:

- Programs to encourage walking
- Regulations that promote walking (eg reduced footpath clutter, enforcement of leash laws, etc)
- Improved infrastructure for walking (street lighting, street furniture, weather protection, signalling, etc)

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- Improved linkages at specified locations
- Legalisation of bikes in MCC parks
- Bicycle lane markings, resurfacing and other infrastructure works
- Improved facilities at workplaces to encourage bicycling

Generally, these measures are unlikely to have any significant effect on the local and regional economies. However, we can identify the following (minor) effects:

- Measures which increase pedestrian activity at shopping centres will benefit those centres
- Measure to reduce footpath clutter should be sensitive to the important economic role of street cafés and restaurants
- Improved weather protection benefits all users of shopping/activity centres
- There are tourism and recreational benefits associated with the development of new or upgraded bicycle paths

Table 4.4: Assessment of Strategy C

Goal	Indicator	Possible Outcome
Enhancing access for commercial activities including tourism and recreation	Accessibility to recreational, cultural and commercial areas in and around CBD and in the inner north	New bicycle paths may add to tourism product
Catering for increased residential population in the inner north and surrounding areas	Area of existing or potential residential land affected (if applicable)	
	Changes in land use (eg from commercial to residential)	
	Accessibility to/from residential areas	Pedestrian-friendly measures improve amenity and access and support the residential property market
Maximising the economic return on investment in transport and land use initiatives	Regional economic effects (effect on businesses etc)	Improved infrastructure associated with weather protection Need to ensure that street activity is promoted, not restricted

4.3.5   Strategy D = Strategy C + Reduced Car Dependency

Strategy D involves a number of government policy responses that are aimed at reducing car dependency in the study area. Specifically, the strategy element includes:

- A run of the Zenith model to test the effect of an increase in the price of commuter parking in the CBD
- Reductions in the availability of all-day commuter parking in the CBD (to the extent that parking supply is affected by public policy)
- Policy options relating to measures affecting the supply and pricing of car parking in the study area, including, potentially
  - policies requiring that new developments be self-sufficient in terms of car parking for residents/workers/visitors

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- policies that reduce on-street parking, particularly for all-day employees (commuters) and in areas outside commercial or industrial zones
        - reductions in parking availability for non-residents in residential areas
- Initiatives that are intended to change behavioural patterns, for example encouragement of Company Travel Plans, instigation of TravelSMART programs, etc

The initiatives have a number of potential effects on economic activity in the study area:

CBD Parking

Initiatives that increase car parking fees for commuters are unlikely to have a significant effect on economic activity unless very large price increases are instigated. This is largely due to the inelasticity of commuter parking with respect to price, since a significant share of employees do not pay the full cost of parking - it is paid through fringe benefits schemes, or as part of a salary package. To the extent that there is an effect, the impact would be negative, since it would reduce the attractiveness of the CBD for commercial activities (although, as noted, any effect would be marginal unless price rises were significant).

Overall, any effect is low due to the current high share of public transport for commuter trips to the CBD.

A restriction in the supply of car parking for commuters would produce a shift in transport mode from private vehicle to public transport, although as noted above the overall effect is small due to the existing dominance of public transport for commuter access to the CBD.

A particular danger in restricting the supply of car spaces is to ensure that only commuter users are targeted. For example, any restriction in availability or increase in price of car parking for shoppers, tourists and other visitors to the CBD would have an adverse impact on local businesses, and would serve to reduce the competitiveness of shops and services in the CBD with respect to other suburban locations (where free parking is generally provided).

Study Area Parking

A number of options are considered in relation to limiting the use of cars through parking policies in the study area. These measures include:

- Restrictions on development that increase demand for car parking without providing car spaces on-site
- Restrictions on the availability of parking for non-resident users in residential zones
- Increasing the price of parking, including on-street and off-street spaces under Council control, and increased permit fees for residents, especially for second/third cars etc

Generally, these policies are designed to reduce the extent of commuter use of cars, as well as encouraging lower car ownership and use by residents, with a resultant

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beneficial effect on amenity in the study area due to lower car usage. However, it is likely that these policies would have an adverse impact on economic activities, as identified below:

- Reduced availability of car parking for commuters is likely to adversely affect access to employment locations in the study area
- The measures are likely to have an adverse impact on car parking availability for shoppers and other visitors to activity centres, especially where there is not sufficient alternative parking locations
- The reductions in the availability of long-term parking spaces is likely to affect access to major institutions in the study area, including Universities, Hospitals, etc
- There is potential for the policies to have a restrictive effect on opportunities for home-based business activities in the study area

In terms of residential activities, the potential loss of car parking spaces, or increased price, is likely to adversely affect residents. However, this effect would be offset by amenity improvements.

Behavioural Change
Policies which successfully encourage greater use of public transport have a beneficial effect, and generally would offset the potential adverse consequences of reductions in parking, etc.

Table 4.5: Assessment of Strategy D

Goal	Indicator	Possible Outcome
Enhancing access for commercial activities including tourism and recreation	Accessibility to recreational, cultural and commercial areas in and around CBD and in the inner north	Reduced access to shops, business and institutions in the study area as a result of reduced availability of parking - these effects relate to shoppers/visitors as well as employees, and particularly where alternative parking options are unavailable Potential adverse impact on CBD businesses where there is a reduction in availability of parking spaces Cordon pricing for the CBD would reduce the relative attractiveness of the CBD as a shopping and entertainment destination
Catering for increased residential population in the inner north and surrounding areas	Area of existing or potential residential land affected (if applicable)	
	Changes in land use (eg from commercial to residential)	Restrictions on development that do not provide car spaces would tend to reduce the opportunities for residential development

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Goal	Indicator	Possible Outcome
	Accessibility to/from residential areas	Price increases for parking permits, or reduced availability, would adversely affect residents This affect offset by amenity improvements, and also offset to the extent that behavioural programs are successful
Maximising the economic return on investment in transport and land use initiatives	Regional economic effects (effect on businesses etc)	Adverse impacts on businesses to the extent that car parking loss affects access to shops, businesses, etc Potential adverse effect on major institutions which are not sufficiently served by off-street car parking

4.3.6   Strategy E = Strategy D + Land Use Changes to Reduce Travel
Strategy E reflects the land use changes that are required in order to meet the forecasts for population and employment growth that are adopted for the study area. Thus, this strategy element represents the physical manifestation of the Base Case scenario (which is based on the DoI forecasts), and identifies the key land use implications in terms of required increase in housing density, etc.

A separate report has been prepared which identifies and discusses these land use implications (refer Appendix 1).

Broadly, the Strategy identifies the following key implications:

- There is expected to be a significant increase in the number of households in the study area, and this has key implications in terms of the required housing density to accommodate this growth.
- Suburbs in the southern part of the study area (Fitzroy, Collingwood) are expected to accommodate significant housing development, requiring a substantial increase in the average density of housing, and the conversion of remnant industrial land to residential or mixed use.
- There is a need for significant mixed use development in some parts of the study area in order to accommodate the expected growth in employment in the study area
- A number of key sites have been identified to accommodate population growth (refer to Figure 2)
- An increase in infill development is expected in the largely residential suburbs of Princes Hill, North Carlton, etc

Policies are required that manage this expected growth in housing and employment, including policies which facilitate appropriate development, and those that deal with the expected competition for land space, particularly in terms of car parking supply. Potential policy responses include:

- Identification of a "core parking area" in Fitzroy/Collingwood where strict controls would be enforced regarding parking allowances for new residential development in order to accommodate expected growth in housing

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- Identification of a "fringe parking area" in Abbotsford and Carlton where specific controls of a less intensive nature will be required to manage housing growth and parking impacts
- Restrictions on the availability of all-day parking in northern parts of the study area which attract mixed car/public transport commuters (ie, commuters driving into the study area and using public transport to access the CBD)

The issues and impacts associated with this strategy element are summarised below:

- There are likely to be significant issues at the local level associated with an increased intensity of development in parts of the study area, including issues related to built form and neighbourhood character, amenity impacts, etc. Generally, we would expect that these impacts would be mainly related to adverse social outcomes, manifested in reduced property prices.
- It is unclear whether the forecasts can be achieved given the expected growth in population and employment, the shortage of available land, heritage controls, and so on.
- The significant incoming resident and working population is likely to have a beneficial impact on businesses (particularly retail) due to an increase in the available market for shopping, entertainment and other activities.
- Parking policy response may adversely affect business and residents due to competition for limited spaces.

Table 4.6:   Assessment of Strategy E

Goal	Indicator	Possible Outcome
Enhancing access for commercial activities including tourism and recreation	Accessibility to recreational, cultural and commercial areas in and around CBD and in the inner north	Competition for limited available space for car likely to adversely affect businesses and residents.
Catering for increased residential population in the inner north and surrounding areas	Area of existing or potential residential land affected (if applicable)	Significant areas of land will be required in order to accommodate the increased population - requires development of available sites, redevelopment of remnant industrial land, conversion to mixed use, increased intensity of development (including increased height)
	Changes in land use (eg from commercial to residential)	Expected changes sin land use to residential and mixed use
	Accessibility to/from residential areas	Reduced access associated with competition for limited available car parking
Maximising the economic return on investment in transport and land use initiatives	Regional economic effects (effect on businesses etc)	Potential adverse impact on businesses associated with restrictions on car parking Positive impacts associated with growth in the market for shopping, entertainment and other activities

4.3.7   Strategy F = Strategy E + Rapid Transit on Eastern Freeway Corridor
The strategy involves the construction of a Doncaster Area Rapid Transit system, involving either a guided bus-way, or light rail system.

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Other features include significant infrastructure development associated with park-and-ride stations, interchanges at Doncaster and along the Eastern Freeway corridor, and extension of bus-lanes on Alexander Parade (at the expense of car traffic).

Expected outcomes include:

- Positive benefits for shops/businesses and other economic activities to the extent that the DART system promotes a reduction in congestion levels on main roads - these reductions are evident in the model for key routes such as Alexandra Parade, Brunswick Street, Lygon Street, and Victoria Parade.
- Provide stimulus around Clifton Hill/Victoria Park and Carlton; as modes at the key stops; and
- Stimulate changes in use/intensity along Alexandra Pde (as a result of better access to pubic transport/traffic reduction)
- The model identifies a number of instances where an increase in traffic is expected as a result of the network adjustment, including Smith Street, Johnson Street (small effect), and Wellington Street.
- A stimulus to economic activity in association with interchange development and park-and-ride stations.

The outcomes are not expected to vary significantly for the heavy rail and toll options.

Table 4.7: Assessment of Strategy F

Goal	Indicator	Possible Outcome
Enhancing access for commercial activities including tourism and recreation	Accessibility to recreational, cultural and commercial areas in and around CBD and in the inner north	Improved access to the extent that congestion is reduced (mostly evident in the Zenith model). Potential adverse accessibility due to loss of car lane along Alexandra Parade.
Catering for increased residential population in the inner north and surrounding areas	Area of existing or potential residential land affected (if applicable)	
	Changes in land use (eg from commercial to residential)	Expected changes in land use to residential and mixed use.
	Accessibility to/from residential areas	Improved access for local traffic due to reduced congestion along key routes (particularly Alexandra Parade).
Maximising the economic return on investment in transport and land use initiatives	Regional economic effects (effect on businesses etc)	Generally positive impact on business activity Positive opportunities associated with interchanges and park-and-ride stations

4.3.8   Strategy G – Strategy F + Improved Arterial Road Network
This strategy involves the construction of a tunnelled east-west link from the Eastern Freeway to near Flemington Road. Options involve potential entry/exit ramps at Nicholson Street and Royal Parade, and a CBD link.

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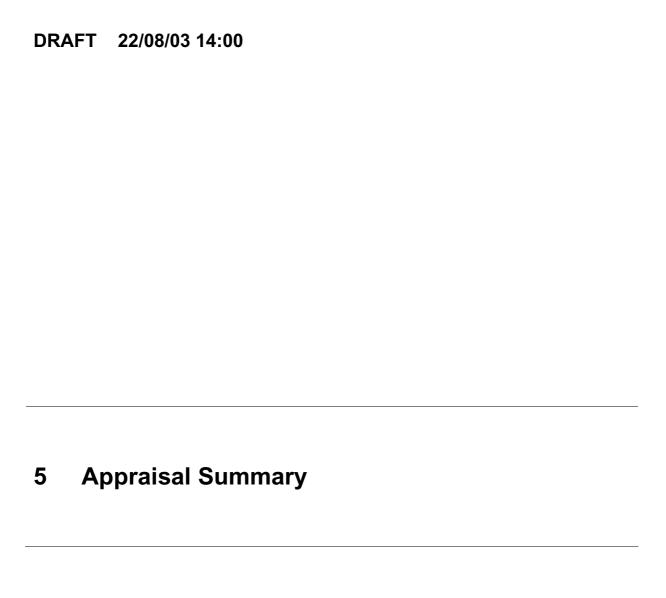Page 40 of 46

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The Zenith results show that this strategy element would be successful in diverting traffic away from some key east-west routes such as Victoria Street/Parade, Alexandra Parade/Princes Street, Elgin Street, Brunswick Road, Elliot Avenue. Cemetery Road, etc, by up to around 50% on some of these routes. Increased congestion would occur at key access routes close to portals (such as Smith Street).

Overall, we would expect that this strategy element would improve accessibility to some activity centres and institutions through reductions in congestion levels along key routes. This would have a positive effect on these centres, particularly where they serve a large catchment.

Generally, the improvements in congestion are also beneficial to residents, although this is significantly offset where local adverse impacts are evident, for example in locations where ventilation stacks are located.

Table 4.8:   Assessment of Strategy G

Goal	Indicator	Possible Outcome
Enhancing access for commercial activities including tourism and recreation	Accessibility to recreational, cultural and commercial areas in and around CBD and in the inner north	Improved access to the extent that congestion is reduced
Catering for increased residential population in the inner north and surrounding areas	Area of existing or potential residential land affected (if applicable)	
	Changes in land use (eg from commercial to residential)	
	Accessibility to/from residential areas	Improve access generally, although there would be specific local adverse impacts associated with ventilation stacks and other social effects
Maximising the economic return on investment in transport and land use initiatives	Regional economic effects (effect on businesses etc)	Positive impacts on businesses associated with improved access.

5 Appraisal Summary

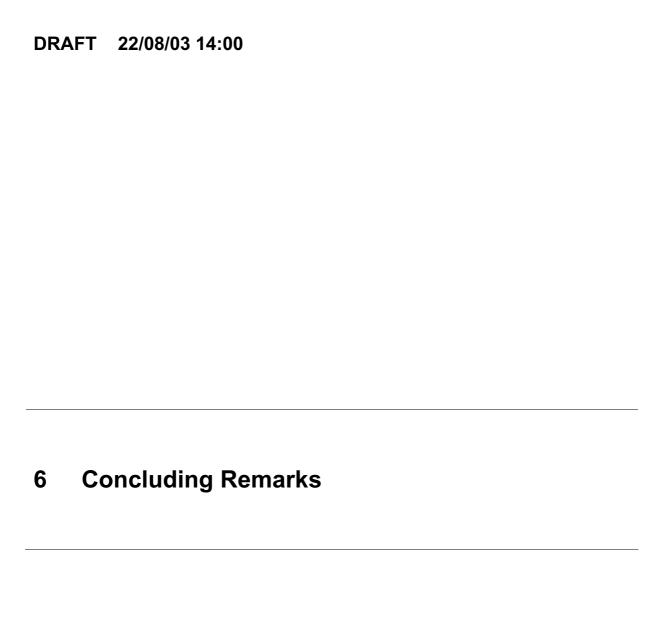# 5   Appraisal Summary

5.1   Summary

The key land use and regional economic impacts/issues associated with each of the strategy options are summarised in Table 5.1 below.

Table 5.1: Summary of Strategy Appraisal – Land Use and Macroeconomics

Strategy Component	Potential Impacts/Issues
Base Case	o Progressive reduction in amenity over time
A. Public Transport Improvements	o Potential stimulus for locations outside study area o Potentially reduced accessibility to some commercial centres (competition for road space) o Improved amenity has positive effect on residential areas o Improved access for centres with high share of public transport usage
B. Local Roads	o Effects depend on actual local measures o Reduced access to residential areas may has adverse effect on residential property, but there may also be an amenity improvement effect o Potential positive effects for local shops which serve a walk-in catchment, associated with amenity improvements o Increased traffic on main roads adversely affects shopping facilities, local businesses (employee access) and community facilities (schools, institutions etc)
C. Walking/Cycling	o Unlikely to have significant regional economic effect o Walking initiatives may adversely affect businesses with street activity (cafés etc) but may also add vibrancy to these areas o Tourism and recreational benefits associated with bicycle paths
D. Reduce Car Dependency	o Reduced car parking provision would adversely affect shopping, commercial and institutional activities o Potential adverse effect on home business activities o Reduced car parking availability for residents may affect attractiveness of the area for residential development

5   Appraisal Summary

Strategy Component	Potential Impacts/Issues
E. Land Use Policies	o Policies which raise car parking prices for residents may adversely affect residential property in the study area o There are significant issues associated with the need to raise the intensity of residential development and employment opportunities – there may be considerable impacts at the local level on built form, amenity etc o There may be a shortfall in land available to accommodate anticipated population growth
F. Rapid Transit	o Creates positive benefits for shops/businesses to the extent that a shift in travel mode reduces congestion on main roads and improves access o May generate transit oriented development/activity at either end (outside NCCCS area)
G. Arterial Roads/Tunnel	o Improved access and reductions in congestion create positive benefits for shops/businesses and other facilities o Improved local road conditions have positive impacts on residential property; however, there may be local adverse impacts associated with ventilation stacks, visual impacts (for example at interchanges) and so on.

6   Concluding Remarks

6   Concluding Remarks

This report has evaluated each of the seven strategy options against a number of goals which have been defined for land use planning and local/regional economics.

The findings of the land use and local/regional economics assessment need to be incorporated into the broader assessment framework being compiled by Department of Infrastructure which draws together the findings of all the disciplines including transport, social, heritage and environment to ensure a holistic approach is applied to the project.