



Heritage Country Integrated Land transport Strategy

Benham Bordbar and Nicole Gallin
BSD Consultants

Abstract

The Heritage Country Integrated Land Transport Strategy is the first time the goals and visions of the 1995 Metropolitan Transport Strategy (MTS) have been developed specifically for use at a regional and local level in an outer area of Metropolitan Perth.

The Heritage Country Strategy encompasses the Local Authorities of Gosnells, Armadale and Serpentine - Jarrahdale and has a total population of approximately 133,000 people, which is projected to increase significantly in the future. The motor vehicle is the first choice for transport within Heritage Country and this is also expected to continue in the future, without action to improve alternatives. The Strategy sets goals for achieving a better mix of private vehicle and public transport use in line with the objectives of the MTS and takes a long term view at achieving this objective.

The initiatives developed to address the unique transport and land use characteristics of Heritage Country include a range of general principles and detailed actions. Such recommendations include improved public transport coverage and improved system integration through the use of dedicated interchanges and park'n'ride facilities. Also, better management of the available road space is recommended and includes HOV and transit lanes as applicable, and an improved hierarchy of roads that recognise the role of the region as a gateway to the Metropolitan Area for freight movements.

The results of a transport modelling exercise undertaken reinforce the need to implement a range of support measures and policies in order to achieve the objectives, including MTS targets. The modelling confirmed that simply providing infrastructure improvements is not sufficient to influence the travel behaviour of the public. The results of the modelling are encouraging as they show, with the infrastructure measures in place and the use of supporting policies, that the transport system can achieve a significant shift in the mode of travel and hence go some way to achieving the objectives of the MTS.

Contact Author

Nicole Gallin
BSD Consultants
PO Box 155
Subiaco WA 6904

Phone: +61 8 9273 3888 Fax: +61 8 9388 3831 e-mail: bsdtraf@bsd.com.au

Introduction

The Heritage Country Integrated Transport Strategy is a landmark study in the future of transport planning in Western Australia.

This is the first time the goals and vision of the 1995 Metropolitan Transport Strategy (MTS) have been developed specifically for use at a regional and local level in an outer area of Metropolitan Perth.

The MTS is a guide to developing an efficient transport system which provides a balanced mix of motor vehicle and public transport use, and a greater ability for cyclists and pedestrians to move freely and safely about the community. Efficient and safe movement of freight through the Metropolitan area via a well defined road hierarchy are addressed in the MTS along with the need for the effective integration of landuse and the transport system.

Heritage Country encompasses the Local Authorities of Gosnells, Armadale and Serpentine-Jarrahdale. These local authorities differ significantly in lifestyle, economic activity and urban fabric.

Heritage Country has long been one of the most important gateways to the metropolitan region, with three major arterial roads passing through it. These being Albany Highway, Brookton Highway and the South Western Highway.

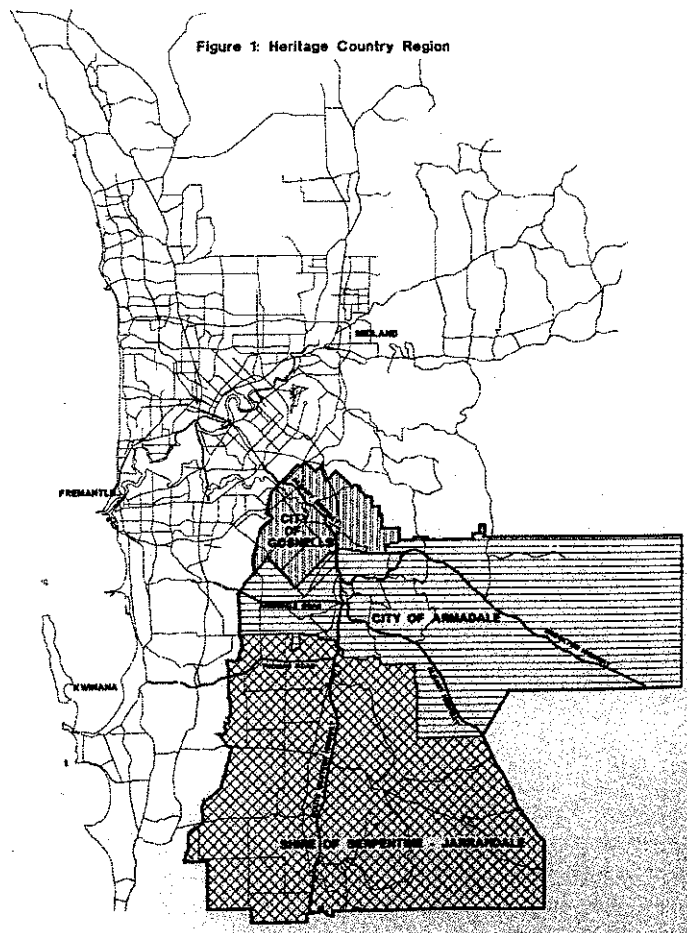
These roads are responsible for linking Perth with the highly-productive farming and mining areas of the State's southern and central wheatbelt areas, and the southern and south-west agricultural districts. The Heritage Country region is shown in Figure 1.

The convergence of major highways, the significant increases in road freight traffic, and increased local passenger traffic has resulted in substantial safety, congestion, amenity and economic efficiency concerns by the community. It not only affects the quality of life for local residents but also impacts on the economy of the State by increasing transportation costs due to an inefficient transport network.

Transport Strategy Development

The development of the Integrated Land Transport Strategy for Heritage Country has evolved over many years and follows the release of the MTS. The Cities of Gosnells and Armadale and the Shire of Serpentine-Jarrahdale have been effectively split by several major highways carrying significant numbers of freight vehicles. The issue of heavy transport vehicles dividing the region has been a significant local issue which has provided the impetus for the development of this transport strategy.

Following a significant amount of community effort and political promotion the State Government and Local Governments within the Heritage Country Region implemented the first stage of the strategy development process by developing a Strategy Framework. The framework study identified some critical issues within the region and set the structure for this second stage of the process.



The second stage involved the development of the transport strategy. As part of this process comprehensive community consultation was undertaken which involved meetings, workshops, displays and focus groups with residents and interest groups

Heritage Country Profile

Heritage Country encompasses the Local Authorities of Gosnells, Armadale and Serpentine-Jarrahdale. The 1996 ABS census shows a population of around 133,000 people, approximately 11 per cent of the population of the Perth Metropolitan Area.

The City of Gosnells is home to 56% of the population of Heritage Country (approx. 80,000 people) followed by Armadale with 37% (approx. 52,000) and Serpentine-Jarrahdale with 7% or just under 10,000 people.

The population of Heritage Country is expected to increase by up to 31,000 by the year 2006 and by about 130,000 by 2026. These predicted growth rates are slightly higher than for the rest of the Metropolitan Area.

Most work opportunities are outside the study area and include Kwinana, Welshpool/Kewdale and Canning Vale.

Existing Transport System

The major road system within the region includes Albany Highway, Brookton Highway, South Western Highway, Tonkin Highway and Armadale Road. These are primary distributor roads, which provide for major regional and inter-regional traffic and carry relatively large volumes of heavy vehicles.

An examination of the road network indicates a lack of well defined links in an east-west direction. The main rail line bisects Heritage Country in a north-south direction with a spur line to Jarrahdale.

The main line diverts to the west at Mundijong junction towards Kwinana. The function of the rail line differs in various parts of Heritage Country. North of Armadale the major function is to carry passengers to Central Perth and beyond. To the south and west of Heritage Country the line is mostly used to carry freight to and from the Metropolitan Area.

The existing public transport infrastructure is dominated by the electrified passenger rail line between the Perth CBD and Armadale. This radial service, which terminates at the Armadale interchange, has nine stops within Heritage Country.

The bus system within Heritage Country operates in several distinct sections and appears to be structured to serve predominantly work related travel.

In the northern part of the region the bus routes servicing the City of Gosnells tend to operate predominantly to and from Perth CBD. None of the existing passenger rail stations in this area have bus/rail interchange facilities which results in inefficient co-ordination of public transport services. The actual coverage of the bus system in the City of Gosnells, based on a review of the bus service plan, appears reasonably comprehensive.

In the City of Armadale the coordination of the public transport services for commuter travel appears better than in Gosnells. The majority of the services operate to/from the bus/rail interchange facilities at the Armadale and Kelmscott rail stations. There are limited services from this part of Heritage Country that continue to the Perth Busport, however these routes also use the bus/rail interchange facilities to pick up and set down passengers which provides the opportunity to change modes to travel to the CBD.

The provision of public transport services for the movement of people between Heritage Country and the South-West Metropolitan region is limited. There is a single service

operating from the Armadale bus/rail interchange to Fremantle. This service operates only once per day in each direction.

The southern parts of Heritage Country are only served in a limited way by the public transport system. The existing passenger rail link does not extend south of the Armadale interchange and the existing bus services are limited. The towns of Byford, Mundijong and Jarrahdale are each served by what is essentially a single bus route. The existing routes follow the major roads and do not deviate to provide full coverage of the area.

A review of the Perth Bike Maps produced by BikeWest (1996) indicates the provision of several dual use paths (DUPs) within the Cities of Gosnells and Armadale. These paths are primarily located on the western side of Albany Highway/South Western Highway.

The BikeWest bike maps also classify road riding environments according to their standard. The majority of the local roads and DUPs within the Cities of Armadale and Gosnells are classified as having good road riding environments, with some of the major roads such as Albany Highway and Tonkin Highway being classified as poor road riding environments for cyclists.

There are limited DUP's provided in the Shire of Serpentine-Jarrahdale and the road riding environment classifications range from 'good' (Spears Drive, Kargotich Road, Hopkinson Road and Masters Road) to 'medium' (Thomas Road) and 'poor' (South Western Highway).

In terms of pedestrian footpaths, the City of Armadale appears to have a reasonably good coverage of footpaths and pedestrian crossing facilities (refuges) which allow for safer road crossings by pedestrians. Council have expressed that the current provision is still inadequate however.

Freight Movement

The three major highways, Albany Highway, Brookton Highway, and South West Highway converge in Heritage Country where they distribute freight vehicles via Albany Highway, north, and Thomas Road and Fremantle Road, west, to the various industrial areas and ports in the Metropolitan Area.

Heavy freight trucks are intermingled with urban and tourist traffic in residential areas of Heritage Country, leading to substantial community concerns.

Through freight movements provide very little direct economic or social benefit to the region and in fact could be perceived as a disadvantage with the associated safety and environmental issues discussed above.

Unlike through freight movements, local and intra regional freight brings considerable economic value to Heritage Country. Therefore, it is important to establish ways of integrating these movements by developing an efficient freight network.

Currently, rail freight movements are not significant in Heritage Country, as most rail freight consists of inter-regional movement between the Metropolitan Area and the south and west of the State. These freight movements occur in the southern part of the study area, where freight is diverted to the west at the Mundijong junction.

The existing rail network has sufficient capacity to accommodate increases in freight movement in the foreseeable future and no significant expansion of the network is envisaged.

Future Transport Influences

The MIS establishes several principles as central tenets of its approach to the development of the metropolitan transport system of the future. These principles are also applicable to the development of an integrated land transport strategy in the Heritage Country Region. In summary, Perth's future transport system must be:

- Safe -- for car users, pedestrians, cyclists, public transport users, and for young and old alike.
- Efficient -- for the movement of people and goods, not just for the movement of vehicles.
- Effective -- in providing access to social, educational, economic and leisure opportunities.
- Environmentally Responsible -- through efficient use of non-renewable resources and the minimisation of polluting emissions and other adverse impacts on Perth's environment.
- Socially Responsible -- through the provision of reasonable levels of accessibility for all people, and through the minimisation of adverse intrusions into community lifestyles.
- Sustainable -- by reducing its motor vehicle dependence and by encouraging the use of public transport, walking and cycling as viable options for many trip-making needs.

The actions that will be required, and which have been advocated in a wide range of transport and land-use system policy documents, are numerous, but consistently include the following:

- Coordinate transport system initiatives with land-use system developments.
- Define agency responsibilities for planning, development, maintenance, management, coordination and monitoring with respect to components of the transport system.
- Establish an hierarchical network of urban centres.
- Provide attractive, high-quality transport alternatives to the car.

- Establish higher densities of landuse in significant regional and local centres and ensure that these centres are served with non-car transport alternatives.
- Introduce parking management policies which support the use of non-car modes of transport.
- Develop residential sub-divisions which promote walking and cycling and which are permeable by the public transport system.
- Provide effective levels of accessibility for people with disabilities and for those who lack access to the car as a means of transport.
- Ensure the efficient movement of freight without encouraging the adverse impacts
- Find effective alternatives to past demand-satisfaction approaches to transport system expansion by utilising existing transport capacity more intensively.
- Develop a transport system which is safe to use.

According to Ministry for Planning, 'Metropolitan Land Use Forecasting System' population projections, significant population growth in Heritage Country is anticipated for the next 30 years, at levels higher than the metropolitan average. City of Gosnells is expected to have a population of 128,000 compared to populations of 85,000 and 60,000 for City of Armadale and Shire of Serpentine-Jarrahdale respectively.

For the purpose of establishing the future transport demand, the expected population and employment growth within Heritage Country was translated into specific land-use scenarios spread over three time horizons. These being 2001, 2006 and 2029.

Future Freight Movement

The MTS predicts that freight to and from the Metropolitan Area will increase considerably as the State's economy grows.

Agricultural products, grain, fertiliser, meat and wool will all increase as production techniques and cost efficiencies are achieved. Grain movements through the region will also increase as a result of the Cooperative Bulk Handling development at Forrestfield.

Mining and forestry products in the south-west of the State are also expected to expand along with horticulture produce from the same area.

While considerable volumes of these products will be exported through the regional ports of Albany and Bunbury, there will be a substantial increase in volumes moving to Metropolitan Area users, Fremantle Port, the new Port at Kwinana and Perth Airport.

It is expected that the increase in freight movement through Heritage Country could exacerbate the existing problems by further dividing communities, increasing safety and pollution concerns and increasing congestion.

To minimise the impact of an increase in road freight movement in the Study Area, there would appear to be a need to create designated freight routes into the major ports and industrial areas of the Metropolitan Area. Of equal importance is the need to plan a major east/west route to deliver larger freight vehicles around the Metropolitan Area to

major ports and commercial destinations in an efficient manner without traversing through built up areas of Heritage Country.

Overall economic growth and new developments such as the new port at Kwinana may result in an increase in rail related travel. Privatisation of Westrail may change the industry through its competitiveness and expansion plans.

Funding

The provision of transport infrastructure is currently in a state of flux, mostly due to the lack of sufficient funding to meet community transport infrastructure needs. The recent High Court decision regarding the revenue raising capabilities of State Governments, vertical fiscal imbalance between the Commonwealth and State Governments, limited revenue raising ability of the States and the Local Governments, all contribute to a situation where not enough funds are available for the provision of public infrastructure.

Changes in the funding mechanisms, such as the collection of fuel levy by the Commonwealth, restricts the ability of the State Government to raise funds, causing it to look for other sources, such as vehicle licence fees, or other means, such as the private sector.

For Heritage Country a number of potential funding sources are available. These include:

- Traditional allocations from Commonwealth and State Governments.
- Local Government rates and taxes.
- Borrowings on the open markets.
- Internal funds from entities such as Westrail.
- Private funds and revenue raising opportunities such as BOOT and related projects.
- Tolls (including shadow tolls).
- Special funds such as Federation Fund and other grant schemes.
- Bonds, such as long term and Infrastructure bonds.

Transport Demand

Increasingly it is becoming a significant part of the transport planning process not to simply satisfy the demand for travel, but to influence this through the management of travel demand.

The movement of people has the biggest influence on the form of our transport system and results from the needs for people to move from place to place for the myriad of activities we all engage in. The demand for transport is affected by many things that help define the transport needs of a region including:

- Population/population density
- Employment/employment density
- Car Ownership
- Household size

Along with the physical/demographic characteristics of an area, the journey purposes also have a significant impact on the transport demand. The dominant travel purposes are:

- Work
- Education
- Shopping
- Recreation

Work related travel is the most dominant travel purpose and is a significant contributor to road congestion and general car based travel.

Currently the majority of the resident workforce in Heritage Country is employed within the South-East Metropolitan area. This trend is expected to continue with the increased employment opportunities expected in the Kewdale/Welshpool and Canning Vale areas along with increased employment opportunities within the Heritage Country Region itself. While this results in a relatively high demand for local trip making within the South-East Metropolitan area our transport system continues to operate as a radial system with the focus being on the Perth CBD.

Another significant focal point for travel to and from Heritage Country is to the South-West Metropolitan Region. The purpose of travel to and from the South-West is dominated by work related travel.

While the primary purpose for travel to and from the South-West is work related, Rockingham and Mandurah offer significant recreational and shopping related attractions. Fremantle is also one of the most significant recreational areas within the Perth Metropolitan region and is a major attraction for travel to and from the South-East Corridor.

With the region acting as a gateway to the Perth Metropolitan region, it will always play a pivotal role in the movement of goods. With the expected increase in the demand for movement of freight through and within the region, it is important that the transport system offers a cohesive and well defined network of freight routes to maximise the efficiency of freight movements and minimise the impacts on the communities within Heritage Country.

In order to achieve the Vision and Transport Objectives for Heritage Country, strategies need to be developed to reverse some of the factors that contribute to increased travel demand and consequently car usage, while also initiating measures that promote alternate modes of transport.

Some of these include:

- Intensification of landuses and controls on development.
- Improved integration of landuse and the transport system.
- Increased integration of all modes of transport.

- Improvements to the public transport systems.
- Improved facilities for the non-motorised transport modes.

Modal Targets

The key concern in setting targets for the region is that the transport strategy should establish an associated set of targets, noting, in particular, that there will never be a "correct" set of targets which can be applied to all urban areas. This is a situation of particular relevance to Heritage Country.

The relative mode splits for the Inner, Middle and Outer regions of the Perth Metropolitan Area were available for 1991 (as reported by Department of Transport) and are presented in Table 1.

Table 1: 1991 Mode and Population Splits

	Mode Split %		
	Inner	Middle	Outer
Walk	13.0%	10.0%	9.0%
Cycle	9.0%	6.0%	4.0%
Public Transport	13.0%	9.0%	2.0%
Other	2.0%	2.0%	2.0%
Remaining	63.0%	73.0%	83.0%
Driver	52.3%	60.6%	68.9%
Passenger	10.7%	12.4%	14.1%

In general, as discussed previously, Heritage Country is considered as an Outer Area in the context of the entire Perth Metropolitan Region. While overall this may be the case it would be expected that some areas within Heritage Country should achieve mode split levels for the non-car modes that were higher than the region targets. This is much the same as the expectations for the Perth Metropolitan Targets.

The regional Mode Split Targets for the Heritage Country Integrated Land Transport Strategy therefore were agreed through the consultation process to be the same as the outer mode splits for the MTS. These are shown graphically in Figure 2.

The mode split targets identified in the MTS for the entire Perth Metropolitan Region are shown in Figure 3. This provides a comparison of the modal split targets for the Perth Metropolitan Region in comparison to those identified for Heritage Country.

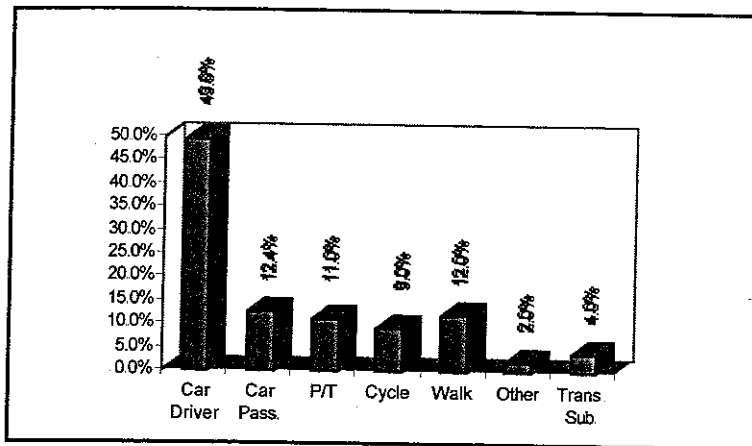


Figure 2 : Heritage Country – Mode Split Targets

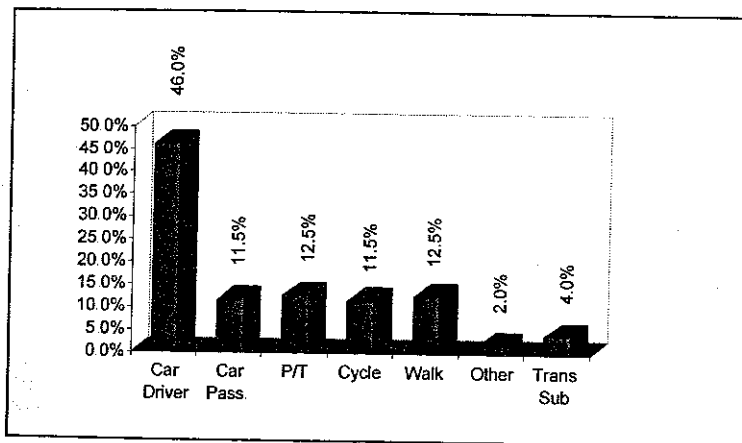


Figure 3 : MTS - Mode Split Targets

Transport Strategy Package

The transport solutions developed for Heritage Country are to address the issues and shortcomings identified within the current transport system as well as addressing the future demands. The solutions are developed as a package so that an integrated, sustainable and implementable strategy is the outcome.

This transport system must provide a safe and effective alternative to the private car while recognising that the private car will continue to be a dominant mode in urban passenger movements within the region and in Metropolitan Perth for the foreseeable future. The use of this “package” approach also recognises the important role that complementary measures, including landuse, play in the achievement of a successful transport system.

It must also be recognised that a transport strategy cannot simply be a shopping list of infrastructure improvements. There is a need for supporting measures to be in place to ensure the success of the transport system in achieving its goals.

The package strategy adopted comprises the following interrelated improvement measures:

- improved **public transport system** including improved services, coverage and accessibility for bus, rail and interchange facilities, better safety and security for persons and property.
- improved **facilities for both pedestrians and cyclists** including a more cohesive network of dedicated paths and trip end facilities to encourage these modes as a healthy alternative for shorter trips.
- improved **system integration** through the use of dedicated interchanges, improved park & ride facilities, improved cycle facilities at major public transport hubs and promotion of supportive landuse policies.
- implementation of a **range of supporting policies and demand management measures** to increase the attractiveness of the alternate modes of transport while discouraging the use of the private car.
- improved **public transport facilities for people with impaired mobility** to provide a high level of accessibility in keeping with the requirements of Disability Standards for Accessible Public Transport
- better **management of the available roadspace** including the promotion of High Occupancy Vehicle (HOV) and transit lanes where applicable, use of both on & off road cycling facilities as part of the roadspace and improved traffic capacity only where required.
- improved **hierarchy of roads** that recognise the role of the region as a gateway to the Metropolitan region for freight movements.
- effective promotion of the strategy and improvement to the **system of information dissemination** through programmes to ensure that transport system users have all information available to them in order to make an informed transport choice.

Demand Modelling

As part of the development of the Heritage Country Integrated Land Transport Strategy, a multi-modal transport model was developed using the Department of Transport Spectre 1.3 Public Transport model and the Main Roads WA TRAMS Highway model as the basis.

The development of this hybrid model was primarily undertaken to assess the success of the transport system in achieving the modal-split targets and to identify the travel patterns within, into and out of the region in the future. The walk and cycle modes were not explicitly modelled as part of this process as insufficient data is currently available and the level of complexity this would have introduced outweighed the advantages of inclusion

The modelling was undertaken for three time horizons, being short term horizon (2001), medium term horizon (2006) and long term horizon (2029).

Transport Strategy Implementation

To ensure successful implementation of the transport strategy an Action Plan was developed. The first stage of the implementation process was to define the roles and responsibilities of various stakeholders and in particular relevant local and state government authorities.

The next stage was to define a range of transport initiatives at regional, district and local levels. These initiatives were defined in consultation with key stakeholders and the community liaison group. Also a range of support policies were identified.

Roles and Responsibilities

The key agencies who need to participate in the implementation of this strategy were:

- Local Authorities of Gosnells, Armadale and Serpentine-Jarrahdale
- Transport - incorporating Transperth
- Ministry for Planning
- Main Roads WA
- Westrail

As well as the above key agencies, the private sector, including public transport service providers are important to the implementation process.

Figure 4 details a model developed to define the roles and responsibilities of these agencies. Under this model, a Transport Strategy Implementation Group (TSIG) would be established as the body with responsibility for the implementation of the Strategy.

Regional Transport Initiatives

Physical transport system improvements were identified for all three time horizons to address the regional travel demands. These included the extension of major highways such as Tonkin Highway and Roe Highway and the construction of a new major east-west link road to provide an alternative and better route for heavy vehicles through the region.

In terms of public transport, recommendations were made for new services as well as improvements to bus services to major employment destinations and interchange facilities within the region. Recommendations were also made in regard to new and improved facilities for pedestrians and cyclists within the reserves of major highways and the railway.

District Transport Initiatives

These included improvements to major links such as Albany Highway and South Western Highway. Also recommendations were made for improvements to existing bus services as well as provision of new services to provide feeder services from residential areas to transport hubs within the region. Improvements to pedestrian and cycling facilities were also recommended at district level.

Local Transport Initiatives

Although the focus of the development of the Heritage Country Integrated Land Transport Strategy has been on the regional and district level movement of people and goods, an integral part of the successful implementation of this strategy is the integration of more localised initiatives to enhance the regional and district initiatives. While no specific proposals were identified for local areas the requirements for this level of travel demand will be catered for largely by the Support Policies.

The major focus of the local initiatives were improvements to the local public transport system. The following details the recommendations outlined as part of the transport strategy at a local level.

- Investigate the viability of 'hail and ride' bus services within the larger urban cells that focus on the District Centres and provide links to the higher level transport services. These services should operate with flexible routes within urban cells, enable passengers to board at any location thus increasing convenience.
- Local Authorities should continue to investigate the viability of "handi-cab" style services that operate after hours and pick up and deliver to where passengers desire, while operating on a route that is fixed at certain locations in the public transport network. This system may be particularly useful for after hours use.
- Continue the development, improvement and safety of local cycle and pedestrian facilities, expanding on the BikeWest network.
- Investigate and remove barriers for the local movement of people with impaired mobility

Support Policies

In order to work towards achieving the Vision and Transport Objectives for Heritage Country, a wide range of policies and support measures need to be developed to complement and supplement the Action Plan.

These policies and support measures need to cover a range of areas to achieve the integrated approach adopted for this strategy. The policy areas recommended within the strategy package are the following:

- Policy A: People with Impaired Mobility
- Policy B: Freight Movement Policies
- Policy C: Parking Policies

- Policy D: School Access
- Policy E: Development Controls
- Policy F: Landuse
- Policy G: Community Education, Awareness & Attitude Program
- Policy H: Transport Strategy Promotion
- Policy I: Joint Venture Activities
- Policy J: Minimum Standard Facilities
- Policy K: Access Plans for Major Developments

In addition to the above recommended policies, a number of other support measures were also identified. These were in the areas of safety and security, amenity and information services.

The modelling exercise indicated that the objectives and modal targets will not be achieved simply by introducing new and improved infrastructure. The role of support policies and measures was established to be vital in achieving the targets. Those responsible for the implementation of the strategy should therefore put significant emphasis on these areas.

Implementation Process

Figure 5 details an implementation process model recommended for the transport strategy.

Recommendations were also made for monitoring the strategy implementation and success. The strategy re-evaluation and community feedback should feed into the overall implementation process from the outset.

Establishment of performance measures and production of monitoring reports on a yearly basis to detail progress against time and budget as well as reporting on the effectiveness of any implemented measure and community feedback, was also recommended as part of the monitoring process.

Figure 4: Heritage Country Integrated Land Transport Strategy Roles and Responsibility Model

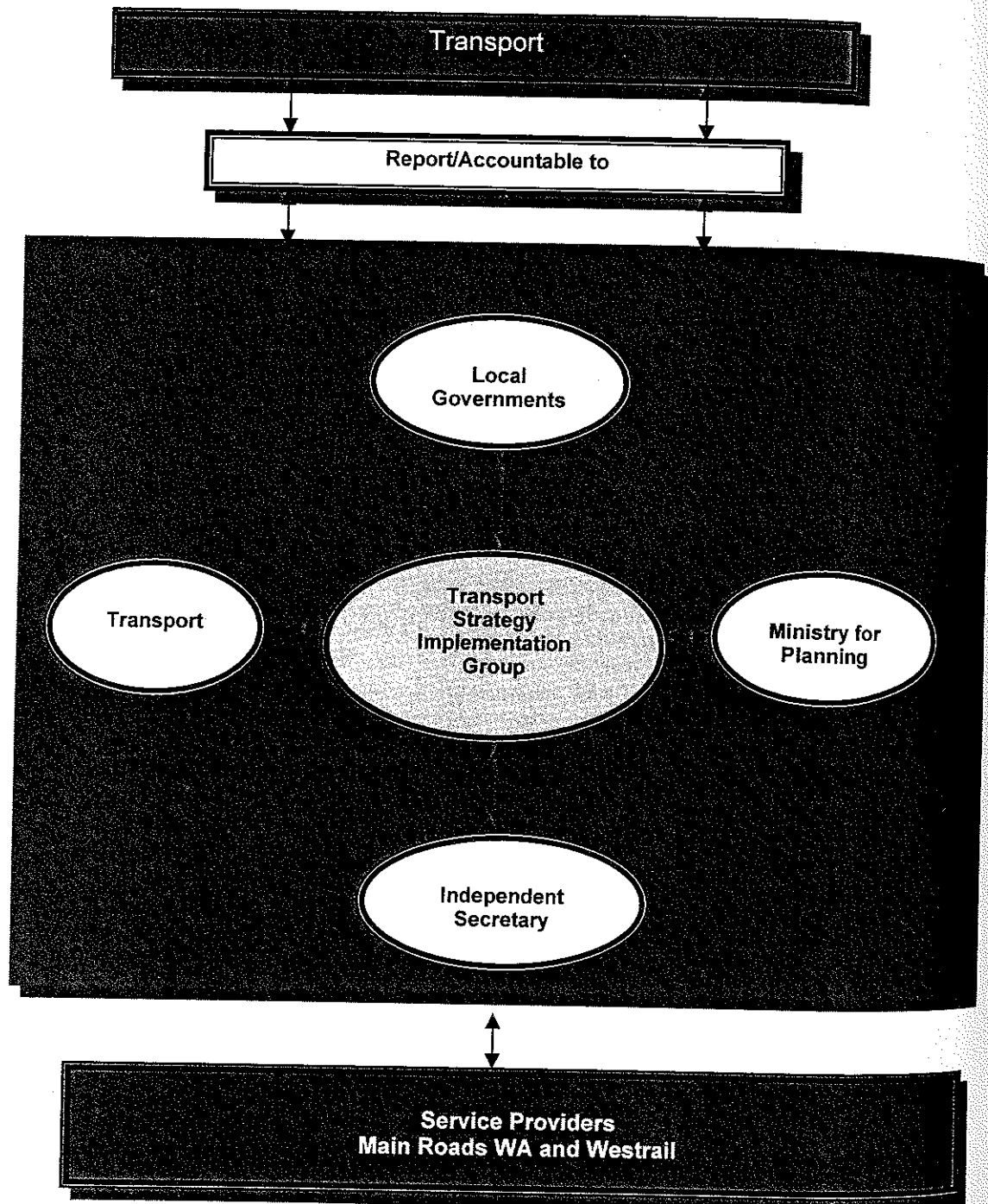


Figure 5: Implementation Process

