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AUSTRALIA - NATIONAL REPORT

STRATEGIC DIRECTION SESSION ST5
Access to mobility: a basic social service



Austroads

Strategic Theme 5: Access to Mobility: a Basic Social Service

Summary

The road network is integral to providing access to economic and social services. Accessibility and mobility issues are fundamental and related aspects of an efficient and effective road network. Access to mobility is a right that governments should guarantee to their population. This report provides selected examples that highlight Australia's response to the challenges of providing communities with effective accessibility and mobility options.

Australia is a unique continent. It is geographically large with a population of just under 20 million people and a large road network length of around 900,000 km. The population settlement patterns which include large urban cities as well as regional and remote communities means that Australia faces many challenges in providing communities with accessibility and mobility options, which are similar to those in both developed and developing countries.

Accessibility is seen as a broad concept that includes economic, social and environmental dimensions as well as the physical aspect. Accessibility encompasses access by people to communities, services, employment and recreation, as well as encompassing access by business operators to points of production and distribution. Mobility relates to the efficiency and reliability of travel and the ease with which people can move and goods can be delivered via the transport system.

The key challenges within urban and metropolitan areas relate to people with limited access to transport choices and the need to provide equity of access. The report highlights action plans associated with the Disability Discrimination Act 1992, which came into effect in Australia in March 1993. As an example, to achieve the requirements of the Act, the State of Victoria has commenced a twenty-year program of transport infrastructure upgrading. The program covers all forms of transport facilities and includes a range of innovative technologies such as wheelchair detection devices linked to traffic signals, pedestrian crossings with infrared sensors to automatically extend walk times, audio tactile devices at pedestrian crossings, tactile ground surface indicators. Other innovations include the provision of low floor buses and trams, and ramped tram stops.

In regional and remote areas there is a need to ensure roads contribute to local and regional economic development opportunities and provide an appropriate level of access to goods and services, employment opportunities and leisure activities. The report includes selected examples including the Lockhart River example, which illustrates a modal integration solution used to enhance community connectivity to the outside world. A further example presented is a road upgrade in Boigu Island, which made a significant contribution to enhancing the quality of life for Boigu Island residents. The Boigu Island road transport project dramatically improved accessibility for local residents and in addition provided public health benefits.

Strategic Theme 5: Access to Mobility: a Basic Social Service

Introduction

This national report has been prepared as an input to the Strategic Direction Sessions to be held at the XXIIInd World Road Congress in Durban in 2003. This national report provides details relating to priorities, challenges and responses relevant to the Strategic Theme 5 (ST5).

ST5 seeks to explore the role of the road network in providing access to economic and social services. The theme emphasises that access to mobility is a right that governments should guarantee to their population.

This national report examines these key issues and the particular challenges they present in the Australian context. The report uses two sets of examples, the first relating to urban or metropolitan areas, and the second to regional or rural areas, to highlight ways in which Australia has responded to the issues within ST5. The examples provided are illustrative only and are not intended to be comprehensive summary of approaches in each state.

Australian Context

The system of government in Australia includes Commonwealth (or Federal), State and Local levels. Australia is a geographically large continent with many climate zones. For example, the State of Queensland is larger than the whole of Great Britain with a road network of some 177,000 km in length that traverses tropical wet areas in the north, arid areas in the west, as well as sub-tropical and temperate zones. The population settlement patterns are characterised by large urban cities as well as regional and remote communities which are separated by large distances as shown in Figure 1. This means that the challenges which Australia faces, such as meeting the needs of regional economies and remote communities, are similar to those in both developed and developing countries.

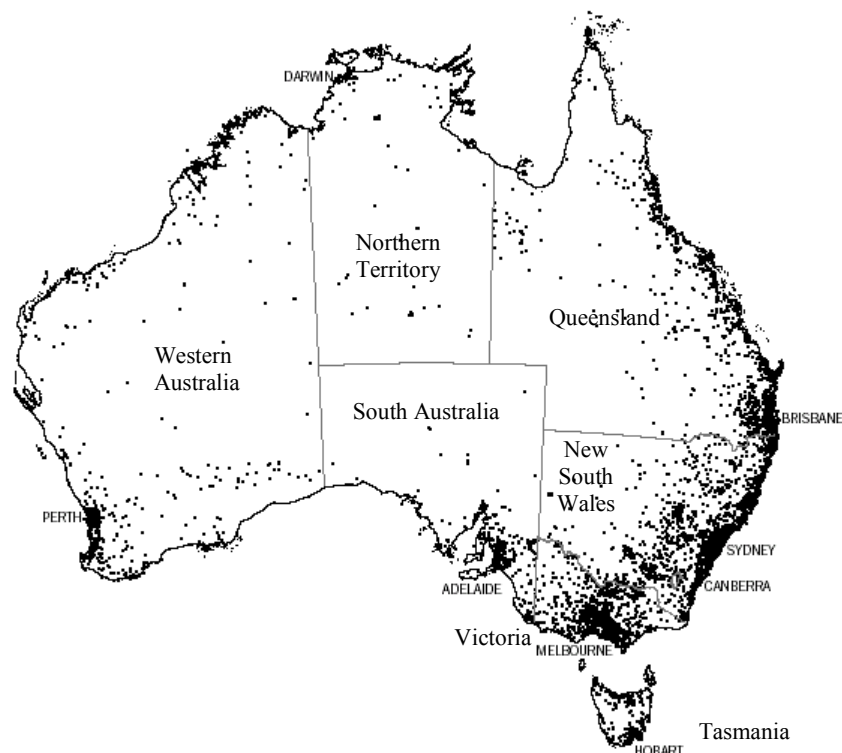


Figure 1. Current population distribution in Australia (source www.abs.gov.au)

The Australian Road System

In 2001 Australia had a population of 19.6 million with a total road network length of around 900,000 km. Just under half of the total road network is sealed. The road length per 1000 population (46km / 1000 population) is almost twice that of the United States and four times that of Japan. Conversely, the number of people per kilometre of road (22) is significantly lower than other countries such as Canada (33), the United States (42), Japan (110) and the United Kingdom (154).

The reason for this is apparent from Figure 1, which shows areas of dense development (along the South and Eastern seaboard) and pockets of development (in other capital city areas such as Adelaide and Perth) with vast, sparsely populated areas between them. The average population density of Australia is 2.5 persons per square kilometre, compared to 3 persons per km² for Canada and 29 persons per km² for the United States.

The Australian vehicle fleet as at July 1999 consisted of around 9.5 million passenger vehicles representing a car ownership rate of just over one car for every two persons in Australia. This is similar to the vehicle ownership rates in the USA (2.04) and Canada (2.3).

The average distance traveled by each car is around 14,000 kilometres per annum. The road freight intensity (expressed in tonne-km per dollar of Gross National Product) is around 0.35 in Australia compared to 0.2 for USA and 0.15 for Canada.¹

Each of the three levels of government plays a role in the management and operation of the Australian Road network. The Commonwealth government is responsible for the network of national highways, and in 1997/98, budgeted over AUD\$1.6 billion for road related expenditure. Of this, 50 percent was spent on the national highway network, 24 percent on the arterial network (primarily managed by the states and territories) and 23 percent on local roads (managed by local authorities). In addition, the state government and local government roads budget was around AUD\$3.4 billion and AUD\$2 billion respectively.

Challenges

The key challenges within urban and metropolitan areas relate to people with limited access to transport choices. These people are disadvantaged. There is also a clear need to ensure that people with disabilities have equity of access. Disability refers to the limitations experienced by people as a result of a physical, intellectual, sensory or mental impairment.

Reduced mobility options, particularly for people within regional and rural areas, means that access to essential services, social services and to economic opportunities may be limited. This is a particularly important issue in remote communities where economic viability is dependent on road transport.

Equity, in the context of Ecologically Sustainable Development (ESD), is concerned with the provision of equitable and accessible transport, participation in the planning and implementation phases of transport plans, level of service offered, and the cost of travel. Equity is therefore concerned with social, economic and environmental matters.

A key challenge is to improve access for non-motorised transport and people with disabilities. Around 18 percent of the Australian population are estimated to have one or more disabilities with around 73 percent of these experiencing mobility limitations. The group of people with disabilities includes elderly people, people with physical, intellectual or sensory disabilities, as well as mobility handicaps.

While there is a need for accessible transport for people with disabilities, improving the quality of the transport services for all people is also required. People without access to motorised vehicles (by choice or otherwise) are an important group in the community. As the population ages, with the proportion of the population older than 65 years almost doubling, from 12 percent to 23 percent by 2038ⁱⁱ, there will be increasing demand for accessible transport services in the future. This means that transport planning today must consider the needs of future generations. Failure to do so may result in more costly retro-fitting and other modifications of the future transport infrastructure.

Understanding of Accessibility and Mobility

There are different interpretations of accessibility and mobility. In the context of this paper, accessibility is seen as a broad concept that includes economic (eg. affordability), social (eg. equity of access) and environmental (eg. livability) dimensions as well as the physical aspect.

The terms ‘accessibility’ and ‘mobility’ are often confused and are sometimes used as synonyms. The Perth Metropolitan Transport Strategyⁱⁱⁱ, for example, defines accessibility as the ease of obtaining goods or the benefits of an activity (such as work, recreation, education, shopping, medical services etc). Accessibility can be achieved through mobility, proximity or the use of electronic communications. Good mobility can contribute to accessibility by enabling a person to move from one place to another, or to have goods or services delivered.

Proximity, however, is a measure of how close desired goods or services are. Good proximity can contribute to accessibility by enabling people to gain the benefits of nearby facilities. On the other hand, electronic communications, including telephones, faxes and computer links contribute to accessibility by enabling people to make direct contact with the providers of goods and services without actually moving.

Because the demand for transport is largely a ‘derived demand’ it is more appropriate to focus on accessibility as a priority rather than mobility. Accessibility refers to the ability to reach desired goods, services and activities (such as food and clothing, emergency services, medical care, education and employment, social and recreational activities, commercial freight delivery). Accessibility may be measured in terms of the time, distance, convenience, choice, or cost involved to reach desired goods, services and activities. Equity of access refers to the quality of an opportunity to engage in economic and social activities, which may be limited by a range of factors including physical, economic or social barriers.

Within Australia, the Austroads Strategic Plan 2001-2004^{iv} identifies priorities in five outcome areas including: road safety; transport system integration; national and regional development; equity, accessibility and mobility in transport; and sustainability.

“Accessibility and mobility issues are fundamental and related aspects of an efficient and effective road network. Accessibility encompasses access by people to communities, services, employment and recreation, as well as encompassing access by business operators to points of production and distribution. Mobility relates to the efficiency and reliability of travel and the ease with which people can move and goods can be delivered via the transport system. In respect of both accessibility and mobility, equity issues relating to people with disabilities, disadvantaged groups, children and older road users are rightly receiving increased attention with the provision of facilities and amenities appropriate to their needs. However, equity of accessibility for communities is also an important goal. Some forms of transport, such as freight delivery in urban areas, are essential, yet can face difficulties in respect of accessibility, safety and amenity. Congestion, particularly in urban areas, continues to challenge traffic managers to develop innovative solutions. Changing travel patterns, effective travel demand management and freight logistics, new technologies and tools are having a positive impact in addressing such issues” (Austroads Strategic Plan, 2001-2004).

Responses

Urban and Metropolitan Areas

Example. Disability Discrimination Act 1992 (DDA)

The Disability Discrimination Act 1992 (DDA) came into effect in Australia in March 1993. It aims to eliminate discrimination against persons on the grounds of disability in the areas of access to premises, facilities and services. The DDA encourages each service provider to prepare and implement an action plan, which includes provisions relating to policies, programs, reviews of practices, goals and targets, as a defense against complaints of discrimination. The DDA also provides for the development of mandatory standards, but to-date the only specific transport standards are those for accessible public transport.

In Victoria, the implementation of the DDA is described in *21st Century Accessibility: An action plan for accessible public transport in Victoria* (1998). This Action Plan acknowledges the responsibility of the government to ensure all the community has access to transport services as a key aspect of a cohesive society.

As an example to achieve the requirements of the Act, the State of Victoria has commenced a twenty year program of transport infrastructure upgrading. The program covers all forms of transport facilities and includes the provision of low floor buses and the introduction of low floor trams and ramped tram stops. As part of the program, areas that pose problems to people with disabilities, including traffic signals, pedestrian crossings and footpaths, are being addressed using innovative technology. All new works are to meet the required new standards, whilst the program also includes retrofitting works. Some of the new innovations include:

- Wheelchair detection devices linked to traffic signals. Sensor loops are installed in footpaths at selected signalised sites for wheelchair crossings. This technology can detect the presence of a wheelchair at the signal and extend the walk time accordingly to meet the wheelchair mobility needs.
- “Puffin” pedestrian crossings with extended walk time. Infrared sensors automatically adjust the green walk signal of the crossing to suit the time needed by a pedestrian negotiating the crossing. This improves traffic flow, by only stopping vehicles whilst the crossing is occupied, and improves safety for less mobile pedestrian by extending the crossing time.
- Audio tactile devices at pedestrian crossings. Victoria has made extensive use of audio tactile devices to assist pedestrians with vision impairment at signalised crossings. Distinctive audible sounds accompany the ‘walk’ and ‘don’t walk’ phases.
- Tactile ground surface indicators at selected intersections and crossings. Australian Standard AS 1428.4 deals with ground surface indicators for the orientation of people with vision impairment. All new pram crossings at intersections and other pedestrian crossings must comply with the new Standard with the application of directional and warning tactile tiles. Retrofitting of existing sites will also be part of the program. Figure 2 illustrates examples of tactile ground surface indicators implemented at intersections and at tram stops.



Figure 2. Tactile ground surface indicators

In Western Australia, accessibility issues are addressed through the *Action Plan for Accessible Public Transport for People with Disabilities in Perth*^v which was developed in 1995 in response to the Commonwealth Disabilities Discrimination Act 1992 (DDA).

In Queensland, a range of initiatives have been implemented including an accessible bus program (designed to improve quality of life for people with reduced mobility in providing better public transport options), accessible trains (wheelchair access), accessible taxis (7 percent of QLD taxis with wheelchair access), accessible ferries and accessible bus shelters.

Example. Perth Access Plan

The implementation of the Perth Access Plan has capitalised on the Graham Farmer Freeway (an underground east-west route through the north end of the city) which was completed in 2000. The 'Access Plan' is expected to effectively reduce the volume of through traffic within the Perth CBD, with vehicles travelling to and from the city centre able to reach their destinations quickly and efficiently. Other components of the plan include:

- the creation of a high quality, safe environment for pedestrians and cyclists and improve equity for these transport users through the city centre;
- more accessible, convenient and efficient public transport;
- improved accessibility for transport users with disabilities; and
- an improved commercial environment for shoppers and businesses.

Figure 3 shows the key features of the 'Access Plan'.



Figure 3. Key Features of the 'Access Plan' (Source: Department of Transport WA, 1997)

Key elements of the plan also include Non-Motorised accessibility, Public Transport accessibility and equity for disabled transport users.

The 'Streets for People' objectives are intended to improve equity for pedestrians in the City Centre and promote safe and convenient movement for non-motorised transport users and a more accessible Swan River foreshore recreational area. Key intersections within the Central Area 'Pedestrian Priority Zone' have been modified to minimise waiting times and reduce crossing distances for pedestrians. A 40 km/h speed limit applies in this area and physical improvements such as wider footpaths and attractive street furniture have been incorporated into the streetscape.

A primary objective of the plan is to improve public transport accessibility to the Central Area with a key feature being the designation of bus lanes. To improve air quality and passenger amenity, low emission, low floor, air conditioned vehicles have been introduced. Bus stop and taxi rank locations have been upgraded throughout the city centre a passenger transfer facility has been constructed to allow for ease of transfer between routes without having to enter the City. A new cycleway along the railway line through the Central Station to provide east-west movement across the city has been provided that has improved safety for on-street cyclists.

Key features of the 'Access' Plan for disabled transport users include the following:

- Equitable changes to Perth's traffic control system which allow for all users to access the city and its car parks;

- A substantially upgraded public transport system including taxis which will improve access to the city for commuters and shoppers;
- Introduction of low floor, low emission, air conditioned buses to improve access for disabled transport users; and
- Wider footpaths and modified intersection layout and control to accommodate all non-motorised transport users.

Figure 4 shows recent technology improvements for disabled public transport users.



Figure 4. Public transport for people with disabilities
(Source: *Perth - Access to the City for People*, Department of Transport WA, 1997)^{vi}

Regional and Remote Areas

Example. Improving access to and within remote communities

Queensland is a geographically vast state, as shown in Figure 5, covering 1.7 million sq. km, or 22.5 per cent of the Australian continent, and a number of climatic realms from arid to wet tropical. Eighty per cent of the state's population is urbanised, living within 50 kilometres of the coast - with over two-thirds of the state's population living in 1 per cent of the land area in south-east Queensland. The remaining 20 per cent of the state's population live in sparsely settled rural and remote areas where many of the state's agricultural and extractive industries support the state's economic prosperity.

Delivering services to remote communities involves the provision of telecommunications infrastructure and the use of higher productivity freight vehicles such as B-doubles, B-triples and Road Trains. In these areas roads have made and continue to make a vital contribution to the state (Figure 5).



Figure 5. Road Train

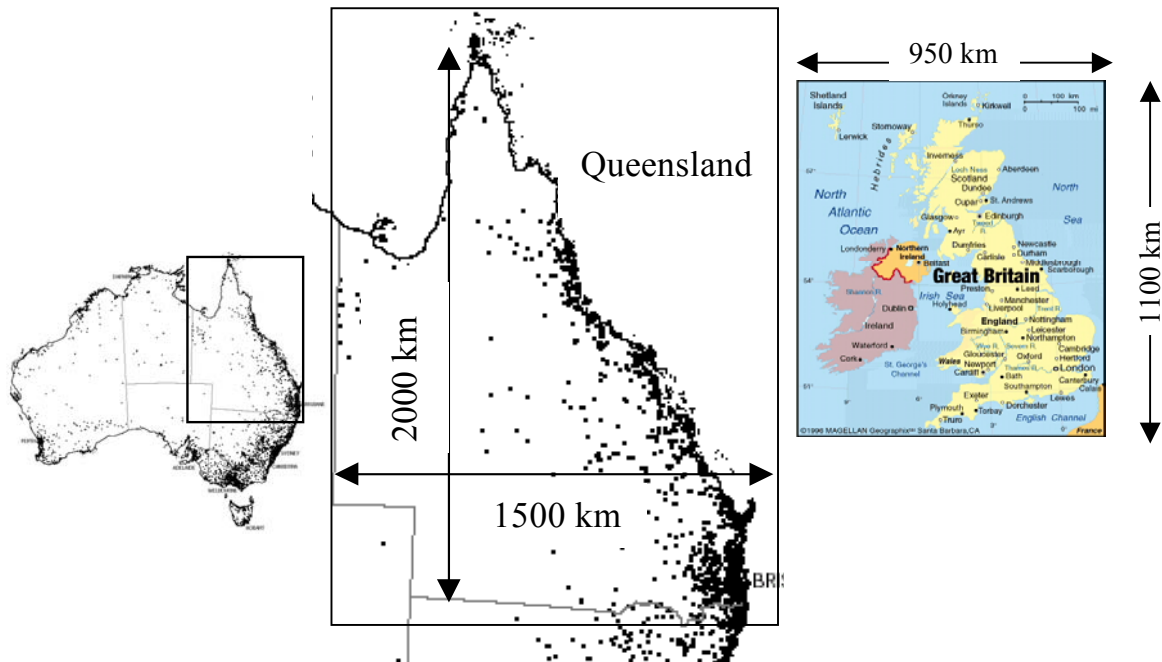


Figure 5. Map of Queensland, indicating population density.

The immensity of Queensland not only creates a problem from a management perspective due to vast distances and the need for decentralization, but also from the perspective of having to understand the importance of various aspects of transportation systems to those communities which are so remote that access to mobility is likely to be a life-line in a very literal sense.

Fair access and mobility for remote communities is a key concern. The Department of Main Roads Queensland (DMR Qld) aims to:

- ensure roads provide an appropriate level of access to goods and services, employment opportunities, leisure activities, friends and family, irrespective of geographic location and giving due consideration to climatic conditions, and level and type of use; and
- ensure roads contribute to local, regional, state and national economic development and support industry competitiveness and growth contribute to the livability of Queensland communities, irrespective of their geographic location.

The Peninsula District of the DMR Qld, based in Cairns, covers an area of more than 265,000 square kilometres. Main Roads provides funding through its Transport Infrastructure Development Scheme (TIDS) to upgrade road infrastructure in these remote communities. The program is in the order of \$10 million per annum and is targeted at improving access into and around remote communities.

As the communities are a long way from an established all weather road network, a key thrust of the program is to provide adequate all-weather linkages between the communities and alternative transport modes to ensure year round access to essential services.

Cape York Peninsula and the Torres Straits Islands represent its most remote and therefore challenging region. Figure 6 shows the location of Boigu Island, which is a community comprising approximately 200 people and Lockhart, further south, having a population of about 700. A recent town street upgrade project (costing AUD\$1.3M) has been undertaken in Boigu while a project leading to improved access to the airport (costing AUD\$2.5M) has been undertaken for the Lockhart community.

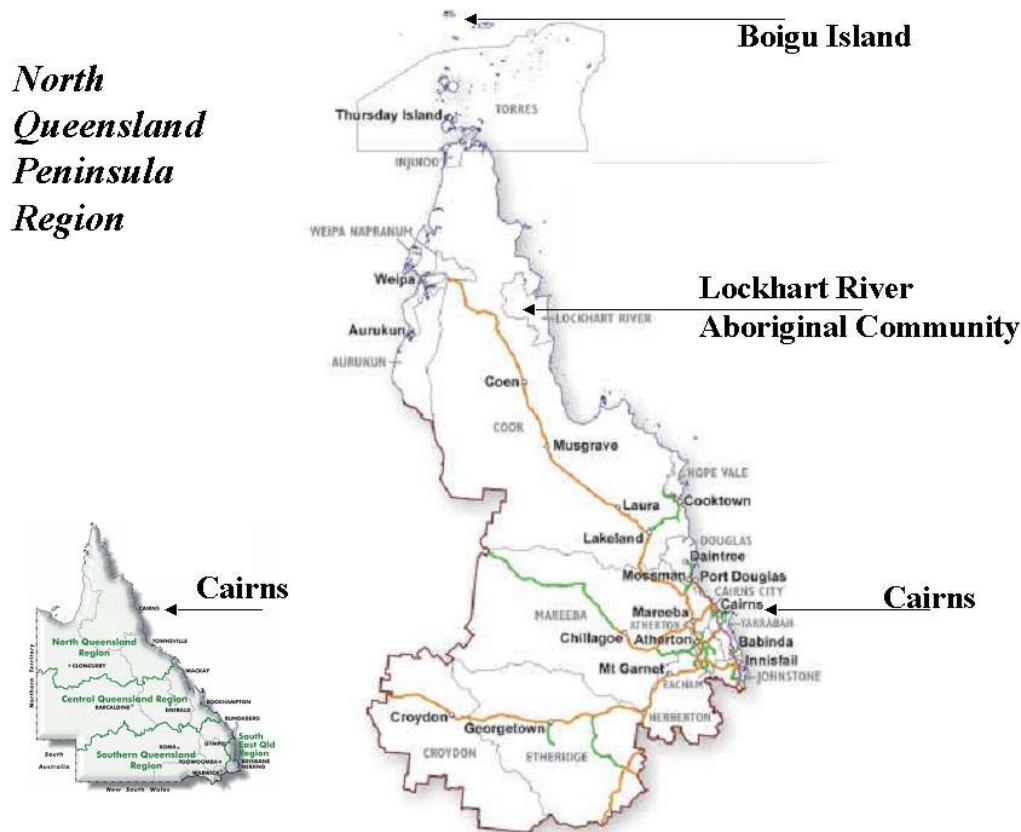


Figure 6. Remote communities in far north Queensland

Community capacity building can take the form of training programs in road maintenance and construction activities in far north Queensland. Indigenous communities in remote Queensland (Cape York and in the Torres Strait) are trained on a project-by-project basis. The training skills acquired increase local communities' self sufficiency in maintaining road infrastructure and improves resident's employment prospects.

Example. Road upgrade in township of Boigu Island

Boigu Island is Australia's northern most territory and is within sight of the mainland of New Guinea. The island consists of mud and sits not far above sea level rendering a quagmire during the wet season. This is not only a problem from the point of view of access but is also a public health issue due to ponding water. Life threatening diseases such as Japanese Encephalitis can prevail under these conditions. In the dry season the road becomes dusty and under these conditions respiratory problems prevail.

In response to these difficulties the DMR Qld developed an innovative new road design catering for three key issues :

- Lack of traditional road building materials.
- Remoteness of the site.
- Drainage difficulties associated with the flatness of the terrain.

Rather than the traditional crowned road, this road was built as a mirror image with an invert at the centre. Sitting just on natural surface, the road then became the primary drainage system for the island. The pavement was constructed using glass fibre reinforced concrete which will be durable under the high water table conditions. All construction materials had to be barged to the island.

This AUD\$ 1.3 million road project emphasises the importance of road transport in providing access to employment opportunities for remote communities and enhancing the quality of life for Boigu Island residents. One of the consequences that was not contemplated in the design manual was that the road gave the children of the island their first chance to use rollerblades. See Figure 7.



Figure 7.

Pre-project unsealed road, Road following construction and sealing, Official opening of the road

Example. Lockhart River – Enhanced Access Through Modal Integration

The Lockhart River Aboriginal Community is situated on the East Coast of Cape York, north of Cairns. With a population in the region of less than 20 000, modal integration would probably not be considered a problem in such a community, using traditional paradigms.

However, the population centre of the community is situated 2 kilometres inland from its barge ramp and its airstrip is located a further 4.2 kilometres inland. During the wet season road freight access in from the arterial network is not possible and the community can be isolated for as long as 5 months. The community therefore relies on barge and air services to move freight, people and services into and out of the community for extended periods each year. It was therefore essential to have at least good road access between the community centre and the two intermodal facilities.

The existing road was typical of roads in this remote area, being rough, dusty and corrugated in the dry season, and slippery with bogholes and often impassable in the wet season as shown in Figure 8.



Figure 8. Unconstructed road: wet season and dry season; road following construction

In 2001 the DMR Qld carried out two projects to connect these facilities with the community centre:

- Road to barge ramp - AUD\$1.2 million for 2 kilometres
- Road to airstrip - AUD\$2.3 million for 4.2 kilometres

These projects were built using conventional paving and bitumen seal techniques, as indicated in Figure 8. They are performing well and have enhanced mobility within the community and connectivity to the outside world.

Technically, these roads are performing well. Measuring their effectiveness is more difficult, simply because traditional success factors (such as saved travel time, reduced operating costs) are probably not appropriate in remote communities. Additional factors that may be considered could include:

- Number of times roads are used for “mercy missions” during the wet season (critical evacuations, import of critical medical supplies)
- Monthly tonnage of freight, wet season versus dry season
- No-go days per wet season compared to previous times.

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- i Austroads (1997). *Roads in the Community*, Sydney
- ii Peter McDonald & Rebecca Kippen. *Population Futures for Australia: the Policy Alternatives*. Research Paper 5 1999-2000. Parliament of Australia. <http://www.aph.gov.au/library/pubs/rp/1999-2000/2000rp05.htm>
- iii See *Metropolitan Transport Strategy*. Department of Transport: Perth, Western Australia, 1995. <http://www.dpi.wa.gov.au/metro/policies/pdfs/mts.pdf>
- iv See http://www.austroads.com.au/austroads/Others/Strategic_Plan.pdf
- v An evaluation of this Action Plan is available at <http://www.dpi.wa.gov.au/metro/issues/users/disability.html>
- vi Department of Transport WA (1997) *Perth- Access to the City for People*