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**CONSULTATION DRAFT**

**NORTHERN TERRITORY GOVERNMENT**

# **ROADS AND BRIDGES STRATEGY**

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Appendix A – Investment Plan

## FOREWORD

A reliable and efficient road network is critical to the Northern Territory. It enables economic and social development and allows communities to connect to jobs and services. In many cases, roads are the only transport option for freight movement as well as access for remote and isolated communities.

The Territory has significant natural advantages relating to agriculture, mineral and energy resources and tourism. It also has geographic advantages from its proximity to the fast-growing Asian markets. As a gateway to Asia, the Northern Territory can be Australia's access to the world's biggest regional economy. There are major prospects for the Territory to be a key supplier of quality goods and services to the region. Driving growth in premium produce, expanding the tourist economy and building an energy export industry are areas of major focus. To unlock these opportunities and achieve a prosperous economy and strong society, critical public infrastructure is required. An efficient road network with adequate capacity, designed to current engineering standards and providing a high level of flood immunity is therefore a critical enabler for growth in the Northern Territory. The Territory's road network requires targeted upgrading to improve accessibility, reduce the cost of doing business and promote economic and social development.

However, the Territory road network is vast, with the vast majority of the roads being unsealed. The condition of many roads means starting from a very low infrastructure base when planning upgrades or improvement works. Additional unique challenges come from the Territory's dispersed population, vast distances and climatic influences from the tropics in the north and the arid central deserts in the south. For regional areas, the need to transport road construction materials long distances coupled with difficulties in accessing materials due to land tenure and environmental constraints also contribute to the cost and complexity of managing the road network.

Investment therefore needs to be targeted to areas that will deliver best outcomes for the Territory, to capitalise on economic opportunities and contribute to a more connected society. This requires evidence-based investment, including through consultation with industry and the community. This Roads and Bridges Strategy outlines the future prioritised development of the road network in the face of rising opportunities and challenges.

## VISION

To unlock the Territory's economic and social potential by through well planned and managed roads and bridges.

## PURPOSE

This strategy provides the plan for the future development and maintenance of the Northern Territory Government's road and bridges network. Strategic development of the road network will support ongoing investment into the economies of the resources, agriculture and tourism sectors. It will also provide longer term certainty for developments, industry and communities through an articulated plan of investments to improve access arrangements.

The longer term outcomes of the strategy are therefore to ensure a safe and efficient network that adapts to traffic growth and change, as well as a road investment plan that responds to the priority needs of the Northern Territory. This is while maintaining an appropriate level of service for all road users.

## POLICY CONTEXT

This Roads and Bridges Strategy is a component of the Northern Territory Government's [Integrated Transport Planning and Investment Roadmap](#) which sets the vision and investment framework for the Territory's future transport, freight and logistics requirements.

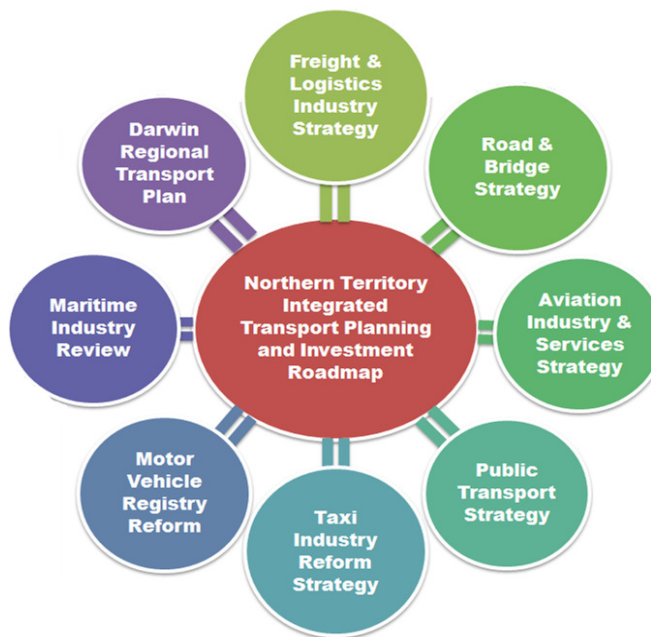


Figure 1 Northern Territory Integrated Transport Planning and Investment Roadmap

The Northern Territory Government's [Framing the Future](#) policy provides the blueprint for achieving a Prosperous Economy, Balanced Environment, Strong Society and Confident Culture and sets the framework for the Roads and Bridges Strategy for the Northern Territory.

Other policy drivers include the [Developing the North](#) agenda, [Our North, Our Future: White Paper on Developing Northern Australia](#), [Tourism Vision 2020](#), [Economic Development Strategy](#), [Asian Engagement Trade and Investment Strategy](#).



## OUR HISTORY

The Northern Territory occupies approximately one-sixth of Australia's landmass, and with only one per cent of the nation's population it has the country's lowest population density. The population is concentrated in a small number of cities and major towns, and a wide distribution of small communities and outstations. Vast distances separate the Northern Territory's major centres from each other and from other interstate cities.

Across the breadth of the northern, central and southern regions of the Territory, there are significantly different landscape and climatic conditions. The Top End experiences a tropical climate, including the Wet season characterised by increased humidity followed by monsoonal rains and storms. In contrast, the central and southern regions are relatively dry for most of the year and with a semi-arid climate there are large variations in temperature from season to season.

With the land sparsely populated, it presents significant opportunities for investment and industry, particularly in the resources, energy and agriculture sectors. Mining, construction and government services are currently major contributors to the economy. However there has been recent strong export growth, particularly in mineral ores and liquefied natural gas. Over the past ten years, per capita income in the Northern Territory has consistently been higher than Australia as a whole and has achieved a growth rate of double the national average. The associated construction activity and subsequent export to international markets has increased the demands on the road network, particularly for heavy vehicle movements.

For the road network, investment is required to sustain and grow economic growth and social development. However, the population of 235,000 people represents a small tax base considering the range of activities and infrastructure necessary to service one-sixth of Australia's land mass. In addition to a capital outlay for construction, a growing road network incurs annual ongoing maintenance and repair costs, which increase with the age and standard of the road network. Therefore investment must be targeted to include projects, upgrades and renewals that will deliver best outcomes for the Territory.

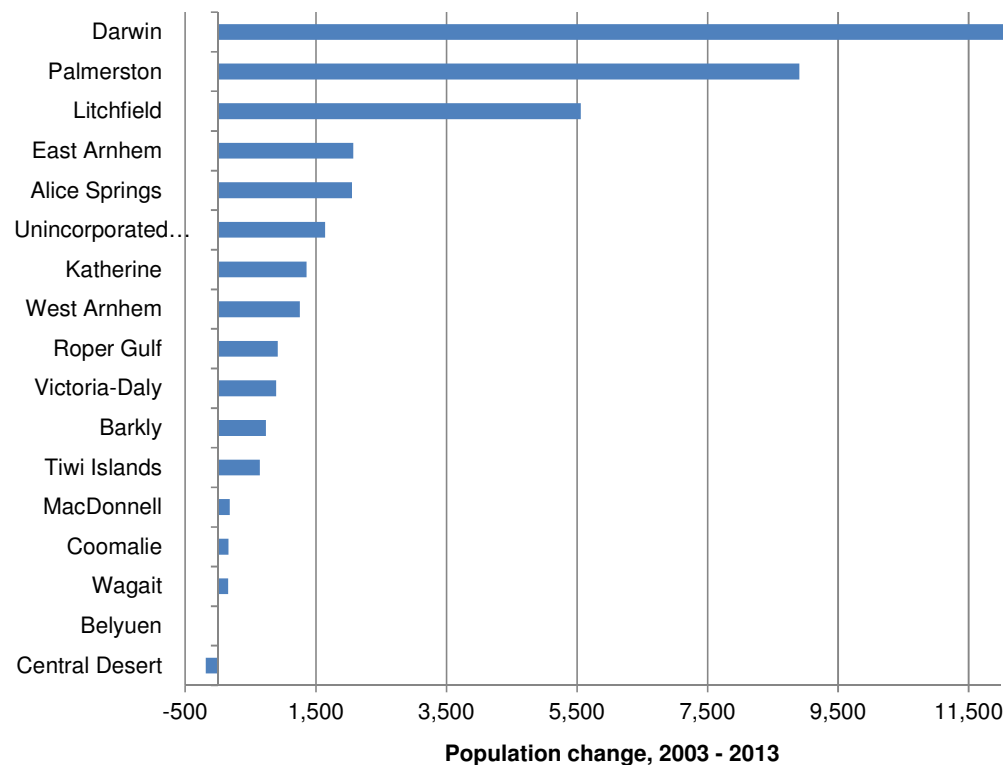
The Territory road network has vastly expanded from a time when the Stuart Highway lived up to its name as "the track". Up until the Second World War, the Territory had less than 500 kilometres of formed road. The outbreak of war and concentration of defence forces in the north prompted the sealing of the Stuart Highway to link Darwin to the railhead in Alice Springs. It also spurred the construction of the Barkly Highway to connect with the east coast.

From the 1960s, a concerted program to improve roads to pastoral holdings was put in place to deliver supply chain efficiencies for the cattle industry. The Victoria Highway was completed as part of this Beef Roads program. Over time and in response to population growth and industry development, the Arnhem Highway was upgraded and sealed, the Stuart and Barkly Highways were upgraded to two lanes and the Stuart Highway was sealed to the South Australian border. Through the 1980s, the Lasseter and Kakadu Highways were also developed as part of the ongoing network expansion and improved access to tourist sites after

achieving self-government.

During the 1990s, stronger economic and population growth associated with the defence relocation program coincided with the Victoria Highway being widened to two lanes and sealed, the Litchfield Park and Luritja Roads being constructed and progressive sealing of Larapinta and Namatjira Drives and the Tanami and Cox Peninsula Roads.

Since the mid-2000s, mining and construction activity in the Territory has driven the need for infrastructure investment. Upgrades across the national and arterial road network have included capacity enhancements and improved flood immunity for year round access as well as bridge strengthening for higher mass vehicles. However a clear focus for road investment over the same period has been the need to respond to population growth in urban areas. About 70% of population growth in the past 10 years in the Territory has taken place in Darwin, Palmerston and Litchfield, which has driven road investment in the greater urban area of Darwin.



Source: Australian Bureau of Statistics, *Australian Demographic Statistics*, Jun 2013, Cat. No. 3101.0, Canberra

**Figure 2** Population change by local government area, 2003 to 2013

### **Darwin road network development**

The form of the Darwin road network has largely evolved historically in response to the geographic structure of early Darwin, and the later constraint of the Darwin Airport.

Early inner residential areas established at Larrakeyah, Stuart Park, Parap / Fannie Bay and commercial developments at Woolner and Winnellie / Berrimah were supported by the Stuart Highway. Subsequent development and growth of the northern suburbs were linked by arterials of Bagot Road, Dick Ward Drive, Vanderlin Drive and McMillans Road.

With strong population growth in the 1980s, Palmerston was established as a satellite of Darwin approximately 19 kilometres to the east. Tiger Brennan Drive was constructed as a single carriageway from the late 1980s to support growing residential traffic demand.

The East Arm Wharf opened as the new deep water port in 2000. Associated industrial development as well as additional residential expansion between Darwin and Palmerston over the past decade has led to network expansion and capacity improvements, including Wishart Road, Berrimah Road, Tiger Brennan Drive and the extension to the Stuart Highway.

The progressive development of the existing road network has sought to provide a good standard of connectivity between these respective areas, with a high level of service for peak commuter movements and for freight traffic.



## INVESTING IN THE FUTURE

The Department of Transport Infrastructure Program for the Territory and National road networks is a considerable investment each year. Affordability is often an issue with transport infrastructure in the Northern Territory due to the vast road network, low traffic volumes and climatic conditions. As such, evidence based investment planning is essential to be able to prioritise projects.

Planning for the future of our road network, and consequently investment in our assets, is becoming increasingly more complex as new strategic drivers come into play. Consideration is also given to a number of Northern Territory and national policies, directions, strategies and plans. The project investment assessment principles play a significant role when deciding to fund one project over another. The key principles driving the development of the future road network are outlined as follows.

1. **Economic development**  
A road network that supports job creation, economic development and growth
2. **Equitable access**  
A road network that connects communities and promotes inclusion and social development
3. **Integrated planning**  
A road network that is planned to respond to current and future land use, the integration with transport hubs and activity centres and the provision of multi-modal transport choice
4. **Asset management**  
A road network that is operated and maintained in a manner that is affordable for government and ensures value for money to the community
5. **Road safety**  
A road network that is safe for all road users through the management of the road and roadside as part of an overall safe systems approach

These principles are used for developing, assessing and prioritising infrastructure programs and form the basis of the Roads and Bridges Strategy and the Investment Plan provided in Annexure A.

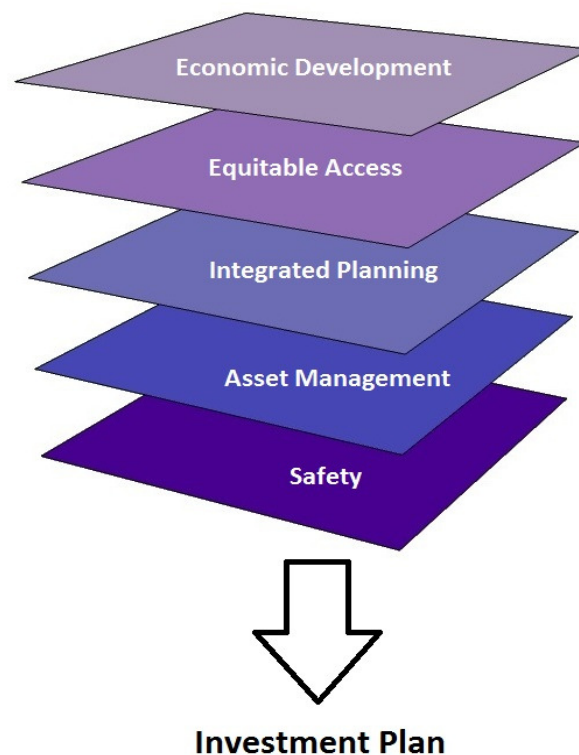


Figure 3 Principles that inform road and bridge investment planning



## STRATEGIC OBJECTIVES

OBJECTIVES	PRIORITY ACTIONS
<b>1. Unlock Economic Potential</b>	<p>1.1 Develop and maintain a road network that supports job creation, economic development and growth</p> <p>1.2 Engage with private industry and representative stakeholder groups to prioritise and target investment in transport infrastructure</p>
<b>2. Provide Equitable Access</b>	<p>2.1 Develop and maintain a road network that connects communities and promotes inclusion and social development</p> <p>2.2 Target stream crossing upgrades to provide better all-weather access as a priority</p>
<b>3. Integration of Planning</b>	<p>3.1 Use integrated planning that responds to current and future land use</p> <p>3.2 Use integrated transport planning that provides multi-modal choice</p> <p>3.3 Use integrated planning that connects transport hubs and activity centres</p> <p>3.4 Protect future corridors</p>
<b>4. Improved Asset Management</b>	<p>4.1 Provide a road network that is operated and maintained in a manner that is affordable for Government and ensure value for money to the community</p>
<b>5. Improved Road Safety</b>	<p>5.1 Provide a road network that is safe for all road users through the management of the road and roadside as part of an overall safe systems approach</p> <p>5.2 Adopt a Safe Systems Approach</p>



## STRATEGIC OBJECTIVE 1

## UNLOCK ECONOMIC POTENTIAL

The Northern Territory has some natural advantages relating to energy resources, minerals, agriculture and tourism. It also has geographic advantages from its proximity to the fast-growing Asian markets, presenting opportunities for the Territory to be a gateway between Australia and Asia as a supplier of quality goods and services. Our road network is critical to the Territory's economic development. It enables freight to be moved, services to be delivered and people to access business, employment and tourism opportunities.

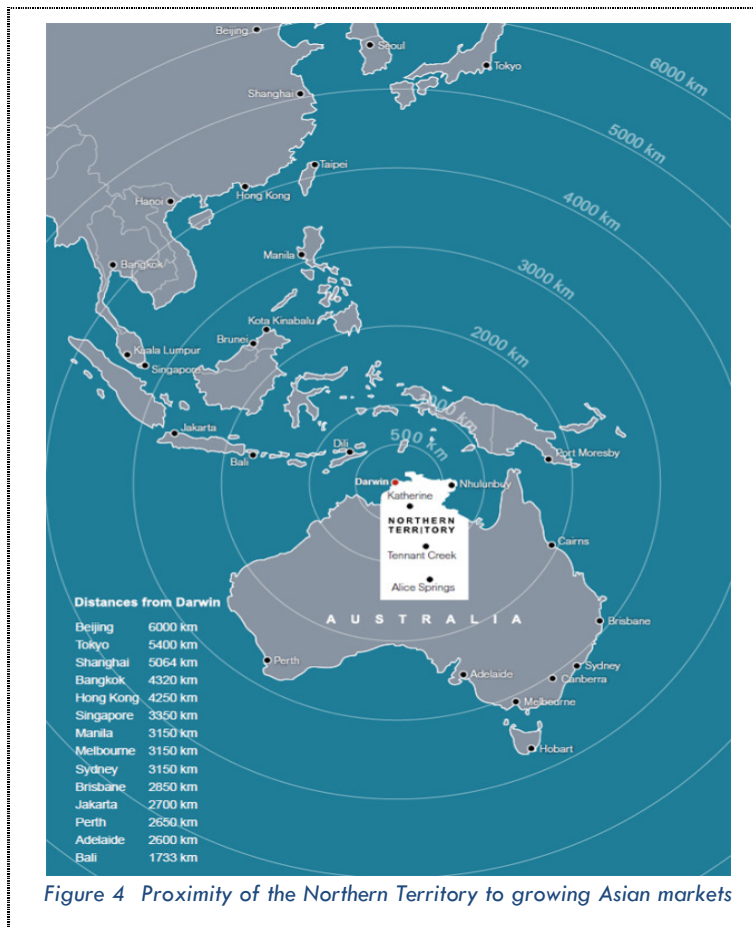


Figure 4 Proximity of the Northern Territory to growing Asian markets

**A ROAD NETWORK  
THAT SUPPORTS  
JOB CREATION,  
ECONOMIC  
DEVELOPMENT  
AND GROWTH**

## AGRICULTURE

Primary industry plays a vital role in the Territory economy and relies on a reliable and efficient road network. Livestock account for the most significant agricultural export from the Northern Territory. Growth in key Asian markets supported by recent trade agreements will likely assist in increasing demand for cattle, which comes from stations spread across the whole of the Territory. With many stations in remote areas and cattle transported by heavy vehicles, the challenge is to provide a suitable standard of access for year-round movement.

Cereal crops for grain, fruit, vegetables and other horticultural products cover pockets of the Territory, however the environment is largely undeveloped with extensive opportunities to capitalise on native flora and fauna. Given the large volume of production that is exported interstate and overseas, the agriculture sector is reliant on transport, particularly land transport via road. Industry consultation has identified that as the sector grows, in particular for high-value exports, the impact of road conditions and transport delays on the quality of product can be significant.

## MINES AND ENERGY

Mining and energy is the largest contributor to the economy of the Northern Territory and an important driver in regional economies. Currently this is from the mining of minerals such as gold, bauxite, manganese and uranium as well as the development of gas. The sector also makes a significant contribution to employment, bolstered by people employed in upstream and downstream sectors. However, there is significant potential to expand the sector with large deposits yet to be explored. The value of untapped resources is estimated to be approximately \$150 to \$200 billion.

The sector is reliant on export demand. Accordingly, transport infrastructure is particularly important to enable movement of resources from point of extraction to point of export. The challenge is therefore to unlock access to isolated and dispersed projects and provide year round heavy vehicle access. However, low traffic volumes, large gross vehicle masses, short project timeframes and fluctuating commodity values impact on the cost and viability of road infrastructure.

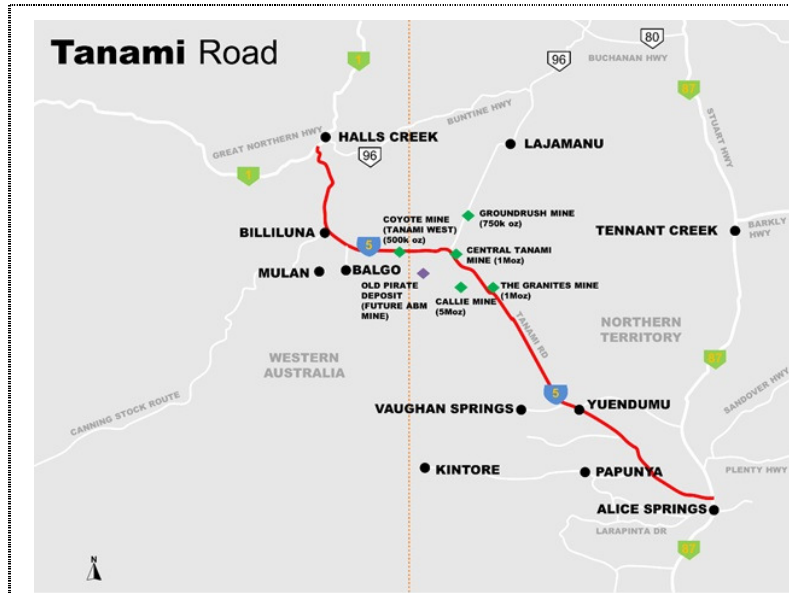


Figure 5 Tanami Road

The Tanami Road stretches from the Stuart Highway in the Northern Territory to the Great Northern Highway in Western Australia. A joint submission has been made by the Western Australia and Northern Territory Governments to Infrastructure Australia to complete the sealing of this important inland connection which supports a number of mines and indigenous communities.

## TOURISM

The Territory offers a rich and unique environment and culture, making it a major attraction for domestic and international visitors. A range of people rely heavily on tourism for employment, with major tourism attractions spread over a large area requiring visitors to travel long distances on the road network.

Some visitors come to the Northern Territory to experience the outback and remote experience, such as the Savannah Way and Outback Way and Binn's Track. Others are looking for easy road access to attractions.

Seasonal drop off in accommodation demand during the Wet season is partially attributable to the difficulty accessing key tourism sites at that time of year, particularly by road. There is potential to increase visitation and length of stay through improvements in access, including the upgrade of the Arnhem Highway, and roads to access the Kakadu National Park, Litchfield National Park and the Red Centre. Better access to new destinations through the development of new routes could extend the length of stay and enhance the existing tourism experience.

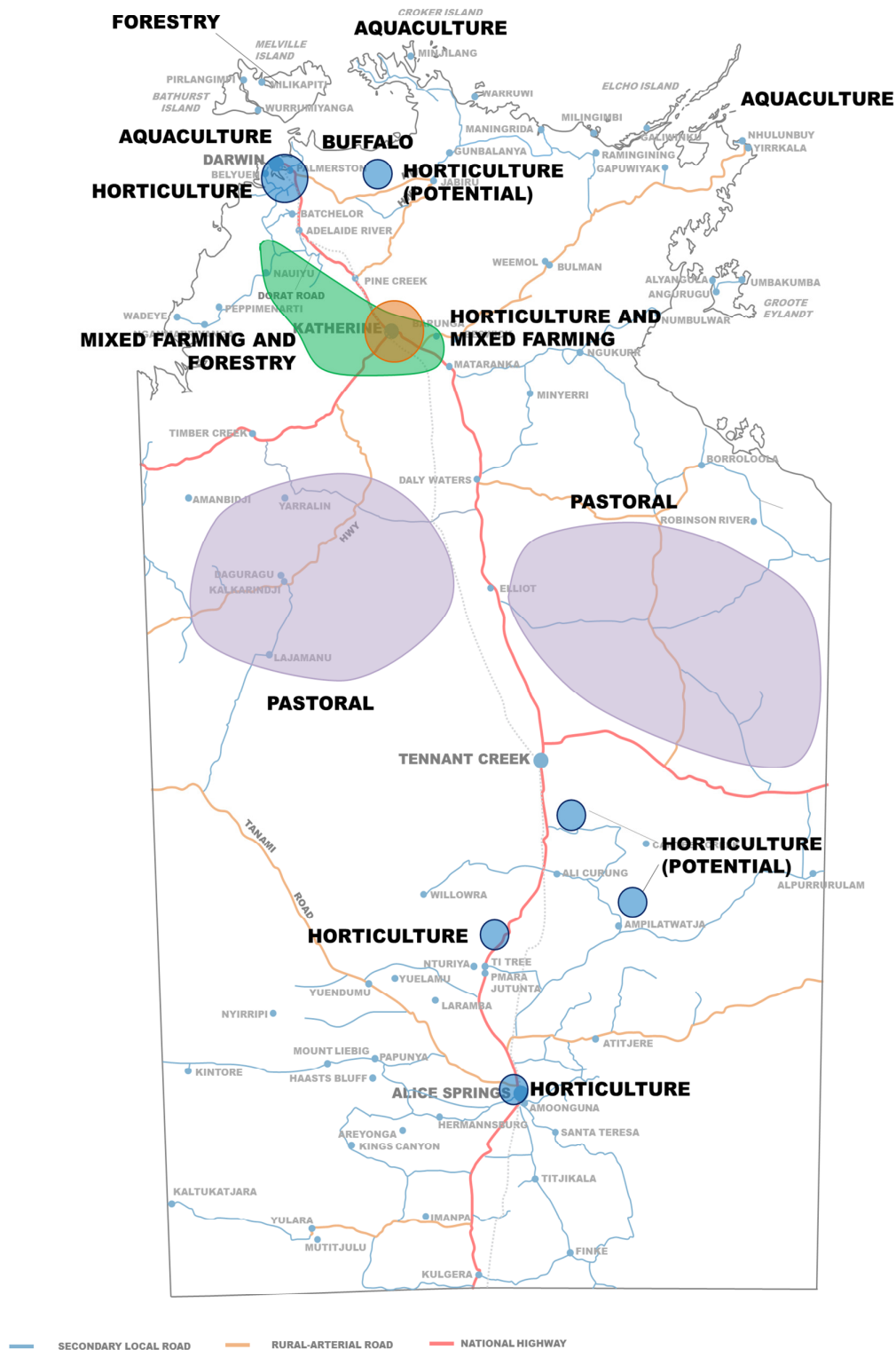


Figure 6 Northern Territory agricultural and horticultural opportunities



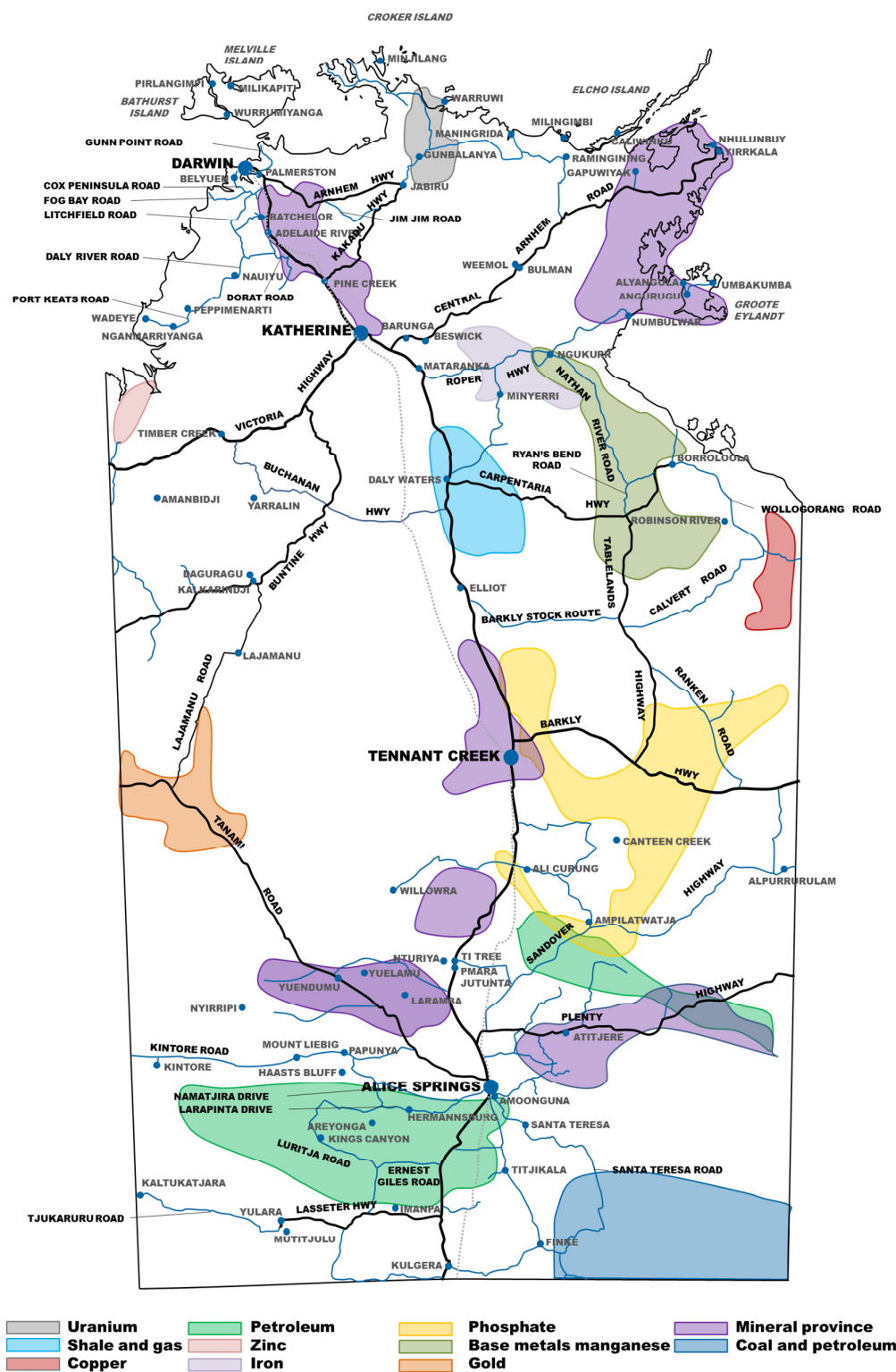


Figure 7 Northern Territory mineral and energy provinces

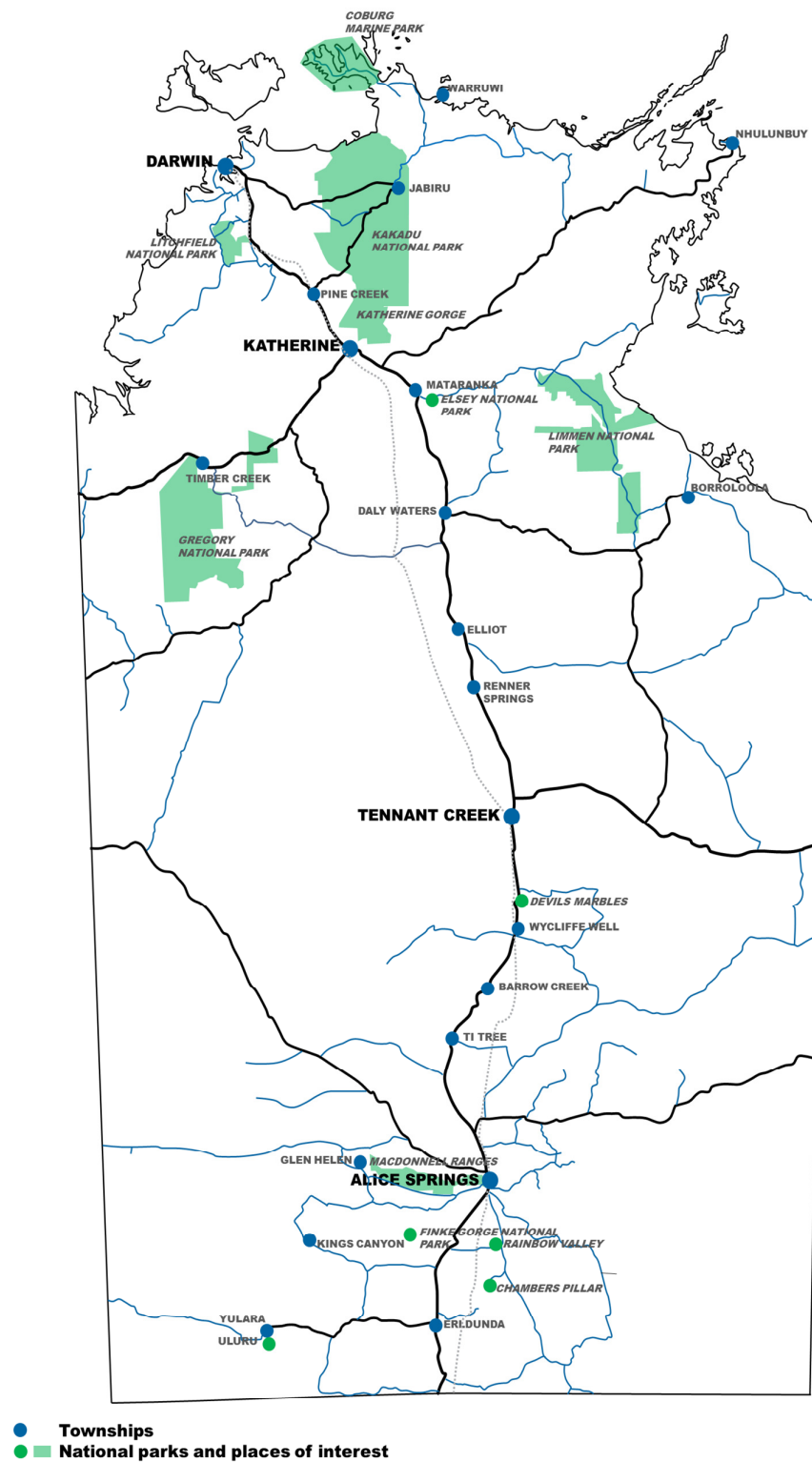


Figure 8 Northern Territory tourism areas of interest

## STRATEGIC OBJECTIVE 2

## PROVIDE EQUITABLE ACCESS

The Northern Territory has a large number of some of the most remote communities in Australia. These communities are spread across vast distances and are home to many of Australia's indigenous populations. This is one of the largest challenges facing the Northern Territory Government. Services such as health and education rely on good access. Furthermore, access provides economic development opportunities and social cohesion.

### ALL WEATHER ACCESS

Regional and remotes communities of the Northern Territory can be isolated for up to 6 months at a time due to wet season rain events. Roads are closed for long periods of time due to no provision of bridge and drainage structures over stream crossings.

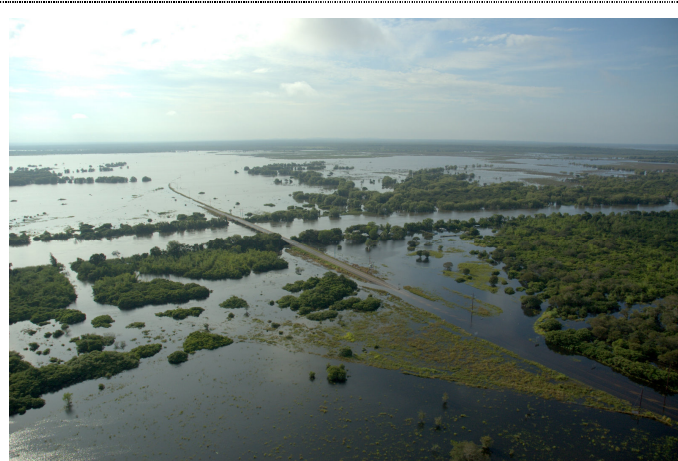
Targeting stream crossing upgrades as a priority will provide the best value for money by reducing road closures times. Each road link will be assessed and a prioritised upgrade program will be developed. Crossings which have historically longer closure times will be targeted as the first priorities to lift the access availability and reliability of the entire road link.

### SEALING OF ROADS

A total of 70% of the Northern Territory road network is unsealed and wet weather events also makes conditions boggy for long periods of time.

Natural gravel resources have depleted over time. Continuation of re-sheeting and maintaining gravel roads is not sustainable longer term. As such, sealing of roads will be undertaken where funding is available to protect this valuable resource.

Sealing of roads also increases the reliability and resilience to wet weather events, meaning less funding being required to rebuild roads that have washed away during the wet season.



**A ROAD NETWORK THAT  
CONNECTS  
COMMUNITIES AND  
PROMOTES INCLUSION  
AND SOCIAL  
DEVELOPMENT**

## STRATEGIC OBJECTIVE 3

## INTEGRATION OF PLANNING

Road network planning is critical to identify road network enhancements that support existing and proposed land use and development in line with Government strategic plans and to meet community expectations.

As well as stakeholder feedback and funding availability, a number of key factors such as safety, traffic and asset performance are considered together to improve the road network. This allows for long term corridor protection, a planned response to emerging growth as well as the ability to integrate with land use development, major projects and freight hubs to achieve a safe, sustainable and efficient road transport network.

### ***A ROAD NETWORK THAT IS PLANNED TO RESPOND TO CURRENT AND FUTURE LAND USE, THE INTEGRATION WITH TRANSPORT HUBS AND ACTIVITY CENTRES AND THE PROVISION OF MULTI-MODAL CHOICE***

## INTEGRATED PLANNING

Planning for the road network does not take place in isolation. An integrated approach considers the planning for land use, as well as planning in sectors such education and regional development to ensure decisions are complementary.

Land use activities produce and attract trips and the location and design of different land uses determine the distances people travel and the potential for public transport, cycling and walking facilities. Equally, the availability of transport infrastructure and services can influence land-use.

Integrated land use and transport planning recognises the complimentary roles of:

- land use and transport in improving transport efficiency and minimising the external impacts of travel;
- private vehicles, public transport, cycling and walking in achieving a sustainable and responsive personal transport system; and
- road, rail, air and sea freight for achieving cost effective and low impact goods movement.

Well integrated planning can allow for better use of the existing road network as well as support mode shift to public transport or walking and cycling. These approaches can minimise the need for unnecessary investment by managing the level and timing of demand placed on road infrastructure assets.

The integrated planning of transport and land use is a key component of both the Draft Darwin Regional Land Use Plan and the Darwin City Centre Masterplan, which have objectives of reduced transport demand and supporting the sustained development as the northern gateway capital city.

## **CORRIDOR PROTECTION**

There is a need to identify and protect transport corridors in advance to secure the long term future of the road network. This ensures government can deliver road projects in line with growth, development and access needs. Longer term corridor protection can also provide certainty to the community about future infrastructure provision as well as minimise any land acquisition costs and reduce the potential for significant impacts to properties.

After the need for a future road connection has been identified and in consultation with the community, engineering and environmental investigations confirm the alignment and the space allocation required. Existing planning powers can then be applied to reserve the corridor for future transport use.

Given the high cost of acquiring land for new corridors, and given the constraints on government budgets, it is vital that opportunities to share corridors between different transport modes and public utilities are actively explored wherever possible.

Separately, access issues resulting from Indigenous land ownership and cultural requirements can result in anomalies for road management and ownership. Owing to historical reasons, a limited number of roads in the Territory are on Aboriginal land rather than under government control. This means that road operations and upgrades must be agreed to by the traditional owners. As such, the Northern Territory Government and stakeholders are exploring options to secure land tenure for all transport infrastructure on Aboriginal land.

## **GROWTH AND DEVELOPMENT**

Progressive population growth and economic development results in increased demand for travel, with more freight and private vehicles on the road. This is due to both gradual residential growth and a step change in traffic volumes from the construction and operation of large industrial projects. In particular, the freight task of major projects can have a significant impact on rural and regional roads. Without appropriate management, increased traffic volumes can lead to deterioration of the network performance, including reduced travel speeds, poorer pavement conditions and the potential for elevated safety concerns.

The Department of Transport implements a number of improvement works each year to reduce delays at identified deficient locations as well as to develop the road network to improve connection between places that are important to people and businesses. Engagement with stakeholders, community consultation and data collection and monitoring allows for prioritisation of these works.

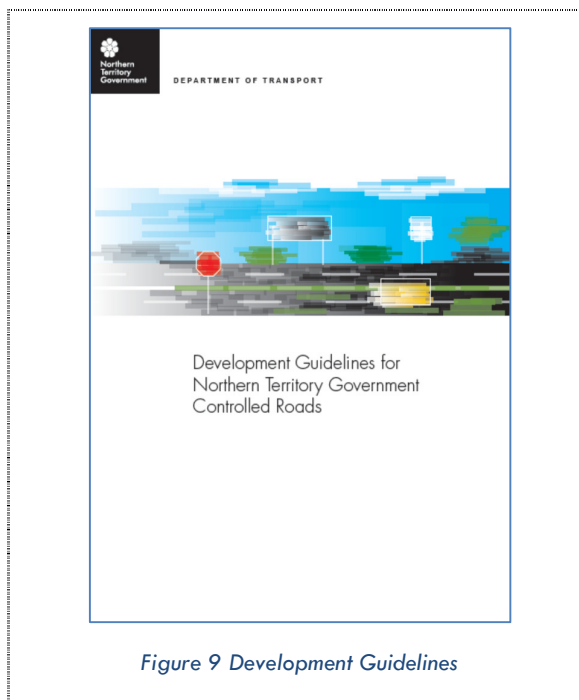


Figure 9 Development Guidelines

The Development Guidelines for Northern Territory Government Controlled Roads aim to provide an easy to follow guide for developers, builders, contractors and design consultants. It should be used for land and infrastructure development that may impact road networks including roads and road reserves managed by the Northern Territory Government. It contains process flowcharts, checklists and a glossary of terms to make it easier to understand the requirements and cut red tape. A suite of technical policies supporting the guidelines is also available.

## FREIGHT AND LOGISTICS

Efficient road freight is a key enabler to the development of the Territory. Currently, higher freight costs associated with travelling long distances contribute to more expensive costs for the Northern Territory. Unreliable road conditions as well as unsealed roads can increase the costs of fuel and maintenance costs. According to industry sources, road freight costs per kilometre can be at least 65% higher on unsealed roads than on sealed roads. Given that about three quarters of Northern Territory roads are unsealed, this is significant for the cost of living for remote communities.

A number of emerging changes in the freight industry are placing increasing pressures on the existing road network. Growing freight demand related to new mining projects is putting increasing stress on rural arterial roads, some of which are unsealed. As a consequence of changes in the structure of the cattle industry, livestock are now moved to a number of different places across a greater distance for grazing purposes. This change, in combination with the growing trend for cattle to be transported to ports throughout the year rather than just in the dry season to meet changing export demand, is placing increasing pressure on parts of the Territory road network.

Intermodal terminals and freight hubs are key aspects in the Northern Territory supply chain, with freight volumes delivered alongside major warehousing and distribution points. The key freight centre at Berrimah associated with the Port of Darwin is supported by regional freight activity at Alice Springs, Tennant Creek and Katherine. The National Land Transport Network provides road links to these freight nodes, to promote and safeguard national and regional freight corridors.

Road network planning is to ensure continued efficient land transport access to freight hubs and to meet the emerging needs of the freight and logistics industry. The key directions for improved freight efficiency and productivity will be addressed in detail through the Freight & Logistics Industry Strategy, which is being undertaken by the Department of Transport as part of the Integrated Transport Planning and Investment Roadmap.



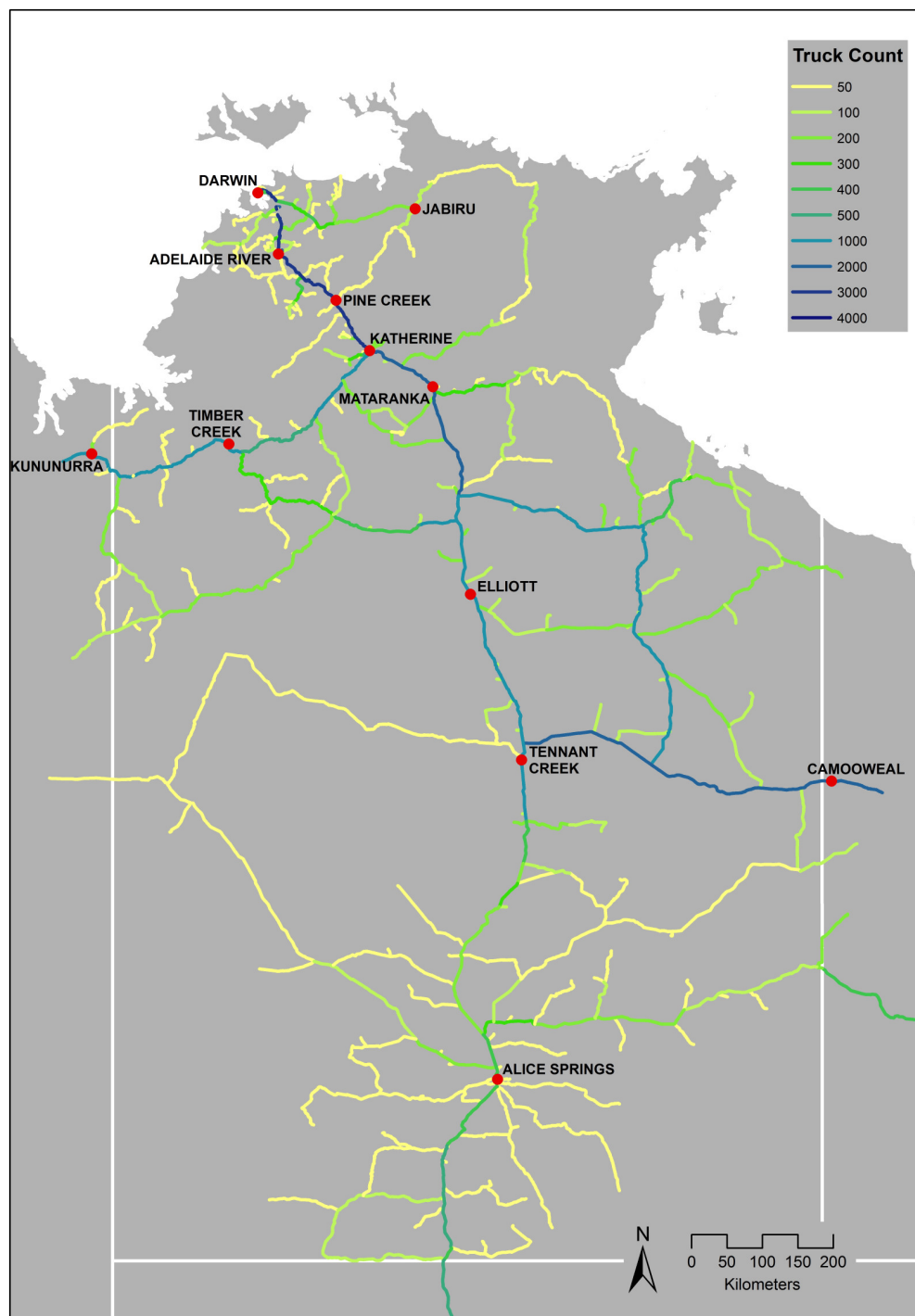


Figure 10 TRANSIT model – Cattle truck movements in the Northern Territory

## STRATEGIC OBJECTIVE 4

## IMPROVED ASSET MANAGEMENT

The total current value of the Northern Territory Government road and bridges network is \$2.6 billion. With an estimated reconstruction cost of close to \$4 billion it is the largest asset under the direct responsibility of the Northern Territory Government. However, a combination of the Territory's large areas, low funding base and extreme climate means that maintaining the standard of this valuable infrastructure is challenging.

A well-managed road freight network can reduce the costs of transport, enhancing the Territory's national and international competitiveness. Conversely, deteriorating condition of the network can increase overall maintenance costs, impact on the cost of business and present road safety issues. Ongoing management of the road network assets is therefore critical.

As government funding for road maintenance is limited, standards and priorities are necessary to ensure that maintenance resources are used in a cost effective way and they are targeted to where they are most needed. The Department of Transport aims to maintain the performance of the road network in a way that minimises the 'whole-of-life costs' incurred over the life of the assets.

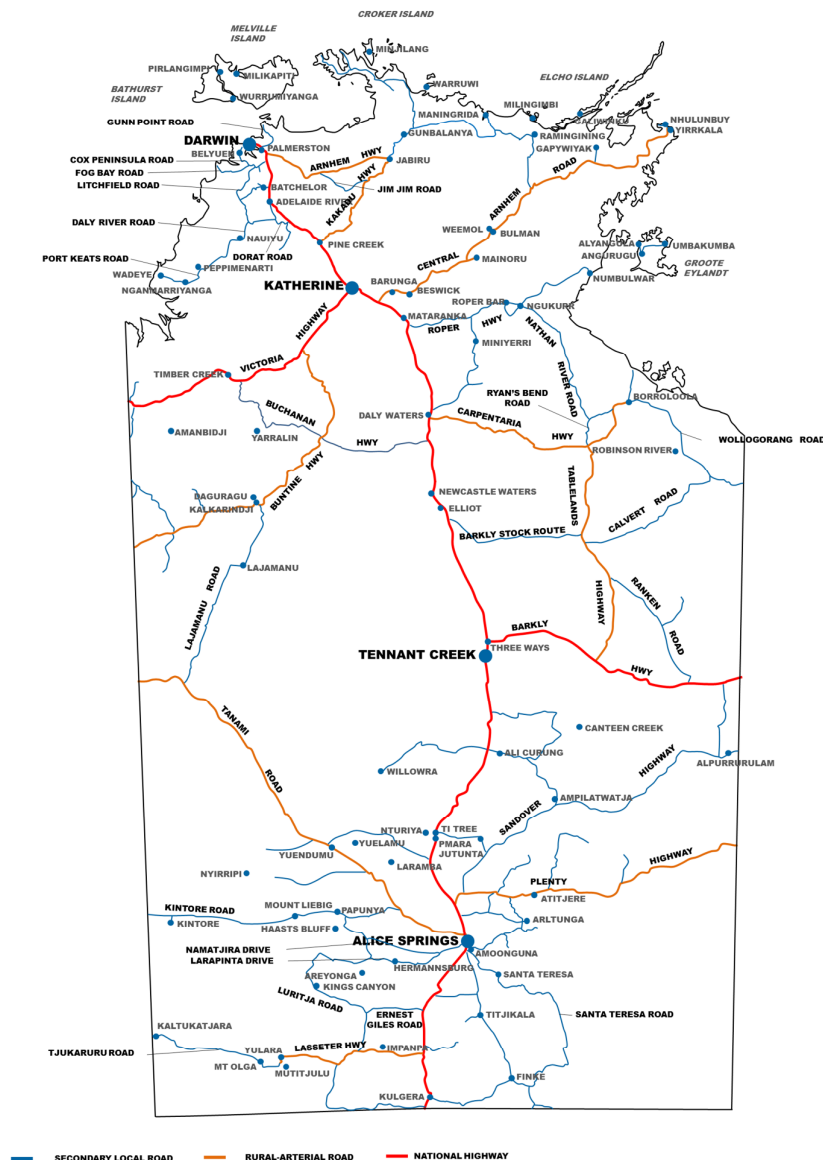


Figure 11 Northern Territory Road Network



## ROAD ASSETS PROFILE

Road standards intend to be fit for purpose, to provide suitable levels of access while balancing against the capital expenditure and the ongoing costs of maintenance. Although the national highways and urban arterial roads are sealed, 70% of the total Northern Territory Government road network is unsealed. As previously identified, this imposes restrictions on access and movement throughout the Territory, ultimately impacting the potential for economic activity and social development.

Many of the Northern Territory's Rural Arterial and Local Roads are of a lower standard due to narrow widths, rough surface conditions on unsealed pavements and limited flood immunity. These roads provide access into and out of regional and remote communities and are often affected by the Wet season, with access reduced or prevented during these times due to flooding or to manage damage to the existing network. Several Rural Arterial and Secondary Local Roads in the wetter Darwin and East Arnhem regions have a history of closure or restriction during the Wet season in the order of three to six months.

Due to its strategic importance in linking the Territory to the rest of Australia, the National Highway network is continually upgraded and maintained to a 'fit for purpose' standard. This has assisted with improving flood immunity for all weather access, as well as providing overtaking opportunities, road strengthening and widening and other road safety related enhancements. Despite periodic renewals across the network, the age profile of the National Highway network has significantly increased over the past 20 years. Over 40% of the National Highway network pavement now has an asset life of more than 40 years (Figure 9). The design life of pavement is commonly 40 to 50 years. Therefore, an extensive program of ongoing works is still required to improve the overall condition of the roads.

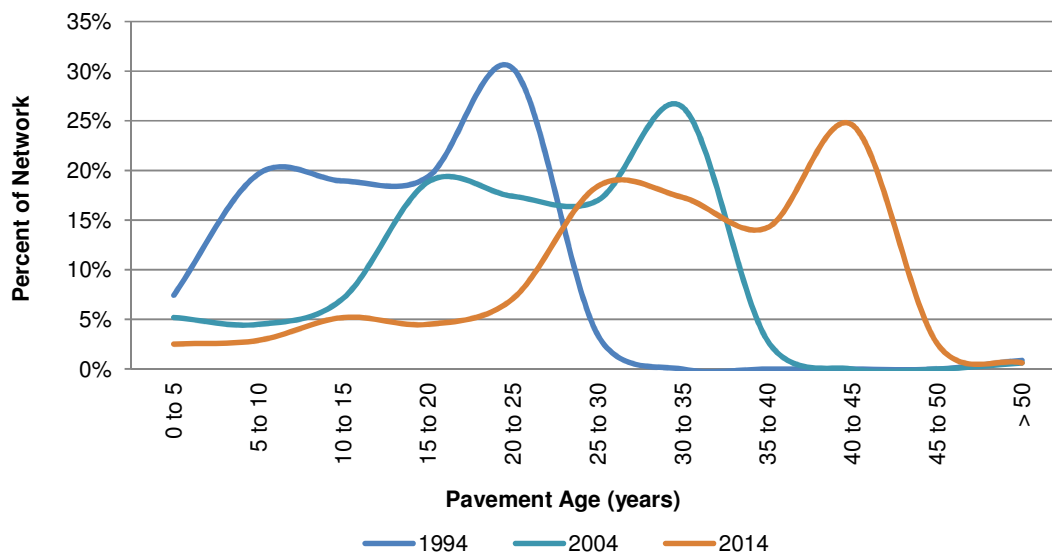


Figure 12 National highways pavement age profile

## BRIDGE ASSETS PROFILE

Bridges and other drainage structures are crucial components of the road network. They have a key role in providing continuous all weather access across waterways and are high capital value assets. Any failure or load restriction can severely restrict traffic movement, with impacts on communities and businesses. There are approximately 230 bridges across the Territory network, encompassing bridge waterway structures, pedestrian crossings and overpasses of roads and rail lines. The majority are located throughout the Top End, which has a more expansive network and is subject to more frequent inundation. Over a quarter of the bridges are on the Stuart Highway alone.

The average age of bridges across the road network is around 35 years, which in terms of bridge stock is relatively young. These assets are maintained throughout their useful life, and condition is monitored to ensure they safely deliver the necessary service.

Over the life of the bridge, there will come a time where the asset is no longer able to satisfactorily perform and may be rehabilitated or improved. Generally, the bridges are currently in a good overall condition and are free of defects affecting structural performance, integrity and durability. However all structures, in particular waterway crossings, are susceptible to degradation with the potential to affect level of service and reduce the life expectancy. Damage to batter protection, debris trapped on piers and riverbank erosion are key threats that are addressed through ongoing maintenance.

Table 1 Bridge asset condition state

Type	Superstructure material	Total	Overall Length (m)	Overall condition state				
				Good	Fair	Poor	Very poor	Unsafe
Bridge	Concrete	182	10,264	4	117	55	6	0
	Steel	23	2,326	0	11	12	0	0
Pedestrian / cycle bridge	Concrete	6	346	1	3	2	0	0
	Steel	13	375	1	2	9	1	0
<b>Total</b>		<b>224<sup>1</sup></b>	<b>13,311</b>	<b>6</b>	<b>133</b>	<b>78</b>	<b>7</b>	<b>0</b>

<sup>1</sup> Excludes bridges constructed since 2012

## STRATEGIC ASSET MANAGEMENT

The foundation of strategic asset management includes setting appropriate and reasonable standards as they relate to maintenance and construction of road assets. The defined levels of service have regard to:

- Community needs and aspirations;
- Industry standards;
- The need to provide a safe and efficient road network; and
- The ability to fund such standards.

These standards should define the type and quality of road-related assets that should be provided and maintained. Depending upon various factors such as demand or importance, a higher level of service may be required for some parts of the network compared to others. For example, key freight routes compared to rural access roads. A level of service hierarchy can define this, with a functional hierarchy based on traffic volumes and freight tonnage rather than simply adopting the existing classification system. This would provide flexibility with the varied Territory network requirements.

For each level of service, target condition requirements are able to be defined. For example, for each hierarchy of road, minimum acceptable condition parameters can clearly be established. The maintenance task is therefore to inspect the current condition of the road network compared to the agreed and established targets to identify gaps that are to be addressed by the Works Program.

An audit process ensures work activities are completed as required and a regular review process confirms that the maintenance effort is meeting the needs of the community.

Communicating with stakeholders and the community about levels of service and performance criteria provides transparency on the maintenance of the road network. It allows agreement on the purpose of the sections of the road network, a clear statement of the minimum condition of components of the network based on intended use, transparent allocation of limited funding and straightforward reporting on the effectiveness of the Works Program.

This is to minimise the whole of life cycle costs of road assets, while aiming to meet the needs and expectation of the community and other stakeholders for the benefit of a prosperous economy and strong society.



Figure 13 Simplified road asset management process

## INTELLIGENT TRANSPORT SYSTEMS

There is significant scope for further use of ITS to respond to the unique challenges of the Northern Territory road network. Given the environmental characteristics, relatively simple transport network and small population, there are existing ITS applications that could be valuable for road safety, asset management and user journeys. A model of the areas of application for ITS is presented in Figure 14, and highlights opportunities for improvement in:

- The way information relating to traffic flows and the state of the network is gathered and used
- The ability to resolve operational issues in the transport network
- The capability to mitigate against the errors of drivers to improve road safety, including through real-time messaging to drivers
- The ability to communicate with travellers and the delivery of accurate information to travellers to promote smarter transport choices, including through mobile applications
- Better and more freight network data collection and use for enhanced network management and more efficient freight movements
- Mechanisms that enable the potential for future new pricing and compliance options, in particular for heavy vehicles and industry

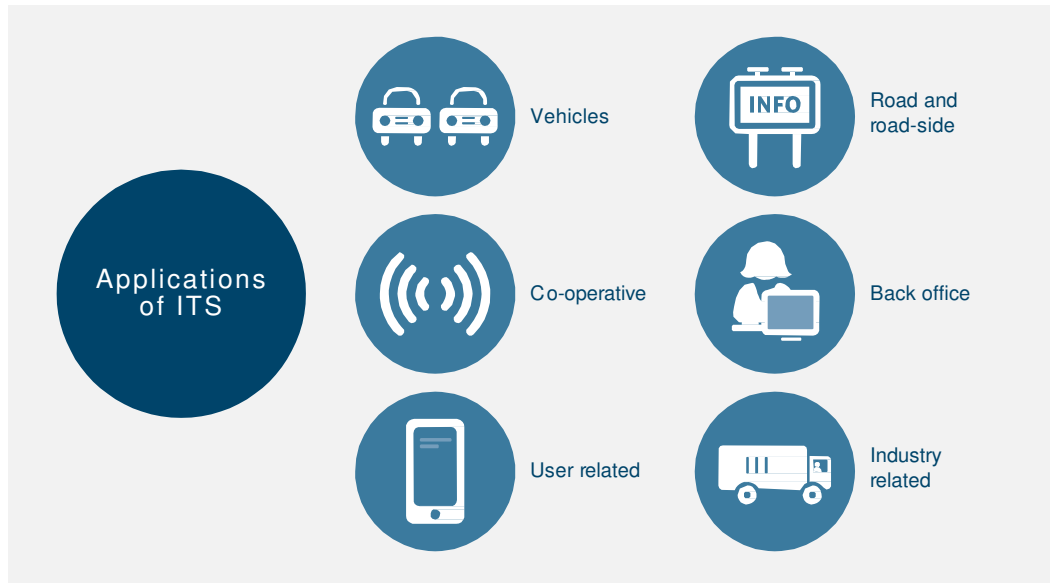


Figure 14 Applications areas of Intelligent Transport Systems (NZTA 2014)

The Northern Territory is in the fortunate position of being willing and able to learn from the experiences of other jurisdictions, and this attitude will greatly enhance cost effectiveness of implementing ITS strategically in the Territory.

To realise these benefits, a key focus is developing an overall Position Statement to clearly define the contribution that ITS can make to creating transport solutions for a thriving Northern Territory. Challenges associated with telecommunications networks would need to be considered. Specific ITS benefits will be influenced by evolving technologies and market demands. The Department of Transport will continually monitor the changes to ensure that intelligent transport systems efforts and investments are maximising returns for the Territory.

## STRATEGIC OBJECTIVE 5

## IMPROVED ROAD SAFETY

Road trauma has a devastating and long lasting impact on individuals, families and communities. The unique geography and circumstances of the Northern Territory pose challenges for road safety. This includes vast distances between dispersed communities, unsealed and high speed roads, levels of poor vehicle maintenance and a high reliance on motor vehicles due to limited public transport. As a result, the Northern Territory has a fatality rate over three times the national average, with 15.9 deaths per 100,000 people.

Between 2005 and 2014, 480 people were killed and 5,340 were seriously injured on Territory roads, the majority in rural areas. Key factors in these crashes included alcohol (45% of fatalities), not wearing a seatbelt (45% of fatalities) and speed (24% of all fatalities). Pedestrian fatalities are overrepresented in the Territory. Often occurring at night and at speeds over 80 km/h, pedestrians comprise over one fifth of all road fatalities compared to the national average of 13%.

To improve road safety, the Northern Territory Government has adopted the safe systems approach. This recognises that road users will inevitably make mistakes, but that the system should be forgiving of these errors and not result in death or serious injury. Sustained efforts to improve road safety have achieved results, with a decrease in the fatality rate over the past 10 years (Figure 15).

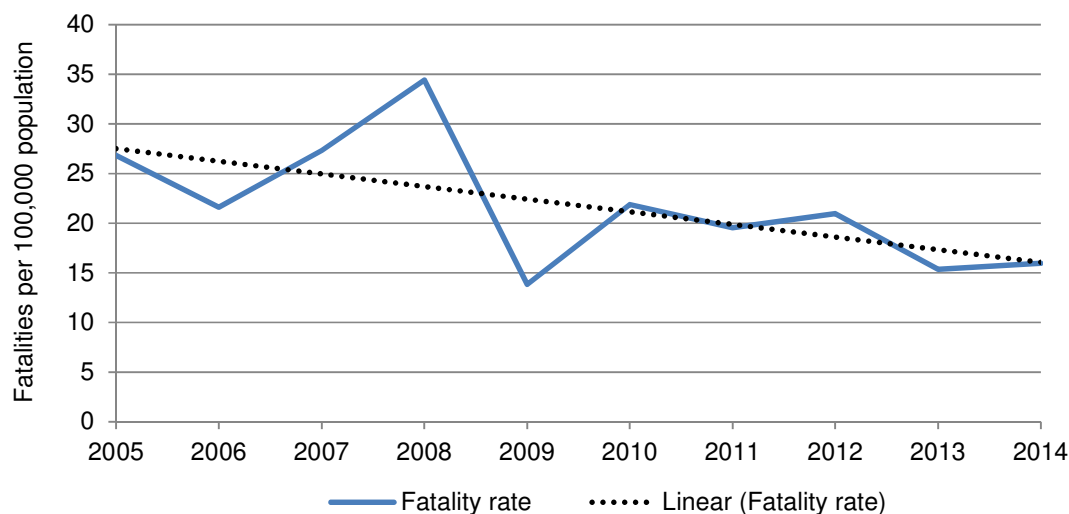


Figure 15 Fatalities per 100,000 population, 2005 to 2014

## NATIONAL ROAD SAFETY STRATEGY

The Northern Territory Road Safety Executive Group is charged with a delivering a coordinated approach to making the Territory's roads safer. Comprising the Police Fire and Emergency Services, the Department of Transport and the Territory Insurance Office, the group works with multiple government agencies, special interest groups and local industry leaders to deliver against the actions of the National Road Safety Strategy. These activities, combined with other policy initiatives such as those targeting health and alcohol consumption will have a lasting impact on road trauma on Territory roads.

## SAFE SYSTEMS APPROACH

The safe systems approach is also the cornerstone of the National Road Safety Strategy 2011-2020, developed cooperatively by Commonwealth, state and territory transport agencies. The key target of the strategy is to reduce the number of deaths and serious injuries on roads by at least 30 percent by 2020. This will be achieved by focusing on four key areas of intervention:

- **Safe roads** – Design and maintain roads that reduce the risk of crashes and lessen the severity of injury. A safe road prevents unintended use through design and encourages safe behaviour of road users.
- **Safe speeds** – Implement speed limits that complement the road environment, and increase compliance with the speed limits to manage the crash impact forces to within human tolerance.
- **Safe vehicles** – Advocate for safer vehicles that lessen the likelihood of a crash, protect occupants, simplify the driving task and protect vulnerable users.
- **Safe people** – Encourage safe, consistent and compliant behaviour through licensing, education, effective road rules, enforcement and sanctions.

## ANNEXURE A INVESTMENT PLAN

### DARWIN REGION

Darwin and the surrounding areas is one of the fastest growing regions in Australia. As such, investment planning for Darwin Region can be quite volatile and challenging for our roads and bridges to ensure the network is keeping up the pace with the rate of development. This investment plan nominates a number of projects. However, as development continues to occur and traffic patterns change, continual monitoring, planning and re-planning to determine the best value for money investment and upgrades will be required. Investment in Darwin Region will be underpinned by the economic development, integrated planning, asset management and safety principles. Upgrades will include intersection works, duplications, strengthening and widening and construction of new infrastructure.

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Arnhem Highway	-	✓ Adelaide River Floodplain Upgrade	Providing year round access for freight, extractive industries, tourism and community, including through raising the road	-	-	Communities (Arnhem Land), tourism (Kakadu National Park), Defence (Mt. Bundy training area), mining (extractive industries)
Arnhem Link Road	\$11 million – Priority crossing(s) yet to be determined	✓ Ongoing planning for crossing upgrades and to determine priority order	New bridge(s) over the major crossings	-	Stream crossing upgrades to provide all year access	Connecting major communities, and alternative route to Nhulunbuy



## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Oenpelli Rd	-	✓ Discussions with Northern Land Council regarding upgrades between Gunbalanya and East Alligator (Cahill's Crossing)	-	-	Upgrade sections of gravel road to two lane seal and undertake flood immunity improvements	Tourism and community
Port Keats Rd	\$21 million – Yellow Creek and Saddle Rail Crossings	✓ Review of previous and current upgrades to determine next priorities	Commence sealing and flood immunity works	Complete sealing and stream crossing upgrades, excluding the Moyle floodplain which is already under construction	Upgrade sections of gravel road to two lane seal and undertake flood immunity improvements	Tourism, Community, potential cattle and access to gas facilities
Stuart Hwy	-	✓ Traffic Studies to determine timing and staging for duplication	-	-	Duplication from Cox Peninsula Road to Adelaide River when required	Duplication to all the way to Adelaide River will be completed on a needs-priority basis and depends heavily on the timing of developments in the region.  Increase safety

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Tiwi Island roads	\$5 million – Sealing on Melville Island	✓ Planning and design works for Melville Island Roads	Upgrade to two lanes seal: Pirlangimpi Road, Pickertaramoor Road and Paru Access Road up to Three Way intersection	-	-	Timber industry and community
Amy Johnson Ave	-	-	Commence progressive duplication	Complete duplication works for the entire road length	-	Capacity improvements and alternative connector to Vanderlin Dr, northern suburbs to CBD
Berrimah Road	-	✓ Planning and concept design	-	Duplication between Wishart Rd and East Arm Port	-	Capacity and safety for increased traffic into the port and supporting industries
Chung Wah Terrace	-	-	-	Construct the extension of Chung Wah Tce to Roystonea Ave at Yarrowonga Rd intersection	Duplicate from Lambrick Ave to Elrundie Ave	Incremental network capacity improvement
Elrundie Ave	-	-	Duplicate from University Ave to Tilston Ave	-	-	Network capacity improvements in the area of Moulton / Driver

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Elrundie Ave	-	-	-	Duplication between Tilston Ave to Roystonea Ave	-	Continuation of network capacity improvements for the development of Mitchell
Kirkland Road	-	✓ Concept and detailed design for intersection upgrade	Upgrade the intersection of Kirkland Road / Wishart Road to provide fourth leg for improved connectivity	-	-	Network connection and road safety
Marine Park access road	-	-	-	Construct access roads to the Marine Industrial Park	-	Road access to Marine Park, including for export related activities
New arterial: Virgina Road to Zuccoli	-	-	-	-	Construct a new north-south arterial from Virginia Rd link to Zuccoli	Incremental network capacity improvement for Zuccoli development

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
New local road: Berrimah Farms	-	✓ Concept and design work for McMillans Road Extension.  Discussions regarding traffic generated from Berrimah Farm subdivision	Construct a new road through Berrimah Farms from McMillans Road extension to Stuart Highway including link to Tivendale Road	-	-	Network access and connectivity for Berrimah Farms area
New local roads: Weddell	-	-	-	-	Construct new local roads to support staged development of Weddell	Improved access to residential areas
New north-south arterial	-	✓ Planning work for Weddell	-	-	Construct a new north-south arterial from Weddell to link to Virginia Road	Provide increased north-south capacity for Weddell development
Noonamah	-	-	-	Start providing new roads at Noonamah to align with development	-	Residential development in the Noonamah/Hughes region

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Roystonea Ave	\$5.5 million - Upgrade the intersection of Roystonea Avenue and Temple Terrace	✓ Planning and design work for Roystonea Ave upgrades	-	Duplicate between Temple Tce and Buscall Ave to provide increased north-south capacity within Johnston	-	Provide increased north-south capacity within Johnston to cater for residential development
Roystonea Ave	-	-	-	Duplication between Buscall Ave and Lambrick Ave to provide increased north-south capacity within Johnston	-	Provide increased north-south capacity within Johnston
Roystonea Ave	-	✓ Planning and design work for Roystonea Ave upgrades	Provide an additional outbound lane on Roystonea Ave from Tiger Brennan Drive interchange to Temple Terrace	-	-	Incremental network capacity improvement
Roystonea Ave	\$4 million – extend Roystonea Ave from Lambrick Ave to Owston Ave	Connection between Lambrick Ave and Elrundie/Channel Is Road already complete	-	Construct the connection between Lambrick Ave and Elrundie Ave	-	Connectivity for population growth and development of Zuccoli and Weddell
Roystonea Ave	-	-	Construct the extension from Elrundie Ave to Weddell Freeway	-	-	Access improvements to align with development growth

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Stuart Hwy	-	✓ Stuart Park Transport Study completed. Further planning work to be undertaken.	-	-	Construct new Stuart Highway deviation road through Stuart Park	Increased capacity, road safety for all road users
Temple Tce	Funded through Department of Health project	✓ Planning work to be undertaken for future Glyde Point Access	Construct the extension across Stuart Highway to service Palmerston Hospital	-	-	Network access from development on the west of Stuart Hwy
Temple Tce	-	✓ Design work being undertaken to join the two intersection upgrades	-	Duplicate from Roystonea Ave to Stuart Hwy	-	Extend duplication to provide network capacity
Tiger Brennan Drive	-	✓ Planning work for concept design to integrate with land development in the area	Construct full grade separation of the Tiger Brennan Drive / Woolner Road intersection	-	-	Network capacity improvements and road safety

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Tiger Brennan Drive - underway	\$103 million – under construction. Dinah Beach to Woolner complete.	-	Duplication from Berrimah Rd to Woolner Rd without an interchange at Berrimah Rd	-	-	Incremental network capacity improvement
Vanderlin Dr	\$11.5 million – Duplication to McMillans Road	-	-	Duplicate to provide north-south capacity between Mueller Rd and McMillans Rd	-	Residential development within and west of Karama
Vanderlin Dr	-	-	-	-	Duplication from McMillans Rd to Stuart Hwy	North-south capacity improvement for access from the northern suburbs
Weddell Freeway	-	✓ Planning work to look at traffic demands in and around Palmerston and determine staging	-	Construct the new link from Tiger Brennan Drive to Elizabeth River	Extend the freeway standard connection from Elizabeth River (including bridge) to Stuart Highway	Reduce demand on the Stuart Hwy and also to provide a more direct linkage to East Arm, Middle Arm
Arnhem Link Road	-	✓ Social mapping work being undertaken with Northern Land Council	-	-	Upgrade to two lane seal standard from Maningrida-Ramingining and Maningrida Access	Longer term strategy

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Kakadu Hwy	-	-	-	-	Upgrade to two lane seal standard from Arnhem Highway to Jim Jim intersection	Longer term strategy
Kakadu Hwy	-	-	-	-	Upgrade to two lane seal standard from Jim Jim intersection to Stuart Highway	Longer term strategy
Finn Road	-	✓ Stakeholder discussions to continue	Upgrade the existing road between Cox Peninsula Rd and Jenkins Rd	-	-	Support Extractive Industry Developments
New local roads: Johnston and Zuccoli	Under construction through Land Release	-	-	-	Construct new local roads to support development of Johnston and Zuccoli	Longer term strategy
University Ave	-	-	-	-	Duplicate from Elrundie Ave to Chung Wah Tce	Longer term strategy
McMinn St	-	✓ Concept design for McMinn Street duplication	-	-	Duplication between Daly St and Bennett St to provide capacity improvements for CBD circulation	Longer term strategy



## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
McMillans Road	-	✓ Planning and concept design work	-	Extend duplication from Vanderlin Dr to Stuart Hwy	-	Longer term strategy
McMillans Road	-	✓ Planning and concept design work	-	Construct north-south connection between Stuart Hwy and Tiger Brennan Drive, initially without an interchange at Tiger Brennan Drive	-	Longer term strategy
Tiger Brennan Drive	-	✓ Barneson Link and TBD duplication from Dinah Beach to McMinn Street – concept and detailed design work. Barneson Link needs to be constructed at the same time as the duplication to manage traffic volumes.	Construct Barneson Link and Duplicate from Dinah Beach Road to McMinn Street	-	-	Third entry into the CBD required to relieve traffic congestion
New arterial: Virginia Road to Zuccoli	-	-	-	-	Construct a new north-south arterial from Virginia Rd link to Zuccoli	Longer term strategy

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Glyde Point Connector	-	✓ Planning and concept design work	-	-	Construct a new connector to Glyde Point	Longer term strategy
Glyde Point Link	-	✓ Planning and concept design work	-	-	Construct the Glyde Point link interchange with Stuart Hwy and McMillans Rd	Longer term strategy
Noonamah network	-	-	-	-	Continue construction of new roads at Noonamah	Longer term strategy

## ANNEXURE A INVESTMENT PLAN

### ALICE SPRINGS REGION

Alice Springs Region is growing and has economic potential in tourism, resources and agricultural sectors. The urban centre of Alice Springs is an important hub of services for central Australia. All five principles of economic development, equitable access, integrated planning, asset management and safety underpin the investment plan for the Alice Springs Region. The investment mix will include new infrastructure, such as the sealing of the Tanami Road and Plenty Highway, asset rehabilitation and upgrades such as strengthening and widening of pavements and urban projects to support the growth in the urban centre of Alice Springs.

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Larapinta Drive	\$25 million	-	Road upgrades to seal the inner loop to a two lane standard	-	-	Completion of the inner Mereenie Loop for tourism and improved community access
Tjukururu Road (Outback Way)	\$40 million	✓ Continue to prioritise and design upgrades as funding becomes available	-	-	Upgrades to a two-lane gravel standard for the full road length	Part of Outback Way, tourism and community

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Plenty Highway (Outback Way)	\$32 million	✓ Continue to prioritise and design upgrades as funding becomes available	-	Extend seal from existing sealed section to Lucy Creek, with improved access to Atitjere and Jervois Mine	Complete seal works from existing sealed section to Lucy Creek, with improved access to Atitjere and Jervois Mine. Later continue seal upgrade of Plenty Hwy from Lucy Creek to the Queensland border. Widen existing sealed section	Part of Outback Way, which connects Queensland through NT to WA. Importance is cattle and tourism
Sandover Hwy	-	✓ Continue to prioritise and design upgrades as funding becomes available	-	Road works to upgrade from formed road to two lane seal, from Plenty Highway to Alparra	Road works to upgrade from formed road to two lane seal, from Plenty Highway to Ammaroo Upgrade to a two lanes gravel standard from Ammaroo to the Queensland border	Cattle movements and community access

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Tanami Rd	\$7 million new in 2015-16	✓ Continue to prioritise and design upgrades as funding becomes available. Preparation work underway for the larger upgrade project to Western Australia	Commence road sealing works and minor improvements to alignment	Finalise road sealing works and minor improvements to alignment	Widen existing seal towards the west from Stuart Hwy	Community access, regional passenger bus, mining, cattle
Larapinta Drive	-	✓ Undertake traffic study to determine appropriate timing	Duplicate from Milner Road to Bradshaw Terrace.	-	-	Network capacity, to match in with existing duplications
Larapinta Drive	\$3 million	-	Upgrade the intersection of Larapinta Drive / Lovegrove Drive	-	-	Intersection capacity improvements and road safety
Local roads: Desert Park	-	-	Improvements to the local road network off Larapinta Drive	-	-	Improved access to residential areas

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Sadadeen Bypass improving flood immunity to Mt John Valley	\$7.5 million	✓ Planning work underway to look at options analysis and best value for money upgrade	-	-	-	Provision of flood immunity for residents east of Todd River
Stuart Hwy	-	✓ Traffic study underway. Concept planning and design work to occur.	Upgrade works in the vicinity of Heavitree Gap	-	-	Improved accessibility along the national network
Stuart Hwy	-	✓ Traffic study	Duplicate between Larapinta Drive to Bitzer Rd	-	-	Provide improved capacity for movement through northern Alice Springs
Santa Teresa Rd	\$10 million under the Regional Roads Productivity Package. Continue to upgrade as funds become available.	-	-	-	Seal existing gravel section from Alice Springs airport to Santa Teresa	Longer Term Strategy
Santa Teresa Rd	-	-	-	-	Upgrade the existing 4WD track to a two lane gravel standard from Santa Teresa to Andado	Longer Term Strategy



## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
New link - Derry Downs to Ammaroo	-	-	-	-	Construct a new gravel road to link Derry Downs to Ammaroo	Longer Term Strategy
Lasseter Highway	-	-	-	-	Seal the length of the Lasseter Highway	Longer Term Strategy
New link - Newhaven to Vaughan Springs	-	-	-	-	Construct a new link to formed road standard	Longer Term Strategy
New link – Wingellina to Curtain Springs	-	-	-	-	Connection to growing Musgrave Region and resource projects	Longer Term Strategy

## ANNEXURE A INVESTMENT PLAN

### KATHERINE REGION

Similarly to Alice Springs, Katherine Region also has economic potential in tourism resources and agricultural sectors. The Roper Highway will be a focus for the Katherine Region as will the roads for the Ord development in the Northern Territory. Again, all five principles of economic development, equitable access, integrated planning, asset management and safety underpin the investment plan for the Katherine Region. The Victoria River Region has potential growth in the cattle production opportunities and as such, the Victoria Highway, Buntine Highway and Buchanan Highway are also important.

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Roper Highway	\$13.5 million - Progressive Seal from Fizzer Creek to Ngukurr over 4 years \$40 million - Roper and Wilton Bridge Crossings	✓ Continue to plan and prioritise upgrades for when funding is available.	Widen and seal from the end of the existing bitumen to the end of Roper Highway	For the existing sealed section, commence widening and resurfacing between Stuart Highway and the end of the bitumen	Complete the widening and resurfacing of the existing seal between Stuart Highway and the end of the bitumen	Community access, cattle, mining and mineral exploration
Victoria Highway	\$35.5 million - Little Horse and Big Horse upgrades	✓ Prioritise pavement strengthening and widening works.	Bridge upgrades to provide flood immunity, particularly at Big Horse Creek and Little Horse Creek. Commence road widening and strengthening works	Continue pavement widening and strengthening along required sections	Complete pavement widening and strengthening along required sections	Freight movement for all-year access. Includes cattle and potential horticulture

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Central Arnhem Road	-	-	Between Beswick and Bulman, commence upgrades to provide a two lane seal	Complete sealing works between Beswick and Bulman	Widen existing seal between Stuart Highway and Beswick Continue seal from Bulman to Gapuwiyak turnoff	Community access, tourism and freight
New link - Fleming-Beasley Roads	-	-	-	-	Construct a new gravel road to link Fleming Road to Beasley Road	Longer term strategy
WDR Haul Road	-	✓ Assess the current condition of the road	-	-	Undertake rectification works to upgrade to suitable public road standard from Nathan River Road to Bing Bong Port	Longer term strategy
Ord River Stage 3	-	✓ Planning and design work.	-	-	Complete works for improved flood immunity, including water crossing upgrades	Longer term strategy

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Buntine Highway	\$10 million - Selected Strengthening and Widening under the Regional Roads Productivity Package	-	-	-	Complete sealing works from Watte Creek Road (Kalkaringi) to WA border Widen seal from one lane to two lanes from Stuart Highway to Watte Creek Road (Kalkaringi)	Longer term strategy
Nathan River Road	-	-	-	-	Upgrade stream crossings along the route for flood immunity	Longer term strategy
Numbulwar Road	-	✓ Assess cost benefit for tourism opportunities	-	-	Upgrade to gravel standard and complete stream crossing improvements	Longer term strategy
Lajamanu Rd	\$5 million (revote and new) to upgrade and seal.	-	-	-	Undertake upgrade works to provide two lane seal	Longer term strategy
Stuart Hwy heavy vehicle alternative	-	✓ Planning work underway, including location of second Katherine River crossing	-	-	Construct a detour route to remove heavy vehicles from the central urban area	Longer term strategy

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Carpentaria Hwy	\$12 million - Borooloola Jump Up upgrade as part of the Heavy Vehicle Safety and Productivity Programme	-	-	-	Widen seal from one lane sealed to two lanes from Stuart Highway to Tablelands Highway	Longer term strategy
Carpentaria Hwy	-	-	-	-	Extend widening works from Tablelands Highway to Bing Bong turnoff	Longer term strategy

## ANNEXURE A INVESTMENT PLAN

### TENNANT CREEK REGION

Tennant Creek Region has significant potential for cattle production and resource developments. The current standard of roads in the Tennant Creek Region is reasonable, given the traffic volumes. The future focus for this region will be on maintaining good road standards to support industry productivity levels. Roads, particularly the Barkly Highway, will support the future development of the Mount Isa to Tennant Creek rail development, resources opportunities as well as potential national service corridors. Additionally, the Tablelands Highway and Barkly Stock Route will also require investment as major cattle road train routes.

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Wollogorang Road	\$5 million - Upgrade Robinson and Calvert crossings	-	Upgrade Robinson and Calvert crossings	-	Upgrade stream crossings along the route for flood immunity	Longer term strategy
Tablelands Hwy	\$12.5 million to strengthen bridges between Barkly Highway and Barkly Stock Route	✓ Undertaken design work to strengthen remaining bridges	Upgrade bridges to lift load restrictions and increase productivity	Commence widening the seal from one lane to two lanes	Widen seal from one lane sealed to two lanes for the entire length of Tablelands Hwy	Key cattle road
New link - Tennant Creek to Lajamanu	-	-	-	-	Construct a new link to formed road standard	Longer term strategy



## ANNEXURE A INVESTMENT PLAN

### EAST ARNHEM REGION

Providing equitable access and safer roads are the main principles underpinning investment in East Arnhem Region. The standard of roads in East Arnhem Region is generally lower than other regions due to the historically lower economic development rates. Wet season access is still a very significant issue with many communities cut off for months at a time. The focus of investment in this region in the short to medium term will be to connect the remote communities through investment in stream crossing upgrades. Provision of better access will ensure better services, including health and education, for a substantial number of remote communities as well as more social inclusiveness and cohesion between communities in the region.

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Ramingining to Central Arnhem Road link	-	✓ Continue to plan and prioritise upgrades	Upgrades stream crossings	Upgrades stream crossings	Upgrade to two lane seal standard	Longer term strategy
Dhupuma Road - including mine section	-	✓ Continue to plan and prioritise upgrades	-	-	Upgrade to two lane seal standard from Central Arnhem Road to Melville Bay Road	Longer term strategy
Gapuwiyak Access Rd	-	✓ Continue to plan and prioritise upgrades	Upgrades stream crossings	Upgrades stream crossings	Upgrade to two lane seal standard	Longer term strategy
New link - Numbulwar to Central Arnhem Rd	-	✓ Continue to plan and prioritise upgrades	Upgrades stream crossings	Upgrades stream crossings	Construct a new link to gravel road standard	Longer term strategy

## ANNEXURE A INVESTMENT PLAN

Road	Current Capital Works	Planning for Forward Works	Short Term (0 - 5 Year Program)	Medium Term (5 - 10 Year Program)	Longer Term (10+ Year Program)	Key drivers
Central Arnhem Road	\$12.75 million Upgrade Rocky Bottom Creek	✓ Continue to plan and prioritise upgrades	Upgrade Rocky Bottom Creek Crossing	-	Seal existing gravel section from Gapuwiyak Turnoff to Dhupuma Road	Longer term strategy