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The Territory road network has come a long way from a time when the Stuart Highway deserved its original name of "the track". We now have a vast network of roads which support a range of industries and communities.

Hon Gerry McCarthy MLA Minister for Transport

From the Minister

Roads are the heart of the Territory and the lifeblood of our communities and economy. They allow people to access jobs and services and connect with each other. Roads enable us to receive freight items of every description – from groceries to building materials - and they provide for the movement of resources, produce and livestock from the Territory to markets elsewhere.

As we head into the next period of the Northern Territory's growth, with the development of the Ichthys LNG project and other major infrastructure, our road network will be even more important in supporting economic opportunities and connecting Territorians across vast distances.

The Territory road network has come a long way from a time when the Stuart Highway deserved its original name of "the track". We now have a vast network of roads which support a range of industries and communities.

As with all areas of Australia, upgrading and maintaining a road network is a big part of the Territory Government's budget. In the Territory, our unique conditions - including distance, a small, dispersed population and extreme weather conditions – present additional challenges that add to the cost and complexity of delivering road projects.

The record 2010-11 Wet Season brought some of these challenges into profile, with many communities and our major centres impacted by flooding and damage to road infrastructure.

The Northern Territory Government is continuing to develop and improve our roads to achieve the outcomes set by Territorians in our Territory 2030 Strategy. Funding assistance is also provided for this task by the Australian Government for our National Highway and strategic road network through a National Partnership Agreement.

This strategy outlines some of our priorities for future road planning, including:

- the enhancement of stakeholder consultation to identify and prioritise roadworks;
- upgrading roads and bridges in all areas of the Territory;

- improving access to and within Territory Growth Towns and other communities:
- applying a safe systems approach to road safety;
- reducing the impact of roads and road use on the environment;
- integrating road network planning with transport, land use and infrastructure planning; and
- meeting the road needs of industry and business for economic development.

In presenting this Strategy, I am conscious that the Territory Government cannot meet the challenges of funding to achieve all of our goals alone. The Northern Territory Government will continue to work with the Australian Government to improve road infrastructure for Territorians.

Hon Gerry McCarthy MLA Minister for Transport

Strategy Summary

Improved road network service levels and increased accessibility is a Northern Territory Government priority.

This 10 Year Road Strategy outlines the Northern Territory Government's strategic, contemporary approach to road network planning, development, management and maintenance and provides a framework for enhancing this process into the future.

A Vital Infrastructure

More than any other infrastructure, the Territory's roads are the foundation of our economy and our social life.

Until the Second World War, the Territory had less than 500 km of formed road. We now have 36 000 km and the volume of traffic is increasing steadily as our population and economy grow.

Between the period 2006 and 2011, the number of vehicles entering the Darwin region on the Stuart Highway increased by more than 24 per cent.

The task for the next 20 years is less about building new roads and more about upgrading the existing network to provide for the social and economic development of the Northern Territory.

This means improved roads to support business, industry and communities in urban, regional and remote areas. This must be done while also maintaining cyclical maintenance and periodic rehabilitation of the existing network.

Funding the Road Network

While significant improvement has occurred on our road network over the past 30 years, the aging of the road network and the shift to a higher standard of rural roads has meant an increased demand on funding for maintenance.

For Governments everywhere, the cost of improving and maintaining road infrastructure is a major budgetary consideration.

In the Territory, vast distances, a dispersed population, river and marine barriers, seasonal inundation and a low tax base substantially impact on the standard and high cost of this infrastructure. The need to transport road construction materials long distances and difficult access to materials due to land tenure and environmental concerns also contributes to the cost and complexity of these challenges.

Over the past 10 years, while there has been a significant increase in funding for Territory roads, construction costs have effectively doubled. For example, upgrading an unsealed road to a sealed road has increased from about \$200 000 per kilometre to about \$600 000 per kilometre. Upgrading an unsealed road to a good standard gravel road has increased from about \$100 000 per kilometre to about \$300 000 per kilometre.

Funding support provided by the Australian Government to assist with developing and preserving the Territory's strategic road network is of major assistance, with the Northern Territory Government receiving \$419 million in the period 2009-2010 to 2013-14.

Securing financial support from the Australian Government under the Northern Territory Government's recent funding submission to improve roads in the vicinity of the Territory Growth Towns will play a key role in helping to Close the Gap on Indigenous disadvantage and will make a life-changing difference to the people and communities involved.

The strategic importance of the Territory's roads is outlined by the 2011 Budget's Capital Works Program which provided \$307 million in combined Australian and Northern Territory Government funding for National Highways and Territory roads, including \$93 million for repairs and maintenance.

Strategic Priorities

The Strategy has been developed with reference to a broader Government policy framework. This includes the Territory 2030 Strategy, the Integrated Regional Transport Strategy, the 10 Year Infrastructure Strategy and the Working Future Territory Growth Towns initiative. All of these policies depend on an effective road network to meet the challenges and demands of the future.

The Northern Territory Government's Capital Works Program, available in the annual Budget Paper's Infrastructure Program, provides a high level action plan for this Strategy and should be referred to for detailed information on individual road upgrading and maintenance projects which are being delivered.

Supporting this, the Northern Territory Government will focus on the three strategic priorities shown in the diagram at bottom left.

To deliver these three strategic priorities, this Strategy outlines a broad range of issues and actions under the following six priority themes:

Population Growth and Social Development

 Constructing and upgrading roads and bridges in urban, regional and remote areas to keep pace with population growth and support social development.

Economic Development

 Providing roads that support the development of our current and emerging industries - including the resource, primary industry, tourism and transport sectors.

ROAD NETWORK WORKS PROGRAM

upgrading and maintenance

 enhancing stakeholder and user engagement to provide a mechanism for input into the development of the road network including capital works, minor new works and repairs and maintenance priorities;

integrating road planning with transport, land use
 and infrastructure planning to improve the quality and

integrating road planning with transport, land use and infrastructure planning to improve the quality and effectiveness of developments and improve connectivity and mobility between communities and centres; and

 continuing to seek funding support from the Australian Government for the delivery of National Highway and strategic road projects, including local and arterial roads around Territory Growth Towns. Remote Area Access Upgrading roads and bridges that connect communities to support the development of regional communities and Territory Growth Towns.

Safer Roads Making our roads safer for drivers, passengers and pedestrians through a safe systems approach that includes roads, vehicles, education and enforcement.

Environment and Asset Management

 Reducing our impact on the environment through better construction and maintenance as well as integrated road network, transport and land use planning.

National Transport Reforms

 Connecting the development and operational management of the road network with the national reform agenda.

Achievements - An Historical Context

The Territory's existing road network has been constructed since World War II. Prior to then, the longest continuous formed road in the Territory was between Darwin and Adelaide River, completed in the 1930s.

South of Adelaide River, the Stuart Highway was a meandering track. The outbreak of World War II and the concentration of defence forces in the north saw the sealing of the Stuart Highway, linking Darwin to the rail head in Alice Springs. The war also prompted the construction of the Barkly Highway to provide access to the eastern seaboard via Mt Isa.

From the 1960s on, a concentrated program to develop beef roads to support the growing cattle industry was put in place, leading to the completion of the Victoria Highway.

Over time, the Arnhem Highway has been upgraded and sealed, the Stuart and Barkly Highways were upgraded to two lanes and the Stuart Highway was sealed to the South Australian border. Two new highways - the Lasseter and Kakadu were also developed.

During the 1990s, the Victoria Highway was widened to two lanes and sealed, the Litchfield Park and Luritja Roads were constructed and progressive sealing of Larapinta and Namatjira Drives and the Tanami and Cox Peninsula Roads has been undertaken.



Achievements - Over the Past Decade

Over the past 10 years the Northern Territory Government, in partnership with the Australian Government, has strategically upgraded and enhanced the Territory's national highways and arterial road network. The total spend on projects has been over \$700 million and includes the following works:

- Construction of East Arm Port Access Stage 1 (duplication of Berrimah Road), Stage 2 (extension of Tiger Brennan Drive from Berrimah Road to the Stuart Highway including a grade separated interchange) and Stage 3 (two-way railway overpass on Berrimah Road).
- Duplication of the Stuart Highway near Noonamah.
- Construction of additional overtaking lane opportunities between Darwin and Katherine.
- Improved flood immunity on the Stuart Highway including new high level bridges over the Elizabeth (Darwin), Edith (Katherine) and Palmer (Alice Springs) Rivers.
- Improved flood protection on the Barkly Highway including reconstruction of road surface and culverts following major flooding in 2009.
- Improved flood immunity on the Victoria Highway including new high level bridges over the Victoria

- and West Baines Rivers, Joe, Lost and Sandy Creeks.
- In partnership with Asia Pacific Transport (Freightlink), developed the road and rail interface for the Alice to Darwin Railway including grade separated overpasses and bridges at Darwin, Katherine, Tennant Creek and Alice Springs.
- Reconstruction of 52 km of the Plenty Highway to good gravel standard.
- Regravelled sections of the Tanami, Buntine, Buchanan, Roper and Sandover Highways, Barkly Stock Route, Larrimah West Creek Link, Point Stuart, Ranken, Central Arnhem, Finke, Tjukaruru and Ringwood roads.
- Sealed: 29 km of the Tanami
 Road; 16 km of the Litchfield Loop
 Road; 33 km of Fog Bay Road;
 all of the Cox Peninsula Road;
 24 km of Namatjira Drive on the
 Red Centre Way; and 7 km of the
 Sandover Highway.
- Widened 32 km of seal on the Lasseter Highway.

- Reconstructed 9 km of the Buntine Highway to two lane sealed standard with a further 9 km of flood immunity works.
- Strengthened and widened 13 km of the Arnhem Highway.
- Realigned and re-graveled 35 km of the Maryvale Road and Hugh Stock Route.
- Realigned Girraween Road with Henning Road.
- Constructed a new high level bridge over the McArthur River at Borroloola.
- Improved flood immunity on the Central Arnhem Road with a new high level bridge over the Wilton and Mainoru Rivers.
- Undertook flood immunity improvements along the Port Keats Road.
- Strengthened 15 bridges across the Territory road network for higher mass vehicles.
- Strengthened the flood damaged Scorpion Creek Bridge on the Victoria Highway.
- Constructed new high level bridges on the Stuart Highway at the Hugh and Palmer Rivers south of Alice Springs.



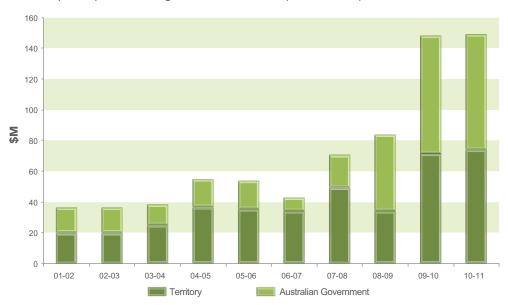
Achievements - Increased Road Expenditure

Capital Expenditure

The graph below shows the overall capital funding provided for Territory roads over the past 10 years.

While there has been a significant increase in investment in Territory roads, over this time construction costs have effectively doubled.

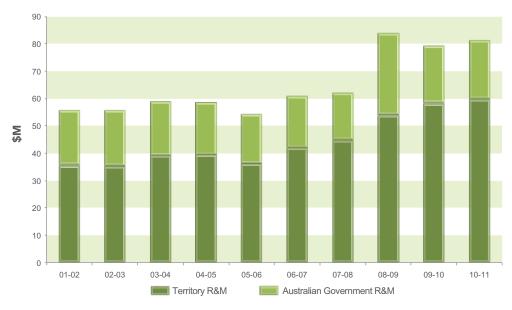
Capital Expenditure/Budget 2001-02 to 2010-11 (current dollars)



Repairs and Maintenance Expenditure

This graph below provides an overview of the level of repairs and maintenance funding for the road network over the past 10 years.

R&M Expenditure/Budget 2001-02 to 2010-11 (current dollars)



Achievements - Improved Pavement Age

National Highways

Strategic maintenance of the road network reduces wear and tear and prolongs the life of roads. The following chart shows National Highway funding levels over the past 10 years.

The optimum time between resealing or resheeting of roads is 12 years (indicated by the red line). In the early 2000s, the average time between reseals on some roads was as high as 30 years indicated by the green lines. This has been reduced significantly over the past few years with the provision of additional funding.

The Northern Territory Government is working closely with the Australian Government to improve maintenance of the National Highway network.

Funding levels and resealing schedule average: Australian Government-funded National Highways * Aust Govt Stimulus Package 10 Average years to resea Funding \$M 2001-02 2002-03 2006-07 2008-09 2009-10 2010-11 2004-05 2005-06 2007-08 Actual Reseal Target for Reseal

Northern Territory Roads

In the early 2000s, the average time between reseals on some roads was as high as 80 years indicated by the green lines. This has been reduced significantly over the past few years with the provision of additional funding.

With the Northern Territory Government roads, there has been a significant improvement in the gap between the actual (green line) and targeted (red line) age of sealed roads.

Further work is being undertaken to close this gap through a targeted repairs and maintenance regime for the Territory road network.





The Territory Road Network

The Territory's road network comprises:

- 36 000 km of roads;
- 210 bridges;
- hundreds of river and creek crossings;
- 55 roadside rest areas;
- 260 km of urban cycleways.

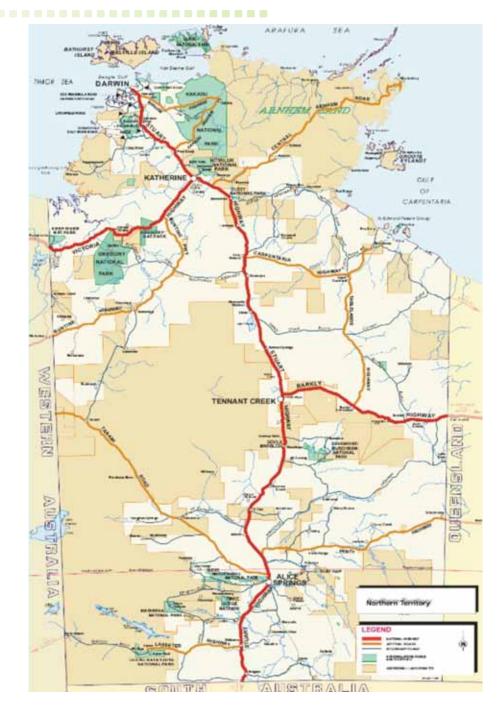
The network is owned, funded and managed by a combination of the three tiers of government, with the Northern Territory Government responsible for more than 22 000 km of the entire road network. The balance of the network is managed mainly by local government (nearly 14 000 km).

The Northern Territory Government is currently developing strategies to better manage these roads including exploring options such as the potential transfer of nearly 7 000 km of its roads to Councils to manage as a part of their local road network.

Current responsibility for various sections of the road network is outlined in the table below:

Road Type	Owned	Funded	Managed
National Highways	NT Govt	Aust Govt with NT Govt contribution	NT Govt
Major Arterial and Rural Secondary Roads	NT Govt	NT Govt with Aust Govt contribution	NT Govt
Local Roads	NT Govt Councils	Aust Govt NT Govt Councils	Councils NT Govt (in unincorporated areas)*

^{*} Unincorporated areas are areas that are not under Council control.



Road Standards

While the entire 2 700 km of National Highway is fully sealed, only 6 000 km of the remaining 33 500 km of roads are sealed.

	Sealed km	Gravel km	Formed km	Unformed km	Total km
National Highway	2 695	0	0	0	2 695
Urban Arterial	125	0	3	0	128
Rural Arterial	2 232	1 341	386	4	3 693
Local Roads managed by NT Government	1 619	5 322	4 584	3 914	15 439
Total NT Government Road Network in 2010	6 671	6 663	4 973	3 918	22 224
Local Roads managed by Local Government (estimate)*	2 000	1 894	2 117	7 931	13 942
National Parks Roads	128	1	122	262	513
TOTAL PUBLIC ROADS	8 799	8 558	7 212	12 111	36 679

Figures for Local Government Managed Roads sources from 2009-2010 NT Grants Commission Annual Report

Sealed

A road that is constructed with a bitumen surface.

Gravel

An unsealed road that has been formed and strengthened with a good quality gravel material. Generally of a higher standard than formed.

Formed

An unsealed road that has been constructed to above the natural surface using local materials. Generally of a higher standard than unformed.

Unformed

An unsealed road that is generally a flat track following the natural terrain. Often occurs as a rough track with two wheel paths, and close vegetation.

Due to their strategic importance in linking the Territory to the rest of Australia, the National Highway system has been continually upgraded and maintained to a 'fit for purpose' National Highway Standard.

This has assisted with improving year round access in terms of flood immunity, as well as providing overtaking opportunities, strengthening and widening and other road safety related enhancements. An extensive program of ongoing works is still required to improve the overall condition of the roads and to address critical issues such as reconstruction of pavements due to age.

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 low 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 to manage damage to the existing network.

Traffic Growth

The traffic volume on all Territory roads has increased steadily in recent years, driven by population and economic growth in mining, primary industry and tourism. The Average Annual Daily Traffic data for National Highways has an increasing trend along the entire road network and it is forecast that this trend will continue.

The main type of transport travelling along the national highways is passenger vehicles. There is also a high volume of larger combination vehicles (semi trailers and road trains) along these roads, accounting for almost 10 per cent of traffic on the Stuart and Victoria Highways, and 16 per cent on the Barkly Highway.

The following table provides a breakdown of vehicle usage on various road types in 2010:

	Light Vehicles	Buses	Trucks	Semis	Road Trains
Rural National Highway	78.04%	8.80%	0.43%	2.29%	5.86%
Urban Primary Arterial	95.15%	4.24%	0.10%	0.49%	0.02%
Rural State Arterial	85.29%	9.13%	0.30%	1.87%	3.41%
Rural Secondary	89.80%	6.99%	0.45%	2.38%	0.38%

Road Costs and Funding Sources

The total asset value of the Northern Territory Government's road network is \$2.3 billion, with an estimated reconstruction cost of \$3.7 billion.

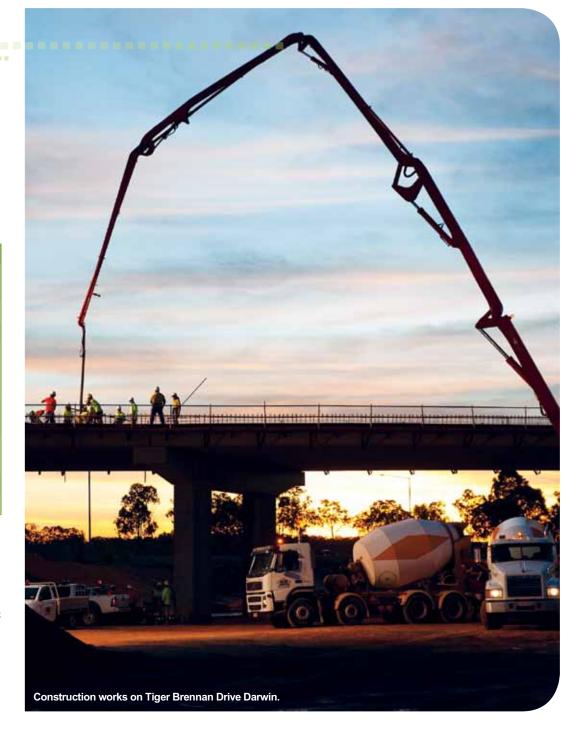
Road construction and upgrading costs can vary considerably. As shown in the table below, the reconstruction of a road to National Highway Standard can cost up to \$900 000 per km and upgrading an unsealed arterial road to a sealed standard can cost up to \$600 000 per km:

Road Type	Construction Type	Indicative Cost
National Highway	Strengthening and widening	\$600 000 - \$900 000 per km
	Overtaking lanes	\$400 000 - \$500 000 per km
	Duplication	\$3m - \$4m per km
Rural Arterial and Secondary Local Roads	Upgrade from unsealed to good standard gravel	\$200 000 - \$300 000 per km
	Upgrade from unsealed to sealed	\$500 000 - \$700 000 per km
	Strengthening and widening	\$325 000 - \$500 000 per km
Bridges and Culverts	Major bridge structures	\$5 000 per sq m
	Major culverts	\$2 500 per sq m

The Australian and Northern Territory Governments are the two main sources of roads funding in the Territory.

The Territory Government funds road projects through a cyclical Capital Works Program. The Australian Government plays a major role in providing funding for the National Highways network, as well as for other strategic roads under specific funding programs such as the Community, Beef and Mining Roads program.

The Australian Government also provides funding to Shire Councils for Local Roads.



Strategic Framework

Planning for the future of our road network is becoming more complex as new strategic drivers come into play. Planning for the future road network considers a number of Northern Territory and national policies, directions, strategies and plans.

The provision of a strong road network is important in supporting these policies and allowing access to, and delivery of, services. A few of the key policies impacting on the road network are outlined below.

Territory 2030

- Education
- Economic Sustainability
- The Environment

- Society
- Health and Wellbeing
- Knowledge, Creativity and Innovation



Government Directions

- A Working Future
- Housing the Territory
- A Smart Territory
- Healthy Territory

- Growing the Territory
- A Safe Territory
- Great Territory Lifestyle
- Greening the Territory



Public Policy and Governance



10 Year Road Strategy

Territory 2030 Strategy

Territory 2030 is an overarching community driven strategy which guides the Territory Government's direction for the next 20 years, setting Government priorities in a number of core areas. Some of the road network related goals set out in Territory 2030 are to:

- Connect our suburbs, cities, towns and regions with appropriate infrastructure to maintain our enviable lifestyle.
- Increase the number of all-weather roads to Territory towns and communities.
- Improve driver, passenger, rider and pedestrian safety to reduce the Territory's fatality rate to the national rate by 2030.
- Undertake long term planning for roads, power, water, sewerage and telecommunications.
- Identify new solutions to the key infrastructure challenges in the Northern Territory for rural roads and highways.
- Ensure Weddell has strong transport links as a world-class green city and a model for the future.

A Working Future and Closing the Gap

The Council of Australian
Government's Remote Service
Delivery National Partnership
Agreement and A Working Future
policy are combined Northern Territory
and Australian Government initiatives
which aim to Close the Gap on
Indigenous Disadvantage by improving
the lives of remote Territorians.

A Working Future's Territory Growth Towns policy specifically targets the Territory's biggest remote Indigenous communities and plans to develop them into proper towns with services and facilities like other country towns in Australia.

The provision of a high quality road network and all year access will be a key enabler for the development of these communities by improving access and mobility.

An extensive survey of the existing local and arterial roads network surrounding the 20 communities was undertaken in 2010 and this has formed the basis of an extensive funding submission to the Australian Government. If endorsed, the outcomes from the proposal will result in significant improvements to road conditions, safety and Wet Season access.

DEPARTMENT OF LANDS AND PLANNING



NT Infrastructure Strategy

The 10 Year Infrastructure Strategy will consider economic, social and environmental sustainability, and provide guidance for determining infrastructure priorities over the next decade. The strategy will address priorities for action, including:

- the development of transport infrastructure; and
- the need for integrated infrastructure planning and management.

to ensure systems meet the needs of the Territory's growing community and economy.

Integrated Regional Transport Strategy

The Integrated Regional Transport Strategy provides a focus on the development of transport services for the remote and regional areas of the Northern Territory, including passenger bus services. The strategy also recognises the important role a good level of road infrastructure plays in allowing for the delivery of effective and reliable passenger and freight transport services to outlying Indigenous communities throughout the Territory.

Climate Change Policy

Strategic roads planning and construction requires consideration of the impact of the environment and climate change on roads infrastructure and visa versa. Some of the issues taken into account by the Northern Territory Government include:

- the impact of floods, higher temperatures and heat stress on roads and bridges and the associated impact on safety;
- the vulnerability of coastal infrastructure;
- long-term infrastructure planning to account for climate change and lessen impacts on the environment: and
- consideration of how a changed climate will affect the way people use transport infrastructure including roads.

Identifying and Prioritising Roadworks

The road development and maintenance prioritisation process includes undertaking stakeholder consultation and considering a range of road planning and asset management principles. A key consideration is optimising the life of the existing pavement through maintaining it in a safe and effective condition.

Stakeholder and User Engagement

Historically, key stakeholder feedback has been on an individual or ad-hoc basis, with stakeholder priorities feeding into the broader planning space. The Strategy has also considered feedback from the public consultations for the overarching strategies.

Regular formal and informal interaction with stakeholders, including through close cooperation and working relationships is essential to:

- provide an update on projects of interest to respective stakeholders;
- outline key priorities for the short, medium and long term; and
- provide a mechanism for formal input into the determination of capital works, minor new works and repairs and maintenance priorities.

In the future, the Northern Territory Government will be implementing a more collaborative framework for engaging with industry and the broader community regarding road planning and development priorities.

User Satisfaction Index

The User Satisfaction Index is an independent survey of road users undertaken by AustRoads (the association of state, territory and New Zealand road authorities) to determine satisfaction with the road network. The index rates roads by features, safety, environmental impact, social issues, services and traffic management.

The 2010 survey results demonstrate that the Northern Territory has one of the strongest scores in Australia, scoring 3.44 compared to an Australian average of 3.28 (NSW 2.89; Vic 3.33; Qld 3.11, SA 3.18 and WA 3.48).

The survey recommends that three factors need to be focussed on – features, social issues and traffic management.

Key Stakeholders

- Australian, NT and Local Government.
- Community and User Groups.
- Primary, resource, tourism and transport industries and representative groups.
- · Land Councils.



Road Planning Considerations

As well as stakeholder feedback and funding availability, a number of key considerations are taken into account during the strategic road planning stages:

Government Strategic Priorities

This ensures that road network requirements are aligned to support the delivery of major government policies and initiatives, including to assist with the provision of, and access to, services, for example A Working Future's Territory Growth Towns policy.

Growth and Development

This involves ensuring that roads are provided to support population growth and economic and social development and changes in passenger and freight service demand, for example large new industrial projects such as INPEX.

Integrated Planning

This includes considering current and future land use and development, the integration with transport freight multi-modal supply chains via rail, air and sea and passenger service requirements, and integration with

the planning of other infrastructure such as schools, hospitals and recreational, shopping, business and residential centres.

A Safe Systems Approach

A priority consideration is undertaking a safe systems approach to road safety by considering the interaction between road users, roads and roadsides, travel speeds and vehicles in the design of new roads and the maintenance and upgrading of existing road systems.

Managing Demand as well as Supply

Demand management approaches are used to avoid or delay more expensive supply-side investment by managing the level and timing of demand placed on road infrastructure assets.

Asset Management

This involves using a whole-of-Government and whole-of-Territory structured governance framework to ensure consistency in approach across government to infrastructure management, maintenance and upgrading across agencies including:

- · planning and budget allocation;
- performance measurement and review;
- maintenance and disposal of assets;
- · collection of data; and
- · infrastructure investment.

This is a total asset management approach which includes the application of whole of life costing principles to ensure value for money in the provision of road assets to the community.

Traffic Modelling

This involves determining who uses the roads and how often, both now and into the future. This is achieved through a network of data collection sites which monitor traffic movements on the road network and the mapping of data against planned growth scenarios. It helps to establish timeframes for major road projects, assess the transport implications of emerging developments and the best options for integration of different transport modes.



The Infrastructure – Capital Works Program

The Infastructure Program is the Northern Territory's strategic funding program for the construction and maintenance of assets and is a major component of the Territory's annual Budget.

Funding received from the Australian and Northern Territory Governments is combined during the development of the Program, which includes road network related **capital**, **minor new works** and **repairs and maintenance** projects:

Capital or Major New Works

 Major road construction or upgrading projects with a value of more than \$500 000.

Minor New Works

• Projects with a value of less than \$500 000.

Repairs and Maintenance

Projects to maintain the existing road network in a working condition.

The programming process commences with the identification and prioritisation of road projects on a Forward Works Program, which occurs three to four years ahead of funding being sourced and allocated.

Projects then proceed to a Design List one year prior to funding, where detailed design and cost estimates are established.

Projects then enter a Construction Program phase where funding is provided and construction is undertaken.

The following diagram explains the nature of the Capital Works process:

Forward Works

3 - 4 years prior to funding

Project identification and prioritisation
Estimated costs
Alignment with Territory 2030 objectives



Design List

1 year prior to funding

Project Review
Funding for detailed project design
Firm cost estimates developed
Site clearances and approvals obtained



Construction

Funding year

Project reviewed for implications for service delivery and economic development
Project has all clearances and accurate cost estimates
Project can proceed directly to construction once funded

While the capital works program is varied to incorporate cyclical priorities, the underpinning program priorities and a number of key road improvement projects are contained within the current program.

Territory Network

- Increasing the number of all-weather roads to Territory Growth Towns and undertaking road and bridge upgrading works in and around these towns and other communities.
- Undertaking upgrading and maintenance of the road network including strengthening, widening and flood immunity improvements.
- Continuing to enhance operational efficiency of the road network in major urban centres.
- Carrying out road safety improvements to the road network using a Safe Systems approach including under the Black Spots Program.
- Implementing a requirement for development of Indigenous building and training capacity in all regional and remote road construction and maintenance contracts.
- Constructing new and upgrade / extend existing cycleway and walkway networks in urban areas, in conjunction with local government.
- Transferring the management of approximately 7 000 km of local roads to Shire Councils.
- Continuing to upgrade major beef, mining and tourism roads.
- Progressively upgrade regional access routes such as the Central Arnhem Road.

Specific Roads

- Improving road access into Middle Arm and the INPEX development including upgrading and sealing of Jenkins Road.
- Continue staged upgrading of Tiger Brennan Drive including improved access to East Arm Port precinct.
- Improving flood immunity on the Stuart, Victoria and Barkly Highways (National Highways).
- Undertaking road safety initiatives (such as truck and car rest areas) on the National Highways.
- Upgrading the Port Keats Road and constructing a high level bridge over the Daly River.
- Improving safety and accessibility on Central Arnhem Road by bridging major stream crossings, road realignments and widening works.
- Upgrading the Tanami Road by extending the seal towards Yuendumu.
- Constructing more overtaking lanes on the Stuart Highway between Katherine and Darwin.
- Undertaking strengthening and widening works on the National Highways,
 Arnhem Highway, Buntine Highway and other rural arterial and local roads.
- · Completing the sealing of the Litchfield Park Loop Road.
- Completing the sealing of Namatjira Drive and extending the seal on Larapinta Drive.

Priorities for Future Action

A broad range of issues and actions that will enable the Territory to continue to undertake a contemporary approach to strategic road network planning, development, management and maintenance are outlined in this section under six priority themes.

The key issues outlined under each theme have been identified through consultation and communication with stakeholders at all levels. There are significant synergies between the themes and some actions will appear in more than one place.

Population Growth and Social Development

• Constructing and upgrading roads and bridges in urban, regional and remote areas to keep pace with population growth and support social development.

Economic Development

• Providing roads that support the development of our current and emerging industries - including the resource, primary industry, tourism and transport sectors.

Remote Area Access

• Upgrading roads and bridges that connect communities to support the development of regional communities and Territory Growth Towns.

Safer Roads

• Making our roads safer for drivers, passengers and pedestrians through a *safe systems* approach that includes roads, vehicles, education and enforcement.

Environment and Asset Management

• Reducing our impact on the environment through better construction and maintenance as well as integrated road network, transport and land use planning.

National Transport Reforms

• Connecting the development and operational management of the road network with the national reform agenda.

Population Growth and Social Development

Population growth is a major driver for the development of our road network. The growth of cities and communities, including the development of new suburbs in urban areas and Indigenous communities in remote areas, impacts on existing road infrastructure and the demand for new and upgraded roads.

Good roads, wherever you live in the Territory, facilitate access to opportunities and services including employment, community networks, health, education, recreation and business.

Current Situation

With 229 000 people living in 1.3 million square kilometres, the Northern Territory has the smallest population density of any jurisdiction in Australia.

Our urban residential population is compacted into a total land area of less than 60 square kilometres while more than a quarter of our residents live in towns and communities considered to be remote or very remote.

Future Trends

The Territory's population is expected to grow to about 263 000 over the next 10 years.

Growth is projected to be strongest in the Greater Darwin area and the East Arnhem region. Alice Springs is expected to have moderate population growth. The development of the new city of Weddell in the Darwin rural area and suburb of Kilgariff in Alice Springs will place a continued emphasis on the need for the integration of transport, infrastructure and land use planning across the road network.

The population of other Territory regional areas is expected to grow at differing rates with significant changes in the distribution of the Indigenous population, with greater concentration in larger centres and reduced numbers in smaller communities in Central Australia.

The Northern Territory Government is committed to urban development which is socially responsible and sustainable.

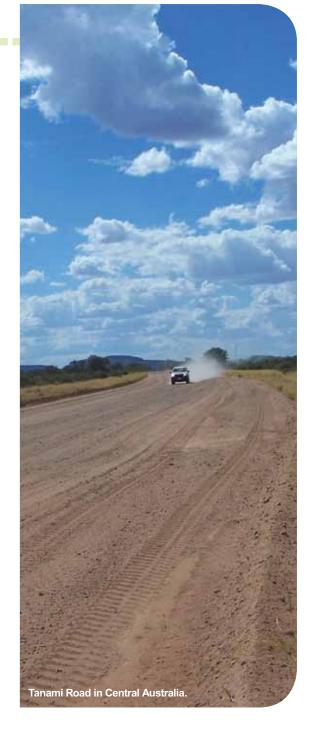
This is achieved through enhancing the amenity and useability of our communities by considering mobility and connectivity between community, business, industrial, recreational and residential areas in the planning process. This connectivity extends beyond roads to include walkways, cyclepaths and the use of public transport services and multi-modal freight hubs and corridors.

Roads play a vital part in the planning and delivery of public transport.
Road enhancements such as the new Tiger Brennan Drive project and the construction of dedicated park and ride facilities in the Darwin rural area and their interface with the road network, support an effective public transport system.

A high quality, all-year, road network is the key enabler in the social development of the Territory Growth Town communities by providing a connection to services in other centres as well as recreational, cultural and social activities.



Priority Issue or Outcome	Action
The Territory maintains an enviable lifestyle with our suburbs, cities, towns	Continue to integrate transport, land use and infrastructure planning with road network planning.
and regions connected by appropriate infrastructure.	Increase the number of all-weather roads to towns and communities, including Territory Growth Towns.
	Undertake road infrastructure works outlined in <i>Territory Growth Towns</i> Local Implementation Plans.
	Engage with key stakeholders to develop targeted responses to specific needs.
The Territory's major centres will be recognised for their high public amenity.	Implement a Roads Landscape Masterplan for major urban areas.
Undertake long term planning for roads, power, water, sewerage and telecommunications.	Develop and implement an NT Urban Arterial Roads Plan (staged development of urban arterial road network) and an NT Link Strategy (development of key arterial roads).
	Facilitate the rollout of the National Broadband Network.
Investment and Infrastructure – Identify new solutions to the key infrastructure challenges in the Northern Territory for rural roads and highways.	Investigate innovative project and program delivery methodologies.
In other urban centres outside of	Enhance the urban arterial network in urban centres outside Darwin.
Darwin, population growth will lead to continued urban development.	Ensure road and transport planning is an integral part of new suburb planning.
Operation of heavy vehicles in the	Monitor local distribution patterns of heavy vehicle traffic.
urban environment is achieved without increasing traffic hazards or reducing	Consult with peak transport industry groups.
the liveability of communities.	Target the use of appropriate safety devices such as signage, lighting and red light / speed cameras.
	Identify specific freight and heavy vehicle routes in urban areas.
Development of Territory Growth Towns.	Develop road networks in <i>Territory Growth Towns</i> in line with new town plans. See Remote Access section for more detail.
Ensure linkages through the development of key arterial roads.	Develop key rural arterial roads to provide an appropriate level of service for regional development and transport needs.



Economic Development

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.

An analysis of Territory development suggests that the following priority road projects will need to take place over the coming decade to meet demand:

- the Territory Growth Towns road links;
- roads servicing proposed mining in the Roper Gulf and southern regions;
- upgrades to the Arnhem Highway to facilitate development of oil and gas industries;
- sealing of Litchfield Park Loop Road and roads in Douglas / Daly River;
- roads linking the city of Weddell and residential development on the Cox Peninsula;
- the Kilgariff residential development in Alice Springs; and
- further development of the Red Centre Way.

Mining and Energy Production

The Territory is rich in minerals and energy. The sector is a significant contributor to the Territory economy through the mining of minerals such as gold, bauxite, manganese and uranium as well as the development of gas. Mining and energy production make up the bulk of exports from the Territory and this is forecast to grow and broaden into the future, with major projects such as the Ichthys gas field and processing plant.

The mining industry places unique demands on the road network, due to its geographically dispersed nature and demand for year round heavy vehicle access. However, low traffic volumes, large gross vehicle masses, fluctuating market place values and often remote locations impact on the cost and sustainability of road infrastructure.

Primary Industry

Primary industry – cattle, fishing, aquaculture and horticulture - plays a vital role in the Territory economy and relies on a quality road network for its success.

The Territory's pastoral industry produces around 580 000 cattle a year from stations spread across the whole of the Territory, with many in remote areas where year-round access is difficult to both build and maintain. Cattle are transported by heavy vehicles, placing greater stress on unsealed roads and increasing maintenance costs for vehicles. The fluctuating market demand for live exports, including the need to move cattle in the Wet Season due to the moving Ramadan calendar, has required more emphasis on a move to year round access to the road network.

The horticultural industry is worth around \$120 million a year to the Territory economy. As it continues to grow and diversify, the impact of road conditions on the quality of product can be significant and the increasing demand for road access to markets is increasing.

Tourism and Travel

The Territory relies heavily on tourism for wealth and employment, and is a major attraction due to its diverse geographic and cultural experiences.

Continued growth in tourism and extension of the tourist season into the Wet Season will increase the demand for all weather access to Territory attractions. Major tourism attractions are spread over a large area, requiring visitors to travel long distances over unsealed roads.

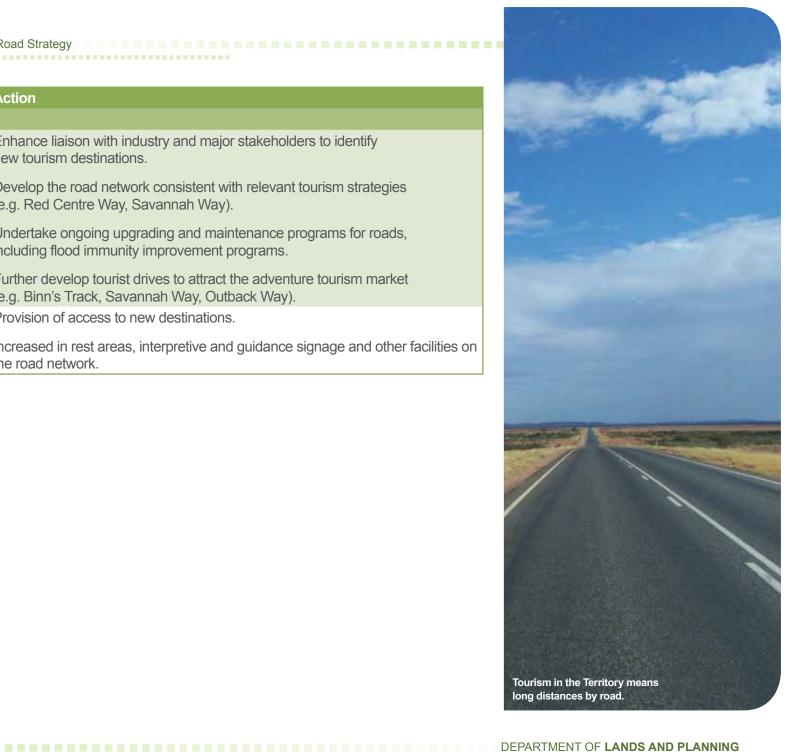
Some visitors come to the Northern Territory to experience the outback and remote experience, including our tourism and four-wheel-drives, such as the Savannah Way and Outback Way and Binn's Track. Others are looking for easy road access to attractions.

Major highways have undergone extensive upgrading in recent years, particularly the Victoria Highway, while the development of the Red Centre Way and Litchfield Loop roads are continuing in support of the tourism industry. There is also demand from industry to improve road access to tourism experiences being developed in remote communities by local Indigenous enterprises and within the Territory parks as well.

Priority Issue or Outcome	Action
Economic Development	
Major industrial developments such as INPEX on Middle Arm require high standard, year-round access.	Engage with key stakeholders to develop targeted responses to specific needs (e.g. future extension of the duplication of Berrimah Road to the Port).
High standard access to ports and railheads.	Upgrade access to Middle Arm by sealing Jenkins Road and intersection improvements on Channel Island and Wickham Point roads.
	Complete Berrimah Road rail overpass.
Potential change to regional freight distribution patterns on the Stuart Highway and elsewhere due to rail.	Develop and maintain regional distributor roads by monitoring freight distribution trends and responding to needs.
Resources	
Demand for road maintenance and construction associated with resource	Enhance liaison with industry and major stakeholders to forecast demand.
extraction and processing. Low traffic volumes but high percentage of heavy vehicles and short-term	Develop, implement and review a maintenance strategy for key mining and industrial roads.
	Undertake construction, rehabilitation and/ or sealing of priority roads.
demand.	Explore user pays and cost sharing arrangements through consultation with stakeholders.
Primary Industry	
Demand for year-round access to road transport.	Enhance liaison with industry and major stakeholders to forecast demand.
Demand for a higher standard of road to protect vehicles and produce.	Develop a National Highways flood immunity program in conjunction with targeted flood immunity, strengthening and widening programs.
	Plan and further develop the arterial road network to principal hubs of primary production.
	Improve access to distribution nodes such as ports and rail terminals.
	Implement Australian Government programs such as the Community, Beef and Mining Roads funding program.



Priority Issue or Outcome	Action
Tourism and Travel	
Provision of higher standard access to high profile destinations.	Enhance liaison with industry and major stakeholders to identify new tourism destinations.
	Develop the road network consistent with relevant tourism strategies (e.g. Red Centre Way, Savannah Way).
	Undertake ongoing upgrading and maintenance programs for roads, including flood immunity improvement programs.
	Further develop tourist drives to attract the adventure tourism market (e.g. Binn's Track, Savannah Way, Outback Way).
Demand for all-year access.	Provision of access to new destinations.
	Increased in rest areas, interpretive and guidance signage and other facilities on the road network.



Remote Access

With 25 per cent of Territorians living in regional and remote centres, providing and maintaining roads to these dispersed areas is important, but costly and difficult.

More than 50 per cent of the Northern Territory landmass is Aboriginal land which contains many community access roads. This strategy recognises the need to continue building strong relationships with land councils, such as the Northern Land Council and Central Land Council, to underpin road upgrades for improved community accessibility.

Many communities, outstations and pastoral properties have only minimum standard road access, and links to the wider road network are closed or are weight restricted for months at a time during the Wet Season.

Coastal communities may be serviced by barges during this period for the carriage of freight, whereas the inland communities rely heavily on road access. Air services are sometimes the only alternative transport mode available when roads are inundated.

Current Situation

A Working Future, Government's strategy to improve the lives of Territorians living in remote areas,

includes plans to develop Territory Growth Towns and improve living conditions for all remote area residents.

It is the most significant reform impacting on the provision of infrastructure to remote communities in the Territory's history.

The Territory Growth Town initiative is based on a 'hub and spoke' model of delivery that will enhance services and economic development opportunities for about 80 per cent of the Northern Territory's remote Indigenous residents. Key to this model is the development of a reliable road network.

Many of the roads associated with Territory Growth Towns are on Aboriginal Freehold land granted under the *NT Aboriginal Land Rights Act*. Some have not been excluded from the underlying tenure, raising questions as to their status as public roads. Establishment of public road corridors and the associated powers to care, control and manage these roads should be undertaken.

Future Trends

Improvements in road infrastructure to facilitate connections between communities, outstations, pastoral properties and major centres will require strategies for both major arterial roads and local access roads.

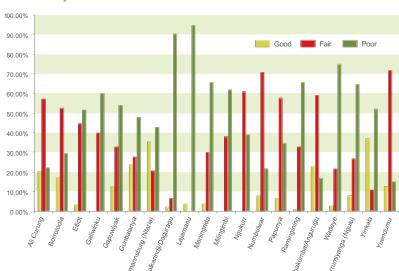
Road surveys completed within 50 km of each of the Territory Growth Towns have found a need for a major investment in road infrastructure (as outlined in the following diagram). Meeting this demand will be an enormous challenge moving forward.

The Australian and Northern Territory Governments are working in

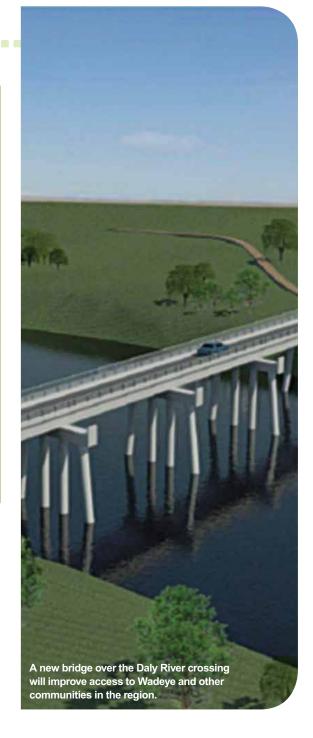
partnership to respond to this challenge. A number of works have already been programmed to upgrade roads and bridges in the vicinity of Territory Growth Towns, with other identified proposed works collaborated into a submission to the Australian Government.

The Submission targets improvements to road conditions, safety and Wet Season access, that will make a major contribution to the achievement of the objectives of Closing the Gap and to many of the action items contained in the Local Implementation Plans (LIPs) for the Territory Growth Towns.





Priority Issue or Outcome	Action
Enhance access to essential services	Engage with key stakeholders to develop targeted responses to specific needs.
and community facilities.	Continue to work with the Australian Government for funding.
	Upgrade roads in and around Territory Growth Towns, including in line with Local Implementation Plans.
	Manage implementation of Australian Government local road improvement plans.
Indigenous economic development.	Develop building and training capacity in road construction and maintenance contracts, for all regional and remote road construction and maintenance contracts.
Improved Wet Season access.	Undertake improvements such as pavement strengthening, sealing and flood immunity measures.
Develop options for better management of local roads.	Develop principles for the potential progressive transfer of local roads to Shire Councils and single user roads to pastoralists over 5 to 10 years.
	Continue to work with the Department of Housing, Local Government and Regional Services, Northern Territory Treasury, Shire Councils and the Local Government Association of the Northern Territory to assess funding needs.
Road Reserve Land Tenure.	In conjunction with the Departments of Housing, Local Government and Regional Services and Justice, resolve road reserve land tenure issues on Aboriginal land.



Safer Roads

Every year far too many people in the Northern Territory are killed and injured as a result of road crashes. While speeding, alcohol and the non-wearing of seatbelts remain the major causes of accidents, road design can play a part in improving road safety.

The Northern Territory has adopted a *Safe Systems* approach to road safety, integrating all elements impacting on improving safety outcomes, including road infrastructure, vehicles, education and enforcement.

Current Situation

A large proportion of the existing National Highway and arterial road network was constructed during the 1960s and 1970s. An increasing number of roads are now reaching the end of their economic life.

Sections of road highway have failed due to pavement deterioration which in some instances has been accelerated due to the inundation during the Wet Season.

The many kilometres of unsealed Territory roads and extreme conditions relating to weather, distance, dust and road surface types mean that drivers need to ensure they drive to suit conditions.

Future Trends

The Northern Territory's *Safe Systems* approach to road safety views the road transport system holistically by seeking to manage the interaction between road users, roads and roadsides, travel speeds and vehicles. This is an inclusive approach that caters for all groups using the road system, including drivers, motorcyclists, passengers, pedestrians, cyclists and commercial and heavy vehicle drivers.

The Northern Territory Government has a number of ongoing initiatives, campaigns and reforms being put in place which aim to reduce the number, severity and cost of road crashes in the Territory. Key focus areas are young driver safety, Indigenous road safety, safer speeds, motorcycle safety and alcohol/drug awareness.

The Northern Territory Government also provides input to the National Road Safety Strategy and its related work program and national public information campaigns.

Safety related road network improvements derive from two broad categories:

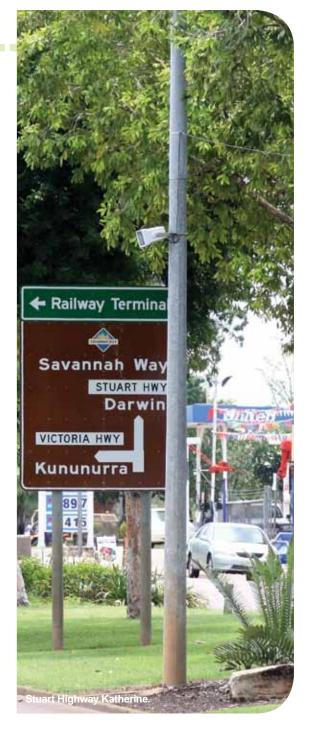
- investment in new road construction and major upgrades, including highway duplication; and
- expenditure on safety focused road works. This includes black spot remedial programs, intersection treatments and a higher level of sealed road shoulders.

The function of a road is taken into account in designing the road and applying infrastructure treatments.

For example, vulnerable road users such as cyclists can be assisted by implementing traffic calming measures on roads to slow cars down. On higher speed roads, separation of cyclists from motorised vehicles is desirable.



Priority Issue or Outcome	Action
Data and information management.	Continue to undertake road network safety audits and inspections.
	Continue to enhance road condition reporting, including the employment of short messaging and social media to alert road users to conditions.
	Continue to provide road condition information to the travelling public.
Infrastructure improvements.	Engage with key stakeholders to develop targeted responses to specific needs.
	Progressively eliminate identified black spots through the Australian Government's Black Spots Program.
	Continue to develop the network of rest areas and parking bays.
	Remove obstructions, providing clear zones and improved signage, line marking and delineation on the road network.
	Undertake ongoing traffic management including passing lanes, turning lanes, roundabouts and intersections with signals.
	Undertake minor works including fencing, street lighting and improvements to road geometry and sight lines.
Safety for cyclists and pedestrians.	Continue to develop footpaths and cyclepaths in consultation with user groups.
	Develop and implement a NT Cyclepath Strategy.
	Upgrade of facilities to achieve Disability Discrimination Act compliance.
Road safety awareness.	Continue to implement road user education and public awareness campaigns targeting driver and pedestrian behaviour.



Environment and Asset Management

Reducing the impact of roads on the environment is a priority of the Northern Territory Government under its Climate Change Policy. Good planning, strategic asset management, integration with land use planning and sympathy with the surrounding environment can all help to contribute to the positive environmental impact of roads.

Current Situation

Roads impact on the environment in many ways:

- materials and energy used in the construction and maintenance process;
- construction;
- roads, bridges and associated drainage works;
- · interference with natural drainage;
- providing an avenue for the transport of weeds and pests;
- providing an avenue for fire ignition which can enables fire management.

In addition to this, vehicles using the road network also impact on the environment through the use of fuel, oil and other products.

Future Trends

With the population of the Territory growing by around 2 per cent a year, the road network will continue to underpin the sustainable development of major centres and communities. Road transport represents the most feasible and affordable transport solution for most communities and for many industries.

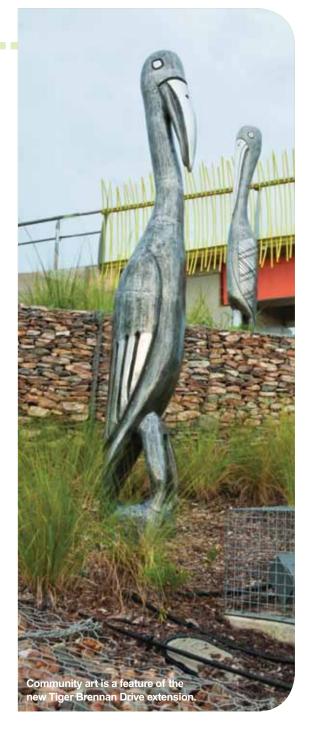
Integration of road network, transport, infrastructure and land use planning can reduce reliance on vehicle traffic, by providing improved connectivity and accessibility for the movement of freight and by enabling more to people walk, cycle or use public transport.

This process is being used to plan for future urban and regional developments such as the new suburb of Kilgariff in Alice Springs and the new City of Weddell in the Darwin rural area.

Integrated planning is also a consideration in the Greater Darwin Region Land Use Plan, which sets out a plan for the future development of the region including the East, Middle and West Arms of the Darwin Harbour. Associated with this strategic planning is the identification and preservation of transport and road corridors to connect these major centres for both the movement of freight and people, including light rail.

Strategic road asset management, maintenance and upgrading programs are also used to preserve physical assets and assist with reducing impact on the environment through:

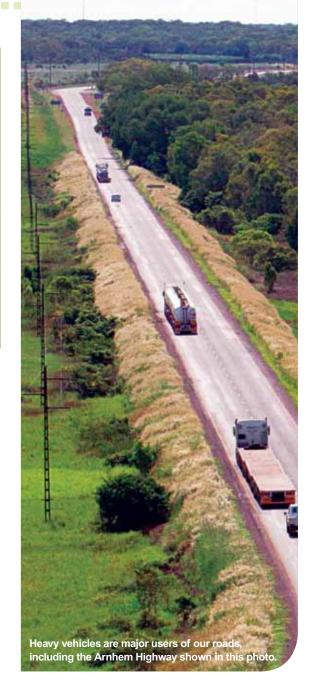
- · reducing the use of resources;
- improving reliability and accessibility;
- · increasing road safety; and
- · prolonging asset life.



Priority Issue or Outcome	Action
Integration of transport and land use planning.	Integrate transport and land use planning including environment considerations in the strategic road network decision-making process.
	Improve pedestrian paths and cycleways.
	Strengthen awareness, knowledge and skills in environmental issues affected by road network operations.
Protecting our environment through	Develop and implement appropriate policies for:
policy where appropriate.	incident and accident management for fires and spills;
	road reserve management;
	heritage sites;
	native vegetation clearing controls and weed management; and
	land management and landscape strategy.
Ensure our road network operates efficiently.	Improve the operational efficiency of the road network through a Network Operations Plan.
The high average age of our roads and the need for major capital investment above current funding levels.	Continue to evaluate current and future priorities within Australian and Northern Territory Governments' strengthening and widening programs.
	Undertake regular consultation with the broader community to ensure funding is allocated against highest priority needs.
	Continue to implement the National Land Transport Network Program on Territory National Highways.
Protecting and maintaining	Monitor compliance with weight restrictions to protect roads from damage.
Territory roads.	Continue the Australian and Northern Territory Governments' strengthening and widening programs.
Impact of climate change and climate change policies on vehicles, industry	Support improved vehicle technology as well as the use of better and alternative fuels.
and agricultural activities.	Continue to implement the Department of Lands and Planning Climate Change Adaption Plan.



Priority Issue or Outcome	Action
Impact of floods, higher temperatures	Review road designs utilised across the NT for currency.
and heat stress on roads and bridges and the associated impacts on safety.	Design bridge works to ensure that flood events are modelled according to the best available data.
Vulnerability of coastal infrastructure.	Identify infrastructure at risk.
Maintenance costs are increasing rapidly due to the combination of the above influences.	Review funding levels against desired and achievable levels of service, with an aim to increase available maintenance funds.
The need to increase funding to ensure roads are maintained at a financially sustainable level.	Support increases in funding to maintain the required standard of the network.
A continued improvement in road standards is sought by the community.	Introduce enhanced maintenance management systems and best practice maintenance management processes.
Monitoring of compliance with load limits to protect road assets.	Undertake routine network management, particularly on parts of the network subject to flooding where limits are imposed following flood events.



Transport Reforms

The Northern Territory Government participates in the development and implementation of a number of transport reforms, many of which impact on road infrastructure through the use and standard of heavy vehicles.

For example, the introduction of heavy vehicle fatigue management requirements in the Territory has resulted in an increased need for truck parking bays while higher mass limits means our bridges must be stronger.

The Northern Territory will continue to participate in the reform process and take into consideration the impact on the road and bridge network during the planning process.

Priority Issue or Outcome	Action
National Transport Reform.	Participate in the National Transport Reform agenda and continue to advocate for the particular needs of the Territory from both an economic and social viewpoint.
	Implement administrative, statutory and operational requirements for the National Heavy Vehicles Regulator by 1 January 2013.
	Assess the impact of reforms on the Territory road network and wider community.
	Undertake infrastructure improvements necessary to implement reforms.
Heavy Vehicle Reform.	Implement the infrastructure recommendations of the Darwin Region Heavy Vehicle Task Force once approved.
Integrated Regional Transport Strategy.	Implement relevant transport infrastructure associated with initiatives.
NT Transport Strategy.	Implement required transport infrastructure recommendations once approved.





Department of Lands and Planning GPO Box 2520 Darwin NT 0801

Phone: 8924 7531 www.nt.gov.au/transport

email: roadnetwork dlp@nt.gov.au

Road Reports www.roadreport.nt.gov.au Phone: 1800 246 199

