NT Infrastructure Audit **2023**

INFRASTRUCTURE NT · NORTHERN TERRITORY

About Infrastructure NT

Infrastructure NT is the Northern Territory's infrastructure body. Infrastructure NT undertakes strategic infrastructure planning and development that co-ordinates and aligns infrastructure needs with economic and population growth.

Acknowledgement of Country

Infrastructure NT acknowledges the Traditional Owners and Custodians across the Northern Territory and their connection to country.

We pay our respects to their communities and Elders – past, present and emerging.

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Commissioner's statement

Louise McCormick

Infrastructure Commissioner
of the Northern Territory

Infrastructure NT commissioned an Infrastructure Audit to find out what needs to be done to make sure our existing and future infrastructure needs can be met to achieve the Northern Territory Government's vision of a $40 billion economy by 2030.

People are at the heart of why we need infrastructure in the Territory – so they can live, learn, play, work and prosper for years to come.

We are following a place-based approach to target the different and specific circumstances experienced in communities across the Territory to make sure existing and new infrastructure meets the needs of local people.

This does not necessarily mean building more and bigger infrastructure. We need to look at the infrastructure we have, see how it meets or does not meet the needs of the community and how it can be improved or repurposed. Then we can determine what new infrastructure is required to meet community needs and enable growth of our industries.

The Northern Territory Infrastructure Audit 2023 identifies the underlying reasons why we have gaps in infrastructure and points to the possible solutions to address historical issues while planning for future infrastructure needs.

Infrastructure NT acknowledges there are infrastructure gaps and constraints in the Northern Territory. That is why the Northern Territory Government is planning significant investments to grow the Territory. The Infrastructure Audit will provide the data, information and analysis to support future looking infrastructure investment planning to meet the needs of the community and businesses.

Infrastructure enables growth and will help the Territory reach its growth targets.

NT growth targets

Gross State Product $40 billion by 2030

Diversify our economy to build resilience

Lead the green economy – sustainable transition to net zero

Create 35 000 more jobs

Boost our population to 300 000 to create critical mass

1 Executive summary

The Northern Territory Government has an ambitious target to create a $40 billion economy by 2030.

To achieve this, we need infrastructure that can meet the social and economic needs of Territorians and help attract and retain people and major projects in the Territory.

Historically, the Northern Territory has faced challenges to grow the economy, population and infrastructure base. The Infrastructure Audit 2023 aims to provide advice on how to be more strategic in the use of, and investment in, our infrastructure.

The Territory has a relatively small open economy heavily influenced by external economic conditions such as exchange rates, commodity prices, interstate and international migration flows, as well as investment in major projects.

The distinctive structure of the economy is influenced by our relatively small population distributed over a large and mostly remote area. Significant distances separate the Territory's main population centres from each other and the rest of Australia.

These ongoing challenges – a well-known low infrastructure base, vast distances and sparse populations – intensify the need to invest in the right infrastructure in the right place at the right time.
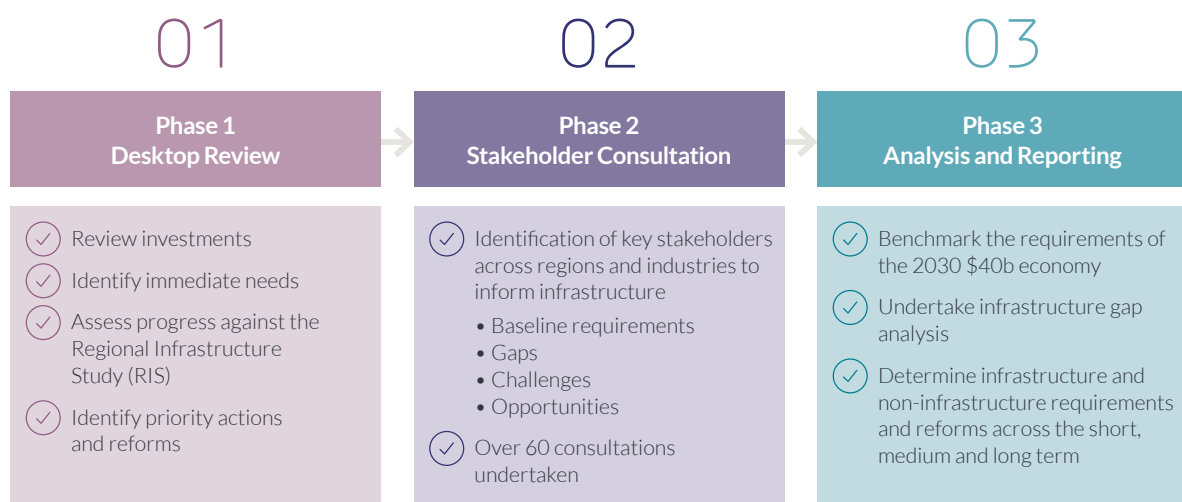
The process

The Audit was developed after collaborating and partnering with a range of diverse stakeholders to capture a wide range of feedback on how infrastructure can be used to respond to these opportunities and challenges.

The Audit captures the Northern Territory's future infrastructure needs to cope with future challenges and opportunities, while acknowledging the gaps and constraints.

The Audit's findings will be used to inform planning, project evaluation, potential investment decisions, and identify opportunities at regional and sectoral levels to support the growth of the Northern Territory.

It provides an evidence base to guide future infrastructure investment decision making and focus attention on investments and reforms to improve living standards and productivity in the Territory.

The Audit included a three phase approach

01

02

03

Phase 1 Desktop Review	Phase 2 Stakeholder Consultation	Phase 3 Analysis and Reporting
✓ Review investments ✓ Identify immediate needs ✓ Assess progress against the Regional Infrastructure Study (RIS) ✓ Identify priority actions and reforms	✓ Identification of key stakeholders across regions and industries to inform infrastructure • Baseline requirements • Gaps • Challenges • Opportunities ✓ Over 60 consultations undertaken	✓ Benchmark the requirements of the 2030 $40b economy ✓ Undertake infrastructure gap analysis ✓ Determine infrastructure and non-infrastructure requirements and reforms across the short, medium and long term

How it will be implemented

The Northern Territory Infrastructure Audit is one of four elements comprising the Infrastructure Framework.

NT Infrastructure Framework
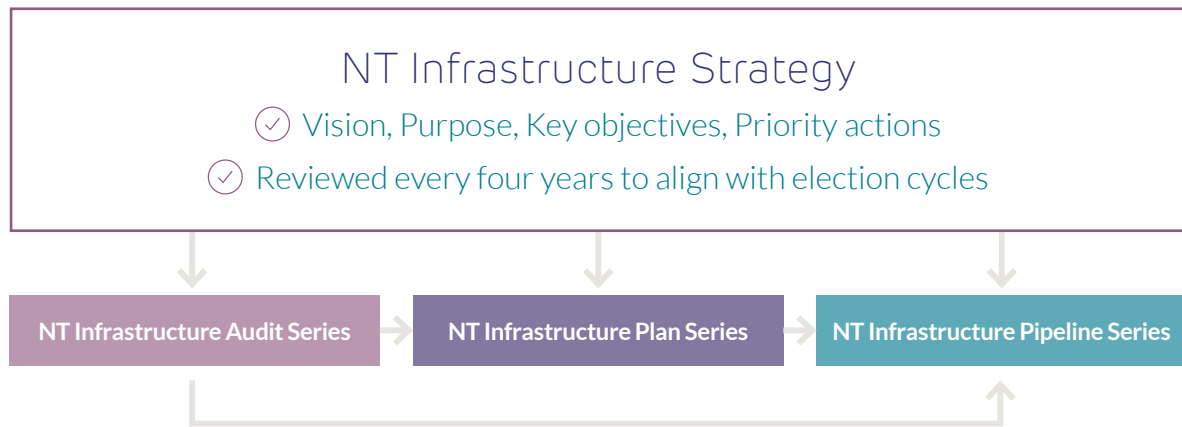
The Framework provides clear direction on planning, developing and delivering government infrastructure investment. The role of the Audit is to:

- establish an infrastructure needs assessment
- undertake a gap analysis of the baseline infrastructure and service level standards
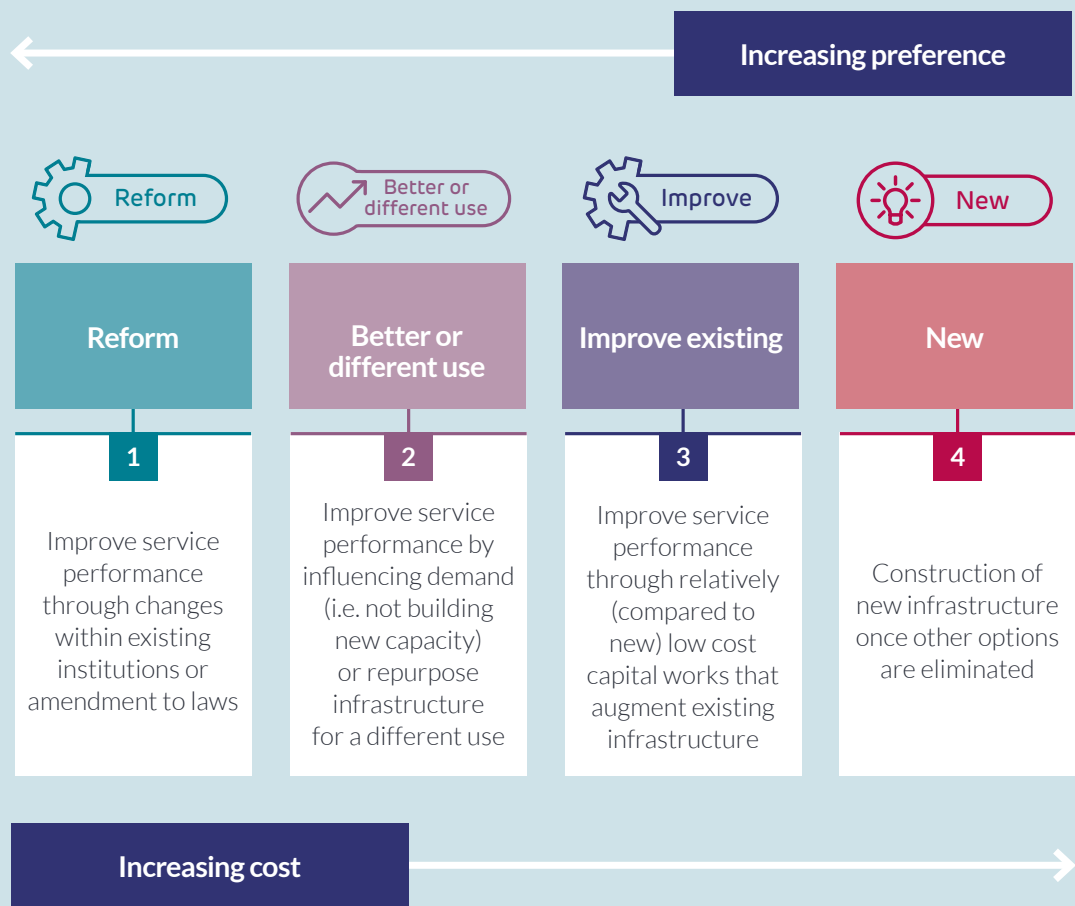- identify reforms to harness opportunities and address challenges.

Specific regional infrastructure demands identified in the Audit informs the Infrastructure Plan and Pipeline. The Infrastructure Audit shows how the Territory can adapt to ensure that infrastructure meets our changing needs for transport and logistics, utilities, social outcomes and land across all regions.

This report outlines what we can do to address infrastructure gaps and constraints in the Northern Territory to improve quality of life and drive sustainable growth.

The Audit identifies 'implementation pathways', to action the key themes and findings of the Audit and provide clear direction to either make reforms or prioritise investment in infrastructure ecosystems.

Implementation pathway actions includes assessing infrastructure for:

- > *Reform* to improve service performance through changed service delivery, organisations or laws
- > *Better or different use* of infrastructure by using smart infrastructure and intelligent systems to make the most of the infrastructure or repurpose the infrastructure for a different use
- > *Improve existing* infrastructure by adding runways, widening roads, adding services to transport corridors, facilities, building upgrades, extend capacity or building on an existing facility
- > *New infrastructure* once other options are eliminated, resulting in a new asset to deliver services and meet changing infrastructure needs.

Reform	Better or different use	Improve existing	New
1	**2**	**3**	**4**
Improve service performance through changes within existing institutions or amendment to laws	Improve service performance by influencing demand (i.e. not building new capacity) or repurpose infrastructure for a different use	Improve service performance through relatively (compared to new) low cost capital works that augment existing infrastructure	Construction of new infrastructure once other options are eliminated

Increasing preference

Increasing cost

Applying this framework to the implementation pathways identified in the Audit helps prioritise what needs to be done to meet community needs while adapting to changing needs and the environment. Below is a summary of the implementation pathways to address issues raised in the audit.

Reform

Reform

Improving service performance through changes within existing institutions or amendments to laws

Implementation pathway	Infrastructure ecosystem
Define levels of service to provide a baseline to assess existing infrastructure to assist future infrastructure planning, prioritising maintenance and capital upgrades of existing assets and identifying gaps in service delivery	All
Develop and adopt a fit for purpose framework for service needs assessment for all Government agencies to use in their place-based infrastructure planning, funding submissions and project delivery	All
Facilitate greater transparency and collaboration in infrastructure planning and assessment frameworks to provide clarity surrounding the development pathway for new projects	All
Review and optimise the existing NT Project Development Framework to ensure it is fit for purpose and scaled for Northern Territory specific and project specific needs	All

Implementation pathway	Infrastructure ecosystem
Infrastructure NT to work with Northern Territory Government agencies to develop function specific infrastructure investment plans	All
Consider the most appropriate type of solution in infrastructure planning, whether it is: • improving service performance through **reform** • **better use** of existing infrastructure (or potential different use) • **improvements to** existing infrastructure • constructing **new infrastructure** when required, after eliminating less capital-intensive options	All
Consider using a broad range of procurement, governance, financing options and delivery models for infrastructure projects	All
Take a coordinated and place-based approach to asset maintenance in rural and remote areas	All
Plan for the establishment of new sustainable development precincts, including associated infrastructure and transmission corridors, designed with key sustainability principles, including: • contribution to net zero emissions • efficient water use • circular economy principles	All
Protect strategic transport infrastructure (corridors and nodes) from encroachment by incompatible land use and development that may impact their operation or expansion	Transport and Logistics
Develop and implement an infrastructure plan to improve digital connectivity across the Northern Territory, including a clear infrastructure rollout roadmap	Utilities
Recognise water has significant value to communities, supporting prosperity, amenity, liveability, health, spirituality and customary values	Utilities
Transition to smarter, cleaner, more reliable energy by implementing Electricity Systems Plans and Strategies	Utilities
Ensure there is sufficient housing timed to support the predicted population growth associated with economic development across the Northern Territory	Social infrastructure
Connect the health system and utilise technology and innovation to improve services	Social infrastructure
Ensure social infrastructure such as education, health, police and community facilities keep pace with a growing population and a diverse demographic to improve liveability, which plays a key role in attracting and retaining people in the Northern Territory	Social infrastructure
Support workforce and population growth by planning and investing in projects that support liveability	Social infrastructure
Recognise and measure the impact and value of investment in social infrastructure to economic growth and support forward looking development of social infrastructure	Social infrastructure
Deliver skills training in communities aligned with the local employment pipeline through partnerships with private investors	Social infrastructure
Ensure justice and public safety facilities are fit for purpose, consider growth in service delivery and the functional needs of contemporary culturally-appropriate service delivery	Social infrastructure
Support land development prioritisation by accurately forecasting demand for residential, industrial and commercial land	Land
Support communities to realise the potential economic development of Aboriginal owned land	Land
Continue to streamline regulatory processes and land tenure arrangements	Land

Better use or different use

Improving service performance by influencing demand (i.e. not building new capacity) or repurpose infrastructure for a different use

Implementation pathway	Infrastructure ecosystem
Develop transport corridors to prepare for future growth and facilitate private sector project development through efficient supply chains	Transport and Logistics
Promote the most efficient, effective and flexible use of existing and planned utilities infrastructure	Utilities
Prioritise strategic actions to reduce the digital divide between urban and remote areas	Utilities
Undertake continued water exploration and targeted water resource investigation	Utilities
Rethink how water and wastewater services are delivered and use technology to improve efficiency and levels of service when renewing ageing assets	Utilities
Establish the circular economy industry as a contributor to the Territory's goal of a $40 billion economy by 2030	Utilities
Ensure that waste management approaches and infrastructure consider industry needs and integrate existing circular economy and renewable energy strategies	Utilities
Investigate opportunities to utilise reverse logistics models integrated with future logistics hubs	Utilities

Improve existing

Improving service performance through relatively (compared to new) low cost capital works that augment existing infrastructure

Implementation pathway	Infrastructure ecosystem
Support resilience and economic development through increased capacity of the rail network and port infrastructure	Transport and logistics
Identify and protect strategic transport infrastructure (corridors and nodes) for passenger and freight movements to allow for logical upgrades, network extensions and intensification	Transport and Logistics
Leverage new local energy supply solutions that replace or complement diesel generation in remote and regional areas	Utilities
Accelerate work to deliver infrastructure solutions for future water demand in urban and remote areas	Utilities
Implement the NT Health Clinical Services Plan to address predicted future health service demands and projected requirements for new, upgraded and repurposed infrastructure	Social infrastructure
Deliver education and training facilities to meet the needs of the community	Social infrastructure
Enhance Territorians liveability and social benefits through improving tourism, art and culture, sport and recreation infrastructure	Social infrastructure

New
Construct new infrastructure once other options are eliminated

Implementation pathway	Infrastructure ecosystem
Unlock private sector investment through the delivery of well-considered and targeted enabling infrastructure	All
Establish a network of regional logistics hubs	Transport and Logistics
Continue to support coverage improvements beyond urban centres by investing in digital infrastructure and leveraging Australian Government initiatives and private sector investment	Utilities
Accelerate work to deliver infrastructure solutions for future water demand in urban and remote areas	Utilities
Enable new industries based on economical and abundant new sources of energy, including large-scale solar and wind	Utilities
Prioritise actions to address shortfalls in accommodation for key workers, students and the vulnerable	Social infrastructure
Continue to prioritise the roll out of the National Partnership for Remote Housing	Social infrastructure
Implement the NT Health Clinical Services Plan to address predicted future health service demands and projected requirements for new, upgraded and repurposed infrastructure	Social infrastructure
Support the delivery of multi-purpose infrastructure to increase community resilience	Social infrastructure
Support the delivery of well-serviced land and provide housing choice that enables population growth and responds to the needs and aspirations of our current and future communities, particularly considering the needs of: • an ageing population • people living with a disability • people who require social and/or affordable housing • students	Land
Accelerate planning and delivery of future sustainable development precincts to support emerging industries, including the Middle Arm Sustainable Development Precinct	Land
Support planning and delivery of serviced industrial land in key regional centres such as Katherine and Alice Springs	Land

Introduction

Infrastructure is required for the Northern Territory Government to achieve its growth targets.

The NT Infrastructure Framework uses a place-based approach to plan and evaluate future infrastructure in the Territory according to local community needs, while supporting economic growth.

This approach aligns with infrastructure policy at national and state levels and across regional and urban areas, in Australia and globally.
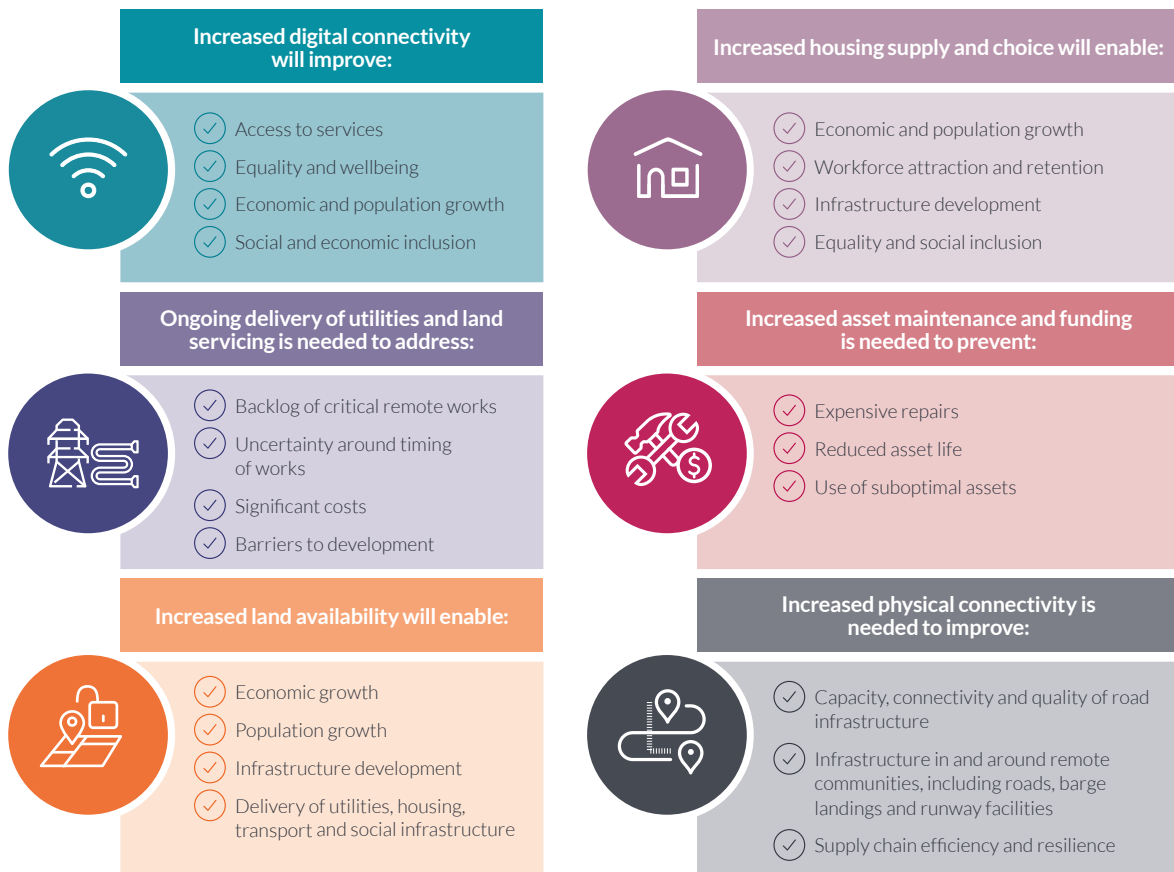
The Audit outlines the infrastructure needs of the Northern Territory by considering the unique challenges, opportunities, gaps and constraints across the Territory.

The Audit used a place-based approach to ensure the voices of the community, industry, business, councils, and government agencies were heard. The stakeholder engagement process, conducted throughout 2022 and into 2023, identified the challenges to enabling growth in communities and regions.

In considering the significant opportunities and infrastructure gaps present in the Northern Territory, a place-based approach improves understanding of the Territory's infrastructure and attributes and supports a broader understanding of how a place and its community can grow and evolve. A place-based approach aims to reconnect infrastructure decision-making with the needs of a community at a local level.

The Audit identified 6 key themes that are challenges the Northern Territory Government has been actively working to address for many years.

Overview of key themes from stakeholder feedback

Increased digital connectivity will improve:
- Access to services
- Equality and wellbeing
- Economic and population growth
- Social and economic inclusion

Increased housing supply and choice will enable:
- Economic and population growth
- Workforce attraction and retention
- Infrastructure development
- Equality and social inclusion

Ongoing delivery of utilities and land servicing is needed to address:
- Backlog of critical remote works
- Uncertainty around timing of works
- Significant costs
- Barriers to development

Increased asset maintenance and funding is needed to prevent:
- Expensive repairs
- Reduced asset life
- Use of suboptimal assets

Increased land availability will enable:
- Economic growth
- Population growth
- Infrastructure development
- Delivery of utilities, housing, transport and social infrastructure

Increased physical connectivity is needed to improve:
- Capacity, connectivity and quality of road infrastructure
- Infrastructure in and around remote communities, including roads, barge landings and runway facilities
- Supply chain efficiency and resilience

One common theme in all stakeholder feedback was the importance of liveability. A high level of liveability can keep existing residents and businesses within the Territory and is linked to sustainable economic growth.

Liveability is important for workforce attraction and retention but also as a critical component of providing a good quality of life for all Territorians. Infrastructure and non-infrastructure factors that impact liveability include water quality, availability of shade, digital and physical connectivity, personal safety, healthcare, housing supply and choice, access to quality education and employment, transport access, community events and entertainment.

The Audit provides data, information and analysis to support future-looking infrastructure planning to address the gaps and constraints identified by stakeholders and ensure the needs of the community and businesses are met as the Northern Territory plans for significant growth through to 2030.

It enables the Northern Territory Government to look at each infrastructure ecosystem as connected rather than individual parts to find synergies and obstacles, and identify efficiencies and dependencies, when making planning and investment decisions for infrastructure.

Below: Gunbalanya modular housing delivery across Cahills Crossing.
Credit: Department of Infrastructure, Planning and Logistics.

Planning for growth

There are many factors to consider when planning for growth in the Northern Territory.

The Northern Territory is home to about 1% of the Australian population and covers about 18% of Australia's land mass, with the majority residing in the Darwin, Palmerston and Litchfield region.

For many years, the Territory's population and economy has been impacted by investment in major projects that attract people to work in the Territory but do not necessarily keep them here long term.

This 'boom and bust' cycle occurs when people move to the Territory for jobs with major projects in mining and resources and then move away again once they end, causing an imbalance in our growth.

To achieve a $40 billion economy by 2030, the Northern Territory must attract a stable workforce to sustain population growth. Increasing the population also provides the scale to support new developments that will benefit Territorians and the economy.

Creating a place where people want to live, play, work, learn and enjoy life is critical to attracting people to relocate to the Territory for employment and keep people here. To do this, we need to know what services and infrastructure people need based on the community, region or urban area they live, such as health, education, employment, wellbeing and social services.

Using this place-based approach to planning and decision-making for infrastructure will drive the best outcomes and give governments and decision-makers the best chance of successfully enabling growth.

State final demand +2.0%
June 2023
(year-on-year change)

Population +0.9%
March 2023
(annual change)

Unemployment rate 3.7%
June 2023
(monthly trend)

Wage price index +2.8%
June 2023
(year-on-year change)

Private Investment +2.8%
to $5.0 billion
(2022-23)

Consumer price index +5.7%
September 2023
(year-on-year change)

The Infrastructure Audit suggests a number of reforms to help plan for the NT's economy and population to grow and are listed below. These are included as Implementation Pathways in this document and categorised for action using an infrastructure investment prioritisation framework (see Executive Summary).

Levels of service and strategic assessment of service needs

Implementation Pathways

Reform — Define levels of service to provide a baseline to assess existing infrastructure to assist future infrastructure planning, prioritising maintenance and capital upgrades of existing assets and identifying gaps in service delivery

Reform — Develop and adopt a fit for purpose framework for service needs assessment for all government agencies to use in their place-based infrastructure planning, funding submissions and project deliver

Benefits
Drives asset owners understanding of customer needs and expectations
Limits building assets and increased capacity in the wrong places
Reduces genuine need that is being overlooked due to a vocal minority
Preferences the most cost-effective ways to address service needs and infrastructure challenges
Demonstrates and encourages fiscal restraint by prioritising value for money options

Collaborative planning and decision making

Implementation Pathways

Reform — Facilitate greater transparency and collaboration in infrastructure planning and assessment frameworks to provide clarity surrounding the development pathway for new projects

Benefits
Enables more multi-use assets rather than bespoke to an individual organisation and potentially at a lower cost
Ensures appropriate consideration of all potential solutions to a problem
Delivers better value for money
Builds business and investor confidence surrounding government decisions and policy

Project planning and development

Implementation Pathways

Reform — Review and optimise the existing NT Project Development Framework to ensure it is fit for purpose and scaled for Northern Territory specific and project specific needs

Reform — Consider the most appropriate solution in infrastructure planning whether it is improving service performance through reform, better use or improvements to existing infrastructure or whether construction of new infrastructure is required where less capital-intensive options have been eliminated

Reform — Infrastructure NT to work with Northern Territory Government agencies to develop function specific infrastructure investment plans

Benefits

Drives a place-based, transparent and robust approach to project evaluation

Ensures whole-of-life costs, including operations, maintenance and asset retirement are included in infrastructure planning

Informs asset design, ensuring project benefits are fully utilised, meet their design life and are fit for purpose

Innovative approaches

Implementation Pathways

Reform — Consider using a broad range of procurement, governance, financing options and delivery models for infrastructure projects

Reform — Take a coordinated and place-based approach to asset maintenance in rural and remote areas

Benefits

Provides value for money and efficiencies in tendering

Assists with risk identification, management and mitigation

Provides the opportunity to coordinate maintenance programs across government assets to achieve efficiencies of time and cost

Provides economic growth opportunities in regions where known programs of ongoing work provides an incentive for business and skills development

Support economic development by recognising the value of investment in social infrastructure and liveability

Implementation Pathways

Reform — Ensure social infrastructure such as housing, education, health, police and community facilities keep pace with a growing population and a diverse demographic to improve liveability, which plays a key role in attracting and retaining people in the Territory

Benefits

Increases the attractiveness of the Northern Territory and helps address the historic migration of Territory residents to other states

Provides confidence that social infrastructure such as education, health, and police facilities will keep pace with a growing population

Above: Nhulunbuy. Credit: Developing East Arnhem Limited (DEAL).

4 External influences

To make sure that infrastructure meets the needs of Territorians now and in the future, we must consider the drivers for change in the Northern Territory.

It is critical to consider the external influences and future trends that will impact on the Territory infrastructure planning for the years ahead, including climate change, addressing Indigenous disadvantage by Closing the Gap, changes in land use, social inclusion and digital changes.

Other external factors to consider include market capacity and investment in major projects across the Territory.

Future trends

We need to consider broader future trends that will influence the Territory's ability to meet its growth targets, either positively or negatively.

The Northern Territory is influenced by domestic and global trends. Change is constant, increasingly complex and interrelated. The pace of change today is rapid and accelerating.

Future trends we believe will play a pivotal role in how the Territory grows and changes to 2030 and beyond include:

Climate change

Climate change is a current and future trend that must be considered by the Northern Territory Government in its infrastructure planning and project evaluations.

Climate projections anticipate more hot days and warm periods. Coupled with aspirations for population and economic growth, this will see an increased demand on our water resources making water security issues more prominent.

Impacts are already being experienced across the Northern Territory with tropical cyclones expected to become less frequent but more intense, more frequent and harsher fire weather and the mean sea level and storm surge will continue to rise.

This means our communities may experience:

- amplified urban heat island effect in built-up areas
- exacerbated impacts from storm surges and other extreme sea-level events
- disruption to services and transportation systems
- damage to infrastructure, industries and coastal ecosystems
- bushfires closer to our settlements
- impacts to human health and wellbeing, particularly the vulnerable (the poor or with underlying health conditions).

We need resilient infrastructure, maintained networks and renewable energy sources to effectively challenge traditional sources of energy on an economic basis.

To support Australia's goal of net zero emissions by 2050, the Northern Territory Government has released its Climate Change Response: Towards 2050, a policy framework to manage climate change risk and opportunities and a three year action plan to support emissions reductions targets, reduce emissions and adapt to climate change.

The action plan sets clear and measurable points under four objectives:

> **Achieve net zero emissions by 2050** – a long term objective will set expectations about future emissions constraints to help our industries and businesses plan and adapt

> **A resilient Territory** – understanding the likely future effects of climate change, putting in place measures to minimise negative impacts, and identifying opportunities presented by adaptation measures that may bring an economic advantage for the Territory

> **Opportunities from a low carbon future** – maximise the Territory's natural advantage to be able to capitalise on low carbon opportunities with its abundance of natural assets and resources.

> **Inform and involve all Territorians** – an effective response to climate change required action from industry, business, community and individuals.

The next phase of work will drive emissions reduction and adaptation. In preparation for this next phase a whole of economy plan aimed at decoupling emissions from economic development is being developed to guide and support a decarbonised Territory.

Land use

Planning for the best use of land is critical to providing suitable areas for people to live, work and have families in our cities, towns and communities. Without the land needed to build houses, shops, businesses, farms or roads, we cannot grow the population or economy.

Strategic land use planning provides a policy framework for future growth and changes to land use. The timely supply of land is a central issue for the Northern Territory's growth and addressing existing housing demand.

Planning ahead is critical to ensure there is sufficiently serviced land available, in the right places, when there is a spike in demand, such as when major projects attract people to the Territory.

The Northern Territory Government has developed a Bringing Land to Market Report (2022) to enhance the current Land Development Process to achieve a Titled Land Supply that satisfies the market demand in a timely and efficient manner.

The report identifies the future population and housing trends that will impact the Territory, which will increasingly focus planners, developers and government on strategically located land that can be brought to market quickly.

The report recognised that the availability of industrial and commercial land is vital to support economic growth. For example, land development at Middle Arm in the Darwin, Palmerston and Litchfield region will enable private sector investment in a globally competitive and sustainable industrial precinct.

Strategic land development can enable agribusiness precincts and renewable electricity supply from solar farms.

Closing the Gap

Aboriginal people represent 30% of the Northern Territory's population and a much higher proportion of the population in remote towns, communities and outstations/homelands.

The 2019 Closing the Gap Report confirms Aboriginal and Torres Strait Islander people continue to experience poorer housing outcomes than other Australians and inadequate housing has serious negative implications for health, education and employment.

Closing the gaps in outcomes between Aboriginal and non-Aboriginal Australians is one of the Northern Territory Government's most important priorities. Land use and development planning must respect Aboriginal Territorian's connection to country and needs to support broader reforms that increase economic opportunities and improve the lives of Aboriginal communities throughout urban, remote and regional centres.

The objective of the National Agreement on Closing the Gap (the National Agreement) is to enable Aboriginal and Torres Strait Islander people and governments to work together to overcome the inequality experienced by Aboriginal and Torres Strait Islander people, and achieve life outcomes equal to all Australians.

The Territory Government, in partnership with the Coalition of Aboriginal and Torres Strait Islander Peak Organisations and the Local Government Association of the Northern Territory, has committed to address the four priority reform areas and has developed the Closing the Gap, Northern Territory Implementation Plan.

The priority reforms are:

- Priority Reform One – Formal partnerships and shared decision making

- Priority Reform Two – Building the community-controlled sector

- Priority Reform Three – Transforming government organisations

- Priority Reform Four – Shared access to data and information at a regional level.

The Northern Territory has a Central Australian Regional Controller who will develop and implement a medium to long term plan for the region, which will include information on how to progress economic development and improve liveability in the region.

The Northern Territory Government aims to achieve better outcomes by involving Aboriginal and Torres Strait Islander people in the implementation plan.

Liveability and social inclusion

Social infrastructure plays a critical role in supporting health, wellbeing and economic prosperity of our entire communities. It helps bring people together, enhances quality of life and contributes to positive health and education outcomes.

A happy, healthy and sustainably growing population is essential to the future of the Northern Territory. A high level of liveability can draw and retain existing residents and businesses and is linked to sustainable economic growth. If citizens do not feel safe, stable and secure negative impacts from reduced population and economic activity will occur.

Liveable communities are safe, socially cohesive and inclusive and environmentally sustainable. They have affordable housing linked via public transport, walking and cycling infrastructure to employment, education, shops and services, public open space, social, cultural and recreational opportunities and safety and emergency services.

The quality of governance within a city or region – planning, co-operation, fit for purpose design – will influence the liveability of cities, regions, towns and communities across the Territory.

The Northern Territory experiences higher levels of disadvantage than any other jurisdiction in Australia. Disadvantages in the community may include unemployment, low income, low literacy and numeracy, lack of access to services, disability, poor health, mental health issues and discrimination.

Infrastructure planning can help combat disadvantage by prioritising projects and approaches to project delivery that support communities, create jobs and deliver benefits that would not otherwise be available to disadvantaged groups.

For example, transport provides people with access to jobs, services and leisure, however people's level of access to transport networks and their benefits often vary.

Infrastructure Australia now considers strategic, social and deliverability benefits for infrastructure, where projects in regional and remote areas can be difficult to justify on economic merit alone due to population scale and lack of data.

Economic development can be supported in the Territory by recognising the value of investment in social infrastructure, liveability and resilience.

Digital

Digital services are a part of everyday life for almost all Australians and will continue to be relied on in the future.

As the reliance on digital services increases, people without access to digital products and online services face a greater barrier to inclusion – this can result in exclusion from essential services such as health, employment, education and commerce.

Barriers that can limit digital access include:

- lack of competition to provide sufficient transmission capacity to some regional centres with lower populations, impacting the value for money, capacity and quality of the transmission lines, which in turn inhibits fast and reliable internet connection

- lack of digital access impacts on ability to engage with digital technologies

- digital affordability

- keeping pace with new technologies.

The Territory's expansive land mass, sparse population and harsh weather conditions introduce logistical challenges in delivering connectivity to 20% of the region's population who live and work in remote locations.

A lack of basic enabling infrastructure, such as mobile towers and transmission infrastructure, in these remote areas means nearly 10% of the region's population does not have access to mobile phone services.

Improving digital services and access for communities will reduce barriers for residents to social and economic services – particularly for people and communities in remote regions.

Above: F-35A Lightning II aircraft, A35-041, at the No. 75 Squadron's 80th anniversary sunset dinner at RAAF Base Tindal, Northern Territory. Credit: Department of Defence. © Commonwealth of Australia, Department of Defence.

Defence

Defence's presence in the north is integral to life in the Northern Territory, the security of Australia and the stability of our region. The ability of Defence and national security agencies to sustain operations in Australia and the Indo-Pacific region is critical for trade, security, protection of our sovereign borders and for humanitarian support. This requires infrastructure and industrial capability to be in place to support these operations.

Defence relies on airport, port and road infrastructure throughout the Territory to conduct its duties and operations. Major defence sites include RAAF Base Darwin, Larrakeyah Defence Precinct and HMAS Coonawarra in Darwin, Robertson Barracks in Palmerston, RAAF Base Tindal near Katherine and the Joint Defence Facility Pine Gap near Alice Springs. Some infrastructure is shared between defence and civilians, including RAAF Base Darwin, which is a joint-user facility with Darwin International Airport. The Northern Territory is home to significant training areas spread throughout the Territory.

Defence now represents over 11% of the Territory economy, with $2.6 billion being spent in 2021–2022. Defence's infrastructure investment program is significant and this will continue as key recommendations from the Defence Strategic Review are adopted to strengthen northern Australia's defence capability.

Defence will spend $6.23 billion in the Territory over the next four years and add 7 640 direct and indirect jobs at its investment peak as Australia's national security focus pivots north.

It is important to integrate defence projects and personnel into communities to ensure growth of the defence footprint does not cause negative externalities economically or socially for the Northern Territory.

To meet housing needs, Defence Housing Australia (DHA) is active in the residential housing market, acquiring and developing land for housing Defence members and their families and private owners.

5 Market capacity

Australia is currently experiencing a record level of investment in infrastructure.

There is an unprecedented wave of infrastructure investment across transport, utilities and social infrastructure expected in Australia over the next five years.

Infrastructure Australia released its Market Capacity Report 2022 on Australia's infrastructure pipeline and the market's ability to deliver on it.

The Report found this increased investment in infrastructure is resulting in labour shortages across all infrastructure projects. Demand for plant, equipment and materials is expected to double in the next five years, challenging the industry to deliver projects on time and on budget.

At $4.07 billion, the Northern Territory's 2023–24 infrastructure program represents a record level of government investment in the Northern Territory, with a focus on improving core government service delivery and realising the Territory's economic potential.

With the strongest growth anticipated in the resources sector in the Territory, it is critical for the Northern Territory Government to work with industry to plan and manage workforce capacity and resources.

Labour shortages are acute in the Territory and have constrained many local businesses from operating at full capacity. The number of job vacancies in the Territory remains more than double pre-pandemic levels.

Key opportunities and major projects

The Northern Territory's strategic position as a gateway to Asia, role as a key defence hub and diversity of mineral, renewable energy, agricultural, gas and petroleum resources, provides opportunities for future economic growth.

Global commitments to net zero emissions by mid-century are increasing the demand for carbon neutral products and supply chains, with renewables expected to reduce dependency on other forms of energy over time.

Emerging industries have the potential to have a significant land use footprint and may place pressure on existing infrastructure and surrounding environments.

The investment portfolio of major private sector projects features a number of large-scale and transformative energy projects. These have the potential to increase the Territory's export capacity for minerals, agricultural products, large-scale solar, gas and the emerging hydrogen industry.

To ensure the private sector projects can be delivered, coordinated work across government agencies is underway to improve infrastructure across the Territory. Investment in transport and logistics infrastructure will boost the Territory's export potential, with positive downstream outcomes for local business and jobs during project construction. Investment in water supply infrastructure is necessary to support industry growth and to maintain water supply and security for the residential population of the Territory.

An increase in the labour force and social infrastructure is needed to support an increased population to deliver these projects.

Careful coordination to create synergies with these projects will be required to:

- facilitate the transition to a 50% renewable energy target by 2030, net zero emissions by 2050, and meet increasing demand for large-scale solar power

- support commercialisation of the Beetaloo Sub-basin in a net zero policy environment and ensure decarbonisation pathways through renewable power at scale and carbon capture and storage are progressed

- ensure the Middle Arm Sustainable Development Precinct is ready to accommodate proponents of major and significant private sector projects

- upgrade Territory supply chains and logistics capability including road, rail, air and sea export to improve supply chain security for the regions and market viability of regional investment

- deliver social infrastructure to support an increased workforce and population, including new housing, government services and community amenities.

The Territory's economic project portfolio comprises more than $53 billion of capital investment over the next five years and spans all regions of the Territory. This includes private sector-led investment, Australian Government funded projects and Territory Government major infrastructure projects. Private sector-led major and significant projects, are worth more than $42 billion*.

To effectively plan for these developments, it is first important to understand the Northern Territory's present infrastructure challenges and gaps.

Aligning infrastructure planning, evaluation and prioritisation with the investment portfolio and the major project pipeline is critical to ensure that Northern Territory Government-led infrastructure investment is aligned with the industries and projects most likely to deliver the highest economic and social benefits.

Delivering the major projects pipeline is vital to meet the Northern Territory Government's ambitious economic, demographic and labour targets for 2030.

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* Project portfolio data as at May 2023.

Above: Darwin City construction. Credit: Northern Territory Government.

Enabling infrastructure for economic growth

Smart, sustainable and effective infrastructure planning and delivery will enable the work underway across the Northern Territory to meet the government's growth targets. Understanding the journey to those targets and where the infrastructure gaps and challenges lay ahead, is of key importance and the focus of the Infrastructure Audit.

How governments can use infrastructure to enable growth

Boosting productivity by investing in the right infrastructure, in the right place at the right time

Public sector infrastructure investment can spur private sector investments

Government's infrastructure investments create growth and jobs

Social infrastructure investments promote equitable and sustainable growth – supporting living standards and communities
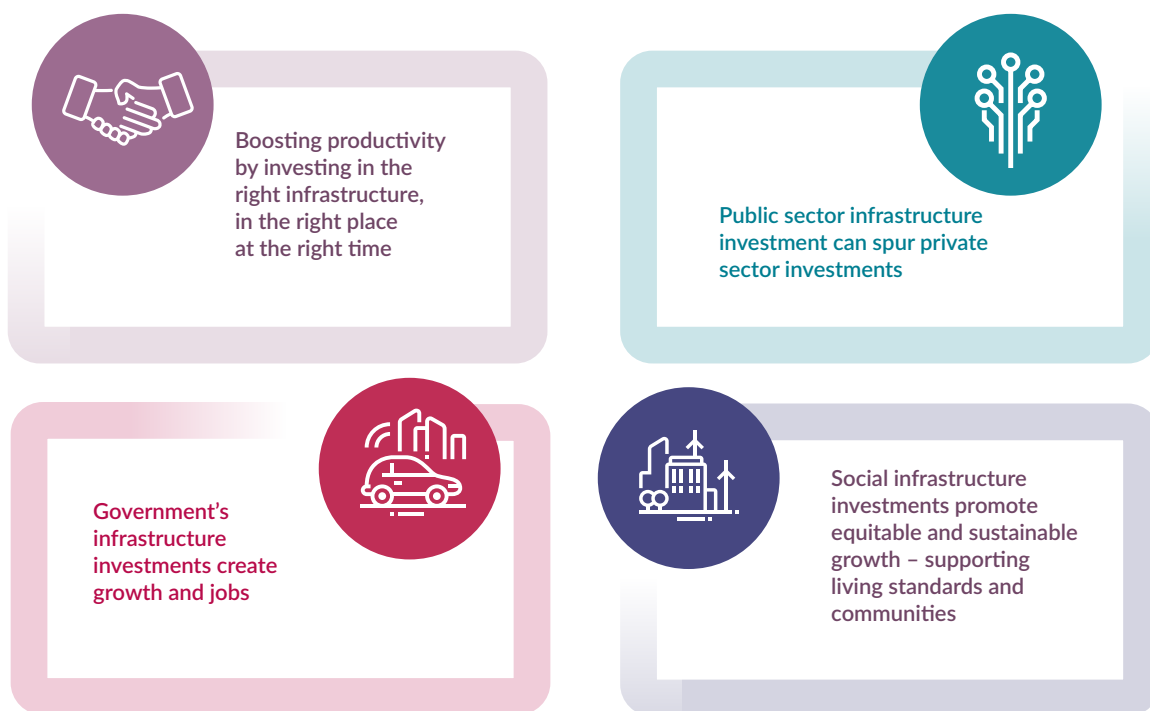
As outlined in the NT Infrastructure Strategy 2022–2030, the Northern Territory Government can use infrastructure to enable growth in four key ways:

1. Investing in the right infrastructure, in the right place, at the right time delivers productivity improvements in an economy. Whether it is reducing traffic congestion, expanding the capacity of rail or ports, or enabling digital connectivity, infrastructure solutions can boost growth through productivity

2. Investing in public infrastructure can spur or help attract investment by the private sector. Whether it is servicing land for housing developments or new roads that support the delivery or operations of major projects, infrastructure can be an important lever for governments to enable growth

3. Investing in public infrastructure and capital works is a significant component of economic growth. The Northern Territory Government delivers a comprehensive portfolio of public works and infrastructure projects across the Northern Territory, which supports broad based growth and job creation throughout all Territory regions

4. Investing in social infrastructure supports the liveability, health and safety of our communities. Without access to basic services and support, people cannot live, work and thrive in a community. Importantly, investment in social infrastructure can improve and promote equitable growth in an economy – improving schools and better health facilities, for example, will often assist the most socio-economically disadvantaged people in a community.

Enabling infrastructure ecosystems refers to infrastructure that is connected, so that when you invest in one type of infrastructure, such as for electricity, you make sure it can support other infrastructure needs, such as digital communications. This ensures we make the most out of investing in infrastructure.

The key findings and themes identified in the Infrastructure Audit are considered for each of the Northern Territory's infrastructure asset classes.

The Audit examines the context of these asset classes and analyses the gaps and constraints to identify solutions and opportunities to address these challenges.

From this analysis, the Audit has pinpointed what needs to be done to address these gaps and constraints through implementation pathways and by prioritising specific infrastructure projects in each of the following 4 infrastructure ecosystems:

> Transport and Logistics

> Utilities

> Social infrastructure

> Land.

Enabling infrastructure ecosystems

Transport and Logistics

- **Land Transport – Rail, Roads and Bridges**
- **Marine Infrastructure**
- **Air Transport**
- **Intermodal Hubs**

Utilities

- **Digital and Telecommunications**
- **Water**
- **Electricity and Energy**
- **Waste Management and Materials Recovery**

Social Infrastructure

- **Housing and Accommodation**
- **Health**
- **Education and Training**
- **Justice and Public Safety**
- **Sporting, Recreation, Lifestyle**
- **Civic Services**

Land

- **Infrastructure Corridors**
- **Residential Subdivisions**
- **Industrial Subdivisions**
- **Environmental Zones**
- **Parks**
- **Waterways**

Transport and Logistics

Transport investment comprises more than half of the total Northern Territory infrastructure program.

This includes significant allocations from the Northern Territory and Australian governments with about $2.24 billion allocated in 2023–24 for roads, aerodromes, jetties and barge landings.

Transport and logistics networks across the Territory's more than 1.3 million square kilometres connect Territorians to services, supplies, jobs and social opportunities. Supply chains move the goods we use, consume and produce, connect us to domestic and international markets and enable mining, agribusiness, energy and gas, and construction industries.

Ensuring the transport network provides a range of sustainable transport options, such as walking, cycling and public transport, is important to lower emissions and help foster more active, healthy and equitable communities.

The tyranny of distance creates a significant reliance on our road, rail, air and sea supply chains. Optimising connections and facilitating efficient freight movement between our urban, regional and remote communities, the rest of Australia and global markets is important to lower costs of living for Territorians and support economic and future growth opportunities.

Integrating transport and future land use is fundamental to protect future strategic transport corridors (freight, passenger and public transport) as well as supporting terminals, warehouses and distribution centres, while ensuring national biosecurity.

Opportunities for development across mining and resources, renewable energy, gas, agriculture and aerospace relies on an efficient supply chain to allow markets to be competitive.

Communities face the challenge of unsealed access roads, airstrips and barge landings, which impact the cost and ability to deliver infrastructure, food security and delivering services including health, education and justice.

Many mining, agricultural and other businesses across the Northern Territory are located in areas requiring significant and frequent travel on unsealed roads resulting in higher travel, repairs and maintenance costs and product losses due to damage.

The Territory's supply chain and land transport network is vulnerable to severe weather events such as cyclones and flooding.

The Northern Territory International Airport is critical to our connectivity with the rest of the world and central to our economy. Air travel is vital to give rural and remote communities access to major centres and key services.

Darwin Port is closest by distance and shipping time of any Australian port to international markets in Indonesia, Singapore, Japan, India, China and much of the global economy.

Cars are the dominant form of passenger transport, with only 3.1% of workers using public transport for their journey to work in Darwin, Palmerston and Litchfield. It is important that future transport strategies consider public transport options, growth of electric vehicle and the transition to hydrogen fuel long-haul and heavy-freight vehicles.

With planned and prioritised investment, the Territory can respond to the findings in the Infrastructure Audit and achieve:

- an integrated regional transport system that is safe, reliable and sustainable to connect people and places and support the continued economic growth of the region

- a strategic road and freight network that supports a dynamic economy and the regions pivotal role in developing the north.

36 000 kilometres (km)
of roads

68%
of roads in the
NT are unsealed

**1 international
airport**

approx
350+ remote
aerodromes
and airstrips
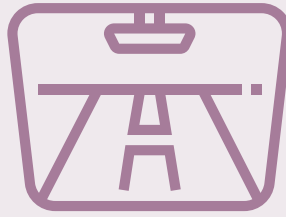
73%
of road fatalities in the NT over
the last 10 years have occurred on
rural and remote roads

5 domestic airports

**14 barge
landings**

servicing coastal
and island
communities

**14.4 million
tonnes**

of maritime cargo
loaded in Darwin

2.7%
of NT workers
commute to
work using public
transport

Implementation Pathways

Reform	Protect strategic transport infrastructure (corridors and nodes) from encroachment by incompatible land use and development that may impact their operation or expansion
Better or different use	Develop transport corridors to prepare for future growth and facilitate private sector project development through efficient supply chains
Improve	Support resilience and economic development through increased capacity of the rail network and port infrastructure
Improve	Identify and protect strategic transport infrastructure (corridors and nodes) for passenger and freight movements to allow for logical upgrades, network extensions and intensification
New	Establish a network of regional logistics hubs

Key infrastructure priorities – Transport and Logistics

Short term	Medium term (to 2030)	Long term (to 2050)
Flood immunity upgrades and improve access along key corridors including sealed connections east and west – Plenty Highway, Tanami Road, Tjukaruru Road and sealed connection to Gove – Central Arnhem Road	Flood immunity upgrades and improve access and seal key arterial regional and remote roads	Flood immunity upgrades and improve access and seal key arterial regional and remote roads Infrastructure to support the uptake of electric vehicles and uptake of hydrogen fuel by long-haul and heavy-freight vehicles
Rail network capacity increases and improved supply chains by developing regional logistics hubs including: • rail spurs • rail sidings • storage and warehousing • unloading capacity • passing loops • laydown areas • community distribution centres • strategic staging areas for fuel storage	Public transport corridors – retain existing corridor and plan for future rapid transit corridors where public transport priority is likely to be required based on residential planning (bus, rapid transit) Mount Isa to Tennant Creek railway to connect the Great Northern Line in Queensland to the Alice Springs – Darwin railway in the Northern Territory Relocate passenger terminals in response to rail network capacity upgrades	Additional rail connections between Northern Territory and the rest of Australia
Enabling infrastructure to support industry growth and increased trade – Marine Industry Park and Darwin Ship Lift, East Arm and Middle Arm Sustainable Development Precinct Develop arterial transport corridors around Darwin – links to Middle Arm Sustainable Development Precinct and links around the harbour and Weddell arterial	Enable marine infrastructure including: • common user infrastructure – modular offloading facility at Middle Arm Sustainable Development Precinct • roads, power, water and telecommunications networks	Enabling infrastructure for future Sustainable Development Precincts
Increase capacity of airports: • runways • storage and warehousing	Airport upgrades to support population and industry growth	Infrastructure improvements to mitigate aviation environmental impacts

Above: Tjukaruru Road towards Kata Tjuta Mountain. Credit: Department of Infrastructure Planning and Logistics.

Utilities

Utilities are essential services that support basic human needs and play a vital role in economic growth and social development.

The Northern Territory has a far-reaching network of essential services and utilities including stormwater, water, waste, electricity, energy and telecommunications across urban, rural and remote settings. These networks are critical to the liveability of our communities.

Economies of scale are not always achievable to deliver these services in the Territory where investment is required across a vast area and often across multiple small development fronts. Strategic planning still seeks to help consolidate activities in locations close to existing services and utilities where there is or will be capacity.

The capacity of existing power and water infrastructure is a major constraint for developing infrastructure, resulting in additional costs and program uncertainty for project owners, which can limit the ability to provide critical services in remote areas.

With planned and prioritised investment, the Territory can respond to the findings in the Infrastructure Audit and achieve:

- business and industry growth through digitally connecting Territory communities

- efficiently-provided, productive water to support growth and productivity, particularly in regional areas

- transition to smarter, cleaner, more reliable energy

- industry development and infrastructure to facilitate the growth of the waste sector.

Implementation Pathways

Reform — Plan for the establishment of new sustainable development precincts, including associated utilities infrastructure and transmission corridors, designed with key sustainability principles, including:
- contribution to net zero emissions
- efficient water use
- circular economy principles

Better or different use — Promote the most efficient, effective and flexible use of existing and planned utilities infrastructure

50% renewable
energy target by 2030

More than

100 000 containers
were returned under the Territory's Container Deposit Scheme, which is 75% of containers sold in the NT

98 387 NT premises
have **NBN** enabled connection available

1% of Australia's waste is generated in the NT
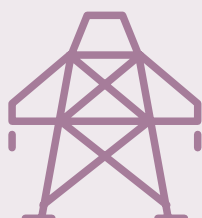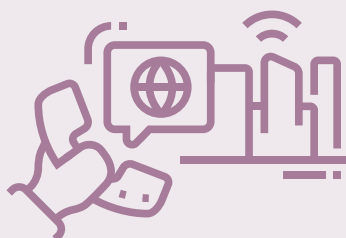
10 520km
of overhead lines

85% of Darwin's water needs
are provided by the Darwin River Dam
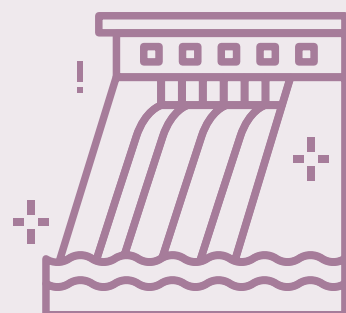
NT waste made up of:

32%
construction and demolition

30%
commercial and industrial

38%
municipal solid waste

More than 260 bores
providing water to 72 remote communities

Digital and telecommunications

Telecommunications infrastructure covers the networks that carry voice and data between users across Australia, and our connections with the rest of the world, which impact on our liveability and productivity.

This includes wires, fibre, towers, sensors, satellites, radio spectrum and physical infrastructure such as data centres and cable landing stations. These come together as networks to deliver communications to and from our devices while we live and work in growing cities or remote communities.

Connectivity is required to enable digital transformation, increase business productivity, improve health, education, safety, tourism and entertainment outcomes and provides access to global supply chains. The 2021 Australian Infrastructure Plan recommends embedding a culture of innovation in the infrastructure sector by adopting an evidence-based 'digital by default' approach to infrastructure planning, delivery and operations which will increase productivity.

There is a deep digital divide in the Northern Territory between regional and remote areas. Beyond urban areas, coverage is sparse and can suffer from reliability issues. Digital connectivity issues are particularly prevalent outside of the major urban centres of Darwin and Alice Springs.

Coverage and Rollout Maps in the Northern Territory – Telstra
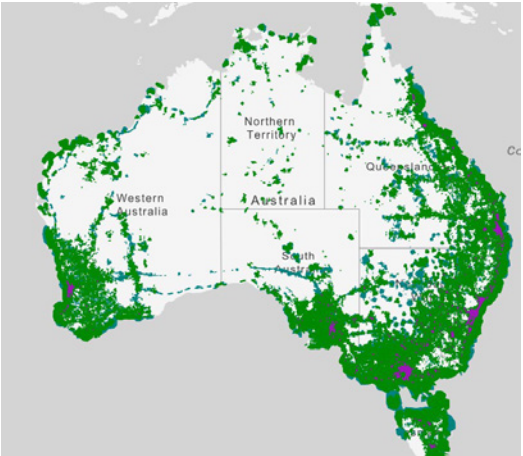
Implementation Pathways

Reform	Develop and implement an infrastructure plan to improve digital connectivity across the Northern Territory, including a clear infrastructure rollout roadmap
Better or different use	Prioritise strategic actions to reduce the digital divide between urban and remote areas
New	Continue to support coverage improvements beyond urban centres by investing in digital infrastructure and leveraging Australian Government initiatives and private sector investment

Key infrastructure priorities – Digital and telecommunications

Short term	Medium term (to 2030)	Long term (to 2050)
New infrastructure and upgrade to existing infrastructure to improve telecommunications in remote communities across the Territory	Deliver new infrastructure and upgrade existing infrastructure to improve telecommunications infrastructure to remote communities across the Territory	Deliver new infrastructure and upgrade existing infrastructure to improve telecommunications infrastructure to remote communities across the Territory
Support digital infrastructure that enables industries, health services and promotes safety	Digital infrastructure to improve connectivity in priority areas of the Stuart Highway	Digital connection to all national highways in the Territory

Water

Water sustains life and is vital to maintain the Northern Territory's unique environment, wellbeing and economic prosperity. Water security, including delivering safe and secure drinking water to urban and remote regions is fundamental for health, livelihood and production.

Water is a key enabler to drive economic growth and prosperity and significant investment is required to ensure the required infrastructure is constructed to meet community and economic demands.

In some of the most isolated parts of the Territory, including those with some of the most economically and socially disadvantaged populations, water services do not meet standards urban residents would expect. A lack of access to clean water and sanitation can worsen existing health issues and increase risks of disease and infection.

The Northern Territory Government, with support from the Australian Government and Power and Water Corporation (PowerWater), completed a detailed business case recommending the Manton Dam Return to Service and Adelaide River Off-stream Water Storage (AROWS) projects as infrastructure solutions to meet the needs of the Darwin, Palmerston and Litchfield region for the next 50 years and beyond.

The high cost of resolving water related issues is a significant constraint to project development. There is potential for innovation in the water sector, particularly in circular economy outcomes with wastewater reuse and water recycling.

Implementation Pathways

Reform	Recognise water has significant value to communities, supporting prosperity, amenity, liveability, health, spirituality and customary values
Better or different use	Undertake continued water exploration and targeted water resource investigation
Better or different use	Rethink how water and wastewater services are delivered and use technology to improve efficiency and levels of service when renewing ageing assets
Improve **New**	Accelerate work to deliver infrastructure solutions for future water demand in urban and remote areas

Key infrastructure priorities – Water

Short term	Medium term (to 2030)	Long term (to 2050)
Increase number of PowerWater serviced communities that have access to safe drinking water aligned with Australian Drinking Water Guidelines Secure water for people, agriculture and industry Return Manton Dam to service	Increase number of PowerWater serviced communities that have access to safe drinking water aligned with Australian Drinking Water Guidelines Commence construction of the Adelaide River Off-stream Water Storage	All PowerWater serviced communities have access to safe drinking water aligned with Australian Drinking Water Guidelines

Electricity and energy

Electricity demand will outpace current forecasts as the Northern Territory's economy rebounds.

The Northern Territory has a large number of stand-alone power systems with three regulated systems covering Darwin-Katherine, Tennant Creek and Alice Springs.

The Territory has a target of 50% of electricity consumed to be from grid connected renewable installations by 2030. Increasing renewable generation from residential and commercial photovoltaic (PV) generation is driving the need for market reform and strategic infrastructure investment.

As industry grows in a range of energy intensive sectors, including low emissions manufacturing, hydrogen ammonia production, data centres and downstream minerals processing, the need for bulk and competitively priced dispatchable electricity will increase. Many industries require 100% renewable electricity for their own operations and supply chains.

The Northern Territory has some of the highest solar irradiance (22 to 24 MegaJoules per square metre) in the world.

Substantial investment into providing land and services to develop renewable energy industries and associated carbon capture and storage is occurring across the Territory.

Technological innovations in battery storage and hydrogen production are becoming more commercial, reducing the dependency on other forms of energy over time.

Integrating renewable technologies into 72 remote communities serviced by Indigenous Essential Services is targeting an average of 70% renewable power generation. Benefits include reducing greenhouse emissions by displacing diesel, reducing government subsidies required for the cost of supplying power and creating jobs.

Implementation Pathways

Reform	Transition to smarter, cleaner, more reliable energy by implementing the roadmap to renewables electricity system plans
Improve	Leverage new local energy supply solutions that replace or complement diesel generation in remote and regional areas
New	Enable new industries based on economical and abundant new sources of energy, including large-scale solar and wind

Key infrastructure priorities – Electricity and energy

Short term	Medium term (to 2030)	Long term (to 2050)
Transition from diesel fuel to renewables for remote communities	Develop a Darwin Renewable Energy Hub	Renewable energy infrastructure including infrastructure required for renewable energy for export
Land services to develop renewable energy industries and associated carbon capture and storage	Install and operate additional security batteries	High-capacity transmission lines
Katherine and Alice Springs upgrades to grid	24GW of solar generation installed to service Middle Arm Sustainable Development Precinct	

Waste management and materials recovery

There is strong support for effective waste management through the Northern Territory's Circular Economy Strategy, which places a focus on waste minimisation and recycling.

Minimising waste, improving resource recovery and building demand and markets for resulting products could help reduce the strain on existing waste management practices and address key targets of sustainability throughout the Territory.

The considerable pipeline of infrastructure development to support major projects across the Territory could significantly increase construction and industrial waste. Additional waste disposal facilities need to be planned ahead of industry needs to manage the by-products of construction and operations. Future additional waste disposal sites will need to consider transportation costs, risks and carbon impact.

The increased demand for waste management and processing can be leveraged to attract private investment, drive innovation in the industry and help develop markets for recycled products. These opportunities are strengthened by developing regional logistics hubs, which will improve scale and transport efficiencies.

As the Territory's urban population centres grow, the capacity of municipal waste disposal needs to increase. Options to reduce the need for landfill disposal include waste levies, which require additional infrastructure to sort, weigh and recycle diverted wastes and will incentivise materials recovery and reprocessing.

There is an opportunity to provide a regional approach to manage the large number of waste transfer and disposal sites across the Northern Territory, however this requires adequate funding and regulatory requirements to develop effective solutions.

Implementation Pathways

Better or different use — Establish the circular economy industry as a contributor to the Territory's goal of a $40 billion economy by 2030

Better or different use — Ensure waste management approaches and infrastructure consider industry needs and integrate existing circular economy and renewable energy strategies

Better or different use — Investigate opportunities to utilise reverse logistics models integrated with future logistics hubs

Key infrastructure priorities – Waste management and materials recovery

Short term	Medium term (to 2030)	Long term (to 2050)
Infrastructure upgrades to support urban, regional and remote landfill including waste management and recycling	Infrastructure to support a circular economy in urban and regional centres (waste collection, sorting, processing, logistics and supply chains)	Infrastructure to support a circular economy in urban and regional centres (waste collection, sorting, processing, logistics and supply chains)

Social Infrastructure

Social infrastructure plays an important role in the economic development of the Territory, providing services and facilities that contribute to the quality of life and wellbeing of Territorians.

Social infrastructure assets include government and privately-owned buildings and spaces that deliver social services by governments and other service providers. While assets are often considered individually, our social infrastructure networks play a significant role in supporting the Territory's economy, liveability and sustainability.

The planning framework sets the stage to provide sufficient, equitably distributed and accessible education, health, recreation, sporting and cultural facilities by local government, Northern Territory Government, private or not-for-profit organisations.

Social infrastructure assets need to be geographically dispersed to provide access to services for as many people as possible, but the type of infrastructure available varies for different places. Most towns have sports ovals and schools, regional centres have hospitals and art galleries, while cities have a full range of social infrastructure and multiple assets.

Social infrastructure can play a part in attracting and retaining staff to the Territory and its regional and remote locations.

There are significant social infrastructure gaps in remote communities and in regional centres. Recreation infrastructure in many remote communities are in need of repair, maintenance or upgrade.

There are opportunities to deliver solutions that can satisfy communities' needs with well-planned multi-purpose facilities.

With planned and prioritised investment, the Territory can respond to the findings in the Infrastructure Audit and achieve:

- housing that enables social and economic wellbeing and strong communities

- increased social and affordable housing, private rental and home ownership across urban, regional and remote communities

- a connected health system that uses technology and innovation to improve services

- harnessed benefits of school infrastructure for community use outside of school hours to improve the efficient use of education infrastructure assets and improved health and social wellbeing outcomes for people

- justice infrastructure assets that are fit for purpose for changing user demographics and needs

- policing, fire and emergency infrastructure that is fit for purpose for the changing demographic and nature of emergencies to ensure access to life-saving services, particularly in rural communities and remote areas

- vibrant places that encourage people to engage, participate and promote civic engagement and building resilience in communities and the environment.

Implementation Pathways

Reform — Ensure social infrastructure such as education, health, police and community facilities keep pace with a growing population and a diverse demographic to improve liveability, which plays a key role in attracting and retaining people in the Northern Territory

Reform — Support workforce and population growth by planning and investing in projects that support liveability

Reform — Recognise and measure the impact and value of investment in social infrastructure to economic development and support forward-looking development of social infrastructure

Key infrastructure priorities – Social Infrastructure

Short term	Medium term (to 2030)	Long term (to 2050)
Maintenance and repair programs across social infrastructure portfolios are coordinated, place-based and prioritised for funding Refurbish and repurpose legacy assets. Replace if alternatives are not viable	Ongoing asset maintenance and asset lifecycle management is applied to all Northern Territory Government social infrastructure assets	Ongoing asset maintenance and asset lifecycle management is applied to all Northern Territory Government social infrastructure assets

88 remote health clinics

7 hospitals

Darwin (2), Palmerston, Gove, Katherine, Tennant Creek and Alice Springs

49 police stations

15 police posts

11 fire stations

7 volunteer fire stations

The NT has **12 times** the national average rate of homelessness

71% of Northern Territory government schools are located in remote and very remote areas

663 new homes completed

(2135 bedrooms) as at 30 June 2023, with 565 homes (1895 bedrooms) underway – *HomeBuild program*

Housing and accommodation

Housing is fundamental to individual, family and community wellbeing.

Access to safe, adequate and affordable housing is a crucial foundation for enabling a person's physical and mental health and wellbeing. Without access to appropriate housing, people are unable to focus on other aspects of their lives (such as health, education and employment) and are unable to contribute productively to society.

Housing is needed to accommodate the workforce to deliver government infrastructure and private projects – both in construction and operations – and drive economic growth.

Shortages are evident in all categories of housing – private, government employee, public and community, and are felt across the Northern Territory in urban, regional and remote areas. The Territory's social housing asset base has an increasing maintenance task, affecting the quality of dwellings.

While housing is generally provided and sought in the private market, there are some people who cannot access housing in the private market and require housing assistance.

Housing shortages are having a significant impact on workforce recruitment, business operations, project development and provision of critical social services including healthcare and education. This is more apparent in remote communities where there is often insufficient housing available to accommodate government and non-government service staff (eg. police, health and education staff) to live in the community.

This leads to services being delivered virtually or by a fly-in-fly-out (FIFO) model, which is not financially sustainable for many small businesses in the regions. This also prevents local communities from realising the full economic benefits of major projects.

Effects of overcrowded housing in remote communities can include poor mental health, domestic and family violence, reduced school attendance, poor hygiene and the spread of disease.

Ageing stock coupled with inadequate maintenance means social housing is struggling to meet the needs of its tenants.

In urban areas there are significant housing development projects in in the planning process, such as new greenfield lots in Holtze, Tennant Creek, and further lots in Katherine East and Kilgariff.

In the NT, 59% of households own their own home, compared with 66% nationally and 40% rent compared with 31% nationally. The Northern Territory Government housing portfolio includes 11 179 social housing dwellings and 395 affordable rental dwellings.

There are three separate housing initiatives aimed at increasing affordable housing supply. These initiatives will contribute to building an aspirational target of one million new, well located homes across Australia over five years through the Australian Government:

- National Housing Accord, a landmark agreement to address the supply and affordability of housing

- drafting legislation to establish the $10 billion Housing Australia Future Fund, Housing Australia and the National Housing Supply and Affordability Council

- one-off $2 billion Social Housing Accelerator Fund payment to support investment for new social rental homes across Australia.

Should all initiatives be formalised, the Territory will be required to facilitate construction of up to 1 500 new social and affordable dwellings over the next five years.

Implementation Pathways

| Reform | Ensure there is sufficient housing timed to support the predicted population growth associated with economic development across the Northern Territory |

| New | Prioritise actions to address shortfalls in accommodation for key workers, students and the vulnerable |

| New | Continue to prioritise the roll out of the National Partnership for Remote Housing |

Key infrastructure priorities – Housing and accommodation

Short term	Medium term (to 2030)	Long term (to 2050)
Continue delivering the remote Housing program Deliver short term accommodation options for key workers and visitors in major centres	Deliver a mix of affordable housing options for projected population growth	Adequate housing to align the Northern Territory's homelessness rate with the national average

Above: Yirrkala new homes in 30 lot subdivision. Credit: Department of Infrastructure, Planning and Logistics.

Health

Health and aged care infrastructure promotes, restores and maintains a healthy society. It is delivered by a variety of public and private providers in a range of settings. Supporting the health of Territorians improves people's lives and helps boost the Territory's economic productivity and social wellbeing.

Models of care have and will change significantly, meaning existing ageing infrastructure does not always meet the functional needs of contemporary culturally appropriate, service delivery.

Providing high-quality healthcare to rural communities and remote areas is a challenge. Approximately 39% in the Northern Territory live in remote and very remote areas. A modern healthcare system must respond to areas of growing need and changes in technology, which is particularly relevant within remote communities.

Access to healthcare in remote and very remote areas is not solely determined by health infrastructure, but also by the availability of housing for the health workforce, transport infrastructure, water quality and digital infrastructure.

While digital healthcare technologies can provide access to routine and specialist healthcare and expertise, reliably adopting these services as part of standard practice is not possible in many remote communities due to poor connectivity.

Upgrades to remote airstrips and roads help facilitate urgent treatment and transporting patients, but challenges remain in some communities.

Lack of housing in some remote communities means that despite funding availability for remote medical positions, the 'resident clinician' model is not always possible, which limits the access of communities to timely healthcare.

Implementation Pathways

Reform — Connect the health system and use technology and innovation to improve services

Improve
New — Implement the Northern Territory Health Clinical Services Plan to address predicted future health service demands and projected requirements for new, upgraded and repurposed infrastructure

Key infrastructure priorities – Health

Short term	Medium term (to 2030)	Long term (to 2050)
Develop and deliver the health infrastructure program based on defined levels of service and place-based approach for upgrades and replacement Deliver immediate priority infrastructure to support • mental health • renal health • remote health	Ongoing roll out of a health infrastructure upgrade and replacement program	Ongoing roll out of the health infrastructure upgrade and replacement program

Education and training

Education infrastructure is the buildings, facilities and campuses that support learning for people at all ages of their life.

Education infrastructure supports individual personal development and is critical to building the skills and workforce capacity the Northern Territory needs in the future. Tertiary education and training represents a key export for the Territory and an important attraction pathway for skilled migrants.

The availability of high quality government and non-government education options is a critical factor in attracting families to settle and stay in the Territory.

Much of the Territory's education infrastructure is ageing with about 62% of education assets over 30 years old.

School assets are some of the most consistently underutilised assets owned by government. They are mostly used between 8 am and 4 pm, five days a week, and are often unavailable for non-school use at other times. While some schools make facilities such as sporting fields, courts or halls available for non-school purposes, there is an opportunity to use these assets for other community purposes, such as cyclone shelters.

Implementation Pathways

Reform — Deliver skills training in communities aligned with the local employment pipeline through partnerships with private investors

Improve — Deliver education and training facilities to meet the needs of the community

Key infrastructure priorities – Education and training

Short term	Medium term (to 2030)	Long term (to 2050)
Develop and deliver an education and training infrastructure program based on defined levels of service and place-based approach for upgrades and replacement	Ongoing roll out of an education infrastructure upgrade and replacement program	Ongoing roll out of the education infrastructure upgrade and replacement program
Encourage private investment and/or partnership for support services (e.g. accommodation for tertiary students)	New and expanded schools in areas of high population growth	Establish infrastructure to deliver contemporary education programs

Justice and public safety

Justice and emergency services infrastructure are made up of buildings and facilities that protect and support the safety of our communities. These services uphold civil rights, prevent and respond to crime, resolve disputes, respond to emergencies and natural disasters, and often engage with the most vulnerable Territorians.

Justice and emergency services infrastructure is often directed to our most vulnerable citizens, and when it is delivered effectively, it helps maintain our liveability and safety of communities.

The dispersed population and vast geographic distances that policing services cover in the Territory has resulted in a significant network of facilities. Much of this ageing infrastructure does not meet the functional needs of contemporary culturally-appropriate service delivery because it is very difficult to refurbish, retrofit or adapt to new models of policing. About 48% of police assets are over 30 years old and are not fit for purpose.

Courthouse infrastructure needs have evolved with technology and new remote service delivery models mean ageing remote courthouses are no longer needed. An increased focus on restorative justice and rehabilitation services could require new infrastructure and new approaches to facility design that consider the best practice approaches.

The proportion of women, Aboriginal and Torres Strait Islander people, and young people moving through the justice system, is increasing. Ageing facilities are often not fit for purpose for these users.

Emergencies are changing in nature, scale and frequency with more high-intensity tropical cyclones hitting our coastlines, creating destruction and at times flooding impacts for communities.

This means emergency services and response infrastructure must be located where services can rapidly and easily access a large range of places, and must have space for the equipment and personnel required to respond to these changing types of emergencies.

Implementation Pathway

Reform	Ensure justice and public safety facilities are fit for purpose, consider growth in service delivery and the functional needs of contemporary culturally-appropriate service delivery

Key infrastructure priorities – Justice and public safety

Short term	Medium term (to 2030)	Long term (to 2050)
Police, Fire and Emergency Services infrastructure upgrades (including training facilities) Infrastructure to increase capacity of justice and public safety services and to reflect the changing profile of justice service users	Develop and deliver an infrastructure program based on defined levels of service and place-based approach to address legacy issues Prioritise and deliver cyclone and emergency shelters	Infrastructure upgrade and replacement program is continually rolled out including police, fire and emergency service facilities

Sporting, recreation, lifestyle

Sporting, recreation and lifestyle infrastructure are natural and built spaces people use for active transport, to play sports and exercise, relax, learn and connect with their communities, cultures, heritage and place. They can provide a wide range of social and economic benefits, build resilience and increase the health and wellbeing of communities.

This infrastructure contributes significantly to the liveability and resilience of places and the wellbeing of people – whether it be a local park or walking track along a river, a museum or art centre, a public swimming pool in a remote town, or the local basketball or netball courts.

Recreational facilities such as sporting facilities, community centres, libraries, local swimming pools and children's playgrounds are critical to promoting social cohesion, building community resilience and creating vibrant places. They create spaces for communities to come together and interact, which can increase civic engagement and community empowerment.

In remote communities recreation infrastructure is generally limited, but plays a crucial role in social interaction and education engagement.

Tourism is a fundamental pillar of the Territory's economy and contributes across a range of industries. The tourist visitor landscape has considerable untapped potential across the Territory's regions, in parks, accommodation, experiences and attractions. A strong and competitive tourism industry also has widespread benefits for local regions and their residents.

Arts and cultural infrastructure such as art centres, studios and workshops, theatres and performing art centres, museums, galleries, libraries and archives provide many social, cultural and economic benefits for communities. Arts and culture facilities build social cohesion and a sense of identity and place through sharing and promoting our history, heritage, arts and cultural practices for the benefit of locals and visitors. Arts and culture facilities also support the employment of creative and cultural practitioners and enhance the impact of supporting industries such as education, health and tourism.

Implementation Pathway

Improve — Enhance Territorians liveability and social benefits through improving tourism, art and culture, sport and recreation infrastructure

Key infrastructure priorities – Sporting, recreation, lifestyle

Short term	Medium term (to 2030)	Long term (to 2050)
Sport, recreation and youth hubs in regional centres	Ongoing roll out of sport and recreation infrastructure upgrade and replacement program	Ongoing roll out of sport and recreation infrastructure upgrade and replacement program
Progress the delivery of cultural and art centres	Medium term priorities in NT Parks Master Plan	Long term priorities in the NT Parks Master Plan
Short term priorities in the Northern Territory's NT Parks Master Plan	Increase collaborative approach to infrastructure delivery and operation	

Land

Investment ready land is key to driving economic growth and support subsequent population growth. A key value proposition for the Northern Territory is its abundance of potentially developable land. There is potential for the sustainable development of new infrastructure corridors, residential subdivisions, and industrial subdivisions.

While the Territory covers more than 1.3 million square kilometres and would seem to have boundless land for future growth, it is subject to many factors that limit and influence where growth can occur. These include environmental, lifestyle, heritage, tenure and land suitability considerations

Land tenure in the Territory can be a constraint and an opportunity. With 50% of the land held as Aboriginal freehold, there are significant opportunities for further economic and social development in accordance with the Northern Territory Government's local-decision making policies and the consent and negotiation requirements of the *Aboriginal Land Rights (Northern Territory) Act 1976 (Cth).*

Outside of the Darwin, Palmerston and Litchfield region, industrial land is limited and future supply is limited by water capacity in Katherine, Tennant Creek and Alice Springs.

The NT Planning Commission has identified the need for an overarching Strategic Directions Planning Policy that articulates the 'big picture' land use and development policy direction for the Territory as a whole.

Strategic planning can bring people together to address land use and development aspirations in their community. It enables government and communities to work together to deliver equitable

and efficient solutions for housing, transport, infrastructure, industry, food production, decarbonisation and more.

The availability of land for residential development is a key economic driver. In the Northern Territory, residential land has historically been subject to peaks and troughs due to the market moving quickly from periods of low demand to high demand.

Industrial and commercial land is vital to support economic growth. The Northern Territory Government has proactively moved industrial land development forward to future proof the economy. The most notable recent initiative has been planning and designing the Middle Arm Sustainable Development Precinct.

Securing land with consideration for the future needs of industry is critical for remaining competitive and supporting the ongoing growth of the Territory.

Securing existing and future infrastructure corridors for transport and major infrastructure to supply essential services is important to prevent delays and unnecessary acquisition of land when projects are rolled out.

With planned and prioritised investment, the Territory can respond to the findings in the Infrastructure Audit and achieve:

- delivering serviced land at the right time and in the right place
- transparent and efficient processes to provide certainty for investors
- integrated and strategic land use planning for housing, commercial and industrial use.

Implementation Pathways

Reform	Support land development prioritisation by accurately forecasting demand for residential, industrial and commercial land
Reform	Support communities to realise the potential economic development of Aboriginal owned land
Reform	Continue to streamline regulatory processes and land tenure arrangements
New	Support planning and delivery of serviced industrial land in key regional centres such as Katherine and Alice Springs
New	Accelerate planning and delivery of future sustainable development precincts to support emerging industries, including the Middle Arm Sustainable Development Precinct
New	Support the delivery of well-serviced land and provide housing choice that enables population growth and responds to the needs and aspirations of our current and future communities, particularly considering the needs of: • an ageing population • people living with a disability • people who require social and/or affordable housing • students

The Northern Territory is

1 347 791 km²

55 000 square kilometres (km²) of vacant crown land

The Northern Territory's population is

251 700 persons

Average of 54 days

to process development applications in 2022–23

In 2022–23 there was an increase of

43% titled residential lots (for detached dwellings)

compared to 2021–22

Key infrastructure priorities – Land

Short term	Medium term (to 2030)	Long term (to 2050)
Construct trunk infrastructure in Kilgariff, Zuccoli, Lee Point, Northcrest, and Katherine East to support land release	Land acquisition and development for projected population growth, focused on alignment to emerging industries and major projects being delivered	Ongoing planned and timely release of land to meet market demand
Holtze infrastructure headworks for the release of the new subdivision	Focus on community planning and land development in accordance with Local Decision Making Policy	Construction of trunk infrastructure for residential development in remote communities
Continue to implement Bringing Land to Market Report recommendations	Planning and designing land release to adopt best practice principles for sustainability and climate change	Land release and servicing of future sustainable development precincts
Land release and servicing for delivery of the Middle Arm Sustainable Development Precinct		Continue to incorporate climate responsive designs and initiatives into urban and community landscapes (consider the impacts of flooding and storm surge)
Accelerate planning for future sustainable development precincts to support emerging industries		
Secure existing and future infrastructure corridors for transport and major infrastructure		

Above: Zuccoli. Credit: Land Development Corporation.

Conclusion

The Northern Territory Government is planning significant investments to grow the Territory and has set ambitious growth targets. Infrastructure enables growth. Understanding the NT's infrastructure ecosystems, investment portfolio of major private sector projects, current infrastructure pipeline and infrastructure gaps and considering potential responses to improve project planning, evaluation and delivery will assist the Territory on its growth journey.

This Infrastructure Audit was undertaken with a place-based approach to ensure the voices of the community, industry, business, councils, and government agencies were heard. The stakeholder engagement process, conducted in 2022 and 2023, identified the challenges to enabling growth in communities and regions and that important feedback has driven much of the approach and analysis detailed within this Audit.

The Implementation Pathways and short, medium and long term infrastructure priorities identified in the Audit have informed the development of the NT Infrastructure Plan and Pipeline 2023.

Infrastructure NT thanks all those who contributed to developing the Northern Territory Infrastructure Audit 2023.

We appreciate the time you have taken to provide feedback through face to face and online presentations as well as through direct feedback to Infrastructure NT.

We have received feedback from Northern Territory and Australian government agencies, local government, land councils, private sector, not for profit community organisations, industry representative bodies and peak bodies.

References

NT Government Strategies

Transport and Logistics

Darwin Regional Transport Plan

Marine Industry Development Plan (draft)

Northern Territory Electric Vehicles Strategy and Implementation Plan 2021–2026

Territory Wide Logistics Master Plan 2020

Utilities

Digital and Telecommunications

Digital Territory Strategy

Regional Broadband scheme

Telecommunications Reform Package

Water

Darwin Region Future Water Supply Strategy

Northern Territory Circular Economy Strategy

Northern Territory Strategic Water Plan

Electricity and Energy

Alice Springs Future Grid Roadmap

Darwin-Katherine Electricity System Plan

Northern Territory Circular Economy Strategy

Northern Territory Gas Strategy

Northern Territory Renewable Hydrogen Master Plan

Northern Territory Roadmap to Renewables

Remote Power Systems Strategy

Waste management and materials recovery

Northern Territory Circular Economy Strategy

Northern Territory Climate Change Response

Social Infrastructure

Housing and accommodation

A Home for all Territorians – Northern Territory Housing Strategy 2020–2025

Northern Territory Community Housing Growth Strategy 2022–32

Health

Northern Territory Mental Health Strategic Plan 2019–2025

NT Health Strategic Plan 2023–2028

NT Health Virtual Care Strategy

Strengthening our Health System Strategy 2020–2025

The Best Opportunities in Life – Northern Territory Child and Adolescent Health and Wellbeing Strategic Plan 2018–2028

Education and Training

Charles Darwin University Strategic Plan 2021–2026

Education NT Strategy 2021–2025

Indigenous Education Strategy

Skilling the Territory Investment Plan 2021–22

Justice and Public Safety

Department of the Attorney-General and Justice Strategic Plan 2021–2025

Northern Territory Aboriginal Justice Agreement

Northern Territory Police, Fire and Emergency Services Ten Year Strategy

Territory Emergency Management Council Strategic Plan 2020–2023

Territory Emergency Plan

Sports, Recreation, Lifestyle

10 year Museums Master Plan Darwin and Palmerston

Aboriginal Tourism Strategy

Creative Industries Strategy 2020–2024

Destination Management Plans

Northern Territory Cruise Tourism Strategy 2022–25

Northern Territory Drive Tourism Strategy 2021–2023

Northern Territory Tourism Industry Strategy 2030

NT Parks Master Plan 2023–2053

NT Sport and Active Recreation Infrastructure Plan: Future Design Projects

Recreational Fishing Development Plan

Land

Accelerated Accommodation program in Katherine and Alice Springs

Bringing Land to Market

Middle-Arm Sustainable Development Precinct Strategic Assessment Agreement

Regional Economic Growth Plans

Barkly Regional Deal – Barkly Economic Growth Strategy 2030

Big Rivers Regional Economic Growth Plan 2022–2030

East Arnhem Regional Economic Growth Plan 2022–2032

Top End Regional Economic Growth Plan 2022–2030

Other Reference material

ARIA Remoteness Geography – Splits the NT into 3 areas, Outer Regional (Greater Darwin), Remote and Very Remote

Australian Urban Observatory: – Measuring the liveability of the 21 largest cities in Australia – Liveability Report for Darwin

Infrastructure Australia: 2022 Regional Strengths and Infrastructure Gaps

Infrastructure Australia: Australian Infrastructure Audit 2019

Northern Territory Infrastructure Plan and Pipeline 2022

Northern Territory Infrastructure Strategy 2022–2030

NT Strategic Planning Policy Directions Paper 2023

Regional Infrastructure Study 2014–15

Territory Economic Reconstruction Commission Report 2020

Connect with us

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