



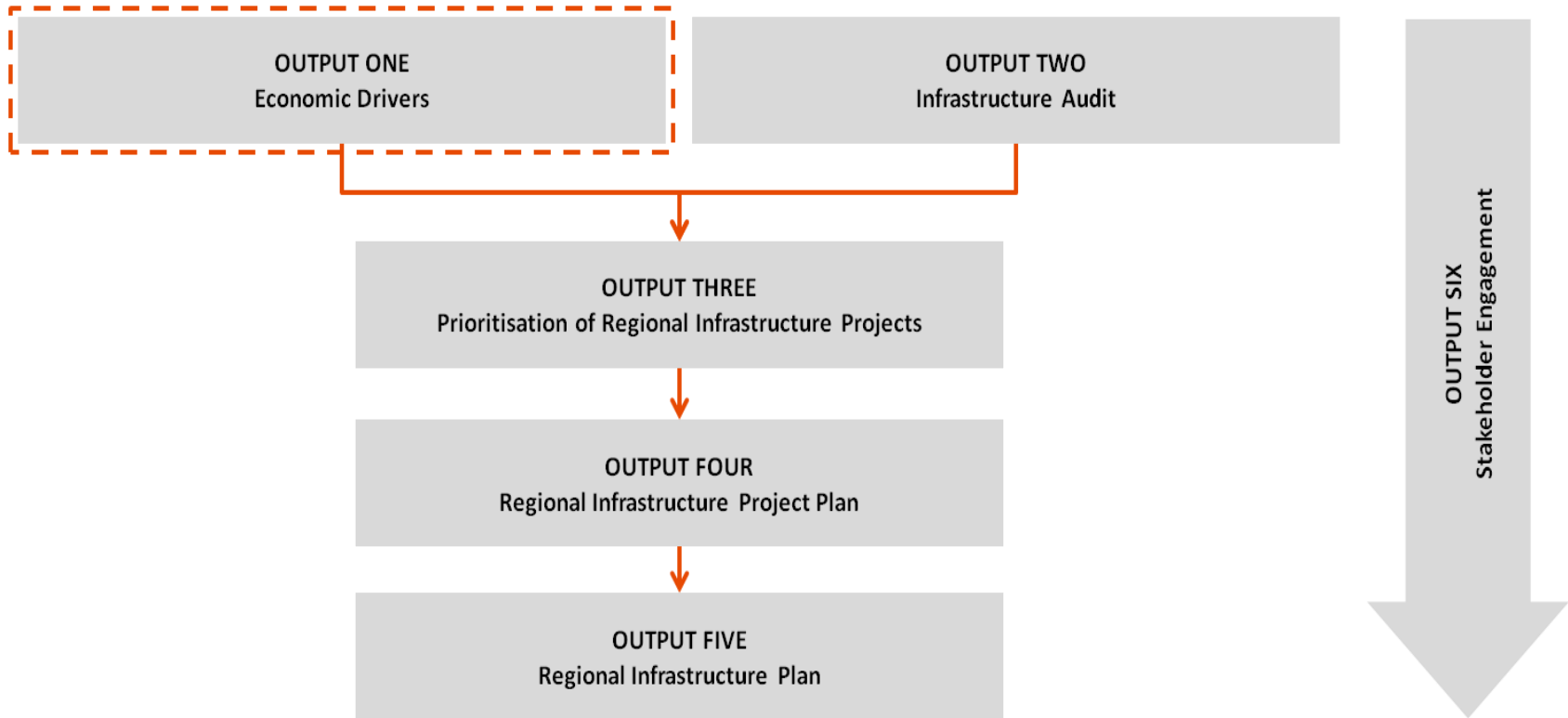
NT Regional Infrastructure Study Economic Drivers (Output One)

Central Australia



Economic Drivers Overview

Analysis of the drivers of economic growth in the Northern Territory:

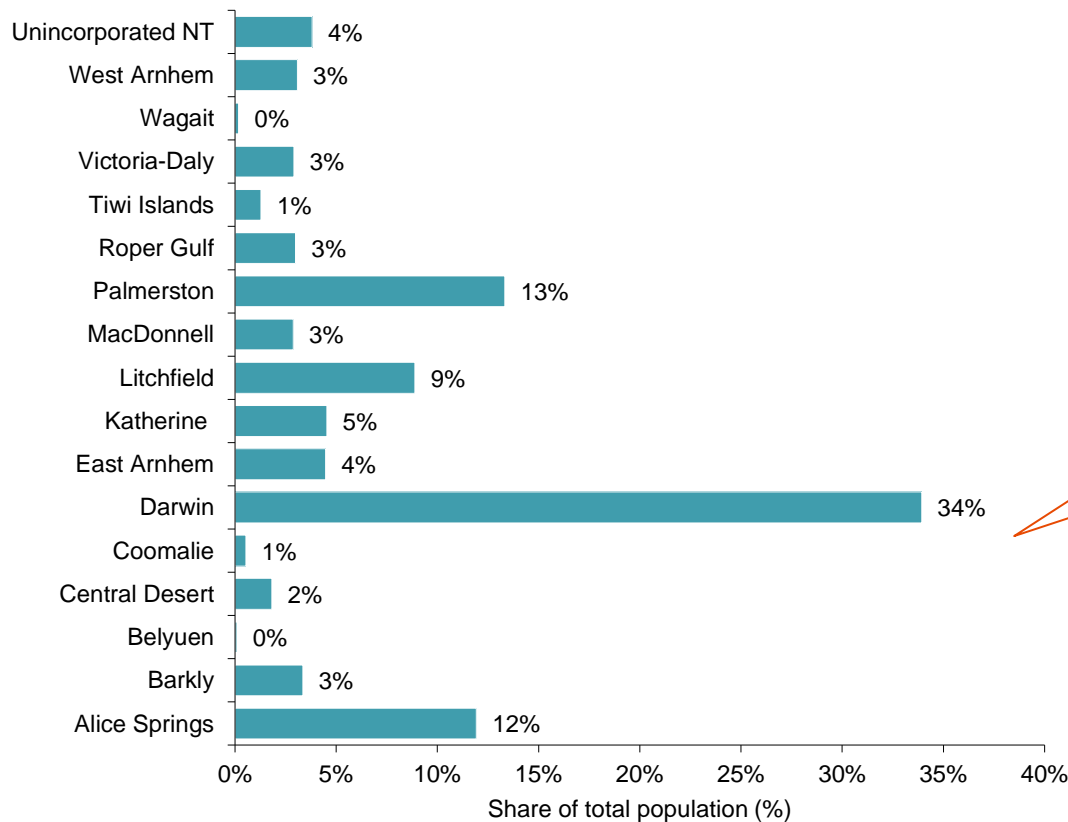


Economic Performance and Outlook – Demographic Characteristics

- Northern Territory has a small population subject to volatile changes.
- Changes are largely driven by changes in net interstate migration associated with the strength of employment opportunities.
- Population growth of 1.7 per cent per annum, slightly higher than the national average.
- Significant issues associated with population measurement due to interstate migration and data collection issues in remote communities.
- Compared with Australia as a whole, the Northern Territory has a higher proportion of residents who are under the age of 50.
- Northern Territory population has a significantly higher share of Indigenous residents (30 per cent) compared to Australia as a whole (3 per cent).

Economic Performance and Outlook – Demographic Characteristics

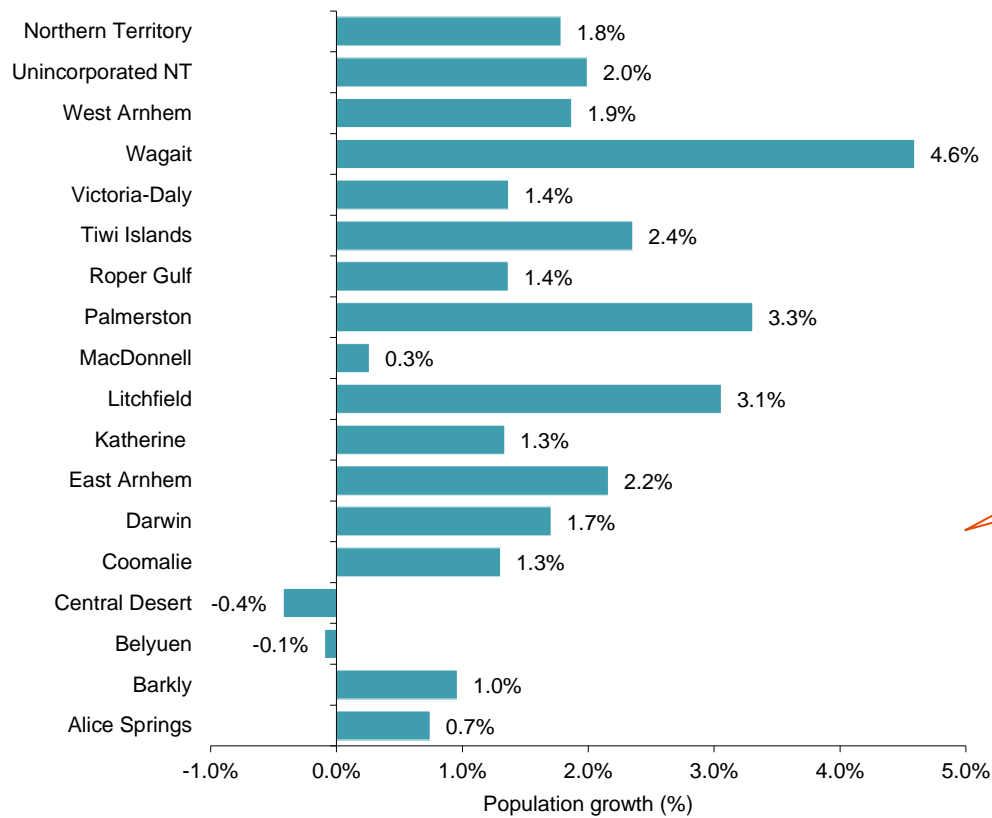
Regional Northern Territory population, 2013



- Over half the population are in Darwin and surrounding areas.
- Regional distribution of the population outside of Darwin includes a large number of very small communities (e.g. population of less than 100 persons).

Economic Performance and Outlook – Demographic Characteristics

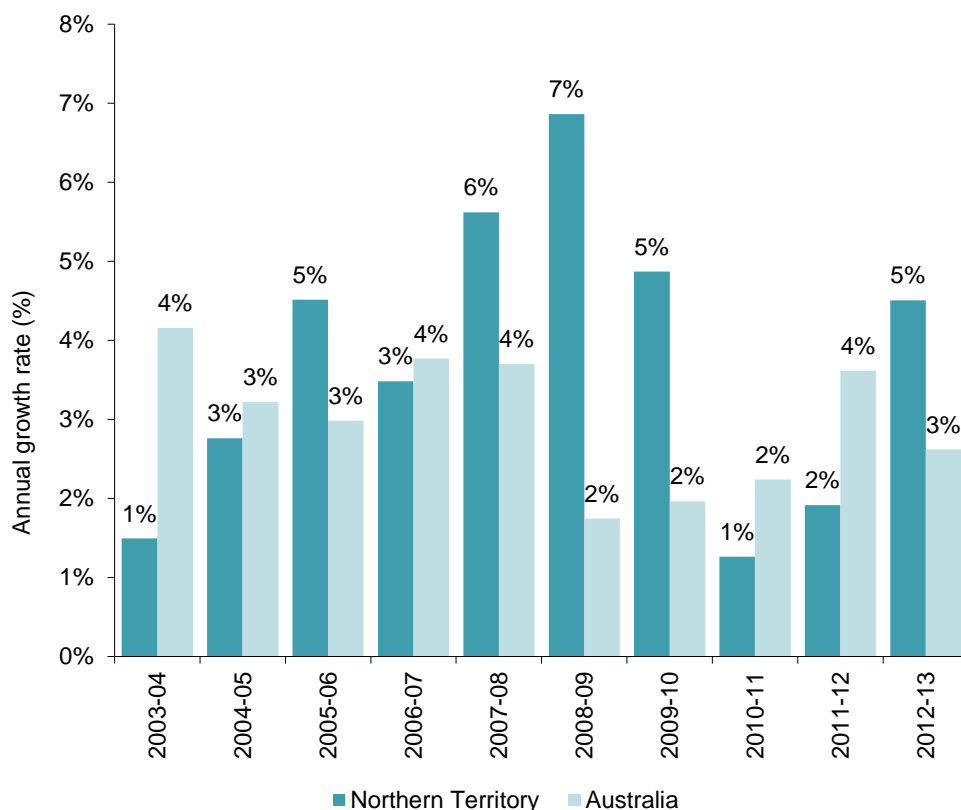
Average annual population growth, 2003 to 2013



- Above average growth surrounding Darwin
- Some regions experiencing slow growth and some experiencing population decline.

Economic Performance and Outlook – Economic Performance and Structure

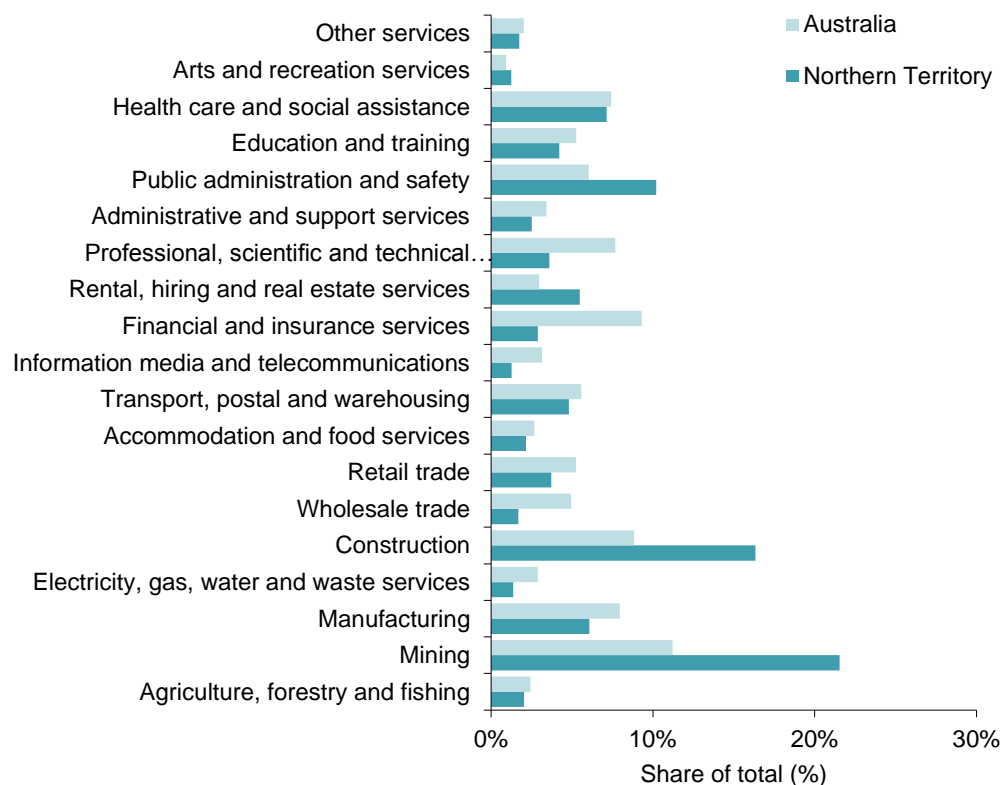
Gross state (domestic) product growth



- Northern Territory accounted for 1.3 per cent of total Australian GDP in 2012-13.
- In 2012-13, the Northern Territory experienced the strongest growth of all Australian states and territories.

Economic Performance and Outlook – Economic Performance and Structure

Industry gross value added

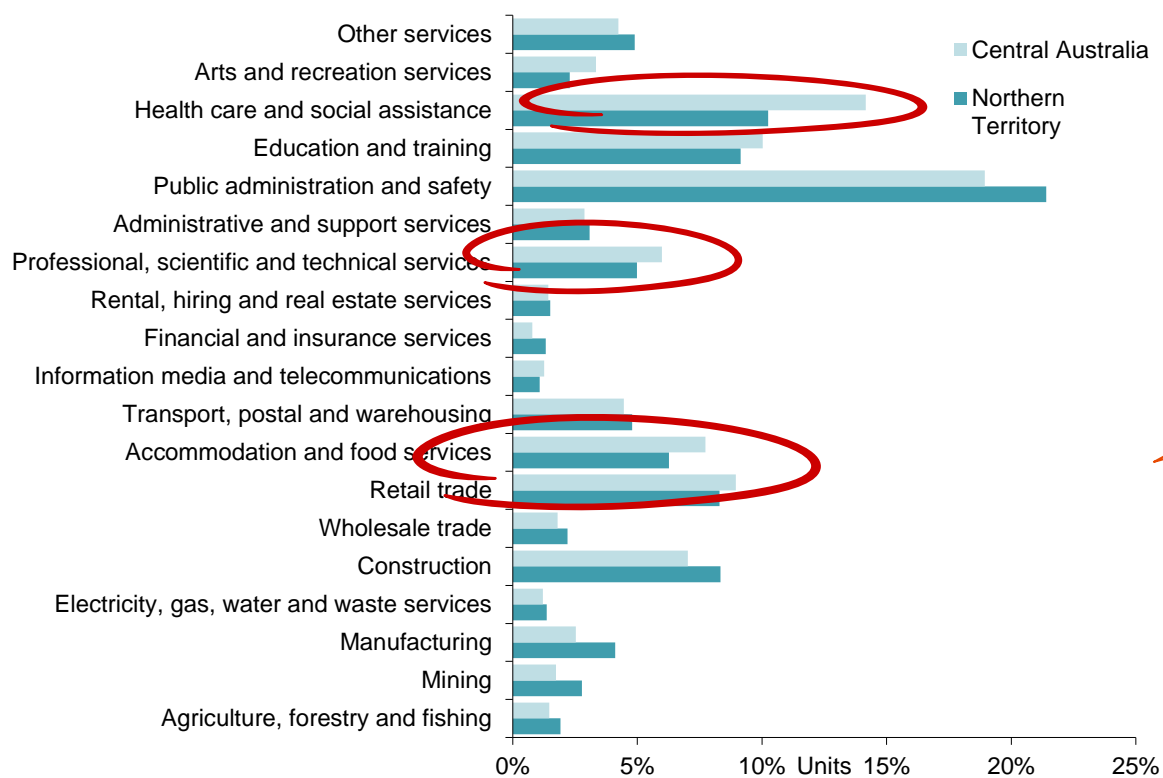


Largest contributors to GSP:

- Mining
- Construction
- Public Administration and Safety

Economic Performance and Outlook – Economic Performance and Structure

Industry employment

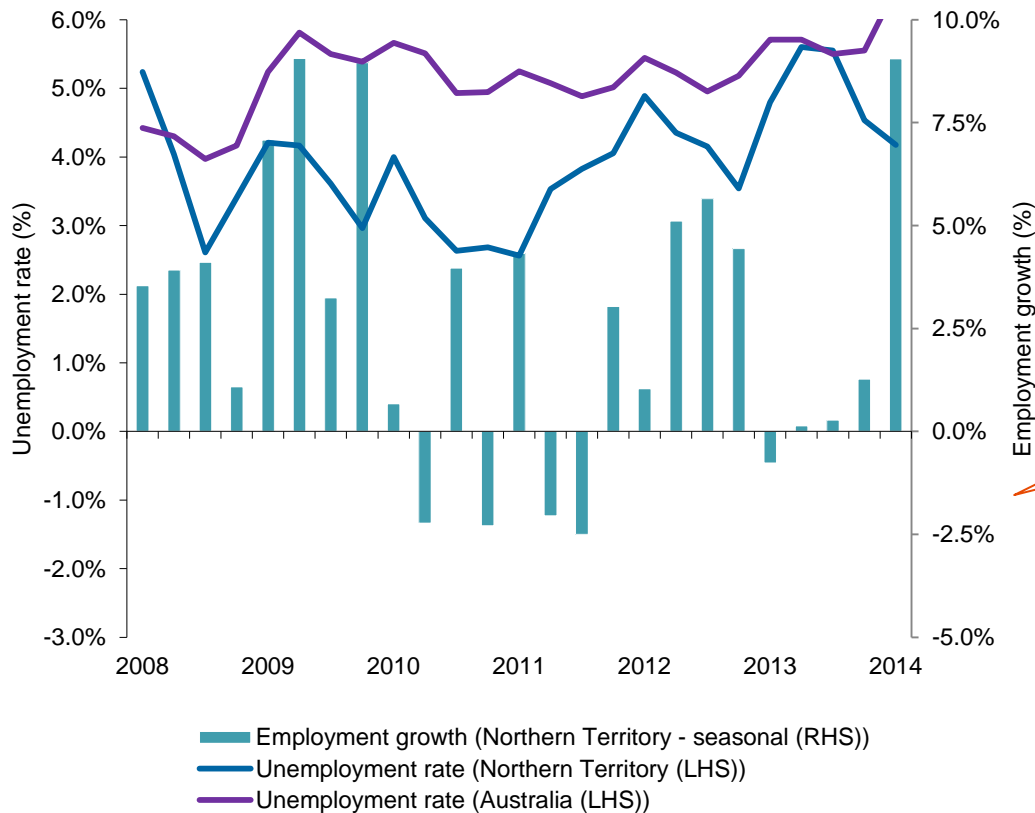


Largest employing industries:

- Public Administration and Safety
- Health Care and Social Assistance
- Retail / Accommodation (Tourism)

Economic Performance and Outlook – Labour Force

Employment growth and unemployment rates

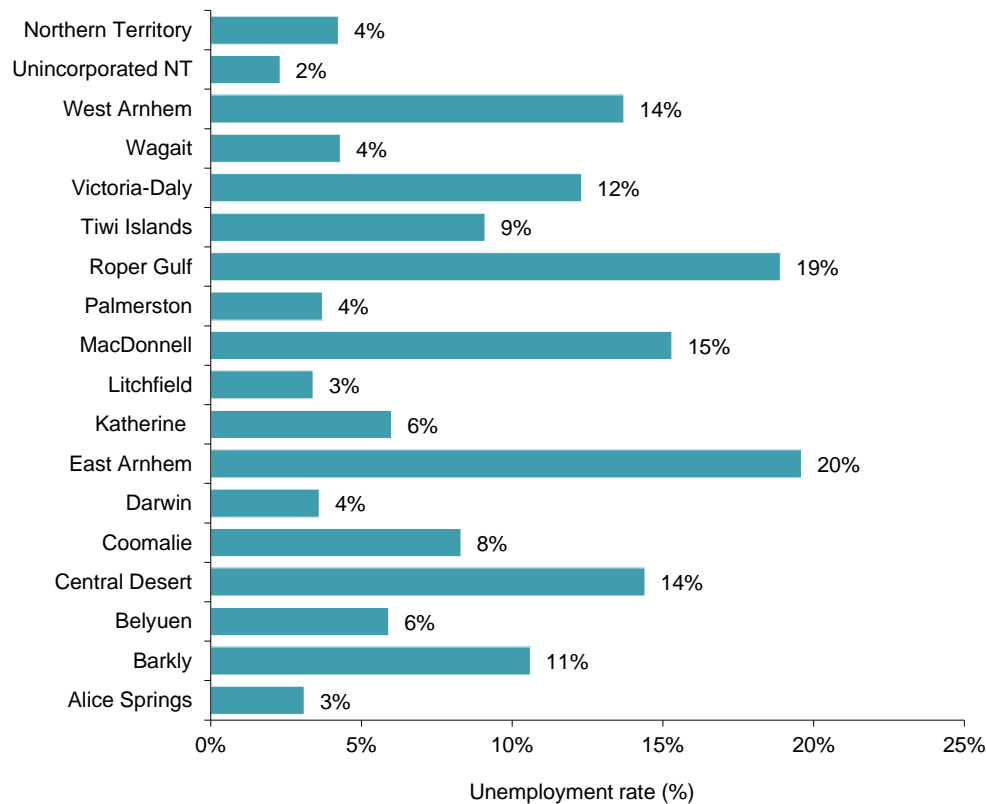


Unemployment in the Northern Territory is generally lower than the national rate.

Large increase in employment growth in recent quarters.

Economic Performance and Outlook – Labour Force

Regional unemployment rates



Significant regional variation in unemployment rates.

A lower average unemployment rate in Alice Springs.

A comparable participation rate of 54.5% (NT rate of 54.3%)

Economic Performance and Outlook – Economic Performance and Structure

Industries experiencing employment growth included:

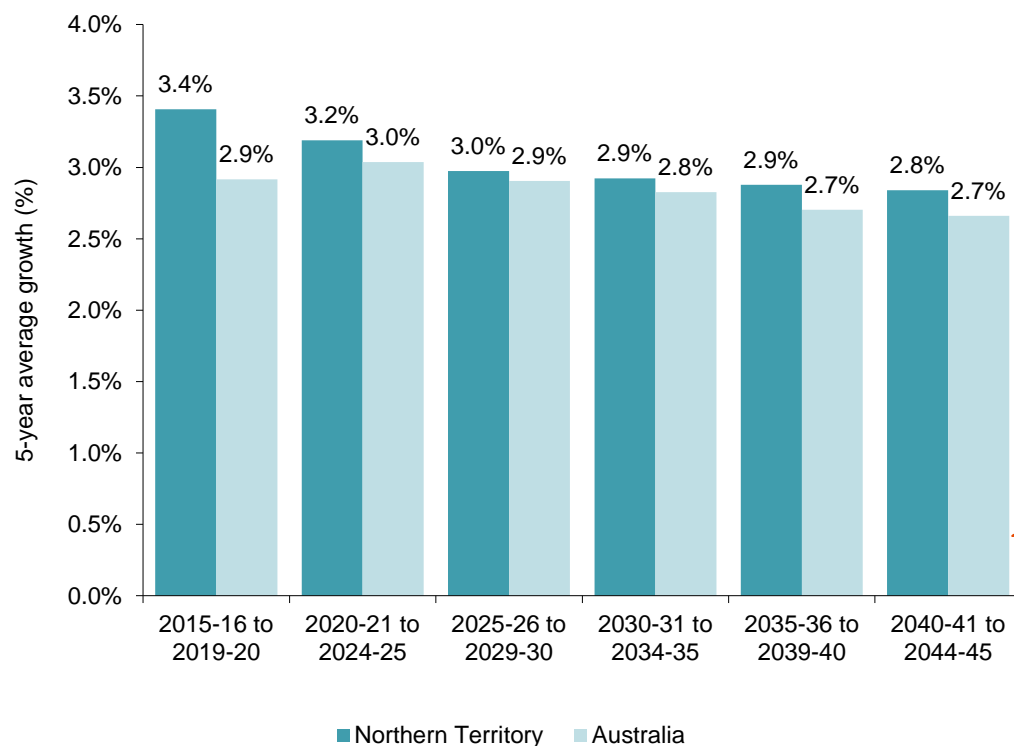
- Public administration and safety;
- Construction;
- Finance and insurance; and
- Manufacturing.

Growth in these industries was partially offset by declines in the following:

- Agriculture, forestry and fishing;
- Education and training;
- Information, media and telecommunications; and
- Wholesale trade.

Economic Performance and Outlook – Northern Territory Economic Outlook

Predicated average economic growth rates

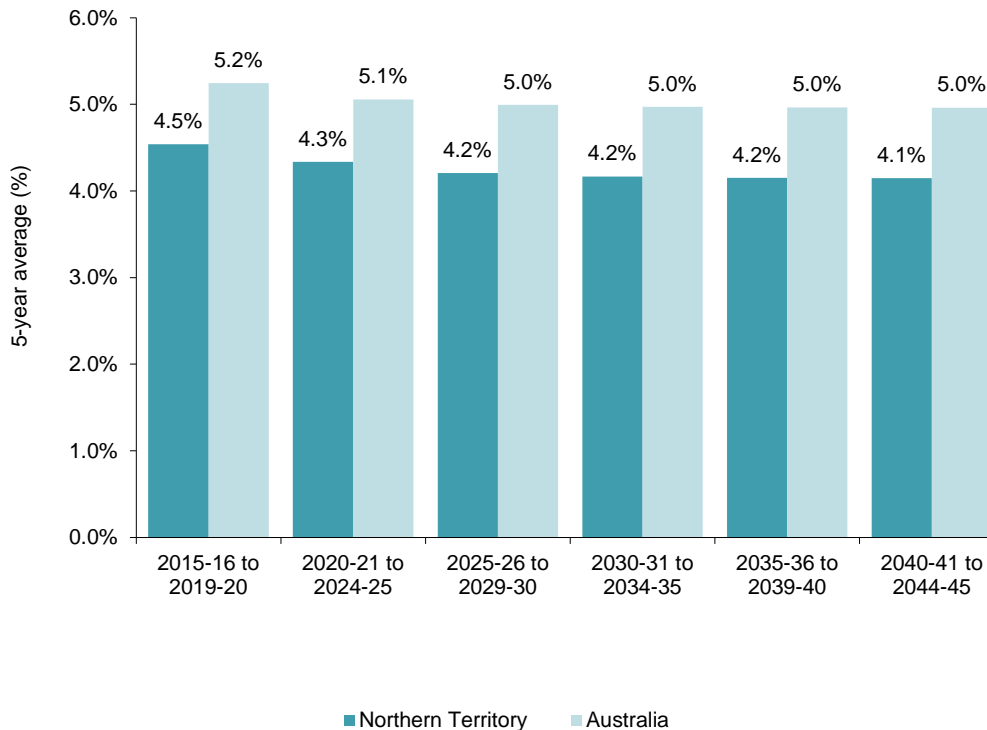


Growth in the Northern Territory is expected to continue to remain stronger than the national average.

This reflects continuation of higher than average growth in both population and labour force participation.

Economic Performance and Outlook – Northern Territory Economic Outlook

Predicated average unemployment rates



Employment growth is expected to continue to increase in the near term. Growth is underpinned by construction activity for major projects. The projected long run unemployment rate is lower than the predicted national average.

Industry Performance, Barriers and Opportunities

Industry Performance, Barriers and Opportunities - Agriculture

Output

- \$347 million (1.8% of NT total)
- 30.0% growth from 2003-13
- Contributed 1.2% to total NT growth from 2003-13

Employment

- 1,900 (1.5% of NT total)
- 3.3% growth from 2003-13
- Contributed 0.2% to total NT growth from 2003-13

Infrastructure Barriers

- Road accessibility and quality
- Port facilities for horticulture exports
- Port facilities for livestock exports
- Port facilities for fisheries exports

Industry Development Opportunities

- High value horticulture commodity export
- Year-round livestock export trade

Industry Performance, Barriers and Opportunities - Mining and Energy

Output

- \$3.7 billion (19.5% of NT)
- 61.4% growth from 2003-13
- Contributed to 21.1% to total NT growth from 2003-13

Employment

- 4,400 workers (3.5% of NT)
- 97.5% growth from 2003-13
- Contributed to 8.1% to total NT growth from 2003-13

Infrastructure Barriers

- Tanami Road
- Port of Darwin capacity & other port/ barge loading issues
- Rail gauge
- Road and power infrastructure
- Pipeline infrastructure

Industry Development Opportunities

- Expansion of gold mining
- Increase in iron ore exports
- Development of an unconventional gas industry

Industry Performance, Barriers and Opportunities - Tourism

Output

- \$821 million (4.3% of NT total)

Employment

- 8,000 (6.6% of NT total)

Infrastructure Barriers

- Road access, quality, and consistency
- Ageing interpretive infrastructure
- Telecommunications coverage
- Broadband coverage
- Energy access

Industry Development Opportunities

- Improved year-round access to existing prominent destinations
- Increased dispersal of visitors to new destinations
- Improved quality of experience

Industry Performance, Barriers and Opportunities - Transport

Output
<ul style="list-style-type: none">• \$820 million (1.8% of NT total)• 23.9% growth from 2003-13• Contributed 2.4% to total NT growth from 2003-13

Employment
<ul style="list-style-type: none">• 1,900 (1.5% of NT total)• 1.1% growth from 2003-13• Contributed 0.3% to total NT growth from 2003-13

Infrastructure Barriers

- Road design shortcomings
- Year-round access
- Lack of intermodal transport facilities

Industry Development Opportunities

- Increase in output and profitability for the road transport sector

Opportunities (for discussion)

Potential opportunity

Opportunity 1: Increase horticulture production and exports

Opportunity 2: Increase livestock production and exports

Opportunity 3: Expansion of mining operations and exports

Opportunity 4: Development of onshore gas industry

Opportunity 5: Increase tourism sector growth

Opportunity 6: Increase transport sector output and productivity

- What are the industries with the potential to drive the next wave of economic growth in Alice Springs?
 - Is infrastructure investment required to build on historical local strengths in tourism, resource extraction and agriculture?
- What are the infrastructure enablers that could assist in facilitating this growth?
Specifically:
 - Transport;
 - Essential Services; and
 - Community Infrastructure.

MOMENTUM

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NT Regional Infrastructure Study – (Output two)





Transport Infrastructure Audit

Transport Infrastructure Audit

Objectives

Two overarching objectives of audit:

- Determine deficiencies in existing infrastructure – *Baseline Audit*
- Undertake a gaps analysis to identify upgrading needs – *Gap Analysis*

Scope of Works

Road

- National highways
- Rural arterial roads
- Secondary local roads

Rail

- All rail between Tarcoola and Darwin in the context of supply chains and passenger movements

Ports

- 14 Government barge landings
- Regional ports operated by independent commercial entities
 - Bing Bong
 - Gove (Nhulunbuy)
 - Groote Eylandt (Alyangula)

cont...

Aerodromes

- 70 Government maintained aerodromes
- Others considered due to mining/tourism impact
 - Jabiru
 - Yulara
 - Groote Eylandt
 - Nhulunbuy
 - Tennant Creek
 - McArthur River Mine
 - Katherine (Tindal)

Baseline Audit – Roads

Key findings:

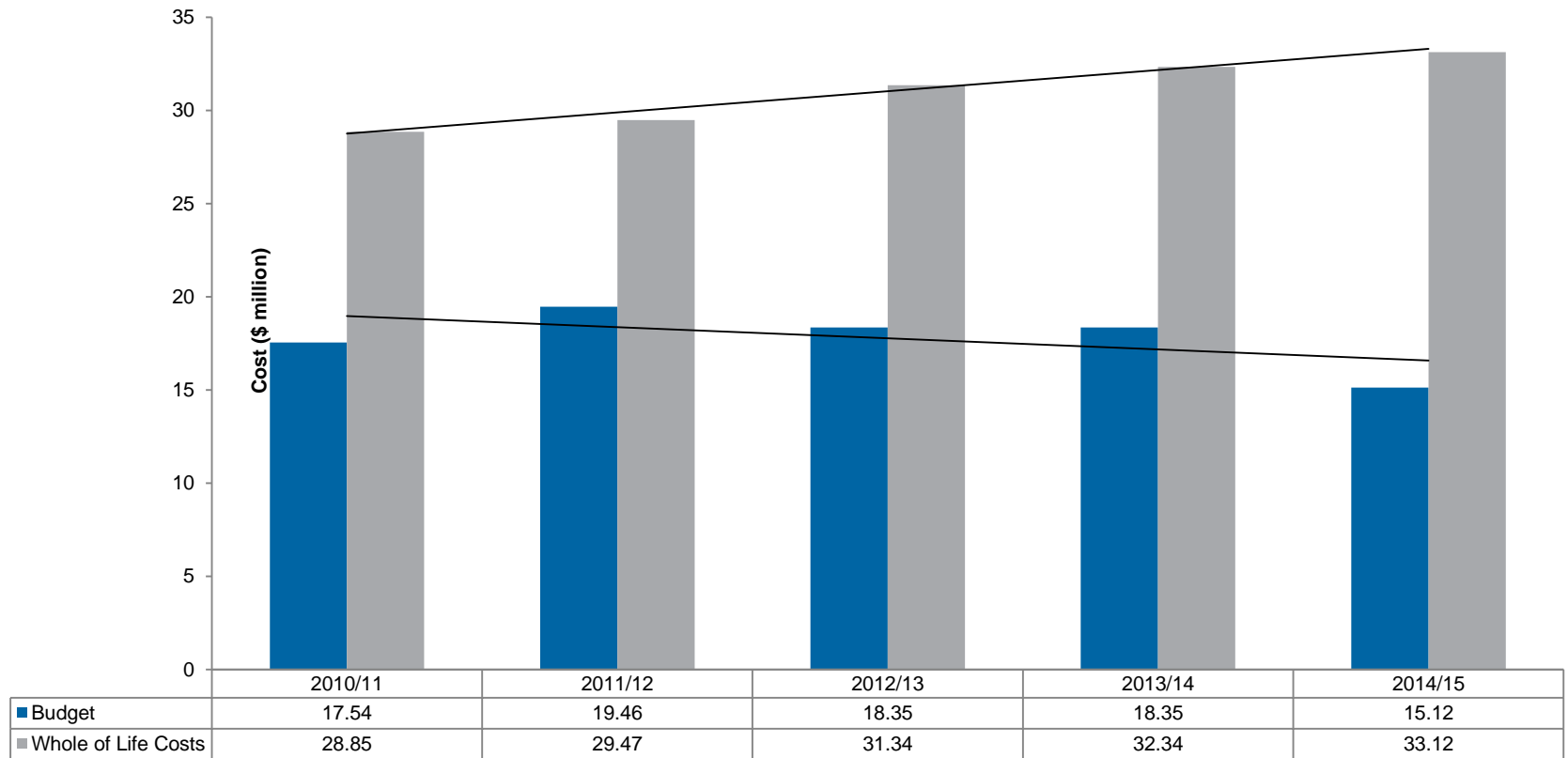
- National Highways - high degree of compliance, sections (Alice Springs region) carriageway width not met
- Rural Arterial Roads – significant variance in road compliance across regions
- Secondary Local Roads – overall low compliance with the technical standards, compliance varies significantly between multi user routes and local access roads
- Maintenance gap is widening

Deficiency Assessment

Region	Functional Road Class	Total Road Length (km)				
			C/W Width	Seal/Gravel Width	No. Lanes	Lane Width
Alice Springs	National Highways	568				
			80%	95%	100%	95%
	Rural Arterials	1446	88%	63%	67%	96%
	Secondary Locals	4357	82%	92%	87%	89%
Total NT	National Highways	2687	91%	97%	100%	97%
	Rural Arterials	4003	78%	59%	67%	88%
	Secondary Locals	10109	76%	86%	86%	90%

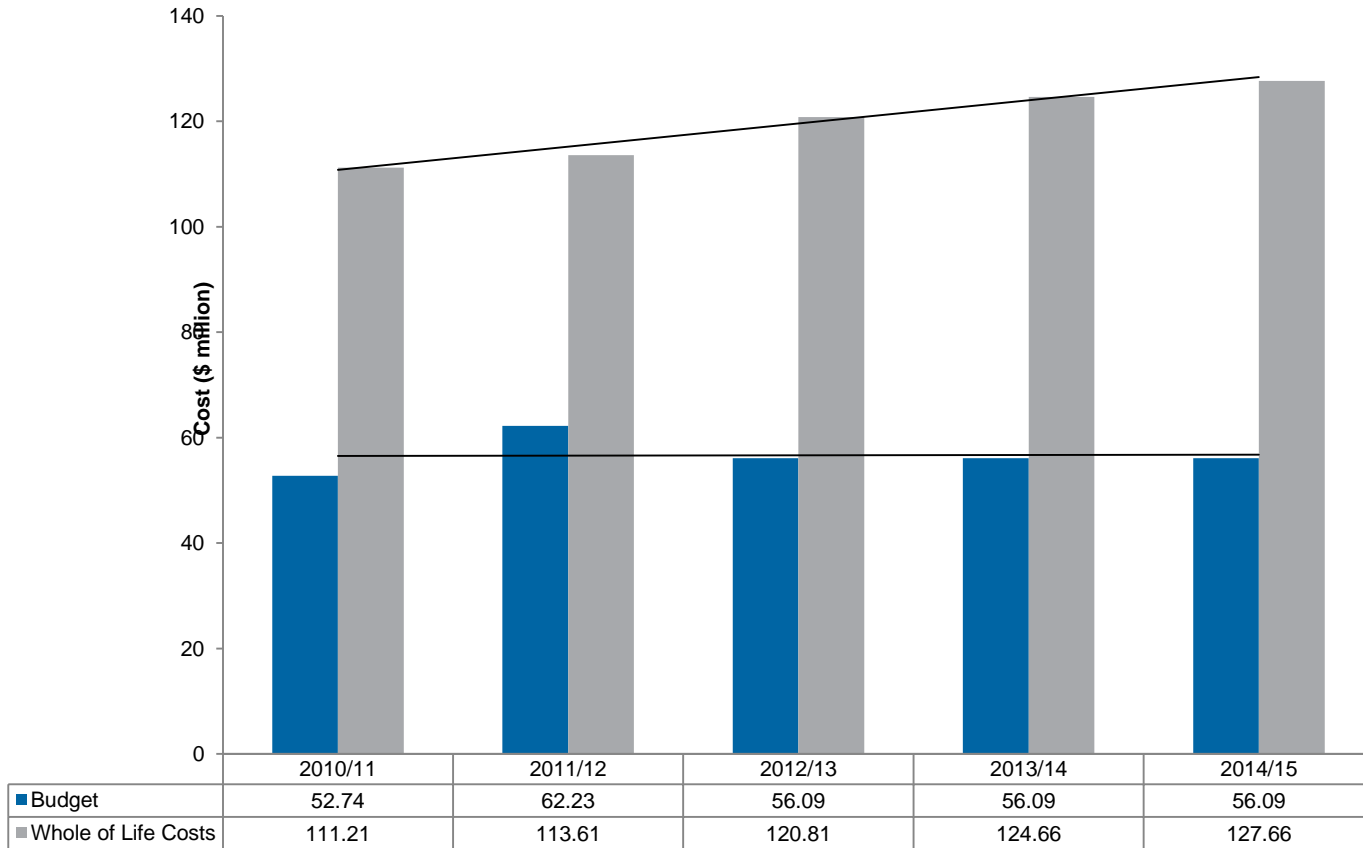
Maintenance requirements for each road type

National Highways – R&M Budget Comparison with Whole of Life Costs Trend



Maintenance requirements for each road type

Territory Roads – R&M Budget Comparison with Whole of Life Costs Trend



Intra-Regional Considerations

- Potential loop road connecting existing road network in Ti Tree and Plenty area, including a linkage between Plenty and Sandover Highways
- A link between Newhaven and Vaughan Springs Road
- A connection between Tennant Creek and Lajamanu
- A link between Numbulwar/Ngukurr and Central Arnhem Road
- A link from Nathan River Road to Bing Bong Port
- Keep River Crossing link from Ord River Stage 3 to Ord River Stage 2 in WA

Inter-Jurisdiction Considerations

- **National Highways** – ok, except flood prone areas
- **Rural Arterial Roads** – Buntine Highway, Tanami Road and Plenty Highway
- **Secondary Local Roads** – Outback Way connects Yulara/Lasseter Highway through to Giles/Wingellina in WA (Tjukururu Road) and Plenty Highway

Gaps Analysis – Roads

Increases in road network use by volume over 5, 10, 20 and 30-year timeframes

Future traffic growth form inputs to prioritisation. Other factors:

- Network connectivity
- Maintaining all weather access
- Economic development criteria (mining, tourism, agriculture)
- Unlocking demand/productivity suppressed by poor accessibility
- Maintenance and construction cost factors
- Aspirational considerations

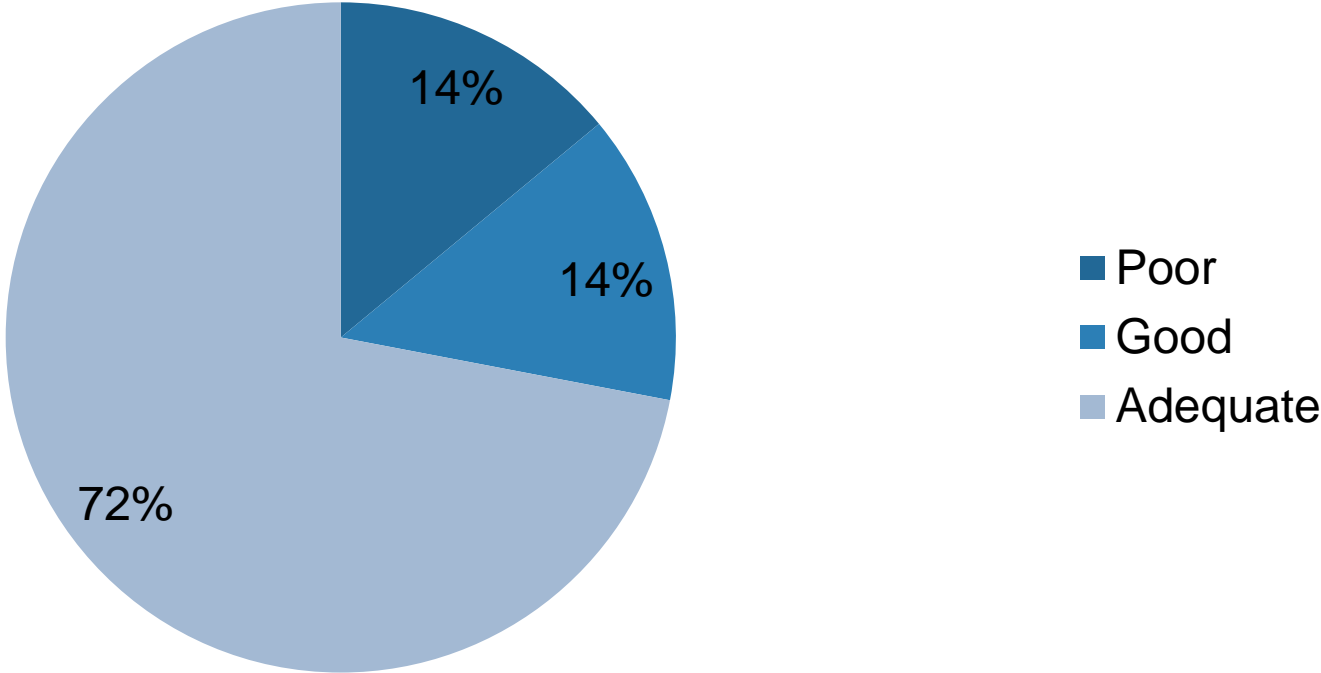
Baseline Audit– Rail

Key findings:

- Current data relating to infrastructure standards is not available other than to AustralAsia Railway Corporation in its monitoring and contractual role due to privatised rail operation.
- Access regulatory framework managed by Essential Services Commission of South Australia (ESCOSA)
- Currently 28 return train services weekly
- Additional potential mining outputs 5-7 mtpa over next 7 years will increase train paths on the network.
- Critical issue will be:
 - efficient scheduling of train services
 - Line capacity through passing loops on the network
 - Darwin/Berrimah staging infrastructure (available track in yard areas)
 - Port access and unloading capacity

Baseline Audit – Ports

Review of Barge Landings Against Minimum Standards



Baseline Audit – Aerodromes

Key findings:

- Initial indications based on level of service criteria are that over 40% of NT Government aerodromes will require minor to major upgrade in the next 10 years.
- Emphasis moving to upgrading larger aerodromes for Code 3 compliance for Code 3 aircraft on RPT services
- Increase in sealing of airstrips leading to increased maintenance funding shortfall for resealing and line marking
- Increased requirement for removal of trees /vegetation in the transition and provision of security fencing (camels etc)



Essential Services infrastructure

Essential Services – Scope of Works

Qualitative information used to describe capacity, reliability and design life:

- Power Infrastructure
 - Generation
 - Grid Connection and high/low voltage distribution
- Water Infrastructure
 - Water source
 - Water storage
- Sewerage Infrastructure
 - Sewage Pumping Stations
 - Wastewater Treatment Plants
- Telecommunications Services
 - Fixed and Mobile voice communication
 - Data broadband (ADSL/ADSL2+, WBDSL, Satellite broadband)
 - Specific government services (DRI, GWIP, GBIP, STAR Network)

Major findings Essential Services

- ▶ **The current infrastructure gap** across capacity, reliability and asset renewal represents the majority of essential service infrastructure needs for the next 30 years with up to 43% of sites currently requiring upgrades
- ▶ Power infrastructure requirements driven by a **reliance on diesel fuel** (76% of locations) and a large number of small power stations (52 units <78MW)
- ▶ **Water infrastructure** represents the majority of required upgrades with 39% currently not having sufficient capacity, 43% currently not providing sufficient reliability and 33% in operation past their economic design life. By the 30 year interval all communities will have a water storage that requires replacement due to end of economic life.
- ▶ **Water resource capacity is constrained** at 36% of sites limiting the amount of available water for use and is of poor water quality at 30% of sites.
- ▶ **There is a need for an NT Telecommunication Strategy**; There is no legal obligations to serve any location. User preferences are wired solutions to improve reliability and latency
- ▶ The agriculture and mining industries in regional areas self-provide their essential services and are not reliant on public service provider infrastructure.

Power Infrastructure Audit – Assets

Power Stations

- PWC Generation ▶ 8 Units – 72 MW
- PWC Remote operations ▶ 52 Units – 78 MW
- Private & Other ▶ 4 Units – 28 MW

76 % Diesel

<1% Solar

19% Dual Fuel

5% Gas

Average Remaining Life – 18 years

Grid and HV/LV Distribution

- PWC Generation ▶ 11 Locations – 16,000 people
- PWC Remote operations ▶ 53 Locations – 31,000 people
- Private & Other ▶ 2 Locations – 4,500 people

Average Remaining Life – 30 years

Power Infrastructure Audit – Assets

POWER STATIONS - PRODUCTION CAPACITY				
REGION	✓	!	✗	REGION TOTAL
ASP	22	0	0	22
DRW	11	0	0	11
EAH	8	0	0	8
KTH	14	0	0	14
TCK	7	0	0	7
TOTAL	62	0	0	62
(%)	100%	0%	0%	

Not applicable: Pine Creek (DRW-KTH System) - Unkown: 3 locations

Capacity

- All power stations have the enough capacity

Redundancy

- All power stations except one have (N-1) redundancy (PWC)

Fuel Capacity

- Average fuel capacity for diesel power stations 18 wks (6 to 58 wks)

Telecommunications Infrastructure Audit – Services

TELECOMMUNICATION - SERVICES				
REGION	MOBILE	ADSL	PHONE	NTG
ASP	14	8	43	23
DRW	16	12	19	15
EAH	10	9	12	11
KTH	13	7	24	18
TCK	3	2	9	6
TOTAL	56	38	107	73
(%)	39%	27%	75%	51%




Total Locations: ASP (68) - DRW (23) - EAH (15) - KTH (27) - TCK (10)

Major Town – Major Remote Town

- Fixed Phone (Yes) – ADSL (Yes) – Mobile (Yes) – ISDN (Yes)
- **Remote Communities - Outstations**
- Fixed Phone (Yes) – ADSL (Very Few) – Mobile (Very Few) – ISDN (Very Few)

Every user comes up with their own solution (VSAT, ADSL, Mobile...)

Audit Results – Water Infrastructure

SUMMARY RESULTS 2014				
WATER INFRASTRUCTURE				REGION TOTAL
SOURCE PUMPS CAPACITY	92%	7%	1%	100%
SOURCE PUMPS RELIABILITY	41%	16%	43%	100%
STORAGE CAPACITY	43%	18%	39%	100%
STORAGE RELIABILITY	49%	8%	43%	100%
STORAGE REMAINING LIFE	67%	0%	33%	100%

Capacity

- 39% of sites don't have enough storage capacity

Reliability

- 43% of sites don't have reliable water source infrastructure (N-1) redundancy (PWC)

Design Life

- 33% of sites have water storage that have reached the end of their design life

Audit Results – Sewerage Infrastructure

- ▶ The majority of Sewage Pumping Stations (SPS) are adequate both in terms of their capacity and condition.
- ▶ Nearly half of the SPSs in the East Arnhem region have capacity issues and are likely to require upgrade to reduce the risk of sewage overflows.
- ▶ There are a significant number of SPSs that have key elements more than 30 years old, especially in the Darwin and East Arnhem regions.
- ▶ 6% of the waste stabilisation ponds in regional NT present a high risk to public health and/or the environment and require upgrade.
- ▶ Over 40% of waste stabilisation ponds pose a moderate risk to public health or the environment and will likely require upgrade in the medium term. The majority of these sites are located in the Alice Springs region. The need for pond upgrades in arid regions may be delayed if effluent disposal is via evaporation or discharge to low risk areas.

Audit Results – Sewerage Infrastructure

SEWAGE PUMPING STATION AUDIT CAPACITY BY REGION					
REGION	✓	!	✗	REGION TOTAL	
ASP	24	1	4	29	
DRW	20	1	4	25	
EAH	11	1	8	20	
KTH	10	1	3	14	
TCK	2	0	1	3	
CAPACITY TOTAL	67	4	20	91	
% of TOTAL	74%	4%	22%		

SEWAGE PUMPING STATION AUDIT CONDITION BY REGION					
REGION	✓	!	✗	REGION TOTAL	
ASP	28	3	0	31	
DRW	11	16	0	27	
EAH	11	11	0	22	
KTH	9	5	0	14	
TCK	2	1	0	3	
CONDITION TOTAL	61	36	0	97	
% of TOTAL	63%	37%	0%		

WASTEWATER TREATMENT AUDIT CAPACITY BY REGION					
REGION	✓	!	✗	REGION TOTAL	
ASP	5	10	3	18	
DRW	9	5	1	15	
EAH	5	5	0	10	
KTH	12	6	0	18	
TCK	1	1	0	2	
CAPACITY TOTAL	32	27	4	63	
% of TOTAL	51%	43%	6%		

WASTEWATER TREATMENT AUDIT CONDITION BY REGION					
REGION	✓	!	✗	REGION TOTAL	
ASP	14	3	1	18	
DRW	2	12	1	15	
EAH	7	3	0	10	
KTH	15	2	1	18	
TCK	2	0	1	3	
CONDITION TOTAL	40	20	4	64	
% of TOTAL	63%	31%	6%		

Asset Capacity	✓	Cap > Req Cap	✗	Cap < 85% of Req Cap	!	85% of Req Cap < Cap < Req Cap
Asset Capacity - WWTP	✓	Low Risk	✗	High Risk	!	Moderate Risk
Asset Condition	✓	RL > 50% of Asset Life	✗	RL < 25% of Asset Life	!	25% < RL < 50% of Asset Life

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NT Regional Infrastructure Study – (Output two)



COMMUNITY INFRASTRUCTURE



Scope

1. Complete a baseline audit to identify current community infrastructure
2. Develop regional profiles of community infrastructure
3. Assessment of current community infrastructure need based on population size and service type
4. Develop standard unit capital maintenance and recurrent costs for community infrastructure types

RIS Community Infrastructure

Audit objectives



1. Education
2. Health
3. Police
4. Housing
5. Vocational Training
6. Community Stores
7. Family infrastructure
8. Communities infrastructure

NTG

**Regional
Councils**

**Private
Sector**

NGOs

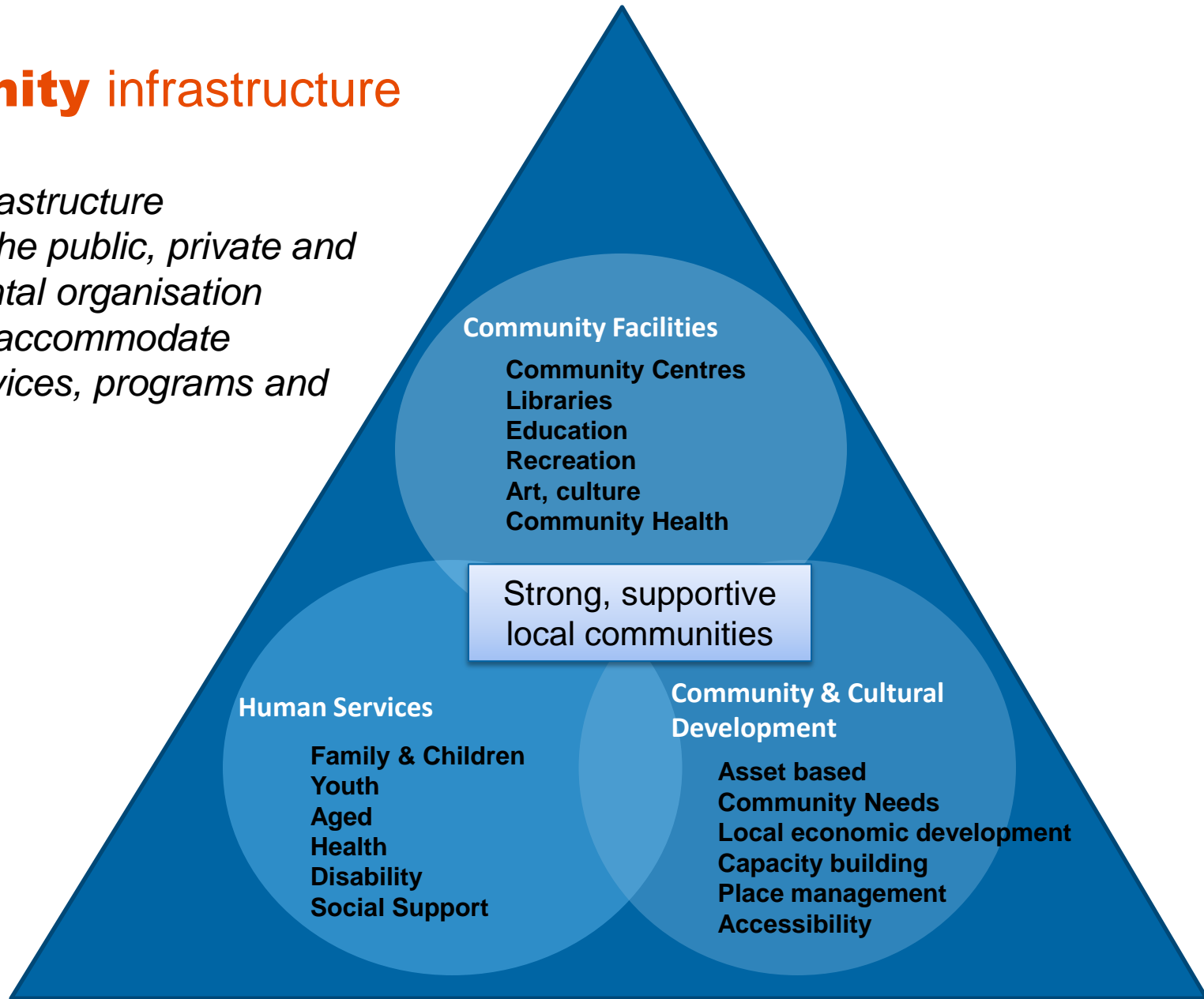
**Australian
Government**

RIS Community Infrastructure

Sectors and Key Providers/Funders

Community infrastructure

Community infrastructure encompasses the public, private and non-governmental organisation facilities which accommodate community services, programs and activities.





Sector	% of Communities with Services
Stores	92%
Housing (Social)	92%
Health	91%
Education	87%
Families	67%
Communities	63%
Police	54%
Vocational Education	36%

RIS Community Infrastructure

Availability of Services



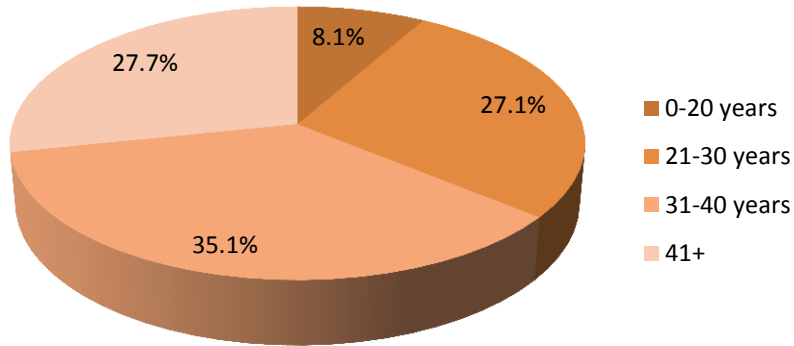
1. Age of assets
2. Policy drivers informing asset investment
3. Role of NGOs and Regional Councils in service delivery

RIS Community Infrastructure

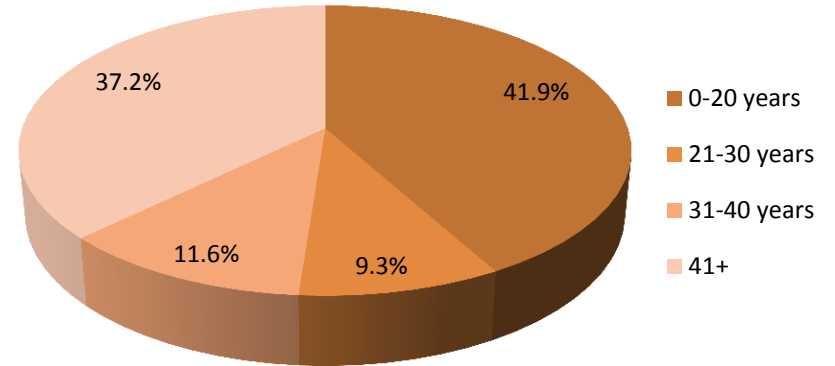
Key Findings



Schools



Police Stations



RIS Community Infrastructure

Asset Age



- 28 communities, 9222 estimated residential population
- Secondary Schools servicing Docker River, Imanpa and Yulara
- 13 police stations
- 10 vocational education facilities
- 27 health clinics
- 1104 social housing assets

RIS Community Infrastructure

Alice Springs Region – Summary Information



- Long distances, small communities
- 3 Regional Service Delivery and/or Growth Towns (Yuendumu, Ntaria, Papunya) with significant investment
- Relatively low levels of overcrowding

RIS Community Infrastructure

Central Australia - Key Findings

Community	Santa Teresa (647)	Papunya (485)	Ampilatwatja (424)	Areyonga (274)	Finke (188)
Early Learning	Child Care/Creche	Child Care/Creche	None	Child Care/Creche	Child Care/Creche
School Age Range	Combined P-10	Combined P-11	Combined P-12	Combined P-7	Combined P-7
Vocational Education	Trade Training Centre	Regional/Remote Training Centre	None	None	None
Police	Police Station - Themis	Police Complex	None	None	None
Health	Category 2	Category 2	Category 2	Category 2	Category 2
Store	Medium	Large	Large	Medium	Medium
Social Housing	99	48	44	32	42
Families	Women's Centre	-	Women's Centre	-	Women's Centre Men's Safe House
Communities	Art Centre Community Hall	Community Hall Art Centre	Art Centre	Art Centre Community Hall	Community Hall Art Centre
Other	-	-	Second Store/Takeaway	-	-

RIS Community Infrastructure

Alice Springs Region – Sample Information



Yuendumu police station



RIS Community Infrastructure

Yarralin police station



RIS Community Infrastructure

Existings vs. new housing



Haasts Bluff Child Care Centre

Ntaria Clinic



RIS Community Infrastructure

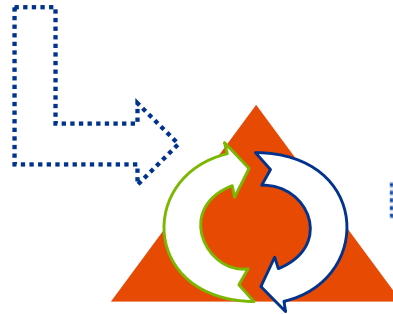
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Economic Development in the Northern Territory

INJECTIONS

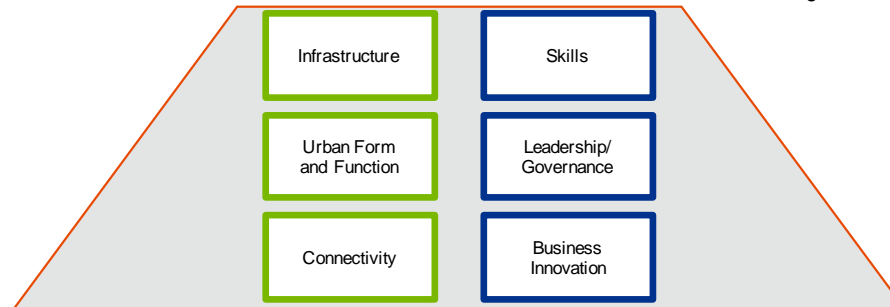
- International and Inter-Regional Exports
- Local, Regional and International Investments



Transactions in the Regional Economy

LEAKAGES

- Leakage of Business Spending
- Leakage of Consumer Spending
- Dividends
- Saving



Preconditions that Government can Influence

- Terrain
- Geography
- Accessible Water Resources
- Arable Land/ Soil Quality
- Mineral Resources
- Climate

Preconditions that Regions are Endowed with

What are we trying to achieve?

INJECTIONS

- *International and Inter-Regional Exports*
- *Local, Regional and International Investments*

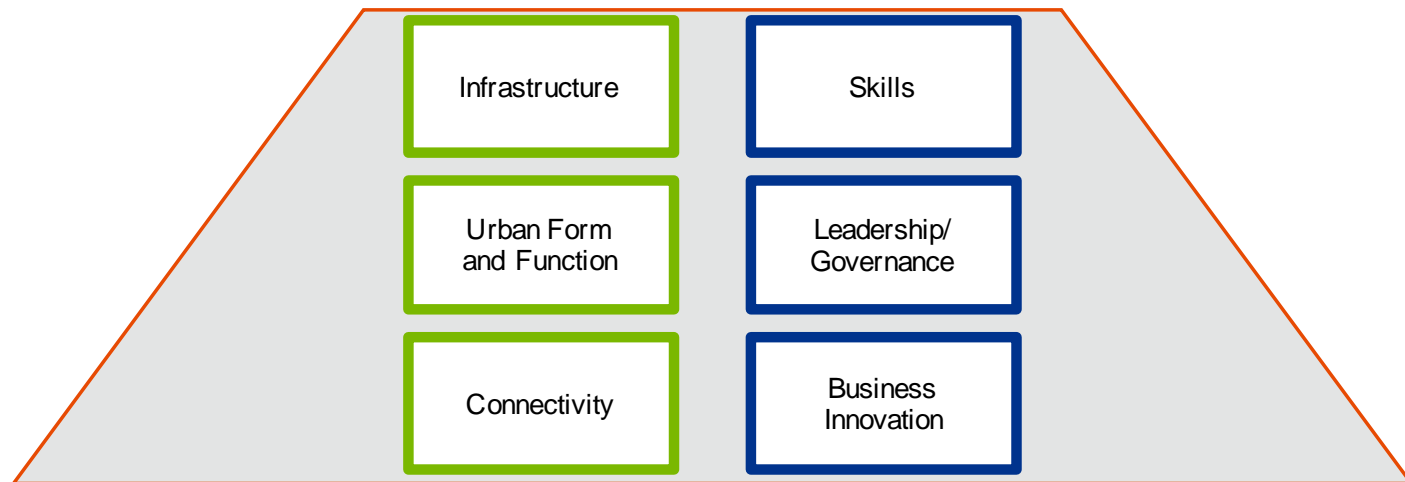


LEAKAGES

- *Leakage of Business Spending*
- *Leakage of Consumer Spending*
- *Dividends*
- *Saving*

- How do we maximise injections into the economy?
- How do we minimise leakages from the economy?
- How do we maximise the number and value of transactions within our economy?

What are the preconditions that government can influence?



**Preconditions that
Government can Influence**

Capital Intensive Preconditions

Infrastructure

1. What are the infrastructure constraints currently affecting industry productivity?
2. Which infrastructure investments would unlock the greatest growth in output?
3. How can government best enable infrastructure investment, through both policy and funding mechanisms?

Urban Form and Function

1. What are the urban infrastructure requirements that are inhibiting workforce functionality?
2. How do our communities compare to other regions as competitive residential destinations for all demographics of the workforce and community?

Connectivity

1. How can infrastructure connect high value industry sectors more efficiently to improve their productivity and output?
2. What are the infrastructure investments that will unlock the greatest economic benefit by bringing supply chains closer together?
3. What are the current deficiencies in our regional transport and communication networks that are limiting greater connectivity?

Human/ Labour Intensive Preconditions

Skills

1. How well do local education and training providers suit the skills mix required by industry?
2. What are the key workforce development issues challenging industry growth?

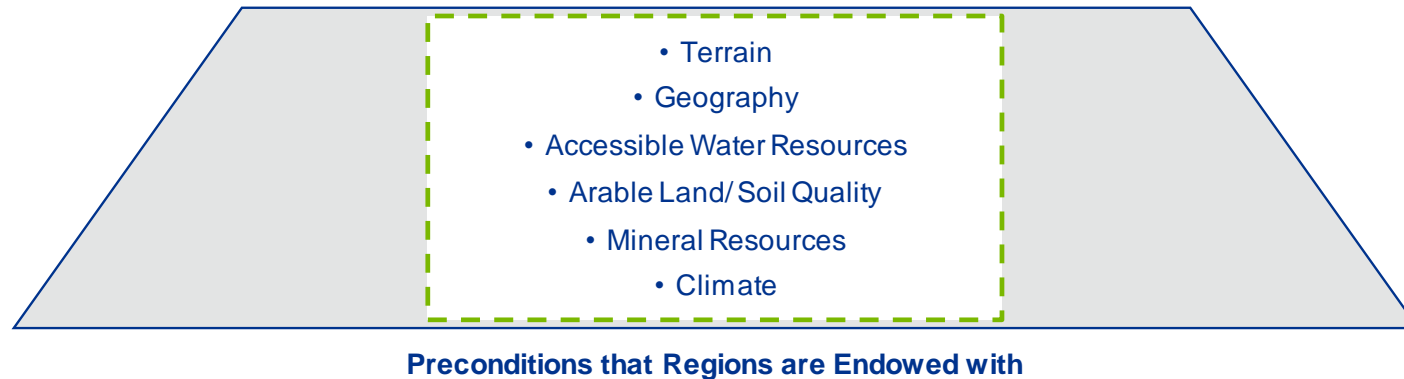
Leadership/ Governance

1. How are existing peak body and government structures and policies influencing industry development?
2. How do local, regional and national industry engagement and promotion activities support the development of local economic development opportunities?

Business Innovation

1. To what extent are there opportunities for local businesses to expand to service a greater share of high-value supply chains?
2. How do existing industry clusters support industry diversification into new value-adding offerings?
3. How is government supporting/ incentivising innovative activity in key growth sectors?

Natural Environment



- To what extent do terrain and geography influence the relative feasibility of the opportunity?
- To what extent do the natural resources in a region predispose it to differing high-value economic activities?
- To what extent do climactic conditions influence business investment risk/reward?