

infrastructure report card 2010

Tasmania



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Tasmania Infrastructure Report Card 2010

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COMMUNIQUÉ

Tasmania must have adequate infrastructure such as transportation and communications systems, water and energy supply if it is to have a viable economy and to support the economic, environmental and social aspirations of its current population and future generations.

In 2005, Engineers Australia took the initiative to raise community awareness about the importance of infrastructure in the 2005 Tasmanian Infrastructure Report Card. This report gave a strategic overview of various infrastructure sectors and provided an independent assessment of the fitness for purpose of Tasmania's key assets. The Report Card found that much of Tasmania's infrastructure required critical changes to be fit for its current and future demands.

Five years on, we are again examining the state of Tasmania's infrastructure to see what progress has been made and what needs to happen in the future if Tasmania is to live up to its potential as an island community with a unique natural and cultural environment and relatively prosperous lifestyle.

Overall, Tasmania's infrastructure is stressed, and is mostly rated as either adequate or poor. The 2010 Report Card recognises that there have been some improvements in potable water and wastewater infrastructure since 2005. We have seen major structural and regulatory reform in the potable and wastewater sector and construction and replacement of new reservoirs, storage dams and pipelines, such as the new reservoir at Mornington and upgrades of Swansea's potable supply system. The Huon Valley Regional Water Scheme will improve the quality of water for Huonville, Franklin, Geeveston and Cygnet, as will the replacement of the Distillery Creek water treatment plant for the people of Launceston. Wastewater treatment facilities have been upgraded in Smithton and Ulverstone, and the new plant at Cambridge will allow the decommissioning of five old-style plants. The challenge will be to ensure that planning regimes are put in place for the long term and that funding is maintained in this area.

Areas where the ratings remained the same, such as stormwater and electricity, indicate that significant infrastructure works have been completed in these areas. There has been an improvement in stormwater quality across the State with the installation of many gross pollutant traps, and guidelines have been developed to assist local government, developers and the construction industry to fulfil their stormwater responsibilities. Funding for future works is an issue for stormwater, as is the maintenance of expertise in this area. The commissioning of Basslink and the Aurora Energy Tamar Valley power station, and upgrades to transmission and distribution systems have been major developments for electricity in Tasmania. Ensuring ongoing generation capacity and addressing the vulnerability of Basslink as the only transmission line connecting Tasmania to the mainland will be issues that need to be addressed in the future.

In examining transport infrastructure, State roads were the only sector to maintain its rating due mainly to the backlog of work being partly addressed. Local and national roads

and ports have lost ground since the last report. While some major upgrades and bypass work have been completed or are underway, there has been a deterioration in the quality of roads due to increases in freight usage and pavements exceeding their design life. To improve the rating for the future, there will need to be better planning, funding and delivery of road infrastructure. Port infrastructure appears to be adequate at present in terms of capacity, but integrated land use, and transport planning outcomes will have a substantial effect on capacity in the future.

This 2010 report includes a rating for rail, airports, irrigation, and gas, which were not rated in 2005. While telecommunications was not rated in 2005, it was rated in a separate report in 2007. Of these, rail received a fail rating on the basis that Tasmanian rail is inadequate for current and future purposes. While there has been some rail infrastructure work carried out recently, or currently underway, there is no plan for the future of Tasmanian rail, and the level of investment to provide an effective and efficient rail service would be very substantial.

Tasmanian airports fared better, recognising that infrastructure has improved considerably in recent times. Gas infrastructure is also recognised as being in good shape, but is vulnerable due to the single transmission pipeline. As well, expansion of the distribution system has ceased. Irrigation has seen significant projects completed or in progress, including the Meander Dam and associated pipelines, together with increased effluent re-use schemes, but faces the challenge of long-term sustainability, for instance, soil salinity problems.

The planning, funding and infrastructure capacity and condition of telecommunications infrastructure achieved an adequate rating. This recognises the planning and funding of the National Broadband Network in Tasmania, as well as the introduction of competition into the Tasmanian market. Poor coverage in some areas will need to be addressed in the future.

Ratings are given below for the current and past Tasmanian and National Report Cards.

Infrastructure Type	Tasmania 2010	Tasmania 2005	National 2005	National 2001
Roads overall	C-	Not rated	C	Not rated
National roads	C+	B-	C+	C
State roads	C	C	C	C-
Local roads	D	D+	C-	D
Rail	F	Not rated	C-	D-
Ports	B-	B	C+	B
Airports	B	Not rated	B	B
Potable water	B-	C Metropolitan D Non-metropolitan	B-	C
Wastewater	C	C- Metropolitan D Non-metropolitan	C+	C-
Stormwater	C-	C-	C-	D
Irrigation	B-	Not rated	C-	D-
Electricity	B-	B-	C+	B-
Gas	C	Not rated	C+	C
Telecommunications	C+	Not rated	Not rated	B

Inadequate infrastructure has major economic and social consequences. Engineers Australia remains concerned that:

- ▶ Critical changes are required to Tasmania's infrastructure to make it fit for current and future needs
- ▶ Long-term integrated infrastructure planning is missing, as is transparent advisory and decision-making mechanisms.
- ▶ Given its small and rapidly ageing population compared to other States, infrastructure funding will always be a critical issue.
- ▶ Skills shortages in the engineering, construction and planning disciplines will continue to impact on Tasmania's ability to plan and deliver future infrastructure projects.
- ▶ Maintenance and rejuvenation of ageing assets need to be funded on a sustainable basis.

Recommendations

1. Government must take responsibility for implementing a long-term integrated infrastructure plan for the State.
 2. The structure and mechanisms for developing and achieving the long-term plan must be open and transparent and must include wide consultation with industry, the professions and the community at large.
 3. Strategies must be developed alongside the infrastructure plan to ensure that Tasmania has, and can access, adequate skills to deliver infrastructure projects.
 4. Investment in infrastructure must increase overall.
 5. Private sector funding for infrastructure must be encouraged and infrastructure delivery models that include the private sector must have the appropriate allocation of risk to deliver the best project outcome.
 6. In the context of the F rating for rail, further short-term investment is required to maintain an operational service while an integrated transport strategy (a component of the recommended integrated infrastructure plan) is prepared to determine the long-term future of rail in Tasmania.
 7. Greater cooperation and resource sharing at a local government level is required to plan and deliver more efficient infrastructure provision and maintenance.
-

RATINGS SUMMARY

The following summarises the 2010 Tasmanian Infrastructure Report Card ratings.

Infrastructure Type	Grade	Comment
Roads overall National roads State roads Local roads	C- C+ C D	These ratings recognise that local roads are generally poor and failures are common due to the employment of reactive maintenance practices. State roads have maintained their standard, with the additional expenditure on these roads resulting in some of the backlog of work being addressed. National roads have deteriorated due to increasing freight usage and road pavements exceeding their design life, while the significant investment on national roads has principally been catch-up expenditure.
Rail	F	This rating recognises that infrastructure is inadequate for current and future purposes, and that the magnitude of the works required to provide any reasonable utility from this infrastructure is enormous.
Ports	B-	This rating recognises that while capacity at ports is currently adequate, over the longer term, substantial problems will arise due to a lack of efficient and effective integration in the provision of road, rail and port infrastructure.
Airports	B	This rating recognises that the airport infrastructure has improved considerably over the last few years, and is adequate to meet existing and foreseeable future demand.
Potable Water	B-	This rating recognises that the current infrastructure is largely adequate and the 2009 reforms of the water sector will significantly improve water services, provided the committed funding materialises.
Wastewater	C	This rating recognises that improvements have been made in recent years to infrastructure in problem areas and there have been significant increases in the volumes of recycled water used. The 2009 reforms of the water and sewerage sector will significantly improve sewerage services, provided the committed funding materialises.
Stormwater	C-	This rating recognises that significant localised stormwater initiatives have been implemented and the application of water sensitive urban design (WSUD) is becoming widespread. However, the State-wide stormwater strategy is yet to be approved and funding for stormwater projects secured.
Irrigation	B-	This rating recognises that there has been a significant expansion in irrigation infrastructure and improved irrigation practice. However, there are concerns about the sustainability of the expanded irrigation systems.
Electricity	B-	This rating recognises that Tasmania's generation system coupled with the interconnector has high supply reliability and security. It also reflects the ongoing improvements that are underway to enhance the quality of the transmission and distribution networks.
Gas	C	This rating recognises that the assets of the gas sector are of a high quality. However, supply is at risk of major disruption due to the single transmission pipeline and expansion of the distribution system has stopped.
Telecommunications	C+	This rating recognises that fixed telephone services are excellent and mobile phone coverage is generally adequate in major population centres and transport corridors. There is generally sufficient capacity in broadband infrastructure to meet present demand, but utilisation is price-dependent. Broadband demand is rapidly growing and difficult to predict with technological advances and new services. While intrastate backhaul is available, many places are served by only one link, which results in security and pricing issues. Interstate backhaul choice has improved with the commissioning of the Basslink fibre cable.

OVERVIEW

Rating process and description

The objective of the Report Card is to rate the quality of economic infrastructure. Engineers Australia has been rating infrastructure since 1999. In 1999, 2001 and 2005, national report cards were published. In 2005, report cards on Australian States and Territories were published. This report card revises and expands on the 2005 edition of the Tasmanian Infrastructure Report Card.

The purposes of the Report Cards are to:

- ▶ Raise the awareness of politicians, media, business and the public that infrastructure underpins the community's quality of life and that inadequate infrastructure impedes economic and social growth, and reduces environmental and societal sustainability
- ▶ Generate debate on the adequacy of the infrastructure (including condition, distribution, funding and timing) required to meet society's needs
- ▶ Increase appreciation of the value of developing an integrated and strategic approach to the provision of infrastructure
- ▶ Raise awareness of the new challenges facing Australia's infrastructure due to climate change, change in demographics, demand increases, resilience and sustainability
- ▶ Improve the policy, regulation, planning, provision, operation and maintenance of infrastructure.

This Report Card provides a strategic overview of Tasmanian infrastructure that other organisations can use when they undertake detailed analysis of particular infrastructures. It also provides a benchmark that the community can use to identify needs and evaluate alternative infrastructure priorities over time.

Ratings have been based on an assessment of asset condition, asset availability and reliability, asset management, sustainability (including economic, environmental and social issues) and resilience. The assessment includes evaluating infrastructure policy, regulation, planning, provision, operation and maintenance. (See *Appendix A: Rating methodology* for details.) The assessment was carried out through research and consultation. Interviews were held with relevant stakeholders and documents were analysed. The assessment has relied on publicly available information and has, in line with its aims, focused on strategic issues, supplemented by quantitative performance measures where these were readily available. A number of industry associations were consulted and Engineers Australia provided input through its experts. Ratings used are comparable with those of past Report Cards. The rating scale is detailed below.

Rating scale

Letter grade	Designation	Definition*
A	Very good	Infrastructure is fit for its current and anticipated future purposes
B	Good	Minor changes are required to enable infrastructure to be fit for its current and anticipated future purposes
C	Adequate	Major changes are required to enable infrastructure to be fit for its current and anticipated future purposes
D	Poor	Critical changes are required to enable infrastructure to be fit for its current and anticipated future purposes
F	Inadequate	Inadequate for current and anticipated future purposes

* Fitness for purpose is evaluated in terms of the needs of the community, economy and environment using criteria of sustainability, effectiveness, efficiency and equity.

State-wide issues

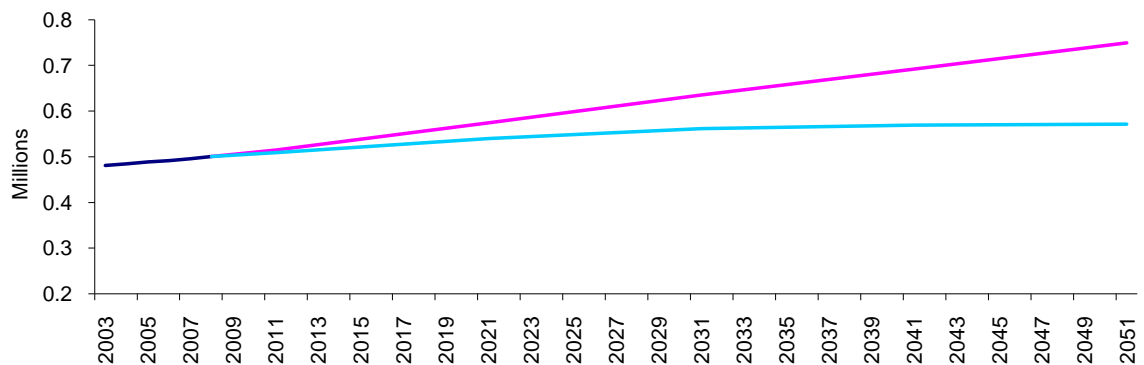
Major factors influencing Tasmania’s infrastructure demand and supply

Population and economic growth will be key drivers of infrastructure demand. The supply of infrastructure is heavily influenced by the quality and quantity of the existing infrastructure, climate change and future investment.

Population

The figure below shows Tasmania’s population projections along a high and low future growth path. It shows that Tasmania’s population will expand from 0.50 million in 2008 to 0.57 million (14% increase) by 2051 under low growth assumptions or 0.75 million (50% increase) under high growth assumptions. The vast majority of the population growth will occur in Hobart. A growing population will accelerate the demand for all water, electricity, transport and telecommunication services.

Tasmania’s recent and projected population using high and low growth assumptions¹



Gross State Product

The table below shows Tasmania’s projected State Gross Product. Economic growth increases demand directly by businesses for infrastructure services, and indirectly by consumers due to their raised standard of living.

Forecast Tasmania’s State Gross Product²

Gross State Product	2009/10	2010/11 Projection	2011/12 Projection	2012/13 Projection
Yearly increase	0.25%	1.5%	2.75%	2.25%

Climate change

Climate change will affect the supply of infrastructure services considerably, and in isolated areas, it will also increase demand, notably for electricity due to increased frequency of heat waves. There are different levels of uncertainty with different projections. Important climate change impacts in Tasmania over the next 50 years are expected to be:

- ▶ Tasmania will become warmer with more hot days and fewer cold nights
- ▶ An increase in annual rainfall combined with higher evaporation will lead to uncertain effects on run-off into rivers by 2030
- ▶ By 2020 there will be a 10-40% reduction in snow cover
- ▶ Centres dependent upon agriculture and forestry may be adversely affected.³

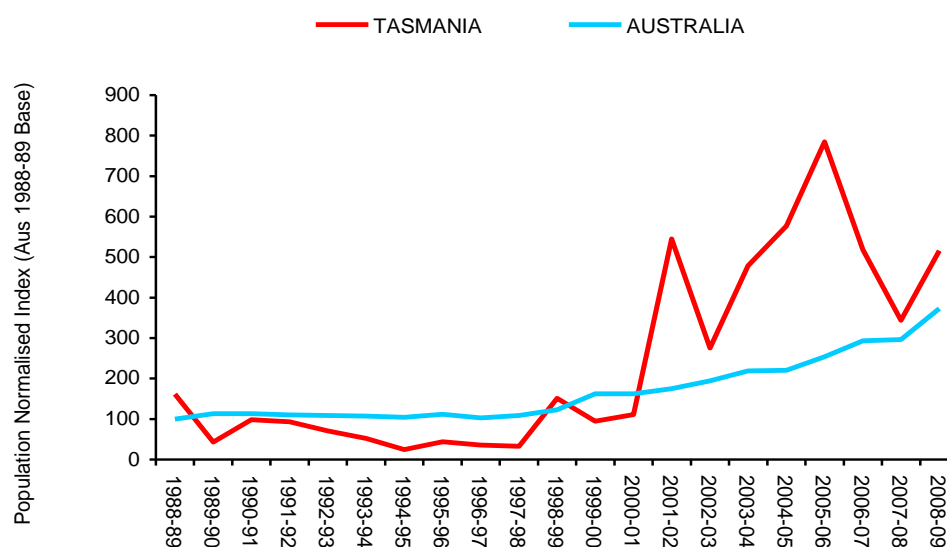
Key infrastructure impacts of the above will be:

- ▶ Growth in peak summer energy demand is likely, due to air-conditioning use, and may increase the risk of blackouts
- ▶ Warmer conditions may help spread vector-borne, water-borne and food-borne disease further south. These health issues could increase pressure on medical and hospital services
- ▶ Urban water security may be threatened by increases in demand and climate-driven reductions in water supply
- ▶ Increases in extreme storm events are expected to cause more flash flooding affecting industry and infrastructure, including water, sewerage and stormwater, transport and communications, and may challenge emergency services
- ▶ In low-lying coastal areas, infrastructure is vulnerable to sea level rise and inundation.⁴

Infrastructure investment

The quality and quantity of Tasmania's existing infrastructure is detailed in this Report Card. At a State-wide level, infrastructure investment amounts provide an indication of these factors. The figure below illustrates the investment in infrastructure over a 25-year period and shows that Tasmania's investment levels were below national levels in the 1990s, and this decade has been considerably higher than the national level. Investment levels are expected to further increase significantly over the next few years.

Index of economic infrastructure expenditure in Tasmania and nationally (real prices, base year index is 1988-89, base is 100 for national expenditure)⁵



Cross sector challenges

While each chapter identifies sector-specific challenges to the future provision of infrastructure, below are challenges across multiple infrastructure sectors.

Strategic planning, coordination and integration

Infrastructure drives the productivity, liveability and sustainability of cities, towns and regions. Optimising all three is a considerable challenge that requires planning, coordination and integration. Strategic planning requires a long-term perspective which, for cities, can range up to 100 years. Coordination requires bringing together all stakeholders including the owners, operators and builders of the infrastructure, the infrastructure users, and the community in the planning process and negotiating mutually acceptable outcomes. Integration requires linking infrastructure plans with broader land use objectives, as well as ensuring that plans of different infrastructures complement one another.

Tasmania's level of strategic planning has improved slowly this decade, but much more needs to be done. Challenges to improving planning, coordination and integration of infrastructure include:

- ▶ Working with the 32 planning schemes⁶ that exist in Tasmania
- ▶ Ensuring that plans balance the productivity, liveability and sustainability goals, and explicitly identify any tradeoffs that have to be made
- ▶ Recognising that strategic plans are based on predictions that often turn out to be inaccurate, e.g. population growth or traffic demand, and consequently plans have to be continually adapted so that the plan's long-term vision can still be achieved
- ▶ Negotiating agreement on infrastructure planning with infrastructure owners, operators and users, and across the levels of government and the private sector.

Skills shortages

There is a significant engineering skills shortage for Tasmanian infrastructure. Specific areas experiencing shortages include water, road, electrical and local government engineering. This shortage is likely to increase with time due to the large numbers of engineering practitioners retiring over the next decade, and an inadequate supply of graduates. Tasmanian universities graduate fewer than 100 engineers per year, which is less than the attrition rate for engineers in Tasmania. There are some 3,000 diploma and degree qualified engineers employed in Tasmania. The consequence of this shortage is delayed and higher cost projects. There is no short-term solution to this problem and it is common to other States and Territories.

Governments maintaining informed buyer status

Having and utilising technical expertise is a pre-condition to being an informed buyer of engineering, information technology and other technical goods and services. It is crucial that buyers are well informed so that they are able to select and justify the option that offers best value for money; select and justify an innovative solution; reduce contractor risks by providing relevant technical details in tender documents; and prevent contractors taking advantage of the buyer's lack of knowledge. The Tasmanian Government and councils need to maintain their informed buyer status, which can be challenging due to budgetary constraints and finding appropriately experienced staff.

Funding

New infrastructure provision can be extremely expensive, particularly in built-up areas. Tasmania has recognised that there needs to be significant investment in infrastructure over the next few decades to meet existing and projected demand. Identified investment includes \$10 billion for water alone. Challenges to infrastructure funding include:

- ▶ Ensuring that high levels of investment are maintained over many years

- ▶ Balancing investment on capital works, maintenance, renewals, upgrades and reducing/managing demand
- ▶ Selecting the best-value source of infrastructure funding
- ▶ Ensuring that new infrastructure projects receive funding for both the capital works and maintenance.

Sustainability and climate change

Infrastructure must contribute to sustainable economic, social and environmental activities. While individual projects in Tasmania over the last decade have sustainability as one of their criteria, sustainability has not been prominent in policies and strategies that shape cities, towns and regions. Challenges in improving infrastructure's contribution to sustainability include:

- ▶ Ensuring that decisions on infrastructure reflect economic, social and environmental criteria
- ▶ Ensuring that decisions on infrastructure reflect the fact that its physical life is typically between 20 and 50 years, but can be over 100 years with refurbishment
- ▶ Designing the infrastructure to operate under changed rainfall, temperature, wind speeds, etc, due to climate change
- ▶ Minimising greenhouse gas emissions over the infrastructure's lifecycle
- ▶ Designing infrastructure so that it can be upgraded at some time in the future
- ▶ Designing infrastructure that maximises the use of recycled elements and minimises total resources use.

Infrastructure performance

Infrastructure performance is judged differently by infrastructure owners, operators, users and other stakeholders. Some stakeholders give priority to financial returns, while others on service quality.

The Report Card uses a balanced stakeholder assessment and has rated Tasmania's infrastructure as mostly adequate or poor. Challenges to improving the performance of infrastructure include:

- ▶ Increasing the supply of infrastructure through the building of new infrastructure or increasing the utilisation of existing infrastructure
- ▶ Reducing/managing infrastructure demand by methods such as introducing infrastructure pricing regimes that reflect the fixed cost of provision and time of use
- ▶ Building detailed information on infrastructure demand and supply, and infrastructure conditions to allow for better allocation of resources.

Conclusion

Tasmania's infrastructure is mostly rated as adequate or poor. This rating reflects that the State's infrastructure is stressed, as illustrated by 'boil water' notices and rail derailments.

While greater utilisation can be extracted from existing infrastructure by building missing links and instigating demand management, significant investment in new infrastructure is required to address well-known problems in existing areas as well as meeting future demand. Sustaining the necessary high level of investment will be challenging due to the numerous demands for government and private sector investment; however, it is critical that this is done to ensure that Tasmania has liveable, productive and sustainable cities, towns and regions.

Engineers Australia welcomes the release in early 2010 of the Tasmanian Government's *Tasmanian Infrastructure Strategy*. This has incorporated a number of recommendations made in the past by Engineers Australia including the need for a long-term integrated strategy, the creation of an infrastructure advisory body to guide major infrastructure decisions, and regular state of infrastructure reporting. Implementing this strategy will represent a major leap forward for the State.

