Infrastructure Australia

Project Business Case Evaluation

Project name	Hobart Science and Technology Precinct
Rating	Priority Project
Date of IA Board rating	9 February 2017

Location	Hobart, Tasmania
Proponent	University of Tasmania
Project timeframe	• Planning: Q1 2017 – Q4 2018 • Construction: Q4 2018 – Q3 2020 • Project completion by Q1 2021

Evaluation Summary

Tasmania faces a number of economic challenges. The state's rate of economic growth is significantly below the Australian average. Unemployment is relatively high, productivity is relatively low, as are rates of education attainment and population growth. Higher rates of university participation are often linked to higher levels of productivity and living standards, while investment in research is often associated with improvement in economic growth.

The University of Tasmania's existing science, technology, engineering and mathematics (STEM) facilities at the Sandy Bay campus are fragmented, and nearing the end of their usable life. The facilities struggle to attract Tasmanian students, and have very limited appeal to interstate and international students. The facilities lack the modern technical infrastructure that characterise a high-end research environment.

The proposal is for the development of a purpose-built STEM facility for tertiary education, research and training in the Hobart CBD. This would relocate the University of Tasmania's Faculty of Science, Engineering and Technology from the existing campus at Sandy Bay to a new facility in the Hobart CBD. The proposed 45,050 m^2 facility would initially accommodate 3,000 students and 700 staff. The University anticipates that the project would result in a 60% increase in undergraduate student demand, and enable improved research outcomes. The relocation was previously listed as a Priority Initiative on the Infrastructure Priority List. The development would be supported by ongoing university and government programs and policies to increase higher education participation in Tasmania, and would also bring about further urban regeneration of Hobart's CBD.

The proponent's economic evaluation states the project has a net present value (NPV) of $364 million and a benefit-cost ratio (BCR) of 1.95 using a real discount rate of 7% and industry benchmark costs. While there are some risks to achieving this BCR, and the project is at a relatively early stage of development, Infrastructure Australia is confident the project would generate benefits in excess of costs. As the project progresses, benefits would be maximised by coordinating delivery of the project with complementary programs to increase student demand, particularly through attracting students who would otherwise not undertake university study.

1. Strategic Context

Tasmania faces a number of economic challenges:

- Long-run economic growth has been lower than other Australian states and territories. Between 2006/07 and 2015/16, Tasmania's annual average economic growth rate was 1.1%, compared to 2.8% for Australia
- Tasmania's unemployment rate is almost 1 percentage point higher than the national average
- Tasmania is almost 20% less productive than the average for Australia
- Tasmania has the lowest population growth rate, and the oldest and fastest ageing population in Australia

Higher education can be a catalyst for improving economic and social conditions. Higher rates of university participation are often linked to higher levels of productivity and living standards, while investment in research is often associated with improvements in economic growth. However, Tasmania has the lowest proportion of people with a bachelor's degree or higher in Australia, with only 22.4% having completed university compared, to 29.7% across Australia.

As the state's only university, the University of Tasmania has an important role in addressing Tasmania's poor economic outcomes. The University is pursuing a strategic mission to raise educational attainment in Tasmania and to direct its research and enterprise to increase the state's future prosperity. The University is the State's second largest employer, with 7,500 staff, and in 2014 its economic impact on the state was estimated at $1.7 billion.

The University of Tasmania has campuses in the three main regions of Tasmania – Hobart in the south, Launceston in the north and Burnie in the north-west. Within Hobart, the University of Tasmania is strategically relocating facilities from the Sandy Bay campus in the south into the city centre. The University has developed $220 million in infrastructure over the past 5 years and has committed a further $217 million to developments which are underway. These relocation and redevelopment projects have resulted in significant increases in student enrolment and research income. Between 2011 and 2015, the number of students commencing in the Faculty of Health has increased at an average annual rate of 18%, following the completion of the Hobart CBD Medical and Health Sciences Precinct in 2009 (stage 1) and 2013 (stage 2). Similarly, since the relocation of the Institute for Marine and Antarctic Studies to new facilities in the CBD in 2014, research income has increased by 35.7%. Despite these increases in enrolments, Tasmania continues to underperform other states in higher education participation.

The proponent indicates that city campuses are creating complex ecosystems of education, employment, innovation and social opportunity, reinvigorating urban centres and opening access to people from suburbs with traditionally low participation rates. The proposed Hobart Science and Technology Precinct would form part of this larger program.

2. Problem description

Hobart's CBD lacks the scale and diversity necessary to support strong population and economic development in high-value industries. The city struggles to attract and retain talented people or new industries, preventing Hobart from realising its potential. Hobart has some important elements for innovation and growth, being home to a number of flagship scientific centres and the University of Tasmania, but is constrained in its ability to leverage these elements because:

- The infrastructure is poorly connected and limits collaboration, both across academic disciplines or industry sectors
- The infrastructure is not configured for growth.

The existing STEM facilities at the University's Sandy Bay campus are ageing and fragmented. These facilities lack the modern technical infrastructure that characterises a high-end research environment, and limit collaboration between faculties. The proponent argues that these ageing facilities discourage Tasmanian students from pursuing higher education, and are a disincentive to interstate and international students choosing to study at the University. Further, the location of the campus at Sandy Bay (approximately 3 kilometres south of the CBD) is a barrier to some students, partly due to transport access issues and partly due to community perceptions about Sandy Bay's socio-

economic status. Student enrolment for STEM courses has declined in recent years, while overall enrolment for the University has grown.

3. Project overview

The initiative proposes the development of a purpose-built tertiary science, technology, engineering and mathematics research and training facility in the Hobart CBD. This would see the University of Tasmania faculty of Science, Engineering and Technology relocating from the existing campus at Sandy Bay to a new facility in the Hobart CBD. The proposed 45,050 m^2 facility would initially accommodate 3,000 students and 700 staff.

The objectives of the project are to:

- Build Hobart's human capital
- Revitalise and increase the attractiveness of Hobart CBD
- Stimulate the local economy
- Improve overall economic productivity
- Enable Hobart to respond to a changing economy

Increased densification and urban development in Hobart's CBD, coupled with development of science, technology, engineering and mathematics related industries, may help attract new industries to locate in Hobart. This could, in turn, help increase economic and population growth. This would further improve the University's competitive offering and would provide opportunities for collaboration with partner organisations.

4. Options identification and assessment

The proponent considered three options in addressing the poor state of the existing facilities:

- Maintain current STEM facilities on Sandy Bay Campus. This option would require $60 million worth of asset refurbishment over three years to maintain the Sandy Bay campus STEM buildings as fit-for-purpose. This level of investment is expected to arrest the current decline in STEM enrolments. This option was used as the base case in the assessment.
- Redevelopment of the STEM facilities on Sandy Bay Campus. This option would cost $429 million over four years, but is expected to only result in a small increase in student numbers, and cause significant disruption to teaching during construction.
- Hobart Science and Technology Precinct development in Hobart CBD. This option consists of a $400 million capital investment to construct a new fit-for-purpose STEM research and teaching facility in the Hobart CBD.

The options were assessed qualitatively against broader investment goals of the project, and quantitatively using cost-benefit analysis. Qualitatively, the Hobart Science and Technology Precinct development was the preferred option as it was the only option to address all of the investment objectives. Quantitatively, the Hobart Science and Technology Precinct was also the preferred option as it had the highest net benefit.

The options analysis did not consider the future use of the Sandy Bay site, which would be vacated in the preferred option. Preliminary investigations to determine the future use of the site are currently underway.

The options analyses in the business case did not formally consider non-infrastructure options to address the problem. However, the University of Tasmania is already undertaking a number of programs to encourage enrolment at the University. These consist of marketing and student outreach programs, and offering course options to make university education more attainable. For example, the University is developing Associate Degrees – shorter degrees of typically two years that offer an entry point into university and have the option to be extended into a Bachelor Degree. These non-infrastructure initiatives will be critical to realising the benefits of the Hobart Science and Technology Precinct.

5. Economic evaluation

The proponent's economic evaluation of the project states net benefits of $364 million (net present value) and a BCR of 1.95 using a real discount rate of 7% and single point cost estimates generated from industry benchmark costs. The proponent has not estimated wider economic benefits (WEBs) in the cost-benefit analysis.

The proponent has measured a range of benefits that would result from the project – for new and existing students, university staff, the University, and the Australian Government.

The benefit to existing students reflects the change in the willingness to pay for education, or consumer surplus, due to the new location (i.e. change in accessibility to the campus) and improved facilities (i.e. improved amenity and learning outcomes). Due to difficulties in measuring all of these changes, the proponent has used the change in transport costs (e.g. vehicle operating costs and travel time) to estimate the benefit to existing students. This approach may underestimate project benefits as it is unlikely to capture the full value of the project for existing students.

The proponent's largest stated benefit stream is new student income benefits, which accounts for 41% of benefits. This benefit stream is derived from the net increase in lifetime earnings for students who enter university because of the improved facilities and new location, and who would otherwise not have completed tertiary education in Australia. This also results in a benefit to Government from higher tax revenue, less the education subsidy paid by the Government for domestic students.

In cost-benefit analysis, the benefits of an infrastructure project for new users are normally lower than those for existing users. However, this assumes that individuals take into account all of the benefits associated with a particular decision. In this case, the proponent's approach to measuring benefits for new students relies on two assumptions:

- Students are currently not taking into account the full value of higher education when deciding whether to enrol or not at university. This may be the result of some information failure, or other barriers to entry for university in Tasmania. The low university enrolment outcomes for Tasmania, and social research undertaken by the University, provide support for this view;
- The project can attract greater student participation from people who would be better off going to university. Achieving this will rely on more than the project itself. The University and the Tasmanian Government currently operate a number of programs targeted at addressing barriers to student enrolment. While the programs themselves are assumed to continue regardless of the project, it is anticipated that they will have a greater influence in attracting students to a new and centrally located campus than to the current campus.

There are a number of risks to the proponent's stated benefits, which could result in realised benefits being less than or greater than stated:

- The proponent has assumed that 50% of new interstate and 90% of new Tasmanian students would not otherwise have attended university without the project, and the expected increased income and tax paid by these students as a result of the project is measured as a benefit. If these proportions are not achieved, the benefits of the project will reduce commensurately.
- Attrition, or students discontinuing their degree before completion, has not been incorporated into the proponent's modelling. While the University has a strategy to improve student retention, it would be appropriate to include some level of attrition in the analysis.
- The Medical Science Precinct has seen a large increase in space demands, which has resulted in timetabling issues and some teaching being conducted at Sandy Bay. The impact of the Health Faculty having access to additional capacity in the Hobart CBD has not been measured and would increase project benefits.
- Benefits have not been measured for postgraduate students, who will experience similar amenity and accessibility benefits as undergraduate students.

While there is considerable risk around the number of new students who might be attracted into university education, the project's benefits remain greater than its costs under a wide range of assumptions. On this basis, Infrastructure Australia is confident that the project would provide overall economic benefit.

Benefits and Costs breakdown

Proponent's Stated Benefits and Costs	Present Value ($m, 2017) @ 7% real discount rate		% of total
Benefits			
New Student benefits (higher incomes for new students who do not attend university in the base case)	$309		41%
New Student benefits (willingness to pay for change in location and new facilities, applying rule of a half)	$3		0%
Existing student benefits (willingness to pay for change in location and new facilities)	$16		2%
Existing staff benefits (increased consumer surplus)	$3		0%
Research benefits (additional research grants)	$86		12%
Revenue from constructed car parking	$1		0%
Residual value of Hobart Science and Technology Precinct	$19		3%
Land value vacated Sandy Bay site	$57		8%
Additional student revenue	$135		18%
Tax revenue (increase in tax revenue from higher incomes plus the reduction in welfare payments)	$199		27%
Federal Government education subsidy	-$84		-11%
Total Benefits[3]	**$745**	(A)	**100%**
Costs			
Capital costs	$269		70%
Operating costs	$102		27%
Maintenance costs	$1		0%
Opportunity cost of CBD site	$10		3%
Total Costs[3]	**$381**	(B)	**100%**
Net Benefits - Net Present Value (NPV)[1] without WEBs	**$364**	(C)	n/a
Benefit-Cost Ratio (BCR)[2] without WEBs	**1.95**	(D)	n/a

Source: Proponent's Business Case

Notes:
(1) The net present value (C) is calculated as the present value of total benefits less the present value of total costs (A − B).
(2) The benefit-cost ratio (D) is calculated as the present value of total benefits divided by the present value of total costs (A ÷ B).
(3) Totals may not sum due to rounding.

Capital cost and funding

The University engaged a Quantity Surveyor to develop the capital cost estimate for the project, based on the preliminary designs and functional requirements for the facility. The peer-reviewed cost estimate used benchmark costs from comparable developments, with contingencies included for design, construction and pricing risks. The cost estimate was not probabilistically adjusted.

Total capital cost (nominal, undiscounted)	$400 million (single point cost estimate)
Proponent's proposed Australian Government funding contribution (nominal, undiscounted)	$250 million
Other funding (source / amount / cash flow) (nominal, undiscounted)	The proponent is seeking funding from the Tasmanian Government, to be combined with its own funding, for the remaining $150 million

6. Deliverability

Project development is at an early stage, with detailed planning for the project expected to begin in early 2017 and construction commencing in late 2018. Planning is expected to consist of: feasibility studies, further detailed project design, evaluation of procurement options, stakeholder engagement, market testing and site investigations. The early stage of development is not considered a significant risk to the project cost estimate because cost benchmarks are more easily established for the construction of university buildings in comparison to other types of infrastructure (such as transport). The University of Tasmania has also recently undertaken a number of major construction projects within Hobart's CBD which have been delivered on time and within budget.

The proponent has conducted a preliminary risk assessment, which identified 12 risks and mitigation strategies. The key risks identified for the project relate to project delays, increasing costs and additional student demand not being realised. Realising additional student demand is an important risk to the realisation of the project benefits, which depends on a number of factors which are beyond the infrastructure investment proposed. Complementary actions by the Tasmania Government and Hobart City Council could assist in minimising this risk. This analysis has been conducted at a very high level and should be revisited during project planning.

A benefits realisation plan has been developed for the project, which includes monitoring of actual benefits against baseline expectations. The benefit realisation plan does not specify the reporting requirements which will be put in place for the project. Infrastructure Australia encourages the proponent to undertake post-completion reviews during operations to monitor the benefits arising from the project.

The project is seeking $250 million of Australian Government funding, with further funding to be met by the University and/or state government. The University is currently working with the state government to determine the nature of its support. Funding the project through increased student revenue was considered. However, the proponent notes that revenues from additional students would be a small proportion of capital costs and would be received over a long period of time, making it difficult for increased student revenue to meaningfully contribute to capital costs.