



RESEARCH BRIEF

Supplementary analysis of issues pertaining to the 2014-15 ACT Budget

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The ACT Select Committee on Estimates 2014-15
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1 Contribution of general rates and stamp duty to ACT taxation revenue

In the 2012-13 Budget, the ACT Government announced that it would gradually replace taxation revenue from stamp duty and insurance duty with additional revenue from general rates to improve the equity and stability of the ACT taxation system.

Over the forward estimates period, part of this switch is set to occur. Over this period, taxation revenue from general rates is expected to increase from 25 to 30 per cent of taxation revenue. Income from stamp duty will rise in dollar terms, but proportionally will fall from 18 to around 15 per cent of taxation revenue.

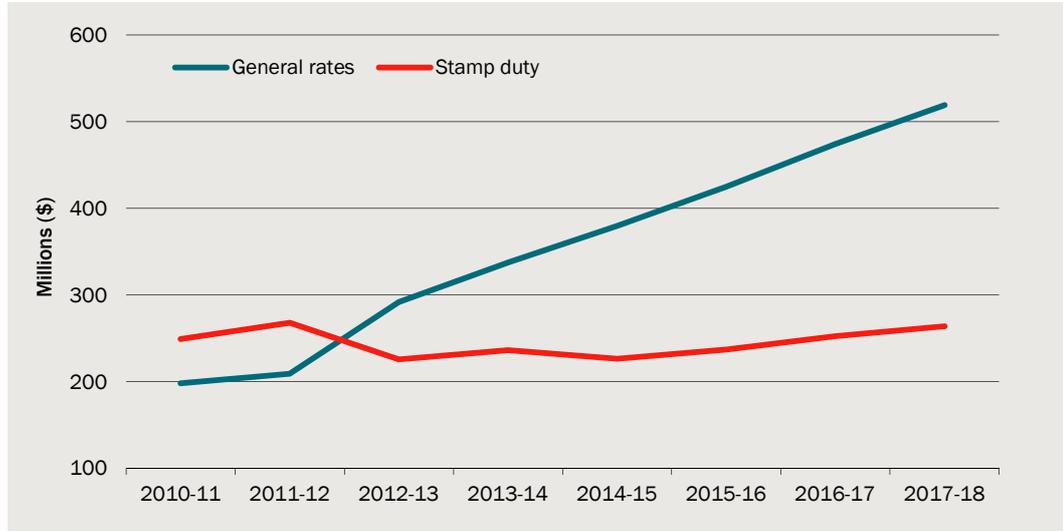
The switch in revenue sources may impose a greater adjustment for lower income households in particular. As a result, the reform package announced in 2012-13 included a set of assistance measures to low-income households. For example, the current Rates Deferral Scheme was expanded to non-pensioners over 65 years of age.

Projected changes in the composition of tax revenue

The Tax Reform Program announced in the 2012-13 Budget included a commitment to gradually replace taxation revenue from stamp duty and insurance duty with additional revenue from general rates. In line with this commitment, taxation revenue from general rates was projected in the 2014-15 Budget to increase by 36.6 per cent over the forward estimates period to close to \$520 million (see chart 1.1). If this projection is realised, income generated from general rates will represent over 30 per cent of taxation revenue by 2017-18 (see chart 1.2).

These projections are based on increases in marginal tax rates and modest though positive growth in the number and price of residential and commercial properties. Growth in the number of residential properties in part reflects the ACT Government's Land Release Program which includes a (reduced) sales target of 13 500 dwelling sites over the forward estimates period.

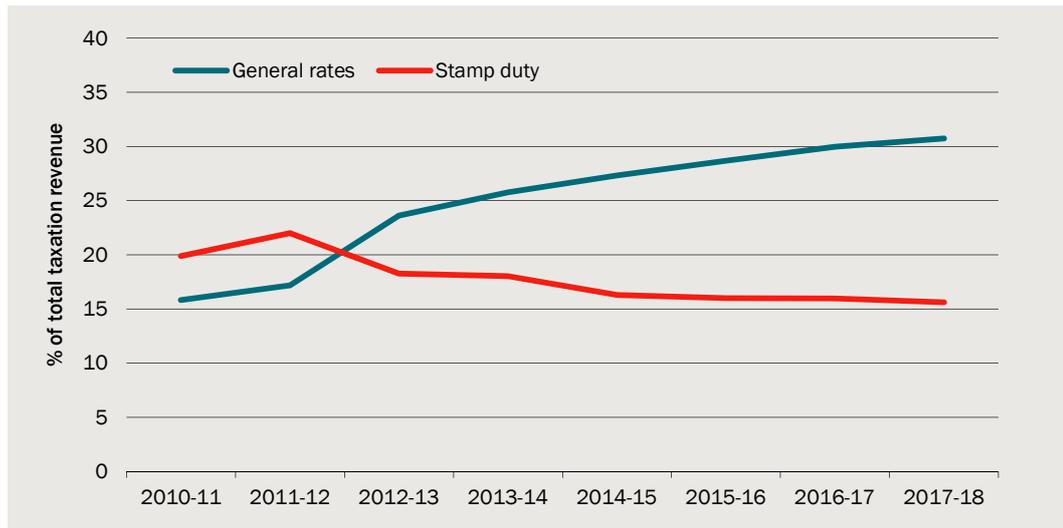
1.1 Projected change in revenue from stamp duty and general rates



Data source: ACT Budget Papers

Stamp duty revenue is expected to record more modest growth over the forward estimates period due gradual reductions in marginal tax rates. Taxation revenue from stamp duty is projected to increase by 16.5 per cent over the forward estimates period to close to \$264 million (see chart 1.1). If this projection is realised, stamp duty as a share of total taxation revenue will fall to close to 15 per cent (see chart 1.2). These projections are driven by a gradual reduction in marginal tax rates, which are offset by continued growth in the number and price of residential and commercial properties.

1.2 The contribution of stamp duty and general rates to taxation revenue



Data source: ACT Budget Papers

Table 1.3 below shows the future schedule of marginal tax rates for stamp duty.¹ This schedule implies that the stamp duty paid on a property purchased for \$500 000 will fall by close to \$7 000 (to \$13 400) between 2011-12 and 2017-18.

1.3 Future schedule of stamp duty rates

Threshold	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Property value (\$000)	(%)	(%)	(%)	(%)	(%)	(%)
Up to 200	2.40	2.20	2.00	1.80	1.48	1.47
200 to 300	3.75	3.70	3.50	3.00	2.50	2.49
300 to 500	4.75	4.50	4.15	4.00	4.00	3.99
500 to 750	5.50	5.00	5.00	5.00	5.00	4.80
750 to 1,000	6.50	6.50	6.50	6.50	6.50	6.00
1,000 to 1454	7.25	7.00	7.00	7.00	7.00	6.75
1455 and above			5.25	5.25	5.25	5.25

Source: ACT Budget 2014-15

Impact of tax reform on economic activity

While being revenue neutral², the replacement of revenue from conveyance duty with revenue from general rates will have both macroeconomic and distribution impacts for the ACT economy. Overall, this tax reform is expected to have a positive though modest impact on the tax base and the ACT economy. Perhaps more importantly, the tax reform will help to improve the equity and stability of the taxation system.

Macroeconomic impacts of shifting away from a conveyance duty

Modelling the macroeconomic impacts of replacing revenue from stamp duty with revenue from general rates for the ACT economy is beyond the scope of this report. Academic literature can however be used to gauge the nature and scale of the impacts.

In particular, the ACT Taxation Review 2012 included estimates of the economic impacts of shifting from conveyance duty to a broad base land tax – a similar scenario to the current tax reform. Shifting from a conveyance duty to a broad based land tax was estimated to increase real gross state product by \$11.4 million (or 0.07% of overall gross state product) in year 5 of the transition and result in 57 additional jobs (table 1.4).

This additional income and employment reflects in part greater turnover of residential and commercial properties, which will help to generate activity across a number of sectors including the property and business services sector.

¹ A future schedule of general rates is not publically available.

² That is, the tax reforms will not affect the amount of taxation revenue collected.

1.4 Economic impacts of shifting from conveyance duty to a broad base land tax

Property value	Unit	Year 1	Year 5	Year 10
Real GSP	\$million	13.3	11.4	8.0
Real GSP	%	0.07	0.07	0.05
Real Consumption	\$million	11.9	10.6	8.0
Real Consumption	%	0.11	0.09	0.08
Employment	(FTE)	77	57	24

Source: ACT Taxation Review, 2012

These positive though modest economic gains from replacing conveyance duty with a broad based land tax are consistent with a number of academic studies that have found that an increase in stamp duty reduces turnover in the residential housing market.

For example, Leigh (2009)³ found that a 10 per cent increase in the level of stamp duty reduces the numbers of properties exchanged by 4–5 per cent if the increase is sustained over a three-year period.

Change in cost of living

The replacement of revenue from conveyance duty with revenue from general rates will clearly increase the cost of living for a number of ACT homeowners. Estimating the change in the level of general rates paid by ACT households over the forward estimates period is difficult due to the fact that the ACT Government has not released a future schedule of marginal general rates. Between 2012-13 and 2014-15 the level of general rates paid on a property valued at \$450 000 has increased by \$300. The long transition period flagged by the ACT Government implies that the total increase in general rates is likely increase further.

Given the anticipate change in the level of general rates over the forward estimates period and beyond, the reform package announced in 2012-13 included a set of assistance measures to low-income households. For example, the current Rates Deferral Scheme was expanded to non-pensioners over 65 years of age.

1.5 Residential general rates

Property value	2012-13 duty payable	2014-15 duty payable
(\$000)	(\$000)	(\$000)
150	0.9	1.1
300	1.4	1.6
450	1.9	2.2
1000	4.2	4.9

Source: ACT Budget Papers

³ Leigh, Andrew, *How do stamp duties affect the housing market?*, 2009.

Change in stamp duty rates payable

Table 1.6 below illustrates the impact of the future stamp duty schedule on the stamp duty paid by homebuyers.

As mentioned above, the stamp duty paid on a property purchased for \$500 000 will fall by close to 35 per cent between 2011-12 and 2017-18. The findings of Leigh (2009) suggest that this fall in stamp duty may increase the level of transactions by between 10 to 15 per cent.

1.6 Stamp duty

Property value	2011-12 duty payable	2017-18 duty payable
(\$000)	(\$000)	(\$000)
200	5.5	2.9
300	9.5	5.4
500	20.5	13.4
750	34.9	25.4
1 000	49.3	40.4

Source: ACT Budget Papers

Rationale for changes to stamp duty and general rates

There is strong rationale for replacing revenue from stamp duty with revenue from general rates. This rationale was recently outlined in Australia's Future Tax System (Henry) Review and then the ACT Taxation (Quinlan) Review 2012. The former review emphasised that stamp duty is an inefficient and inequitable tax. In particular, the report noted that:

Stamp duties are poor taxes. As a tax on transferring land, they discourage land from changing hands to its most valuable use. Stamp duties are also an inequitable way of taxing land and improvements, as the tax falls on those who need to move.

Stamp duty is a relatively simple tax to collect, since it is levied on the sale price, which is easily observable. Administrative simplicity was one of the main reasons why stamp duties were first introduced...However, now that broad-based taxes on income and consumption are available, the relative simplicity of stamp duty is not a strong justification for retaining the tax.

The latter review assessed stamp duty and general rates against four criteria and found that stamp duty was less efficient, equitable, and stable than general rates (see table 1.7):

1.7 Economic assessment of stamp duty and general rates

Criteria	Stamp duty	General rates
Efficiency	The literature suggest that stamp duty decreases household mobility, distorts location choice, and creates lock-in effects in the housing market.	General rates are an efficient tax due to the broad base. The fixed component of rates increases the efficiency of the tax as it reduces incentive to purchase a lower value property over a higher value property.
Equity	Not an equitable source of revenue as the duty only applies to people that purchase a real property as opposed to other forms of property.	General rates are a relatively equitable source of revenue. Property owners with the same unimproved value property pay the same rates and in this sense, the tax is horizontally equitable.
Stability	Stamp duty is relatively unstable. Highly elastic with respect to GSP, low in forecast accuracy, and very volatile around long run growth.	General rates are generally stable being levied on a large, immobile taxation base, have high compliance rates, and are a predictable source of revenue.
Administration costs	Stamp duty has relatively low administration costs as the administrative processes, such as the exchange of contracts, already exist and are undertaken regardless of whether conveyance duty is being levied.	General rates have very low compliance and debt recovery costs at around 0.09 per cent of general rates revenue in 2010-11. However, administration and collection of rates revenue is relatively higher at 0.38 per cent of general rates revenue, due in part to costs associated with undertaking regular land valuations.

Source: ACT Taxation Review 2012

2 *The economics of budget deficits and surpluses*

The 2014-15 Budget was designed to support the ACT economy in the short-term, mainly through infrastructure spending, and return to a budget balance over the medium term.

Given the ACT's relatively strong balance sheet and the expected characteristics of the slowdown in economic activity, this strategy may be prudent if the spending choices are efficient and wealth creating.

It is apparent that the timing of the stimulus is in line with the expected slowdown in economic activity in the ACT. The high proportion of investment spending directed to health infrastructure and road upgrades in the 2014-15 Budget will provide social benefits, as well as economic benefits during the construction phase, though may lead to a more modest rise in the future tax base.

Context

In 2012, the CIE prepared an information paper to the ACT Legislative Assembly titled 'The economics of budget surplus versus deficit'. One key finding of the paper was that there a number of complex trade-offs involved in deciding whether or when to run a budget deficit and how quickly to return a budget to surplus. The final decision will ultimately depend on the state of the economy and the state of the Government's balance sheet. In periods where the economy is weak and the balance sheet is strong, it is prudent for governments to run budget deficits in order to support the economy. In periods where the economy is strong and/or the balance sheet is in bad shape, it is prudent to run surpluses to avoid overheating the economy or to repair the balance sheet.

Given the expected slowdown in the ACT economy and the relatively strong state of the ACT Government's balance sheet, the Government's budget strategy to provide stimulus to the economy and return the budget back to balance over the medium term is considered to be prudent.

However, the most relevant consideration is not whether the ACT Government should be running budget deficits but the efficacy of the current budget strategy.

Trade-offs involved in managing a budget during a downturn

The ACT Treasury could have adopted a number of fiscal strategies for the 2014-15 Budget. In particular, ACT Treasury had the choice between:

- improving the balance sheet position (austerity) or supporting the economy (stimulus)
- providing stimulus in the form of infrastructure spending or tax cuts and/or handouts

- returning to a budget balance in the short-term (1-2 years) or medium-term (4-5 years).

The trade-offs involved in the decisions outlined above are detailed in Table 2.1 below.

2.11 Trade-offs involved in managing a budget during a downturn

Fiscal policy	
Austerity	Stimulus
<ul style="list-style-type: none"> ▪ Austerity measures help to maintain a strong balance sheet position and preserve the current credit rating. ▪ Austerity measures may exacerbate the downturn in economic activity. 	<ul style="list-style-type: none"> ▪ Stimulus measures deteriorate the balance sheet position, increase debt and increase the risk of a credit downgrade. ▪ Stimulus measures help to support economic activity.
Policy tools	
Infrastructure	Tax cuts / hand-outs
<ul style="list-style-type: none"> ▪ Infrastructure spending can generate additional future taxation revenue if it increases the productive capacity of the economy and the tax base. ▪ Infrastructure spending can be subject to long processing and planning delays which can make it hard predict the timing of the stimulus. 	<ul style="list-style-type: none"> ▪ Tax cuts and/or hand-outs are unlikely to generate as much taxation revenue over the medium-term as they don't directly expand the productive capacity of the economy or tax base. ▪ Stimulus can potentially be provided almost immediately to help boost economic activity.
Return to budget balance	
Short-term	Medium-term
<ul style="list-style-type: none"> ▪ Returning to budget balance quickly can reduce interest costs associated with additional borrowings because funds are borrowed for a shorter period of time. ▪ Returning to budget balance quickly has the potential to de-stabilise the economy and reduce risk management and flexibility. 	<ul style="list-style-type: none"> ▪ Returning to budget balance over the medium-term can increase borrowing costs and increase exposure to market volatility. ▪ Returning to budget balance over the medium-term allows the economy to adjust to the transition.

Source: The CIE

Stimulus vs. Austerity

Austerity measures, as currently seen in some European countries, are typically pursued if there is a risk that a government cannot honor its debt liabilities or that a government's credit rating may be downgraded. The relatively low levels of debt and liabilities of the ACT Government suggest that this is not currently a concern and that the provision of some stimulus to the ACT economy was prudent.

Infrastructure vs. tax cuts / hand-outs

Instead of infrastructure spending the ACT Government could have attempted to stimulate the economy by tax cuts or handouts as was seen by the Federal Government in 2010. The main benefit of these policy measures is that they allow stimulus to be provided to the economy almost immediately. However, the measures do not help to expand the productive capacity and future tax base of the economy in the way that infrastructure spending does.

Given that the level of activity in the ACT economy is not expected to fall too sharply and/or deeply, there appears to have been little rationale for stimulus to be in the form of tax cuts and/or handouts.

Short-term vs. medium-term

Instead of returning the budget to balance over the medium term the ACT Government could have attempted to bring the budget back to balance within 1 to 2 years. However, given the low level of interest rates and the modest risk that rates will rise in the future, there appears to have been little rationale for returning to budget balance in the short-term at the risk of destabilizing the economy.

Efficacy of stimulus

An important aspect of assessing the fiscal strategy of the ACT Government is the efficacy of the stimulus provided to the economy. A number of criteria can be used to assess the efficacy of the fiscal strategy including:

- the scale of stimulus
- the timing of stimulus
- the expected returns on investment/spending.

The scale of stimulus

Choosing the scale of stimulus also involves trade-offs. Too much stimulus can potentially risk a government's credit rating and budget position, while not enough stimulus can result in unnecessary spare capacity in the economy i.e. unemployment or underemployment.

Table 2.2 outlines the criteria used by Standard and Poors (S&P) to assess the credit worthiness of local and regional governments. Of these criteria, stimulus spending primarily affects a government's budget performance and debt burden, and can also potentially impact on budget flexibility and liquidity. Significantly, however, a number of the criteria used by S&P to assess the credit worthiness of the ACT Government will not be significantly affected by the stimulus spending. Given that a number of measures of budgetary performance and debt burden remain in line with Victoria, the only other Australian State to currently have an AAA credit rating, there is seen to be only a modest risk of credit downgrade.

This view is consistent with public comments recently made by Anna Hughes, S&P analyst:⁴

We are not seeing any impact from the budget on the triple-A stable outlook. Certainly, with the preliminary analysis we have done, it looks like everything is in the current metrics for the triple A.

⁴ For more information please see: <http://www.canberratimes.com.au/act-news/no-downgrade-for-the-acts-triplea-credit-rating-says-standard-and-poors-20140608-zs10w.html>

2.2 Key performance indicators of ACT Government's credit worthiness

Criteria	Key performance indicators
Institutional framework	Predictability, transparency and accountability, extent of support from Federal Government, overall adequacy of revenue to cover expenditure.
Economy	Wealth, diversification of economy, demographics, growth prospects.
Financial management	Transparency and disclosure, budgeting, long-term capital and financial planning, revenue and expenditure management, debt management, reserve and liquidity management, management of government related entities, political and managerial strength, external risk management.
Budgetary flexibility	Ability to raise taxes, fees or tariffs, the political willingness and economic limits that could curb use of this flexibility, and potential revenues from asset sales.
Budgetary performance	Operating balance as a percentage of adjusted operating revenue, operating balance after capital accounts as a percentage of total adjusted revenues.
Liquidity	Liquidity framework, internal and external cash flow generation capacity, use of stress analysis during market turbulence.
Debt burden	Expected stock of debt and interest burden, potential volatility of the cost of debt from exposure to market risks, other long-term liabilities, mostly unfunded pension liabilities.
Contingent liabilities	The nature of the contingent liabilities, materiality, the monitoring process, contingency reserves.

Source: Standard and Poors, International Public Finance: Methodology For Rating International Local and Regional Governments, 2010.

The timing of stimulus

Given the use of infrastructure spending to stimulate the economy, it is important that the construction phases of the projects align with the expected downturn in the economy. Table 2.3 below outlines the 2014-15 Budget Infrastructure Program and shows that the vast majority of the spending associated with the new capital program and works currently in progress is being spent in 2014-15 and 2015-16. In particular:

- 93 per cent of the expenditure on capital works in the New Capital Program occurs in 2014-15 and 2015-16
- 96 per cent of the expenditure on capital works currently in progress occurs in 2014-15 and 2015-16

This coincides with the timing of the expected slowdown in the ACT economy.

In contrast, the vast majority of spending associated with provisioned capital expenditure, including Capital Metro, is expected to be spent in 2016-17 and 2017-18. In particular, 80 per cent of the provisioned capital expenditure on projects including Capital Metro, University of Canberra Public Hospital, and the Courts project, occurs in 2016-17 and 2017-18.

2.33 2014-15 Budget Infrastructure Program

Threshold	2014-15	2015-16	2016-17	2017-18	Total
	\$m	\$m	\$m	\$m	\$m
Capital works					
Feasibility	2.0	0.1	0.0	0.0	2.1
Forward design	0.9	1.4	0.5	0.0	2.8
Construction	128.9	164.3	23.4	0.9	317.5
Sub-total capital works	182.1	165.8	23.9	0.9	372.7
Sub-total ICT & P&E	54.8	30.8	9.3	2.9	97.8
Total New Capital Program	236.9	196.6	33.3	3.7	470.5
Total Works in Progress	498.2	192.5	20.3	5.3	716.2
Total Capital Program	735.1	389.1	53.6	8.9	1 186.7
Capital Provisions	0.0	262.7	542.9	513.5	1 319.2
Total Capital Program incl. provisions	735.1	651.8	596.6	522.4	2 505.8

Notes: Capital provisions include University of Canberra Public Hospital, Capital Metro and the Courts project

Source: ACT Budget 2014-15

The returns on investment / spending

Infrastructure can be thought of as the long-lived structural assets that either facilitate the flow of goods, information and factors of production between buyers and sellers (economic infrastructure) or underpin the delivery of essential services such as health (social infrastructure). Investments in the former class of infrastructure will generally generate high levels economic returns and help to expand the tax base, while investment in the latter will generally have higher levels of social benefits.

Table 2.4 below provides the details of the 10 largest new capital works projects announced in the 2014-15 ACT Budget which represent close to 70 per cent of all new capital works. This list of projects is dominated by health and road infrastructure (including both upgrades to existing roads and the building of new roads). While the health infrastructure projects and road upgrades will have considerable social benefits and economic benefits stemming from their construction, these projects are likely to have a more modest impact on the future tax base.

In addition, large health infrastructure projects, like any large projects, can pose some budgetary risk to the Budget, often impacting on the timing of large capital spending initiatives. The health infrastructure commitments are notoriously susceptible to delays because of their complexity and sequencing needs to ensure that patient outcomes are not impacted by the work program.

2.44 New Capital Works Initiatives

Threshold	2014-15	2015-16	2016-17	2017-18	Total
Initiatives	\$m	\$m	\$m	\$m	\$m
Infrastructure Investments					
Alexander Maconochie Centre	24 304	29 786	-	-	54 090
Secure Mental Health Unit	3 808	30 619	9 064	-	40 491
Health Infrastructure Program – project managements	13 184	14 522	-	-	27 706
Civic to Gungahlin Corridor	8 000	12 000	-	-	20 000
Calvary Public Hospital – car park	17 427	1 653	-	-	19 080
Emergency Services Agency Station	8 569	10 164	131	-	18 864
Molonglo Infrastructure Investment	6 000	8 000	3 000	-	17 000
Isabella Weir Spillway Upgrade	5 050	5 050	-	-	10 100
William Slim/Barton Highway Roundabout Signalisation	1 000	7 000	2 000	-	10 000
Majura Parkway to Majura Road	3 300	6 556	-	-	9 856

Source: ACT Budget 2014-15

3 *Economic analysis of the Capital Metro*

There is little available evidence to support the economic merit of the Capital Metro, which appears to be more focused on environmental and social objectives. Based on information that is available, light rail in Canberra has a net cost to the ACT of approximately \$235 million relative to a Bus Rapid Transit (BRT) option.

The expected uplift in employment in the transit corridor identified in the business case is difficult to attribute directly to the construction of the light rail if land use policy implemented over the same period increases density in that area.

The expected uplift in land values in the area surrounding the transit corridor is potentially a measure of benefits to users of the land, however counting it as a benefit in addition to decreased journey time and other benefits may lead to double-counting.

Light rail does present a low emissions alternative to cars and would have lower emissions per passenger than a BRT option.

However, the total discounted cost of light rail (\$524.1 million) is over double that of BRT (\$248.5 million) and only leads to a small additional benefit over BRT in terms of pollution.

The Capital Metro represents a substantial expense on infrastructure in the ACT, and there is relatively little publicly available information on the economic case for the project.

The two major resources that analyses the costs and benefits of the project include:

- Capital Metro Job Creation Analysis (2014), and
- City to Gungahlin Transit Corridor – Infrastructure Australia (‘the IA submission’) Proposal (2012).

Economic arguments in favour of the Capital Metro relate to uplift in population, employment and land values in the transit corridor, although little formal analysis has been conducted of these benefits.

Economic sustainability

Economic sustainability can be interpreted as representing the following objectives:

- meeting present needs without compromising future needs
- maintenance of societal wellbeing over time, and
- efficient allocation and use of resources over time.

The economic sustainability of the Capital Metro development can be assessed with reference to these objectives and to broader economic considerations. The major economic impact areas of the Capital Metro development include economic benefits associated with:

- the potential (relative) uplift in population, land values and employment
- decreased travel time, and
- avoided motor vehicle accidents.

Costs and Benefits of the Capital Metro and Bus Rapid Transit

Decisions made to allocate resources efficiently can be informed by cost-benefit analysis, which has been undertaken as part of the 2012 submission to Infrastructure Australia. Table 3.1 shows the costs and benefits of the Capital Metro under a standard land use scenario. This land use scenario assumes a continuation of government land use and planning policies in place at the time of the submission.

3.1 Costs and Benefits of Light rail under BAU scenario

Costs and benefits	Discounted present value	Contribution
	\$millions	per cent
Capital expenditure	469.8	89.6
Operating and maintenance expenditure	54.3	10.4
Total costs	524.1	100.0
Change in generalised journey time	150	27.2
Incremental fare revenue	53.8	10.6
Incremental parking revenue	198.3	40.3
Unperceived vehicle operating cost savings	60.4	11.6
Avoided accident costs	23.8	4.4
Avoided air pollution	11.7	1.7
Avoided greenhouse gas emissions	9.3	1.5
Avoided noise pollution	3.8	0.7
Avoided road damage	1	0.1
Residual value	22.9	1.8
Total benefits	534.9	100.0
Net benefits	10.8	

Note: Values have been discounted at 7 per cent.

Source: 'City to Gungahlin Transit Corridor' Infrastructure Australia Submission 2012.

Table 3.2 shows the costs and benefits of light rail under a scenario of higher density land use in the transit corridor. This holds total population growth in the ACT constant relative to the business-as-usual (BAU) scenario, but involves more growth in the transit corridor than accounted for by existing population projections. This growth may be

caused by the Capital Metro itself (in increasing demand to live in the transit corridor) or because of changes to land use policy.⁵

3.2 Costs and Benefits of Light rail under high density scenario

Costs and benefits	Discounted present value	Contribution
	\$millions	per cent
Capital expenditure	469.8	89.6
Operating and maintenance expenditure	54.3	10.4
Total costs	524.1	100.0
Change in generalised journey time	633.7	51.7
Incremental fare revenue	53.3	4.4
Incremental parking revenue	192.5	15.7
Unperceived vehicle operating cost savings	177.2	14.5
Avoided accident costs	69.7	5.7
Avoided air pollution	34.5	2.8
Avoided greenhouse gas emissions	27.2	2.2
Avoided noise pollution	11.3	0.9
Avoided road damage	2.9	0.2
Residual value	22.9	1.9
Total benefits	1225.2	100.0
Net benefits	701.1	

Note: Values have been discounted at 7 per cent.

Source: 'City to Gungahlin Transit Corridor' Infrastructure Australia Submission 2012.

Incremental parking revenue was included as a benefit in this cost-benefit analysis. However, this is likely to represent a transfer between individuals and government and is therefore excluded as a benefit.⁶

Excluding parking revenue, table 3.3 shows that costs exceed benefits under the business as usual land use scenario, indicating that a light rail option requires the assumption of population uplift to have sufficient economic or environmental benefits to be justified. Without this, the Capital Metro would impose a \$187.4 million net cost to the ACT.

⁵ *Capital Metro – Job Creation analysis* (2014) mentions the creation of a “corridor specific development unit”, which will seek to deliver urban intensification along the Capital Metro corridor. This may mean that benefits of increased corridor land use are not directly attributable to the Capital Metro, but rather to changing land use policies.

⁶ Increasing parking charges in Canberra may be justified, however it is a separate decision to the construction of the Capital Metro. Parking charges give a disincentive to using cars to commute to the city, and therefore may encourage greater ridership of the Capital Metro. However, the additional revenue raised by increasing parking charges is not a benefit to the ACT, but rather a transfer from individuals to government.

3.3 Costs and Benefits of Light rail and BRT under both land use scenarios (excluding parking revenue)

Costs and benefits	Bus rapid transit	Light Rail	Difference
	\$millions	\$millions	\$millions
Business as usual land use scenario			
Total costs	248.5	524.1	275.6
Total benefits	293.5	336.7	-43.2
Net benefits	45.0	-187.4	-232.4
High density land use scenario			
Total costs	248.5	524.1	275.6
Total benefits	994.9	1032.7	-37.8
Net benefits	746.4	508.6	-237.8

Note: Values have been discounted at 7 per cent. Parking revenue has been excluded from total benefits for both scenarios.

Source: 'City to Gungahlin Transit Corridor' Infrastructure Australia Submission 2012.

A separate cost-benefit analysis has been conducted by Bob Nairn Consultant⁷ which estimated that construction costs for the Gungahlin Light rail line (Capital Metro) will be \$915 million. This report is substantially less clear about its assumptions than the IA submission, however highlights that cost estimates of light rail are highly variable. Construction costs per mile cited in the report range between US13.6 – 43.8 million per kilometre.

Similarly, the Tourism and Transport Forum, in a paper in support of light rail,⁸ cites costs between \$20-40 million per kilometre (including rolling stock) based on European light rail projects.

These reports present less transparent estimates of costs and benefits, however, they highlight the uncertainty of light rail costs.

Comparison with Bus Rapid Transit alternative

The economic case for the Capital Metro is a relative proposition — it depends on the net cost of the project relative to alternative options for achieving the objectives sought. This has been done in the 2012 submission to Infrastructure Australia with respect to the Bus Rapid Transit (BRT) option. The proposed corridor of development is the same for BRT, with a dedicated bus lane in the median exclusively used by buses.

The BRT option has net benefits of \$243.3 million and \$746.4 million under the BAU and higher density scenarios respectively.⁹ This also excludes parking revenue as a

⁷ This report was commissioned by the Canberra Liberals: *An Economic and Financial Assessment of the Proposed Gungahlin Light Rail Project*, Bob Nairn Consultant Pty Ltd, June 2014.

⁸ *TTF Transport Position Paper – the Benefits of Light Rail*, Tourism and Transport Forum March 2010, accessed at <http://www.ttf.org.au/DisplayFile.aspx?FileID=762>.

benefit. Therefore, relative to the BRT, light rail has a net cost of \$232.4 million under the BAU scenario, or \$237.8 million under the higher density land use scenario.

The 2012 submission to Infrastructure Australia states that ‘the economic returns that can be delivered through LRT investment alone are likely to be economically marginal’¹⁰.

The economic drivers that favour bus over rail typically include:¹¹

- initial capital costs are lower¹², and therefore new routes can be built more cheaply to use existing vehicles
- small changes in routes are easier to implement because fixed rails or power cables are not required
- it is easier to change the frequency of services and number of buses in the BRT system given lower costs of vehicles
- vehicles can be moved to and from the BRT system and the kerb-side bus system, and
- it is easier to move from a BRT system to an LRT system.

The ‘Canberra Transit Corridor’ project is on the Infrastructure Australia Priority List at the ‘Early Stage’ level of priorities. This indicates that it “address[es] a nationally significant issue or problem, but the identification or development of the right solution is at an early stage.”

Conversely, the uplift in population can be smaller in scale with buses because there is less certainty about the path of transport routes. This might prevent the build-up of businesses in the transit corridor relative to rail.

Changes in population and land use

A higher density land use scenario for the transit corridor area would increase the benefits of the Capital Metro because it would increase the amount of avoided travel time. The ACT Government submission to Infrastructure Australia (IA) assesses the benefits of both the LRT and BRT options under a higher density land use scenario.

Population growth in the Gungahlin area has been historically very high (6.8 per cent between 2001 and 2011¹³) and population projections (shown in table 3.4) indicate continued growth substantially above that of any other statistical district in the ACT.

⁹ These estimates are sourced from the City to Gungahlin Transit Corridor – Infrastructure Australia Project Submission 2012, pp. 80-81 and exclude incremental parking revenue as a benefit.

¹⁰ City to Gungahlin Transit Corridor – Infrastructure Australia Project Submission 2012, p29.

¹¹ Strengths and weaknesses of LRT and BRT are discussed in Currie, G 2005 ‘Bus Transit Oriented Development – Strengths and Challenges Relative to Rail’, *Journal of Public Transportation*, vol. 9, no. 4.

¹² Currie, G 2009, ‘Research perspectives on the merits of Light Rail vs Bus’, presentation for Infrastructure Australia, accessed at <http://www.infrastructureaustralia.gov.au/publications/files/lightrailvsbus.pdf>.

¹³ City to Gungahlin Transit Corridor – Infrastructure Australia Project Submission 2012.

3.4 Population projections for ACT statistical districts

District	2009	2012	Growth rate
	No. of people	No. of people	Per cent
North Canberra	46 850	55 150	1.4
Belconnen	91 250	94 150	0.3
Woden	33 800	33 650	0.0
Weston Creek	23 300	21 000	-0.5
Molonglo	0	20 600	38.5
Tuggeranong	89 800	85 150	-0.4
South Canberra	26 000	30 600	1.4
Gungahlin	40 900	72 900	4.9
Remainder of ACT	300	350	1.0
ACT total	352 200	414 350	1.4

Source: Chief Minister, Treasury and Economic Development Directorate Population Projections.

However, this projection of population forms the business as usual land use scenario. The higher density scenario only adheres to the Chief Minister, Treasury and Economic Development projection of ACT total population, with the submission implying that projected growth in different statistical districts does not follow the projections.

Economic impacts of population uplift

The level of demand for the Capital Metro will affect its economic viability. The IA submission states that “for economic viability, the Project is likely to require the delivery of higher densities within the Project Corridor over a long period of time”.

By implication, even with continuing population growth in Gungahlin significantly above the Territory average, there is unlikely to be sufficient demand for light rail to make the project economically efficient without the project inducing greater density in the transit corridor.

Assumptions of population uplift have been made in the context of other light rail proposals. In the case of the Gold Coast Light Rail, an adjustment to Gold Coast City Council population projections was made to account for uplift in population in the transit corridor area, where an adjustment factor of 20 per cent of existing population projections was used.¹⁴

Environmental impacts of population uplift and increased residential density

Light rail is less emissions intensive per passenger than bus or car transport.¹⁵ The benefit of light rail in reducing air pollution, greenhouse gas emissions and noise pollution under

¹⁴ http://www.goldcoast.qld.gov.au/documents/bf/GCRT_Corridor-Study-Aug2011-full-report.pdf

¹⁵ Puchalsky, C 2005, ‘Comparison of Emissions from Light Rail Transit and Bus Rapid Transit’, *Transportation Research Record: Journal of the Transportation Research Board*, Vol 1927, pp. 31-37.

the BAU land use scenario is \$22 million, slightly better than the benefit from BRT of \$19.4 million.¹⁶

With the total discounted costs of building operating the Capital Metro (\$524.1 million) estimated to be more than double the costs of BRT (\$248.5 million), the reduced emissions per dollar of public infrastructure spending is lower for LRT than BRT. Currie (2009)¹⁷ similarly argues that carbon dioxide emissions from the Melbourne Metro are not very different from Melbourne bus emissions.

Continued spread of Canberra through green-fields development (and the land release program) can lead to worse environmental outcomes compared to infill development, because more travel will be required to reach the city. Canberra's low-density development is partially accountable for the high levels of car dependency.¹⁸ The provision of public transport alternatives to private vehicle usage can enable higher residential densities, however this increased residential densities and urban renewal do not necessarily follow the construction of public transport infrastructure.¹⁹

Uplift in land values

Development in infrastructure has the potential to lead to uplift in land values in transit corridor. This increase in land values would reflect the value of the private benefits of the Capital Metro to users. Potential residents are willing to pay more for the land in the proximity of the Metro because it would offer shorter travel times than other areas of Canberra. Additionally it reflects willingness to pay for greater amenity in the area due to less air pollution and the aesthetic appeal of the light rail.

Increase in land values is not necessarily a separate benefit because it reflects the willingness to pay of landowners for the benefits of the light rail, which have already been included in cost-benefit analysis. Including the uplift in land values as a separate benefit to the decreased travel time, increased urban amenity, uplift in employment and decreased air/noise pollution is likely to double-count benefits.

The increase in land values in the transit corridor may also come at the expense of land values in other areas of Canberra. In that case, uplift in land values would be a transfer of wealth from owners of property in other parts of Canberra to owners of property in the transit corridor.

¹⁶ City to Gungahlin Transit Corridor – Infrastructure Australia Project Submission 2012.

¹⁷ Currie, G 2009, 'Research perspectives on the merits of Light Rail vs Bus', presentation for Infrastructure Australia, accessed at <http://www.infrastructureaustralia.gov.au/publications/files/lightrailvsbus.pdf>.

¹⁸ City to Gungahlin Transit Corridor – Infrastructure Australia Project Submission 2012, p40.

¹⁹ <http://www.sgsep.com.au/insights/insights-bulletin/canberra-insights-bulletin/light-rail-understanding-the-urban-impacts/>

Changing land values is not a benefit in and of itself, but indicates the change in value of the land to owners.²⁰

Uplift in Employment

The ACT government commissioned analysis of the potential job creation because of the Capital Metro. This analysis is contained in the report *Capital Metro – Job Creation Analysis* by Ernst & Young.

The Capital Metro will require labour for its construction and operation. Employment associated with the Capital Metro is focused in the construction sector and technical services, such as employment of engineering technicians. It may provide stimulus for the ACT economy during a time of weakened economic activity and a decrease in public sector employment. Commercial and residential development in the transit corridor can be attributed to the construction of the Capital Metro to the extent that the Metro encourages people to move into this area due to the easier transport access.

In general, infrastructure development is not justified only by the jobs created in its construction. There is an opportunity cost to spending on the Capital Metro. Clearly if government funds were not spent to construct a light rail system they could be spent on other infrastructure or put to other use by government. Most other capital works spending would also involve employment in construction or operation of that infrastructure.

The common approach of using a multiplier to government expenditure to determine the amount of jobs created, such as in Estache et al. (2013),²¹ indicates that there is employment created by any government infrastructure development, and that claiming that the Capital Metro creates jobs is not a justification for the Capital Metro over other infrastructure projects.

For jobs to be created that are additional to the ACT, it is necessary for there to be an increase in the supply of labour. Ernst & Young analysis²² accounts for the number of ‘achievable jobs’ that could be created by the Capital Metro construction and changes land use in the transit corridor. It recognises that government infrastructure construction may ‘crowd-out’ private sector investment because of the change in wages in equilibrium²³.

²⁰ Change in land values can indicate the value of health and lifestyle benefits of light rail, including the preference of light rail over buses in terms of comfort and aesthetics. No rigorous attempt has been made to quantify these benefits, and in particular, illustrate how they are directly attributable to the light rail itself.

²¹ Estache, A, Ianchovichina, E, Bacon, R, and Salamon, I 2013, *Infrastructure and Employment Creation in the Middle East and North Africa*, Washington, DC: World Bank. doi:10.1596/978-0-8213-9665-0. License: Creative Commons Attribution CC BY 3.0 accessed at <https://openknowledge.worldbank.org/bitstream/handle/10986/12237/NonAsciiFileName0.pdf?sequence=1>

²² *Capital Metro – Job Creation analysis*, Ernst & Young 2014, Appendix 2, p. 30.

²³ *Capital Metro – Job Creation analysis*, Ernst & Young 2014.

The construction of infrastructure may have an important role as counter-cyclical fiscal policy and create employment in sectors experiencing a downturn. The Capital Metro would be justified as counter-cyclical policy if:

- construction of the Capital Metro creates more jobs than alternative capital works, or
- employment in the construction of the metro is in occupations that would benefit from temporary support.

Additionally the employment generated should be timely, with 'shovel ready' projects being more effective in generating short term stimulus.

Agglomeration economies present a potential beneficial impact of employment uplift in the transit corridor. Increased density of employment may lead to productivity benefits at a firm level as well as human capital benefits associated with workers' exposure to different jobs. The analysis in *Agglomeration Benefits of the Melbourne Metro* concluded that these labour productivity benefits of the Melbourne Metro represent 20–25 per cent of the total benefits of that infrastructure.²⁴

Attempts to quantify the wider economic benefits of the Capital Metro such as agglomeration benefits have not been made.

The effect on private investment – crowding-out or crowding-in?

Public investment in infrastructure may have a positive or negative impact on private investment.²⁵

The positive impact, called crowding-in, is where infrastructure provides favourable conditions for private investment. For example, the Capital Metro is likely to encourage private investment in the area surrounding the transit corridor because it is easier to access those areas via public transport.

However, public investment may crowd-out private investment, with the increased demand for funds required to finance public investment leading to higher costs of financing private investment, and therefore decreased private investment. This may be more true for areas not directly serviced by the Capital Metro.

Additionally, the construction sector in particular is likely to experience crowding out, because public demand for construction work due to the Capital Metro will lead to increased wages. Increased wages will lead to higher marginal costs of private investment requiring construction, and thus the level of private investment will decrease.²⁶

The extent of crowding out depends on the level of excess capacity in the construction sector. Given softness in economic conditions in the ACT, these effects may not be significant.

²⁴ *Agglomeration Benefits of the Melbourne Metro*, SGS Economics and Planning, July 2012.

²⁵ <http://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp864.pdf>

²⁶ This issue is discussed in the Capital Metro Job Creation analysis. Considering the effect of wages increasing to equilibrium decreases the 'employment footprint' to a level of 'achievable jobs'.



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