



**Australian Government**  

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**Commonwealth Grants Commission**

**2015 REVIEW**

**A CAPITAL COST INDEX**

**STAFF DISCUSSION PAPER  
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Submissions sought by	For discussion at a workshop on 3 April 2014. Submissions should be emailed in Word format to <a href="mailto:secretary@cgc.gov.au">secretary@cgc.gov.au</a> by 30 April 2014. Submissions of over 10 pages in length should include a summary section.

## A CAPITAL COST INDEX

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- 1 Discussion paper CGC2013-07S said it would be appropriate to apply a capital cost index instead of a recurrent cost index in the infrastructure assessments if a reliable one is available, it is policy neutral and it is materially different from the recurrent wage and regional cost indexes currently applied. A combination of the capital city and regional indexes produced by Rawlinsons was proposed as a potential approach to measuring the relative costs of infrastructure.
- 2 States raised concerns about the use of the Rawlinsons indices, including:
  - suitability — the indices do not focus on State-type buildings
  - policy neutrality — differences in taxes and building codes affect the indexes
  - coverage — the number of data points is limited and some regional centres are not covered, nor are some urbanisation, environmental and scale effects
  - within States, the cost indices can vary noticeably with different building types.
- 3 Western Australia, Tasmania, ACT and the Northern Territory supported the use of a capital cost index in principle.
- 4 Rawlinsons provide building cost indices which could be used to create a capital cost index more suited to the infrastructure assessments than the current cost factor.
  - The capital city index shows costs in each capital city relative to Sydney. It is derived annually from a review of building costs across all buildings, tender returns, market conditions and discussions with contractors, consultants and suppliers. It covers all construction activity including roads and transport projects. Rawlinsons has confirmed the capital city indices are derived in a consistent manner across States and can be used for interstate comparison.
  - Regional indices capture how much more it costs to build in regional and remote areas of a State compared to the capital city in that State. The indices are calculated by comparing the cost of a building in the capital city with the cost of the same building in regional and remote towns. They provide an intrastate measure of cost differentials but cannot be used for interstate comparisons without adjustment to include the interstate dimension.

**Table 1 Capital city index, October 2012**

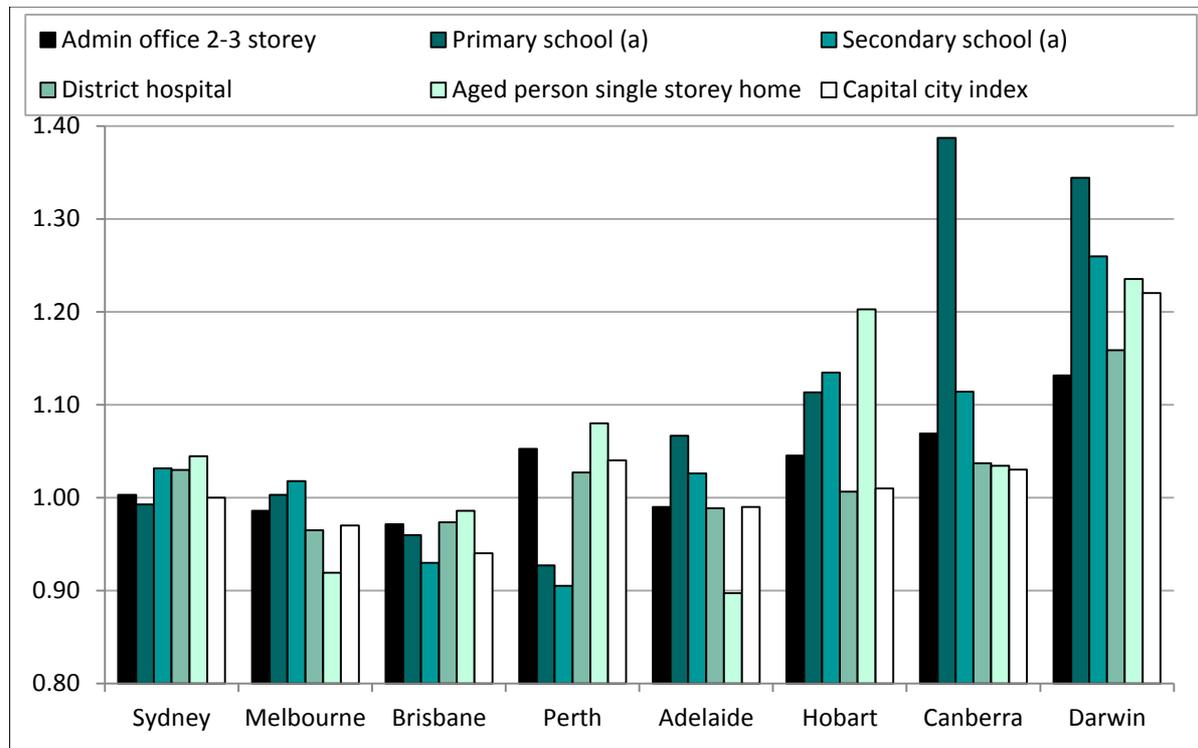
	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra	Darwin
Capital city index	1.00	0.97	0.94	1.04	0.99	1.01	1.03	1.22

Source: Rawlinsons Construction Cost Handbook, Edition 31, 2013, page 875

## Suitability

- 5 Rawlinsons indices are independent and widely used indices prepared specifically to provide data on construction costs and variations in those costs. Similar methods are used in preparing the indices for each capital city and for each region within States.
- 6 The most recent capital city indices are shown in Figure 1. They reflect an average of the cost differentials across a wide range of construction activities.
- 7 Indices for several State-type buildings are also available. They are also in the figure. The indices for some specific building types, such as schools have different interstate relationships from the broader indices. Rawlinsons have not been able to provide specific reasons for these variations, although they accept differences in project specific design issues may be relevant.

**Figure 1 Cost indices for various building types and overall capital city index by capital city, 2012**



Source: Rawlinsons Australian Construction Handbook, Edition 31, 2013

- 8 Rawlinsons advised the city indices provide a reliable guide to underlying construction cost differentials. The dominance of non-State type projects implies State specific design criteria have limited impact on the interstate relationships.
- 9 Rawlinsons have said the indices for smaller cities such as Darwin and Hobart are just as representative of the underlying costs in the city as those for the big cities. However, they noted costs in the smaller cities can be affected more by the flow-on

from few large projects, such as the recent oil/gas projects in Darwin. They consider this is a genuine reflection of market conditions, and hence costs, at the time.

- 10 Table 2 compares the Rawlinsons capital city index with another capital city index — the Rider Digest tender price index. The two indices give similar results for Sydney and Melbourne. However, the Rider index shows lower relative prices in the other capitals, especially Darwin and Brisbane, and it suggests Canberra has lower construction costs than Sydney.
- 11 Both indices cover the effects of differences in labour and material costs and market conditions. The Rawlinsons index covers a wide range of construction activity, including housing and non-building construction, whereas the Rider index is prepared on the basis of the construction costs for of two similar buildings in each city. The Rider index does not provide data for Hobart or centres outside the capitals.

**Table 2 Comparison of Rawlinsons and Rider Digest indexes**

	Sydney	Melbourne	Brisbane	Perth	Adelaide	Hobart	Canberra	Darwin
Rawlinsons (a)	1.000	0.970	0.940	1.040	0.990	1.010	1.030	1.220
Riders Digest - TPI (b)	1.000	0.972	0.820	1.005	0.950	n.a.	0.977	1.044

(a) Rawlinsons capital city index. Includes labour and material costs and market conditions.

(b) Riders Digest tender price index Dec 2012, reflects the change in tender levels for buildings other than housing. Accounts for labour and material costs and market conditions. Does not include data for Hobart

Source: Rawlinsons Construction Cost Handbook, Edition 31, 2013, page 875,  
Rider Levett Bucknall, Riders Digest 2014, Canberra, Australia Edition.

- 12 The Rawlinsons indices provide comprehensive and consistently prepared data on overall construction cost differentials across all State capital cities and regional areas within States. While the direction of the cost differentials is consistent with that shown by the Rider Digest tender price index for most States, the size of the differentials is greater. Further investigation is required to understand the differences.
- 13 The following considers other issues which need to be addressed if the Rawlinsons indices are to be used as the basis of capital cost factors. Rawlinsons indices are the basis of this analysis because they provide data for capital cities and regional areas.

## Policy neutrality

- 14 The indices may be affected by interstate differences in taxes and charges and building codes. Rawlinsons has advised they have no way of reliably identifying the extent to which State policy affects costs but they believe the impact is minor. This is in part because fixed costs which include taxes, levies, fees and charges are only about 5% of total costs.

- 15 This might be addressed by assuming 5% of costs are excluded from the indices (equivalent to discounting the interstate differentials by 5%). This materially reduces the Northern Territory's implied cost disabilities and has immaterial effects on all other States. However, this approach implies States with above average building costs are those where policies increase costs which may not be so. Alternatively, 5% of the indices could be adjusted by the relative revenue efforts for taxes most likely to affect construction activity which may include payroll tax, insurance tax and motor vehicle taxes. Doing this has a negligible effect on the indices. Staff conclude adjustments for interstate differences in revenue efforts would add complexity for no material impact.
- 16 Any interstate differences in building codes could have a bigger effect if building codes are set by State authorities and it could be shown the codes are systematically stricter (or more demanding) and thus led to higher construction costs in similar circumstances in some States (that is, if a State's requirements in high wind areas, high flood risk areas and saline soil area were all stricter than those in other States). Staff understand there is a national code which sets minimum standards across the country. However, we have no evidence on the extent to which States vary the codes resulting in different levels of stringency across the States. It is likely the codes are predominantly driven by technical considerations.

## Coverage

- 17 Rawlinsons regional cost indices do not cover all population centres in the States. However, they cover the bulk of the population in each State as shown in Table 3.

**Table 3 Proportion of population covered by Rawlinsons indices**

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
	%	%	%	%	%	%	%	%	%
Population covered	80	81	78	87	83	60	100	68	81

Note: Not all regional centres with indices could be allocated to a UCL. In some cases, staff manually applied a score to a UCL close to the regional area. For example, the score for Surfers Paradise was applied to the Gold Coast population.

Source: Staff calculations using Rawlinsons regional data and 2011-12 ABS UCL populations.

- 18 In discussion paper CGC 2013/07 staff suggested regional areas where indices are not produced could be estimated by assuming they had the same cost structure as sampled regions with a similar degree of remoteness. The Northern Territory argued that assumption was inappropriate and provided some examples based on recent tender prices to illustrate the point.
- 19 Applying the regional cost index of the closest region with a similar degree of remoteness to centres not covered by the Rawlinsons data should result in more accurate indications of the cost differentials between State capitals and regions than

the approach outlined in CGC 2013/07. However, as the Northern Territory examples suggest, it may nevertheless be an understatement. Any remaining differentials are likely to be highly location specific and their overall impact on the GST distribution would be dampened by the small proportion of the population (or asset stock) affected. More precise adjustment would require evidence from States on the relative costs of similar projects in omitted centres, the nearest sampled centre and the State capital.

- 20 While the Rawlinsons indices do not explicitly cover the effects of some aspects of the physical environment, they do so indirectly. Rawlinsons have indicated their figures capture the effects of the building codes applying in the localities examined. Since those codes stipulate design features aimed at mitigating the major effects of aspects of the environment affecting the structural integrity of buildings, the cost implications are reflected in the indices.
- 21 Rawlinsons have indicated the indices reflect market conditions in each locality covered and therefore they capture any implications of the smaller markets and lower activity levels in some centres.
- 22 The indices do not cover some cost differentials, such as those arising from land acquisition and site specific topography. Staff note land is assessed on an equal per capita basis in the investment assessments in part because land values and the need for land acquisition are affected by the policies of individual States. It is also noted that some site specific factors, such as slope can be mitigated by design considerations with limited impact on costs.
- 23 Available information indicates the Rawlinsons indices cover the bulk of construction cost differentials arising from locational and major environmental features.

## Constructing overall indices for each State

- 24 Preparing overall State wide indices requires the indices to be combined to derive an overall index for each State which reflects its accessibility and remoteness circumstances relative to the national average. This requires the following steps.
  - The regional indices in each State need to be adjusted to reflect a common base. The published indices for each region in each State are calculated relative to the State capital and each State capital city index is relative to Sydney. Comparable indices could be derived by multiplying each State's regional indices by its capital city index.
  - The adjusted indices for each region in each State need to be combined to produce a State-wide index. Ideally, the indices for each region would be weighted by the value of infrastructure in the region, but those details are not available. Since the location of infrastructure is generally related to the people served, weighting by population would be an appropriate approximation. This

approach was used in constructing the Commission’s regional cost index under 2010 Review methods.

- The State-wide indices need to be rebased to use the Australian average as the base rather than Sydney. This adjustment would be made on a population weighted basis.

25 If Rawlinsons data are used, the indices would be updated annually using the latest data available from Rawlinsons and up-to-date populations. This will produce disability measures that reflect the effects of changes in market circumstances and other influences on the construction costs in a contemporary way.

26 Table 4 shows the resulting factors for 2012-13 and compares them with the overall combined roads/non-roads factor for 2012-13 from the 2014 Update.

**Table 4 Comparison of factors, 2012-13**

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Ave
Rawlinsons indices	1.000	0.953	0.965	1.098	1.003	0.976	1.038	1.304	1.000
2014 Update (a)	1.002	0.979	1.003	1.056	0.991	0.975	0.886	1.102	1.000

(a) This is a weighted average of the wage and regional cost disabilities used for roads and non-roads.

Source: Staff calculation

27 There are two further issues which need to be considered in the process of reaching a decision on whether or not the Rawlinsons data are fit for the purpose of establishing a reliable relative capital cost index.

- While the Rawlinsons data are applicable to the labour inputs to road construction, they are less applicable to road material inputs because there are fewer inputs to roads. This may mean road material costs are more volatile between locations. Data are not available to adjust the indices for this.
- The Rawlinsons indices may not reflect relative costs for plant, equipment and other non-land investment. However, GFS data indicate this investment has been only about 10 % of total investment in each year since 2007-08 and buildings and other constructed assets were 90% of non-financial assets (excluding land). This could be dealt with by assuming no cost disabilities applied to plant and equipment, continuing the current approach of applying the wages and regional costs indices or applying the Rawlinsons indices.