

# WESTERN AUSTRALIAN SEPTEMBER 2009 SUBMISSION

## SCHOOLS EDUCATION

### Key Points

- Newly prepared comprehensive data on Western Australia's school resourcing highlights the dominant influence of indigeneity and remoteness.
  - The impact of socio-economic status is very modest.
- The Commission's calculation of the low socio-economic status (SES) factor appears to be based on erroneous data, giving a wildly incorrect disability factor for Western Australia.
- The Commission's assessment that Western Australia is advantaged in terms of SES and low English fluency (LEF) does not represent reality.
  - The Commission's LEF indicator is a poor indicator for remote Indigenous people.
- The Commission should review the regression analysis of post-compulsory enrolments, to ensure that the estimated enrolments are not distorted by correlations among the explanatory variables in the regression model.

### WESTERN AUSTRALIA'S RESOURCING OF SCHOOLS

The Western Australian Department of Education has prepared a comprehensive preliminary analysis of the resourcing per student in Western Australian schools, cross-classified by primary/secondary, school size, SES (using the SES index used to distribute Western Australian school funding), indigeneity and remoteness. This data is attached.

The data highlights the dominant influence of indigeneity and remoteness, and the modest impact of SES. To some extent, this is reflected in the Commission's proposed weights of 34% and 6% for indigeneity and SES respectively. However, it appears that the Commission has underestimated the difference in the relative importance of these factors. In this regard:

- The influence of Indigeneity in Western Australia appears to be generally well above the Commission's estimate of an additional 34%. Table 1 presents our estimates of the additional indigeneity weight, cross-classified by school level, remoteness and SES, based on analysis of the Education Department data.
- On the other hand, the impact of low SES is typically in the ballpark of the Commission's estimate (see Table 2 for our calculated low SES weights, cross-classified by school level, remoteness and indigeneity).

**Table 1: Indigenous Cost Weight in Western Australian Schools 2007-08 %**

	High Socioeconomic Index	Low Socioeconomic Index
<b>Primary Schools</b>		
Non-remote	160	158
Remote	45	21
<b>Secondary Schools</b>		
Non-remote	157	192
Remote	360	Na

**Table 2: Low SES Cost Weight in Western Australian Schools 2007-08 %**

	Low indigeneity	High indigeneity
<b>Primary Schools</b>		
Non-remote	3.1	10.2
Remote	17.4	20.8
<b>Secondary Schools</b>		
Non-remote	3.5	5.6
Remote	Na	-3.9

In Table 1, no figure is returned for remote secondary schools with low SES, as in that category there were no low indigeneity schools to compare with high indigeneity schools. For corresponding (remote low SES) primary schools, the calculated weight has been calculated on relatively slight data, as only 333 students attend low indigeneity schools in that category. The high variation in the indigenous weights is to be expected in this type of data analysis – the focus should therefore be on the general results.

Similarly, in Table 2 no SES weight could be calculated for remote secondary schools with low indigeneity, and the SES weight for remote primary schools with low indigeneity is based on slight data. As with Table 1, there is much variation in the SES weights, and the focus should be on the general results.

With regard to the attached data, it should be noted that judgement has necessarily been used in determining thresholds for high/low SES, indigeneity, etc. The Department of Education has also advised that the modelling is a work in progress which is being further refined.

#### **DATA PROBLEMS IN THE CALCULATION OF THE COMMISSION'S SES FACTOR**

The Commission's draft report proposes a measure of low SES based on the number of government school students living in Census Collection Districts (CDs) with a SEIFA score in the lowest five deciles. We understand this is based on the SEIFA index of advantage and disadvantage.

However, the State shares of low SES enrolments in the Commission's draft report (page 205) appear highly anomalous.

- Western Australia's share of low SES enrolments is only 6%, compared with the State's 10% population share.

We believe this to be an error. We have interrogated the 2006 Census data at CD level with the aim of reproducing the Commission's data. As shown in Table 3, there is a vast difference between our analysis and that of the Commission. We believe our numbers to be correct.

**Table 3: Comparison of government school students in WA – 2006 Census**

	<b>WA Treasury</b>	<b>CGC Spreadsheet</b>
Low SES students	83,106	46,355
High SES students	102,104	138,038
Total	185,210	184,393

### **PLAUSIBILITY OF THE COMMISSION'S SES AND LEF FACTORS**

The Commission's proposed SES and LEF factors both imply that Western Australia has a significant advantage relative to the national average.

Western Australia considers this to be implausible, having regard to the results of the 2008 National Assessment Program – Literacy and Numeracy (NAPLAN) report.

This report provides national and State-by-State results for four year levels (3, 5, 7 and 9) in the domains of reading, writing, spelling, grammar & punctuation and numeracy.

The results consistently show Western Australian students with below average achievement, for both indigenous and non-indigenous students.

Obviously, policy impacts on the quality of service could be an explanatory factor. However, there are indications that this is unlikely, including the generally above average outcomes achieved in Western Australia's very remote areas (compared to similar areas in other States), and the tendency for the gap between Western Australia and Australia to narrow for the higher years in the NAPLAN report.

We have previously (February 2009) documented a range of concerns with the proposed SES indicator, including insufficient weight for social factors, data quality issues and the problem of well-off families sending their children to private schools - these families affect area indices (such as the Commission's proposed indicator) but are not relevant to public education costs.

- While area indexes are, as the Commission notes, used to help allocate funding, States also decide on the general funding level, and can use resource allocation formulas flexibly. The Western Australian index is designed for our circumstances.

A major problem with the LEF indicator is that it is a measure of fluency, not literacy and numeracy. There is also a data quality issue in relation to remote indigenous persons and multilingual non-English background students (see below).

Western Australia asks the Commission to examine the consistency between its proposed indicators and the NAPLAN report.

#### **ACCURACY OF THE COMMISSION'S LEF INDICATOR**

The Commission's LEF indicator is based on Census data. Western Australia is concerned that this data understates the degree of LEF in remote Indigenous communities.

The Census question on whether English is spoken at home, if answered "no", leads to a follow up question on English fluency. However, if answered "yes" it does not lead to a further question. Speakers of a dialect of English, such as "Aboriginal English" are, therefore, automatically recorded as being perfectly fluent in English.

This is a very significant issue in remote areas of Western Australia, where the Census records a high level of English fluency among Indigenous communities that is not borne out by the experience of government employees on the ground.

The Grants Commission could address this by including all remote Indigenous students in the LEF indicator.

In addition to not counting as LEF those students who speak a non-mainstream dialect of English, the Commission may be including fluent English speakers as LEF. This is because some students who speak a language other than English at home may be multilingual, in some cases even coming from highly educated multilingual families.

#### **POST-COMPULSORY ENROLMENTS**

The Commission has used a regression model developed by a consultant to estimate post-compulsory enrolments on a policy neutral basis. The model estimates enrolment rates in terms of five explanatory variables - SES, indigeneity, non-English speaking background, remoteness and unemployment rate.

Western Australia is concerned that there are significant correlations between some of the variables, particularly:

- SES and indigeneity; and
- remoteness and indigeneity.

While these correlations do not invalidate the model, they increase the error bounds of the estimated coefficients, and may bias the results for individual States where the relationship between SES, indigeneity, etc is different from the national average.

To assess how important this might be, we calculated alternative estimates of the coefficients for the explanatory variables as follows:

- split the dataset into two equal parts based on the indigeneity ranking;
- re-estimate the model using the 'low indigeneity' dataset, but without the indigeneity variable – the intention is that the re-estimated SES coefficient will be less affected by indigeneity;
- use the re-estimated SES coefficient to exclude the impact of SES from enrolment rates in the full dataset;
- re-estimate the model using the full dataset, with the SES-adjusted enrolment rates, and excluding the SES explanatory variable.

As shown in Table 4, the re-estimated coefficients appear significantly different from those estimated by the consultant.

Accordingly, we ask that the Commission review the regression analysis of post-compulsory enrolments, to ensure that the estimated enrolments are not distorted by correlations among the explanatory variables in the regression model.

**Table 4: Comparison of post-compulsory model coefficients**

	<b>Consultant</b>	<b>WA Treasury</b>
SES	5.73	8.54
Indigeneity	-14.09	-11.99
NESB	0.94	-0.10
Remoteness	-1.38	-1.29
Unemployment rate	6.46	7.73