

The Allen Consulting Group

Feasibility of a National Schooling Recurrent Resource Standard

Final report

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Acronyms

ABS	Australian Bureau of Statistics
ACARA	Australian Curriculum, Assessment and Reporting Authority
AGSRC	Average Government School Recurrent Costs
CELDT	Comprehensive English Language Development Test
CGC	Commonwealth Grants Commission
COAG	Council of Australian Governments
CSC	Commonwealth Schools Commission
DEEWR	Australian Government Department of Education, Employment and Workplace Relations
ERI	Education Resources Index
ESL	English as a Second Language
GST	Goods and Services Tax
HECS	Higher Education Contribution Scheme
ISCA	Independent Schools Council of Australia
LBOTE	Language Background Other Than English
MCEETYA	Ministerial Council on Education, Employment, Training and Youth Affairs
NAPLAN	National Assessment Program – Literacy and Numeracy
NEA	National Education Agreement
NRIPS	Net Recurrent Income Per Student
NSRRS	National Schooling Recurrent Resource Standard
OECD	Organisation for Economic Co-operation and Development
PISA	Program for International Student Assessment
SES	Socio-economic status
SRP	Student Resource Package
SRS	Schooling Resource Standard
VET	Vocational Education and Training
WSF	Weighted Student Funding

Executive Summary

The Australian Government Review of Funding for Schooling has commissioned the Allen Consulting Group to examine the feasibility of a schooling resource standard (SRS). The findings of this project will inform deliberations by the Review Panel.

The concept of a SRS has particular relevance as, across many areas of human service delivery, governments have sought to distinguish their role as 'purchasers' of services, from their role as a 'provider' of services.¹ As part of achieving this distinction, governments have sought to fund services by setting a price based on an assessment of a reasonable cost to deliver the service, based in turn on defined standards and outcomes.

To implement this principle, governments have developed funding models that seek to increase efficiency (in terms of costs) and effectiveness (by clearly defining expected outputs and outcomes).

A resource standard has a number of benefits and potential applications:

- it can link funding to outcomes and improve accountability by providers for the outcomes they achieve;
- funding levels can be adjusted to meet differing needs of individuals and communities;
- it is a transparent means of allocating funding between service providers; and
- it can be used for public reporting so that organisations can improve their performance and users of services can make informed choices.

Application of a resource standard to Australian schooling is influenced by a number of contextual factors, including:

- the process of learning at school takes place over many years and is powerfully influenced by a range of external factors;
- teaching is far more complex than the delivery of other human services and it is far more difficult to link funding to outcomes at a particular point in time;
- educational outcomes are heavily influenced by inherent student characteristics, as well as past educational achievement and social background;
- many students change schools and bring with them achievement levels partly attributable relate to learning at their previous school;
- outcomes from schooling are also influenced by how financial resources are used, not just the level of resources provided;
- there is enormous variation between Australian schools in terms of the communities they serve, the background of students, their size and location; and

¹ As the SRS model in this report was developed to inform the work of the Australian Government Review of School Funding, the term 'National Schooling Recurrent Resource Standard' (NSRRS) is used throughout the report when referring to the report model. The term SRS is used only in relation to other models.

- the Australian Government is a contributor to school funding rather than a purchaser of services, with differential contributions to different sectors.

Notwithstanding these important caveats, a National Schooling Recurrent Resource Standard (NSRRS) may provide a new way to assess and provide the level of resourcing required by schools to meet outcomes agreed nationally by the Australian, state and territory governments.

The concept of a SRS was considered in the 1980s by the Commonwealth Schools Commission (CSC) and again in 2005 by the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA). A needs-based community standard was in place between 1985 and 1993. In this most recent application there was not a strong linkage between educational outcomes and the community standard.

The following principles guided the development of a NSRRS:

- the elements of the NSRRS should be transparent, defensible and equitable;
- the NSRRS should be set at a level that enables school outcomes to be achieved and improved over time generally and within individual schools;
- performance levels linked to the NSRRS should be linked to both national policy goals and outcomes for individual students;
- the NSRRS should be capable of application to all schools;
- the NSRRS should be able to be linked to other policy interventions to improve school outcomes and accountability; and
- the NSRRS should be capable of adaptation over time.

There are five ways a NSRRS might be used in the Australian schooling context:

- a fully developed NSRRS could in theory be used to underpin resource allocation to individual schools;
- a NSRRS could underpin a student entitlement funding model for schools;
- a NSRRS could provide a more reliable and relevant benchmark against which costs and outcomes for schools and school systems can be assessed;
- a NSRRS could assist in identifying investment requirements for school education in Australia; and
- a NSRRS could be used by the Australian Government to guide its contribution to both government and non-government school funding as a replacement for the Average Government School Recurrent Costs (AGSRC) measure.

The AGSRC has a number of limitations as the basis for a sustainable and transparent school resourcing measure. For example, it is based on the average cost of provision across government schools of vastly different characteristics and student cohorts, rather than the differential cost of meeting the needs of students and schools in all sectors. Also, there is no relationship between cost and outcomes in the AGSRC.

Conversely, a NSRRS, in conjunction with loadings, could identify both standard and differential costs and link these to the achievement of educational outcomes.

Building upon the above, a NSRRS is defined as:

‘The level of resourcing per student from all sources that efficiently and effectively applied over time, would enable students attending schools serving communities with minimal levels of educational disadvantage the opportunity to meet agreed national educational outcomes.’

The principles of both efficiency and effectiveness underpin the above definition of a NSRRS. In the full design of a NSRRS, effectiveness must be defined broadly in terms of agreed national educational objectives and outcomes. Efficiency is also an important principle given financial constraints facing governments and the community more broadly.

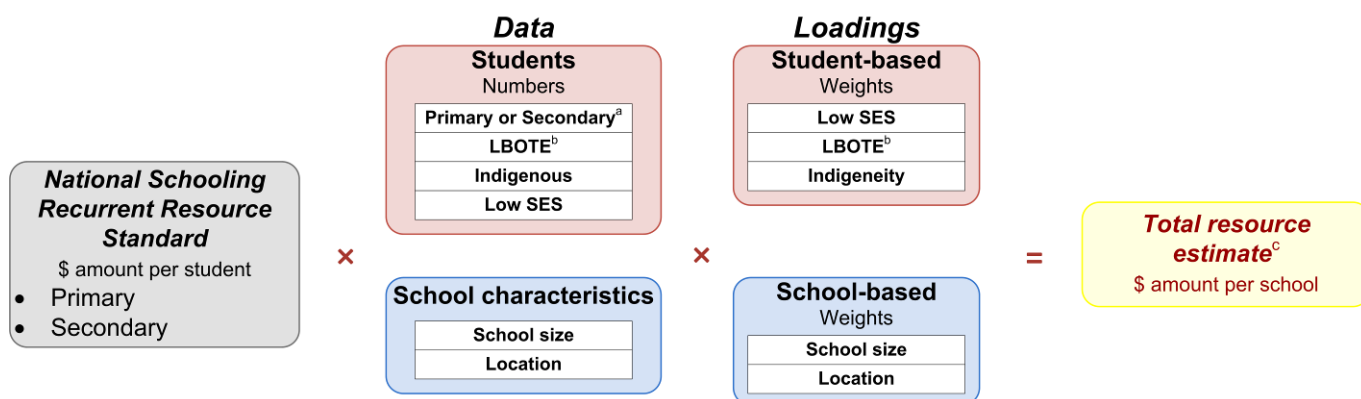
Loadings would be applied to the NSRRS to identify additional resources required by schools to assist students with specific needs to achieve specified outcomes. Loadings would also reflect higher costs faced by schools with certain characteristics, such as those in remote localities. At this stage loadings for students with disability have not been included due to known data limitations.

Application of this definition would result in two NSRRS rates – one for primary students and another for secondary students.

A diagram displaying application of the NSRRS is detailed in Figure ES 1.1.

Figure ES 1.1

APPLICATION OF THE NATIONAL SCHOOLING RECURRENT RESOURCE STANDARD DEFINITION



Notes: ^a primary or secondary students, not part of educationally disadvantaged groups. ^b students with a language background other than English, where at least one parent has only completed schooling up to year 9 or below. ^c Total amount for a school.

Source: Allen Consulting Group

A NSRRS under this definition relates resources to outcomes. These outcomes must be broadly defined and may range from literacy and numeracy outcomes to retention and completion outcomes. A NSRRS is focussed on estimating the resourcing necessary to meet specified national outcomes — that is, activities and outcomes that are common to all schools.

At present the only consistent national data relating to schooling outcomes is the National Assessment Program – Literacy and Numeracy (NAPLAN) data. NAPLAN data provides important information on key aspects of school and student performance, but it is only at best a partial measure of the broader schooling outcomes contained in the Melbourne Declaration and the National Education Agreement (NEA).

A two-stage process is identified for assessing schooling outcomes for the purpose of estimating a NSRRS and loadings, comprising:

- using NAPLAN data in relation to numeracy and literacy to identify 'reference schools', where at least 80 per cent of students are achieving above the national minimum standard, for their year levels, across the three years 2008 to 2010; and
- validating NAPLAN outcomes for reference schools, by examining other data and applying professional judgement at the school-level.

Following application of the above process for identifying reference schools, it is proposed that financial data reported on the My School internet site be used to estimate the NSRRS. This NSRRS estimate should be based upon all school resourcing applied to school operating costs. The available data means that a preliminary estimate of the NSRRS primary and secondary rates can be developed, based upon the resourcing level of reference schools. This estimation process would apply statistical techniques to identify the level of resourcing for a school meeting the NSRRS definition given earlier.

When estimating the NSRRS, it will also be possible to estimate loadings when there are reference schools with the required characteristics.² In the absence of appropriate reference schools, alternative methods for estimating loadings will be required. This could include estimating loadings on the basis of the cost of specific programs targeted to certain groups that over time have demonstrated the ability to improve student achievement. These NSRRS rates and loadings will need to be maintained over time through an annual indexation process.

Capital funding is not included in the NSRRS design at this time. The highly variable way in which capital funding is provided and treated in individual schools, and sectors, means it is inappropriate to include it at this time. However, it may be feasible to incorporate capital funding into the NSRRS in the future.

The future development of a NSRRS will depend on broader recommendations from the Review Panel and decisions by the Australian Government on application of a NSRRS to fund schools. Furthermore, the NSRRS model proposed in this report would require further detailed development prior to application, including:

- development of preliminary estimates of the NSRRS and loadings;
- development of outcome standards and an assessment framework for school level validation of the initial NSRRS estimation; and
- undertaking school-level validation of both outcomes and financial data.

In summary, it is considered that:

² For example, serving a low SES student population, or schools in a remote location.

- it *is* possible to design an appropriate NSRRS model;
- it *is* possible to define and apply outcome standards from school-level data on a limited basis, with supplementary validation activities required to validate the selection of reference schools;
- it *will be* possible to estimate a NSRRS, based on current financial data for reference schools;
- it *will be* possible to estimate loadings to be applied to a NSRRS, where there are sufficient reference schools of certain characteristics.

Table ES 1.1 summarises the preferred options identified in this report, for development of a NSRRS.

Table ES 1.1

SUMMARY OF PREFERRED OPTIONS

Area	Section	Options	Preferred option
What is the 'student outcome standard' in schooling?	Measures used to specify a student outcome standard	<ul style="list-style-type: none"> • Input • Process • Output • Outcome 	Focus on outputs and outcomes with input based standards applied
	What type of standard measure should a 'student outcome standard' be based upon?	<ul style="list-style-type: none"> • Norm-based standard measure • Criterion-based standard measure • Proportion-based measure 	Based upon a criterion-based standard measure (or measures), while also incorporating proportion-based measures
	Adjustments to a 'student outcome standard'	<ul style="list-style-type: none"> • No adjustments • Jurisdictional • Sector • School/student 	No adjustments
Can a National Schooling Recurrent Resource Standard be specified?	Financial and non financial resources	<ul style="list-style-type: none"> • Financial only • Consider all resources 	Only financial resources
	Level at which a NSRRS should be set	<ul style="list-style-type: none"> • Individual student level • Individual school level 	A NSRRS should be built from the individual student level, but applied at the school level
	Characteristics for adjusting base NSRRS	<ul style="list-style-type: none"> • Student • School • Community • School system 	Student and school characteristics considered
	Structure of a NSRRS	<ul style="list-style-type: none"> • Base plus model • Average cost model 	NSRRS should be structured as a base plus model, with loadings tied to additional costs associated with students of various backgrounds and need, meeting educational outcome standards
	Source of data for a NSRRS	<ul style="list-style-type: none"> • Government schools • Non-government schools 	Both government and non-government schools

Area	Section	Options	Preferred option
Which costs should be met by a National Schooling Recurrent Resource Standard?	Should a NSRRS be based on efficient costs?	<ul style="list-style-type: none"> • Efficient cost • Existing average cost 	NSRRS based on efficient costs
	Types of costs	<ul style="list-style-type: none"> • Sector overheads • System overheads • School level resources • Capital costs 	Only school level resources
	Adjunct costs of schooling	<ul style="list-style-type: none"> • Transport • Health and welfare • Other related costs 	Not part of NSRRS – should be separately identified as a community service obligation
How should the National Schooling Recurrent Resource Standard be developed and applied?	Materiality threshold for loadings to the base level of a NSRRS	<ul style="list-style-type: none"> • >1 per cent • >5 per cent • >10 per cent 	Limit number of loading factors through application of a >10 per cent threshold
	Application of loadings to base level	<ul style="list-style-type: none"> • Loadings tied to outcomes • No conditions 	Tied to achievement of agreed educational goals and outcomes

Source: Allen Consulting Group

Chapter 1

Introduction

The Australian Government Review of Funding for Schooling has commissioned the Allen Consulting Group to examine the feasibility and applicability of a schooling resource standard (SRS). The findings of this project will inform deliberations by the Review Panel.

The scope of work is outlined in Box 1.1. This report focuses on the first stage of the scope of work: conceptual design; potential application; and the methodology for estimating a SRS.

Box 1.1

FEASIBILITY AND APPLICABILITY OF A SCHOOLING RESOURCE STANDARD: SCOPE OF WORK

The scope of the work in the **first stage** should include:

- reviewing and critically assessing previous studies of school costs or resourcing standards, including relevant international research;
- investigating options for how existing statements of goals such as the Melbourne Declaration and COAG targets might be represented in an appropriate resource standard for quality schooling;
- considering the advantages and disadvantages of these options to form an assessment of which, if any, are feasible and merit further work; and
- scoping and assessing the comparability and reliability of existing data that could be used for the purposes of setting a resource standard.

The scope of the work in the **second stage**, if it proceeds, would include:

- developing in more detail a standard preferred by the Review Panel;
- analysing data to make preliminary estimates of the level and cost of that standard;
- validating the approach and estimated levels of the standard against sample data based on close liaison with school systems and/or individual schools; and
- developing a model to provide estimates of cost on a per student and in aggregate basis, taking into account both the base cost of educating all students as well as supplementary costs to meet specific additional needs if applicable.

Source: Australian Government Review of Funding for Schooling Secretariat

1.1 Purpose of the report

The purpose of this report is to outline a preferred approach for the design and estimation of a SRS. Options considered in relation to specific features of a SRS are outlined and the preferred approach identified.

The SRS model outlined in this report relates to recurrent funding from all sources, although it is recognised that capital funding could be included in the optimum design of a SRS. Funding sources include:

- state and territory governments;
- Australian Government;

- fees; and
- other private income.

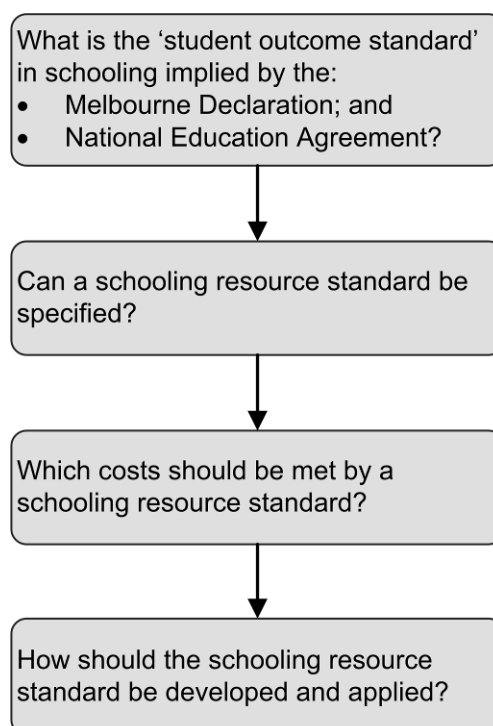
As the SRS model in this report was developed to inform the work of the Australian Government Review of School Funding, the term 'National Schooling Recurrent Resource Standard' (NSRRS) is used throughout the report when referring to the report model. The term SRS is used only in relation to other models.

The preferred approach to the NSRRS detailed in this report has been the subject of discussions with the Review Panel. Technical meetings were also held with representatives of the schooling sectors, states and territories and the Department of Employment Education and Workplace Relations (DEEWR). The project also drew on the knowledge of individuals with expertise in school funding and public finance. Nevertheless, the preferred approach to a NSRRS outlined in this report remains the work of the Allen Consulting Group, and has not been endorsed by the Panel.

The overall conduct of the project has been guided by a number of research questions, as detailed in Appendix A and summarised in Figure 1.1.

Figure 1.1

SUMMARY OF RESEARCH QUESTIONS



Source: Allen Consulting Group

1.2 Structure of the report

The remainder of this report is structured as follows:

- Chapter 2 provides an overview of the key features of the preferred NSRRS, its potential applications, potential benefits and processes required for ongoing development and validation;
- Chapter 3 outlines principles applied in the project for the design and estimation methodology for a NSRRS, and for its ongoing development;
- Chapter 4 identifies key outcomes from a review of previous work to develop a SRS, drawing from Australian and international literature and experience. Where appropriate, the Chapter also draws upon the findings of technical meetings;
- Chapter 5 identifies in more detail the strategic options considered in the development of the NSRRS and the preferred options adopted on advice from the Panel;
- Chapter 6 identifies potential applications of a NSRRS;
- Chapter 7 details a methodology and process for estimating a NSRRS; and
- Chapter 8 identifies a number of issues that will need to be addressed as part of the development of a NSRRS

Chapter 2

Overview: definitions, application and development

2.1 Introduction

This chapter summarises the NSRRS model described in detail in Chapter 5 of this report. The chapter also discusses the general principles and benefits of a 'resourcing standard' for the delivery of publicly funded services, as well as how these principles might apply to school funding. The chapter then outlines the preferred design of a NSRRS, its feasibility, and possible applications. It concludes by setting out the steps required for the full development and ongoing maintenance of a NSRRS.

2.2 What is a resource standard?

Before discussing the application of a NSRRS for Australian schools, it is useful to consider the general concept of a 'resource standard' where governments fund services to the community.

In the past two decades, governments have sought to distinguish between their role as 'purchasers' of services and their role as a 'provider' of services. Thus, governments have sought to fund services by setting a price, based on an assessment of a reasonable cost to deliver the service, and on defined standards and outcomes. This contrasts with previous approaches, where services were funded on the basis of historic or the average costs of delivery, without any clear link to outcomes.

To implement this principle, governments have developed consistent, transparent and equitable models for funding services in a way that increases efficiency (in terms of costs) and effectiveness (by clearly defining expected outputs and outcomes). A resource standard is therefore not just the average or lowest cost of service provision. Moreover, it must be linked to consistently defined and measurable outcome standards.

These models should ensure that governments are equitably funding providers of similar services, not just to treat providers fairly, but also to ensure that people receive services based on consistent levels of resourcing and outcomes. Prices paid under these models can also be adjusted for higher costs of service delivery to individuals and communities with more complex needs, or to reflect additional costs associated with economies of scale and/or location. The models also support the growing emphasis on public reporting of the costs and outcomes of service provision.

Using the principles outlined above, a resource standard applied to a range of services provided to the community could be defined as '*the efficient cost of delivering services that effectively meet specified outcomes*'.

A resource standard can then be seen to have a number of benefits and potential applications, for example:

- it can link funding to outcomes and improve the accountability of providers for the outcomes they achieve;
- funding levels can be adjusted to meet differing needs of individuals and communities;
- it is a more transparent means of allocating funding between service providers; and
- it can be used for public reporting so that organisations can improve their performance and users of services can make informed choices about the provider they wish to use.

However, the extent to which the concept of a resource standard can be applied to schooling generally, and specifically in the Australian context, needs to be considered in terms of the following factors:

- the process of learning at school takes place over many years and is powerfully influenced by a range of external factors;
- teaching is far more complex than the delivery of other human services and it is far more difficult to link funding to outcomes at a particular point in time. The way in which students progress through school varies and may require different levels of resources and support at different times;
- educational outcomes are heavily influenced by inherent student characteristics, as well as past educational achievement, social background, family characteristics and peer influences;
- many students change schools and bring with them achievement levels that relate to learning at previous schools;
- while there is now more comprehensive and consistent information about the performance of schools, there remains considerable debate about the extent to which this information captures not only learning outcomes, but also the broader outcomes of schooling (such as those reflected in the Melbourne Declaration, the National Education Agreement (NEA), and the associated National Partnership agreements);
- outcomes from schooling are also influenced by how financial resources are used, not just the level of resources provided;
- there is enormous variation between Australian schools in terms of the communities they serve, the background of students, their size and location, and to some extent in their roles; and
- the Australian Government is a contributor to school funding rather than a purchaser of services with varying contributions to different sectors. School funding arrangements in Australia are also complex, which is caused in part by overlays of Australian Government-state and territory agreements.

Notwithstanding these important caveats, a NSRRS may provide a new way to assess and provide the level of resourcing required by schools to meet outcomes agreed nationally by the Australian and state and territory governments.

Indeed the concept of a NSRRS is not new. As outlined in chapter 4, the concept of a NSRRS was considered in the 1980s by the Commonwealth Schools Commission (CSC) and again in 2005 by the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA). A needs-based community standard was in place between 1985 and 1993; however, there was not a strong linkage between educational outcomes and the community standard in this application.

Therefore the key questions this report seeks to address are: how a NSRRS might be defined and designed; whether data is available to support the design; whether a NSRRS can be used to assess the level of Australian Government funding to support schools; and what benefits might flow from the development and implementation of a NSRRS.

The following principles guided development of the NSRRS:

- the elements of the NSRRS should be transparent, defensible and equitable;
- the NSRRS should be set at a level that enables school outcomes to be achieved and improved over time, both generally and within individual schools;
- performance levels linked to the NSRRS should be linked to both national policy goals and outcomes for individual students;
- the NSRRS should be capable of application to all schools;
- it should be possible to link the NSRRS to other policy interventions to improve school outcomes and accountability; and
- the NSRRS should be able to adapt over time.

2.3 Potential applications of a NSRRS

There are five broad ways a NSRRS might be used:

- a fully developed NSRRS could in theory be used to underpin resource allocation to individual schools, but this would require agreement by all funding bodies. However, this is both complex and impractical. Given the number and diversity of schools in Australia, this approach would not be consistent with the general principles of reforms to Commonwealth-State financial relations agreed by the Council of Australian Governments. These reforms focus on achievement of outcomes, rather than detailed control over inputs;
- a NSRRS could underpin a student entitlement-funding model for schools. This could be similar to what may apply in the future for higher education, and to VET in some jurisdictions; although the highly varied levels of Australian Government contributions to different schools would make this option difficult to develop and implement;

- a NSRRS could provide a more reliable and relevant benchmark against which costs and outcomes for schools and school systems can be assessed. Based on experience in other sectors, a NSRRS and its various elements could indirectly influence resource allocation to schools by identifying areas of over and under funding relative to student characteristics and outcomes. Governments and school authorities could use a NSRRS to assure parents and communities that based on outcomes achieved by similar schools, their school has the financial resources required to deliver defined outcomes;
- a NSRRS could also assist in identifying investment requirements for school education in Australia; and
- a NSRRS could be used by the Australian Government to guide its contribution to both government and non-government school funding, replacing the Average Government School Recurrent Costs (AGSRC) measure. This is the most important potential application of a NSRRS.

The AGSRC has a number of significant limitations as the basis for a sustainable and transparent schools resourcing measure into the future. For example, it is based on the average expenditure on provision across government schools of vastly different characteristics and student cohorts, rather than the differential cost of meeting the needs of students and schools in all sectors. Also, there is no relationship between cost and outcomes in the AGSRC.

Conversely, the NSRRS, in conjunction with loadings, could identify both standard and differential costs and link these to the achievement of educational outcomes in a transparent and nationally consistent manner.

Determining the way a NSRRS could be applied, as an alternative to the AGSRC, will require detailed consideration in the context of the broader options for Australian Government schools funding under consideration by the Review Panel. A key issue in that regard is that Australian Government funding as a proportion of total school funding varies significantly between schools in different sectors. This means that the way a NSRRS interacts with funding from other sources will vary. But even where it only forms a portion of school funding, a NSRRS will still provide an important national benchmark against which the resourcing needs of schools can be assessed.

2.4 Defining a NSRRS

The starting point in the design of a NSRRS is to define what we mean by a ‘schooling resource standard’. Consistent with the definition of a general resource standard for service delivery outlined above, the definition of a NSRRS adopted in this paper is:

‘The level of resourcing per student from all sources that efficiently and effectively applied over time, would enable students attending schools serving communities with minimal levels of educational disadvantage the opportunity to meet agreed national educational outcomes.’

The principles of both efficiency and effectiveness have been used in the above definition of a NSRRS. In the full design of a NSRRS, effectiveness must be defined broadly in terms of agreed national educational objectives and outcomes. Efficiency is also an important principle given financial constraints facing governments and the community more broadly. It is important that resources are used to maximum effect and weighted towards meeting greatest need.

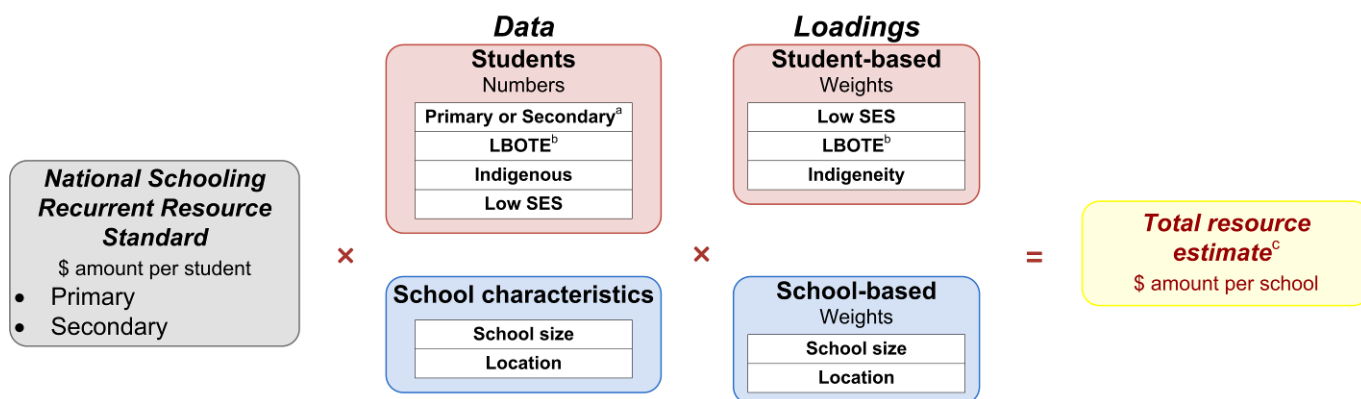
The definition of a NSRRS outlined above has been developed over the course of the project and is preferred because it offers the most straightforward and nationally consistent method of estimating the level of funding required for students with minimal levels of educational disadvantage to achieve specified educational outcomes.

Under the model adopted in this report, loadings would be applied to provide additional resources to schools to assist students with specific needs to achieve specified outcomes, in addition to this level of funding in the NSRRS. Loadings would also reflect higher costs faced by schools with certain characteristics, such as those in remote locations. At this stage, loadings for students with disability have not been included, due to known data limitations.

The application of a NSRRS to calculate an individual school’s total resource estimate is demonstrated in Figure 2.1. In this application the starting point for the NSRRS is an amount per student, with a different amount for primary and secondary students. The proposed application of the NSRRS does not consider 'stage of schooling' (i.e. lower, middle and upper years). However, this differential could be built into the NSRRS design in the future.

Figure 2.1

APPLICATION OF THE NSRRS DEFINITION



Notes: ^a primary or secondary students, not part of educationally disadvantaged groups. ^b students with a language background other than English, where at least one parent has only completed schooling up to year 9 or below. ^c Total amount for a school.

Source: Allen Consulting Group

An alternative way of presenting the NSRRS was considered in the development of this report. This would see the NSRRS as the total resources estimate for a school if the per student funding level and all of the loadings were applied. This approach would result in a different NSRRS for each individual school, but based on consistent estimates of resources per student and for loadings.

The preferred definition is considered to be simpler and more transparent for a NSRRS where the Australian Government is only a contributor to school funding, whereas the alternative presentation is more relevant to a total schools funding *model* applied by jurisdictions or school systems to determine the total funding for each school.

2.5 Defining and measuring outcomes

A NSRRS, under the definition adopted in this report relates resources to outcomes. These outcomes must be broadly defined and may include literacy, numeracy, retention, and completion outcomes.

A NSRRS is not intended to specify the level of resources required by a school to undertake all activities. Rather, it is focussed on estimating the resourcing required to meet specified outcomes — that is, activities and outcomes that are common to all schools. The NSRRS is not intended to meet the cost of those activities distinct to specific schools, such as extra curricular activities.

Furthermore, it is not proposed that the NSRRS indicate the level of resources required for a school to achieve ‘exceptional’ performance. Rather, the NSRRS is a level of resourcing sufficient for schools to perform against specified student outcome standards, recognising that there will be individuals and schools potentially above and below those standards.

At present the only consistent national data relating to schooling outcomes is the National Assessment Program – Literacy and Numeracy (NAPLAN) data. NAPLAN data provides important information on key aspects of school and student performance, but is at best only a partial measure of the broader schooling outcomes contained in the Melbourne Declaration and the NEA. Furthermore, it is undesirable to reduce the many and varied outcomes from schools to numbers or points on a scale.

To address this shortcoming in available national data, a two-stage process is proposed to assess outcomes for the purpose of estimating a NSRRS.

1. Using NAPLAN data as a proxy for school outcomes in relation to numeracy and literacy to identify a range of ‘reference schools’ that have met specified NAPLAN outcomes. This initial filter will enable a preliminary NSRRS estimate to be estimated and validated. The NAPLAN outcomes used to identify the reference school could comprise:
 - Those schools where at least 80 per cent of students are achieving above the national minimum standard, for their grade, in both reading and numeracy, across the three years 2008-2010.
2. Validating outcomes for these reference schools by using data and professional judgement at the school level, based on consistent national definitions and evaluation techniques, to assess the extent to which the broader schooling outcomes (such as those implied in the Melbourne Declaration and the NEA) are being achieved by the reference schools. Adjustments to the initial estimates can then be made if required.
 - For example, school level assessments could look at student performance across specific subject areas, student engagement levels, parental

satisfaction levels, post school destinations, performance in senior secondary certificate assessments and VET in school outcomes for students taking VET options. Some of this data is already publicly reported by schools and by one state. However, even as additional nationally consistent outcomes data becomes available, school level validation and assessment of outcomes will always be important.

Those schools identified as meeting the 'student outcome standard', known as reference schools, are then used to estimate the NSRRS.

2.6 Estimation process

NSRRS

The key element of a NSRRS is the estimation of the resources required to achieve outcomes. It is important that the estimate is based on resources currently being used in schools.

For that purpose, financial data from the reference schools can be accessed from data reported on the My School website. That data contains caveats reflecting some differences in treatment of financial data between jurisdictions and school systems, and the data will undergo further refinement and adjustment over time. However, this data should be sufficiently robust for the purposes of an initial NSRRS estimation for reference schools in stage one of the proposed estimation process, summarised in Chapter 7.

A school level validation process of financial data with reference schools could be undertaken concurrently with the outcomes validation process.

Estimation of the NSRRS will not just include government funding. Rather, a NSRRS must include all comparable school resources consistent with My School financial data, including Australian Government, state and territory government, and private contributions, to estimate the total level of recurrent resources required to meet specified outcomes.

However, the NSRRS itself may not necessarily include estimates of total school funding and resource requirements (in particular, school system costs and capital funding) given the wide disparities in practices between schools and sectors. The NSRRS should therefore be seen as a recurrent or operational funding standard although in the longer term there is a case to include a capital component in the NSRRS (as discussed in section 5.4).

Loadings

The actual value of loadings will require careful consideration, particularly those associated with student disadvantage, such as low socio-economic status (SES). A key consideration in the determination of loadings is identifying legitimate factors for when a loading should be applied. More broadly, it is intended that loadings link to the cost of achieving a student outcome, as discussed in section 2.5. Thus, it will be necessary to ensure that loadings are an accurate representation of the costs of students of different characteristics achieving an outcome standard.

Estimation of loadings using the My School financial data will require reference schools covering a range of student and school characteristics, such as low SES students and remote location. In the absence of reference schools with these characteristics, alternative methods for estimating loadings will be required. This could include, for example, estimating loadings on the basis of the cost of specific programs targeted to certain groups that over time have the potential to improve student achievement.

The proposed loadings reflect an approach considered feasible based on *currently available data*. For example, loadings for students with disability are not included. At the present time, there is no nationally consistent data on students with disability to enable inclusion of such a loading, particularly having regard to different levels of disability and their impact on student performance.

Moreover, the additional costs of providing intensive support services to students with disability, or the very high costs of small schools serving remote indigenous communities, may be better addressed by assessing costs and outcomes for similar schools and students, rather than by seeking to identify cost differentials from general school and student data.

Indexation and adjustment

It is important that the value of a NSRRS is maintained over time through appropriate annual indexation arrangements and periodic adjustment. It is envisaged that following estimation of the NSRRS rates, these rates would be indexed annually using either an agreed indexation rate or adjustment. Furthermore, it is envisaged that the NSRRS would periodically (for example, every five years) be subject to a re-estimation process.

A key consideration in indexation is to ensure that indexation rates are informed by changes in costs in relevant sectors of the wider Australian economy as well as cost movements in schools. Such a consideration would ensure that incentives are not created for unreasonable cost increases to be incurred in schools in the knowledge that these costs will simply be passed on, at least in part, through application of a NSRRS.

2.7 Capital funding

It is not possible to estimate capital funding levels or requirements using current national financial data. The ways in which school systems and individual schools fund capital varies significantly and the capacity of most schools to use their capital assets for future investment (for example, through disposal, borrowings, and leasing) is very limited. Capital investment in schools, and particularly in school systems, is also highly cyclical and there are often strong public interest reasons for governments and school systems to rationalise and invest in new schools as school age populations change in specific localities.

Nonetheless, against a background of concern about the future capital needs of schools in Australia, there are strong public policy arguments for identifying and developing a capital cost element within a NSRRS (if feasible) so that schools and school systems can plan for future capital needs with greater certainty than under current arrangements.

2.8 Further development and oversight of a NSRRS

The future development of a NSRRS will depend on broader recommendations from the Review Panel and decisions by the Australian Government on application of a NSRRS to fund schools.

However, the NSRRS model proposed in this report would require further detailed development prior to application. Specific matters to be addressed would include:

- estimation of both the NSRRS and loadings including the appropriate treatment of resourcing for students with disability using the processes set out in Chapter 7 and other techniques;
- development of outcome standards and an assessment framework for school level validation of the initial NSRRS estimation; and
- undertaking a school level validation process of both outcomes and school level financial data.

Subsequent to the finalisation of the design of the NSRRS and the initial estimation process there are additional issues that will require ongoing consideration and development. These include:

- ongoing refinement of the NSRRS model, including options for the inclusion of a capital element either as a loading or within the standard;
- annual indexation and periodic adjustment to the NSRRS; and
- periodic review and evaluation of the effects of the NSRRS, in particular the extent to which outcomes are being achieved, including through the application of loadings for specific student cohorts and schools.

It is important that both these further developmental roles are undertaken using evidence-based and transparent analysis. Statistical and econometric analysis should be applied, allied with professional judgement (particularly in relation to outcomes achieved by schools).

These functions should be overseen and undertaken at arms length from government, either through a specialist agency established for the purpose, or through periodic reviews by an expert panel or committee.

2.9 Feasibility of a NSRRS

On the threshold question as to whether or not it is feasible to develop a NSRRS, the analysis to date and the methodology set out in the following chapters and appendices suggests that:

- it *is* possible to design an appropriate NSRRS model;
- it *is* possible to define and apply outcome standards from school-level data on a limited basis, with supplementary validation activities required to validate the selection of reference schools;
- it *will be* possible to estimate a NSRRS, based on current financial data for reference schools; and

- it *will be* possible to estimate loadings to be applied to a NSRRS, where there are sufficient reference schools of certain characteristics. Where there are insufficient reference schools to estimate loadings, alternative estimation processes will be required.

A fully developed NSRRS will require further and ongoing development and validation to meet all of the evaluation criteria set out above. The key elements of the financial data required for NSRRS estimation have already been nationally defined. Further, in conjunction with ongoing improvement in data quality and validation at the school level, this data should be sufficiently robust for estimation purposes.

Data for assessing outcomes is and will continue to be more complex. As national outcome data improves, and with validation at the school level, it should be possible to ensure that the resourcing estimates process is applied to schools with similar characteristics achieving at least broadly similar outcomes. In addition, it must continue to be emphasised that those outcomes are not appropriate as the basis for an outcomes based funding system across schools.

However, final decisions on the feasibility of a NSRRS must be considered in the context of its potential application, in terms of both the broader schools funding framework recommended by the Panel, and subsequent decisions by the Australian Government.

Chapter 3

Principles for developing a National Schooling Recurrent Resource Standard

3.1 Introduction

This chapter identifies principles to guide identification of a preferred approach for both the design and subsequent estimation of a NSRRS. Two sets of principles have been developed:

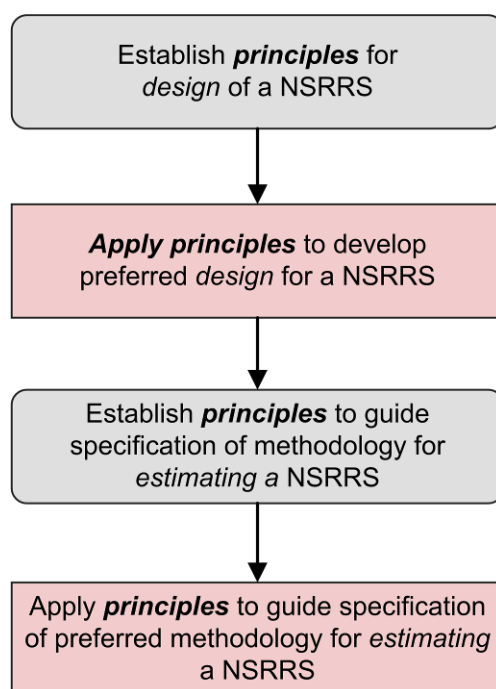
- principles to be applied in identifying a preferred approach to design of a NSRRS; and
- principles to guide development of a methodology for estimation of a NSRRS.

The principles have been developed as statements, to allow various options to be assessed.

Figure 3.1 demonstrates the process for developing and evaluating options for a NSRRS, by applying the principles detailed in sections 3.2 and 3.3.

Figure 3.1

PROCESS FOR APPLYING A PRINCIPLED APPROACH TO DEVELOPING A NSRRS



Source: Allen Consulting Group.

3.2 Principles to be applied in design of the NSRRS

The overarching consideration in designing a NSRRS is that likely benefits of its successful development and application will outweigh the costs relative to alternatives and the status quo. Accordingly, the following principles have been developed for application in the course of designing the NSRRS and accompanying loadings:

- the elements of the NSRRS should be transparent, defensible and equitable;
- the NSRRS should assist in developing a more consistent and sustainable national school funding framework;
- the NSRRS and loadings should be set at a level that enables school outcomes to be achieved and improved over time, generally, and within individual schools;
- performance levels linked to the NSRRS should be linked to both national policy goals and outcomes for individual students;
- the NSRRS should be capable of application to all schools;
- it should be possible to link the NSRRS to other policy interventions to improve school outcomes and accountability; and
- the NSRRS should be able to adapt over time.

3.3 Principles to guide development of NSRRS estimation method

In addition to the above design principles, a number of principles have been applied to guide the development of the method for estimating the NSRRS. These principles go to the heart of ensuring the technical feasibility of estimating the NSRRS and loadings, along with maximising the feasibility of subsequent implementation:

- data should be available at the school level and, if relevant, at the system level, to establish outcome standards and calculate resourcing levels;
- the NSRRS should not be purely a theoretical model, and should be sufficiently robust to have practical application as either a benchmark funding standard, and/or to assist with resource allocation where agreed;
- the development and application of a NSRRS should not impose unreasonable new demands for data collection on schools and school systems;
- new or additional data collection should be considered, where this would improve the accuracy of the NSRRS;
- estimation of the NSRRS should be transparent, and able to be comprehended by stakeholders;
- estimates of the NSRRS and loadings should be based upon schools already attaining national policy goals and outcomes; and
- development and implementation of the NSRRS should be possible within two years.

The last principle is considered to be fundamental — it is considered that if development and implementation of the NSRRS was to take longer than two years, it is unlikely to survive the usual policy implementation/political cycle.

Chapter 4

Evolution of a Schooling Resource Standard

4.1 Introduction

This chapter examines past Australian and international experience in the development of a SRS, and relates this experience to the issues addressed in this report. The analysis is limited to Australian Government school funding, due to the diversity of funding approaches used by state and territory governments.³

The concept of a SRS is not a new one, either in Australian or international school finance. Concepts similar to a SRS have been explored and applied by the Australian Government a number of times during the past 40 years, during which time the role of the Australian Government in school funding has progressively increased. Similarly, a SRS has been utilised in the United States of America, both in school finance litigation, as well as the funding of schools in some jurisdictions. Evidence has also been sought of the application of a NSRRS in other countries, particularly those identified by the OECD as being ‘high performers’.

4.2 Australian experience⁴

There have been a number of significant policy changes since the Australian Government first began direct funding of school education in 1964. Figure 4.1 provides a timeline of policy analysis and research undertaken in Australian school funding since 1964 relevant to the concept of a SRS.

The early research and analysis, detailed in Figure 4.1, particularly the landmark Karmel Report (Interim Committee for the Australian Schools Commission 1973), led to major policy change resulting in the calculation and application of a needs based resource standard (which can be seen as the precursor to a SRS). There have been several other recent studies that have contributed to the evolution of the concept of a SRS.

- In 2004, Angus et al produced a report for the Department of Education, Science, and Training examining the resourcing of primary schools, and identifying that:

‘Resource allocations should be better matched to student needs, and that this should be done by the application of funding formulae that are sensitive to the home background of students and variations in school intakes.’

Angus et al 2004

It was also highlighted that recurrent funding should be linked to socio-economic disadvantage and the results made public and transparent, leading to larger allocations of resources to schools with lower SES intakes.

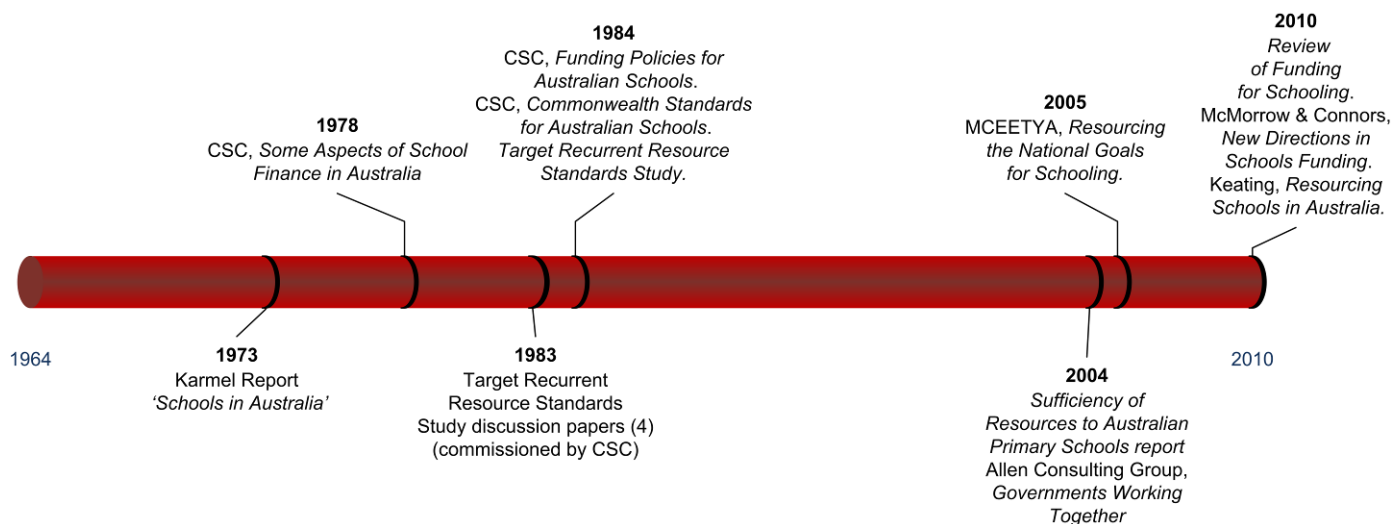
³ No evidence of estimation and implementation of a SRS by state and territory governments was identified in the course of this project.

⁴ This section draws extensively upon McMorrow and Connors 2010, and Wilkinson et al 2006.

- In 2005, MCEETYA produced a report on *Resourcing the National Goals for Schooling* (Schools Resourcing Taskforce Secretariat 2005). The report puts forward an existing least cost approach to calculating a 'base cost' of schooling using financial and non-financial data. The recurrent unit cost of estimated least cost schools was based on data provided by each jurisdiction. Costs associated with capital and transport were excluded. Additional resourcing of need was also investigated. This part of the study looked at programs that effectively helped disadvantaged students. The cost of these programs was used as a proxy for the cost of helping disadvantaged students to meet the standards set out in the Adelaide Declaration.
- In 2010, two publications relevant to the concept of a SRS were released. McMorro and Connors (2010) proposed a new model of school resourcing based on a national *teaching* resource standard, with quality of teaching being acknowledged as the most significant contributor to student outcomes. Keating (2010) proposed a conceptual framework for resourcing schools in Australia. The framework includes a set of common principles under which different school systems (as opposed to individual schools) operate. Within this framework, a 'community rate' is identified, defining a minimum resource level against which 'base' public funding is calculated. This community rate includes minimum funding levels for all schools, from all funding sources (private and public). A 'base' public funding rate is then calculated, defining the government contribution towards meeting the community rate. Needs based funding is then allocated to schools by government.

Figure 4.1

DEVELOPMENT OF A SCHOOLING RESOURCE STANDARD IN AUSTRALIA: PREVIOUS RESEARCH AND ANALYSIS



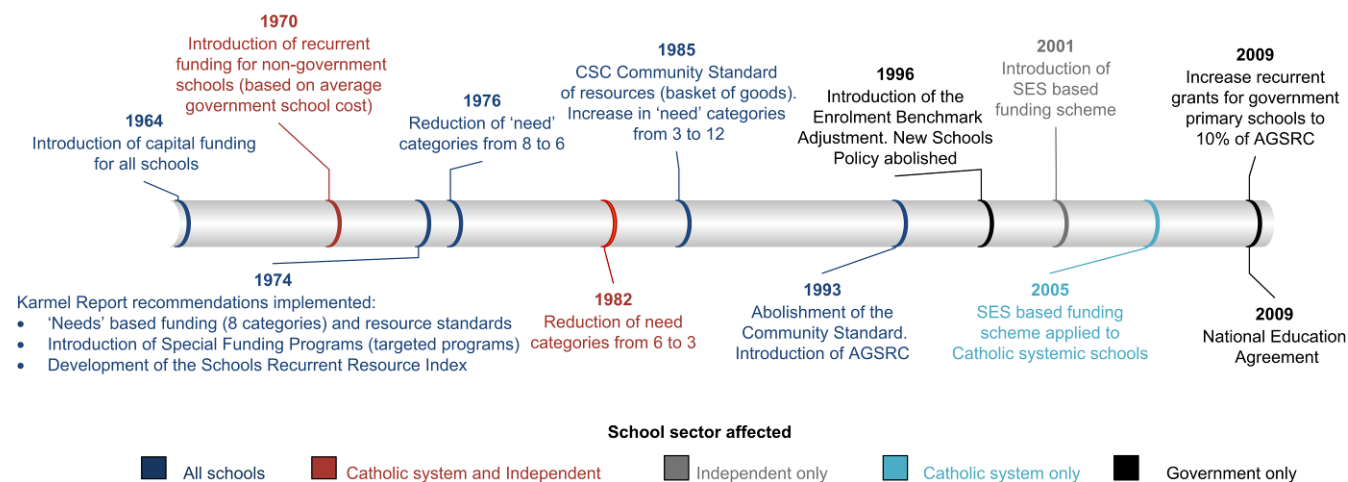
Source: Allen Consulting Group.

In addition to the research and analysis outlined above there have been major policy changes in schools funding by the Australian Government which are relevant to the concept of a SRS.

Figure 4.2 maps these major policy changes that affected all schools, or only specific school sectors (government, Catholic or independent), as outlined in greater detail below.

Figure 4.2

TIMELINE: AUSTRALIAN GOVERNMENT FUNDING POLICY CHANGES



Note: CSC = Commonwealth Schools Commission, AGSRC = Average Government Schools Recurrent Costs.

Sources: McMorrow & Connors 2010; Harrington 2010; Wilkinson et al 2006; CSC 1984; ACG analysis.

- In 1964, the Australian Government introduced capital funding for Australian schools in all states and territories. Prior to this, the Australian Government was only responsible for schooling in the Australian Capital Territory and Northern Territory. Funding was introduced through *The States Grants (Science Laboratories and Technical Training) Act 1964*, providing grants for equipment in government and non-government schools. The Act was broadened in 1972, authorising \$20 million for capital expenditure on government primary and secondary schools. The Act was amended in 1973 to include non-government schools (Harrington 2010).⁵
- In 1970, recurrent per student grants for non-government schools were introduced as part of *The States Grants (Independent Schools) Act 1969*. This was primarily to assist the Catholic school sector to deal with the growth of the post-war school population, and societal aspirations for the expansion of secondary schooling. The Act outlined rates of \$35 per primary student and \$50 per secondary student, which were based upon existing government school costs. In 1973 these rates were fixed equivalent to 20 per cent of the cost of educating a child in a government school (Harrington 2010).

⁵ It is noted that although 1964 was the year of direct Australian Government funding of schooling, there was previously indirect support. For example, in 1952 income tax deductions for school fees were introduced. These deductions were initially capped at £50, and later increased (Wilkinson et al 2006).

- The Interim Committee for the Australian Schools Commission (1973) (commonly referred to as the ‘Karmel report’), highlighted deficiencies in resources and inequalities in educational opportunities throughout the Australian schools system. A key area of concern was the limited resourcing available to Catholic schools. The report recommended the introduction of ‘needs’ based funding, and the extension of Australian Government funding to non-government schools on the basis of ‘need’, which was then implemented in 1974. ‘Need’ was defined by eight categories (categories A, least disadvantaged, to H, most disadvantaged), established in relation to explicitly stated resource standards (in particular student-teacher ratios). Although underpinned by input-based measures (student-teacher ratios), the Karmel committee resource standard can be seen as the precursor in Australia of the concept of a SRS. The committee also recommended that the Australian Government fund state governments to achieve a significant increase in overall school funding in the following five years (to 1979). Schools in ‘need’ category H (most disadvantaged) were identified as most in need of public assistance.
- In 1974, Special Funding Programs were introduced and the Schools Recurrent Resource Index developed. Special Funding Programs (targeted programs) were introduced for disadvantaged schools, special education, teacher professional development and innovation (Harrington 2010). The Schools Recurrent Resource Index (Schools Price Index) was introduced from 1974 to adjust grants for price and wage increases.
- From 1976, grants to non-government schools were linked directly to average cost (similar to the current AGSRC) of maintaining students in government schools. In 1976, the number of non-government school funding categories were reduced from eight to six. In 1982, these funding categories were further reduced, from six to three.
- In 1985 the Australian Government, following recommendations in the CSC 1984 report, implemented a quadrennial funding of government and non-government schools based on a ‘Community Standard’ of resources. The standard was a ‘notional basket of resources, containing the level and range of recurrent resources required in all schools’. The Community Standard can also be considered to be akin to a SRS. The Education Resources Index (ERI) was also developed to apply a more comprehensive definition of ‘need’ for non-government schools (for recurrent and capital funding). The ERI replaced the Schools Recurrent Resource Index previously used. The previous three ‘need’ categories were expanded to 12, to better reflect the varying characteristics of schools (assessed by the ERI). The allocation of funds following this 1985 decision was informed by deliberations of the Quality of Education Review Committee, which was established to provide advice to the Australian Government on ‘clear, more efficient strategies to direct the increased funds’ (Quality of Education Review Committee 1985, p. 204). To this end, the Quality of Education Review Committee advice to the Australian Government had a strong focus upon schooling outcomes, similar to those in the Melbourne Declaration and the NEA (see Box 4.1).

Box 4.1

SIMILARITIES BETWEEN OUTCOMES DETAILED IN 'QUALITY OF EDUCATION IN AUSTRALIA', THE MELBOURNE DECLARATION AND THE NEA

The Quality of Education in Australia report published in 1985, describes many desirable outcomes for students, similar to the Melbourne Declaration and the NEA (as outlined in section 5.2).

The Quality of Education Review wanted to develop clearer and more efficient strategies to direct increased funds to schools, in ways that ensured:

- the attainment of a satisfactory standard by the great majority of students at successive stages of a general curriculum, with particular reference to communications, literacy and numeracy; and
- an improved relationship between secondary education, employment, and tertiary education opportunities and requirements.

In particular, other goals similar to those of the Melbourne Declaration and the NEA included, 'to encourage and foster the development of the children whose social, physical or environmental disadvantages cripple their capacity to learn, if necessary by making additional resources available to them'.

Source: Quality of Education Review Committee 1985.

- In 1993, when the Community Standard and government school costs were at approximately the same level, the Keating Government abolished the Community Standard as the benchmark for general recurrent grants. The Community Standard was replaced by an average cost approach, the AGSRC measure. The AGSRC is expenditure based, rather than price based — accounting for changes in historical schooling expenditure rather than changes in the prices of goods and services, thus representing a move away from a SRS concept. The AGSRC was considered to be a simpler and more realistic approach to the Community Standard and Schools Price Index (DEETYA 1997). Schools were still placed in one of 12 categories of 'need' for recurrent grant purposes. The ERI continued to be used to assess the appropriate category for each school.
- Between 1974 (Karmel Report) and 1993 (abolition of the Community Standard), it can be argued that the Australian Government's school funding approach involved an implied SRS. Karmel's needs-based funding linked to explicitly stated resource standards, such as standards for time spent on professional development and class sizes, meant that schools not meeting this resourcing standard could be easily identified. In a sense, the funding model was linked to particular input-based measures of a school's performance.

The introduction of a Community Standard of resources in 1985 by the CSC, was less linked to an explicit resource standard. However, it did define a notional 'basket of resources' required in all schools. These two policies are the closest school funding methods have come (at an Australian Government level) to defining a SRS for schools in Australia.

- In 1996, under the Howard Government, school funding policy shifted once more to the notion that 'the way to drive quality of schooling was to use public money to promote parental choice of non-government schooling, stimulating provider competition'. The main impact on school funding was the introduction of the Enrolment Benchmark Adjustment, allowing the Australian Government to recoup a share of savings from the states.

- In 2001, a SES-based funding scheme was introduced, in the first instance focussed on independent schools. The scheme was characterised by the assessment of need, based on parental capacity to pay, as measured through analysis of area-level Census data.⁶ Under the scheme, a minimum grant was provided to non-government schools, equivalent to 13.7 per cent of the AGSRC. Grants were distributed over 46 subsidy levels, up to a maximum of 70 per cent of AGSRC. Changes in Australian Government funding to individual schools as a result of school SES composition were avoided through the use of funding protection methods (funding maintained and funding guaranteed).
 - There were issues associated in applying the SES scheme to Catholic schools, primarily because the funding scheme was based on a dual sector schooling model (grouping Catholic and independent schools together). In 2005, the SES scheme was applied to Catholic schools (although not all). Most grants were around 50-60 per cent of AGSRC. Categories of ‘need’ continued to be assessed by the ERI for some schools.
- In 2009, the Australian Government increased general recurrent per capita grants for government primary school students, in line with the rate for government secondary schools – 10 per cent of AGSRC (Harrington 2010).

Funding models in states and territories

Discussions have been held with jurisdictions, non-government school peak bodies and researchers to broadly assess whether any current school funding models resemble a SRS.

Despite the considerable work that has been done in the past, discussions with state and territory education departments have not identified any application of a SRS in the funding of government schools within the definition proposed in this project.

Under all state and territory government school funding approaches, schools are basically provided a base level of resources (either as funding, or a combination of staffing and funding), with additional resources made available on the basis of various measures of need. It could be argued that the ‘base’ level of funding provided by most state and territory governments is akin to a SRS. However, the loadings applied to funding levels in response to varying measures of need, such as socio-economic disadvantage, are not closely linked to the resources required in affected schools to achieve a ‘student outcome standard’ and performance.

As an example, elements of the application of the Victorian government schools funding model, the Student Resource Package (SRP), resemble a SRS. As part of the SRP, funding is allocated to schools combining a per student rate (akin to a SRS), with different funding rates dependent upon student characteristics, particularly the stage of schooling (akin to loadings). Additional loadings are also provided to schools for factors such as location, and the density of low SES students (DEECD 2010).

⁶ This approach used student home address details to identify the Census Collection District in which they resided. There are approximately 225 households to each Census Collection District across Australia.

There are some small exceptions to this finding. For example, in Tasmania the Department of Education funds a program titled ‘Raising the Bar, Closing the Gap’ that provides additional senior teaching and professional development resources to schools. The level of funding provided for this program is based on evidence of the resources required to achieve program objectives.⁷

4.3 International experience

In addition to the previous Australian experiences with a SRS, there is a number of examples from overseas. The closest examples to a SRS that fall within the definition proposed in section 4.3, come from the United States of America (USA).

Examination of school funding approaches in other countries identified as being ‘high performers’ in terms of educational outcomes has found insufficient detail to be able to categorically state whether or not a SRS is at work – however, the available evidence suggests that a SRS is not applied.

United States of America

As noted above, research from the USA is further developed in terms of the notion of a SRS, as it relates to the definition proposed in this project. In particular, the methodologies applied in the USA seek to define a ‘student outcome standard’, and then quantify the resources required to meet this standard. These resource estimates typically seek to indicate the level of resourcing required by schools (or school districts) serving students with different characteristics.

Establishing a service standard

Consideration of a SRS in the USA is generally at the state-level, such that the ‘student outcome standard’ is based upon state sanctioned standards. State proficiency standards in the USA are then used to establish accountability requirements under the *No Child Left Behind Act (2001)*.

These standards are largely based around the concept of ‘educational adequacy’, defined in this context as *‘students having the opportunity to meet external standards of performance’*. Accordingly, the notion of a ‘student outcome standard’ is dependent upon the nature of the external standard, which are typically state proficiency standards.

Over the last two years, the USA National Governors Association has sought to establish Common Core State Standards, which:

‘...define the knowledge and skills students should have within their K-12 education careers so that they will graduate high school able to succeed in entry-level, credit-bearing academic college courses and in workforce training programs.’⁸

Although independent of the *No Child Left Behind Act (2001)*, it is considered likely that these Common Core State Standards will become an informal set of national standards.

⁷ See <http://www.education.tas.gov.au/dept/strategies/raising-the-bar>

⁸ See <http://www.corestandards.org/>

Student outcome standards have also been set in the USA as a result of litigation regarding education finance systems. For example, the New Jersey State Supreme Court required that the state ensure that poorer urban districts received educational funding ‘substantially equal’ to that of richer districts, and that the funding must be adequate to provide for the special educational needs of poorer districts (Duncombe & Yinger 2004). This kind of judgement has been the basis for numerous resource-based adequacy studies.

Methods for estimating a Schooling Resource Standard

Four main methods have been developed in the USA for estimating a SRS:

- *Professional judgment/resource cost model approach*: the level of spending per pupil that is required to achieve an adequacy standard is decided according to certain pre-defined characteristics in a prototypical school, including total enrolment and the percentage of students who are poor.
- *Successful districts/schools approach*: builds on the idea that districts or schools already meeting a state’s performance standard will be spending an amount that is at least sufficient to provide an adequate education.
- *Whole school design approach*: successful school reform efforts can be used to determine the expenditures needed to provide an adequate education.
- *Cost function approach*: uses econometric methods to estimate the cost of achieving specified levels of performance from actual data on spending. This determines if the amount of spending is adequate, and whether it meets a state’s performance standard (Downes & Stiefel 2008).

While many examples from the USA of estimating a SRS predominantly apply only one of the above approaches, it is also common for another method to play a role.

Application of a Schooling Resource Standard

By far, the professional judgement approach has been the most commonly applied approach to estimating a SRS in the USA, followed by the successful schools approach. There appear to have been fewer cost function and evidence-based approach studies undertaken.

This trend also seems to be reflected in the application of adequacy-related resource standards by policymakers in the USA, where there is evidence of education finance systems being implemented that directly incorporate recommendations from professional judgement and successful schools studies. On the other hand, there is little evidence to suggest that the cost function or evidence-based approaches have had as much uptake. This is perhaps due in part to the fact that the professional judgement and successful schools approaches being somewhat more grounded in empirical evidence that can be understood by a non-technical audience.

The professional judgement is potentially the most subjective of the four approaches, as it relies upon the opinions of education experts. This is in contrast to the evidence-based approach, which employs an ad hoc application of more broadly identified successful reforms, drawn from research and other literature. Furthermore, as is shown in a Maryland case, the successful schools approach is appealing to policy-makers as it is based on the demonstrated success of schools in meeting existing state service standards (see Box 4.2).

Box 4.2

APPLICATION OF A SCHOOLING RESOURCE STANDARD MODEL: MARYLAND

Maryland is one example of a jurisdiction where a SRS has been applied to fund schools. In this instance the successful schools approach was used. The state implemented recommendations from the Thornton Commission, which suggested that state funding for its foundation program – the Basic Current Expense formula – be increased to reflect a base cost calculated in a 2001 successful schools study, which also considered the professional judgement approach (Augenblick 2001). The commission chose the successful schools approach as:

- the methodology established a rational link between the state's performance standards and the amount of state aid provided for education;
- it was based on actual spending in schools that are meeting state performance standards;
- it represented a middle ground between the least and most expensive estimates of Maryland's adequacy needs, as identified in other approaches; and
- the methodology used to derive the estimates had been upheld by the courts in at least one other state as a sound basis for calculating adequate education funding.

On 3 April 2002, the Maryland Senate passed a bill to adopt the Thornton Commission's finance systems reforms.

Source: Thornton 2002.

Criticisms have been levelled at the above methods used to examine adequacy, arguing that more resources for schooling do not necessarily lead to better outcomes for students. Further, the scientific rigour of the various analytical methods has also been brought into question. Instead, it is argued by critics that the focus should be shifted from adding resources to improving incentives for schools to utilise their existing funding more effectively (Costrell, Hanushek & Loeb 2008; Hanushek & Lindseth 2009). Despite this criticism, the various critics of adequacy analysis do not provide a feasible alternative method to advising governments on how much funding should be provided to schools, and how this funding should be allocated on the basis of student characteristics (Duncombe 2006).

Weighted student funding

A separate body of work in the USA has focussed not so much as on the concept of a SRS, but rather on what is called 'weighted student funding' (WSF). The objective of WSF is to achieve an equitable distribution of funding between schools on the basis of individual student characteristics. In essence, under WSF funding is able to 'follow' individual students irrespective of the government school attended.

A key criticism of WSF is that it does not consider what actual resourcing requirements may be. Accordingly, applying the NSRRS concept introduced in Chapter 2, the WSF is akin only to the 'loadings' element of the model. Application of the WSF model has been able to overcome historical anomalies in school resourcing, such as high SES schools receiving more funding than low SES schools by virtue of having more experienced, and thus costly, teachers.

The WSF approach has been applied in a number of USA school systems, including San Francisco and Oakland (see Table 4.1 for San Francisco example). However, the available evidence has not been able to identify significant change in school-level operations, such as staffing profiles as a result of introducing WSF (Chambers et al 2010).

Table 4.1

APPLICATION OF WEIGHTED STUDENT FUNDING IN SAN FRANCISCO: WEIGHTS

Grade	Base weight	English learners			Special education			
		Long-term non-redesignated	Beginning/intermediate (based on CELDT) ^a	Advanced/transition (based on CELDT) ^a	Low income ^b	Resource specialist program	Special day class non-severe	Special day class severe
K	1.33	-	0.0781	0.0605	0.09	0.0097	0.0179	0.0315
1-3	1.33	-	0.0781	0.0605	0.09	0.0097	0.0179	0.0315
4-5	1.00	-	0.0781	0.0605	0.09	0.0097	0.0179	0.0315
6-8	1.14	0.937	0.0937	0.0605	0.09	0.0097	0.0189	0.0315
9-12	1.19	0.937	0.207	0.0605	0.09	0.0097	0.0189	0.0315

Notes: ^a CELDT stands for the Comprehensive English Language Development Test taken by English learners and serves as the assessment that determines whether a student is considered English proficient. ^b Low income is defined by eligibility for the free or reduced-price lunch program.

Source: Chambers et al 2010

To illustrate how the San Francisco weights are applied, a first grade student from a low-income family who is also an 'advanced' English language learner would have a combined weight of 1.4805, calculated by:

$$\begin{aligned} & \text{Grade-specific weight (1.33) +} \\ & \text{Low income weight (0.09) +} \\ & \text{Advanced CELDT}^{\circ} \text{ weight (0.0605).} \end{aligned}$$

Accordingly, this student would generate revenues 48.05 per cent higher than the base for a fourth- or fifth-grade student.

Other countries

A detailed literature search has been undertaken to identify specific school funding approaches at work in school systems identified as being 'high performers', and to specifically identify whether a SRS (or similar model) has been applied in school funding. To examine this issue, details on school funding arrangements in a number of countries, including Canada, France, South Korea and Finland, has been sought. However, in most cases insufficient detail could be identified on specific school funding arrangements to provide clear insight to the current project.

Alberta, Canada

One jurisdiction where a high degree of information has been identified is the Province of Alberta in Canada (see Box 4.3).

⁹ California English Language Development Test

Box 4.3

FUNDING APPROACH IN ALBERTA, CANADA

Funding allocations are made in five categories:

- base instruction funding. This is a base level of funding based on the number of students in each school;
- additional funding for differential cost factors. This provides additional funding to schools for factors such as low SES, students with English as a second language (ESL), students with disability, school size, school location and a variety of other factors;
- targeted funding for provincial initiatives. This provides funding for specific purposes. Programs include Student Health Partnerships, Alberta Initiative for School Improvement and a Small Class Size program;
- other provincial support, providing other miscellaneous allowances; and
- capital funding, which is provided for the preservation of current school facilities or the construction of new school facilities.

Source: Alberta Education 2010.

The approach used by Alberta is similar to that applied by the Victorian Government Department of Education and Early Childhood Development in funding government schools.¹⁰ This sees a base level of funding tied to student numbers, with additional funding provided to meet costs associated with student and school characteristics. However, no evidence has been found in the Alberta case of the 'base' level of funding, as well as loadings, being aligned with educational goals and targets. Rather, this approach is focussed on providing an input-focussed resource allocation mechanism, rather than one tied to outputs.

Identification of specific information regarding school funding arrangements

As highlighted above, research examining international practice has been unable to identify sufficient detail surrounding school funding arrangements, and their basis, to draw strong conclusions. Drawing upon the Australian experience, it is likely that such information is not in the public domain, or at least not particularly accessible. Few Australian jurisdictions have details of their school funding arrangements in the public domain, let alone details of methodological underpinnings. This situation appears to also exist internationally.

4.4 Implications of past experience for NSRRS design

The analysis above of the past Australian and international experience with a SRS (or similar models) provides little in the way of guidance to consideration of the strategic options detailed in Chapter 5. Rather, this past work will be instructive for the development of specific methodologies for estimating a SRS. This is most relevant for the literature from the USA, where there has been considerable debate on the application of different methods.

¹⁰ See <http://www.education.vic.gov.au/management/srp/default.htm>

Limited international experience with the concept of a SRS is not an argument in itself against the concept. Australia has been at the forefront of innovation in many areas of reform of education and training, including financing. Most notable in this regard is the introduction of the Higher Education Contribution Scheme (HECS), now universally regarded as an efficient and equitable model for student contributions to the costs of higher education — a reform that is now in its third decade of application.

As detailed in section 4.2 there have been several major policy shifts in Australian Government schools funding policies. Despite these shifts, there is strong evidence that further reform is required to establish a more sustainable funding model linked to schooling outcomes, combined with a greater capacity to target public resources to learners with greatest needs.

Chapter 5

Strategic options in developing a National Schooling Recurrent Resource Standard

5.1 Introduction

This chapter identifies the strategic and preferred options for the design and development of a NSRRS which were developed and assessed over the course of the project. The options considered in this chapter represent a sub-set of the project research questions detailed in Appendix A, comprising aspects of:

- specification of a ‘student outcome standard’;
- specification of a NSRRS;
- costs to be met by a NSRRS;
- development and application of a NSRRS; and
- methods for estimating a NSRRS.

The overall approach taken in this report examining the feasibility of a NSRRS is that a ‘student outcome standard’ must first be articulated. This ‘student outcome standard’ represents the educational outcomes students are expected to attain from the process of schooling. Subsequently, the school-based activity required to achieve these educational outcomes underpin the estimation of the financial resources required in a NSRRS.

5.2 Specification of a ‘student outcome standard’

The first stage of developing a NSRRS is to identify what application of the standard is expected to achieve, and how achievement is to be measured. This notion has been adapted in this project through the concept of a ‘student outcome standard’, representing the level of service that a school is expected to provide.

The purpose of setting a student outcome standard for the purpose of a NSRRS is to ensure that similar schools meeting that standard can have their resourcing levels assessed for the purposes of estimating the NSRRS — not to fund all schools on the basis of those outcomes. Those schools identified as reaching the student outcome standard will be considered ‘reference schools’, with these schools providing the basis for estimating both the NSRRS and loadings.

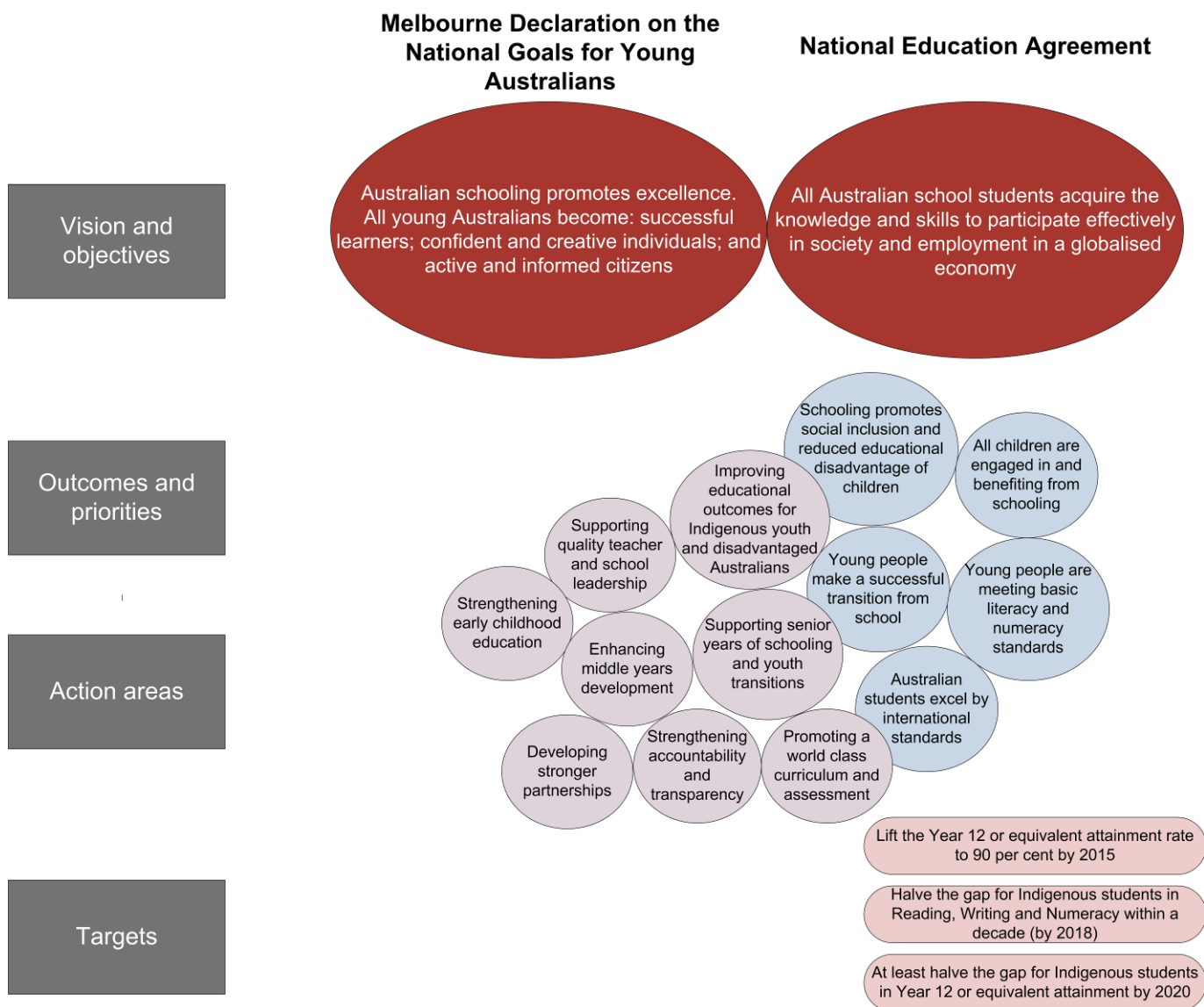
In the Australian school education context, guidance for the establishment of a ‘student outcome standard’ is provided by the overarching goals and targets contained in the:

- Melbourne Declaration on Educational Goals for Young Australians; and
- The NEA, and associated National Partnerships.

There is much overlap between key aspects of the Melbourne Declaration and the NEA. Arguably, the vision and objective of both documents are nearly identical, with outcomes and priorities contained within the NEA complementing the action areas of the Melbourne Declaration. These relationships are detailed in Figure 5.1.

Figure 5.1

NATIONAL POLICIES ASSOCIATED WITH IMPROVING SCHOOL EDUCATION IN AUSTRALIA



Note: Overlapping circles indicate where the NEA and Melbourne Declaration intersect.

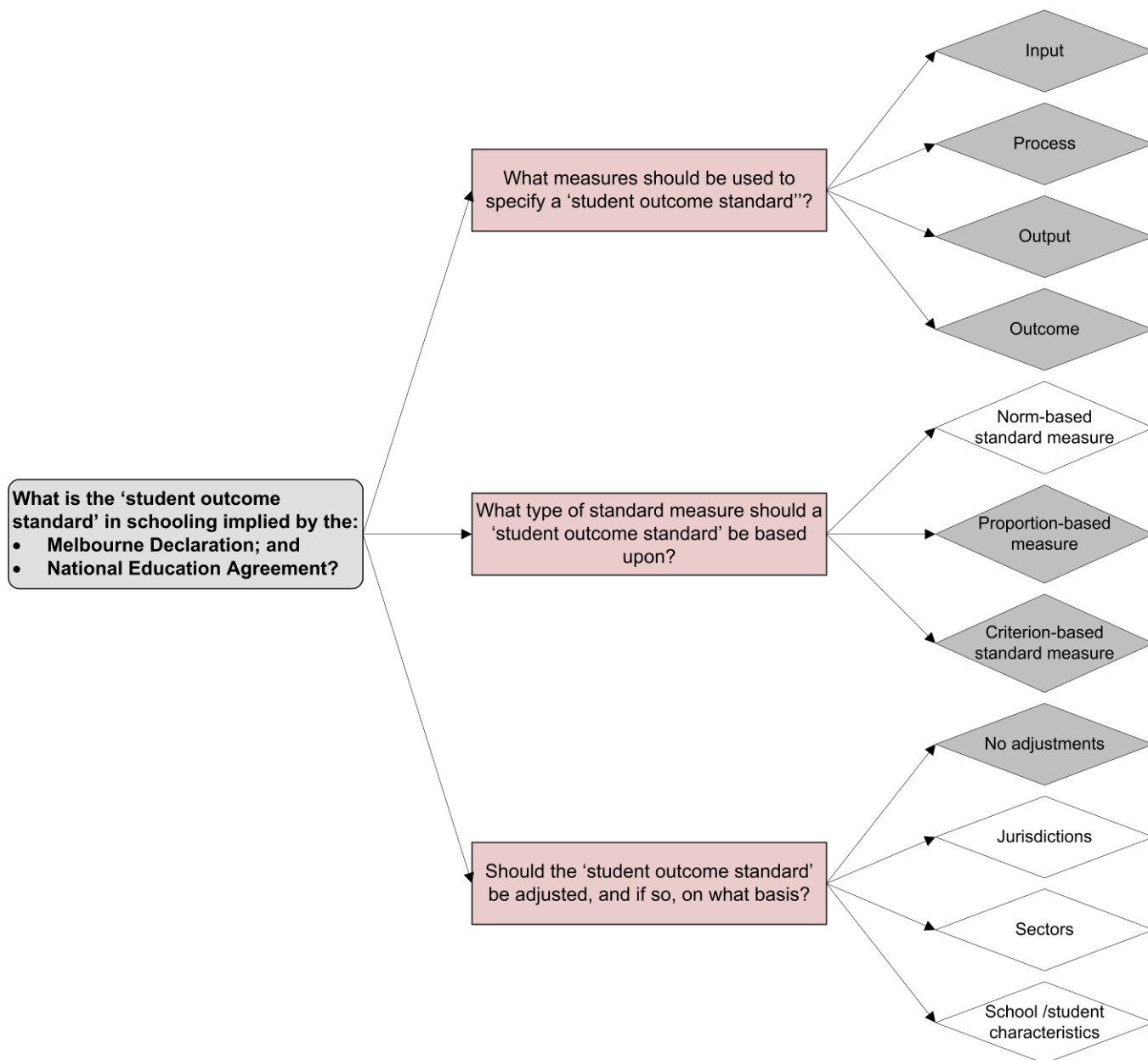
Source: MCEEDYA 2008; and COAG 2009; analysis by Allen Consulting Group.

As some of the goals and targets in these documents cannot be measured nationally on a consistent and reliable basis, it is important to distinguish between outcomes that a NSRRS will *support*, and those outcomes where a NSRRS directly contributes towards *achievement*. Further detail on this distinction is provided in Table 5.1 (on p. 43).

Key options associated with the specification of the ‘student outcome standard’ arising from both the Melbourne Declaration and NEA are detailed in Figure 5.2. These options relate to the ‘level’ and detail of outcome measures, as well as how the ‘student outcome standard’ is established.

Figure 5.2

SPECIFICATION OF STUDENT OUTCOME STANDARD: OPTIONS



Note: Dark grey shading in right hand side diamond indicates preferred option(s).

Source: Allen Consulting Group

What measures should be used to specify a ‘student outcome standard’?

There have been significant improvements in data available on school performance and student outcomes since the 1980s. This has included the development of:

- national educational goals and targets (the Melbourne Declaration and NEA);

- state and territory standards based assessment;
- My School publication of NAPLAN;
- targeted research in the area of funding and educational outcomes; and
- additional data collected by individual states and territories, such as parental satisfaction.

As is highlighted in Chapter 4, previous application of an 'implied' NSRRS in Australia was not tightly focussed on the achievement of such educational goals and targets.

Measures for specifying a 'student outcome standard' include input, process, output and outcome measures. However, as highlighted below, these measures are not mutually exclusive. For example, output and outcome measures may be supported in their achievement by input measures.

In the current public policy environment, there is a strong focus on the outputs and outcomes of public services, and the associated cost of services. At the same time in many services, such as health care, a strong focus is placed upon input and process standards. Such input and process standards may be directly part of a specified 'student outcome standard', or may be required on the basis of externally imposed standards.

An example of input and process standards being linked to outputs and outcomes as part of a 'student outcome standard' is the *National Quality Standard for Early Childhood Education and Care and School Age Care* (2009). This document details a range of quality standards aimed at achieving outputs and outcomes contained in the *National Partnership Agreement on Early Childhood Education*. Specified quality standards include items such as teacher to child ratios and teacher educational qualification requirements. These standards are aimed at achieving outcomes such as, 'by 2013, every child will have access to a pre-school program in the 12 months prior to full time schooling'.

Conversely, input and process-based performance standards may be achieved through being required to meet standards imposed by third parties. For example, Australian hospitals are required to meet the national accreditation standards of the Australian Commission on Safety and Quality in Health Care. Similarly, health care professionals are required to meet standards imposed by registration agencies and professional bodies, such as continuing professional development.

There has been significant movement in recent years in Australian schooling towards the imposition of a number of input and process-based 'standards of service' from a range of bodies, including the recent introduction of:

- National Professional Standards for Teachers; and
- the Australian Curriculum.

Separate to the requirements specified by these input and process-based standards, there is an array of outcome-based measures specified by the NEA. Ultimately, many of the performance measures contained in the NEA, and associated documentation, are derived from school-level data collection. The exceptions are population-based measures drawn from sampling, such as Australian performance in international tests, as well as the Program for International Student Assessment (PISA).

In this context, input and process-based standards, such as National Professional Standards for Teachers, can assist in achieving the outcome-based measures specified by the NEA.

Our examination of the feasibility of the NSRRS will also consider whether loadings should be made on the basis of factors such as SES. Therefore, it may be appropriate for the 'standards of service' to also consider such factors.

Most of the stakeholders consulted in technical discussions supported the use of a 'student outcome standard' that was output or outcome focussed. Outputs and outcomes are already being measured in most jurisdictions. Some jurisdictions have input-based resource standards, mainly based around staff to student ratios. In particular, stakeholders made the following comments:

- The service standard should not focus on educational achievement alone because this would not be in the spirit of the Melbourne Declaration.
- It will not be too long before it is possible to track individual student progress. This would make it possible to assess the effectiveness of additional funding going to specific types of students — for example, does additional funding for ESL help students 'close the gap' after a few years?
- Finland was also mentioned, where progress is already tracked for individual students. It was noted that this could be useful when assessing outcomes. In particular, it could show whether a school had helped individual students improve significantly (meaning a successful outcome), even if their absolute score might be relatively low (for example, in some cases success means bringing a low performing student up to average, rather than having all students perform excellently).

It is assumed, in the rest of this report, that a NSRRS will be predominantly outcome focussed.

Scale of measures

A related issue is whether a potential suite of measures (input, process, output or outcome) should have a narrow or broad focus. A narrow suite could only consider 'educational' measures (for example, literacy and numeracy). Alternatively, a much broader suite of measures could be used, including more subjective measures such as parental satisfaction.

Such subjective measures are considered important, but are likely to be difficult to 'standardise' between schools. Furthermore, the NEA targets are highly focussed upon measures of educational outcomes, and not subjective measures. While it is difficult to measure or calibrate the direct relationship between a resource level and educational outcomes, it is even more difficult for the broader and more subjective measures contained in the Melbourne Declaration.

For this reason a NSRRS is only directly related to *measurable* elements of the Melbourne Declaration and the NEA. In doing so, a NSRRS will help to achieve the broader outcomes of the Melbourne Declaration and the NEA. However, these broader measures should only be included in a 'student outcome standard' if consistent and reliable performance measures are available (either through national school-level data) for schools, which can then be used for the purpose of estimating the NSRRS and loadings.

Improvements in outcome data will occur over time, such as the national application of the proposed parent school satisfaction survey by the Australian Curriculum, Assessment, and Reporting Authority (to be launched in 2011), and the potential extension of post-school destination measures in the future. Furthermore, additional outcome measures will be supported by the National Professional Standards for Teachers and the Australian Curriculum.

In the future, nationally collected outcome measures could be extended to include: student progress against year or age benchmarks in specific subject areas; against learning outcomes for the Australian Curriculum; and parent, student and teacher satisfaction across Australia. However, this would require significant changes in assessment and reporting practices, and agreement between states and territories.

Validation of using student outcome standard to identify reference schools

As many of the abovementioned outcome measures are available at the school level, these measures could be analysed on a nationally consistent basis to validate outcomes from schools that meet national outcomes as derived from data sets such as NAPLAN results.

A validation process could involve analysis of a sample of reference schools. This analysis would assess whether school performance resulting in selection as a reference school is replicated when using other performance measures.

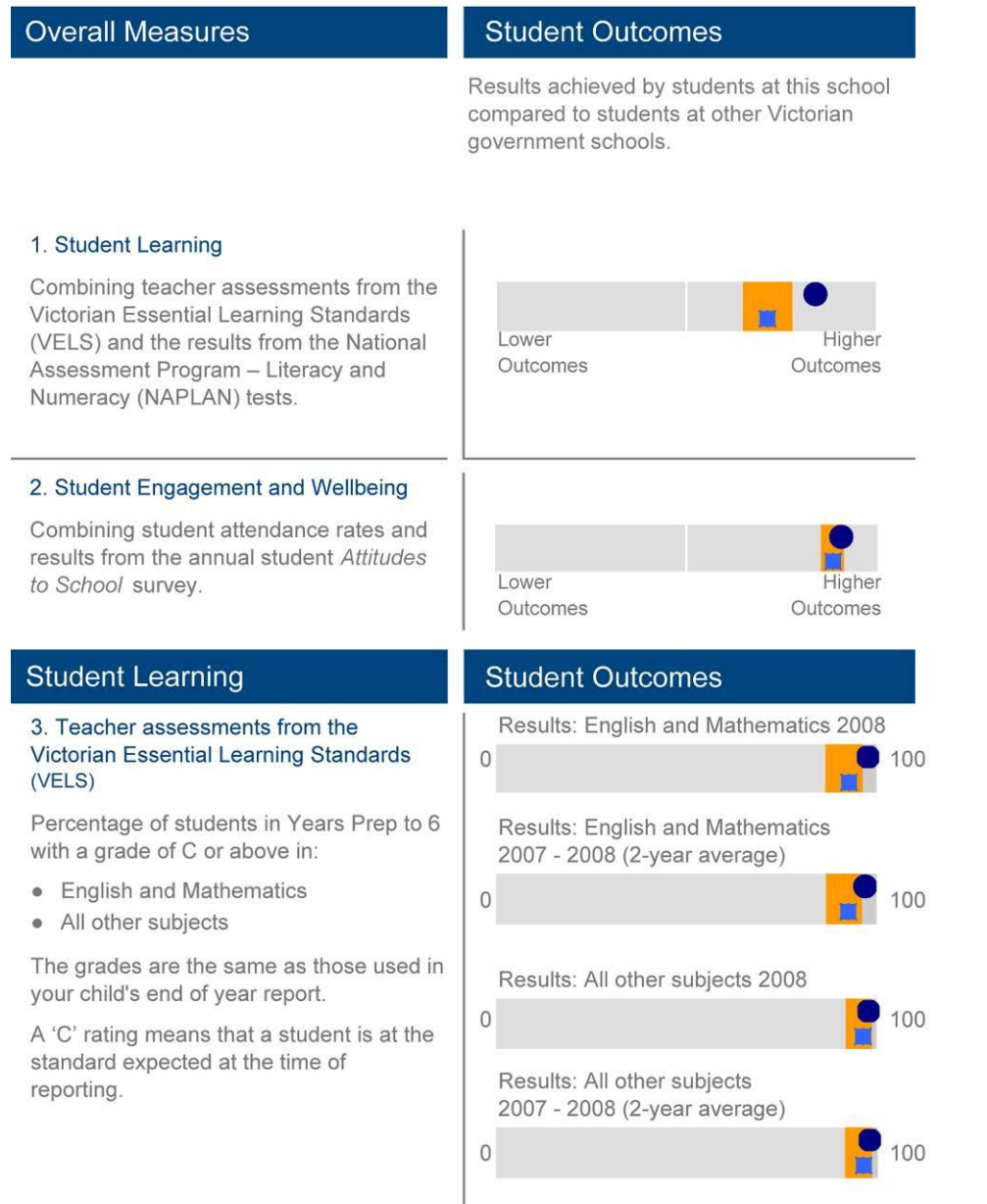
This validation process would apply professional judgement of school performance. Both this analysis and professional judgement at the individual school level would apply consistent national definitions and evaluation techniques, such as those implied by the Melbourne Declaration and the NEA.

School-level assessments could look at student performance across specific subject areas, student engagement levels, parental satisfaction levels, post school destinations, performance in senior secondary certificate assessments, and VET in school outcomes for students taking VET options.

Selected schools already publicly report some of this information. For example, a broad-ranging assessment and school reporting approach is applied by the Victorian Government to publicly report the performance of government schools (see Figure 5.3 and Figure 5.4). This reporting covers both student performance against the Victorian Essential Learning Standards, as well as student and parental satisfaction. Other measures such as student transition and attendance are also reported.

Figure 5.3

VICTORIAN GOVERNMENT SCHOOL PERFORMANCE SUMMARY: PRIMARY



Notes: Deidentified school reported above.

Symbols: ● = Result for this school, ■ = Median of all Victorian government schools. Orange area is the range of results for the middle 60 per cent of Victorian government schools

Source: VRQA 2009

Figure 5.4

VICTORIAN GOVERNMENT SCHOOL PERFORMANCE SUMMARY: SECONDARY

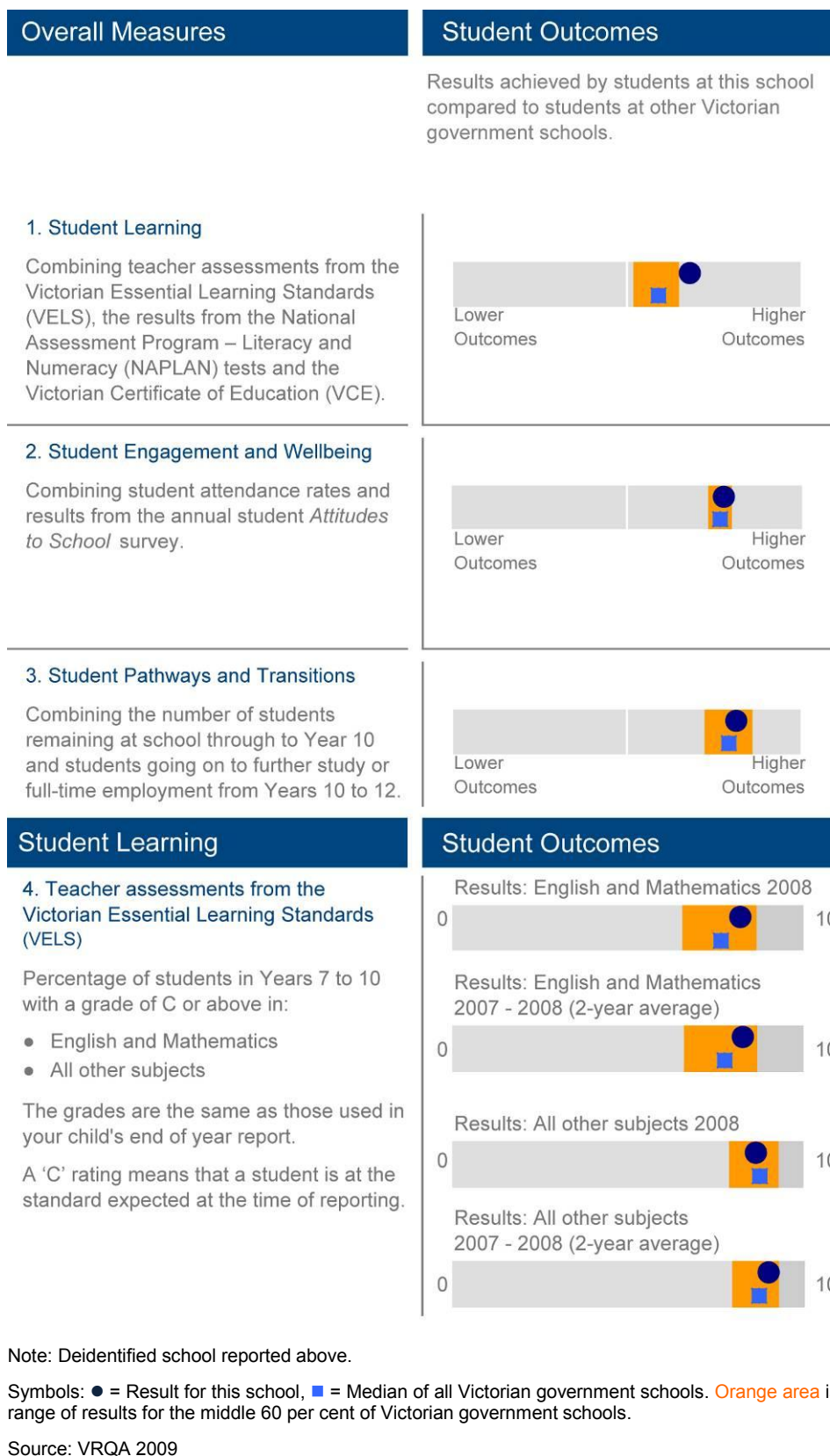
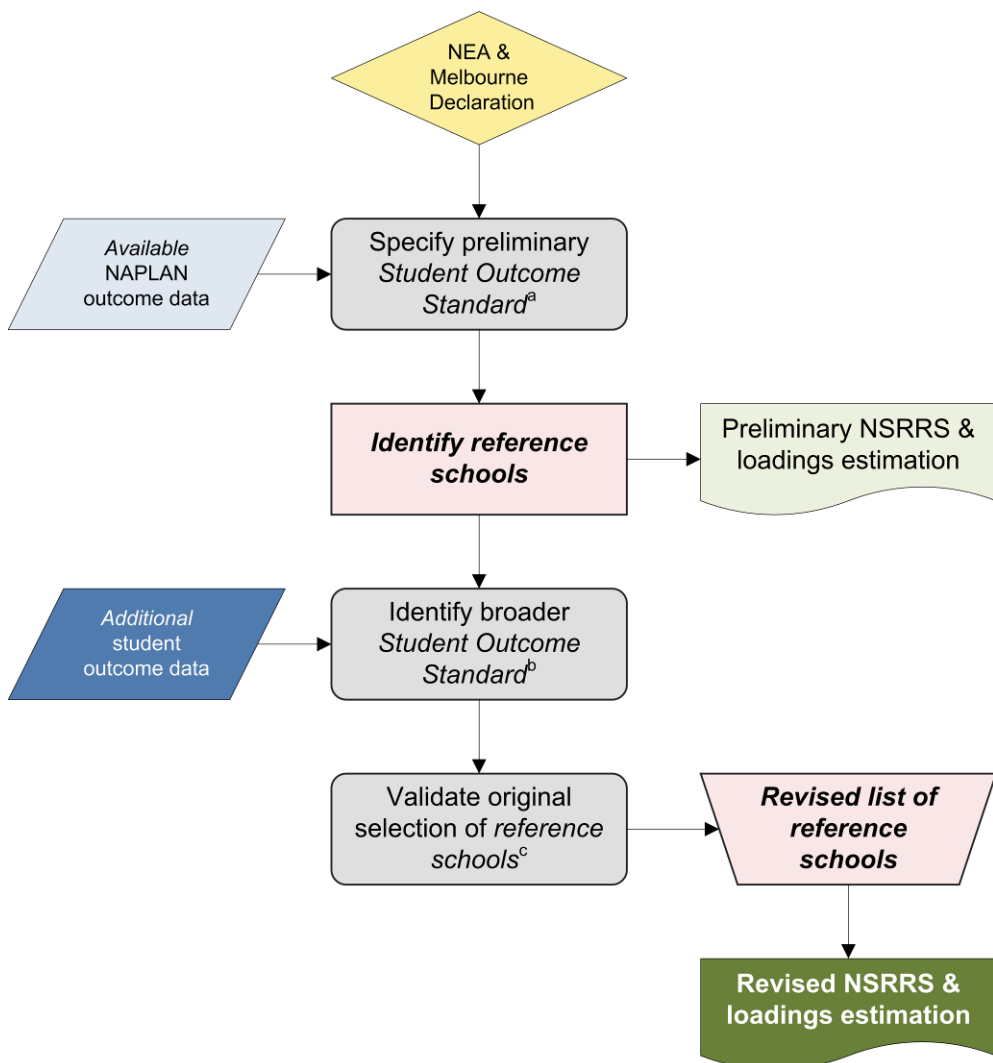


Figure 5.5 summarises the role of reference schools, the process by which these schools are selected, and the proposed subsequent validation process.

Figure 5.5

ROLE AND VALIDATION OF REFERENCE SCHOOLS



Notes: ^a This specification is based upon the currently nationally available schooling outcome data, from NAPLAN. ^b Broader student outcome standard, identified using additional measures. ^c Application of broader student outcome standard, in combination with professional judgement, to validate and revise original list of reference schools.

Source: Allen Consulting Group

Application of 'student outcome standard' for students with additional needs

One area for further consideration is how a 'student outcome standard' should be applied for students with additional needs and/or disability. At this time there is not a nationally agreed approach for identifying students with disability, along with additional educational support needs, but work is under way to develop one.¹¹

¹¹ See <http://www.deewr.gov.au/Schooling/Programs/Pages/swdtrial.aspx>

Preferred option

National outcomes should be assessed using nationally available and consistent data. Where data is not available from national data sets, school level data based on consistent national definitions and evaluation processes should be used to validate outcomes from national data sets.

What type of standard measure should a 'student outcome standard' be based upon?

The actual measurement of achievement of the 'student outcome standard' could be focussed on criterion-based measures, proportion-based measures, or norm-based measures:

- a criterion-based measure would be underpinned by an absolute measure of student achievement, such as literacy or numeracy skills being at a certain level. It would be quite feasible for such a standard to be adjusted over time as a way of 'driving up' student achievement.
- a proportion-based measure would incorporate measures such as school retention rates and post-school destination measures, to further inform the student outcome standard. Proportion-based measures are not necessarily focussed on educational outcomes and student proficiency per se, instead providing a wider range of measures for other school and student outcomes.
- in contrast, a norm-based measure would be underpinned by the notion of students being ranked relative to their peers. However, such a measure is problematic. As an example, at any one time 20 per cent of students will be performing in the bottom quintile relative to others. Furthermore, such a measure does not identify whether performance, in absolute terms, is improving.

Given the above, it is considered that a preferred method for measuring a 'student outcome standard' should be a criterion-based measure, as well as incorporating elements of a proportion-based measure (for example, retention and post-school destination rates).

Preferred option

The measure for a 'student outcome standard' should be based upon a criterion-based standard measure (or measures), while also incorporating proportion-based measures.

Should the 'student outcome standard' be adjusted, and if so, on what basis?

There is an overarching question in establishing a 'student outcome standard', as to whether this standard should be 'constant' for all students (and thus schools), and only vary on the basis of student year level or age. Alternatively, this standard could be adjusted in response to school and student characteristics correlated with reduced student performance, such as low socio-economic or Indigenous background.

Education research has identified a number of factors strongly related to student educational outcomes. SES is frequently identified as being strongly related to student educational achievement on various measures, ranging from school completion to proficiency. For example, research examining school performance in Australia has found that there are large differences in performance between students based on their social background. Specifically, students of lower SES perform less well at school than students of higher SES (Lamb et al 2004).

Similarly, research undertaken by the Australian Council for Educational Research for a MCEETYA Expert Working Group identified the following factors as being correlated with student outcomes:

- Indigenous status;
- language background other than English (LBOTE);
- location; and
- special educational needs (Masters et al 2008).

International research also suggests that education and social disadvantage are linked to measures of educational achievement. These include child poverty, parental education and income, parental attitudes and neighbourhood factors (Machin 2006).

The relationship between SES and educational outcomes is not clear cut, especially for individual students. Rather, SES is predictive of a range of intermediary factors that contribute to educational achievement, such as parental engagement and interest in a child's education, to time required to travel to school for students in remote locations.

Options for adjustments to the 'student outcome standard' include:

- a 'constant' student outcome standard, which all students and schools are expected to meet (adjustments only made for 'fixed' factors such as student year level);
- having a constant 'expected' student outcome standard, but adjusting the expectation of actual school performance against the standard;
- adjusting the student outcome standard on the basis of school and community characteristics (e.g. concentrated disadvantage or limited school curriculum offerings);
- adjustments to account for school performance relating to individual students, including SES, LBOTE, family background (i.e. level of education), Indigenous background and students with disability; or
- a combination of the above measures.

Adjustments to the 'student outcome standard' in response to the characteristics of students, schools, regions and the local community would take into account that certain schools have a more challenging task in meeting NEA goals and targets than others. Such challenges include a disengaged student and parent body (which itself is influenced by an array of socio-economic factors), or schools providing education to Indigenous students in very remote locations.

Conversely, the notion of making adjustments to the 'student outcome standard' may be seen as attempting to 'excuse' students not attaining such a standard. Such an approach could, in fact, entrench the notion that different social groups are expected to perform at different levels, instead of creating an expectation that *all* students should be striving to reach a certain proficiency level. As previously identified, the application of a standard to students with additional needs and/or disability is another important consideration in this context.

A majority of stakeholders in technical discussions suggested that if adjustments were to be made for varying schooling characteristics, they should be made at the student and/or school level, rather than at the sector or jurisdictional level.

One particular technical discussion with a stakeholder highlighted that parents and students attending independent schools expect a higher level of service for the fees paid. It is suggested that the 'level of service' and student outcomes expected by parents paying in excess of \$20,000 per year in school fees is likely to be somewhat higher than that implied by national goals and targets or where parents are paying low or minimal fees. This argument is supported by Adnett & Davies (2002).

Moreover, all parents are entitled to expect that students will achieve at the maximum of their capability, regardless of which school they attend. Excellence, continuous improvement, innovation and meeting differing student needs and aspirations should be common across all schools, supported by a NSRRS, but supplemented by additional programs, measures and local school characteristics.

Application of this concept is consistent with the definition of equity developed by the Review Panel, whereby 'differences in educational outcomes are not the result of differences in wealth, income, power or possessions' (Review of Funding for Schooling 2010). In other words, there is an overarching objective that in the future, student educational outcomes should not be *caused* by student SES per se. With this objective in mind, and noting that various measures of student SES are related to student achievement, it would be inappropriate for the student outcome standard to be adjusted.

Overall, it is considered that an output and outcome focussed 'student outcome standard' should be developed, aimed at meeting national goals and targets. A student outcome standard would be defined primarily in terms of a student proficiency level, dependent upon their year level or age. Such a outcome standard standard would be set at a level such that when a student completes their compulsory schooling, they are well placed to function in society. This could include having appropriate literacy, numeracy, reasoning and communication skills, to name a few. It could also include other measurable outcomes such as overall school retention and completion rates, and post-school destinations although as indicated earlier these measures are not currently available on a consistent national basis, and would need to be collected and assessed at the school level from schools meeting outcomes standards for validation purposes.

In theory, student achievement against age level performance benchmarks could also be used. However, these are currently not consistently assessed or reported within or across schools.

An example of the application of this concept is provided in Figure 5.6, combining both the concept of:

- the outcome standard attained by students (Y-axis); and
- factors that may limit student performance, particularly inherent student ability and capacity (X-axis).

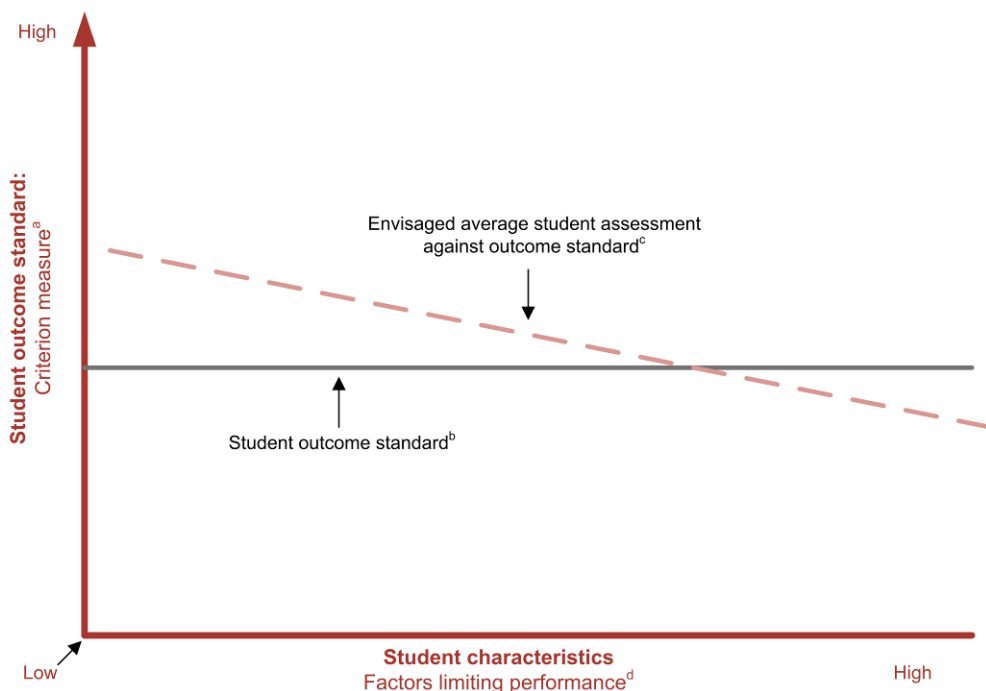
Figure 5.6 also details the application of a criterion-based student outcome standard, which is set at the same level for all students (grey solid line). However, it is envisaged that the performance of students against this standard will vary.

On average, students without disadvantage would be expected to perform above the standard, but some will also perform below it.

The specific settings of the student outcome standard itself are expected to be such that key facets of the NEA and Melbourne Declaration targets are met, as set out in Table 5.1 below.

Figure 5.6

SPECIFICATION OF A ‘STUDENT OUTCOME STANDARD’: CONCEPTUAL APPLICATION



Notes: ^a Criterion-based measure of student performance, such as literacy and numeracy level (for age). ^b Proficiency standard set at level required to effectively participate in society at completion of compulsory schooling (adjusted for year level or age). ^c Envisaged average student performance ('line of best fit'), ^d Student characteristics limiting performance, such as inherent ability. It is assumed that factors related to wealth, income, power or possessions are not significant factors influencing or limiting performance.

Source: Allen Consulting Group

Preferred option

*The 'student outcome standard' should **not** be adjusted on the basis of school and student characteristics. Further, the 'student outcome standard' should be set on the basis of both criterion-based standards and proportion-based measures.*

Achievement of the agreed 'student outcome standard' should result in achievement of key goals and targets contained in the Melbourne Declaration and NEA. This will require school level data collection and analysis based on consistent national outcomes and evaluation processes.

Relationship between a 'student outcome standard' and national agreements

In applying the methodology outlined above, it is possible to align the goals of the Melbourne Declaration and NEA, and the relationship with the student outcome standards featured in a NSRRS based on the analysis outlined above, as shown in Table 5.1.

Table 5.1

LINKING THE MELBOURNE DECLARATION AND THE NEA TO A STUDENT OUTCOME STANDARD AND A NSRRS

Area/objective	Role of NSRRS	
	Supports ^a	Achieves ^b
Melbourne Declaration		
Australian schooling promotes equity and excellence.	✓	
All young Australians become: successful learners; confident and creative individuals; and active and informed citizens.	✓	
Action areas:		
• developing stronger partnerships;		
• supporting quality teacher and school leadership;	✓	
• strengthening early childhood education;		
• enhancing middle years development;	✓	
• supporting senior years of schooling and youth transitions;	✓	
• promoting a world class curriculum and assessment;		
• improving educational outcomes for Indigenous youth and disadvantaged Australians, especially those from low SES; and		✓
• strengthening accountability and transparency.		✓
National Education Agreement		
All Australian school students acquire the knowledge and skills to participate effectively in society and employment in a globalised economy.	✓	
Outcomes:		
• all children are engaged in and benefiting from schooling;	✓	
• young people are meeting basic literacy and numeracy standards, and overall levels of literacy and numeracy achievement are improving;		✓
• Australian students excel by international standards;	✓	
• schooling promotes the social inclusion and reduces the educational disadvantage of children, especially Indigenous children; and	✓	
• young people make a successful transition from school to work and further study.	✓	
Targets:		
• lift the Year 12 or equivalent attainment rate to 90 per cent by 2020;		✓
• halve the gap for Indigenous students in reading, writing and numeracy within a decade; and		✓
• at least halve the gap for Indigenous students in Year 12 or equivalent attainment rates by 2020.		✓

Note: ^a 'Supports' indicates that a NSRRS will support the achievement of this goal. ^b 'Achieves' indicates that a NSRRS will contribute directly to the achievement of this goal.

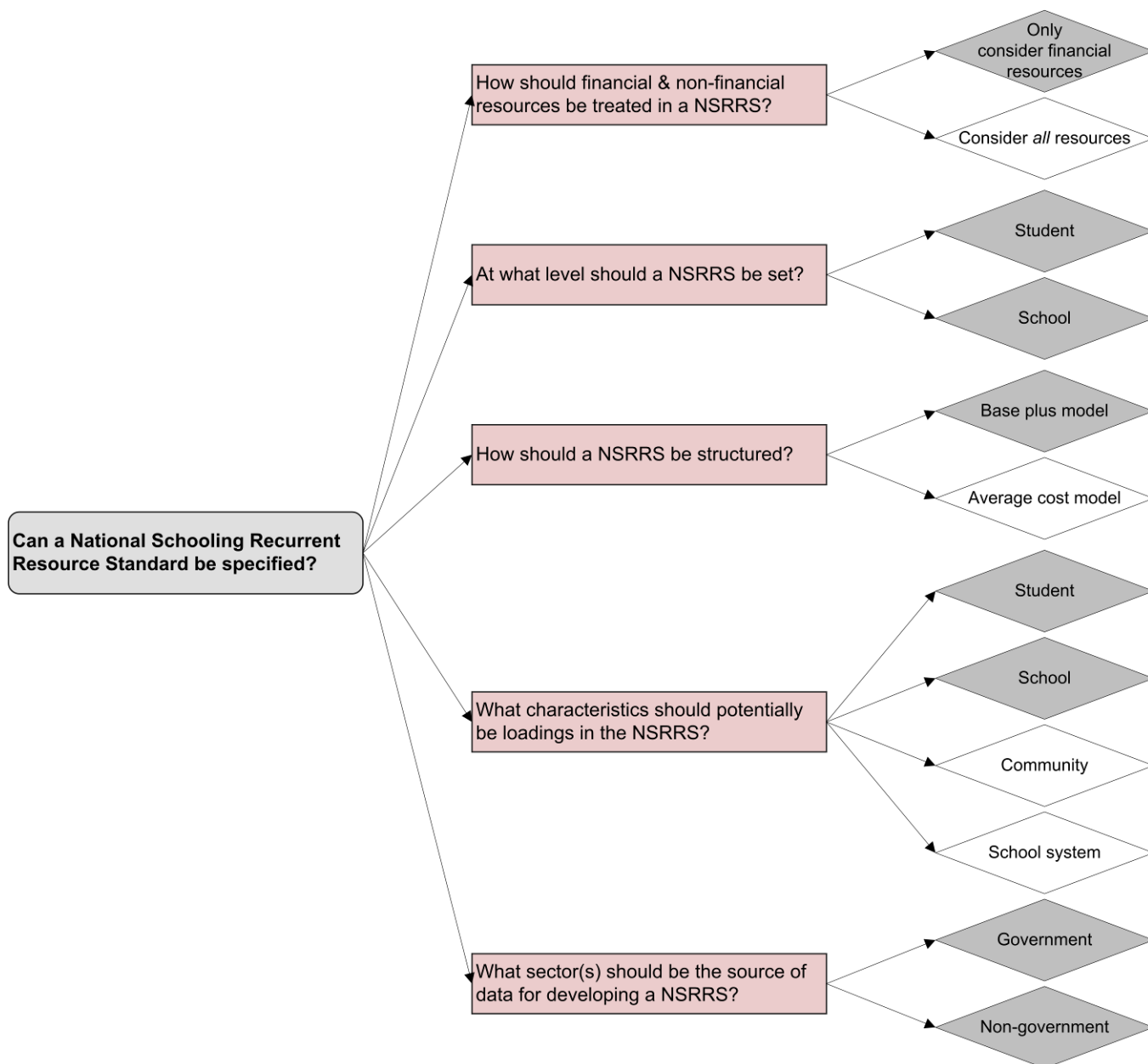
Source: MCEETYA 2008; and COAG 2009; analysis by Allen Consulting Group

5.3 Specification of a NSRRS

There are a number of strategic options related to the specification of a NSRRS itself. These relate to the scope of resources contained within the NSRRS, the level at which the NSRRS is specified, the basis for applying loadings to the NSRRS, and identification of the school sectors that should be the source of data for estimating the NSRRS (see Figure 5.7).

Figure 5.7

SPECIFICATION OF A NSRRS: OPTIONS



Note: Dark grey shading indicates preferred option(s).

Source: Allen Consulting Group.

How should financial and non-financial resources be treated in a NSRRS?

The concept of a NSRRS first raises the question of what is meant by ‘resources’. Most work in school finance defines resources purely as funding from all sources. However, it is unclear whether this ‘narrow’ definition of resources is sufficient, particularly if resourcing is to be considered an important factor in the provision of school education, and thus the achievement of educational goals and targets.

The vast majority of education, economics and outcomes literature finds that funding is ‘necessary but not sufficient’ in explaining differences in school performance (Hanushek 1997). Rather, it is a case of how funding is deployed, rather than funding levels alone, which itself is a function of a range of factors, such as the quality of school leadership, school accountability arrangements, and flexibility in internal school resource allocation. At the same time, a school requires a minimum level of resources to function, in terms of hiring teachers, and providing classrooms and materials.

There is thus a question of whether the definition of ‘resource’ within NSRRS should:

- be limited to funding (i.e. money); or
- should also consider the resources that funding is able to ‘purchase’, and the subsequent deployment of these resources. More simply, the concept of ‘resources’ could be taken to incorporate the quality of a resource and how that resource is used, as well as the notion that some of these resources cannot be bought. These issues are discussed in further detail below.

This broader concept of resources is outlined in Figure 5.8, which identifies that funding is used to purchase a range of resources that are then used to provide schooling. Adapted from work by Professor W. Norton Grubb of the University of California, Berkeley, a wide definition of resources can be applied:

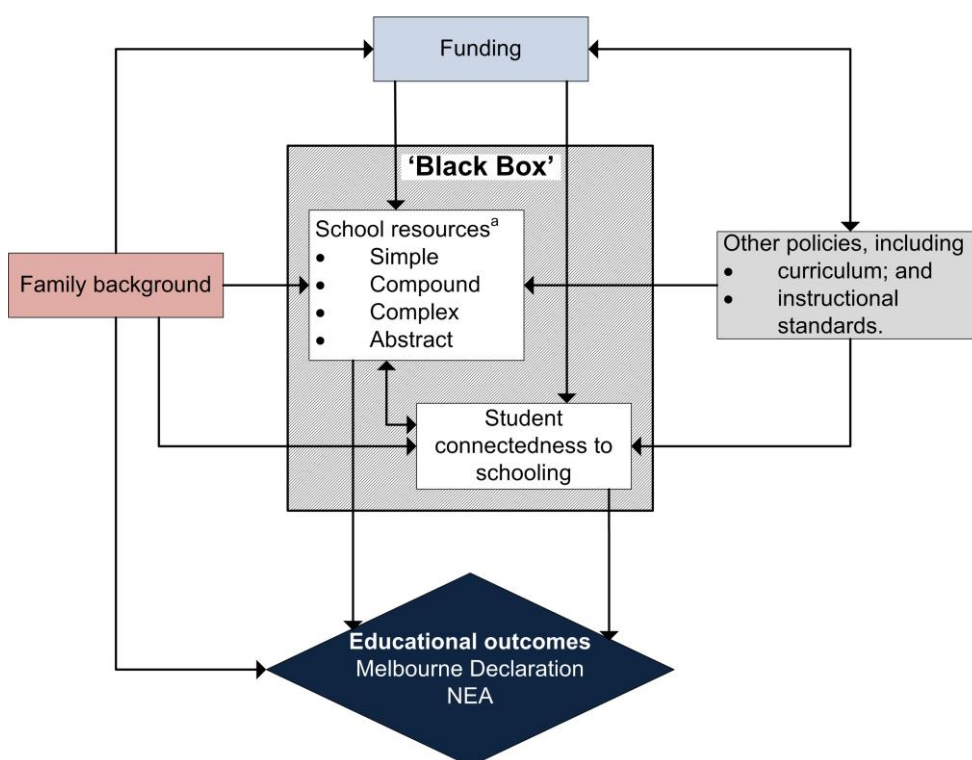
- *simple* resources are components of expenditure per student, such as class size or teacher salaries;
- *compound* resources represent factors influencing the utilisation of simple resources;
 - Take class size reduction as an example: to reduce class size, appropriate resources may include keeping teacher quality constant, adequate facilities, and appropriate staff development — all in order to achieve the goal of better outcomes from reduced class sizes.
- *complex* resources are difficult to introduce into a school, and include factors such as school leadership, innovative teaching practice, and how teachers use classroom time;
- *abstract* resources are hard to detect and measure, including school climate and school management approaches employed by the principal.

Grubb (2011) highlights a number of reasons for defining resources in this way. The first is that it forces systems to recognise a greater range of resources, such as the quality of teaching, and a larger number of factors that may impact on student outcomes. Compound, complex and abstract resources may also be unequally distributed, compared to simple resources, and many of these resources cannot be bought.

Funding only contributes to what Grubb calls *simple resources*, such as per student expenditure. However, Grubb highlights the importance of how these simple resources are deployed to acquire and develop compound, complex and abstract resources.

Figure 5.8

HOW RESOURCES IMPACT UPON EDUCATIONAL OUTCOMES



Source: Adapted from Grubb 2009, p. 47.

The challenge in applying a broad concept of resources in a NSRRS lies both in measurement and application. The concepts of *complex* and *abstract* resources developed by Grubb, although intuitively important to schooling performance, are also more difficult to measure than funding and very difficult to cost at a national level. In the future as data and measurement continues to improve, more of these non-financial, complex and abstract resources may be able to be measured and applied to a NSRRS. Accordingly, consideration should be given to developing and implementing data measurement and collection activities to collate this type of data.

Conversely, limiting the concept of a NSRRS solely to funding risks masking that it is how funding is used, and the quality of this use, that aids in achieving particular educational outcomes. This issue also relates to how a NSRRS is applied, and more importantly, how the resultant financial resources received by a school are deployed. In this context, a number of existing 'quality' mechanisms should support the implementation of a NSRRS such as the Australian Curriculum, National Teaching Professional Standards or other policy and program interventions.

Preferred option

The NSRRS should only consider financial resources, defined as all financial resources deployed by a school in the provision of a school education to students.¹²

Outside of the NSRRS, reporting and accountability arrangements should seek to identify how financial resources are deployed within schools, with a view to assessing how effectively schools use resources.

Deployment of a NSRRS should link to other policy interventions, such as raising the quality of teaching.

At what level should a NSRRS be set?

There are two broad options for the level at which the NSRRS is set:

- at the individual student level; or
- at the individual school level.

Intuitively, the NSRRS should be set at the level (or levels) where costs drivers reside. For example, it is considered that the number of students in a school is a key driver of costs. However, in the case of a homogenous group of students, this cost driver can be met through funding provided at the school level. School level funding is also able to accommodate factors such as cost differences associated with the year level of students.

In the school context, it may be feasible for the majority of funding levels to be driven at the individual student cost level. However, such an approach would fail to take into account the cost impact associated with the nature of the student body. For example, a point made in a discussion with school funding researchers is that costs per student do not necessarily grow linearly if there are concentrated levels of disadvantage. Recent analysis by the New South Wales Department of Education and Training (NSW DET) has examined the significance of both an individual student's SES and school-level SES. This analysis found there is a not only a strong linkage between individual student SES and performance, but also the concentration of disadvantage at the school level.

¹² The specific scope of financial resources (e.g. whether it includes the application of resources for capital expenditure), is examined in section 5.4.

Concentration of disadvantage at the school level was shown to have a powerful additional impact on student performance (NSW DET 2011). This is particularly the case when there may be multiple challenges within a school, such as low SES alongside poor English fluency or remoteness. Similar findings have also been made in analysis of Australia's participation in the PISA (see Box 5.1), highlighting the role of both student and school characteristics, and the combined impact of both.

Box 5.1

INDIVIDUAL STUDENT AND SCHOOL CHARACTERISTICS

It is important to recognise the effect on student performance that an individual student's family background or SES has on their performance, and the peer effect of the SES of the school itself.

In analysis of Australian results of PISA 2009, when student level SES was taken into account, students in Catholic and independent schools still performed at a significantly higher level than students in government schools (although differences between these school sectors were reduced). When school-level SES (i.e. the 'peer effect' or concentrated disadvantage) was taken into account, the advantage of schools in the Catholic and independent school sectors disappeared — with no significant differences between achievement levels in different school sectors.

In summary, students in the Catholic or independent school sectors bring with them an advantage from their SES that is not as strongly characteristic of students in the government school sector.

Source: Thomson et al 2009.

It is considered that the number of students in a school is a key factor in per student costs. There are significant economies of scale in schools, due to high fixed costs. For example, in a secondary school, a number of staff are required to provide curriculum coverage, even if there are only 10 students in a year. Accordingly, it may be appropriate for a NSRRS to consider the provision of funding for these fixed costs, independent of the number of students attending a school.

In addition, many schools service specific communities with particular needs and interests (schools in Indigenous communities, remote localities or with a specific focus, such as VET and the arts or those schools dealing with disengaged learners). Even if the focus of a NSRRS were on the achievement of educational outcomes for individual students, some connection between the resourcing standard and the achievement of a school's broader organisational role and goals would seem important.

One stakeholder suggested distributing money by school system rather than through individual schools or students. This allows some of the fixed costs to be averaged out between schools. The amount of funding in this instance is likely to be a better approximation of true cost as opposed to funding being distributed to individual schools. However, such an approach is not applicable for independent schools as they are not part of a system.

In summary, a NSRRS should be developed at the individual student level, and then 'totalled up' for application at the school level.

Preferred option

A NSRRS should incorporate a level of resourcing that over time would provide students with the opportunity to meet agreed national educational outcomes, provide schools with the capacity to improve student outcomes, and have regard for the needs and capabilities of their student population.

In this sense, a NSRRS should incorporate both student and school level resourcing components.

How should a NSRRS be structured?

There are two potential approaches for the broad structuring:

- an average cost model, with a ‘flat per student rate’ for *all* students in *all* schools; or
- a base plus model, with a base per student amount, which can be adjusted in response to student and school characteristics.

The second option is displayed in Figure 5.9.A with loadings applied to the NSRRS made on the basis of student need. It should be noted that the actual loadings should be tied to the cost of programs and other activities that may contribute towards students meeting the specified educational outcomes.

An average cost model would be much simpler to develop and understand than a base plus model. However, there are a range of issues associated with an average cost model that potentially make it a less attractive option.

In particular, an average cost model would not differentiate between students and schools of different characteristics — the exception may be between primary and secondary schools. Thus, characteristics of systems, schools and students that may generate differences in the cost of students meeting the agreed educational outcome standards would be omitted. This would be an issue because there is significant variation in characteristics. In a sense, the average cost model approach would be akin to the application of the AGSRC, where there is a flat ‘rate’ for all schools (differentiated between primary and secondary school students).

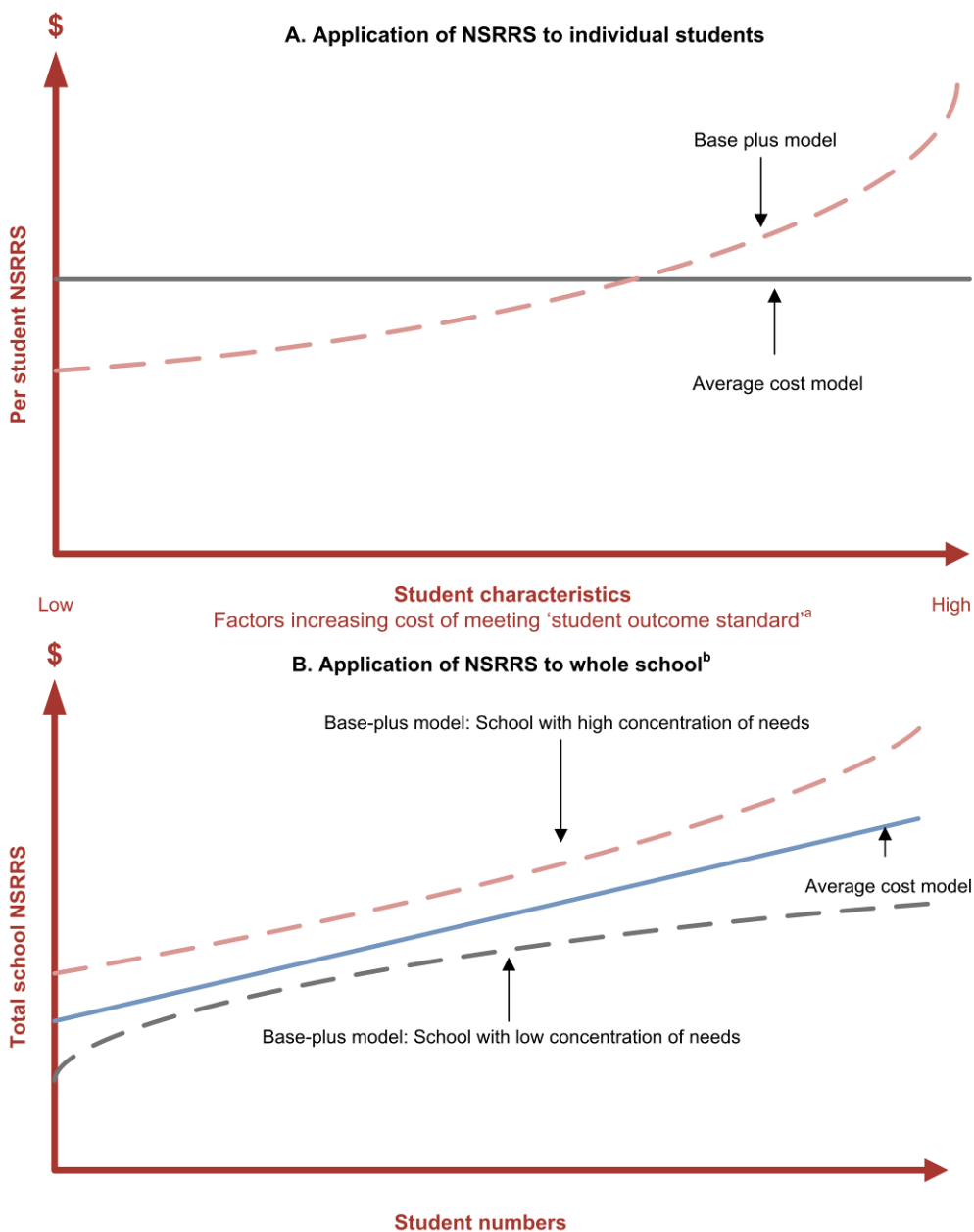
In contrast, a base plus model would seek to target need through estimating a base student funding rate that is applied to all schools, with loadings then applied on the basis of characteristics of students and the school itself. Such an approach would result in the ‘base’ rate of the NSRRS being less than that estimated using an ‘average’ cost approach.

Preferred option

The NSRRS should follow a ‘base plus’ model, with loadings tied to the additional cost of students meeting educational standards.

Figure 5.9

STRUCTURE OF A NSRRS: OPTIONS



Note: ^a Legitimate factors identified as affecting cost of achieving student outcome standard. ^b Total amount of funding to a school, based on aggregation of individual student amounts.

Source: Allen Consulting Group.

What characteristics should loadings apply to?

The difference in the level of the NSRRS estimated for individual schools, based on factors that affect the cost of achieving a specified outcome, is a key variable in the development of the NSRRS.

In all states and territories, funding loadings of varying size are applied based on a range of factors including student SES, remoteness (often linked to school size), LBOTE, and stage of schooling. Furthermore, an individual community may also have significant cost implications independent of those related to student or school characteristics. These same factors are often related to the achievement of student outcome standards themselves.

School system characteristics may also generate significant differences in resource requirements, such as wage rates and class size policy.

During technical discussions with stakeholders there was consensus that student, school and community characteristics need to be taken into account in a NSRRS, as well as considering variations in the cost of service delivery between states and territories (that may require application of a loading).

It is considered that loadings applied to a NSRRS should be made based on student and school characteristics that affect the cost of achieving 'student outcome standards'. However, there are two key considerations relating to loadings:

- to what extent should loadings be applied?
- how should loadings be accounted for?

Under past Australian Government school resourcing arrangements for non-government schools, schools with levels of 'like' disadvantage were grouped into categories of need, with each category defining a level of additional funding (in addition to base funding) (see Chapter 4 for additional information). Similarly, current arrangements for Australian Government resourcing of non-government schools use Australian Bureau of Statistics census data (based on the Census Collection District where students reside) to calculate an SES score, which is tied to an AGSRC resource level.¹³

Both current and past Australian Government school resourcing arrangements are considered relatively simplistic when compared to approaches used in other public service contexts such as acute health care. In sophisticated acute health care funding models, a wide range of factors are used to calculate funding rates, such as age, procedures and morbidity (Smith 2007).

Within this context, it is considered that the development of a NSRRS should examine the appropriateness of loadings applied to the NSRRS being made on a range of student, school and community factors. These *could* include:

- student characteristics, such as:
 - year level (potentially at a higher resolution than primary and secondary);
 - SES (e.g. parental occupation or education);
 - LBOTE, particularly students in high need such as refugees;
 - Indigenous background; and
 - students with disability, developmental delay or additional needs.
- school characteristics, such as:

¹³ Between 13.7 and 70 per cent of AGSRC.

- school location (e.g. remoteness) (see Box 5.4);
- school size (e.g. small schools generally have diseconomies of scale, in terms of higher per student costs);
- concentrated disadvantage;
- school curriculum offerings (e.g. vocational programs are more costly than ‘traditional’ academic programs); and
- mode of education delivery (e.g. schools providing distance education).
- community characteristics, such as:
 - local employment situation (e.g. prospects for future employment affecting both student motivation and post-school destinations); and
 - financial and in-kind community support provided to the school (e.g. additional support from parents, local business).
- school system characteristics (varying between states and territories), such as:
 - wage costs (e.g. different Enterprise Bargaining Agreements between states and territories); and
 - school system policies, such as class size in lower primary year levels.

The connection between characteristics, funding, and outcomes is complex, and the extent to which a NSRRS should be adjusted based on student, school, and community characteristics would be dependent on additional factors. For example, particular language backgrounds are likely to require more costly assistance than others. Educational and associated expenditure needs arising from disability are also highly variable. For example, costs associated with students with disability are largely driven by the severity of a student's disability — a student with a mild disability may only require assistance with certain activities. In contrast a student with a profound disability may require full-time assistance from a teacher's aid.

At this time, there is no nationally consistent data on students with disability to allow this to occur. However, it is understood that this issue is currently the topic of national discussions, with a trial under way to develop a national model for identifying students with disability.¹⁴ Furthermore, there is a need to identify the range of educational supports, and their cost, for students with different forms of disability.

Performance may also vary based on year level or skill, such as, between primary and secondary, or between literacy and numeracy. These findings are supported by recent analysis undertaken by the New South Wales Department of Education and Training concerning Australian school funding arrangements (NSW DET 2011).

Loadings could also consider key intervention points and the stage of schooling. For example, loadings may be best targeted to children with additional needs at a certain year levels, such as the first years of school, and not across all year levels. However, the practicalities of adjusting funding at key intervention points would be complex, and could only be applied where evidence of key intervention points and associated costs was strong.

¹⁴ See <http://www.deewr.gov.au/Schooling/Programs/Pages/swdtrial.aspx>

It should also be acknowledged that loadings applied to financial resources *alone* will not aid in increasing performance among disadvantaged students in schools. Rather it may be appropriate that loadings be tied to the cost of evidence-based programs identified as being capable of assisting in the achievement of educational outcome standards.

Box 5.2

SPECIFIC STAKEHOLDER VIEWS ON APPLYING LOADINGS TO A NSRRS

- Several stakeholders mentioned students with disability as needing additional resources. In this context differences were also noted between sectors. For example, government schools are required to 'take all comers' which means they end up with a larger proportion of students with special needs. It was also noted that generally, Catholic schools seek to 'take all comers' but do not necessarily receive the same level of support for students with disability as government schools, thus limiting the ability of Catholic schools to achieve this objective.
- Stakeholders mentioned that 'VET in Schools' would require specific attention due to its cost structure, which differs greatly from the ordinary cost structure of secondary schooling.
- Due to the composition of schools differing between states (e.g. Year 7 as part of primary school in Queensland, differences in ages for compulsory schooling), an allowance may need to be made for the state in which a school is located.
- Stakeholders questioned how differences in curriculum between schools and states would be taken into account, given that the cost of schooling depends on the curriculum. It was suggested that defining a resource standard would be simplified greatly under a national curriculum because that would improve comparability between states and schools.
- Other issues identified by stakeholders included: remoteness of schools and the concentration of disadvantage in schools.

Source: Stakeholder consultations

Applying loadings to a NSRRS

It is considered that each of the above student and school characteristics should be considered in development of the NSRRS, subject to data availability. In particular, a key requirement for the estimation and subsequent application of loadings in conjunction with the NSRRS is that sufficient reference schools can be identified covering a range of student and school characteristics, such as low SES students and remote location. In the absence of there being reference schools with these characteristics, alternative methods for estimating loadings will be required. This could include, for example, estimating loadings on the basis of the cost of specific programs targeted to certain groups that over time have the potential to improve student achievement.

The application of loadings should be policy neutral. This means that loadings should not be influenced by policy differences between jurisdictions. This is the approach taken by the Australian Government Commonwealth Grants Commission in the calculation of relativities for application in distributing Goods and Services Tax revenue between jurisdictions. In the context of schooling, policy differences could include wage agreements and class size policies. Application of each of these policy factors as a loading when applying the NSRRS could lead to significant differences in the total resource estimate for similar schools located in different jurisdictions.

The incorporation of loadings for various measures of need is frequently included in funding models, both for schooling and other services. For example the Schools Resourcing Taskforce (2005) examined additional per student resourcing for various measures of need. Methods used in the Schools Resourcing Taskforce report to calculate per student additional resourcing need are described in Box 5.3.

Box 5.3

RESOURCING NEED — SCHOOLS RESOURCING TASKFORCE (2005)

Student related resourcing (in addition to the base cost of schooling) was considered by the Schools Resourcing Taskforce.

Three types of student related factors were considered: low SES, ESL, and Indigenous background. Approximately 12 per cent of primary school students, and 15 per cent of secondary school students were identified as being eligible for this additional 'student related factor' funding.

Costs were studied as follows.

- For each category, an estimate was made of the level of additional resources (in addition to current expenditure) needed to attain the specified education effectiveness goal.
- A profile was then developed of the type of resources (such as teacher time, professional development, administration, materials and equipment) required by schools in order to meet the future additional resourcing needs generated by each category of student related need.

The following additional per student costs were calculated for primary and secondary students, including low SES, ESL and Indigenous factors.

Students	School focussed initiatives	Target group initiatives	Individual initiatives
Primary	\$247	\$1,017	\$4,641
Secondary	\$265	\$979	\$5,304

Individual initiatives included reading recovery.

Targeted group initiatives included provisions for identified groups, such as ESL classes.

Schools focussed initiatives looked at whole school provisions (for example, the priority schools funding program).

From these three categories, an average per student cost was calculated to inform the additional resourcing need for assisting all students to attain the *National Goals for Schooling*.

Source: Schools Resourcing Taskforce Secretariat 2005.

However, some states or territories face far higher average costs in all elements of schooling and far greater rates of disadvantage, in comparison to any other state or territory. Box 5.4 describes a number of additional costs, also impact upon school funding in rural, remote and very remote areas.

Box 5.4

ADDITIONAL COSTS OF DELIVERY IN RURAL, REMOTE AND VERY REMOTE AREAS

Costs in delivering schooling in rural, remote and very remote areas, among disadvantaged populations, and to populations with varying cultural practices (such as Indigenous), are often far greater than in a metropolitan school environment. One such example is schooling in the twenty Northern Territory Growth Towns. Additional indirect costs in these settings include (but are not limited to):

- higher cost of teacher recruitment;
- higher teacher wages for working in remote communities;
- teacher travel allowances to return home;
- costs of additional leave provisions to attract teachers to remote areas;
- professional support networks and welfare provisions for teachers working in challenging circumstances;
- significantly higher cost of capital; and
- the cost of providing adequate housing for staff in these communities.

It is important to consider, first, whether these costs should be incorporated within a NSRRS, or treated outside of a NSRRS; and second, if these costs are included, how and to what extent should they be incorporated?

Source: Stakeholder consultation

The related issue of the materiality threshold for potential loadings is considered in section 5.5. Where possible, it is preferred that the application of loadings to a NSRRS be made where funding can be tied to student and school outcomes.

Preferred option

Student and school characteristics should be considered in the development of loadings to be applied to the NSRRS.

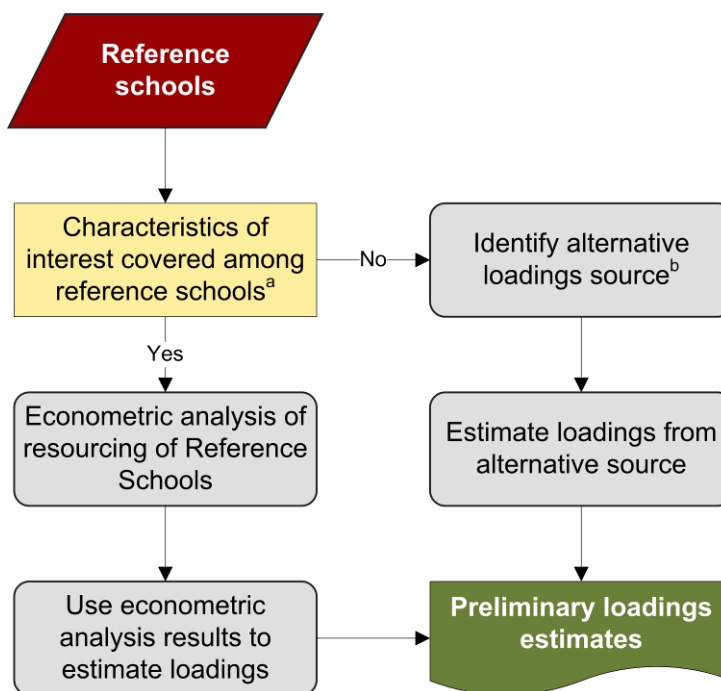
Reference schools and the estimation of loadings

The estimation of loadings, to be applied in combination with the NSRRS, will in the first instance be dependent upon reference schools (see Figure 5.10). In particular, it is envisaged that loadings will be estimated using econometric analysis of reference schools, financial and other data. For example, it is anticipated that loadings can be generated relatively straightforwardly for characteristics such as school size and location.

However, there is a possibility that insufficient reference schools with certain characteristics, such as schools serving a low SES student population, will be identified to enable estimation of loadings. In these circumstances, it will be necessary to identify loadings using alternative means. The most promising approach in this regard would be identifying programs, and other school-based activities, found to be effective in improving student performance to a level comparable to that represented by the student outcome standard. Following identification of specific programs and activities, it would then be necessary to estimate the cost of these programs, and thus the appropriate loading.

Figure 5.10

REFERENCE SCHOOLS AND THE ESTIMATION OF LOADINGS



Notes: ^a Characteristics of particular interest include low SES schools, school size, location, and specific student characteristics (e.g. Indigenous, and language background other than English) ^b Alternative sources of loadings could be that implied by the cost of targeted programs aimed at improving student outcomes among target populations (e.g. low SES students).

Source: Allen Consulting Group

What sector(s) should be the source of data for developing a NSRRS?

By definition, the government school sector is the source of data for estimating the AGSRC. However, there is a fundamental question of whether estimation of a NSRRS should also be underpinned by the government sector, or whether data should also be sought from the non-government sector.

Since 2010, the government school sector accounts for 66 per cent of all school enrolments, down from 71 per cent in 1996. This national figure conceals much variation across the country — in the Australian Capital Territory, only 54 per cent of secondary students attended a government school in 2010 (ABS 2010).¹⁵

Potential reasons for not collecting data from non-government schools for the development of a NSRRS could be issues associated with financial data comparability and the like, both between individual non-government schools, and across sectors. However, it is understood that this issue has been largely addressed through data collated by the Australian Curriculum, Assessment and Reporting Authority (ACARA) for reporting on the My School website, recognising that further adjustments and refinements to data will be required.

¹⁵ Full time equivalent student basis.

The issue of data comparability will need to be examined in a later stage of the project. However, it is considered that the guiding principle throughout the project should be that data from both government and non-government schools is collected and utilised for development of the NSRRS.

At the same time, it is noted that highly resourced schools (largely funded through fees) have the potential to bias the estimate of a NSRRS. This is due to a higher expectation of standards within these schools. In using data from non-government schools, it is important that estimation methods ensure that high revenue schools do not bias estimation of a NSRRS.

Preferred option

Both government and non-government schools should be the source of data for the development of a NSRRS.

5.4 Costs met by a NSRRS

In developing a NSRRS, it is important to clearly define the costs that are to be covered. This is necessary for two reasons:

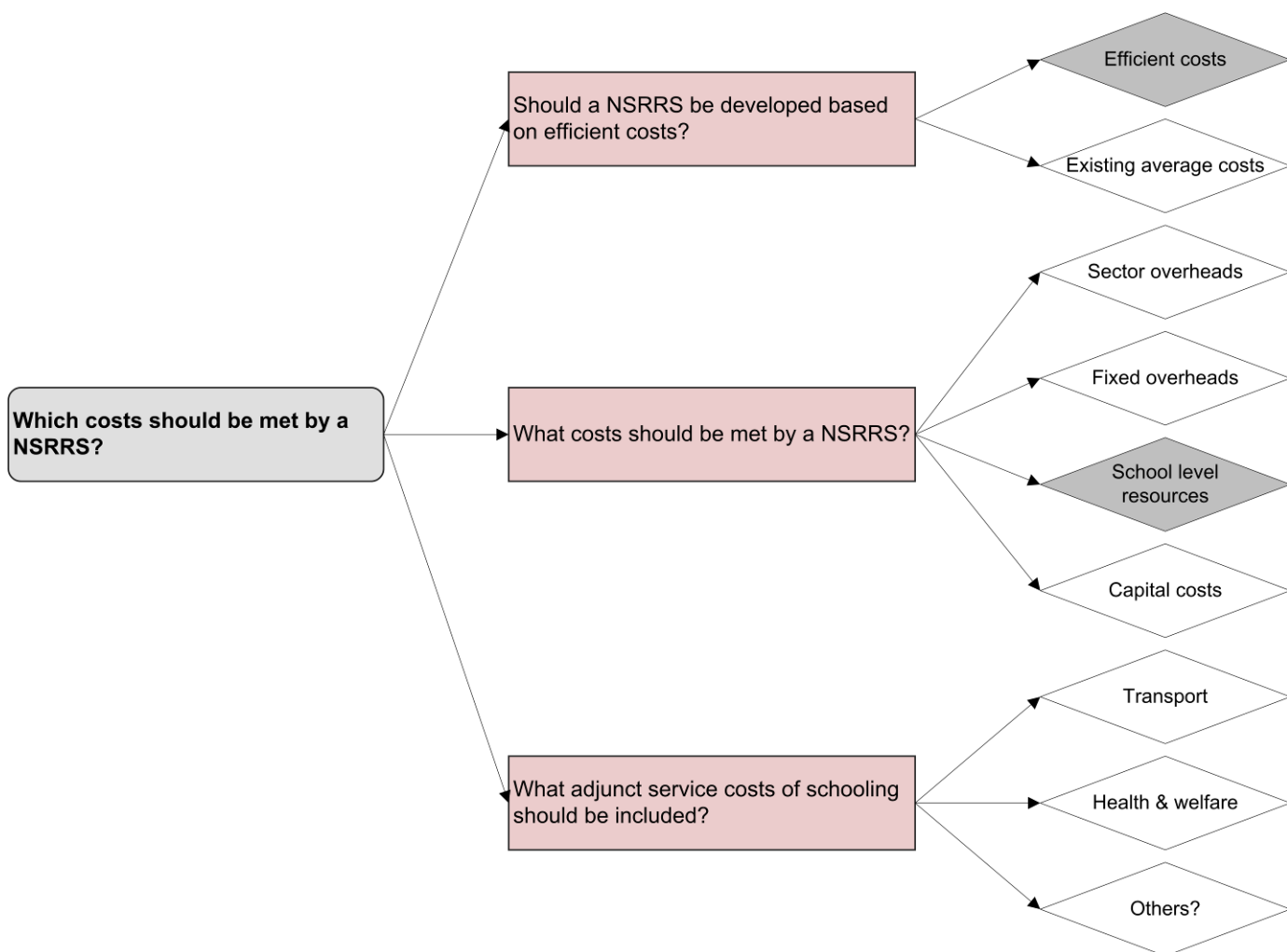
- to ensure clarity about the purpose and role of the NSRRS; and
- to guide data collection for estimation of the NSRRS.

There are three facets to considering costs to be included in the NSRRS, comprising:

- the development of a NSRRS based on efficient costs or existing average costs;
- cost types, including student level resources, sector overheads and capital costs; and
- adjunct service costs of schooling, including costs associated with specific activities within a school (see Figure 5.11).

Figure 5.11

COSTS MET BY A NSRRS: OPTIONS



Note: Dark grey shading indicates preferred option(s).

Source: Allen Consulting Group

Should a NSRRS be developed based on efficient costs?

There are a two options for estimating costs in developing of the NSRRS, comprising:

- efficient costs; or
- existing average costs.

In this context, efficient cost is defined as the minimum level of resources required for the agreed ‘student outcome standard’ to be achieved.

Conversely, existing average costs do not seek to represent any form of benchmark, but instead seek to identify the average cost currently incurred by schools in meeting the agreed ‘standard of service’. By definition, the ‘existing average cost’ would be higher than the efficient cost. It would be appropriate for both types of costs to be estimated, so as to provide a comparator.

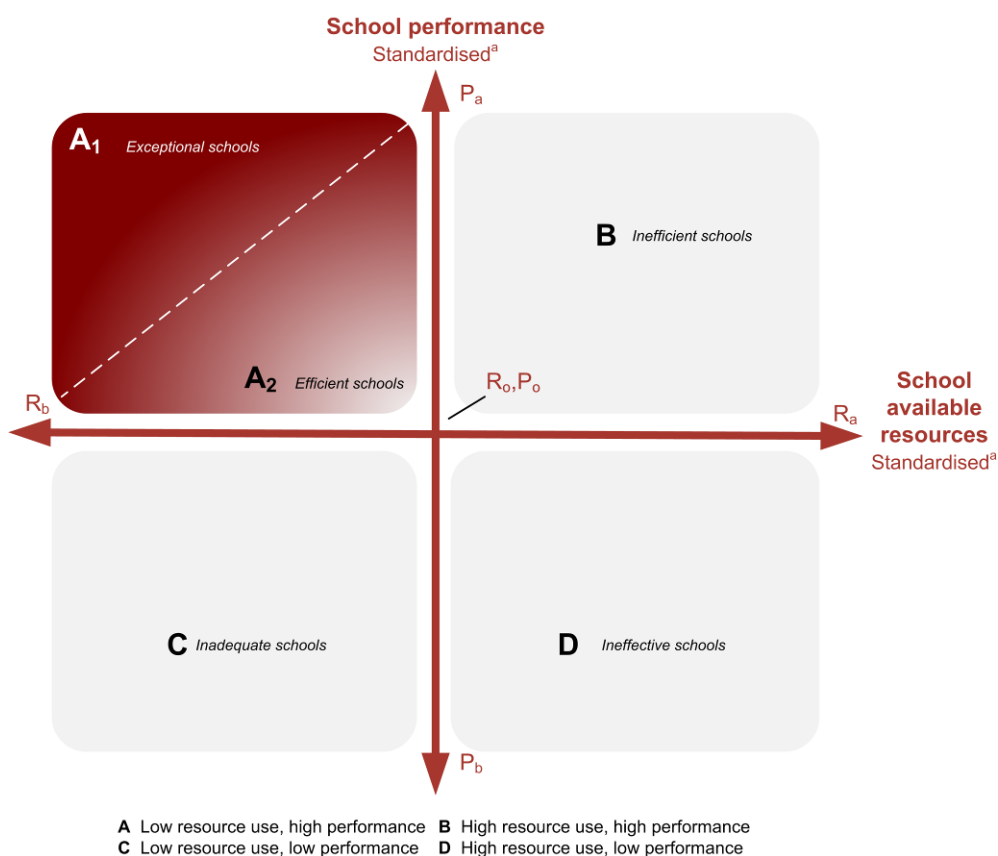
It would be difficult for a NSRRS to be agreed by government that was not underpinned by the notion of ‘efficiency’. Indeed, that is potentially a weakness of the AGSRC, in that it simply measures the average per student cost of government schools, without consideration of whether this represents the least cost of achieving an agreed educational outcome.

A conceptual diagram is presented below detailing one method for how a NSRRS may be estimated, and subsequently applied (see Figure 5.12). This diagram is underpinned by the dual concepts of efficiency and effectiveness. In this context, it is desirable that a school achieves the student outcome standard at the minimum (i.e. efficient) cost.

Figure 5.12 highlights how schools can be categorised on the basis of a schools available resources (R) and performance (P). R_a represents a high use of resources by a school, while R_b represents a relatively low use of resources. P_a represents high school performance, while P_b represents a relatively low level of performance.

Figure 5.12

CONCEPTUAL APPROACH TO RECONCILING EFFICIENCY AND EFFECTIVENESS



Note: ^a School performance and resources are adjusted to account for legitimate factors.

Source: Allen Consulting Group.

Both R and P are standardised to account for *legitimate* factors that may affect both. For example, student characteristics, such as inherent ability, may affect the performance of a school in meeting proficiency objectives.¹⁶ Similarly, factors such as school location and size may result in the school receiving additional resources.

The placement of intercepts (R_0 , P_0) is dependent upon the characteristics of the school and its students. Therefore, two schools with equal *actual* performance and resources have the potential to fall into different quadrants, depending upon the characteristics of students and other factors, which lead to the adjustment of both R and P.

Quadrant A identifies schools combining relatively low resource use and high performance. All schools in quadrant A can be defined as efficient and effective based on their student and/or school characteristics. However, those schools in the top left hand corner of quadrant A (A_1) are exceptional in achieving student outcome standards at minimal cost, given their student and school characteristics. A school with challenging characteristics (such as highly concentrated disadvantage) can be placed in Quadrant A, provided it makes efficient use of resources and achieves superior performance, relative to student and school characteristics. However, this model depends upon agreement around a consistent, objective and fair measure of school performance.

Quadrant B defines inefficient schools, with a relatively high use of available resources, but generating high performance outcomes. Quadrant C defines schools that are inadequate, in terms of the resources available (or used) and performance achieved based on their student and school characteristics. Finally, Quadrant D defines ineffective schools, with a relatively high use of available resources, but producing low performance outcomes.

It is considered that the NSRRS level for schools would be set at a level around that identified for efficient schools (in triangle A_2). These schools are identified as meeting educational outcome targets, while using a relatively low level of resources. It is considered that basing the NSRRS on ‘efficient’ schools is more realistic than basing it on ‘exceptional schools’ (triangle A_1).

As a starting point for estimation of the NSRRS, those schools identified as ‘high performing’ (quadrants A and B), are considered to be ‘reference schools’.

Preferred option

A NSRRS should be based upon the efficient costs of effective schools. However, average costs should also be estimated so as to provide a comparator.

As a starting point for estimation of the NSRRS, high performing schools should first be identified. These schools are considered to be ‘reference schools’.

What cost types should be met by a NSRRS?

Costs associated with schooling can be defined by four broad categories:

¹⁶ The discussion in this section assumes that the ‘student outcome standard’ is varied on the basis of school and student characteristics. In section 5.2 (p. 39), the option of whether a ‘student outcome standard’ should be adjusted or fixed is considered. The approach presented in this section is nevertheless still valid if a ‘fixed’ standard is selected in section 5.2.

- **Sector overheads** include costs such as regulation of the sector, certification of professionals and national school testing. These costs may also include development and maintenance of curriculum.
- **System overheads** administrative costs at the sector level, such as the cost of keeping system headquarters. System overheads can include administrative costs (e.g. finance and human resources), and the provision of services across schools within a system, such as program development and co-ordination.
- **School level resources** defined as the largely variable costs dependent on the individual circumstances and characteristics of a school. There are large differences in these costs between schools, and the adequacy of resources that may apply to different schools. Currently, these costs are often compared between ‘like’ schools, of a similar size and characteristics. There may also be a component of fixed costs included within school level resources, such as the cost of a school principal.
- **Capital costs**: defined as a school's cost in maintaining and building on its capital resources, in order to facilitate educational outcomes. In considering capital costs, existing and new schools should be differentiated.¹⁷

Key factors influencing the decision of whether a cost should included in the NSRRS comprise whether:

- the cost is considered to be directly related to the objectives of a NSRRS; and
- inclusion of the cost category may have potentially unintended consequences, such as providing inappropriate incentives.

The final decision on which costs are included in a NSRRS will also be informed by data availability and resolution.

System overheads and sector overheads

While system overheads and sector overheads are important, it is not recommended that they be considered in the NSRRS. Inclusion of these costs may create significant cost allocation challenges and may detract from the school-level focus of the NSRRS. However, it is also noted that concentrating on only school-level costs may provide incentives to devolve more functions to schools, particularly from a system level, than may be optimal.

Alternative options may include defining a set of school functions and taking into account their costs, regardless of where the function is performed (sector, school etc.). This approach may be beneficial in some jurisdictions that use regional offices and networks to plan and distribute resources (as opposed to funding being delivered directly to schools).

¹⁷ Capital costs associated with equipment and other non-building fixed assets are considered to be school-level resources.

School level resources

It is considered that school-level resources should definitely form part of a NSRRS. Costs would include all school-level operations, such as teacher and school-based administrative staff, as well as associated learning costs associated with stationery and educational materials. It is envisaged that school-level resources are the largest of the four cost categories being considered.

Capital costs

For the purposes of this analysis, capital costs comprise those costs associated with the acquisition of fixed assets that are of sufficient value to be recorded on a school's balance sheet. It is envisaged that these assets largely comprise land and buildings.

There are two quite different options in relation to the treatment of capital in relation to a NSRRS.

On a pure conceptual and normal commercial basis, and to meet modern accrual accounting conventions, a NSRRS should ideally provide for all school-level costs – both operating and capital. Capital costs are a significant cost of schooling provision, which are often overlooked in analysis of schooling costs. Furthermore, in non-government schools, particularly independent schools, a proportion of operating revenues are typically allocated towards capital works. For example, analysis of non-government school operating revenues data from 2009 suggests that approximately \$900 per student in Catholic schools and \$1,600 per student in independent schools, was used for capital works and loan repayments (Deloitte 2011).

The inclusion of capital costs in a NSRRS would provide a degree of certainty regarding the resourcing of capital costs, especially in relation to the building, replacement, or renewal of ongoing facilities, particularly for schools fully managing their own capital assets. If there is an expectation that resources allocated for instructional activities are to be used efficiently, then the same argument applies to the efficient utilisation of capital. Moreover, a continuing contribution to the costs of capital may address concerns about the quality of capital infrastructure in many schools.

The treatment of capital costs was considered important by stakeholders. However, there was considerable concern about the way capital costs could be included, especially because of the wide variation of costs between locations (e.g. cost of land or the need to include teacher accommodation in remote areas) (see Box 5.5).

Box 5.5

CAPITAL COSTS: STAKEHOLDER VIEWS

One stakeholder noted that if capital costs are considered in the NSRRS then they should be considered separately to recurrent costs because capital costs are 'lumpy' by nature.

The issue was also raised about how an appropriate level of capital costs would be determined, because schools might have significant capital expenditure one year and none the next. It was suggested that the cost of building a new government school be taken as a benchmark (using data from recently built schools).

Another stakeholder noted the difficulty in distinguishing capital costs from recurrent costs in some cases. For example, some schools may lease their computers (a recurrent cost) while others buy them outright (a capital cost). Also, smaller non-government schools (Catholic schools were mentioned as an example) may not report clearly on their capital expenditure and assets because they are not required to under law (due to accounting rules – cash accounting versus accrual accounting).

Source: Allen Consulting Group

The inclusion of resourcing for capital costs in a NSRRS must take into consideration a number of issues:

- accounting for differences between schools and sectors in terms of:
 - stages in the capital lifecycle (i.e. how to differentiate between new schools, and schools which are on the verge of requiring major capital improvements);
 - approach taken to capital financing, with many non-government schools borrowing funds, with government schools typically reliant on capital works appropriations; and
 - valuation methodologies, such as whether capital component of NSRRS should be underpinned by current market valuations, or replacement costs.
- creating perverse incentives:
 - inclusion of a provision for capital costs may discourage the consolidation of existing schools when there is a strong educational case for doing so; and
 - conversely, incentives may be provided for the opening of new schools, where there is already capacity in existing schools.
- identifying capital benchmarks, with it being necessary to identify:
 - appropriate capital cost of a school, for different size enrolments and locations;
 - the expected useful life of school fixed assets; and
 - ultimately, an annualised capital amount.
- the extent to which schools and school systems actually apply the capital component of a NSRRS for capital works:

- some schools and school systems may use the capital element of a NSRRS to subsidise recurrent activities with subsequent shortfalls in capital expenditure creating pressure for additional funding.

Each of the above issues is quite complex. In particular, the inclusion of significant capital costs (i.e. new buildings) in a NSRRS will increase the complexity in defining and implementing an effective NSRRS, particularly if the primary focus of a NSRRS is on linking a student outcome standard (relating to student and school outcomes) to resources.

The exclusion of providing for capital and debt servicing expenditure in the NSRRS will keep implementation relatively straightforward as each school is at a different point in its capital expenditure lifecycle. Schools that are either new, or recently re-developed, would have little requirement for capital funds in the short-term. Conversely, schools that have aged buildings would likely require additional funding almost immediately.

A provision for general maintenance and minor acquisitions (such as computers and general equipment) could be effectively included in a NSRRS, without distorting NSRRS funding levels, with more significant capital costs treated separately.

Preferred option

Subject to data availability, only school-level resources should be considered in the initial development of a NSRRS, with a provision for general maintenance and minor acquisitions also included.

Further consideration should be given to options for the appropriate inclusion of a capital component of a NSRRS.

Adjunct service costs of schooling

A further consideration is the extent to which adjunct service costs should be included in a NSRRS. Adjunct service costs comprise expenditures that are either not consistently incurred by schools across jurisdictions and sectors (i.e. may be incurred by other government sectors), or are only incurred by a small number of schools.

Such costs may include:

- costs associated with remote schools:
 - transport to and from schools;
 - teacher housing; and
 - higher costs of establishing, running, and maintaining schools.
- health and welfare costs of students attending school.

These costs are often of particular significance in delivering educational outcomes in rural, remote or very remote areas, or among disadvantaged populations. In these instances, activity related costs of schooling are extremely high, and have a significant impact on educational outcomes of students in these localities.

In remote Indigenous communities, schools may be the sole provider of a range of health and welfare services, which in a metropolitan context would be provided by non-school providers. However, the provision of these services contributes towards student attendance, and broader wellbeing.

One option is that these adjunct service costs are treated outside of a NSRRS, and estimated as a separate resourcing requirement akin to a community service obligation. Such a community service organisation would be separately calculated and paid to jurisdictions, systems or schools. Adjunct costs should only be treated in this way when they fall outside the government's education budget. For example, housing grants for teachers working in remote locations, where the responsibility for this cost sits with another government agency. If costs relate directly to educational outcomes, then they should be treated as a loading applied to the base NSRRS (as described previously). A risk with this approach is cost shifting between government portfolios and different levels of government.

Preferred option

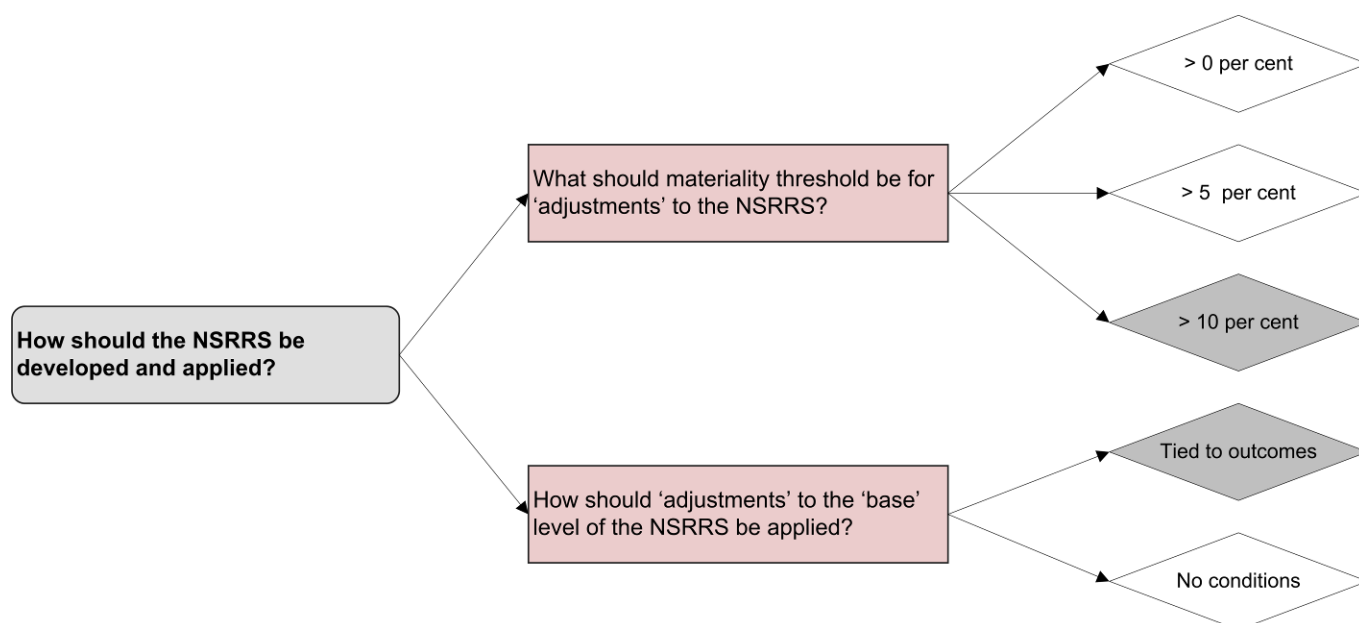
The NSRRS should be set on the basis of a combination of individual student and school characteristics, with adjunct educational resource requirements separately identified (i.e. not part of the NSRRS).

5.5 Development and application of a NSRRS

On the assumption that the NSRRS includes a range of loadings for student, school and other factors, there is a question of how these should be applied. A particular consideration includes what the 'materiality threshold' should be for loadings applied to the NSRRS. In other words, by what percentage should a 'factor' be able to increase the NSRRS from its base level?

There is also a separate question of whether the provision of NSRRS loadings (i.e. higher NSRRS level), should be tied to outcomes – schools are expected to achieve the outcomes which NSRRS loadings are intended to address (see Figure 5.13). It should be noted that a lower threshold will lead to more loadings and complexity.

Figure 5.13

DEVELOPMENT AND APPLICATION OF A NSRRS: OPTIONS

Note: Dark grey shading indicates preferred option(s).

Source: Allen Consulting Group.

Materiality threshold for loadings applied to the NSRRS

As identified in section 5.3, there are a wide range of factors that may be used to adjust the NSRRS. However, there is concern that if there are too many loading factors:

- the NSRRS becomes overly complex and unwieldy;
- schools look to the NSRRS to provide additional resources for all challenges, instead of being innovative;
- schools may have an incentive to classify students so as to attract additional funding; and
- it is difficult to ensure compliance with NSRRS guidelines (e.g. guidelines for classifying students).

A potential method for addressing these concerns is to limit the number of loadings in the NSRRS to only those that fall within a materiality threshold. A range of options are presented in Figure 5.13 regarding what these thresholds may be, ranging from loadings that increase the NSRRS to barely greater than 0 per cent, up to only adjusting the NSRRS if this increases the NSRRS level by more than 10 per cent.

Within a materiality threshold, it is also important not to give schools an incentive to 'game' the system by over-reporting the levels of disadvantage.

An alternative approach to considering materiality may be in selecting loading factors, such that only a limited number of schools qualify for a higher NSRRS.

It is proposed that the future development of the NSRRS seek to limit the range of loading factors. For the purposes of guiding the future development and estimation of a NSRRS, it is considered that this materiality threshold should be set at 10 per cent.

Preferred option

Development of the NSRRS should seek to limit the number of loading factors through the application of a materiality threshold. The exact level of this threshold should be informed by analysis of the impact of different NSRRS options on individual schools. Initially, a materiality threshold of 10 per cent should be applied.

Application of loadings to the 'base' NSRRS level

This report recommends in favour of loadings being made to the NSRRS to take into account differences in resource requirements for meeting school educational goals and targets. Consequently, there is a question of whether such loadings should be 'time limited'. For instance, discussions with one jurisdiction identified a specific program made available to primary schools where students have fallen behind in literacy and numeracy. This program is only funded for 3-4 years, with expectation that students will have 'caught up' over this timeframe. However, this approach is not feasible for students with disability or long term additional needs.

Thus, if the NSRRS is to be adjusted to reflect the cost of different groups meeting educational goals, there may be scope for loadings to be 'time limited'. The exact mechanics of such an approach would need to be explored. For example, loadings applied to the NSRRS could be limited to individual students entering primary school, and only applied for a certain number of years.

Such an outcome-focussed approach to the NSRRS could avoid NSRRS loadings being seen as an entitlement. In the absence of such an approach, it is possible that the issues that generate NSRRS loadings — the challenge associated with students with certain characteristics meeting educational goals and targets — will never be successfully addressed.

However, the linkage of NSRRS loadings to outcomes also creates potential to manipulate the system. For example, there is concern that students who for various reasons do not participate in NAPLAN, thus potentially influence a school's overall NAPLAN performance (COAG Reform Council 2010). If loadings are tied to outcomes, these outcomes would need to be narrowly and specifically defined.

In this context it is important to note that some children with disability or additional needs will not improve over time, and are consistently in need of additional funding.

The implications for school level innovation of NSRRS loadings being time-limited may require careful consideration. For example, providing a higher NSRRS level to schools to achieve an agreed student outcome standard, that is subsequently reduced following achievement of these standards, could potentially diminish the incentive for schools to improve performance. Further, it could provide an incentive for schools to 'cherry pick' students unlikely to require additional assistance to achieve outcomes.

Regular review of a NSRRS, and associated loadings, could be one way of ensuring that loadings are contributing to outcomes.

Preferred option

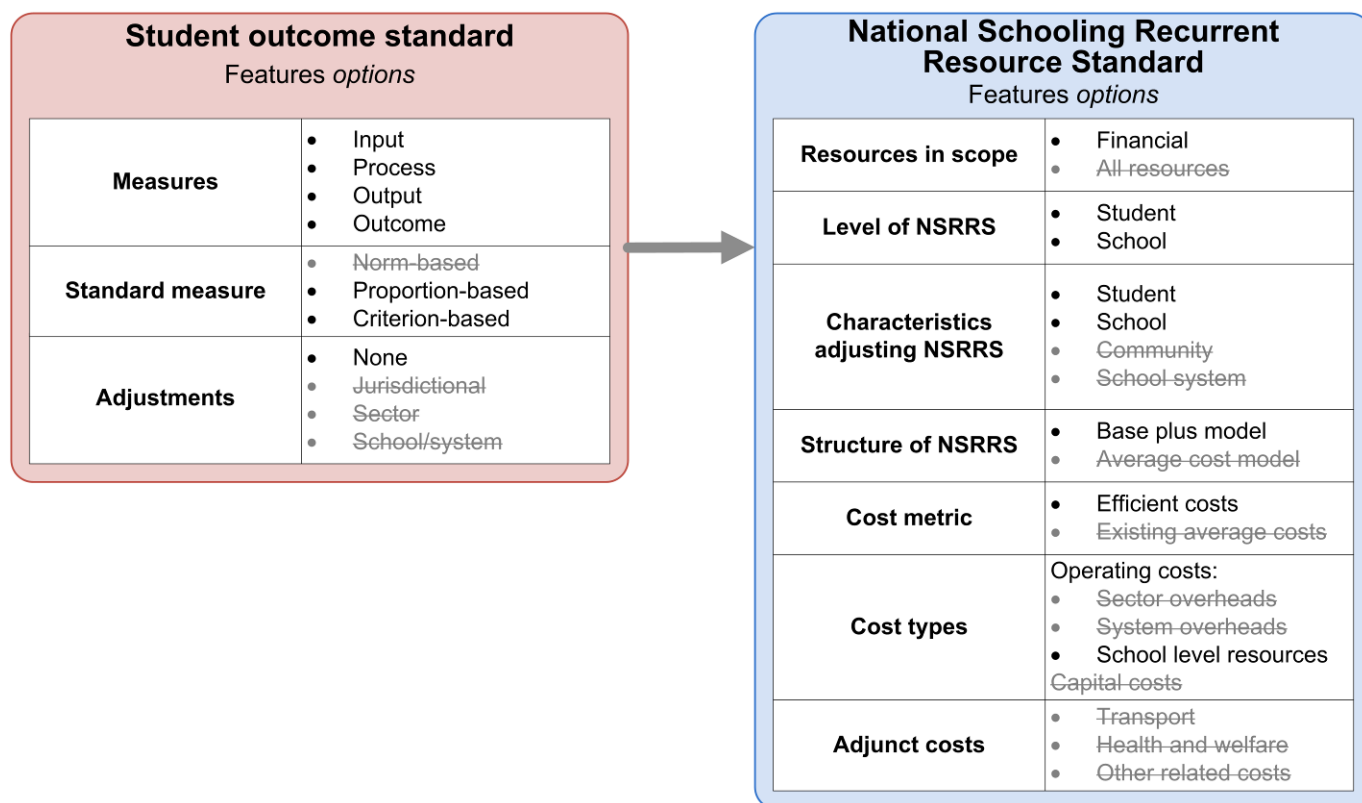
The application of loadings to individual school NSRRS levels should be tied to the achievement of agreed educational goals and outcomes, where possible. The specific time scale for achievement should also be considered.

5.6 Preferred design and definition of a NSRRS

Drawing upon the preferred options identified above, Figure 5.14 summarises the various options considered, along with preferred options. Preferred options identified in this report are in black font, with non-preferred options in ~~grey strikethrough~~.

Figure 5.14

NATIONAL SCHOOLING RECURRENT RESOURCE STANDARD: FEATURES OPTIONS



Note: Preferred options are in black font. Non-preferred options are identified by ~~grey strikethrough~~.

Source: Allen Consulting Group

National Schooling Recurrent Resource Standard: definition

A single preferred definition for a NSRRS emerges from the combination of preferred options detailed above, comprising:

‘The level of total resourcing per student from all sources that efficiently and effectively applied over time, would enable students attending schools serving communities with minimal levels of educational disadvantage the opportunity to meet agreed national educational outcomes’

This definition follows the approach of the AGSRC, where there is a primary and secondary student per-capita rate. It is considered that this application would minimise disruption and confusion in moving away from the AGSRC.

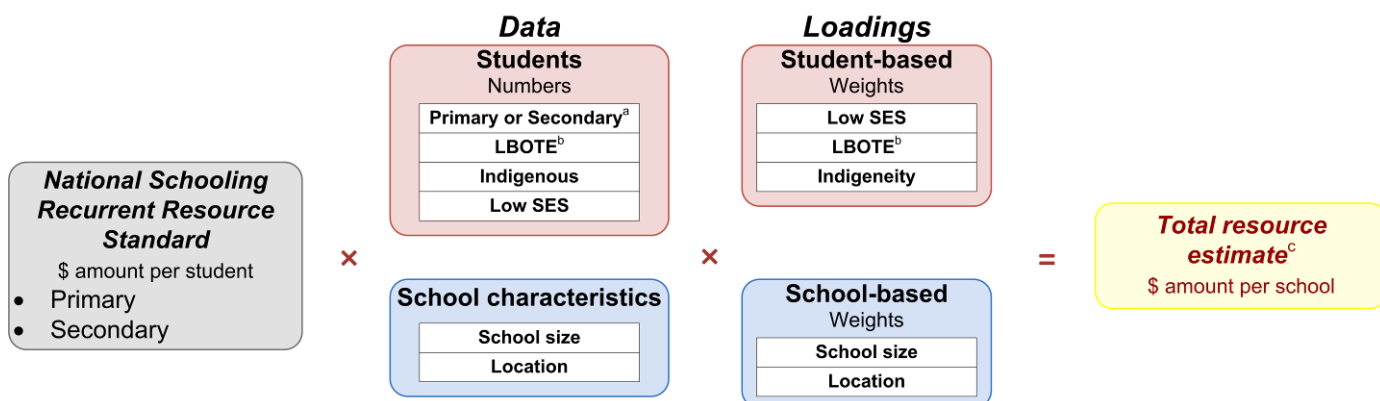
The application of the definition is detailed in Figure 5.15, with there a primary and secondary rate for the NSRRS. This rate is then multiplied by data on the number of students, and loadings, to generate an estimate of an individual school’s total resource estimate.

The specific loadings in this definition reflect an approach considered feasible based on currently available data. For example, loadings for students with disability are not included. At the present time there is no nationally consistent data to record students with disability.

Furthermore, it may be appropriate for additional loadings to be considered in the future, such as weights associated with the 'stage of schooling' of a student (e.g. early, middle, or upper years).

Figure 5.15

PREFERRED NSRRS DEFINITION



Notes: ^a Primary or secondary students, not part of educationally disadvantaged groups. ^b Students with a language background other than English, where at least one parent has only completed schooling up to year 9 or below. ^c Total amount for a school.

Source: Allen Consulting Group

A second option for defining the NSRRS was considered, involving the specification of a total amount of resourcing for a school. As every school has different characteristics, ranging from enrolment numbers, to location and student background, likewise every school would have a different NSRRS level. This definition comprises:

‘The level of total school resourcing from all sources that, efficiently and effectively applied over time, would provide students with the opportunity to meet agreed national educational outcomes, and, schools the capacity to improve student educational outcomes, with regard to the needs and capabilities of their student population.’

Preferred NSRRS definition

The principles of both efficiency and effectiveness are reflected in the above definition of a NSRRS. Regardless of the final definition of the NSRRS, effectiveness must be defined broadly in terms of agreed national educational objectives and outcomes. Efficiency is also an important principle, given the financial constraints facing governments and the community more broadly. It is thus essential that resources are used to maximum effect and weighted towards meeting need.

The preferred definition offers the most straightforward and consistent method of estimating the level of funding required for students with minimal levels of educational disadvantage in a school of a certain size to achieve specified educational outcomes. Furthermore, the preferred definition is also simpler and more transparent for a NSRRS where the Australian Government is only a contributor to school funding.

It must also be emphasised that linking resourcing requirements to outcomes is for the purposes of estimating resource requirements for schools to achieve outcomes, and not funding individual schools on the basis of those outcomes.

Finally, the preferred definition is considered to be the 'ideal' design. However, the unavailability of data for estimation of the NSRRS may mean there is a need for some variation from this design in estimation and implementation of the NSRRS.

One factor that could impede full development of the NSRRS and loadings in the short-term could be that there is limited evidence available to estimate loadings. Estimation of loadings requires their being sufficient data identifying the resourcing required for students and schools of differing characteristics (e.g. low SES students), to meet the agreed student outcome standard.

Preferred option

The preferred NSRRS definition would see one NSRRS value for primary students, and one for secondary students.

NSRRS: funding individual schools

Building upon the above discussion on the 'high level' operation of a NSRRS used by the Australian Government for school funding, Figure 5.16 details the potential application of a NSRRS in funding individual schools. This diagram is applicable to both individual schools, and to school systems. Australian Government funding would be combined with resourcing from other sources to generate a school's total revenue.

This diagram indicates that the level of Australian Government funding to a school is dependent upon:

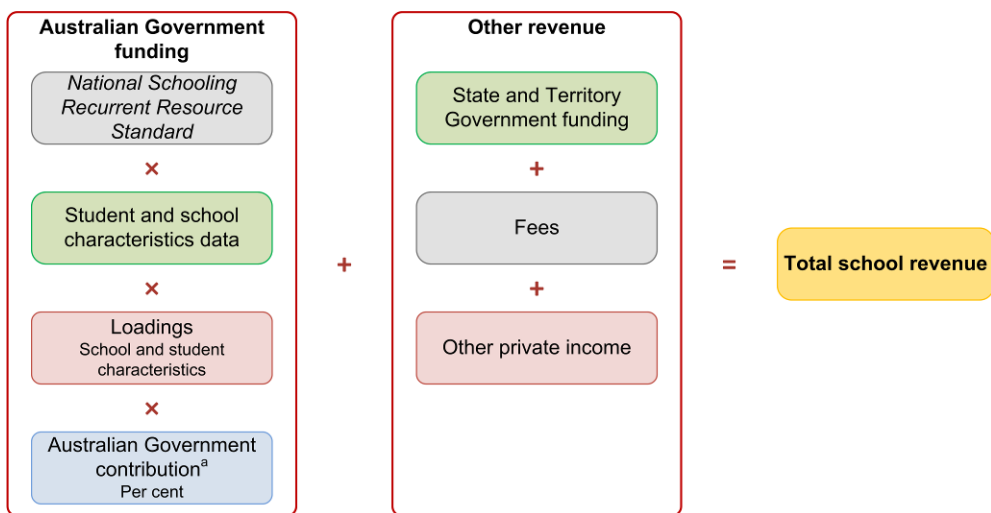
- the NSRRS rate;
- specific school and student characteristics in a school;
- loadings applied to school and student characteristics; and

- the percentage of the NSRRS that the Australian Government has agreed to fund.¹⁸

The value of 'total school revenue' in Figure 5.16 will differ from the 'total resource estimate' in Figure 5.15. 'Total school revenue' in Figure 5.16 represents *total actual* revenue received by schools, whereas the 'total resource estimate' in Figure 5.15 represents an estimate of total resourcing requirements, and not actual revenue itself.

Figure 5.16

ROLE OF NSRRS IN FUNDING INDIVIDUAL SCHOOLS



Notes: ^a It is assumed that the Australian Government will contribute a certain percentage of the NSRRS for schooling.

Source: Allen Consulting Group

¹⁸ This percentage rate may well differ between government and non-government schools.

Chapter 6

Potential applications of a NSRRS

6.1 Introduction

This chapter identifies potential applications of a NSRRS. These comprise:

- informing the allocation of financial resources to individual schools;
- creating a student entitlement funding model for schools;
- setting a resource benchmark for assessing schooling costs and outcomes;
- identifying resourcing requirements for Australian schools; and
- guiding Australian Government resource allocation to schooling.

The broad design and estimation of the NSRRS is not dependent upon the specific application of the NSRRS. However, the level of rigour and accuracy required in the NSRRS is influenced by the specific application.

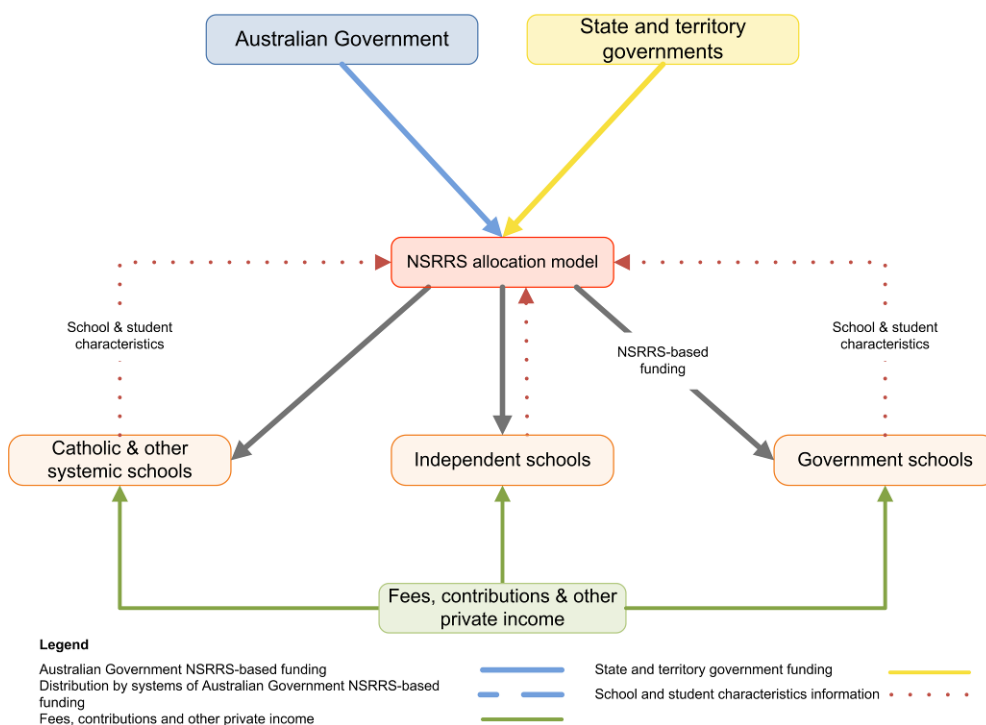
6.2 Allocation of financial resources to individual schools

A NSRRS could in theory be used to underpin resource allocation to individual schools but this would require agreement by all funding bodies. However, this is both impractical and complex given the number and diversity of schools in Australia. It would also be inconsistent with the general principles of COAG reforms, which focus on achievement of outcomes rather than specification of financial inputs.

The application of this approach is detailed in Figure 6.1, with Australian Government and state and territory government funding 'pooled' prior to allocation of funds to individual schools using the NSRRS allocation model.

Figure 6.1

NSRRS APPLICATION: ALLOCATING RESOURCES TO INDIVIDUAL SCHOOLS



Source: Allen Consulting Group

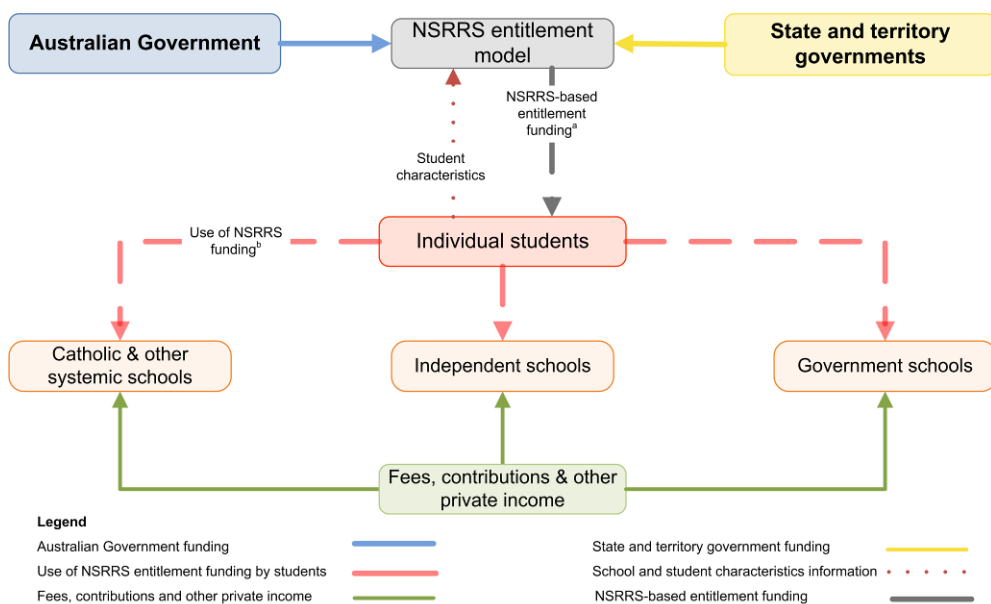
6.3 Student entitlement funding model for schools

A NSRRS could underpin a student entitlement funding model for schools. This could be similar to what may apply in the future for higher education, and is applied to VET in some jurisdictions. If school-level factors were to be included in the NSRRS, the highly varied levels of Australian Government contributions to different schools would make this option difficult to develop and implement.

The potential operation of this approach is detailed in Figure 6.2, where funding from both the Australian and state/territory governments is ‘pooled’, with funding estimated from the NSRRS entitlement model then notionally allocated to individual students. This funding is not provided directly to students, but rather follows students as they attend the school of their choice. This is an important distinction, as it is a key difference between an entitlement funding model, and a voucher model.

Figure 6.2

NSRRS APPLICATION: STUDENT ENTITLEMENT FUNDING MODEL FOR SCHOOLS



Notes: ^a funding is notionally attached to individual students. ^b NSRRS based-funding follows students to schools.

Source: Allen Consulting Group

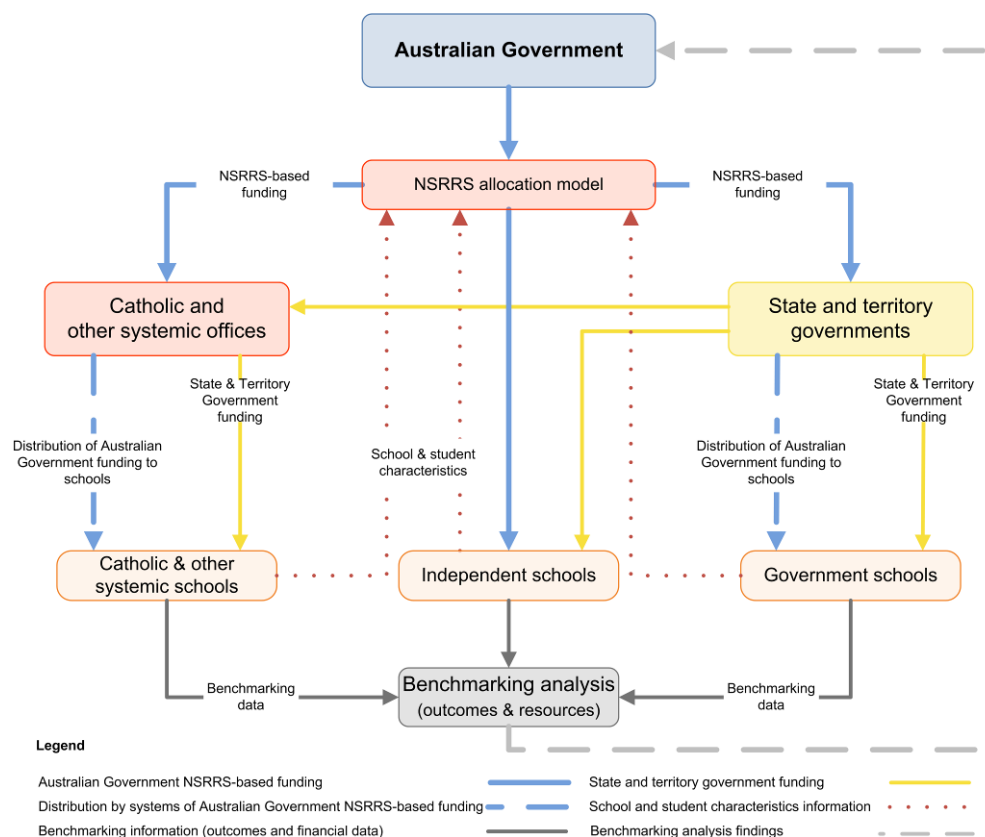
6.4 Resource benchmark for assessing costs and outcomes

A NSRRS could provide a more reliable and relevant benchmark against which costs and outcomes for schools and school systems can be assessed. Based on experience in other sectors, a national NSRRS and its various elements could indirectly influence resource allocation to schools by identifying areas of over and under funding relative to student characteristics and outcomes.

The potential application of this approach is detailed in Figure 6.3, whereby there is independent analysis of school resourcing and outcomes, following the operation of the NSRRS for resource allocation. The findings of this analysis are then provided to the Australian Government, to inform future development and application of the NSRRS.

Figure 6.3

NSRRS APPLICATION: RESOURCE BENCHMARK

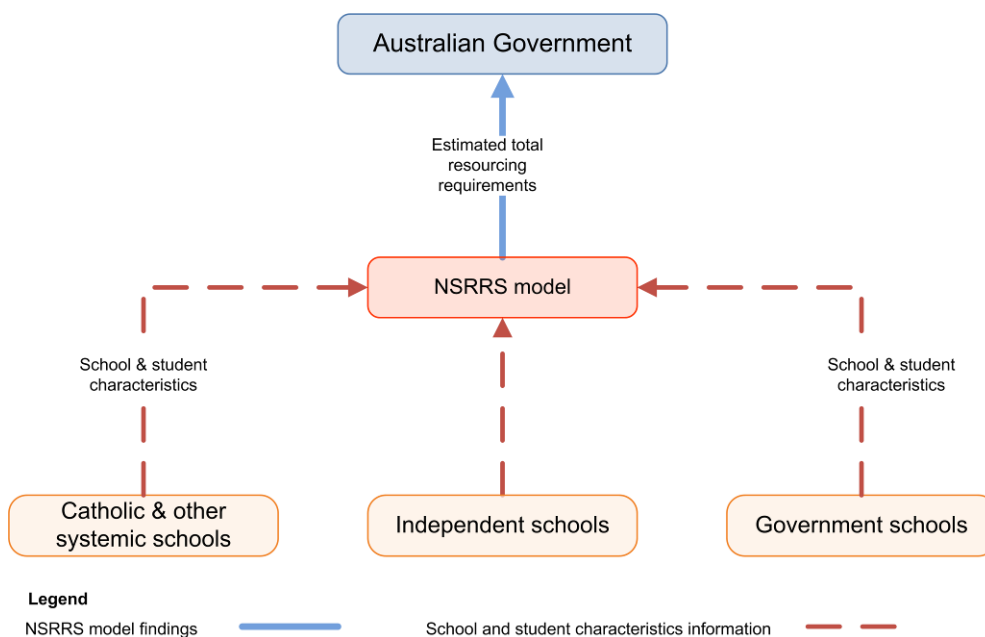


Source: Allen Consulting Group

6.5 Estimation of resourcing requirement for schools

A NSRRS may also be applied to estimate the total resourcing requirement for Australian schools, in total and individually, required to achieve a student outcome standard. This application is distinct from direct application by the Australian Government for resource allocation to individual schools. Such analysis and estimation would provide guidance to the Australian Government, and other stakeholders, as to whether there are sufficient resources applied in total to Australian schools, or whether there are potential opportunities for redistribution. This approach is summarised in Figure 6.4.

Figure 6.4

NSRRS APPLICATION: ESTIMATION OF RESOURCING REQUIREMENTS

Source: Allen Consulting Group

6.6 Guide Australian Government resource allocation to schooling

The final potential application of a NSRRS is its application as a measure by the Australian Government to guide its contribution to both government and non-government school funding as a replacement for the AGSRC, which has the limitation of being a historic expenditure based measure not related to outcomes.

As Figure 6.5 illustrates, individual school and student characteristics (dotted maroon line) are used to calculate the NSRRS-based Australian Government contribution to schools (unbroken blue line). In the case of government schools, and Catholic and systemic schools, this funding is provided to the respective system or government, and then allocated to individual schools.

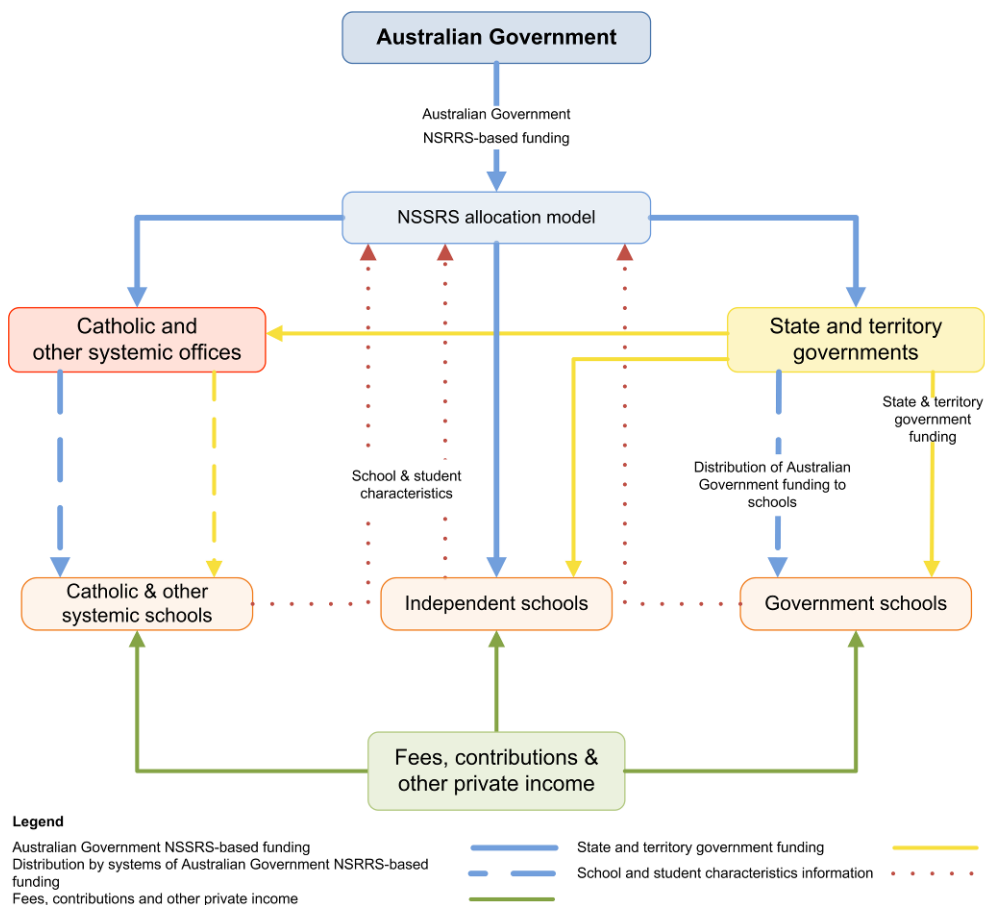
This potential application respects the notion of ‘subsidiarity’, such that state and territory governments, and non-government school systems, have the discretion to allocate Australian Government funding as they see fit.

The allocation of funding to individual schools by systems or state and territory governments may reflect the basis of the NSRRS-based allocation by the Australian Government, which is based upon individual school and student characteristics. Furthermore, under status quo funding arrangements, all schools receive separate funding from state and territory governments, fees and other private sources.

The notion that the allocation of Australian Government funding is not tied to specific schools would also provide school systems with the flexibility to ‘manage’ year-to-year variations in the NSRRS-based allocation. However, such capacity will not exist for independent schools, particularly ‘low fee’ independent schools that rely upon the Australian Government for the majority of their funding. For such schools, funding rules may need to be established that reduce funding volatilities.

Figure 6.5

NSRRS APPLICATION: AUSTRALIAN GOVERNMENT RESOURCE ALLOCATION



Note: The dashed blue lines from 'Catholic and other systemic offices' and 'State and territory governments' indicate the expectation that Australian Government school funding will be distributed between schools in a different manner to that estimated for individual schools.

Source: Allen Consulting Group

It is noted that there are currently significant differences in Australian Government per student funding between the government and non-government sectors, as well as within the non-government sector. Therefore, the way a NSRRS could be applied, as an alternative to the AGSRC, will require detailed consideration in the context of the broader options for Australian Government schools funding under consideration as part of the Review.

A key issue in the application of the NSRRS is that Australian Government funding as a proportion of total school funding varies significantly between schools in different sectors, as do state/territory government contributions. Accordingly, in practice a NSRRS could operate more as a benchmark to guide funding decisions than as a resource allocation tool.

It is noted that the distribution of funds to state and territory governments for schooling, using the NSRRS in combination with loadings, may have implications for the distribution of GST funds. This distribution process is underpinned by analysis undertaken by the CGC. As part of the approach taken by the CGC, consideration is taken of the distribution of Australian Government funding in estimating GST distribution. It is thus quite feasible that a jurisdiction may attract additional funding via application of the NSRRS relative to other states and territories, but additional funding received as a result of the NSRRS may result in a lower GST distribution. This is because the CGC considers revenue from all sources in its deliberations, unless a specific directive is made to the CGC by the Australian Government to exclude this revenue stream from consideration.

Chapter 7

Methodology for estimating a NSRRS

7.1 Introduction

This chapter outlines a detailed methodology for estimating a NSRRS, as specified in previous chapters. The chapter commences by providing an overview of the estimation process, followed by specific options for NSRRS estimation. These options are drawn from the United States school finance literature.

The chapter then identifies data requirements and availability. This section has significant implications for the estimation process, and the degree to which the NSRRS is able to align with the preferred design detailed above. Drawing on the findings on estimation method options, and data availability, the chapter identifies a preferred preliminary estimation approach, and explains how these findings can be applied to estimating the total resourcing requirement for an individual school. The chapter also identifies a method and associated data requirements for what is considered to be the ‘full’ development of the NSRRS. This ‘full’ development will require the collection of new data sets, and additional analysis and validation.

Finally, the chapter identifies a preferred option for the ongoing indexation of the NSRRS.

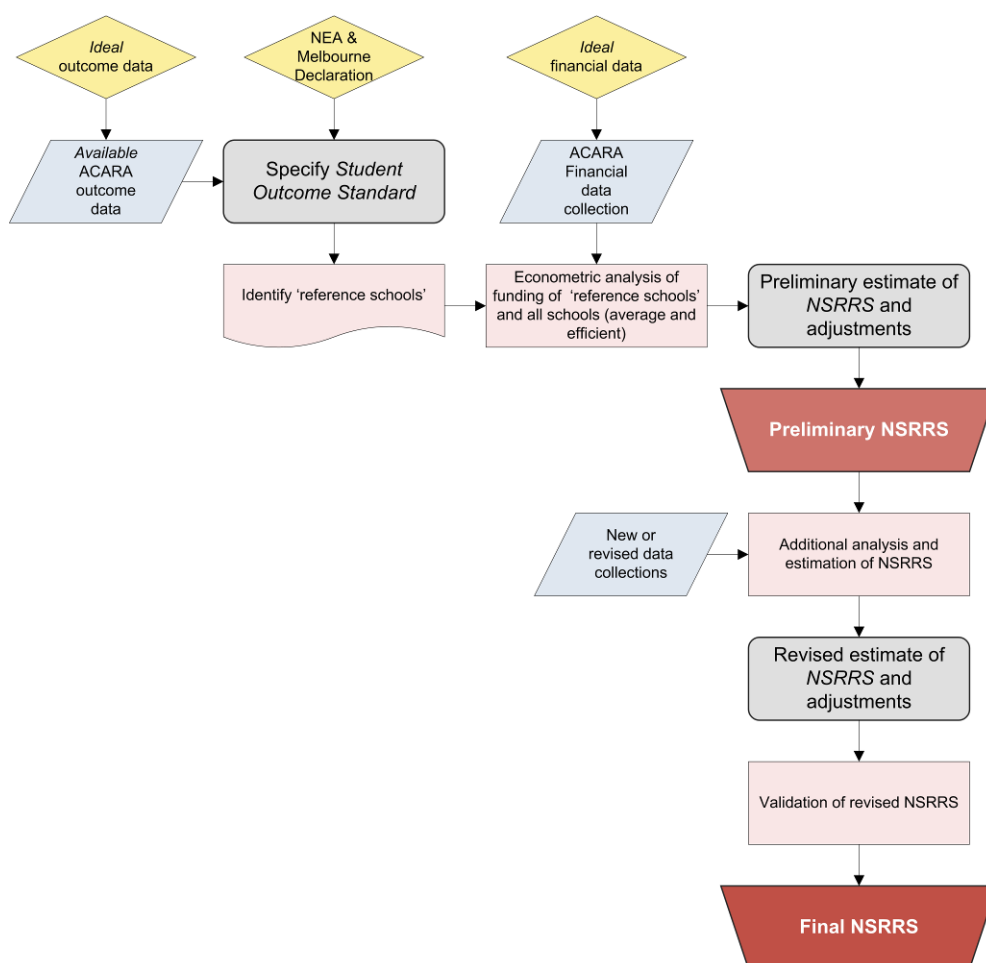
7.2 Overview: estimation process

Figure 7.1 provides an overview of the NSRRS estimation process. This diagram indicates that the establishment of a ‘student outcome standard’ (based on the NEA and Melbourne Declaration) is a key component of the estimation process. However, the actual make-up of the ‘student outcome standard’ is dependent upon data availability – ‘ideal’ outcome measures detailed in Chapter 5 may not be currently available. The same issue also applies to financial data, where preliminary estimation of the NSRRS is largely influenced by data currently collected by ACARA.

Figure 7.1 also applies the concept of ‘reference schools’, first discussed in section 5.2. Reference schools are those schools identified as meeting the ‘student outcome standard’. It is intended to use these schools to estimate the NSRRS and loadings, as they represent schools that are achieving the benchmark outcomes.

Also detailed in Figure 7.1 is a suggested process for turning a preliminary estimate of the NSRRS into a final estimate ready for implementation.

Figure 7.1

OVERVIEW OF NSRRS PRELIMINARY ESTIMATION PROCESS

Source: Allen Consulting Group

7.3 Possible estimation techniques

The four main methods for estimating a NSRRS, developed and applied previously in both Australia and the United States, comprise:

- *Professional judgment/resource cost model approach*: the level of spending per pupil that is required to achieve an adequate standard is decided according to certain pre-defined characteristics in a prototypical school, including total enrolment and the percentage of students who are poor;
- *Successful districts/schools approach*: builds on the idea that districts or schools already meeting a performance standard will be spending an amount that is at least sufficient to provide an adequate education;
- *Whole school design approach*: successful school reform efforts can be used to determine the expenditures needed to provide an adequate education; and

- *Cost function approach*: uses econometric methods to estimate the cost of achieving specified levels of performance from actual data on spending. This determines if the amount of spending is adequate, and whether it meets a state's performance standard (Downes & Stiefel 2008).

The notion of efficiency is not emphasised in the above methods, but it is nevertheless one that the design detailed in Chapter 5 emphasises. Quantitative techniques exist (and are frequently applied in economic research such as that undertaken by the Productivity Commission) that can reconcile performance and cost to identify efficient service providers.¹⁹ However, these methods are relatively complex, and may not be considered sufficiently transparent for public comprehension. The issue of transparency will need to be considered in the estimation of the NSRRS.

It is misleading to suggest that only one of the above estimation methods can be applied. Rather, it is quite feasible to combine elements of two or more of these approaches. There may also be scope to 'mix' combinations of the above approaches. For example, one possibility could be to first identify those schools achieving the required educational outcomes, and undertake detailed cost analysis of those schools. This would, however, require that these 'successful' schools represent a cross-section of student and school characteristics.

For example, one option raised by stakeholders is to estimate the NSRRS based upon the top 20 per cent of government schools on the basis of NAPLAN scores. Such a sampling approach *may* identify schools with a range of characteristics. Following identification of these schools, econometric techniques could be applied to identify the resources used by schools in achieving this level of performance, particularly those used by schools serving disadvantaged students. It would also be appropriate to identify and publicise specific techniques employed by schools performing well in the face of a challenging student population.

It is not considered that the specific methodology chosen will be particularly influenced by selection of the NSRRS definition, and other options. For example, the cost function approach could be used to estimate both the NSRRS 'base rate', along with appropriate loadings.

Each of these methods relies, to varying degrees, on an extensive range of data.

Moving forward, it is considered that elements of all four approaches have a role to play in the estimation of the NSRRS. Indeed, as estimation of the NSRRS is able to draw upon data for all Australia's schools (numbering in excess of 9,000) there is scope to use a combination of several approaches.

Estimating loadings

Conceptually, the most complex task in developing the NSRRS is not so much that of estimating the 'base rate' of the NSRRS, but rather the loadings. One particular issue that needs to be considered is the evidence base around loadings for factors such as low SES or Indigenous background. The threshold in justifying loadings is that additional funding can contribute towards improved outcomes.

¹⁹ A recent example is provided in PC (2010), examining relative efficiency in Australian public and private hospitals.

Options for estimating loadings could be:

- identifying the costs of programs identified as being successful in improving student performance; or
- identifying the costs of high performing schools that have student and school characteristics considered to impede performance.

7.4 Data requirements

This section identifies the potential data requirements to estimate a NSRRS. The four potential methods for calculating a NSRRS detailed in section 7.3 each require a similar range of data, as shown in Table 7.1. The data is grouped into four categories:

- student outcomes;
- student characteristics;
- school characteristics; and
- financial data.

Measures of student and school characteristics are required to inform estimation of loadings applied to the student and school components of the NSRRS. Such loadings would reflect the additional needs of disadvantaged students and the cost implications of those related to school characteristics (e.g. remoteness and school size). As these characteristics vary from school to school, the ideal level of data will be at the school level.

A key feature of Table 7.1 is that there is sufficient data of adequate quality to develop a preliminary estimate of a NSRRS. However, it is felt that additional data is required for the NSRRS to be ready for implementation. The one area where additional data is required is for student outcomes, which is used to identify 'reference schools'. At the present time, the only nationally consistent student outcome measure is NAPLAN performance. It is recognised that NAPLAN data provides important information on key aspects of school and student performance, but it is only at best a partial measure of the broader schooling outcomes contained in the Melbourne Declaration and the NEA. Movement to a national unique student identifier will improve the ability for many of these outcomes to be measured in the future.

One issue highlighted in Table 7.1 requiring special consideration during the course of estimating the NSRRS and loadings is that related to students with disability. As noted in Table 7.1, national definitions for identifying students with disability are under development. Although the estimation process will be able to exclude specialist schools, it will not be able to identify the funding provided to the numerous mainstream schools attended by students with disability, and who attract additional funding for this reason. This situation could mean that both NSRRS and loading estimates are inflated, as additional funding associated with students with disability is unable to be excluded.

Table 7.1

DATA REQUIREMENTS FOR ESTIMATING A NATIONAL SCHOOLING RECURRENT RESOURCE STANDARD

Data	Availability for estimation application ^a		Source	Note
	Preliminary	Full		
STUDENT OUTCOMES^b				
NAPLAN: literacy and numeracy	✓	✓	ACARA	Years 3, 5, 7 and 9.
Student learning: assessment based	✗	✓	State and territory departments, Catholic systems, and independent schools	Reported for Victorian Government schools by VRQA
Year 12 study scores	✗	✓	As above	
School attendance rate	✗	✓	As above	Nationally consistent data unavailable (i.e. not directly comparable)
Australian Tertiary Admission Rank	✗	✓	Tertiary admission centres	
Post-school destination	✗	✓	Post-school student surveys	Only on My School for Victorian, Queensland and Western Australian schools in 2009.
VET unit completion	✓	✓	ACARA	
Parent satisfaction	✗	✓	School-based surveys	Reported for Victorian Government schools by VRQA
STUDENT CHARACTERISTICS				
Enrolments (by year level)	✗	✓	State and territory departments	Only <i>total</i> school enrolment (by gender) available from ACARA
Measures of disadvantage:				
• LBOTE	✓	✓	ACARA	Limited to where at least one parent has year 9 secondary school education, or below
• Indigeneity	✓	✓	ACARA	
• Socio-economic status	✓	✓	ACARA	Measured using ICSEA. School-level only.
• Students with disability	✗	✓	State and territory departments, Catholic systems, and independent schools	Currently unavailable. National definitions are under development.

Data	Availability for estimation application ^a		Source	Note
	Preliminary	Full		
SCHOOL CHARACTERISTICS				
Total enrolments (school size)	✓	✓	ACARA	
Location type	✓	✓	ACARA	Options comprise metropolitan, provincial, remote or very remote.
FINANCIAL DATA				
Revenues received by schools:	✓	✓	ACARA	
<ul style="list-style-type: none"> • State and territory governments • Australian Government • Fees • Other revenues 				

Note: ^a Availability status for **all** Australian schools. ^b School level data only required.

Source: Allen Consulting Group

7.5 Reference schools

Preliminary process

It is intended that the preliminary estimate of both the primary and secondary NSRRS be developed using ‘reference schools’. Reference schools are those schools identified as meeting the ‘student outcome standard’. At present, reference schools can only be identified by NAPLAN data. The use of NAPLAN is a particular limitation in secondary schools, in that NAPLAN does not notably apply to students in years 10 to 12. Furthermore the use of year 7 NAPLAN results to identify reference schools is problematic in secondary schools. This is because NAPLAN is undertaken in May of each year, and year 7 NAPLAN is potentially more a reflection of the primary school attended by a student.

Following discussions with a number of educational outcome measurement experts, the following specification was identified:

‘Those schools where at least 80 per cent of students are achieving above the national minimum standard, for their grade, in both Reading and Numeracy, across the three years 2008 to 2010.’

This specification considers performance in two of the five NAPLAN domains. It was considered that reading was predictive of performance in the other literacy-based domains. Moving forward, it is appropriate that broader measures of schooling performance be used to identify ‘reference schools’.

Revised process

The above process for identifying reference schools would develop a preliminary estimate of a NSRRS only. As detailed in section 5.2, it is considered that further development and implementation of the NSRRS will depend upon there first being a broader measure of the student outcome standard, to complement NAPLAN outcomes. This would include additional school performance measures, as well as the application of professional judgement. Ultimately, this process will lead to the development of a revised list of reference schools, with it being envisaged that some schools identified as meeting a NAPLAN-based student outcome standard do not reach a broader student outcome standard.

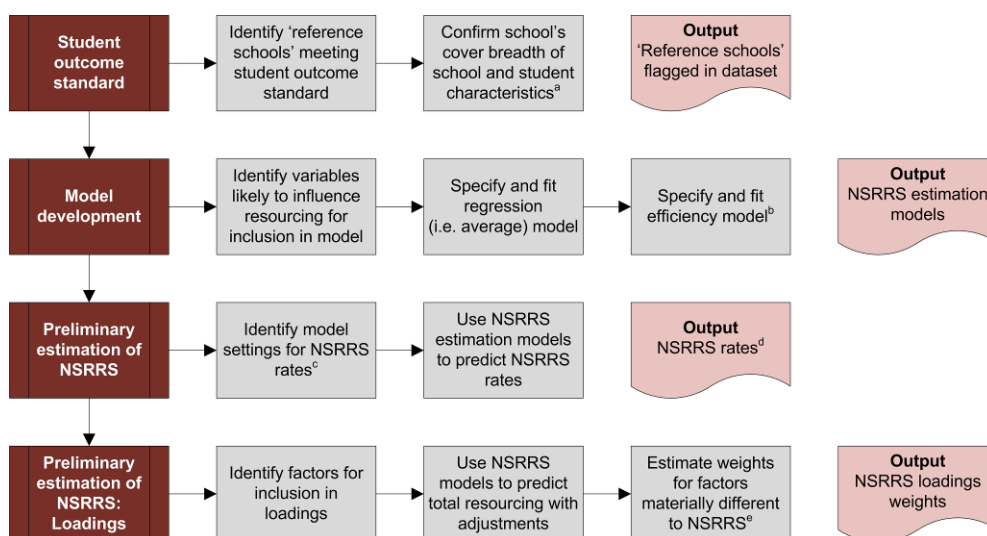
7.6 Preferred estimation methodology

As noted in section 7.3, a number of analytical techniques have been identified in the literature that can be utilised to estimate the NSRRS, and the accompanying loadings.

Based upon the requirements of the NSRRS, and the available data, an appropriate methodology to apply to estimate the NSRRS, and accompanying loadings, is a combination of the ‘cost function’ and ‘successful schools’ approaches. Elements of the ‘professional judgement’ approach are also applied in this process, particularly in identifying reference schools (i.e. those schools identified as meeting the ‘student outcome standard’).

Figure 7.2 provides an overview of this estimation method.

Figure 7.2

NSRRS AND LOADINGS ESTIMATION STEPS

Notes: ^a If there are insufficient 'reference schools' with characteristics of interest for determining loadings, it may be necessary to use 'all schools' for estimation of loadings, and 'reference schools' for estimation of the NSRRS itself. ^b Quantile regression or stochastic frontier analysis to be applied. ^c Model settings will include factors such as school size. ^d Rates for both primary and secondary ^e Propose application of a 10 per cent materiality threshold.

Source: Allen Consulting Group

As noted in Figure 7.2, a key element of estimating the NSRRS rates for primary and secondary students is to first develop an econometric model estimating the resource requirements for reference schools with different characteristics. The dependent variable in this model would most likely be Net Recurrent Income per Student (NRIPS). Ultimately, this approach will identify how different school characteristics influence per student school resourcing from *all sources*. A detailed summary of this econometric approach, and the associated options, is provided in Appendix C.

As it is necessary to estimate NSRRS rates and loadings for both primary and secondary students, which are applied to all school types (primary, secondary and combined schools), it is considered that one econometric model should be developed.²⁰ An alternative approach could be to estimate separate models for primary and secondary schools, with the results generated from these models then applied to combined schools.

Following development of an econometric model, the model would be used to predict NSRRS rates. This step requires assumptions being made about certain 'model settings' such as school size. In essence, it is necessary to specify the exact characteristics of a 'hypothetical school'. These characteristics are then combined with the regression estimation results to estimate the NSRRS. The ability of the econometric model to be used to estimate loadings is dependent upon whether the reference schools cover the breadth of school and student characteristics of interest (e.g. low SES and location).

²⁰ Combined schools include both primary and secondary students.

An illustration of this concept is provided in Figure 7.3. In the top graph, the model is used to predict the total resourcing requirement for a school with varying numbers of students (the black straight line).

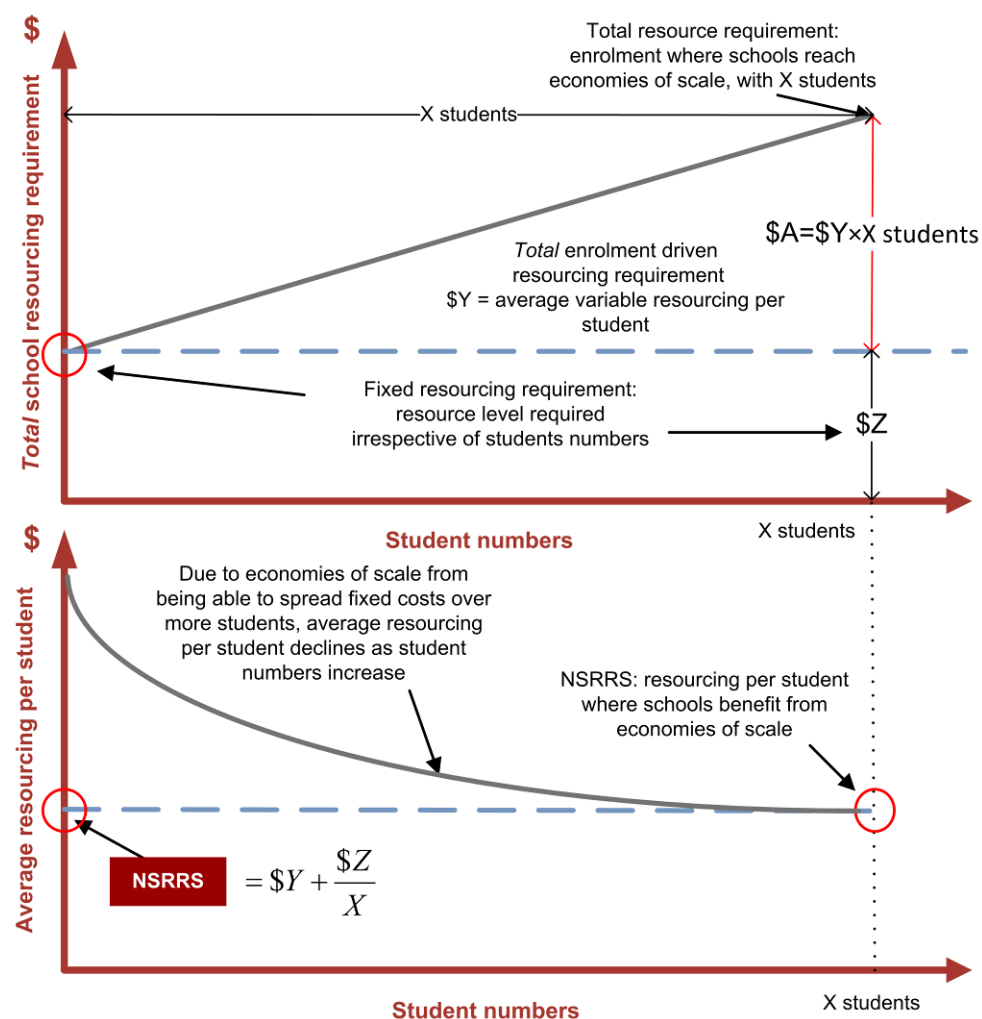
It is notable that the more students in the school, the slower the curved line increases. Indeed, the curve ‘plateaus’ at the point where there are X students. It is assumed that the NSRRS is to be set at this point, where there are X students.

The bottom graph turns the total school resourcing requirement estimate into a per student amount. In this graph, it is apparent that the more students in the school, the average resourcing requirement per student decreases. This is because as enrolments increase, fixed costs are able to be allocated across more students. In a school, these fixed costs are likely to include, for example, a principal and minimum complement of teachers required to cover curriculum.

Average resourcing per student plateaus at the point where there are X students (see red circles), with a school of this size able to benefit from economies of scale. It is at this enrolment point that the NSRRS is set. A different enrolment point would result in a different NSRRS estimate.

Figure 7.3

ESTIMATION OF THE NSRRS



Source: Allen Consulting Group

7.7 Indexation and adjustment

In addition to estimation of a NSRRS, it is also necessary to identify an appropriate methodology for the ongoing estimation of the NSRRS.

For example, it may be deemed appropriate that the NSRRS be indexed annually, and re-estimated (or re-based), say, every five years. The alternative approach of more frequent estimation of the NSRRS, such as annually, would consume significant resources. If a periodic indexation process is undertaken, this should be done using a transparent and evidence based methodology.

To inform identification of a preferred indexation methodology, a number of criteria have been identified:

- minimise the risk that increased expenditure by schools themselves *directly* affects indexation rate, through increased school expenditure 'determining' the indexation rate;
- indexation reflects changes in underlying costs of schooling, particularly factors outside the control or influence of individual schools or systems; and
- indexation does not include cost changes associated with quality changes.²¹

At this time, it is considered that only one indexation rate be applied to both NSRRS rates, and to all schools. This approach would need to be validated, to identify whether there are legitimate cost growth differences between primary and secondary schools, and between different parts of Australia.

A number of indexation options are identified in Table 7.2. A key feature of each of these options is that they exclude education-related costs. Customised indexes may need to be sourced from the Australian Bureau of Statistics meeting this requirement. The importance of this exclusion is highlighted in consumer price index data (year to March 2011). The total consumer price index grew at 3.3 per cent, whereas education prices grew 5.9 per cent in the same period (ABS 2011).

Furthermore, it may be appropriate to limit the labour price index to occupations comparable to those in schools.

Table 7.2

NSRRS INDEXATION OPTIONS

Options	Source	2010 to 2011 growth ^b
Consumer Price Index ^a	ABS 6401.0 ^e	3.3 per cent ^c
Labour Price Index ^a	ABS 6345.0 ^e	3.9 per cent ^c
Consumer and Labour Price Index (combined) ^b		3.78 per cent ^d
My School financial collection	ACARA	Not available

Note: ^a In practice, would exclude school education costs. ^b Weighted average of consumer price index, and labour price index, based on share of labour costs in schools. ^c Values do not exclude education costs ^d Assumed labour costs account for 80 per cent of school costs. ^e ABS catalogue number.

Source: Allen Consulting Group

²¹ This concept is applied in estimation of the consumer price index, where efforts are made to reduce the effect of quality changes in prices.

Chapter 8

Further development and maintenance of the NSRRS

The future development of a NSRRS will depend on broader recommendations from the Review Panel and decisions by the Australian Government on application of a NSRRS to fund schools.

However, the NSRRS model proposed in this report would require further detailed development prior to application. Specific matters required to be addressed would include:

- estimation of both the NSRRS and loadings including the appropriate treatment of resourcing for students with disability using the processes set out in Chapter 7 and other techniques;
- development of outcome standards and an assessment framework for school level validation of the initial NSRRS estimation; and
- undertaking a school level validation process of both outcomes and school level financial data.

Subsequent to the finalisation of the design of the NSRRS and the preliminary estimation process, there are additional issues that will require ongoing consideration and development. These include:

- ongoing refinement of the NSRRS model including options for the inclusion of a capital element either as a loading or within the standard itself;
- annual indexation and periodic adjustment of the NSRRS; and
- periodic review and evaluation of the effects of the NSRRS, in particular the extent to which outcomes are being achieved including through the application of loadings for specific student cohorts and schools.

It is important that these further developmental roles are undertaken using evidence-based and transparent analysis using statistical, econometric analysis, as well as professional judgement, in particular in relation to outcomes achieved by schools.

These functions should be overseen and undertaken at arms length from government, either through a specialist agency established for the purpose or through periodic reviews by an expert panel or committee.

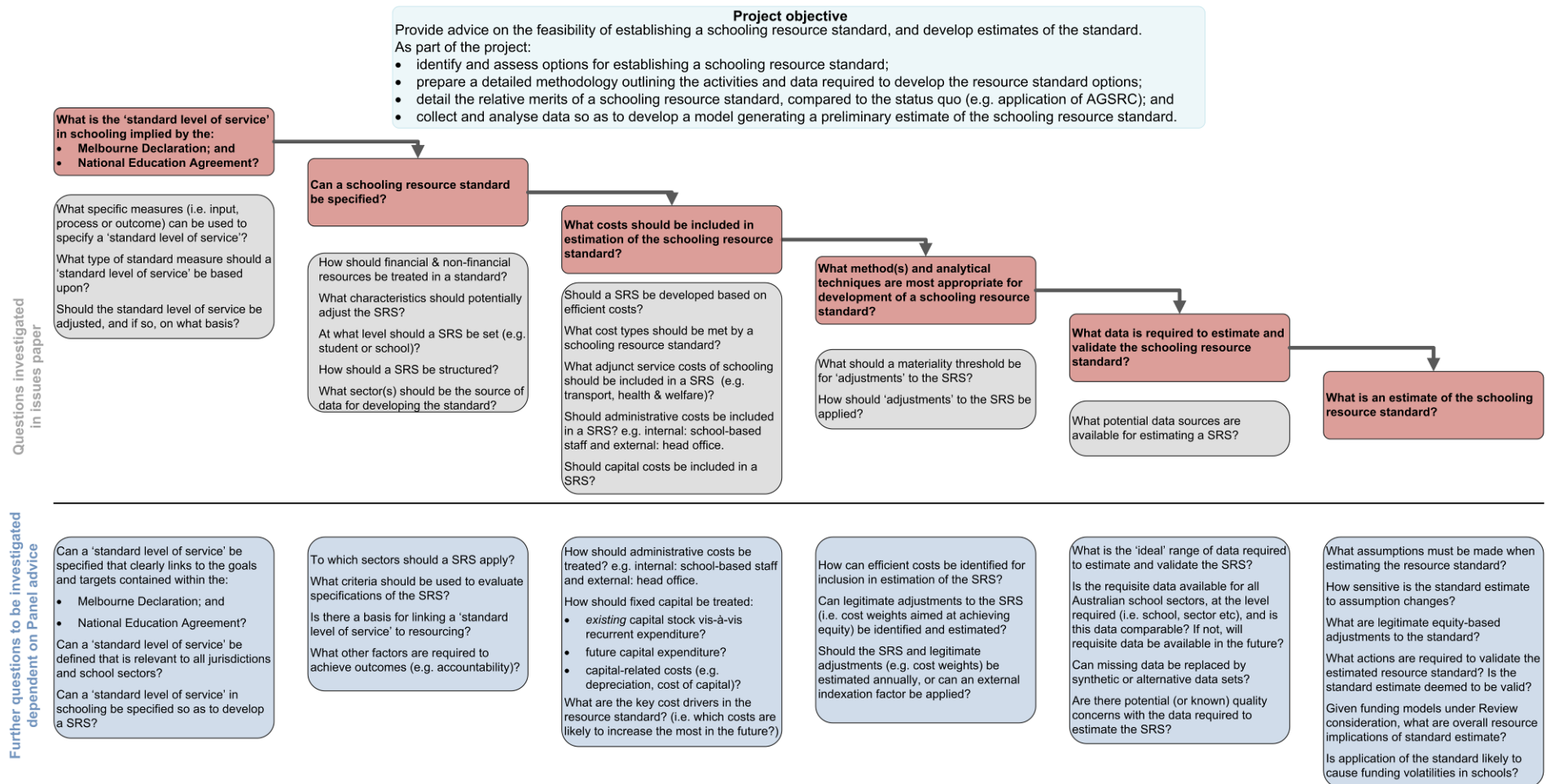
Appendix A

Project research questions

The project research questions are detailed in Figure A.1.

Figure A.1

PROJECT RESEARCH QUESTIONS



Source: Allen Consulting Group

Appendix B

Technical discussion meetings

Table B.1

TECHNICAL DISCUSSION MEETINGS

Organisation	Sector	Stakeholder	Date
Tasmanian Department of Education and Training	Government	Nick May (Acting Director - Finance and Resources)	2 February
Centre for Post-Compulsory Education and Lifelong Learning, University of Melbourne	Research	Stephen Lamb (Deputy Director) Richard Teese (Director)	9 February
The University of Sydney	Research	Jim McMorrow Lindsay Connors	10 February
NSW Department of Education and Training	Government	Leslie Loble (Deputy Director General - Strategic Planning and Regulation) Martin Graham Andrew Dowling	10 February
The University of Melbourne	Research	Professor Jack Keating	15 February
Victorian Department of Education and Early Childhood Development	Government	Jim Miles (Acting Executive Director - Office for Resources and Infrastructure) Claire Britchford (CFO) Nino Napoli (Assistant General Manager - School Resources Allocation) Mary Clarke (General Manager - Economic Analysis)	17 February
Independent Schools Council of Australia	Independent	Bill Daniels (ISA) Colette Colman (ISCA) David Robertson (Independent Schools QLD) Geoff Newcombe (Association of Independent Schools NSW) Nigel Bartlett (Independent Schools Victoria)	17 February
Northern Territory Department of Education and Training	Government	Gary Barnes (Chief Executive) Debbie Ethymiades (Executive Director Strategic Policy and Performance) David Ryan (Acting Executive Director - Corporate Services)	18 February
ACT Department of Education and Training	Government	Mark Whybrow (Acting Executive Director - Corporate Services)	21 February
Productivity Commission	Government	Lawrence McDonald Rick Baker	23 February
National Catholic Education Commission	Catholic	Dr Bill Griffiths (CEO) Terese Temby (Chair of National Education Commission) Ron Dullard (Director/CEO - WA) Brian Croke (Executive Director/CEO - NSW) Ross Fox (Senior Adviser - Funding and Government Relations/CEO - VIC) Vic Lorenz (Assistant Director, Finance and Resourcing - QLD)	25 February
Australian Centre for Education Research	Research	Dr Phil McKenzie (Research Director) Adrian Beavis (Research Director) Paul Weldon (Research Fellow)	28 February

Organisation	Sector	Stakeholder	Date
Victorian Department of Health	Government	John Bayliss-McCulloch	3 March
WA Department of Education and Training and Department of Education Services	Government	Richard Strickland Bronte Parkin Nick Markostamos Mike Helm Peter Titmanis John Leaf	4 March
QLD Department of Education and Training	Government	Lesley Lalley (Executive Director) Benita McGovern (Director) Anne Kuhnemann (Executive Director) Ian Mcconachie (Principal Policy Officer) Margaret Pethiyagoda (Executive Director) Robyn Albury Boyd Paties Patrick Bryan.	7 March
Department of Prime Minister and Cabinet, Department of Treasury, Department of Finance and Deregulation	Government	Maxwell Masepp (Department of Treasury) Kate Glazebrook (Department of Treasury) Benedikte Jensen (Department of Prime Minister and Cabinet) Anne Croudace (Department of Prime Minister and Cabinet) Anne Martin (Department of Finance)	7 March
Australian Government Grants Commission	Government	Tony Nichols (Director - Education and Justice) Dermot Doherty (Assistant Secretary)	7 March
SA Department of Education and Children's Services	Government	Gino DeGennaro (Chief Executive)	29 March
Australian Curriculum, Assessment and Reporting Authority	Government	Peter Hill (Chief Executive Officer)	30 March

Source: Allen Consulting Group

Appendix C

Technical estimation method

This appendix builds upon Chapter 7 to provide a detailed methodology for how the NSRRS and loadings can be estimated using econometric methods.

C.1 Role of econometric modelling

The application of econometric regression techniques allows the role that different school and student and school characteristics have in the resourcing of a school to be 'disentangled'.

To use a very simple example, consider 100 government schools of the same size and characteristics, and from the same jurisdiction. However of these schools, 75 are in a metropolitan location and 25 are in a provincial town. Under the funding model applied by the Department of Education, all provincial schools receive an additional 10 per cent funding, so as to meet the higher costs of a provincial location.

Without knowing the specifics of the funding model, regression analysis allows identification of the additional funding tied to a provincial location.

C.2 Regression methods

It is proposed that two regression methods be applied in the estimation process:

- ordinary least squares regression; and
- quantile regression.

In addition to quantile regression, it would be appropriate to also consider a technique known as stochastic frontier analysis. Stochastic frontier analysis allows estimates a 'frontier', and could be used to estimate an 'efficient' value of both the NSRRS and loadings. However, the ability to use stochastic frontier analysis depends upon this modelling approach first meeting a number of technical requirements, such as the distribution of predicted residuals.

The ordinary least squares regression can be considered 'average' regression, where the objective is to estimate the mean of a dependent variable (in this case NRIPS).

In contrast, quantile regression can be used to estimate a particular percentile of a dataset. The target percentile is typically the median, but alternative percentiles can also be specified. For the purposes of this discussion, it is assumed that the median is the most relevant percentile, such that quantile regression is referred to as median regression.

In a median regression, the objective is to estimate the median of the dependent variable, conditional on the values of a set of independent variables. Accordingly, median regression finds a line through the data that minimises the sum of the absolute residuals rather than the sum of the squares of the residuals, as in ordinary least squares regression. It is understood that NRIPS is relatively skewed, such that the median NRIPS is less than the mean.

C.3 Specification of regression models

Both the ordinary least squares and quantile regression models should seek to include the range of variables considered to influence how schools are resourced. These include:

- enrolments;
- specific student characteristics (e.g. LBOTE students, and Indigenous students);
- socio-economic status;
- location (e.g. metropolitan or remote);
- sector; and
- jurisdiction.

Finally, it is considered that the regression models should include all schools, but with specific 'flags' against the identified reference schools. This will allow consistent estimation of the NSRRS, and potentially loadings, for all schools, including reference schools.

A potentially significant exclusion from the above list of variables is students with disability (by severity). This is because nationally consistent data on students with disability does not currently exist. This issue can be addressed in part through the exclusion of specialist schools. However, it is envisaged that there will still be a number of mainstream schools attended by students with disability, and who attract additional funding for this reason. This situation could mean that both NSRRS and loading estimates are inflated, as additional funding associated with students with disability are built into the estimates.

C.4 Application of models to predict the NSRRS and loadings

The econometric models described above are used as the basis for estimating the NSRRS. It is considered that the NSRRS rate should be based on a school with no 'disadvantages' (i.e. factors that place upward pressure on resourcing requirements).

Accordingly, it is necessary to specify regression model settings, to then estimate the NSRRS.

NSRRS rates

In using the model to estimate the NSRRS rates, it will be necessary to specify hypothetical primary and secondary school. It is envisaged that this school would comprise the following:

- large school benefiting from economies of scale;
- metropolitan location;
- above average socio-economic status; and
- no disadvantaged students potentially attracting additional funding.

Following this specification, the regression model results will be used to 'predict' the NSRRS rates for a school with these characteristics.

Loadings

A similar process to that detailed above would be applied to estimate loadings. As noted earlier in the report, the ability to use the regression model results to estimate loadings will be dependent upon there being sufficient reference schools with the characteristics of interest. The estimation of loadings will also require the specification of a hypothetical school, with decisions required to be made on how the model settings should be established when estimating different loadings.

For instance, there is a question of when estimating loadings for small schools, whether these loadings are based on the school being in a metropolitan or non-metropolitan location.

Appendix D

Glossary

Capital costs are defined as a schools cost in maintaining and building on its capital resources, in order to facilitate educational outcomes. In considering capital costs, existing and new schools should be differentiated.

Fixed costs are defined as the base costs of a school in order for it to operate.

Loadings can be defined as additional levels of funding, on top of 'base cost' funding for schools.

Overheads are costs enabling the school sector or system to operate. For example, regulation, administrative sector and system costs or national testing.

Recurrent costs are defined as those school costs that are reoccurring from year to year. These costs are akin to operating expenditure.

Variable costs are defined and changing from year to year, and with changes to student and overall school characteristics, particularly student numbers.

Bibliography

ABS (Australian Bureau of Statistics) 2010, *Schools, Australia, 2010*, Cat. No. 4221.0.

ABS (Australian Bureau of Statistics) 2011, *Consumer Price Index, Australia, March 2011*, Cat. No. 6401.0.

Adnett, N & Davies, P 2002, *Markets for Schooling*, Routledge, New York.

Alberta Education 2010, *Funding Manual for School Authorities*, School Year 2010/2011.

Angus, M, Olney, H, Ainley, J, Caldwell, B, Burke, G, Selleck, R & Spinks, J 2004, *The Sufficiency of Resources for Australian Primary Schools*, for the Department of Education Science and Training.

Augenblick J 2001, *Calculation of the cost of an adequate education in Maryland in 1999-2000 using two different analytic approaches*, Augenblick and Myers Inc., Maryland Commission on Education Finance, Equity, and Excellence (Thornton Commission).

CSC (Commonwealth Schools Commission) 1984, *Australian Government Standards for Australian Schools*, Canberra.

Chambers J, Levin J & Shambaugh L 2010, 'Exploring weighted student formulas as a policy for improving equity for distributing resources to schools: A case study of two California school districts', *Economics of Education Review*, Vol. 29, pp. 283-300.

COAG (Council of Australian Governments) 2009, *National Education Agreement: Intergovernmental Agreement on Financial Relations*.

COAG Reform Council 2010, *National Education Agreement: Performance report for 2009*, COAG Reform Council, Sydney.

Costrell, R, Hanushek, E & Loeb, S 2008, 'What Do Cost Functions Tell Us About the Cost of an Adequate Education?', *Peabody Journal of Education*, Vol. 83, pp. 198-223.

DEECD (Victorian Government Department of Education and Early Childhood Development) 2010, *Student Resource Package Guide*, <<http://www.education.vic.gov.au/management/srp/guide/default.htm>>, Accessed 23 March 2011.

DEETYA (Australian Government Department of Employment, Education, Training and Youth Affairs) 1997, *Schools Funding: consultation report*, Australian Government, Canberra.

Deloitte 2011, *ACARA 2009 National Financial Data for My School.edu.au*. Unpublished.

Downes, T & Stiefel, L 2008, 'Measuring Equity and Adequacy in School Finance', in Ladd H & Fiske E (eds.), *Handbook of Research in Education Finance and Policy*, Routledge, New York.

Duncombe, W 2006, 'Responding to the Charge of Alchemy: Strategies for Evaluating the Reliability and Validity of Costing-Out Research', *Journal of Education Finance*, Vol. 21, No. 2, pp. 137-159.

Duncombe, WD & Yinger, J 2004, *How much more does a disadvantaged student cost?*, Centre for Policy Research, Maxwell School of Citizenship and Public Affairs, Syracuse University

Grubb, W 2009, *The money myth: school resources, outcomes, and equity*, Russell Sage Foundation, New York.

Grubb, W 2011, 'Narrowing achievement gaps in tough times: rethinking the roles of money and school resources', in Timar, T & Maxwell-Jolly, J (eds.), *Connecting the Dots and Closing the Gaps* (in press), Cambridge: Harvard Education Press.

Hanushek, E 1997, 'Assessing the Effects of School Resources on Student Performance: An Update', *Educational Evaluation and Policy Analysis*, Vol. 19, No. 2, pp. 141-164.

Hanushek, E & Lindseth, A 2009, *Schoolhouses, Courthouses, and Statehouses: Solving the Funding-Achievement Puzzle in America's Public Schools*, Princeton University Press, Princeton.

Harrington, M 2010, *Australian Government funding for schools explained*, Background Note, Parliament of Australian, Department of Parliamentary Services, Canberra.

Interim Committee for the Australian Schools Commission 1973, *Schools in Australia : report of the Interim Committee for the Australian Schools Commission*, Australian Government Publishing Service, Canberra.

Keating, J 2010, *Resourcing schools in Australia: a proposal for the restructure of public funding*, The Foundation for Young Australians, Victoria.

Lamb S, Rumberger, R, Jesson, D & Teese, R 2004, *School Performance in Australia: Results from analysis of school effectiveness*, Report for the Victorian Department of Premier and Cabinet.

Machin, S 2006, *Social disadvantage and education experiences*, OECD Social, Employment and Migration Working Papers, France.

Masters, G, Rowley G, Ainley, J & Khoo, S 2008, *Reporting and Comparing School Performance*, A report to the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA).

McMorrow, J & Connors, L 2010, *New Directions in Schools Funding: a proposed model*, The University of Sydney.

MCEETYA (Ministerial Council on Education, Employment, Training and Youth Affairs) 2008, *Melbourne declaration on educational goals for young Australians*, Ministerial Council on Education, Employment, Training and Youth Affairs, Melbourne.

NSW DET (New South Wales Department of Education and Training 2011, *Discussion Paper: Australian School Funding Arrangements*, Sydney.

PC (Productivity Commission) 2010, *Public and Private Hospitals: Multivariate Analysis*, Supplement to Research Report, Canberra.

Quality of Education Review Committee 1985, *Quality of education in Australia: report of the Review Committee*, Australian Government Publishing Service, Canberra.

Review of Funding for Schooling 2010, *Emerging Issues Paper*, Australian Government, Canberra.

Schools Resourcing Taskforce Secretariat 2005, *Resourcing the National Goals for Schooling, Stage 2 Report*, Prepared for the Ministerial Council on Education, Employment, Training and Youth Affairs, Canberra.

Smith, P 2007, *Formula Funding of Public Services*, Routledge, London.

Thomson, S De Bortoli, L Nicholas, M Hillman, K and Buckley, S. 2009, *Highlights from the full Australian report: Challenges for Australian Education, Results from PISA 2009*, ACER.

Thornton, A 2002, *Commission on Education – Finance, Equity and Excellence; Final Report*, Report to the Department of Legislative Services, Annapolis, Maryland.

VRQA (Victorian Registration and Qualifications Authority) 2009, *Government School Performance Summary 2009*, <<http://www.vrqa.vic.gov.au/StateRegister/Search.aspx/Search?SearchType=0>>, Accessed 6 May 2011.

Wilkinson, I, Caldwell, B, Selleck, R, Harris, J & Dettman, P 2006, *A History of State Aid to Non-Government Schools in Australia*, for the Department of Education Science and Training, Canberra.