report

Scoping the *Widening Participation Longitudinal Study*

PREPARED FOR
AUSTRALIAN GOVERNMENT DEPARTMENT OF EDUCATION AND TRAINING

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Executive summary

Australia's investment in educational equity is not well understood

Young people from disadvantaged social groups under-participate in Australian higher education, which costs the country in both social and economic terms. Time spent in education is a significant predictor of future employment and earnings (Lamb et al 2004), and the systematic underrepresentation of particular social groups in occupations that require a tertiary qualification can undermine the capacity of these professions to appropriately service and accommodate diversity.

In the 2015-16 Budget, the Australian Government allocated $175 million for partnerships and programs to enhance higher education participation for disadvantaged students, to be administered in 2016 via the Commonwealth's Higher Education Participation Programme (HEPP), which commenced in 2010 (Australian Government Department of Education and Training 2015).

Educational equity interventions – such as those facilitated through HEPP – seek to achieve equity in access to formal skill development opportunities that enable individuals to realise their life potential. In Australia, interventions with relevance to higher education participation are typically implemented for secondary school students (to encourage post-compulsory study) and for commencing higher education students (to enhance retention and attainment).

The effectiveness of these interventions is difficult to measure. Interventions are facilitated by a range of providers in multiple contexts and their impact is not well understood, making it difficult to evaluate their effectiveness and make evidence-based decisions on future program implementation.

By enhancing Australia's capability to determine the cost-effectiveness of equity interventions, these activities could be better targeted in scope and timing to achieve enhanced effects for individuals and for the Australian economy and society. Furthermore, if we can more accurately determine how and why there are differences between individuals in relation to higher education access and achievement, Australian policymakers, researchers and education practitioners will have the requisite knowledge to design future interventions that work.

New data infrastructure is needed to measure effectiveness

Australia does not currently have the data to make these determinations, so the Australian Government Department of Education and Training (the Department) commissioned scoping research to deliver design specifications and indicative costings for a new *Widening Participation Longitudinal Study* (the WPLS).

The WPLS is a potential new longitudinal study that would look at the identified equity groups in scope for equity policy and programmes, and collect data for the purpose of:

- analysing barriers to participation in higher education and the comparative weight of those barriers
- investigating the influences on students' aspirations and ability to access higher education, and the varying importance of these influences
- assessing the effectiveness of specific equity activities and interventions.

The WPLS represents a new research initiative by the Australian Government specifically designed to determine the factors influencing higher education participation in Australia. It has a focus on the effectiveness of equity interventions that aim to enhance participation and attainment by population sub-groups who typically experience educational disadvantage.

The objective of this Final Report for the Department of Education and Training is to explain and evaluate three relevant study design options that meet the brief for a new WPLS, and the findings are designed to inform the Department's decision-making with regard to future WPLS implementation.

Research and consultation have informed WPLS study design

The study designs detailed in this report are the outcome of a detailed research and consultation process undertaken in 2015 by The University of Queensland's Institute for Social Science Research (ISSR) and Victoria University's Centre for International Research on Education Systems (CIRES), involving:

- planning, engagement and continuous consultation with the Department
- review of existing literature
- review of relevant studies and their specifications
- demographic research to define the characteristics of study participants
- identification of equity interventions of interest
- consultation with key stakeholders from the education sector (including school personnel, government representatives, university equity officers, survey administrators, and academic specialists).

The WPLS represents an opportunity to map the pathways of disadvantaged learners towards higher education, with a focus on little-understood issues relating to student aspirations and expectations, as well as broader social and economic factors such as family attitudes, financial decision-making, peer influences, and mental and physical wellbeing.

The role of the WPLS in determining intervention effectiveness is also a central value proposition for the new study, as there are no identified existing surveys in Australia that measure individual

experiences of equity interventions in the higher education context, either before entry or post-commencement.

As an outcome of early-stage research, the Department and the research team agreed the WPLS would best be designed as an accelerated cross-sequential longitudinal study covering up to three age cohorts: Primary School, Secondary School, and Higher Education.

The Secondary School and Higher Education Cohorts are of central importance to the WPLS because education equity interventions targeting higher education are typically delivered in these contexts. Data collection from a Primary School Cohort is less integral but may generate important new insights into the formation of educational aspirations and expectations in earlier education and the potential impacts for lifelong learning, with the scope to inform interventions in earlier life if appropriate.

Longitudinal studies, like the proposed WPLS, are characterised by repeat measures with individuals over a period of time, making them relatively expensive to implement; they require a significant commitment to ongoing data collection and retention strategies to reduce sample attrition over the study period. The WPLS has been scoped with acknowledgement of the likely cost constraints for implementation and the design options in this report seek to achieve usable data for research and policy-making within a four-year study window.

The WPLS can be built from multiple data sources

This scoping study identifies three primary strategies to obtain data for measuring the effects of equity interventions that address disadvantage in higher education for the cohorts specified:

1. *Using administrative data,* including *National Assessment Program - Literacy and Numeracy* (NAPLAN) data as a means to obtain comprehensive education participation and attainment information without over-burdening study participants
2. *Leveraging existing longitudinal survey data*, namely the *Longitudinal Surveys of Australian Youth* (LSAY), the *Longitudinal Study of Australian Children* (LSAC), and the *Quality Indicators for Learning and Teaching* (QILT) surveys to obtain existing information for the Primary School and Secondary School Cohorts in particular, and drawing on the government's existing data investments
3. *Collecting new longitudinal data* specific to the objectives of the WPLS study to address data not otherwise covered in existing records, including engagement with equity interventions, and student aspirations and expectations.

The WPLS needs to address interventions using both new and existing data

The report concludes with three study designs that build on the above data scaffolding in different ways, with varying implications for cost and analytic value. The options are:

1. *Basic Design*: linked data from existing longitudinal surveys and administrative records, with the capacity to generate some insights into the pathways through education for identified equity groups, but not to adequately assess the mediating role of equity interventions

2. *Recommended Design:* targeted new survey data collection with Secondary School and Higher Education Cohorts that explicitly addresses interventions. This includes sampling of up to 1000 respondents from the five primary identified equity groups, and is modelled on LSAY to broaden the analytic capabilities of both surveys

3. *Extended Design*: an expansion of the recommended approach. This design includes data collection with a Primary School Cohort, supplementary studies to counter potential sample attrition for the most hard-to-reach equity groups (*Aboriginal and Torres Strait Islander People* and *People with a Disability*), and a survey with the sixth identified equity group (*Women in Non-Traditional Areas*).

1 Cost efficiencies in study design and implementation are best achieved by using existing data sources, but current administrative data and longitudinal survey data are not sufficient in isolation to address the research needs of the WPLS. We recommend combining existing data with targeted new surveys to build a viable design framework for the study. The Recommended Design option offers the best value for money with regard to a new government investment in longitudinal data collection for assessing the impact of equity interventions on higher education participation and attainment. It also provides the Department with the option to fund additional data collection modules to meet specific policy and operational objectives, if required.

PART A
BACKGROUND AND APPROACH TO SCOPING THE WPLS

1 Background to the scoping study

The Scoping Study for the WPLS was contracted in 2014 and the activities in support of methodological design have included a literature review, stakeholder engagement, and a review of comparable studies. The design options detailed in this Final Report reflect the outcomes of this process, as well as decision-making by the Department in dialogue with the research team during the course of the study.

1.1 Brief for scoping the WPLS

In 2014, the Department issued an invitation for Expressions of Interest in scoping a WPLS that would aim to:

- explore the outcomes for people from disadvantaged backgrounds in accessing and participating at university, by tracing the progress of cohorts of prospective and actual students over a period of time
- track the outcomes experienced by people from disadvantaged backgrounds as a result of longer-term equity measures and of various equity interventions over a period of time
- gather detailed, individualised data on barriers to higher education and influences that affect students' choices about higher education
- provide detailed information about the effectiveness and significance of each intervention, both individually and in combination with other influences

> "This study [the WPLS] will develop evidence to inform equity policy and practice by government and universities. It will also inform evaluation of the effectiveness of higher education equity programmes, in particular the Higher Education Participation and Partnerships Program (HEPPP) and its replacement from 2015, the Higher Education Participation Programme (HEPP)"
>
> (Australian Government Department of Education, invitation for Expressions of Interest: Widening Participation Longitudinal Study – Scoping Study, 2014)

1.2 Methodology

As background work towards study scoping, our research team completed a review of existing literature relating to higher education participation for disadvantaged students, including:

- influences on students' aspirations and ability to access higher education
- pathways into higher education
- outcomes of participation
- the nature and effectiveness of education equity interventions

We also collected information on the knowledge, data needs, and research priorities of end-users and other stakeholders. This was conducted through consultation with key stakeholders from the education sector, including school personnel, government representatives, university equity officers, survey administrators, and academic specialists. A list of stakeholders consulted in this process is available at Appendix I.

We consolidated the findings in a WPLS Discussion Paper (August 2015) for the Department that:

- summarised the research evidence on higher education participation for disadvantaged students as it pertains to the WPLS
- identified leading surveys on higher education participation for disadvantaged students and validated data items relevant to the WPLS
- suggested topics and issues that should be covered in the WPLS, based on the literature and subject to endorsement by the Department
- identified data analysis techniques used by other leading surveys in this field, evaluated their strengths and limitations, and considered the data requirements needed to support varying techniques

This Final Report is informed by the findings in the Discussion Paper as well the Department's response, which included the prioritisation of key research objectives and the identification of potential operational constraints for implementation. Where applicable, readers are encouraged to refer to the Discussion Paper for more detailed background to the design of the WPLS.

Key findings from the WPLS Discussion Paper

- There are no identified existing surveys in Australia that measure individual experiences of equity interventions in the higher education context, either before entry or post-commencement. There is also no capacity to assess the impact of these interventions on higher education participation and attainment, making this a distinct value proposition for a new WPLS.
- There is little existing data, either in Australia or internationally, that provides evidence about the impact of pre-adolescent experience on higher education. This could potentially be addressed through a new study.
- Student aspirations in relation to higher education may have a limited relationship to disadvantage status, but student expectations (their beliefs about their likely life outcomes) are strongly influenced by background factors (James 2000 and 2002; Naylor et al 2013). Interrogating the complex relationship between student aspirations, expectations, and achievements as they play out from childhood could be a key contribution of the WPLS.
- There is limited research on the impact of disability on higher education access and performance, and there are research challenges due to the heterogeneity of conditions that may produce disability and the diverse social, health and economic impacts of disability. These challenges need to be carefully managed but there is scope through a longitudinal design to capture both the temporal and

enduring impacts of disability on higher education participation, experience and attainment.

- The evidence relating to the impact of financial considerations on disadvantaged students' decisions to participate in higher education is mixed (Gorard, Huart, and Davies 2012). There is scope for the WPLS to explore this as one of the influences on decision-making with regard to higher education.
- There is considerable variation in the rates of participation for students from non-English speaking backgrounds (see variation in results in research by Bowden and Doughney 2009; James et al 2004; Miralles 2004 cited in Aird et al 2010; and Scull and Cuthill 2006). The WPLS may offer new insights on the processes leading to disadvantage or advantage for this equity group, if there is a sufficient sample size to allow disaggregation.
- Although there is broad data available on the performance of disadvantaged young people who are admitted into higher education, there is limited data on their outcomes post-completion. This gap may be redressed through data collection over an extended period of up to eight years, subject to resourcing constraints.

2 Policy background to the WPLS

Increasing participation in higher education for disadvantaged students has been an important element in successive governments' approaches to building national skill levels, and promoting the capacity of individuals and communities to participate fully in social and economic life. Policy initiatives at state and national level have sought to increase access to education for disadvantaged students so that they are better able to achieve their life potential. Robust monitoring and evaluation of these equity interventions is essential to maximise the benefits for students and optimise the investment by government.

2.1 There are six identified equity groups for Australian higher education

The WPLS has at its core a focus on the six identified population sub-groups to which equity interventions in Australia have historically been targeted. These groups are:

1. *People from Low Socioeconomic Backgrounds*
2. *People Living with a Disability*
3. *Aboriginal and Torres Strait Islander People*
4. *People from Rural and Remote Areas*
5. *People from a Non-English Speaking Background* (NESB)
6. *Women in Non-Traditional Areas of Study* (WINTA).

The prioritisation of these groups is based on a theoretical approach that conceptualises equity as increasing participation in higher education among groups of people that are typically underrepresented. There is debate about how educational equity is best framed, whether through a focus on participation (access to education, and retention) and/or an emphasis on outcomes (educational attainment, labour market participation, and wellbeing). For the purpose of WPLS scoping, we take higher education participation as the primary measure of educational equity, with consideration of education outcomes where possible.

2.2 Australia has a long history of education interventions for equity groups

Enhancing access to higher education in Australia has been a fundamental goal of all Australian Governments since the Commonwealth first expanded its investment in Australian universities in the late 1950s and assumed full responsibility for funding higher education from the states in 1974.

The Australian Government's *Higher Education Policy Statement* (DEET 1988) set out the government's objectives for continued expansion of higher education to improve participation in tertiary studies in Australia. Recognising that system growth itself was not sufficient to support fairness and opportunity in Australian higher education, the Government - for the first time in policy - identified specific underrepresented groups, and established a requirement for universities to set equity goals and develop related strategies to achieve them.

In 1990, a comprehensive national equity framework was articulated through *A Fair Chance for All* (DEET) to give full effect to these requirements. A set of higher education equity performance indicators were also developed (Martin 1994), against which the Higher Education Council's National Board of Employment, Education and Training reported on progress in 1996.

In 2003, the Coalition Government emphasised equity objectives in its policy statement *Our Universities Backing Australia's Future,* with a significant emphasis on access by Indigenous people to higher education.

Five years later, the 2008 *Review of Australian Higher Education* (the Bradley Review) delivered a comprehensive analysis of the performance of Australian higher education, in relation to equity generally and, more specifically, in relation to the target groups outlined above. One of the Review's terms of reference was "supporting and widening access to higher education, including participation by students from a wide range of backgrounds" (Bradley 2008). Based on analysis of enrolment and participation data, the Bradley Review found that three groups remained significantly underrepresented in higher education: *People from Low Socioeconomic Backgrounds, People from Regional and Remote Areas,* and *Aboriginal and Torres Strait Islander People*.

A central recommendation of the Review was to boost participation through the further expansion of higher education, chiefly by uncapping the funding for undergraduate degrees. It found that expansion in itself would not be sufficient to improve equity outcomes and, in light of this, the Bradley Review recommended the Government adopt a target that students from low socioeconomic backgrounds represent 20 per cent of all undergraduate enrolments by 2020. The Review also recommended that programs aimed at improving educational equity be funded at a level of four per cent of teaching grants, and that performance-based funding models include participation, completion and progress rates for the three equity groups seen as most at risk (Bradley 2008, p.160).

The Australian Government responded to the Bradley Review in a document titled *Transforming Australia's Higher Education System* (2009). The Government adopted the recommendation for a participation target for *People from Low Socioeconomic Backgrounds* and indicated it would support the Review's other equity-related recommendations in the higher education funding and accountability framework.

In 2010, the Government established the HEPPP – now renamed HEPP – to support equity in Australian higher education, with three primary areas of focus:

1. Allocating funding to universities based on the proportion of low socioeconomic students in the university
2. Creating partnerships with schools and other agencies to raise aspirations and build capability in potential students
3. Funding national projects aimed at supporting the implementation of HEPP nationally and in institutions (Australian Government Department of Education and Training 2016a).

The WPLS is a research initiative intended to support the Australian Government to understand the effects of its equity interventions, including, but not limited, to those facilitated through HEPP.

2.3 Overall equity improvements can mask variable performance in the sector

In 2015 the National Centre for Equity in Higher Education prepared a report on *Student Equity Performance in Australian Higher Education* that provides some indication of the progress made in recent years:

> *Equity student enrolments have expanded at varying degrees between 2007 and 2014. For instance, the enrolment of students with disability increased by 73.2% while Indigenous enrolments increased by 58.9%. Enrolments from regional (30.3%) and remote (16.1%) areas and the enrolment of women in non-traditional areas (19.8% from 2008) saw slower growth, while low SES student enrolments grew 44.9% over this period. Growth in NESB was 50.4%.*
>
> *Low SES students accounted for 17.9% of undergraduate enrolments in 2014, up from 16.3% over 2007 to 2009, which reflected its historic share as an indicator. Students with disability represented 5.8% of all domestic undergraduates in 2014, up from 4.4% in 2007, reflecting overall growth in enrolments. Indigenous students saw continued growth in their share to 1.6%. Regional (18.9% in 2014) and remote (0.9%) have seen fluctuations in their shares, while the NESB student share of total enrolments has increased from 3.2% in 2007 to 3.6% in 2014 and women in non-traditional areas has declined to 17.8% in 2014* (Koshy and Seymour 2015).

Most of the gains in equity performance occurred from 2009 when the Government's new policy framework began to take effect, and universities expanded enrolments at marginal funding levels in anticipation of the full implementation of demand-driven funding from 2011.

There are significant differences between universities' types and groupings across these system-level outcomes.

2.4 Higher education equity policy is currently uncertain

The current higher education equity policy framework is in a state of flux after the Senate rejected higher education reforms and funding measures announced in the 2013 Budget.

The Coalition Government announced in 2014 that it would discontinue the previous Labour Government's higher education targets to increase participation by people from low socioeconomic status backgrounds to 20 per cent by 2020, as well as the more general degree attainment targets set by the former Government. Funding was also removed or reduced for some equity programs. Reward funding for equity performance ceased from 2014, with savings of $121.1 million over five

years, and HEPP costs have been reduced by $51.3 million, with an Access and Participation Fund of $582.7 million now in place to support low socioeconomic status students (Dow 2016).

The Coalition Government announced in 2014 that a new Commonwealth Scholarship scheme would be established to support student access, participation, and attainment. The scheme was part of its proposed deregulation of higher education student fees, and providers with more than 500 funded students would be required to establish an institutional fund into which they would contribute $1 for each additional $5 in revenue, beyond savings from reductions in per-student funding. In addition, the Government announced a proposed extension of demand-driven funding to sub-degree higher education programs as well, indicating that this would help create additional pathways into higher education.

At the time of publication, these measures have not passed the Senate, and the Australian Government is undertaking further consultation on its overall higher education funding and policy framework.[1] The WPLS is being scoped within a changing policy context for Australian higher education participation but these changes also point to the value of the study. The current policy climate presents several major issues around the current and future approach to equity in Australian higher education, for which a new WPLS might provide evidence (see Chapter 3).

[1] Please note that this report was prepared prior to the release of the report *Driving Innovation, Fairness and Excellence in Australian Education* (Department of Education and Training 2016) and the announcement of the 2016 Federal Government election. The design decisions in relation to the future implementation of any WPLS would need to reflect the final policy decisions of the incoming Federal government.

3 The value of a WPLS

There are gaps in existing research and data relating to equity in higher education, as well as emerging policy questions, that may be tackled using WPLS data. Ultimately, the primary value proposition of a new WPLS for the Australian Government relates to the evaluation of policies, programs and interventions to improve education equity and in determining effectiveness at a national level.

3.1 A WPLS could enhance our understanding of non-traditional education pathways

The Australian higher education system is earmarked for further growth, and this is likely to come from students entering university directly from schools and through the Australian Tertiary Admissions Ranking (ATAR) system, particularly from the defined equity groups as well as from older learners (Robinson 2016).

At present, existing administrative datasets may be used to link schooling participation and outcomes to higher education participation and attainment, but understanding non-traditional pathways into higher education is more problematic. For example, we know less about students who have experienced interrupted schooling, have not attended school in Australia or who are entering as older students, and the longitudinal nature of a new WPLS could enhance our understanding of these non-traditional pathways into higher education.

3.2 A WPLS could provide insights into higher education entry processes

A WPLS could provide insights into the nature and appropriateness of the mechanisms for higher education entry. There is increasing debate about the relationship between expansion of the higher education system in Australia and education quality. Universities are trending towards an increased intake of students with low ATAR scores, which raises questions about the prospects of these students with regard to retention, academic success, and post-education outcomes, particularly as the level of demand for graduates has begun to fall.

In the context of this debate, there has been confusion about the nature of the ATAR system. ATARs are often mistakenly viewed as a grade or mark, rather than a ranking under which students with lower ATARs will inevitably be admitted to higher education when there is an expansion in student intake. Concerns have also been raised about the transparency of ATAR requirements for specific courses offered by Australian universities.

Universities have pointed to the limitations of ATAR relating to higher education participation (Robinson 2016) and several have argued for, or introduced, other methods and processes for university entry both in general or to specific university courses or programs. The Australian Government has announced that a Higher Education Standards Panel will examine issues relating to

the transparency of student admission requirements and the Australia Labour Party's Higher Education Policy, whilst retaining an emphasis on education equity (Robinson 2016). A WPLS could contribute data and evidence on the validity of higher education entry mechanisms and how they function as a facilitator or a barrier to higher education participation by identified equity groups.

3.3 A WPLS could support teaching practices that meet the needs of diverse students

An increasing focus on student retention, completion, and outcomes will require universities to continually review and adapt teaching and learning strategies to successfully engage students. In particular, this is the case for students who have not been involved in highly structured and intensive learning, such as senior secondary certificates, whose progress will need to be closely tracked.

While individual student tracking is possible through existing higher education datasets, linking progress to the student's background and longer-term outcomes would enable teaching and learning strategies and support for different learner cohorts to be developed based on evidence of successful participation and outcomes. Similarly, information for potential students in particular cohorts, their families, and specific communities could be developed and targeted more effectively, drawing on evidence from qualitative data fields in a WPLS.

3.4 The primary value of the WPLS is in relation to intervention effectiveness

The biggest research challenge is in determining the effectiveness of education equity interventions, and this is recognised by government. With funding from the Australian Government, The University of Melbourne's Centre for the Study of Higher Education developed a *Critical Interventions Framework* in 2013. This framework conceptualises and supports intervention policy, and could be complemented by the evidence provided from the WPLS to evaluate policy and program effectiveness.

A WPLS is required because measurement of the effectiveness of interventions addressing disadvantage is currently based on analysis of administrative and survey data that are not fit-for-purpose. Although useful for assessing overall system and institutional performance, these datasets tell us little about effects on individuals. Further data is needed to assess the effects on access, participation, engagement, and outcomes for students with non-linear and episodic engagement in higher education over several years.

Over time, equity groups' higher education participation and outcomes have been assessed through enrolment and survey data. However, new data is needed to assess the often complex and varied pathways into and from higher education, students' progress and experiences during study, and the outcomes of higher education participation.

There are gaps in knowledge around the factors that influence and enable successful participation in higher education, as well as the patterns of participation and completion amongst learners who have

been traditionally underrepresented in higher education. These learners may require additional and different forms of support to achieve similar outcomes to learners who are traditionally well-represented in higher education, and these requirements are very difficult to measure through current data collections.

Moreover, the dynamics of social and economic disadvantage are complex. Some disadvantage factors identified through the equity approach are subject to change, such as socioeconomic background, rural or remote location, and some forms of disability. Based on these indices, individuals may move in and out of educational disadvantage over time, due to factors such as job loss or family relocation. It is not currently possible to accurately assess higher education participation and attainment in relation to these temporal and spatial dynamics of disadvantage.

Our capacity to assess the effectiveness of system-level and institutional-level equity intervention strategies remains limited. We do not currently have a student or population cohort-based perspective. Better knowledge about disadvantaged young people's pathways towards higher education would likely improve understanding of the potential of interventions, such as those focused on the transition from schooling to higher education, from VET to higher education, and from other settings into higher education, and the WPLS is intended to address this need.

A WPLS could address the following gaps in research:

- the role of individual aspirations and expectations on higher education participation, attainment and post-commencement outcomes
- the pathways of disadvantaged learners towards higher education prior to mid-secondary school, as existing research acknowledges that experiences in later primary and early high school are significant predictors of higher education participation (Gale et al 2010; Lamb et al 2004; Teese and Lamb 2007)
- the pathways of disadvantaged learners from key groups – namely Indigenous people and people with a disability – at any point prior to higher education participation, due to underrepresentation and attrition in existing data collections
- the pathways of disadvantaged learners through higher education post-commencement, including key factors influencing their higher education trajectories
- the relationship between higher education participation and attainment of broader social and economic factors, such as family attitudes and aspirations, income support, part-time work, accommodation and transport, peer influences, social networks, and mental and physical wellbeing.

PART B
DESIGN PARAMETERS FOR THE WPLS

4 The challenges and opportunities of design

Scoping the WPLS is an important exercise that will direct the potential future value of the data and it is important to anticipate the inherent challenges to study design. The issues outlined below represent key challenges and opportunities in WPLS study design for which foundation design principles have been determined, based on research and consultation and in discussion with the Department:

- **Measuring the student experience before and during higher education**
- **Identifying exposure to interventions**
- **Leveraging existing data resources**
- **Sampling for best effect.**

4.1 Measuring the student experience before and during higher education

The WPLS represents an opportunity to identify the impact of adolescent experience, including aspirations, expectations and achievements, on education trajectories and higher education outcomes in later life. In early scoping discussions with the Department, it was resolved to apply an accelerated sequential framework to the study designs for the WPLS, focusing on three cohorts:

1. *Primary School Cohort*: students in late primary school at the commencement of the WPLS, with the possibility of linking NAPLAN data to the WPLS
2. *Secondary School Cohort*: students in mid-secondary school at the commencement of the WPLS
3. *Higher Education Cohort*: students who are entering higher education at the commencement of the WPLS.

This multi-cohort approach ensures the desired numbers of people from the disadvantaged groups of interest are included in the sample at each age range because a new sample is drawn for each cohort and older cohorts are not subject to the same sample attrition that occurs with long single-cohort studies starting in primary school.

The Secondary School Cohort and the Higher Education Cohort are integral to the success of the WPLS design and should be included as a minimum. A Primary School Cohort could produce data from which we can infer how educational aspirations or expectations predict subsequent higher education participation. Student expectations are known to be strongly influenced by background factors and are likely to develop in early life (Gale et al 2010), making primary school education a potentially significant site for intervention in this regard.

Adopting an accelerated sequential design ensures that data coverage across the key early life stages (ages 10-25 years) is achieved within three to five years of commencing the study. In

contrast, collecting data from a single cohort commencing at primary school age would take 10-15 years to yield data spanning a similar age range, with attrition increasing as the cohort ages.

Although the WPLS Discussion Paper highlighted the value of administering WPLS surveys extending over seven to eight years, with a particular focus on capturing the experiences of identified equity groups after higher education completion, cost constraints on data collection are likely to limit the capacity of the WPLS to no more than three to four survey annual waves post-baseline.

One disadvantage of a multi-cohort design in which cohorts run for only three to four waves is that it is not possible to track individual trajectories from primary school to higher education entry. It is, however, possible to assess within the age range those predictive factors for each equity group that make them more likely to achieve higher education success later in life. It is also possible to build synthetic cohorts for equity groups by stacking individual cohorts in age order. The study designs in this Final Report aim to achieve optimum data value within this three to five year time window.

Design principle: The WPLS applies an accelerated cross-sequential design to achieve rapid, high quality data within three to five years.

Design principle: The WPLS incorporates a minimum of two age cohorts to generate evidence on student pathways from schooling through to higher education.

4.2 Identifying exposure to interventions

One of the aims of the WPLS is to assess, as far as possible, the relevance of equity interventions for disadvantaged students' outcomes, and this requires robust assessment of study participants' experiences of equity interventions.

The landscape of equity interventions involves various types of interventions that are funded and sponsored by different levels of government, educational institutions, and not-for-profit and for-profit organisations. Interventions are delivered inside and outside schools by teachers and other personnel from these diverse organisations. If the WPLS is to usefully evaluate the effect of interventions, it is essential that students' experiences of interventions are measured accurately.

In scoping the WPLS, we have considered how to achieve this measurement efficiently and cost effectively. Consistent with the *Critical Interventions Framework* (Naylor et al 2013), we note that interventions typically occur at key points:

- prior to higher education entry (e.g. outreach, enrichment, programmes to raise career aspirations and improve industry links)
- at the time of selection and admission to higher education (e.g. fee assistance, income support, scholarships)
- during the transition from school to higher education (e.g. additional tutoring, support groups, disability assistance)

- during higher education, to enhance retention and achievement (e.g. changes to course structure and design, extra-curricular learning and support).

The typical timing of these educational equity interventions underscores the importance of collecting data for the Secondary School and Higher Education cohorts in particular.

A list of relevant interventions currently implemented to widen participation in higher education is available in Appendix II.

Student participants in the WPLS are unlikely to be reliable sources of information about their experiences of intervention activities. Students may not know they are participating in equity interventions, and if they do know, the boundaries between intervention experiences and mainstream teaching and learning experiences may not be apparent to them. This limitation on collecting data on interventions through student reports needs to be explicitly acknowledged and addressed in WPLS design. For pragmatic reasons, it was determined that the WPLS would collect data on interventions targeting education participation that are specified in generic terms based on what an intervention looks like to a student rather than being specifically identified (feedback on WPLS Discussion Paper, Sept 2015).

Design principle: The WPLS is designed to collect data on interventions targeting education participation that are specified in generic terms based on what an intervention looks like to a student.

4.3 Leveraging from existing data resources

It is important to design a new study that complements, rather than duplicates, existing data investments. A number of relevant studies have informed our development of the WPLS and present possible opportunities for data linkage, and the key data resources with relevance to WPLS design are described in Chapters 6 and 7.

A new longitudinal study needs to be sufficiently large to capture pathways and outcomes for students from disadvantaged and non-disadvantaged backgrounds, and reflect the breadth of education and training contexts in Australia.

Existing data does not provide sufficiently targeted and granular information to address the complex issues faced by some of the equity groups, or examine the role of equity interventions. For example, the current LSAC cohorts are too small to produce robust estimates for Indigenous or disabled students, despite being reasonably large samples of general populations (~5,000 children in each of the two cohorts). They also have limited data on aspirations and intentions regarding participation in education, and no specific information on equity interventions. These problems also largely apply to other general-population surveys that are readily available for analysis (see Chapter 7 for further detail).

One possible strategy to leverage the available data resources for the purpose of the WPLS is to piggy-back on one or more of the existing surveys by boosting its sample and adding content to the data collection. We initially considered this could be done by boosting samples of underrepresented equity groups in future waves of surveys such as LSAC or LSAY, adding additional questions that would capture equity interventions, or adding additional survey waves. For example, LSAC is a biennial study so adding an interim wave specifically focused on issues directly relevant to WPLS could be considered. Data linkage could also further leverage existing information for the benefit of the WPLS. For instance, where administrative data on school-based equity interventions are available, these could be linked to LSAY to enhance its capacity to address questions relevant for the WPLS study.

LSAY has the most relevance to the WPLS, but the Department provided feedback that it is not feasible to boost the Indigenous sample of LSAY or include additional questions on interventions for the next wave of data collection, due to go into field mid-2016. A new longitudinal study of Indigenous Australians – *Mayi Kuwayu* – is proposed and could represent a basis for identifying an Indigenous sample for the WPLS, but there is some uncertainty about its commencement.

As a consequence, the WPLS designs in this report are premised on the assumption that expanding LSAY is not viable at this time, and specifications for the WPLS are not tied to the implementation of *Mayi Kuwayu*. We have focused on identifying ways to ensure compatibility between the WPLS and LSAY so that a new study might offer benefits to existing government investments in longitudinal data collection.

Design principle: The WPLS is not dependent on amending LSAY but is intended to complement relevant existing longitudinal data.

4.4 Sampling for best effect

One of the key challenges associated with the WPLS lies in developing a robust sampling frame that can act as the basis for a successful national longitudinal study focusing on up to three specified student groups.

The WPLS requires an advanced sampling strategy because there is significant diversity in the target population for the WPLS, and previously stated challenges in identifying students who have been reached by equity interventions. The key issues include:

- ensuring the sample contains sufficient numbers of students from each identified equity category, to allow assessment of their distinctive experiences and susceptibility to influence by equity interventions
- building a sampling frame of students who fall into these disadvantage categories in ways that supports a robust national sample with the desired characteristics

- ensuring that, despite the complexities of representing disadvantaged students in sufficient numbers for each group, the sample as a whole is tied to transparently identifiable, useful populations.

The nature of the sample, with its emphasis on disadvantaged groups, also creates particular challenges for survey administration and management. In general, issues of distance, isolation, language, and participant access can all present barriers to participant involvement, and the barriers are compounded for longitudinal research programs given there is an imperative to retain respondents over time.

These issues are particularly significant in relation to disengagement from education. Student disengagement, particularly amongst disadvantaged students, is a matter of growing concern and policy interest. The longitudinal nature of the WPLS, together with the aim of recruiting an initial sample from primary school students, means it has the potential to observe disengagement, assess its predictors, and evaluate the impact of equity interventions on student engagement. The WPLS also requires robust strategies for retaining sample members who have disengaged from education, and this is further evidence in support of a multi-cohort design and has been a key consideration for WPLS sampling.

Design principle: The sampling strategy for the WPLS is designed to provide adequate representation of students from each of the equity groups, as well as a non-disadvantaged comparator group.

4.5 Summary of final design criteria

The study design for the WPLS needs to:

- generate data that is useful for conducting innovative research on the barriers and pathways for disadvantaged people moving into and through higher education
- produce the evidence required to evaluate the impact of various equity interventions, including but not limited to those undertaken under HEPPP and HEPP
- harmonise with other major relevant data collections nationally
- link effectively with administrative data where possible, to maximise study data quality and minimise participation burden.

The key design requirements for the WPLS are set out against related evaluation criteria in the table below.

Table 1 Core WPLS design criteria

DESIGN ELEMENT	EVALUATION CRITERIA
Coverage of Main Topics	The WPLS includes topics designed to understand and measure the impact of equity interventions that include but are not limited to: demographic information that supports an understanding of disadvantage, individual aspirations, student decision-making about participation, and student engagement.
Measurement of Interventions	The WPLS collects data on interventions specifically targeting educational attainment, specified as generic categories that represent what an intervention actually looks like to a student.
Coverage of Age Cohorts	The WPLS aims to target age groups ranging from primary school students to students currently studying at university – approximately 10-25 years.
Age Cohort Sample Size	The sampling strategy for the WPLS provides adequate representation of students from each age cohort.
Coverage of Equity Groups	The WPLS takes into account all six identified equity groups, with an option to exclude a specific WINTA sample if required for feasibility because it can only be determined post-entry to higher education.
Equity Group Sample Size	The sampling strategy for the WPLS provides adequate representation of students from each of the equity groups, as well as a non-disadvantaged comparator group.
Study Period	The WPLS achieves quality data within three to five years.

5 Scoping definitions of equity groups

In scoping the design of the WPLS, the Department specified for inclusion the six identified equity groups, plus a comparison group of students not experiencing educational disadvantage. This chapter outlines our broad approach to defining those equity groups for the WPLS, acknowledging that the operational definitions will vary based on the final study specifications chosen by the Department for implementation.

We suggest, where possible, using definitions from the *Data Standards Manual: Student Background Characteristics* to ensure general consistency with the accepted definitions within the education sector. Where the WPLS study design draws on existing data sources, the equity group definitions may be circumscribed by definitions used elsewhere.

5.1 People from Low Socioeconomic Backgrounds

Low socioeconomic background may be defined in various ways, including:

- household employment and unemployment
- household income or wealth
- parental education levels or occupational status
- living in an area that is identified as socioeconomically disadvantaged

The socioeconomic status of the household in which a young person lives may change over time so using multiple indicators of socioeconomic background enables more accurate and precise analysis, depending on the specific research question.

The feasibility of using multiple indicators depends on the availability of household-level information in a sampling frame. If information on the family or household members is not available, effective sampling on the basis of socioeconomic disadvantage requires intensive screening processes that significantly increase the cost of the study. A lower-cost alternative is to use an area-based indicator of low socioeconomic background such as one of the SEIFA indices (Australia 2011, 2033.0.55.001) or to infer an individual student's socioeconomic background directly from the education and employment characteristics of their parents.

There are a number of ways participants' socioeconomic background can be identified by looking at parental background. Two approaches with relevance to the WPLS are outlined below:

- The Higher Education Information Management System (HEIMS) identifies *People from Low Socioeconomic Backgrounds* based on their postcode of permanent residence. This is matched against the 2011 *SEIFA Index of Education and Occupation* by postal area, in which families in the bottom quintile (25%) are classified as having low socioeconomic status.

- The Australian Curriculum and Assessment Agency (ACARA) Technical Specifications (section 5.1 of the *Data Standards Manual: Student Background Characteristics*) use data elements relating to parental education and occupation to inform the identification of the socioeconomic background characteristic for students, as set out in Table 2.

Table 2 ACARA Technical Specifications for the determination of Socioeconomic Background

Background characteristic	Indicator	Data elements	Question modules	Information about
Socioeconomic background	Socioeconomic background	Parental school education	Two modules	Parents/guardians
		Parental non-school education	Two modules	Parents/guardians
	Socioeconomic background – occupation	Parental occupation	Two modules	Parents/guardians

Under the ACARA approach:

- parental school education is defined as the highest year of primary or secondary education that a student's parent or guardian has completed
- parental non-school education is defined as the highest qualification attained by a parent or guardian in any area of study other than primary or secondary school
- parental occupation group is the occupation group that includes the main work undertaken by the parent/guardian. Information for both parents/guardians is recorded if applicable

Scoping note: The WPLS operational definition of *People from Low Socioeconomic Backgrounds* may be derived from a geographical basis and/or parental background, depending on the sampling frame available.

5.2 People Living with Disability

The ABS defines four levels of severity of a person's limitation, ranging from mild disability, where a person does not need help with everyday core activities such as self-care and communication, to moderate disability, severe disability, or profound disability (ABS 2012). The level of disability is contingent upon the frequency with which a person requires assistance with core activities (ABS 2012).

As indicated in the WPLS Discussion Paper, more than half of young people who have a severe or profound disability are challenged by intellectual or learning disabilities and would not be included in the WPLS. Furthermore, although most young people living with a disability have congenital conditions, others acquire a disability and so longitudinal data is required to ascertain the temporal aspect of disability for some people.

As with the definition of *People from Low Socioeconomic Backgrounds*, HEIMS and ACARA offer two alternative approaches. HEIMS records self-reported disability status wherein students indicate that they are living with a particular type of disability and/or they would like to receive additional information on support available. The options from which students can select are:

- Disability, impairment or long term medical condition
- Hearing disability
- Learning disability
- Mobility disability
- Visual disability
- Medical disability
- Other disability

The *Nationally Consistent Collection of Data on School Students with Disability* is more specific in its definition of disability type, as outlined in Table 3.

We also note that work is currently being undertaken in the schools sector around the definition and identification of disability amongst school students, and the outcomes may have implications in relation to data collection for a new WPLS.

Table 3 Nationally Consistent Collection of Data on School Students with Disability for the determination of Disability Type

Disability Type	Indicative examples
Physical disability	Cerebral palsy - Amputation - Spinal cord injury, spina bifida and like conditions - Muscular dystrophy – Multiple trauma – Acquired or traumatic brain injury
Chronic medical condition	Arthritis - Auto-immune diseases - Extensive burns – Cystic fibrosis – Cancer
Intellectual disability	Includes intellectual disability of unknown cause as well as chromosomal disorders such as Rhett's Syndrome, Down's Syndrome, Fragile X.
Learning disability	Includes dyslexia and speech and language disorders which require ongoing long-term support and related diagnoses.
Global development delay	This term is applicable only to children who have or may have an intellectual disability that has been diagnosed prior to age 6.
Autism spectrum disorder	Includes Autism, Asperger's syndrome and like diagnoses.
Vision impairment	Excludes students whose visual impairments are rectified with the use of glasses and/or contact lenses.
Chronic long-term or conductive hearing loss	Includes students with a hearing impairment that require ongoing long-term support.
Severe behaviour disorder	Attention Deficit Hyperactivity Disorder (ADHD) - Oppositional Defiance Disorder (ODD)
Mental Health (psychiatric disorder) and/or social/emotional disorder	Schizophrenia, Bipolar disorder and like psychoses - Depression, anxiety and like states - Severe anorexia

Scoping note: The WPLS operational definition of *People Living with Disability* is dependent on the sampling frame available, and longitudinal data can support an understanding of the sometimes temporal nature of disability and its effect on higher education participation.

5.3 Aboriginal or Torres Strait Islander People

The definition for *Aboriginal or Torres Strait Islander People* is relatively straightforward and widely accepted. Young people are considered to be of Aboriginal or Torres Strait Islander background if they, or their parents, identify as such. This self-identification is the basis of the ABS definition (2071.0 - Reflecting a Nation: Stories from the 2011 Census, July 2011). Relevant reference points for the WPLS, including ACARA and HEIMS, apply this definition.

Scoping note: The WPLS operational definition of *Aboriginal and Torres Strait Islander Peo*ple will be people who identify as Aboriginal or Torres Strait Islander, consistent with other data sources.

5.4 People from Rural and Remote Areas

Young people living in rural and remote areas are identified by their residential location. The ABS includes a five category remoteness area classification (ABS 2011), with the following categories:

- Major cities of Australia
- Inner regional Australia
- Outer regional Australia
- Remote Australia
- Very remote Australia

The remoteness structure captures the distance people need to travel to access government services. Remoteness is a direct measure of declining service accessibility due to geographic location and should therefore be a primary element in the operational definition for this equity group in the WPLS. For example, Creswell and Underwood (2004) applied the Accessibility/Remoteness Index of Australia (ARIA) to classify schools participating in the *Programme for International Student Assessment* (PISA), as illustrated in the table below.

Table 4 Overview of the application of ARIA to schools participating in PISA (Creswell and Underwood 2004)

ARIA Classes	Geographic area	Definition of classification	Examples
Highly Accessible	Major city areas	Geographic distance imposes minimal restriction upon accessibility to the widest range of goods, services and opportunities for social interaction	Camberwell (VIC) Belconnen (ACT) Launceston (TAS)
Accessible	Inner regional areas	Geographic distance imposes some restriction upon accessibility to the widest range of goods, services and opportunities for social interaction	Coffs Harbour (NSW) Ruffy (VIC) Days Hill (SA)
Moderately Accessible	Outer regional areas	Geographic distance imposes a moderate restriction upon accessibility to the widest range of goods, services and opportunities for social interaction	Quondong (NSW) Happy Valley (VIC) Bootooloo (QLD)
Remote	Remote areas	Geographic distance imposes a high restriction upon accessibility to the widest range of goods, services and opportunities for social interaction	Buckleboo (SA) Pingaring (WA) Meeleebee (QLD)
Very Remote	Very remote areas	Geographic distance imposes the highest restriction upon accessibility to the widest range of goods, services and opportunities for social interaction	Mimili (SA) Paraburdoo (WA) Nobles Nob (NT)

Australia also has measures of the socioeconomic advantages and disadvantages of geographic areas (SEIFA), as indicated by population composition. In the HEIMS data, a student's postcode of permanent home residence is used to construct indicators of students' geographic region (metropolitan, regional, remote) using the Australian Statistical Geography Standard.

Scoping note: Students from regional or remote areas should be included in the WPLS. There are two primary possibilities for defining geographic disadvantage for the study: solely in terms of remoteness of the place of residence, or jointly according to both the remoteness and the socioeconomic disadvantage of the residential location, depending on the sampling frame.

5.5 People from a Non-English Speaking Background

Most definitions identify *People from a Non-English Speaking Background* (NESB) based on information about the main language spoken at home. For example, ACARA collects data on the "Main language other than English spoken at home". If the respondent speaks more than one language at home (not including English), the language that the respondent speaks most often is reported. Information is collected in relation to the student, the mother and father, or guardians. HEIMS data records information on whether a student speaks only English at their permanent home residence.

Scoping note: Information about the main language spoken at home is a relatively simple and useful indicator for use in the WPLS with regard to defining *People from NESB*

5.6 Women in Non-Traditional Areas of Study

According to our analysis of the Census 2011 data, there are four broad fields of study where women are significantly underrepresented, so that they constitute less than 30 per cent of persons who obtained a qualification in a given field (Martin et al 2015, p. 50). These fields of study are:

- Engineering and Related Technologies (6.8 per cent of qualifications are held by women)
- Architecture and Building (7.6 per cent)
- Information Technology (25.6 per cent)
- Agriculture, Environmental and Related Studies (28.8 per cent).

There are significant definitional and operational issues with including the WINTA equity group in the WPLS. First, it is unclear whether it is appropriate to treat women in non-traditional areas of study as a disadvantaged group in the same way as other equity groups of interest. Second, women in non-traditional areas of study cannot be identified until they enter higher education and, therefore, this group cannot be sampled in the Primary School and Secondary School Cohorts.

For these reasons, understanding the pathways to higher education for women in non-traditional areas of study is not a primary objective of WPLS design, noting that one of the primary value propositions of the new study is its capacity to collect targeted longitudinal data on the experiences of students prior to commencing higher education and how this informs participation and attainment.

The inclusion of a WINTA sample can only be undertaken as part of a Higher Education Cohort and we have approached it as an optional extra for inclusion at the discretion of the Department, rather than a core component driving design decisions.

Scoping note: Women defined as WINTA are those studying towards higher education qualifications in Engineering and Related Technologies; Architecture and Building; Information Technology; or Agriculture, Environmental and Related Studies. They cannot be identified as an equity group of interest until after commencing higher education.

5.7 Non-disadvantaged group

The WPLS will also require a sample of non-disadvantaged students for comparative purposes. This sample will be selected by identifying students who do not belong to any of the five priority equity groups prioritised for this study (i.e. excluding WINTA).

Scoping note: The non-disadvantaged comparator group for the WPLS should include students who do not meet the definition of *People from a Low Socioeconomic Background, People Living with Disability, Aboriginal or Torres Strait Islander People, People from Rural or Remote Areas,* or *People from NESB*

PART C
DATA COLLECTION STRATEGIES FOR THE WPLS

6 Using existing data

There are several major administrative datasets that explicitly address student participation and achievement, and have potential relevance to the WPLS design. For the purposes of this report, administrative data is defined as comprehensive, consistent and reliable datasets held by a central agency or agencies. By using these existing records, the WPLS can achieve potential cost efficiencies in data collection, and reduce the burden of research participation for WPLS subjects, but there are major limitations in the capacity of existing administrative data to meet the design requirements for the WPLS.

Strengths and limitations of administrative records for the WPLS

- Existing administrative records cover a number of priority topic areas with relevance to the WPLS, namely education participation and attainment.
- There are significant administrative data linkage projects being advanced by government that could be leveraged in support of WPLS implementation, if applicable at the time of commencement.
- Using existing data is not viable as a standalone data strategy for the WPLS because it does not cover important topics such as aspirations and achievements nor does it provide sufficient data to assess the effectiveness of equity interventions.

6.1 Administrative records with relevance to WPLS design

The datasets with relevance to the WPLS design fall into two broad categories and there is significant overlap between the datasets in some instances:

- administrative data related to all students' enrolments in pre-school, schools and in higher education
- administrative data reflecting outcomes of assessments of developmental goals or students' learning, either against national standardised tests, state curriculum and assessment requirements, or institution-level student achievement and progression, and measures derived from them.

The relevant datasets of interest are:

- National Early Childhood Education and Care Collection
- School administrative data
- Senior secondary certification agency data
- Tertiary entrance data
- HEIMS

- Australian Early Development Census (AEDC)
- National Assessment Program – Literacy and Numeracy (NAPLAN) data.

These datasets have been reviewed individually for their relevance and feasibility for use in the design of the WPLS, and we have identified three datasets - NAPLAN, HEIMS and AEDC – for inclusion as part of the design specifications that are detailed later in this report.

6.2 Administrative data relating to student enrolment

6.2.1 National Early Childhood Education and Care Collection

Enrolment-related data in the National Early Childhood Education and Care Collection aims to report accurately on the number of children who have received a preschool program within the collection reference period (ABS 2014). The collection is managed by the Department and includes the following data fields that are relevant to the WPLS:

- gender
- Aboriginal and Torres Strait Islander status
- Accessibility/Remoteness Index of Australia (ARIA)
- disadvantage, measured in terms of usual residence, in conjunction with the geographically-based Index of Relative Socioeconomic Disadvantage (IRSD), one of four indexes of SEIFA

The collection also includes whether students have participated in a structured, play based learning program, delivered by a degree qualified teacher, aimed primarily at children in the year or two before they commence full-time schooling.

A key issue with this collection is that adjustments are required for students participating in more than one centre or program. In addition, while these data are conceptually a starting point for the WPLS, there are issues with timing; there are significant time lags between participation in pre-school and participation in higher education, with most prospective higher education students not covered by the collection.

6.2.2 School administrative collections

All state and territory education departments, as well as Catholic Education Offices and independent schools, hold comprehensive administrative data on students enrolled in schools, including data in the fields relevant to the WPLS design. This data is only available nationally through the National Schools Statistics Collection (NSSC) at an aggregate school level, however, and is not nationally analysed and reported at the student level.

The NSSC is a collaborative arrangement between state, territory and Australian Government education departments. It is managed by the Ministerial Council on Education, Early Childhood Development and Youth Affairs (MCEECDYA) Performance Measurement and Reporting Taskforce.

Information is provided on the number and characteristics of schools, students, and staff. These data are derived from the annual Schools Census enumerated each August by the relevant authorities, and are published through the annual ABS publication *Schools Australia* (cat. no. 4221.0).

Records held by schools and state and territory system authorities include relevant fields on:

- Indigenous status
- gender
- parental education and occupational background
- disability status
- language background
- age
- year level.

While data collected at the point of the Schools Census is held by schools and system authorities at an individual level, they are supplied to MCEECDYA at an aggregate level only. This means that data on individual students would have to be sourced from individual jurisdictions and non-government schools, which is unlikely to be feasible for a project with targeted scope such as the WPLS.

6.2.3 Senior secondary certification agency data

Senior secondary curriculum and accreditation authorities develop and oversee the delivery and assessment of senior secondary certificates and issue senior secondary qualifications. They also maintain individual student records of enrolments, progress, and completion in relation to individual subjects and certificates.

Agencies access and maintain records of personal and administrative data at an individual student level. Data is collected from all schools and students in a manner consistent with the responsibilities detailed in charters that stipulate the agencies' roles as statutory authorities of their respective state and territory governments. Although this data is potentially an important link between Year 9 NAPLAN results and information on senior secondary participation and outcomes, individual student data is not available nationally. This is because the student data is held by state and territory curriculum and accreditation authorities, and it would not be easily or readily available for WPLS purposes.

In addition, many older students – particularly from some groups of interests to the WPLS – may not enter higher education directly from senior secondary schooling, thus limiting the value of this dataset for the WPLS design.

6.2.4 Tertiary entrance data

At the higher education level, tertiary admissions bodies manage the process of offers and acceptances for access to university in certain states. Information held by these bodies links

outcomes from senior secondary certificates to individual student details and characteristics, in order to inform individual institutions' processes of offers and acceptances.

Data fields relevant to this study may contain information relating to disadvantage status, including:

- SEIFA percentile
- main language at home other than English
- refugee status
- Indigenous status
- disability categories
- Centrelink information.

Data is held by individual state tertiary admissions bodies, or by individual universities in the smaller states and territories. There is little value in tracking students through tertiary admissions data, however, as most students of interest will also be picked up in the HEIMS (see below), and increasing numbers of students will enter higher education through direct admission by institutions.

6.2.5 Higher Education Information Management System (HEIMS)

HEIMS is the information management system used by higher education providers in Australia for reporting to the Department. Once enrolled, students are allocated a Commonwealth Higher Education Student Support Number (CHESSN), which is used to track liabilities for HELP and remains with the student for their academic life.

Relevant items in HEIMS include:

- Indigenous status
- gender
- parental occupation
- prior levels of educational attainment
- language spoken at home
- home address (as well as term address)

Data is held by individual institutions but is available at the individual student record level through the Department on a de-identified basis, by specific request.

HEIMS is a comprehensive dataset that can be used to identify students entering higher education and monitoring their progress, making it an essential resource for the WPLS and warranting its inclusion as part of the design specifications for the study.

6.3 Administrative data relating to student development and achievement

6.3.1 Australian Early Development Census (AEDC)

The AEDC - formerly known as the *Australian Early Development Index* - is a nationwide data collection of early childhood development at the time children commence their first year of full-time school, comprising five domains:

- physical health and well being
- social competence
- emotional maturity
- language and cognitive skills
- communication skills and general knowledge.

The AEDC is completed by teachers of students in the first year of schooling and is undertaken every three years. The third collection occurred in 2015, and a new cohort is assessed in each census. The AEDC contains individual student records including name, age, and criteria highly relevant to the WPLS including:

- special needs status
- Indigeneity
- language other than English
- main language spoken at home
- SIEFA
- statistical division
- post code.

Data is held and managed by the Department.

The value of the AEDC to WPLS design is that it provides a national dataset from which an early primary sample could be derived, based on assessed levels of student development. This makes it a more relevant dataset than school administrative data or the National Early Childhood Education and Care Collection.

6.3.2 *National Assessment Program – Literacy and Numeracy* (NAPLAN)

NAPLAN is an annual assessment for students in Years 3, 5, 7 and 9. It is administered by the ACARA, which also holds NAPLAN data. NAPLAN results are reported at the school and jurisdiction level but are available at the individual student level (i.e. ACARA holds individual student records under strict confidentiality).

Fields relevant to the WPLS include:

- gender

- Indigenous status
- main language other than English spoken at home
- parental occupation and parental educational levels
- geographic location.

As NAPLAN data is available nationally and can be used to link student characteristics and student performance, it is a more viable source of data for WPLS than school system and individual non-government school administrative collections. The application of NAPLAN to the WPLS is further detailed in the design specifications in this report.

6.4 How administrative records can be used

Administrative data provide significant potential to track the movement of learners from most of the relevant student cohorts from pre-school to higher education. They allow for identification and tracking of entire cohorts of students – rather than samples – according to defined criteria, and they can potentially be tracked from various starting points at school-age through to higher education. It is preferable to track full cohorts to overcome the problems inherent in sample attrition that persist even if the problem of low response rates is overcome.

These datasets are typically discrete systems. Although individual jurisdictions link these systems to monitor learner progress between key learning milestones, they are not used nationally and do not cover the complete transition from early childhood to university in all states and territories.

The costs and complexity of major data linkage projects are significant. In 2012, the ABS scoped a major project for the Strategic Cross-Sectoral Data Committee that aimed to establish a data integration framework for education and training statistics. The objective was to determine:

> *"…how existing information could be structured into a student-centred longitudinal database. The model would bring together information on early childhood education, schooling, Vocational Education and Training (VET) and higher education. Other information could also be incorporated, such as childhood development information from the Australian Early Development Index (AEDI), or the results of literacy and numeracy testing and academic results. All of this information could be stored in an enduring, linked statistical and research database"*

We understand the project has not proceeded beyond the concept stage at this point due to the costs and complexities involved. We also note it is unlikely that the custodians of the relevant datasets would undertake linking and matching activities specific to widening higher education participation, although it may be incorporated as part of a broader body of work. Nonetheless, relevant data integration activities should be considered as part of the data landscape at the time of WPLS commencement, if applicable.

In summary, while there is significant value in incorporating administrative records into the WPLS design, it cannot be used as a standalone data collection strategy. It does not support analysis of barriers to participation in higher education and the comparative weight of those barriers.

- There is no capacity in existing administrative records to include data on parental and learner aspirations, or other qualitative items relevant to widening higher education participation by identified equity groups.
- There is limited capacity to assess the extent to which students had been subject to interventions. While it would be possible to identify students from schools than had been part of formal and major interventions, local interventions (e.g. between individual schools and universities, or school-based interventions) would not be captured.
- Factors that strongly influence student decisions on entering higher education, institution and subject choice, and broader social and economic factors that influence participation and retention would be missing.
- Many students do not enter universities with ATAR scores or senior secondary certificate outcomes; that is, their pathways into higher education are not linear and may include pathways through VET, thereby requiring the inclusion of VET student data systems in addition to those reviewed above.
- There is mixed data availability on particular policy interest groups, such as students with a disability.

The AEDC, HEIMS and NAPLAN have been identified as relevant elements for the design of a WPLS and their application is further detailed in our design specifications in Part D of this report.

7 Leveraging longitudinal survey data

Longitudinal data is used to reliably assess the impact of individual differences, family circumstances, government policies, community and social contexts, and national and international events on life outcomes for individuals and populations. It is more expensive to gather than some other forms of data due to the costs associated with repeated data collection and limiting sample attrition over time.

Over the five years to 2013, the Australian Government committed approximately $300 million to national longitudinal research initiatives that have relevance to the scope of the WPLS (including LSAY, LSAC, LSIC and the HILDA survey), and it is sensible to evaluate the potential to leverage this existing longitudinal survey data in the WPLS design.

Strengths and limitations of longitudinal survey data for the WPLS

- Existing longitudinal survey data collected by the Australian Government cover many data items with relevance to the WPLS but do not specifically set out to measure the effectiveness of equity interventions.
- As determining the effectiveness of educational equity interventions is a core value proposition for the WPLS, longitudinal surveys are currently insufficient to address this research objective.
- LSAY provides a design model for a new WPLS; if the WPLS is designed as a complement to LSAY, there is scope to enhance the research value of both surveys.
- LSAC is also potentially valuable if the Department implements a Primary School Cohort for the WPLS.

7.1 Longitudinal surveys with relevance to WPLS design

In scoping the WPLS, we considered the potential role of comparable surveys and survey instruments that align with the objectives of the WPLS. Our criteria for determining the fit of an existing survey with the WPLS and its feasibility for use were:

- the survey measures individual characteristics relevant to WPLS objectives
- the survey is longitudinal
- the survey includes a large sample, or an oversample, of multiple WPLS equity groups
- the survey is specifically designed to measure experiences of age groups relevant to the WPLS (i.e. students and learners).

None of the studies reviewed as part of this scoping project met all four criteria. The studies found to be most relevant to WPLS design were LSAY and LSAC. We have also included further detail on the usability of the *Quality Indicators for Learning and Teaching* (QILT) surveys, which are cross-

sectional in design rather than longitudinal, but offer large sample sizes and potentially good coverage of all equity groups.

This section focuses on the potential applicability of these surveys, and the WPLS Discussion Paper (August 2015) provides further detail on all comparable survey and survey instruments.

7.2 Longitudinal Surveys of Australian Youth (LSAY)

LSAY is the survey with most relevance to the WPLS, based on its content and age cohort coverage. It is a series of consecutive longitudinal cohort studies that follow Year 9 students until they complete their schooling and enter the workforce, up to the time they are 25 years old. LSAY continues the tradition of the earlier *Youth in Transition Survey* and *Australian Youth Surveys* in the 1970s, 1980s and early 1990s, aiming to provide information that can be used to better understand the factors underpinning successful school-to-work transitions. To date, there are five cohorts of LSAY: the 1995 cohort (Y95), 1998 cohort (Y98), 2003 cohort (Y03), 2006 cohort (Y06) and 2009 cohort (Y09). A 2015 LSAY cohort is projected, with fieldwork scheduled to commence in 2016.

The three most recent LSAY cohorts were integrated with the Organisation for Economic Co-operation and Development (OECD) PISA program, and the surveys collect information from those students who initially participated in PISA.

The sampling strategy to select these students was a two-stage procedure (Thomson et al 2013). In the first stage, schools were selected based on a probability proportional to enrolment size of 15-year-olds, and stratified according to jurisdiction, sector, geographic location, sex of students, area socioeconomic status, and achievement. In the second stage, 20 students and all age-eligible Indigenous students from each school were selected to participate in LSAY. The initial sample size of the LSAY surveys ranges from 10,370 (Y03) to 14,710 (Y06).

The LSAY data is collected through annual computer assisted telephone interviews (CATI) with the participants. Interviews contain information on student test scores in mathematical, reading and scientific literacy obtained through students' participation in the PISA program. The study also collects background information on their families, reading activities, English lessons, library use, strategies used in reading and understanding texts, educational career, life at school, educational and vocational plans, attitudes to school and learning, work experience, workplace learning, and part-time work.

7.2.1 Key advantages of LSAY in scoping the WPLS

LSAY is a potential foundation resource in the design of the WPLS:

- Students in the different LSAY surveys are tracked from age 15, which means these datasets can be leveraged to examine students' outcomes in late secondary school and

university. The 2009 (Y09) LSAY cohort and the prospective 2015 and 2018 cohorts are likely to be of most relevance to the purposes of the WPLS.

- Different LSAY surveys contain different information. In the last available LSAY cohort (Y09), there are sufficient measures to define socioeconomic status (though not through household income), Indigenous status, residence in a rural/remote area, and coming from a non-English speaking background, and this data is available across all waves.
- The data gathered in Y09 covers a wide-ranging set of topics relevant to the aims of WPLS in substantial detail. For instance, data are collected on school characteristics, student educational history, student achievement, time spent learning, perceptions about self and school, post-school plans, career advice, reasons for dropping out of education, subject courses in higher education, curricular change, qualifications and results in higher education, satisfaction with study, and workplace learning. There is also survey data on detailed employment patterns and outcomes once study participants enter the workforce.
- The sampling for the LSAY surveys is school based, which makes it possible to examine the effect of equity activities and interventions administered by schools. LSAY also has good geographical coverage, which enables examination of local interventions.
- LSAY offers an opportunity to compare the experiences, outcomes, and trajectories of students across multiple cohorts.

7.2.2 Key limitations of using LSAY in the WPLS

Despite LSAY's broad alignment with the WPLS, there are important limitations with regard to the sample size of equity groups in the study and the omission of explicit data on interventions:

- Information on student disability is poor, and it is not possible to identify people with a disability. There is information on disability in one wave of the Y09 cohort only.
- *People from Low Socioeconomic Backgrounds* would need to be identified using other criteria than household income, as there is no data on household income in the survey.
- Attrition rates in the LSAY surveys, particularly between the first and second waves, are very high (e.g. in the Y09 cohort, only 61.5% of wave 1 respondents are retained by wave 2).
- There are no questions in the LSAY surveys that identify student participation in equity activities and interventions that support higher education participation, nor their experiences in these interventions.

7.3 Longitudinal Study of Australian Children (LSAC)

LSAC offers specific value in relation to the WPLS Primary School Cohort, should data collection for this sample be funded by the Department.

LSAC is Australia's first and only national longitudinal birth cohort study. It emerged to fill the need for robust and representative data to inform *"further understanding of child development, inform social policy debate and identify opportunities for intervention and prevention strategies in policy areas concerning children and their families"* (AIFS 2013, p.8).

LSAC collects relevant information on:

- family demographics
- household finances
- work status of the study child's parents
- social capital
- health status of the study child and her/his parents
- parenting practices
- childcare
- home education environment
- the study child's general development, health behaviour, risk factors, and cognitive, social and emotional outcomes.

This information is provided by multiple informants: the study child, the study child's parents or guardians, and a teacher or childcare worker (for 4-5 year old children who attend a school or day care centre). Main data waves in LSAC occur biennially: 2004 (wave 1), 2006 (wave 2), 2008 (wave 3), 2010 (wave 4), 2012 (wave 5), and 2014 (wave 6).

LSAC features an accelerated cross-sequential design following two separate child cohorts. The first comprises children aged 0 to 1 in 2004 (cohort B) and the second comprises children aged 4 to 5 in 2004 (cohort K). LSAC's sample was designed to be representative of all Australian children born between March 2003 and February 2004 (cohort B) and between March 1999 and February 2000 (cohort K), with the exception of children living in some remote areas. To accomplish this, a two-stage clustered sampling strategy was implemented, selecting first postcodes and then children. The Medicare Australia enrolment administrative database was used as the sampling frame, and as a means to maximise geographical representation, complex stratification techniques were used.

LSAC has been linked to several administrative databases including:

- NAPLAN (information on test scores, test absences, and whether the study child repeated a year level)
- Medicare Australia (medical and pharmaceutical benefit claims and immunisation records)
- National Childcare Accreditation Council (accreditation and quality of the day care centre attended by the study child)
- AEDC (children's development as they enter school) for Victoria, Queensland and Western Australia only
- ABS Census of Population and Housing (neighbourhood characteristics, such as SEIFA).

7.3.1 Key advantages of LSAC in scoping the WPLS

LSAC cohorts have relevance to the WPLS with respect to the age of the study participants, and there is capacity to identify individuals most likely to experience educational disadvantage based on their equity group status:

- LSAC cohorts span much of the age range relevant to the WPLS. There is an opportunity to observe cohort K children, now aged 12-13 years, as they transition from primary to secondary school and then to university; meanwhile, cohort B children are now completing primary school and will soon move to secondary school.
- LSAC data can be used to identify five equity groups precisely, based on data items relating to children's health and disability, household finance conditions, ethnic and linguistic background, and area of residence.
- By virtue of its longitudinal nature, LSAC can track student movements in and out of educational disadvantage, as defined by their classification within the identified equity groups over time.
- LSAC contains a reasonable amount of information relevant to WPLS. For example, it asks about parents' and children's educational and job aspirations for the study child, the home educational environment (e.g. number of books in the house), the amount and timing of study time, the detailed time use of the child, any house rules about homework, and parental engagement into schools. In addition, the questionnaires in the LSAC survey are sensitive to the age of the study children and contain new education-related questions as they age. For example, in their teenage years, the children and their parents are asked specifically about their intentions to undertake higher education studies. Critically, LSAC has been linked to administrative data from NAPLAN, and the school performance of participating children is known.
- LSAC's sample is stratified geographically and so children concentrate in the same postcodes, barring geographic mobility. This benefits research into the impact of interventions that have been implemented in some geographical areas and not others, as many children would have been exposed to the same intervention/s and comparison groups are readily available.

The LSAC data also has several interrogative properties that might be useful to the WPLS, albeit not core to its research objectives:

- It is possible to track children before late primary school, which opens possibilities for the examination of early life factors as antecedents of good or poor educational and labour market performance. This includes using linked data on the AEDC, a measure of children's development as they enter school, and the results of survey-implemented cognitive tests (such as the "Who am I?" assessment tool, the Peabody Picture Vocabulary test or the Matrix Reasoning test from the Wechsler Intelligence Scale) or socio-emotional tests (e.g. the Strengths and Difficulties Questionnaire).

- LSAC data are linked to NCAC and contain information on the quality of the day care centre attended by the study child, which could facilitate research into childcare-to-school transitions and the role of childcare centres in preparing children for later life.
- In the long-run and unlike LSAY, LSAC will be able to provide a complete picture of students' life trajectories from primary school to the labour market.

7.3.2 Key limitations of using LSAC in the WPLS

LSAC is not without significant limitations in addressing the objectives of the WPLS:

- The cohort-specific sample sizes for disadvantaged subgroups are very small, which limits the ability to make robust comparisons of equity and other groups, and prevents in-detail analyses of equity groups.
- The LSAC sample is not representative of children in remote areas, which raises concerns about its suitability to provide quality information about people from rural and remote areas as an identified equity group.
- It is known that Indigenous children are underrepresented in LSAC and suffer from higher rates of attrition than non-Indigenous children. Attrition in LSAC is also higher amongst economically disadvantaged families.
- LSAC's sample used Medicare records as a sampling frame so it does not include many children from families who are not permanent residents in Australia and hence do not have access to Medicare. Many of these families eventually transition into permanent residence, but are missed by this study. This omission particularly affects the coverage of NESB children.
- LSAC contains little information about whether or not children have been exposed to interventions, nor their experiences of such interventions, although in principle, it would be possible to link LSAC to school-level data, which would help identify children who were exposed to interventions administered by schools.
- LSAC is well established and the children in the study are already teenagers so there is little room to include new questions pertaining to their educational experiences and outcomes in primary and secondary school.

7.4 Quality Indicators for Learning and Teaching (QILT)

QILT is a suite of national higher education surveys aimed at understanding students' engagement with the courses they undertake during their time in tertiary education (SRC 2015). The QILT surveys also cover students' evaluations of their teachers and their learning experience. The surveys ultimately aim to provide a thorough measure of teaching performance as evaluated over student lifecycles, by building an understanding of their learning preferences and carer trajectories.

There are three QILT surveys, collectively aimed at providing a complete picture of the entire student life cycle (SRC 2015e):

1. *Student Experience Survey (SES) - formerly the University Experience Survey (UES), prior to 2015*: measures higher education students' experiences of and satisfaction with student support, teaching and learning resources; student engagement; and education outcomes.

2. *Graduate Outcomes Survey (GOS) and Graduate Outcomes Longitudinal Survey (GOS-L)*: replaced the former *Australian Graduate Survey*, and focuses primarily on graduates' future study and employment trajectories post undergraduate level. The GOS-L is the longitudinal component of the GOS and data collection for this survey is scheduled to commence in 2016. Questions will remain similar to those within the GOS and graduates will be recontacted annually for three years post-graduation.

3. *Employer Satisfaction Survey (ESS):* aimed at assessing and evaluating the skills and work readiness of graduates, through contact with the supervisors of GOS graduates.

QILT is endorsed by the Department and managed under the Economic and Market Analysis Branch of the Research and Economic group. Universities and other tertiary institutions can already access their own data and results, enabling them to gain an understanding of patterns and trends amongst students from their own institute.

QILT surveys from across all higher education institutions and universities can provide some information about the WPLS higher education cohort. Unfortunately, all QILT surveys are cross-sectional with low response rates and small sample sizes, leading to significant deficiencies as a core data collection strategy for the WPLS. This includes:

- no longitudinal tracking or modelling to follow trajectories of equity groups throughout higher education and beyond
- potentially strong selection bias, driven by the opt-in nature of survey completion, which could undermine the reliability of statistical estimates.

7.4.1 Key advantages of QILT surveys to the WPLS

There is value in using the QILT surveys in designing the WPLS:

- Although not a longitudinal survey, data from the SES are collected from cross-sectional samples annually. This provides a large amount of data to draw analyses from. Two groups of students are surveyed annually: commencing and final year undergraduate higher education students.
- The SES draw their sample from HEIMS, and are potentially able to follow students (who participate in both surveys) from commencement through to their final undergraduate year, by tracking the respondents' CHESSN. By using the CHESSN to track students, it may be

possible to follow students' trajectories and movement across courses of study and enrolment in any institution/university, and therefore create a longitudinal analysis.

- Disadvantaged groups are not specifically sampled in the SES and GOS, although it may be possible to identify some of these groups through demographic information supplied in the survey. For example, questions in the survey can help identify *People Living with Disability* and *Aboriginal and Torres Strait Islander People*, and postcode and first-in-family information can help identify socioeconomic disadvantage.
- The SES and GOS have options for including additional questions to the survey each year. Currently, additional items are only asked at a university level. It may also be possible to work across the Economic and Market Analysis and Governance, Quality and Access branches within the Department to develop a small number of mutually beneficial additional questions for inclusion in the SES. These questions would be asked of each participant Australia-wide, thus enhancing the analytic power of the SES. The potential to add questions at the national level for the GOS is not known.
- Because the SES is aimed at measuring students' higher education experiences, using the SES also gives researchers an opportunity to explore equity interventions and how they are associated with students' experiences of teaching and learning resources, student engagement, and outcomes.
- The SES, includes a question that asks "have you seriously considered leaving study?" and provides an extensive list of possible reasons for doing so. The reasons provided include: travel, lack of academic support, difficulty with workload and fees, financial and family difficulties or commitments, and boredom or lack of interest. Identifying which students are considering leaving at the end of their first year of study and why, then tracking who has and has not left by their final undergraduate year, may provide additional information that would complement the aims of the WPLS.
- The GOS and GOS-L include main topics with relevance to the WPLS for the higher education cohort, namely:
  - labour force participation
  - current tertiary study and level of education
  - graduate attributes gained via course participation
  - students' experiences of their supervisors and teachers
  - experiences of the course content and course processes.
- There may also be the possibility of obtaining data from the ESS to further understand the work readiness and career trajectories of students beyond the cohort requirements of the WPLS.

7.4.2 Key limitations of QILT surveys to the WPLS

Ultimately, the value of the QILT surveys – although real for the WPLS Higher Education Cohort – is constrained:

- Response rates are relatively low at just below 30 per cent. Individual institutions can choose follow-up CATI to improve response rates, with costs ranging from $24-$65 per completed questionnaire. This is unlikely to be feasible if seeking to increase response rates Australia-wide for the purposes of the WPLS.
- Participation in QILT surveys is opt-in, thereby leading to selection bias.
- It is not possible to specifically sample groups of interest Australia-wide using QILT surveys, and this may result in low representation of some of the equity groups of most interest to the study.
- The QILT surveys provide a range of information about student outcomes, which is one of the aims of the WPLS, but there is limited information about education interventions.
- Although indicative data may be drawn from the SES item about considering existing higher education, the QILT surveys engage only those students who remain within higher education and not those who leave higher education prior to graduation. If students from equity groups are more like to withdraw from higher education before graduating, QILT samples of remaining equity group students may not appropriate represent the QILT populations.

7.5 How existing longitudinal survey data can be used

Leveraging value from existing surveys offers some advantages to the WPLS design. The existing datasets span the age range covered by the three cohorts:

- The Primary School Cohort is approximately covered from LSAC wave four onwards (in 2014 the K- cohort of LSAC was aged 11-12 years in wave 4, and the B-cohort was aged 10-11 years in wave 6).
- LSAY participants are 15 years old in their first wave, and the new intake for LSAY begins in 2016 which could provide data on the Secondary School Cohort. The LSAC K-cohort was aged 15-16 years in 2014 and also could provide data for the middle WPLS cohort.
- QILT surveys cover the Higher Education Cohort from time at university to the period immediately after graduation.

Data are richest for the first two WPLS Cohorts, and using LSAC ensures that some data will be immediately available for participants from Primary School and Secondary School Cohorts.

The data cover much of the content necessary for the purposes of the WPLS, especially for the Primary School and Secondary School Cohorts. Importantly, LSAC and LSAY generate different age-appropriate information.

- LSAC is comprehensive about family and household circumstances, characteristics, attributes and experiences of both the study child and his/her parents, and the study child's developmental and educational outcomes.

- LSAY comprehensively addresses educational achievement, progression, school experiences, attitudes to school, and education. It also has some information on post-school educational plans and occupational expectations. In addition to this, LSAY also contains limited information on respondents' perceptions of their peers' educational and occupational plans.
- QILT surveys contain information on higher education students' perceptions of teaching and learning, skills development, and resourcing and graduate outcomes including labour force participation.

Taken as a whole, these complementary data sources enable reasonable analyses of: the determinants of educational outcomes for the Primary School Cohort; the plans and higher-education outcomes for the Secondary School Cohort; and the university experiences and graduate outcomes for the Higher Education Cohort.

There are also key data gaps in the longitudinal datasets, particularly with respect to aspirations and interventions. LSAY is the primary source of educational and occupational plans, but contains no data on aspirations (desired or preferred educational and occupational outcomes). The plans identified in LSAY are expectations, not aspirations, which may be adjusted in light of perceived barriers. By the age of the Secondary School Cohort, young people - particularly those in equity groups - may have already tempered aspirations for higher education outcomes they believe to be more realistic. Similarly, LSAC also lacks information on educational and occupational aspirations for the Primary School Cohort which would allow this process to be investigated. LSAY does not survey parents, despite parents' influence on young people's choices, and it contains only limited peer information. All surveys lack data on equity interventions; however, given that LSAC is linked to NAPLAN, it may be possible also to link LSAC data with state level data on school-based intervention programs.

There are also some limitations with regard to sample size and composition:

- The LSAC samples represent general populations and do not contain enough rural and remote, Indigenous, or NESB students for robust analyses, particularly after attrition. Depending on measurement, the cohort of *People from Low Socioeconomic Backgrounds* may also be too small.
- Similarly, LSAY does not have enough Indigenous respondents, cannot identify people with disabilities, and would require *People from Low Socioeconomic Backgrounds* to be identified differently from the household income criterion. LSAY also draws students from schools. Population members in the Secondary School Cohort who are not in school at age 15 are missed, and samples may be drawn disproportionately from some equity groups.
- QILT surveys potentially cover the equity groups but are opt-in rather than randomly selected. Students and graduates who participate may differ from those who do not (e.g. more motivated, more engaged, demographically and socially distinctive), thereby potentially compromising the representativeness of the data through selection bias.

- Because QILT samples are drawn from students and graduates, age-equivalent young people who do not enter higher education are not observed, and this is another source of selection bias. QILT sample members may differ from their age peers who are outside of higher education, in factors that influence entering and graduating from higher education. LSAY data may help to address this issue, because LSAY tracks students to age 25 years regardless of whether they enter higher education; however, the LSAY cohorts face other sample difficulties already noted.

The application of LSAY, LSAC and QILT, in the context of their collective strengths and limitations, is discussed as part of the design options in Part D of this report.

8 Collecting new survey data

When considering that current data sources – in the form of administrative records and existing longitudinal surveys – are unable to fulfil some, but not all, data requirements for the WPLS, the need for collection of new longitudinal survey data becomes apparent. A fully bespoke WPLS questionnaire administered across three cohorts represents the gold standard in research design for this study, supporting full control in content, sampling, and respondent participation, but cost is prohibitive.

Strengths and limitations of collecting new data for the WPLS

- A purpose-built survey can be custom-designed to address all topics of interest for the WPLS, rather than cobbling together content from existing measures.
- In particular, a bespoke survey could be designed to collect relevant data on equity interventions.
- A bespoke survey could best address all identified equity groups in each survey cohort through tailored design, a sufficient sample size, and appropriate participant retention strategies.
- Challenges remain with regard to the underrepresentation of Indigenous students and students with a disability, and the WINTA group is only identifiable in the Higher Education Cohort.
- New longitudinal surveys are relatively expensive, so there is a likely need to look at new data collection in conjunction with using existing data.

8.1 The value of new survey data

Given the objectives of the WPLS, and considering the perceived shortcomings of current existing data collections, there is substantial value in undertaking a new survey specifically tailored to accommodate key equity groups.

A purpose-designed survey could take account of the relatively small sizes of the equity groups of interest through tailored design, sampling, and sample retention strategies. It would also allow for full control over data content and measurement. Topic areas could be comprehensive and fit-for-purpose, and questions could be standardised. In particular, questions specifically related to equity interventions could be included as part of the survey. Furthermore, assuming that the right information for each cohort is collected and harmonised across the three samples, it may be possible to use statistical matching to link respondents in the different cohorts, thereby creating one long pseudo-cohort.

Even a purpose-built survey faces design challenges, especially in relation to Indigenous students, disabled students, and the WINTA group. There are difficulties in recruiting and retaining survey participants, and a single survey instrument is unlikely to be relevant for all respondent groups.

The other major limitation of this approach is the cost of running a custom survey. While it is difficult to estimate an exact cost for such a study, based on the costs associated with running other surveys such as LSAC or LSAY, we expect that a three-cohort WPLS would cost more than $5.5 million over four years.

8.2 How new survey data could be used

A new bespoke WPLS survey would cover all three cohorts: Primary School, Secondary School, and Higher Education. Each of the age cohorts would have purpose-built samples covering the equity groups, as well as a non-disadvantaged comparator, and they would each be of a large enough size to allow for a reasonable granularity of analysis and a robust estimation of effects.

There are a number of design principles that are proposed to ensure that the WPLS study delivers data of reliable quality and, subsequently, provides robust evidence for answering the research questions on widening participation in higher education among disadvantaged groups. These design principles are to:

- allow for comparison with previous existing national and international data collections, such as LSAY, LSAC and NLYS for relevance and continuity
- employ oversampling to ensure that there are sufficient samples in the specific target sub-populations
- ensure that school/community effects can be studied by undertaking a survey approach that allows for the clustering of similar individuals and captures variation across schools/communities
- have a large enough sample size in each cohort to produce valid and reliable findings

A new longitudinal survey would support full flexibility over the questions asked, allowing for all relevant topics to be included. The areas covered should include:

- *Demographics*: questions around a range of demographic characteristics that include socioeconomic position, family's ethnic background, and level of education, as well as health.
- *Educational pathways*: extensive questions to address specific educational pathways and vocational steps that facilitate successful transitions into higher education and the labour market, customised for each age cohort, and tracking specific subjects taken in primary and secondary schools and at university.
- *Student engagement*: detailed information about various dimensions of student engagement, covering attendance and truancy behaviours; relationships with teachers; student involvement and participation; relationships with peers; social networks at school/university.
- *Aspirations*: educational and labour market aspirations; and primary and secondary school cohorts' intentions and expectations for tertiary and further education.

- *Equity interventions*: questions on equity interventions that students knowingly participated in, and those they chose not to participate in; access to and interaction with various education programs; use of advice and support services at school and university; engagement in tertiary transition support programs; and access to general social support.

A bespoke survey could be designed to maximise the potential benefits of data linkage, both as a source for the sampling frame as well as for enriching the information collected via survey with relevant data items from other sources. Although a fully bespoke three-cohort WPLS may be cost-prohibitive, targeted new data collection is further explored as part of the design options in Part D of this report, including the Recommended Design.

PART D
STUDY DESIGN OPTIONS FOR THE WPLS

9 Overview of study design specifications

Building on the available data collection options, we have developed three study designs with varying implications for cost and analytic value:

1. *Basic Design*: linked data from existing longitudinal surveys and administrative records. This option has the capacity to generate some insights into the pathways through education for identified equity groups, but would not adequately assess the mediating role of equity interventions

2. *Recommended Design:* targeted new survey data collection with Secondary School and Higher Education Cohorts. This design includes sampling of up to 1000 respondents from the five primary identified equity groups, and is modelled on the LSAY to broaden the analytic capabilities of both surveys

3. *Extended Design*: an expansion of the Recommended Design. The Extended Design includes data collection with a Primary School Cohort, supplementary studies to counter potential sample attrition for the most hard-to-reach equity groups (*Aboriginal and Torres Strait Islander People* and *People with a Disability*), and a survey with the sixth identified equity group (*WINTA*).

The main design elements for each option are outlined in this section, including:

- coverage of the priority topics and data items as relevant to WPLS research objectives
- sampling approach, including coverage of age cohorts, coverage of identified equity groups, and sufficient sample sizes for analysis
- timing – or intervals – for data collection
- survey administration modes
- participant retention challenges and possible remedial strategies
- specific data linkage activities that are central to the WPLS (additional data linkage opportunities may also be relevant)
- specific research ethics issues for consideration in implementation
- the analytic capability of the resulting data and some techniques required for data analysis.

There are also some specifications that are common to all study designs, namely:

- *Results dissemination*: under any methodological approach, the WPLS should include a results dissemination strategy that aims to raise its profile with consumers (i.e. students, particularly from identified equity groups), government end-users, and the research community, with the end-goal of enhancing uptake in research and policy, and retaining study participants (for the Recommended and Extended options)

- *Research ethics:* all research with human participants is subject to appropriate ethical clearances. This includes research using secondary data, to ensure the data use is consistent with existing consents.

All study designs are outlined in summary form for the purpose of supporting government decision-making about WPLS implementation. In addition, we have included an extended evidence-based research protocol for the Recommended Design.

9.1 Summary of three study design options for the WPLS

The primary criteria on which the three study designs may be compared relate to:

- coverage of the main topics of interest, including: demographics that support an understanding of disadvantage; education participation and attainment; student aspirations and expectations; factors impacting decision-making; and student engagement.
- capacity to measure educational equity interventions
- coverage of relevant age cohorts – Primary School, Secondary School and/or Higher Education
- suitability of the sample size for making determinations in relation to the age cohorts
- coverage of the identified equity groups (five groups, excluding WINTA)
- suitability of the sample size for making determinations in relation to the identified equity groups
- ability to collect usable data within a 3-5 year study period

A summary of the three design options in relation to the above criteria is set out in Table 5 below.

Table 5 Comparison of WPLS Design Options based on key evaluation criteria

ELEMENT	BASIC DESIGN (OPTION #1)	RECOMMENDED DESIGN (OPTION #2)	EXTENDED DESIGN (OPTION #3)
Design Summary	Longitudinal study using only existing data (LSAY, LSAC and QILT) applied to three age cohorts and five equity groups of interest but with limited capacity to evaluate equity intervention effectiveness	Longitudinal study collecting new primary data for two age cohorts and five equity groups of interest and using LSAY as a comparator group, with improved capacity to evaluate equity intervention effectiveness	Extensions to the Recommended Design Option to overcome sampling limitations: 1) Survey of Primary School Students 2) Qualitative studies with Aboriginal and Torres Strait Islander People and People with a Disability 3) Survey of WINTA for the Higher Education Cohort
Coverage of Main Topics	Moderate, with coverage of: • Demographics that support an understanding of disadvantage • Pathways to higher education • Role of school factors in increasing participation in higher education • Education participation and attainment	High, with coverage of main topics of interest including but not limited to: • Demographics that support an understanding of disadvantage • Pathways to higher education • Role of school factors in increasing participation in higher education • Education participation and attainment • Student aspirations and expectations • Factors impacting student decision-making • Student engagement	High, with a focus on collecting the following data for key groups of interest: • Demographics that support an understanding of disadvantage • Pathways to higher education • Role of school factors in increasing participation in higher education • Education participation and attainment • Student aspirations and expectations • Factors impacting student decision-making • Student engagement
Measurement of Interventions	Low, with limited or no capacity to measure interventions in existing data	High, with new data on interventions collected from students, teachers, and parents	High, with new data on interventions collected from students, teachers, and parents
Coverage of Age Cohorts	High – three (3) cohorts: 1) Primary School Cohort (via LSAC) 2) Secondary School Cohort (Years 9-10 via LSAY) 3) Higher Education Cohort (via QILT)	Moderate – two (2) cohorts: 1) Secondary School Cohort (via bespoke data collection and LSAY comparator group) 2) Higher Education Cohort	High – extending the Recommended Option to coverage of three (3) cohorts through the Primary School Survey
Coverage of Equity Groups	High – five (5) equity groups, with the exception of WINTA	High – five (5) equity groups, with the exception of WINTA	Desirable – six (6) equity groups including WINTA
Equity Group Sample Size	Insufficient, with the following groups underrepresented: 1) People from Rural and Remote Areas 2) Aboriginal and Torres Strait Islander People 3) People from NESB 4) People Living with Disability.	Sufficient (n=1000 students from each of the five equity groups, excluding WINTA, plus n=1000 students as a comparator group in each age cohort) – total sample size n=6000 students from the Secondary School Cohort and n=6000 from the Higher Education Cohort	Desirable, with a Primary School Cohort (n=1000 students from five equity groups plus n=1000 students as a comparator group); supplementary samples to offset attrition for Aboriginal and Torres Strait Islander People and People Living with Disability (Secondary School Cohort only); and a new WINTA sample in the Higher Education Cohort (n=1000)
Study Period	Immediate data availability	Full data within 4 years, with data available annually	Variable, depending on implementation schedule
Costs	Cost neutral	~$2.4 million	Variable up to >$5 million

10 Option 1: Basic Design

The most cost-efficient approach to WPLS design and implementation is to not collect any additional primary data, but rather to draw on existing administrative records and longitudinal survey data collected by state and federal agencies. This is a relatively cost-neutral study design, and analysis can commence quickly because the data have already been collected.

It does, however, have significant drawbacks with regard to the resulting interrogative value of the study. A WPLS implemented based on a Basic Design will allow researchers to track the pathways into higher education for some equity groups but not all of them. It will offer virtually no capacity for government to evaluate the effectiveness of equity interventions on higher education participation for disadvantaged groups.

10.1 A Basic Design is low cost but has limited research capacity

The WPLS Basic Design draws heavily on LSAY, LSAC and QILT survey data (see Chapter 7 for further detail). As previously discussed, LSAY and LSAC are high-quality longitudinal surveys that are representative of the general population. They are also available to the public, and have extensive documentation and user support. Furthermore, LSAC has been linked to administrative data that has relevance to the WPLS, including NAPLAN.

As these datasets are freely available, the cost of using them for the WPLS is limited to the marginal cost of additional data linkage.

A Basic Design for the WPLS should seek to obtain data linkage to the following datasets:

- NAPLAN data – for information on prior academic achievement
- AEDC – for information on early language and cognitive skills development
- HEIMS – to track the progress of equity groups through higher education.

We recommend that, if possible, the questionnaires in future waves of LSAY are expanded to include questions on educational and occupational aspirations, as well as students' experiences of equity interventions. The cost of including these items would be relatively small but the value to a WPLS based only on existing data would be significant.

We have not included this as a feature of the Basic approach because feasibility is dependent upon decisions made in relation to LSAY implementation. In addition, the timing of the next LSAY cohort – due to commence mid-2016 – does not reasonably support revisions to content or sampling in order to better align with a prospective WPLS. Although LSAY currently includes questions on career advice at school, and on transitional support including mentoring, summer camps and university visits, these are very limited as a measure of intervention effectiveness, which restricts the value of the Base Design option as a means for researching equity intervention effectiveness.

10.2 The Basic Design covers relevant topics but cannot measure interventions adequately

Existing survey and administrative data collectively cover a number of topics relevant to the purpose of the WPLS. LSAC covers a range of family and household circumstances, including data about educational environment at home, such as the amount of time the child spends on studying and other activities, any house rules about homework, and parental engagement with schools. It also captures some information about parents' and children's educational and job aspirations for the study child, including the specific intentions to undertake higher education studies in the later waves of the survey. LSAC includes a parent survey as well, which would enable the study of parental influences on students' academic progress through primary school.

LSAY captures educational achievement, progression, school experiences, attitudes to school and education, and post-school educational plans and occupational expectations. It tracks students' full educational history, student achievement, time spent learning, perceptions about self and school, post-school plans, career advice, reasons for dropping out of education, subject courses in higher education, curricular change, qualifications, and results in higher education. The survey also contains limited information on respondents' perceptions of their peers' educational and occupational plans.

Of the QILT surveys, the SES survey could be used to track students' educational experience, including their engagement with learning, perceived teaching quality and support, and skills development, and the GOS survey could be used to track post-university destinations of equity group students.

NAPLAN data and the AEDC can provide information about early language and cognitive skills development, and are already linked to LSAC, and HEIMS data could be used to track the progress of equity groups through higher education. Linking these administrative records to the LSAY dataset would enhance the capacity of the survey to provide data relevant for the purpose of the WPLS.

Taken together, these data sources enable investigation of relevant topics including:

- the links between academic performance and in-school factors, such as school engagement among selected equity groups
- the pathways to university participation for students from selected equity groups, namely *People from Low Socioeconomic Backgrounds, People Living in Rural and Remote Areas,* and *People from NESB*
- the role of some school factors, including career planning and advice received, in increasing the participation in higher education among students from selected equity groups.

LSAY data may also enable long-term comparisons over time and across cohorts.

The Basic Design would inevitably suffer from distinct limitations from the point of view of the usefulness for the WPLS study. Two key limitations stand out:

- There is only very limited data in the existing surveys on both parental and student aspirations. LSAY data would be the primary source of educational and occupational plans, but it contains no data on aspirations (i.e. desired or preferred educational and occupational outcomes). The plans identified in LSAY are not aspirations, but rather expectations, which may be adjusted in light of perceived barriers.
- There would be little or no capacity to assess the extent to which students have been subject to interventions. While LSAY and some administrative data allow the identification of students from schools that had been part of formal and major interventions, they do not capture information on local interventions between individual schools and universities, or school-based interventions.

10.3 The Basic Design has insufficient samples of all equity groups

Existing survey data – LSAC, LSAY and QILT – map neatly on to a three-cohort structure for the WPLS:

- LSAC covers student trajectories throughout primary school and on to secondary school (i.e. WPLS Primary School and Secondary School Cohorts)
- LSAY tracks secondary school students from Years 9-10 onwards, and extends into post-secondary pathways (i.e. Secondary School and Higher Education Cohorts)
- QILT surveys cover higher education students from the first year of university and also include information on postgraduate destinations (i.e. Higher Education Cohort).

Together the three datasets are also able to capture all five equity groups, with some important caveats:

- LSAC covers five equity groups (i.e. excluding WINTA), but with small sample sizes. Three groups - *People from Rural and Remote Areas*; *Aboriginal and Torres Strait Islander People*; and *People from NESB* - are underrepresented.
- Four out of five equity groups are identifiable in LSAY, with the exception of *People Living with Disability*, as disability information is only available in the 2013 waves. *Aboriginal and Torres Strait Islander People* and *People from Rural and Remote Areas* are underrepresented and the sample is further undermined by attrition issues.
- The QILT samples are based on HEIMS administrative data and all identified equity groups are, in principle, identifiable for this dataset.

Under a Basic Design approach to the WPLS, there would be limited capacity to obtain reliable information about the trajectories and pathways into higher education for *People from Rural and*

Remote Areas, *Aboriginal and Torres Strait Islander People,* and *People Living with Disability.* LSAC and LSAY offer large representative samples of general student populations but they do not deliver sufficient samples representative of all equity groups, while QILT samples are much smaller and it is highly unlikely they will be representative of the higher education student population because participants self-select into the study.

When the sample sizes for equity groups are too small it prohibits detailed and robust analysis of the existing survey data. For example, despite the inclusion of over 1100 Indigenous participants in the initial data collection for the Y09 cohort, the number of Indigenous participants drops to just 313 by the fourth wave of the survey. This prevents the longitudinal survey data from producing sufficient statistical power to draw reliable conclusions around these policy groups of interest. Furthermore, there is no direct control over the retention of priority participants in the WPLS Basic Design, as it uses existing data.

10.4 The established time-points for data collection are restrictive

Data collection points could correspond with the timing of the existing longitudinal surveys:

- biennial surveys for the Primary School Cohort (LSAC data)
- annual surveys for the Secondary School Cohort (LSAY data)
- annual cross-sections for the Higher Education Cohort (QILT data).

However, the biennial design of the LSAC precludes the observation of changes in circumstances over time, and the cross-sectional design of the QILT surveys prevents any longitudinal analysis of the pathways through higher education for the equity groups.

10.5 There is scope for extensive data linkage

A Basic Design for the WPLS has scope for extensive data linkage, subject to data availability. LSAC has already been linked to several administrative databases including:

- NAPLAN (information on test scores, test absences and whether the study child repeated a year level)
- Medicare Australia (medical and pharmaceutical benefit claims and immunisation records)
- National Childcare Accreditation Council data (accreditation and quality of the day care centre attended by the study child)
- AEDC (children's development as they enter school)
- ABS Census of Population and Housing (neighbourhood characteristics, such as the Socioeconomic Index for Areas [SEIFA]).

LSAY data is linked to PISA scores, and further data linkage is being considered for the new cohort (Review of LSAY, 2014), including linking to NAPLAN results.

An optimum approach for the WPLS would include additional data linkage centred on LSAY that could support the linking of individual student records with AEDC, NAPLAN and HEIMS data. This would produce long trajectories for individuals, with the scope to follow the life course of learners from a very early age through primary school (via AEDC), on to secondary school (via NAPLAN and LSAY), and into higher education (using HEIMS).

The feasibility and cost of such data linkage will require further consideration if the Basic Design option is chosen for the WPLS.

10.6 Implementation depends on the scope of existing participant consents

Ethical considerations around data collection are relatively limited under this WPLS Basic Design. It would be important, however, to conduct a privacy impact assessment into how the new data linkage relates to the data linkage and data use to which participants originally consented.

10.7 Analytical possibilities are strongest for the Primary and Secondary cohorts

The longitudinal nature of the data for the Primary School and Secondary School Cohorts opens a range of modelling possibilities.

For the Primary School Cohort, panel data models could be used to study the links between academic performance (NAPLAN Scores) and engagement with school and educational expectations. Trajectories of achievement could be studied for those equity groups that are adequately represented in the data.

The LSAC sample is area-based, which allows for the study of geographical and community effects on children's academic performance. The sample is not drawn through schools but from Medicare records so it is possible to study members of equity groups who are outside of the formal schooling sector (e.g. home-schooled children), although this would likely be impeded by small sample sizes.

For the Secondary School Cohort, LSAY supports the analysis of transitions from school to further and higher education. The impact of secondary school academic performance on the probability of completing Year 12 could be investigated. Statistical methods for longitudinal data, such as event history analysis, could be used to investigate post-school outcomes, including the likelihood of enrolling into university or labour market destinations. LSAY also covers some information on career planning and advice received at school, and the impact of these factors on subsequent academic and labour market outcomes could be studied.

The LSAY sample is school-based, which allows researchers to decompose variation in the observed outcomes into the variation between students (within schools) and the variation between schools. This variation can be further modelled through multilevel modelling. LSAY data also has several cohorts; it is possible to make long-term comparisons over time and across cohorts.

Data analysis relating to the Higher Education cohort is more limited because the QILT surveys are cross-sectional, and analysis would be restricted to standard methods for cross-sectional data, such as descriptive statistics and multivariate regression models.

10.8 The Basic Design is a budget option for pathways not interventions

As it based on the use of existing data, the only cost associated with the Basic Design option would be the marginal cost of additional data linkage. This would mostly comprise the costs of negotiating data access protocols and setting up the data analysis systems.

Despite this, the Basic Design option is not recommended for implementation by the Department, based on its limited capacity to evaluate the effectiveness of education equity interventions, which is the core value proposition of the WPLS for policymaking. The Basic Design option is a viable alternative only in the event that the Department opts to seek new insights into the pathways of disadvantaged learners more broadly, without a specific focus on intervention effectiveness.

11 Option 2: Recommended Design

Our recommended approach to WPLS design recruits two new disadvantaged student cohorts – a Secondary School Cohort and a Higher Education Cohort. It also uses LSAY as a design model. LSAY has established credibility and relevance as a longstanding longitudinal survey, and with its recent pairing with PISA, provides a model for designing the WPLS sampling approach.

Under the Recommended design, the WPLS will collect new primary data for respondents from all five identified equity groups, conducted in parallel to LSAY. It has the capacity to collect data on: individual disadvantaged students' experience of the barriers to participating and succeeding in higher education; the effectiveness of interventions and actions intended to overcome such barriers; and student education outcomes over three years, including in the higher education setting.

11.1 Summary of the Recommended Design

The Recommended Design has been scoped to run in parallel with LSAY, but unlike LSAY, it provides a sample size for each disadvantaged cohort that is sufficient to provide robust population estimates. LSAY data will be used to source a secondary control group for non-disadvantaged students, and the repeat measures available in the recommended longitudinal study design support the examination of effects over time across disadvantaged groups, as compared with the comparator groups.

New survey data for the Recommend Design would be collected for two cohorts only - a mid-late Secondary School Cohort and a commencing Higher Education Cohort - to achieve value for money. This study design excludes a Primary School Cohort because a three-year study would not have the capacity to collect higher education outcomes for this cohort, which undermines its research value. The inclusion of a late Primary School Cohort is available as a potential add-on to the Recommended Design, as detailed in Option 3 (Extended Design), at additional cost.

11.2 The Recommended Design has sufficient power for analysis of equity group pathways

The Recommended Design involves a sample of 1000 students from each of the identified equity groups and a control group, for a total of 6000 participants in each WPLS cohort. These sample sizes, combined with related retention strategies, will provide reliable populations estimates on variables of interest for each disadvantaged group.

For both the Secondary School Cohort and the Higher Education Cohort, the sample would be selected on the basis of membership to one disadvantaged group, and groups with smaller

populations would be selected first. The study of interaction effects would be facilitated by including individuals who are members of more than one disadvantaged group.

11.2.1 The sampling strategy for the Secondary School Cohort is based on PISA

The sampling approach for the Recommended Design parallels the method used to recruit students to participate in the PISA: a two-stage probability sampling process first involving the selection of the school and then the student. The Secondary School Cohort sample is Year 10 students, recruited across the Australian states and territories. By recruiting Year 10 students, the three-year WPLS longitudinal survey can then track students beyond school into post-school study, work and other activities, thus providing estimates of initial university participation.

We recommend sampling 150 schools with a probability proportional to the enrolment of Year 10 students in each school. Stratification of the sample will ensure sampling of more schools serving low-socio economic communities and support the WPLS to obtain adequate sample size for each disadvantaged group of interest, as they will be more concentrated in these schools.

The variable used to stratify the school sample would be the school's *Index of Community Socio-Educational Advantage* (ICSEA) value, with 40 per cent of the schools chosen from the lowest ICSEA quartile, 30 per cent from the second lowest quartile, 20 percent from the third lowest quartile, and 10 percent from the highest quartile.

The number of students from each disadvantaged group who were in this school sample in 2014 is shown in the table below.

Table 6 Number of disadvantaged students in the proposed school sample, by disadvantaged group 2014

Disadvantaged Group	Number of Students in the Sample
Aboriginal and Torres Strait Islander People	2090
People Living with Disability	>20,000
People from Low Socioeconomic Backgrounds	2300
People from NESB	6010
People from Regional and Remote Areas	>20,000

Source: ACARA My School data file (unpublished) [multiple random samples of 150 schools provides the basis for this estimate]

An average of seven students in each of the disadvantaged groups would be randomly selected from sample schools, with the actual number adjusted to reflect the number of students in each disadvantaged group in the school. As with PISA, this is likely to involve the recruitment of most or all age-eligible (and willing) Indigenous students in sample schools.

A control group can be generated by selecting an appropriately weighted number of students not belonging to any of the disadvantaged groups, and this group would be selected from schools not in

rural and remote location because all students in rural and remote schools would be classified as disadvantaged in terms of the criteria for the key equity category *People Living in Regional and Remote Areas.* Non-disadvantaged Year 10 students in the LSAY sample provide a secondary control group, representative of the overall Year 10 student population.

As is the case for PISA sampling, we propose identifying a WPLS School Coordinator in each school to ensure suitable local arrangements are put in place, including the random sampling and recruitment of students, and the specific timing and conduct of the initial student survey/school survey. WPLS School Coordinator training should include advice on selecting students using the definitions of equity groups (see Chapter 5), plus ongoing support identified during survey piloting.

We suggest identifying the student sample by the end of April of the year in which they would be first contacted, with main fieldwork commencing from August onward in each of the three years of the main study. Student contact details for recontacting students over the three follow-up surveys would be provided by WPLS School Coordinators to a national WPLS Survey Manager using protocols adapted from PISA/LSAY.

11.2.2 The Higher Education Cohort sampling strategy is consistent with the SES

The proposed sampling frame for the Higher Education Cohort is first-year students in government-funded places who were enrolled in an undergraduate course and studying domestically. This is the same sampling frame used in the SES, with an additional requirement that students be in government supported places.

By maintaining consistency with the SES, records conforming to this sampling frame can be extracted from the national HIEMS Submission 1 Student File submitted by higher education providers to the Department in the early part of the relevant year (e.g. March in 2017). This file is also used to identify participants in the SES. Students from each of the five identified equity groups, plus a control group of students not belonging to any of the disadvantaged groups, would be randomly selected using relevant data elements in higher education data collections. There are suitable variables in HIEMS to identify members of each equity group, as shown in the table below.

Table 7 HEIMS data elements for selection of Higher Education Cohort

Disadvantaged Group	Data Element
Aboriginal and Torres Strait Islander People	HEIMS Element 940
People Living with Disability	HEIMS Element 943
People from Low Socioeconomic Backgrounds	HEIMS Element 944
People from NESB	HEIMS Element 941
People in Remote and Regional Areas	HEIMS Element 946

Source: HEIMS Health Online website (retrieved February 2016)

This approach would facilitate identification of a sample of 1000 students from each of the disadvantaged groups and the control group for participation, with invitations to participate in the WPLS disseminated until the desired sample was achieved. About 30 per cent of students contacted for the SES respond to the invitation to complete the SES questionnaire so a similar proportion of students could be reasonably expected to accept an offer to participate in a new WPLS.

The table below shows the population of disadvantaged students commencing higher education in 2015, and demonstrates that sufficient student numbers are available for the study.

Table 8 Number of commencing higher education students eligible for WPLS participation, by disadvantaged group 2014

Disadvantaged Group	Number of Students
Aboriginal and Torres Strait Islander People	4,514
People Living with Disability	14,495
People from Low Socioeconomic Backgrounds (low SES postcode measure 2011 SEIFA)	50,228
People from NESB	10,900
People in Remote and Regional Areas (MCEETYA measure)	143,339

Source: Department of Education and Training – Higher Education Statistics

Fieldwork for the SES is undertaken in September and October, based on the HEIMs Submission 1 of that year. The initial and follow-up surveys of the Higher Education Cohort could occur at the same time, coinciding with the fieldwork window proposed for the Secondary School Cohort.

11.3 Sample sizes are appropriate for all equity groups, even after attrition

A sample size of 1000 students from each of the key equity groups and a control group is recommended for both the Secondary School and Higher Education Cohorts, with the Secondary School Cohort selected from 150 schools.

This sample size has been determined with consideration given to the effect attrition is likely to have on the robustness of survey estimates and the level of confidence. The recommended sample sizes, when combined with the retention strategies recommended below, will provide reasonably robust populations estimates on the variables of interest for each equity group (independent of non-sampling errors). With a national population of 14,168 Indigenous students in Year 10 in 2015, a sample size of 1000 would provide estimates that have a confidence interval of + or – 3 per cent with a 95 per cent confidence level, all else being equal. The confidence intervals and levels would be of this order for all other groups.

The effects of attrition on the sample over time affect levels of confidence, but the sample sizes are likely to remain sufficient. Assuming an average 20 per cent inter-wave sample loss (based on the average 2009 LSAY sample attribution for Indigenous students from the first 2010 contact), after

three years the final WPLS sample size for each equity category would be approximately 500. This final sample size number would provide estimates that have a confidence interval of + or – 4.3 per cent with a 95 per cent confidence level, all else being equal, which is sufficient for reliable data analysis.

11.4 Annual surveys capture change and transitions

Under the Recommended Design, members of the Secondary School and Higher Education Cohorts would be surveyed annually. This is the same interval adopted for LSAY surveys, including the forthcoming Y15 cohort. The recommended frequency is informed by volatility in young people's circumstances during the ages of 15 to 25 years, which requires data to be collected frequently enough to capture important changes and transitions.

As the majority of participants in the Secondary School and Higher Education Cohorts would be in the 15-25 year age range, annual data collection is most appropriate. WPLS data collected could also then be analysed in ways consistent with LSAY, within the limitations of the three-year duration of the WPLS.

To reduce data collection costs, the Department may consider an initial survey followed by re-contact after three years (i.e. at the commencement of post-school education, employment or other activity). Whilst this would reduce the price of the Recommended Design by omitting two follow-up surveys, it would also reduce the insights to be gained from the study, and increase attrition and bias over the three year period so this is not recommended.

11.5 Participant retention strategies need to be built into the design

All longitudinal surveys have to confront the problem that, with each successive survey wave, some sample members are lost because of a failure to locate those who have moved, cannot be contacted, or no longer want to take part.

For the most recent LSAY cohort (comprising those who participated in the 2009 PISA study), overall sample retention was 61.5 per cent in the first wave, dropping to 53.6 percent and 46.1 per cent in the second and third waves respectively (see Table 9). LSAY attrition continued in later waves when participants were of tertiary education age, with overall retention falling to 40.8 per cent and 35.7 per cent in the fourth and fifth waves respectively. This information is displayed in Table 9, which shows that retention rates were lower for students from disadvantaged groups across all waves (see underlined figures below), and this trend has implications for the WPLS design.

Table 9 Sample retention rates for LSAY 2009 sample, 2009-2014

	N	2010	2011	2012	2013	2014
All	14251	61.5	53.6	46.1	40.8	35.7
Achievement (quintiles)						
Lowest	3170	38.8	29.3	22.1	17.3	13.2
Lower middle	2906	56.0	45.9	36.8	30.8	25.0
Middle	2779	65.6	57.3	48.0	41.6	36.1
Upper middle	2743	72.9	66.5	59.6	54.0	48.3
Highest	2653	78.3	73.9	69.0	65.1	60.8
Location						
Metropolitan	9890	62.5	54.7	47.6	42.4	37.4
Provincial	3908	59.9	51.9	43.3	37.7	32.2
Remote	453	53.6	43.9	37.7	30.9	28.0
SES (quintiles)						
Lowest	2790	51.3	41.6	33.3	28.1	22.8
Lower middle	2784	58.6	49.9	41.5	35.8	30.9
Middle	2787	64.2	55.7	47.0	41.2	35.9
Upper middle	2773	67.3	60.4	53.0	47.8	42.7
Highest	2799	71.5	65.7	60.1	55.0	49.6

Source: Derived from LSAY 2009 longitudinal cohort data

As illustrated in Table 10, the greatest attrition in the PISA sample occurred in 2010, when 39 per cent of the sample was lost in the first LSAY wave. This was a result of restrictions around the collection of PISA participant contact details, and the absence of other retention strategies.

The attrition rate for the lowest SES quintile in that wave was 49 per cent. In subsequent waves of the Y09 cohort, annual attrition of the overall sample and the lowest SES quintile varied between 10 and 15 per cent, and 15 to 20 per cent respectively.

In the Recommended Design for the WPLS, the recruitment of identified equity group samples in the Secondary School and Higher Education Cohorts outside of PISA/LSAY will avoid these limitations. In addition, the recruitment of participants directly into a longitudinal survey - as opposed to inviting participants from a cross-sectional survey (PISA) to participate in a subsequent longitudinal survey (LSAY) - can be expected to reduce the initial attrition seen in the LSAY.

Table 10 Year-by-year sample attrition rates for LSAY 2009 sample, 2009-2014

	2009 (N)	2010	2011	2012	2013	2014
All	14251	38.5%	12.8%	14.0%	11.5%	12.5%
Achievement (quintiles)						
Lowest	3170	61.2%	24.5%	24.6%	21.7%	23.7%
Lower middle	2906	44.0%	18.0%	19.8%	16.3%	18.8%
Middle	2779	34.4%	12.7%	16.2%	13.3%	13.2%
Upper middle	2743	27.1%	8.8%	10.4%	9.4%	10.6%
Highest	2653	21.7%	5.6%	6.6%	5.7%	6.6%
Location						
Metropolitan	9890	37.5%	12.5%	13.0%	10.9%	11.8%
Provincial	3908	40.1%	13.4%	16.6%	12.9%	14.6%
Remote	453	46.4%	18.1%	14.1%	18.0%	9.4%
SES (quintiles)						
Lowest	2790	48.7%	18.9%	20.0%	15.6%	18.9%
Lower middle	2784	41.4%	14.8%	16.8%	13.7%	13.7%
Middle	2787	35.8%	13.2%	15.6%	12.3%	12.9%
Upper middle	2773	32.7%	10.3%	12.3%	9.8%	10.7%
Highest	2799	28.5%	8.1%	8.5%	8.5%	9.8%

Source: Derived from LSAY 2009 longitudinal cohort data

We suggest that the WPLS incorporate the strategies developed for the LSAY15 cohort to maximise retention of equity group respondents beyond the first contact point, including but not limited to:

- maintenance of participant contact details
- thank you cards and newsletters for participants
- the extension of the random prize draw to disadvantaged cohorts (Australian Government Department of Education and Training 2016b).

Given the relatively higher attrition of LSAY participants from disadvantaged groups, we consider that additional strategies will be required for the WPLS such as the formation of an online community (see 11.5.1) and targeted financial incentives for *Aboriginal and Torres Strait Islander People* (see 11.5.2). We have included possible sample maintenance strategies in the indicative costings for the WPLS, with financial incentives itemised as an optional inclusion. The table below shows the anticipated sample retention rates for the equity groups in the WPLS if the proposed sample maintenance strategies are used.

Table 11 Estimated sample retention rates for disadvantaged cohorts in the WPLS

	Wave 1 (Baseline)	Attrition year-on-year	Wave 2	Wave 3	Wave 4
Secondary School Cohort					
Indigenous	1000	20%	800	640	512
Other disadvantaged groups	1000	18%	820	672	551
Non disadvantaged cohort	1000	15%	850	723	614
Higher Education Cohort					
Indigenous	1000	20%	800	640	512
Other disadvantaged groups	1000	18%	820	672	551
Non disadvantaged cohort	1000	15%	850	723	614

11.5.1 Innovations in sample maintenance can also be used for the WPLS

A significant innovation in retaining longitudinal study participants is the use of community-forming social networks such as online research communities, which make use of developments in web technologies and online communities. This technique has generated significant success in maintaining samples, and we recommended targeting a WPLS online community towards participants with low prior educational achievement to keep these individuals engaged in the study, and it is important the community is carefully facilitated in ways that do not introduce bias in the survey results.

The request for proposals to conduct the LSAY15 data collection states that the maintenance of the cohort and the minimisation of attrition is a primary goal, particularly for disadvantaged student groups (Australian Government Department of Education and Training 2016b). Suppliers were encouraged to propose new and innovative approaches to achieve this outcome. With the survey for the first wave of LSAY15 in field from September 2016, the success of retention initiatives will be known before the end of the year and these retention strategies should be considered for the WPLS as applicable.

1.1.1 Targeted incentives can increase participation from Indigenous respondents

The national United States longitudinal survey of high school students (base cohort of Grade 9 students commencing in 2009) reduced attrition at the first-wave recontact by providing participants who were no longer at their base school with an incentive of $40 (National Centre for Education Statistics 2014). Similar success has been reported in other panel studies such as HILDA and the *British Household Panel Survey* (e.g. see Fumagalli, 2009; Watson and Wooden, 2012).

It follows that the Recommended Design should incorporate targeted incentives. We propose two funding incentives for *Aboriginal and Torres Strait Islander People* in the Secondary School Cohort (800 students). The attrition of members of the Indigenous cohort for LSAY and other comparable studies is recognised as a significant concern (Marks and Long 2000); it is greater than the attrition

observed for other disadvantaged cohorts and therefore we have prioritised this group for the receipt of incentives in the WPLS.

The first is an unconditional payment of $10 for providing notification of any change of contact details, with payment made at each survey contact. The purpose of this payment is to encourage notification so that contact can be maintained with the participant and to build loyalty to the study. Unconditional payments of this nature were found to be effective in maintaining contact with participants in the *British Household Panel Survey* in particular (Fumagalli et al 2010).

The second proposed payment is $25 for participants who complete the WPLS. Similar payments were found to be effective in encouraging survey response rates in a trial conducted as part of the United States *New Immigrant Survey* (Jasso et al 1999), although limited information on price sensitivity was obtained.

The WPLS might also consider employing an Indigenous researcher to engage with respondents from this equity group and their communities. Existing research supports the development and utilisation of partnerships with Indigenous communities, schools and individuals for effective data collection (Lowitja Institute 2015).

A similar incentive payment is not proposed for the Higher Education Cohort, given the different profile of this cohort and the opportunities that HIEMS data provides to understand the bias introduced by attrition.

11.6 The Recommended approach includes four waves of data collection

Under the Recommended Option, the WPLS will be administered as an initial questionnaire based on the PISA questionnaire and three follow-up surveys modelled on LSAY (a total of four waves of data collection).

1.1.2 The initial questionnaire is based on the PISA framework to collect contextual data

PISA assesses the ability of 15 year-olds to apply their understanding in reading, mathematics and science to everyday problems and situations. In addition to specific assessment in these domains, contextual questionnaires are administered to the student and the school to collect information on student background and school setting respectively. Each contextual questionnaire takes about 20 minutes to complete.

The student contextual survey is administered to the student and gathers data on their demographics, family background, attitudes, motivations and capacities regarding learning and their school, and their views regarding career and the use of their time. The school questionnaire gathers data on school resources, policies and practices and the way the schooling system is organised and operates. The earlier PISA contextual surveys are in the public domain and are available for use.

We propose administering these surveys to the Secondary School Cohort to collect comparable contextual information to that available on PISA/LSAY participants. These questionnaires also provide the vehicle to collect data on student and school perceptions about the barriers to higher education participation, and the equity influences and interventions that are operating in the individual and school context. To maintain the questionnaire's length, some questions in the survey would need to be deleted to accommodate additional items. The questionnaires would be administered online at the school under the supervision of the WPLS School Coordinator.

Internationally, PISA has optional questionnaires for parents regarding their background; the cost of education; attitudes to, and involvement in, the child's school; parental support for learning in the home; and their expectation of their child's performance in school and their future career path. Whilst this PISA option has not been implemented in Australia, there are compelling arguments to do so. The outcomes of students from disadvantaged groups are heavily influenced by their parents; in particular, their experiences of their child's situation, their strategies to support their child's success, and their understanding of strategies that may be potentially or actually operating. If adopted, this survey could be administered online with a hardcopy option and supervision provided by the WPLS School Coordinator.

For the Higher Education Cohort, background information on students is available from the enrolment forms completed by students and captured in the data in HEIMS. The initial contextual questionnaire proposed for Secondary School Cohort survey participants could be reduced in scope and adapted for adult respondents, but given the age and independent status of the Higher Education Cohort, a parent survey is not required.

1.1.3 Follow-up questionnaires occur at three time-points and are modelled on LSAY

For the three proposed follow-up surveys of the Secondary School and Higher Education Cohorts, a modified version of the LSAY survey is proposed.

The surveys would incorporate items designed to capture information on barriers to participation and interventions to overcome those barriers (identified in Chapter 7). A common set of items for all the equity groups would enable a comparative analysis of which types of barriers are experienced by members of the different disadvantaged groups, and which categories of intervention are important in ameliorating their effects.

Questionnaires could be further tailored to interrogate the experiences of target groups as required. For example, the WPLS questionnaire for *People Living with Disability* might address issues raised through the 2015 implementation of the *Nationally Consistent Collection of Data on School Students with Disability*, including what constitutes a 'reasonable adjustment' under the Disability Discrimination Act. It might also be adapted to look at differentiated financial support arrangements for *Aboriginal and Torres Strait Islander People* or the design features of Indigenous student support units found in most universities.

The implications of removing lower priority items from LSAY will need to be considered, and decisions on questionnaire design should be made under governance arrangements that include both end-users and academic advisers so that the implications of changes for longitudinal data collection and analysis are taken into account.

11.7 The WPLS would be administered using a multi-mode approach

We suggest conducting follow-up fieldwork using a multi-platform approach involving both CATI and online surveying. Increasingly, online surveying is proving effective in longitudinal and panel surveys. Wallis, the company responsible for data collection for Y09 and Y06, have reported that the proportion of responses collected by these two methods is approaching 50:50, with survey participant preference driving the increases in the proportion of data collected online.

The Recommended Design involves distinct sub-cohorts from equity groups so the interaction with survey participants needs to be differentiated to encourage and facilitate their survey participation. Interviewers would need to provide the background to the WPLS and be able to talk knowledgeably and confidently with respondents from the disadvantaged groups about the reasons for the survey, the uses of the data, and the confidential nature of the information collected. The training of those administering the survey would need to address these considerations, including incorporating lessons learned from LSAY data collection.

A strict call-back routine has been one of the keys to maximising response LSAY rates, and this would also be the case for the WPLS Recommended Design. This strategy, including the spread and timing of calls, needs to be sensitive to the situation of members of the equity groups.

As with LSAY, survey questionnaires and administration should be the subject of piloting prior to the full survey being conducted. A pilot survey of 5 per cent of the sample is incorporated into the Y15 design. We suggest a similar approach for the questionnaires and cohorts in the Recommended Design for the WPLS, and this is included in the indicative study costings.

11.8 The WPLS should link to NAPLAN

It is recommended that both WPLS cohorts are linked to NAPLAN data for education achievement data. PISA collects data on students' reading, mathematics and science achievement and as prior education achievement is a strong predictor of future academic success, these variables are important to the analysis of LSAY data and understanding the relative influence of various factors on student success, including higher participation and outcomes. Equivalent achievement data would not be available for the members of the proposed Secondary School Cohort; however, linking NAPLAN data to the data collected on this cohort of students from equity groups would facilitate the calculation of derived PISA scores for these students. This would support analyses of Secondary School Cohort data, including prior educational achievement.

In 2013, 56.3 per cent of commencing domestic Bachelor students were 19 years old or younger, and a further 21.8 per cent were 20 to 24 years (Australian Government Department of Education and Training 2016c). NAPLAN testing began in 2008, so if the WPLS commences in 2017 or later, at least 75 per cent of students could be expected to have NAPLAN results from which PISA scores could be derived. Whilst the delayed commencement of higher education by members of some disadvantaged groups would mean that this proportion might be lower in some cases, prior educational achievement data would still be expected to be available for most students. In addition, and as outlined earlier, data linkage with HEIMS is also proposed for the Higher Education Cohort.

11.9 There are particular ethical considerations for the Secondary School Cohort

The recruitment of a Secondary School Cohort of students into the Recommended Design raises a range of ethical considerations, including but not limited to:

- obtaining approval by school authorities, including satisfying merit and methodology tests
- sourcing parental approval for students aged under 16 years
- establishing appropriate privacy provisions including the arrangement for data handling, custodianship, storage and access.

Similar considerations apply to the conduct of PISA/LSAY and are resolved through national governance structures for the schools sector. These same structures could be used to identify and approve suitable research ethics arrangements for the Recommended WPLS Design.

In contrast, the Higher Education Cohort involves the recruitment of adults in post-school settings. As a result, the research ethics considerations could parallel those operating for the SES and be less detailed.

11.10 Longitudinal analysis and cross-cohort comparisons are supported

The Recommended Design collects new longitudinal data on secondary school and higher education students, thereby tracking the education and career trajectories of individual participants and supporting an enhanced understanding of whether the equity interventions they have engaged with result in longer term impacts on higher education participation, experiences, and attainment.

The Recommended Design involves a Secondary School Cohort of 16 year-olds whereas the LSAY cohort is recruited at age 15 in the PISA study. Some students still at school at age 15 leave school by the time they are 16, which affects the comparability of sample frames for LSAY and the Secondary School Cohort in the Recommended Design. Any release of data from the implementation of the Recommended Design should be accompanied by a commentary on the implications of this for the analysis of data and presentation of results.

11.11 Annual datasets should be managed in ways consistent with LSAY

The Recommended Design would produce annual datasets for which specifications are required in relation to data coding, the compiling of datasets, and related checking and cleaning processes; this also includes naming conventions for the variables and labels in the datasets. These conventions would need to be consistent with those in operation for LSAY to avoid confusion by researchers drawing on data from both sources to investigate youth transitions. To encourage and support such use, this documentation would need to be available in user-friendly formats.

The datasets created would require protocols regarding data transfer, data custodianship, warehousing and access, including to address privacy legislation. The arrangements in place for LSAY would provide a model for suitable arrangements, with co-location of data and alignment of other arrangements to simplify access for data users.

11.12 The estimated cost of WPLS implementation is $2.4 million

We have provided an estimate of the cost of implementing the Recommended Design for the WPLS based on the sample sizes set out in this chapter. The total cost over four years is estimated to be in the order of $2.4 million excluding GST. Should this study be procured through competitive tender, actual costs would be set by the market, and this is an indicative estimate only to support comparability with the other options outlined in this report.

Table 12 Estimated costs for the Recommended WPLS Design (AUD)

	Base Year	Wave 1	Wave 2	Wave 3
Questionnaire and survey development	30,000	25,000	25,000	25,000
Pre-test data collection	27,000	23,000	20,000	16,000
Main sample data collection	460,000	378,000	310,000	255,000
Data preparation	60,000	50,000	50,000	50,000
Documentation	10,000	10,000	10,000	10,000
Sample maintenance	80,000	65,000	55,000	45,000
Project management	80,000	80,000	80,000	80,000
Total	747,000	631,000	550,000	481,000

The indicative costs are based on the following assumptions, in addition to specifications previously detailed:

- The base survey for the Secondary School Cohort is online for students and schools and a mixture of online and hardcopy for parents. The base survey for the Higher Education Cohort is online and CATI for follow-up surveys.
- Pre-test data collection costs for follow-up surveys are based on 50% online surveying and 50% by CATI, at a cost of $40 per achieved response.
- Main data collection costs for follow-up surveys are based on 50% online surveying and 50% by CATI, at a cost of $35 per achieved response.
- Targeted incentive payments to encourage sample retention of Indigenous students in the Secondary School Cohort are additional to the total survey cost, and recommended at a value of $10 per survey contact (total: $15,600) and $25 per survey response to the follow-up surveys (total: $39,000) for a total of $54,700 over three years.

12 Option 3: Extended Design

The Extended Design enhances the Recommended Design by suggesting a number of additional features that could be implemented if the associated costs are not an issue. While these additional features would add value to the Recommended Design, we note high costs associated with their inclusion, which is part of the reason additional features have not been included as a part of the Recommended Design.

12.1 Summary of the Extended Design

The Extended Option features three suggested extensions to the Recommended Design:

- An additional survey of primary school students from all equity groups and a non-disadvantaged comparator group, and their parents, to identify relevant early-life processes and early educational trajectories
- Supplementary studies of *Aboriginal and Torres Strait Islander People* and *People with a Disability* to provide more depth on the circumstances and barriers to higher education faced by these two groups, for which there are particular challenges in obtaining reliable information
- A survey of the WINTA group for the Higher Education Cohort – to explore the experiences and trajectories through higher education for this equity group.

At this time, indicative costings only can be provided for the Extended Design because cost estimates depend on methodological and operational factors. Taken as a whole, the three extensions to the Recommended Design – inclusion of a Primary School Cohort, Supplementary Studies for the Secondary School Cohort, and a WINTA survey for the Higher Education Cohort – are estimated to cost around $3.4 million for four waves of data collection, bringing the total cost of the WPLS to nearly $5.8 million excluding GST.

12.2 A Primary School Cohort can map early education trajectories

The Extended Option is the only design alternative that captures study-specific data from all three age cohorts: the Primary School Cohort, the Secondary School Cohort, and the Higher Education Cohort. The main rationale for introducing the Primary School Cohort is to track early-life processes relating to the formation of educational aspirations, and the effects of any early-stage interventions that may have occurred prior to individuals entering secondary school.

While it would not be possible to capture the direct effects of these processes and interventions on ultimate higher education outcomes because of the accelerated sequential design of the WPLS, adding a Primary School Cohort would enable policymakers to identify early patterns that may have

a cascading effect onto the subsequent educational trajectories and outcomes. For instance, if there are systematic differences in the aspirations of some equity group students that can be identified during primary school and translate into lower academic achievement, this points to a distinct opportunity for early intervention.

The sample for the Primary School Cohort, although not addressed in the Recommended Design, could be drawn in a similar manner to the Secondary School Cohort under the preferred approach. We recommend that students be recruited into this WPLS sample in Year 4 so their progress can be tracked through both the final stages of primary school and the transition into secondary school, within the four-year time span of the proposed study.

This design would ensure an overlap between the Primary School Cohort and the Secondary School Cohort, similar to the overlap proposed for the Secondary School and Higher Education Cohorts. Such an overlapping design allows us to understand how selection into secondary school might function to enhance and/or undermine higher education participation for specific groups of interest.

The advantages of the Primary School Cohort are most likely to be realised if data collection is undertaken over seven years, up to Year 10. In this way, the WPLS would achieve full coverage of educational trajectories from mid-late primary school, through secondary school, and into higher education. This design would also enable researchers to directly compare the last wave of data for the Primary School Cohort with the first wave of data for the Secondary School Cohort, to gain a better understanding of the likely attrition bias for the Primary School Cohort, and the selectivity of the Secondary School Cohort (i.e. some equity group students dropping out of school before Year 10).

The sampling approach for the Primary School Cohort should be comparable to the Secondary School Cohort (i.e. a random stratified sample of students, taken from a random selection of 150 schools and with an overrepresentation of students from identified equity groups). As with the Secondary School Cohort, the target sample sizes within the cohort could be:

- 800 students from the equity group Aboriginal and Torres Strait Islander People
- 1000 students from four other equity groups (excluding WINTA, which is not applicable)
- 1000 students from a comparison group of students not classified as being from an educational equity group.

We recommend annual survey intervals for the Primary School Cohort. The Primary School Cohort should also include a parental interview, supporting the collection of data collection around parents' socioeconomic background, their educational aspirations for their children, and their knowledge of their children's participation in equity programs or interventions. Parental consent would be required for the children in this cohort to participate in the WPLS, and parents could be invited to participate at the same point-of-contact for obtaining consent for their children to participate.

An additional difficulty arises with regard to participant retention in the case of the Primary School Cohort, where providing financial incentives to children would be ethically problematic. Alternative ways of incentivising could be considered, such as providing incentives to parents, or providing non-

financial incentives to children. The parental interview could be used to ask parents to encourage children to complete their part of the survey.

Consistent with the Secondary School Cohort described in the Recommended Design, the WPLS questionnaire would comprise a common set of items for all equity groups to facilitate comparative analysis. A set of tailored group-specific items could also be included to explore the unique circumstances faced by each group and the interventions in place to address them.

Similar to LSAC, and due to the age of participants, the main mode of data collection for the Primary School Cohort would need to be computer assisted face-to-face interviews (CAPI), particularly in the first waves of the survey. As participants age, CATI and online surveys could be progressively introduced, and parents could be surveyed through a combination of CATI and online modes.

Newly collected data for the Primary School Cohort should be linked to NAPLAN records to match student achievement data, and special ethical considerations would need to be made for the Primary School Cohort as this will involve collecting data from under-age respondents.

Data management and data analysis considerations for the Primary School Cohort survey would be consistent with the Recommended Design. The main differentiating factor would be the capacity of a Primary School Cohort to support an enhanced study of the effects of aspirations and early interventions on later academic achievement and aspirations, particularly if data collection was undertaken over seven years.

As a starting point, we have estimated the cost of adding a Primary School Cohort at half the estimated costings for the Recommended Design, which uses two cohorts (i.e. $1.2 million, see section 11.12). We have then factored in certain characteristics of the Primary School Cohort that will likely make data collection for this group more expensive.

Data collection for the Primary School Cohort could incur additional costs of more than $1 million. The rationale for this cost differential is:

- *Face-to-face interviewing is proposed for the Primary School Cohort and this means more expensive fieldwork.* A conservative estimate from the ESOMAR 2014 Global Prices Study indicates that the cost of a face-to-face interview is about 45% higher than online surveying, and 25% more expensive than CATI. By comparison, a study by Szolnoki and Hoffman (2013) estimated that the cost of a face-to-face interview is up to 150% higher than online surveying, and 67% more expensive than CATI. Given that the total data collection costs (pre-test and main sample combined) are estimated at $745,000 excluding GST for the four waves of the Secondary School Cohort, with a mix of online and CATI completions, undertaking face-to-face interviewing for the Primary School Cohort could increase data collection costs by between 35 and 110 per cent. This is a cost increase of around $260,000 to $820,000 excluding GST when compared to the cost of the Secondary School Cohort.
- *The Parents Survey proposed for the Primary School Cohort would also add significantly to the cost of the Extended Option.* It is difficult to estimate the cost of this component, including

data preparation, documentation and project management. Assuming the parental interview is about a quarter of the length of the main questionnaire and the data is collected using a mix of online/CATI modes as per the Secondary School Cohort, the cost of data collection alone would be about a quarter of what it costs for the Secondary School Cohort (i.e. at least $185,000 for four annual data waves).

- *In addition, if the Primary School Cohort data collection was to be extended all the way to Year 10, this would further add to the survey costs*. The cost of an extra three waves is estimated to be at least 50% of the cost of collecting the initial four data-points.

12.3 Supplementary Studies support the representation of hard-to-reach groups

Through the use of supplementary studies, the Extended Option also supports the collection of custom data on the specific circumstances and barriers to higher education as experienced by *People with a Disability* and *Aboriginal and Torres Strait Islander People* in the Secondary School Cohort of the WPLS. These groups are underrepresented in existing studies and may be at risk of underrepresentation in the Recommended Design due to sample selection and attrition.

The rationale for having these supplementary studies are:

- Potentially different sampling strategies are required for *Aboriginal and Torres Strait Islander People* and *People Living with Disability* to achieve adequate representation and capture the diversity of circumstance (e.g. different forms of disability). This has been shown in previous government-funded longitudinal studies. The *Longitudinal Study of Indigenous Children* (LSIC) uses a non-random purposive sampling design, focusing on locations chosen to cover the range of socioeconomic and community environments where Aboriginal and Torres Strait Islander children live.
- For these target groups, tailored approaches to data collection may be more productive. This includes the use of specialised interviewers - LSIC uses Indigenous interviewers - and appropriate training for interviewers working with people who have a disability.
- Interview content could be customised to appropriately capture the diverse circumstances and barriers to higher education participation for people from these equity groups, requiring the use of semi-structured interviews rather than closed-ended questions.
- Face-to-face interviews have been shown to be an effective a way of overcoming practical difficulties of interviewing some students from these equity groups and to improve sample retention (Booker 2011).
- Study implementation would benefit from specialist expertise in the areas of Indigenous and disability research, and the use of supplementary studies could support this.

The participants for the Supplementary Studies may be recruited in ways consistent with the approach implemented for LSIC. LSIC uses purposive area-based sampling to recruit Indigenous people, ensuring appropriate diversity of background characteristics and community environments.

Medicare records could be used to identify young people with a broad range of disabling conditions. The sampling for these supplementary studies would not be school-based, so the design would allow researchers to identify young people from these two equity groups who do not participate in formal education.

We recommend a sample of about 100 students from each of the two equity groups for these supplementary studies. Participants would be re-interviewed twice a year, to ensure adequate depth of the data and boost sample retention through more frequent and personalised contact.

Appropriately selected and trained interviewers would likely need to be employed to maximise sample retention for the supplementary studies (e.g. Indigenous interviewers for the Indigenous equity group). These studies should also attempt to maintain the same interviewers for all waves of the survey. As they are based on semi-structured qualitative interviews, the studies would likely also require face-to-face interviews to enable a more personal contact with the respondents.

While it is very difficult to provide indicative costs of those Supplementary Studies, this approach is likely to be expensive given the nature of data collection required with hard-to-reach populations. For instance, if we assume the cost of a single face-to-face interview to be $400 excluding GST, including transcription and coding costs, then two annual rounds with 100 participants would cost about $80,000 per equity group per year - a total per annum of $160,000 for both equity groups.

We suggest that an experienced researcher would be required to work on the project at approximately 25% FTE for the purpose of designing the interview instruments, overseeing the data collection and coding, which could add around $80,000 per annum to the cost of these Supplementary Studies. It should therefore be assumed that the Supplementary Studies will cost in excess of $240,000 per year, or more than $960,000 over the four years of data collection for the Secondary School Cohort. This is additional to the base cost of the WPLS as specified in the Recommended Design.

12.4 WINTA respondents can be surveyed in the Higher Education Cohort

As an equity group, WINTA are only identifiable at entry to higher education, and their experiences could be explored through a custom survey embedded in the Higher Education Cohort. For the WPLS, the primary purpose of including women in non-traditional areas of study is to explore what factors affect their experiences in higher education and their achievement and completion in their chosen areas of study.

Participants could be recruited through the same strategy as used for the other equity groups, with a target sample of 1000, consistent with the size of other equity groups. The issues of participant retention in this group are similar to those raised in the Recommended Option. The WINTA group could be surveyed in the same way as other equity groups in the Higher Education Cohort, using a combination of CATI and online surveys.

Assuming that the cost of collecting the data for the WINTA group is comparable to the cost for the other equity groups, the WINTA survey should add about another 16.7% to the total cost for the Higher Education Cohort estimated in the Recommended Design (i.e. one-sixth of the total cohort cost, which represents five equity groups plus a non-comparator group). This is about $200,000 excluding GST for the four data points.

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Appendix I

List of stakeholders consulted in relation to the WPLS scoping study (2015)

CREASER, Mette - National Centre for Vocational Education Research

KOSHY, Paul - Research Fellow, National Centre for Student Equity in Higher Education

LIM, Patrick - National Centre for Vocational Education Research

LOVEDER, Phil - National Centre for Vocational Education Research

LOVETT, Ray - Research School of Population Health, Australian National University

MARTIN, Lin - Tertiary Education Quality and Standards Agency

NAYLOR, Ryan - The University of Melbourne

REDMAN, David - Australian Government Department of Education and Training

SHERMAN, Rebecca - National Centre for Vocational Education Research

TRINIDAD, Professor Sue - Director, National Centre for Student Equity in Higher Education

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Appendix II

Identifying whether young people have been subject to interventions designed to ameliorate the impact of disadvantage, and what impact such interventions have had, are possible objectives in the WPLS. A wide range of programs and activities in schools and HE may be considered to be interventions in this context. They may impact young people at different points in their journey towards and through HE. We provide a list of various types of interventions, together with some examples that have been, or currently are, being undertaken. Please note, the illustrations provided are examples of interventions from Australia and overseas, and are not a comprehensive list of all interventions currently being undertaken.

- **Prior to HE entry**
    - Outreach activities from universities to schools
        - Hands on Monash – Indigenous Summer Camp
        - Hike to Higher Education
        - Australian Indigenous Mentoring Experience (AIME)
        - Seamless Transition Education Pathways Program (STEPP)
    - Enrichment programs
        - Curriculum Bridges (program aimed to develop the enthusiasm and capacity of students from disadvantaged school in STEM study
        - Exceptional Teachers for Disadvantaged Schools (ETDS) program
    - Programs to raise young people's career aspirations
        - The National Partnership on Youth Attainment and Transitions added to existing career development initiatives such as the *myfuture* website with the development of a National Career Development Strategy and funding 'Making Career Connections' projects
        - Victoria positioned career development as a core component in developing life pathways through education, training and employment for all students but with particular resonance for disadvantaged students
    - Programs to improve industry and community links
        - 'Partnership Brokers' focussing on schools building partnerships with training and education providers, business and industry, families and community groups to support young people in reaching their full potential
- **At selection and admission to HE**
    - Fee assistance
        - Higher Education Contribution Scheme (HECS)
        - Higher Education Loan Help (HELP) and VET FEE-HELP, which became available from 2009 for some VET qualifications and was further expanded under the Skills Reform National Partnership from 2012.
    - Income support
        - Youth Allowance – available to students 24 years and under
        - Austudy – available to student older than 24
        - ABSTUDY – a supplement to Youth Allowance and Austudy available for Indigenous students

        - Youth Disability Supplement – supplement that provides additional financial support to young people with a physical, intellectual, or psychiatric disability.
    - Scholarships
        - Pell Grants in the United States

- Interventions that provide alternative pathways to HE:
    - VET pathways
        - Provides alternative access to the workforce and higher education (eg University)
    - Enabling pathways
        - Pre-entry programs for students with lower ATAR scores, eg University Preparation Program (UPP) at University of Tasmania
    - Special consideration
        - 'ATAR discount' to students from rural areas or a disadvantaged financial background, eg Access Melbourne program through University of Melbourne, and a similar program through University of Sydney

- **At transition from school to HE**
    - Programs in the UK are aimed at: (1) learning and teaching; (2) friendship and peer support; and (3) participation and belonging.
    - Specific funding for Australian universities for programs and supports for students from underrepresented groups
        - Orientation to academic life
        - Additional tutoring
        - Support and social groups
        - Additional supports for students with disabilities
        - Ensuring the courses are culturally relevant
        - Addressing culture at universities to ensure it is socially inclusive
        - E.g. "The Big Plan" (Department of Education, Western Australia) – aimed at supporting later year school students with disabilities by helping students identify hopes and aspirations for their future.

- **Within HE (to improve retention, progress and success)**
    - Changes to course structure and design
        - Including Indigenous perspectives; on-line or virtual delivery
    - Extra-curricular learning and support
        - Peer support and mentoring; academic support, advising or counselling; Indigenous Tutorial Assistance Scheme – Tertiary Tuition (ITAS-IT) program; informal study groups.
        - In the UK, Surrey University and City University, London: specific assistance to disabled students or those struggling with conditions such as dyslexia or autism.
        - In the US, Academic advising and counselling, as well as academic support and enrichment programs to help students overcome disadvantages including deficiencies in schooling and college preparation.