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Model specification document: options to deliver three-year-old preschool

Royal Commission into Early Childhood Education and Care, Attorney-General's Department

DeloitteAccess **Economics**

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Acronyms

Acronym	Full name			
ABS	Australian Bureau of Statistics			
ACECQA	Australian Children's Education and Care Quality Authority			
AEDC	Australian Early Development Census			
CBDC	Centre-based day care			
CCS	Childcare Subsidy			
DfE	Department for Education			
DTI	Department for Trade and Investment			
ECEC	Early Childhood Education and Care			
FDC	Family Day Care			
LDC	Long Day Care			
NQF	National Quality Framework			
NQS	National Quality Standard			
NWC	National Workforce Census			
SA2	Statistical Area 2			
SA3	Statistical Area 3			

1 Context to this document

The South Australian Government has committed to introducing universal three-year-old preschool, with a view to delivery commencing in 2026, as part of various other potential reforms of the early childhood education and care (ECEC) landscape in South Australia.

On 16 October 2022, the Royal Commission into Early Childhood Education and Care (the Royal Commission) was established by order of the Governor of South Australia, with the Hon. Julia Gillard AC appointed as the Commissioner. The Commission's Terms of Reference include inquiry into how universal quality preschool programs for three- and four-year-old children can be delivered in South Australia, including addressing considerations of accessibility, affordability and quality as well as how to achieve universality across both age cohorts.

Against this backdrop, Deloitte Access Economics was engaged by the Royal Commission to develop a model capable of simulating alternative scenarios for delivering universal three-year-old preschool in South Australia and estimating the associated costs (recurrent and up front) and workforce demand at a state-wide and regional level. This modelling is intended to provide an initial appraisal of the impact and relative costs of alternative delivery options and, in doing so, inform the deliberations of the Royal Commission. As the Commission's work advances, there will likely be scope to revisit and refine this modelling.

The model uses the best available data and evidence, including data from both the South Australian Department for Education and the Australian Government Department of Education, as well as findings from the *South Australian Early Childhood Education and Care Sector Survey* conducted in early 2023.¹ A constant dialogue with the Royal Commission team ensured alignment between the model logic and the policy design assumptions, with various functionalities within the model allowing key features of the policy and its underpinning assumptions to be readily modify. A working version of the model had been provided to the Commission's secretariat for ongoing use.

The purpose of this document is to describe the model's underlying logic, design, data and assumptions. It should be referred to when reviewing and interpreting the results in the *Interim Report* of the Royal Commission into Early Childhood Education and Care.

For reference, the key results presented in the Interim Report are summarised in Table 1.1.

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¹ Deloitte Access Economics, Mapping long day care and non-government preschool in South Australia, (report commissioned by the Royal Commission into Early Childhood Education and Care, South Australia, 17 March 2023 < https://www.royalcommissionecec.sa.gov.au/documents/Mapping-long-day-care-and-non-government-preschool-in-South-Australia.pdf>).

Table 1.1: Interim results

	Additional workforce requirements	Ongoing (recurrent) costs	Capital costs
Scenario 1 – government preschool only	811 ECTs1,217 educators152 other staff (directors)	\$273.8m in 2023 dollars (\$357.2m in 2032 dollars)	\$102.0 - \$112.4m in 2023 dollars (\$127.4 - \$140.4m in 2032 dollars)
Scenario 2 – long day care and non-government preschool only	• 631 ECTs • 768 educators • 111 other staff (directors)	\$93.4 2023 dollars (\$121.8m in 2032 dollars)	\$99.8 - \$110.0m in 2023 dollars (\$124.7 - \$137.4m in 2032 dollars)
Scenario 3A – a mixed approach to delivery	• 618 ECTs • 813 educators • 112 other staff (directors)	\$145.8m 2023 dollars (\$190.3m in 2032 dollars)	\$50.5 - \$55.7m in 2023 dollars (\$63.1 - \$69.6m in 2032 dollars)
Scenario 3B – a mixed approach to delivery, with equity targeting	• 660 ECTs • 880 educators • 120 other staff (directors)	\$162.7m 2023 dollars (\$212.2m in 2032 dollars)	\$101.2 - \$111.2m 2023 dollars (\$126.4 - \$138.9m in 2032 dollars)

Note: Under each scenario, children who are already eligible to attend three-year-old preschool may continue to access this service in government preschools. The cost of this has been omitted in Scenario 2, as it focusses specifically on the costs of provision in long day care and non-government preschool services. Accordingly, Scenario 2 presents the incremental cost of three-year-old preschool. The cost of three-year-old preschool provision in government preschools to the already eligible cohort of three-year-olds has been captured for the government delivery and mixed market scenarios, thus representing the total cost.

Source: Deloitte Access Economics (2023).

1.2 Navigating this document

The remainder of this document is organised as follows:

- **Section 2** outlines the modelled scenarios to increase the capacity of the South Australian ECEC sector to meet the estimated additional demand for three-year-old preschool.
- **Section 3** outlines the modelling framework and approach, including the approach to estimating future demand for three-year-old preschool, sector capacity and supply responses, and cost and workforce estimates.
- **Section 4** details the source of inputs into each step of the scenario logic and provides additional information about the representativeness of data used to inform some modelling parameters.
- **Section 5** outlines the key conceptual and technical assumptions in the modelling and outlines the sensitivity of model outputs to the central assumptions.

2 Scenarios for delivering universal three-year-old preschool

This section outlines the characteristics of four scenarios developed to understand potential approaches and costs to deliver a universal entitlement to three-year-old preschool in South Australia. This includes outlining the model's assumptions in relation to the characteristics of the preschool program and the settings which would lead to increased supply across different service models.

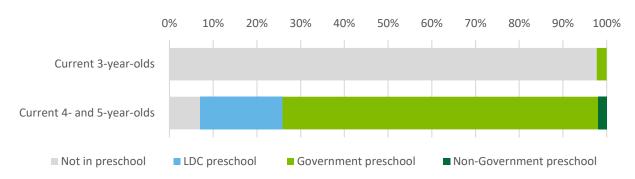
2.1 The current three-year-old education and care landscape

In considering potential approaches to the delivery of universal three-year-old preschool, current activity in South Australia's three-year-old ECEC sector presents a point of reference to compare the relative impact of different policy scenarios.

In South Australia, ECEC is delivered through a mixed market of government and non-government providers. Of the 19,100 three-year-old children in South Australia, two-thirds are estimated to be enrolled in a centre-based ECEC program.²

Currently, only a limited number of three-year-old children in South Australia are eligible to receive funding for a formal preschool program. The cohorts eligible to receive funding to enrol in a preschool program in South Australia are Aboriginal children and children in care.³ This cohort represents about 500 enrolments, or three per cent of three-year-old children. All current three-year-old preschool provision is provided through government preschool (see Chart 2.1).

Chart 2.1: Current distribution of three- and four-year-old children across service types



Source: Deloitte Access Economics, Department for Education provided data (Government preschool enrolments), ABS Preschool (LDC and non-government enrolments), as at 2021

Note: The ABS Preschool dataset identifies children enrolled in preschool programs and other early childhood education.

Enrolment patterns across services reflect the current funding and eligibility arrangements:

• 11,500 three-year-old children are enrolled in long day care (LDC) services. Parents of three-year-old children have access to funding under the Australian Government Child Care Subsidy (CCS) to reduce the out-of-pocket costs of centre based day care services.

² ABS (20 May 2022), Microdata and TableBuilder: Preschool Education, Australia. Where children attended multiple service types, enrolments are estimated to match the overall proportion of attendance by other three-year-old children in South Australia

³ Aboriginal children and children in care are eligible for 12 hours of preschool a week when they turn three. Some children with disabilities or additional needs may also be able to start preschool earlier if there are places available.

 100 children receive education and care at non-government preschool providers, which are predominately co-located with non-government primary schools across the State.⁴

Comparing enrolments to the three-year-old population implies that 7,000 three-year-old children in South Australia currently do not access centre-based care or preschool (across both government and non-government services). While a small number of children with non-standard care needs may receive funding under the Child Care Subsidy to access Family Day Care (FDC) and In Home Care (IHC), these children are identified as 'not enrolled in' the service types which could be expected to be able to deliver three-year-old preschool.

Mapping long day care and non-government preschool in South Australia found that, within these forms of centre-based care, 45 per cent of LDC services report that they deliver a preschool-equivalent program to their three-year-old enrolees.⁵ Although these programs are not funded as preschool, they are reported to meet the minimum regulatory requirements defined for a four-year-old preschool program.⁶

All South Australian children are entitled to one year of preschool in the year before school and, as at 2021, around 90 per cent of this cohort enrol in a preschool program.⁷ Enrolments among the year before school cohort provide a point of reference for enrolment patterns under these policy conditions. As seen in Chart 2.1, four-year-old and five-year-old children at government preschools account for three quarters (78 per cent) of enrolments, with LDC accounting for a further 20 per cent and non-government preschool the remaining two per cent.

2.2 Overview of policy scenarios

In line with the Commission's *Interim Report*, four alternative scenarios for the delivery of universal three-year-old preschool have been modelled. Scenario development started with the recognition that in pursuing a non-mandatory universal three-year-old preschool program, the capacity of the State's preschool system would need to increase. With this in mind, the four scenarios represent the spectrum of alternative options for increasing the capacity of the sector to enable the universal provision of funded three-year-old preschool.

- Under **Scenario 1: Government preschool only,** all three-year-old preschool is assumed to be delivered through government preschools and non-government preschools currently funded for four-year-old preschool delivery by the Department for Education.⁸
- Under **Scenario 2: Long day care and non-government preschool only,** all three-year-old preschool is delivered through non-government services, including LDC centres and non-government preschools.
- Under **Scenario 3A: Mixed approach to delivery,** a mixed model is used, and three-year-old preschool is delivered through government preschools, non-government preschools and long day care services, reflecting the current settings in the four-year-old market.
- Under Scenario 3B: A mixed approach for delivery, with equity targeting, a mixed
 model is used as per 3A, with the addition of commissioned services for some cohorts. That is,
 three-year-old preschool for most South Australian children is delivered through both
 government preschools and LDC services, with some purpose-built, commissioned integrated
 services in areas of high developmental vulnerability.

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⁴ In this document, 'non-government preschools' refers to 21 non-government operated preschools which receive Preschool Reform Agreement funding via the Department for Education. These are distinct from LDCs designated by ACECQA as preschools not run by the Department for Education, as referred to in Deloitte Access Economics, *Mapping long day care and non-government preschool in South Australia* (see below)

non-government preschool in South Australia (see below)

⁵ Deloitte Access Economics, Mapping long day care and non-government preschool in South Australia, (report commissioned by the Royal Commission into Early Childhood Education and Care, South Australia, 17 March 2023 < https://www.royalcommissionecec.sa.gov.au/documents/Mapping-long-day-care-and-non-government-preschool-in-South-Australia.pdf>.

⁶ I.e., the program is delivered by a degree qualified early childhood teacher registered with the Teacher's Registration Board of South Australia that at a minimum, meets National Quality Framework qualification requirements, with a teacher to child ratio of 1 to 11.

⁷ Productivity Commission, Early Childhood Education and Care - Report on Government Services 2023, 7 February 2023 https://www.pc.gov.au/ongoing/report-on-government-services/2023/child-care-education-and-training/early-childhood-education-and-care

⁸ These are distinct from LDCs designated by ACECQA as preschools not run by the Department for Education, as referred to in Deloitte Access Economics, Mapping long day care and non-government preschool in South Australia, (report commissioned by the Royal Commission into Early Childhood Education and Care, South Australia).

These four stylised scenarios have been specified to allow differences between delivery settings to be illuminated across key variables of interest, including material issues such as workforce requirements and recurrent operating costs. It is of course the case that there are many variants to these options – especially insofar as a mixed market approach is concerned. These can be tested via the functionality in the model itself.

Table 2.1 summarises the provider types through which preschool programs can be accessed under the scenario specification, depending on children's current enrolment status.

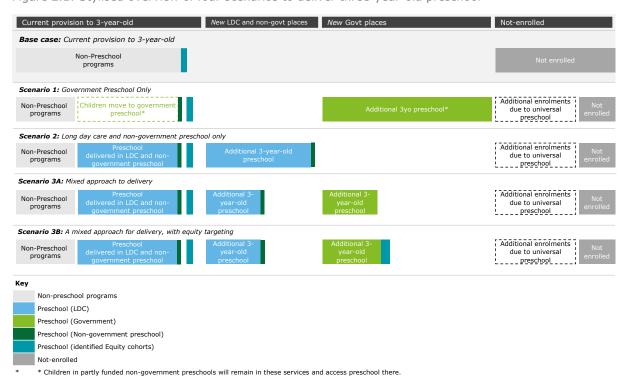
Table 2.1: Access to preschool programs for children across scenarios

	Scenario 1	Scenario 2	Scenario 3A	Scenario 3B
Children not in ECEC	Government preschool	• LDCs • Non- Government preschool	 LDCs Non-Government preschool Government preschool 	 LDCs Non-Government preschool Government preschool Commissioned places
Children in a non- preschool program in LDC	Government preschool	• LDCs	• LDCs	• LDCs

Source: Deloitte Access Economics (2023).

Figure 2.1 presents a stylised illustration of the potential delivery of three-year-old preschool and non-preschool places in the ECEC sector under the four scenarios, with the base case of current provision as a point of reference. In this diagram, the relative number of places under each scenario is not intended to indicate scale but, rather, the movements of any cohort of three-year-old children relative to the base case.

Figure 2.1: Stylised overview of four scenarios to deliver three-year-old preschool



Source: Deloitte Access Economics (2023)

Note: the relative size of places as represented in this image are illustrative only and not intended to be to scale.

Note: in each scenario, three-year-old children enrolled in non-government preschool remain and are funded to access a preschool program at their existing service.

2.3 Detailed scenario logic

The scenarios set out in Figure 2.1 reflect different combinations of the parameters and key assumptions about demand and supply (see section 3). This section outlines the stylised path of demand and supply under each of the scenarios.

Scenario 1: Government preschool only

Under this scenario:

- Children currently enrolled in non-government and government preschools are assumed to remain in their existing programs.
- Children already enrolled in non-preschool programs in the LDC sector are assumed to enrol in government preschools for the purposes of receiving their 15 hours. This scenario therefore assumes that some three-year-old children already accessing LDC services would *move* to government services to access preschool.
 - This would imply that all LDC services are delivering a CCS program while government services are delivering a preschool program.
 - As such, it is assumed that children requiring care in addition to the preschool entitlement dosage would access both government preschool and LDC programs.
- The scenario also assumes that additional demand would be created by three-year-old children not currently accessing centre-based care or preschool.

Under this scenario, almost all preschool demand would be met by additional places in government services. Where these additional places cannot be supported by existing government preschools, new preschools or centres are required to meet this demand.

Scenario 2: Long day care and non-government preschool only

Under this scenario:

- Children currently enrolled in non-government and government preschools are assumed to remain in their existing programs. ⁹
- Children who are already accessing LDC receive a funded preschool program in the setting they are already enrolled in.
 - Of these, some three-year-old children are already receiving a preschool-equivalent program. The primary change for this cohort would be the funding arrangements, with no implications for workforce or costs.
 - For children enrolled in an LDC service receiving a program that is not equivalent to
 preschool, some services are assumed to be able to convert these programs, primarily by
 employing an Early Childhood Teacher, with no capital costs. Therefore three-year-old
 children enrolled in LDC services and not currently receiving a preschool-equivalent
 program would largely access a new preschool program at their existing LDC service.
- Some services are assumed not to offer a preschool program under all scenarios, including Scenario 2.
 - Children at these services would largely access a new preschool program at another LDC service that does offer preschool.
- There may still be demand for non-preschool LDC provision alongside the preschool entitlement, where families require more hours of care than the preschool dosage. The modelling assumes that services reserve a share of capacity for this non-preschool delivery.

This scenario assumes additional demand would be created by three-year-old children not currently accessing centre-based care or preschool. This demand would be met by additional places in LDC services. Where these additional places cannot be met by existing LDC services, new services would meet this demand.

⁹ The approximately 500 three-year-old children currently receiving a preschool program in the government sector (Indigenous children and children in care) are expected to remain enrolled in that setting.

Scenario 3A: Mixed approach to delivery

This scenario assumes that funded three-year-old preschool is delivered through government preschools, LDC centres and non-government preschools. Under the current specifications, this option is most similar to the current delivery profile of four-year-old preschool in South Australia.

Under this scenario:

- Children currently enrolled in non-government and government preschools are assumed to remain in their existing programs.
- Children who are already accessing LDC receive a funded preschool program in the setting they
 are already enrolled in.
 - Of these, some three-year-old children are already receiving a preschool-equivalent program. The primary change for this cohort would be the funding arrangements, with no implications for workforce or costs.
 - For children enrolled in an LDC service receiving a program that is not equivalent to
 preschool, some services are assumed to be able to convert these programs, primarily by
 employing an Early Childhood Teacher, with no capital costs. Therefore three-year-old
 children enrolled in LDC services and not currently receiving a preschool-equivalent
 program would largely access a new preschool program at their existing service.
- Some services are assumed not to offer a preschool program under all scenarios, including Scenario 3A.
 - Children at these services would largely access a new preschool program at another LDC service that does offer preschool.
- Additional demand would be created by three-year-old children not currently accessing centre-based care or preschool, and those families seeking preschool in addition to LDC services. Demand among these families and children is assumed to reflect existing 4YO enrolment patterns.
 - This demand would first be met by additional places provided by existing LDC services, non-government preschools, and government preschools.
 - Where these additional places cannot be met by existing services, new services would be opened by both government and non-government providers to meet this demand.

Scenario 3B: A mixed approach for delivery, with equity targeting

This scenario assumes that funded three-year-old preschool for most South Australian children is delivered through both government preschools and LDC services (following the process outlined in Scenario 3A: Mixed approach to delivery). However, in areas of high developmental vulnerability, three-year-old preschool would be delivered through purpose-built integrated hubs that provide preschool (integrated into a long day care offering as appropriate), health, and family support services.

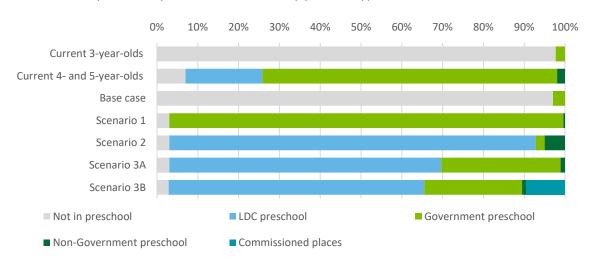
Under this scenario:

- Children currently enrolled in in non-government and government preschools are expected to remain in their existing programs.
- Children who are already accessing LDC would receive a funded preschool program in the setting they are already enrolled in.
 - Of these, some three-year-old children are already receiving a preschool-equivalent program. The primary change for this cohort would be the funding arrangements, with no implications for workforce or costs.
 - For children enrolled in an LDC service receiving a program that is not equivalent to
 preschool, some services are assumed to be able to convert these programs, primarily by
 employing an Early Childhood Teacher, with no capital costs. Therefore, three-year-old
 children enrolled in LDC services and not currently receiving a preschool-equivalent
 program would largely access a new preschool program at their existing service.
- Some services are assumed not to offer a preschool program under all scenarios, including Scenario 3B.
 - Children at these services would largely access a new preschool program at another LDC service that does offer preschool.

- Additional demand would be created by three-year-old children not currently accessing centre-based care or preschool, and those families seeking preschool in addition to LDC services
 - Those residing in areas of high developmental vulnerability would have access to a commissioned place in a specialist service, where ECEC provision is delivered collocated with other family services in an integrated hub model. These services would be commissioned, and children enrolled in these services are assumed to receive a higher dosage of 30 hours preschool.¹⁰
 - In areas without high levels of developmental vulnerability, demand would be met by additional places in LDC services, non-government and government preschool.
 - This demand would first be met by additional places in existing service providers.
 - Where these additional places cannot be met by existing services, new services would be opened by both government and non-government providers to meet this demand.

Chart 2.2 shows children's enrolment in preschool programs across the scenarios. Under the base case, approximately three per cent of three-year-old children remain enrolled in a government preschool program. While there is a proportion of children in LDC who are reported to be receiving a preschool-equivalent program – meaning that the program meets the current definition of four-year-old preschool – it is not funded as a preschool program, and thus not captured in Chart 2.2. The *South Australian Early Childhood Education and Care Sector Survey* suggests this proportion is 45 per cent of LDC services (representing around 40 per cent of approved places). ¹¹ For similar reasons, three-year-old children currently enrolled in non-government preschools are not classified as preschool enrolments in Chart 2.2.





Source: Deloitte Access Economics, Department for Education, provided data, South Australia, ABS Preschool Notes: The current 3 and 4-year-olds are captured in 202112 and the Scenarios are as of 2032.

 $^{^{\}rm 10}$ This parameter can to be adjusted in the model.

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¹¹ Unpublished data, *South Australian Early Childhood Education and Care Sector Survey* (2023), commissioned by the Royal Commission into Early Childhood Education and Care, South Australia, and fielded by Deloitte Access Economics. The survey informed the *Mapping long day care and non-government preschool in South Australia* report and was also used to collect unpublished data to parameterise this modelling. The survey captured inputs from 337 long day care and non-government services, between January and February 2023; a sample reflecting 66% of the population invited to undertake the survey. ¹² The four-year-old preferences include data relating to five-year-old children still enrolled in year before school preschool and ECEC services.

3 Modelling framework and approach

This section sets out the components of the modelling approach, including the assumptions which drive demand estimates across regions, the approach to modelling the supply responses of each service type under the scenarios, and the basis for understanding the cost and workforce requirements of each option.

3.1 Estimating demand by region

3.1.1 Three-year-old population

The population by SA2 derived from the 2021 Census by age group forms the basis for estimating the number of three-year-old children in the population. Population growth estimates (medium case) developed by the South Australian Department for Trade and Investment for each of the State's 19 Population Projection Regions are proportionally applied to the SA2 population. These population estimates represent the three-year-old cohorts' place of usual residence, which is converted to a place of enrolment using historical mobility data.

3.1.2 Accounting for preferred enrolment location

To understand the regions in which additional supply is required, it is necessary to map how children currently access ECEC services relative to their home location. This is a function of service availability, family preferences, and the mobility of families – reflective of their work and mobility patterns, the availability of transport, and willingness to travel. Data on children's residential address and place of enrolment was used to develop mapping between place of residence and place of ECEC enrolment by geographic area. This mapping was developed drawing on the following child-level data:

- Three and four-year-old children's access to LDC from CCSS data
- Enrolees of government preschools and non-government preschools with PRA agreements from Department for Education data. See 3.1.3 for more details.

This mapping provides a contemporary and comprehensive picture of mobility trends in South Australia, and a basis for assuming the possible trends for an ECEC market in which funded preschool is universally available to three-year-old children.

Assuming these preferences hold for all children in the SA2, potential demand at an SA2 level is understood to be a function of:

- Resident population in the SA2
- minus population in the SA2 that typically enrols in ECEC outside of the SA2
- plus population from other SA2s that typically enrols in ECEC within the SA2

Assuming the mobility mapping holds over time, the modelling converts population growth rates (place of residence) into enrolment growth rates by SA2. While this modelling approach is grounded in mobility patterns for children, it is not without limitations. Notably, the approach assumes that the mobility patterns of three-year-old children who currently do not access ECEC are similar to those accessing ECEC services. Moreover, it assumes the current trends hold, which is likely to be impacted by the provision and location of new services, regions of residential growth (including greenfield developments or urban infill), and transport infrastructure.

¹³ ABS census figures have been calibrated against the Department for Trade and Investment (DTI) forecasts to ensure alignment in population by DTI region.

3.1.3 Mobility in accessing existing and new services

Families will have a degree of flexibility in where they can access preschool programs. However, modelling must have regard to the degree to which families are willing to travel to participate in such services.

The model initially matches preschool demand and supply within the family's preferred SA2 of enrolment. However, the model allows families to access supply in other SA2s in instances where (1) there is no spare capacity in the preferred SA2 but there is capacity in other SA2s, and (2) the SA2s with capacity are within a region where there is high level of interregional mobility in enrolment patterns, and it is reasonable for families to travel in accessing preschool. This rule applies both for access to existing services and new services.

This stylised aggregation means that rather than needing to match demand and supply within each granular SA2, demand and supply only need to balance within a larger region, and families are willing to move within the region to access preschool.

To determine these mobility regions – from which demand is confined – a minimum threshold of children attending the service from the same home geography can be set. If the threshold is not met, a larger geographic boundary is used instead.

As a default, the model adopts a threshold of 75 per cent. That is, 75 per cent of children who live in that SA2 are also enrolled in a service in the same SA2. If this is exceeded, demand is confined to that SA2, and it is assumed there is a low level of mobility and ability to access services in other SA2s.

For instance, 89 per cent of children enrolled in ECEC services within the Renmark SA2 also live within the Renmark SA2. This meets the SA2 threshold, and so demand is restricted to children living in the Renmark SA2.

If fewer than 75 per cent of enrolments reside in the SA2, enrolment patterns within the home Statistical Area 3 (SA3) level are considered. If 75 per cent of enrolments reside in the SA3, this is set as the boundary.

If fewer than 75 per cent of enrolments in a given SA2 are from the home SA3, the Department for Infrastructure and Transport (DTI) region is adopted. For example, 66 per cent of children enrolled in ECEC services in the Adelaide SA2 also live in the Adelaide SA2. This does not meet the default 75 per cent threshold, and so the SA3 is considered. At the SA3 level, 69 per cent of children currently enrolled in ECEC in the Adelaide SA2 live in the same SA3. This does not meet the 75 per cent threshold, so the DTI region is adopted as the geography in which children from the Adelaide SA2 can move to access any new services.

Further, the modelling assumes that the 27 SA2s identified by the BetterStart data as at high risk¹⁴ of developmental vulnerability have lower mobility, and demand is limited to within the home SA2.¹⁵ This reflects findings from literature on parental preferences that disadvantaged families are more likely to be impacted by accessibility barriers, including not having access to a car, having limited public transport, or being able to spend less time travelling to and from ECEC.

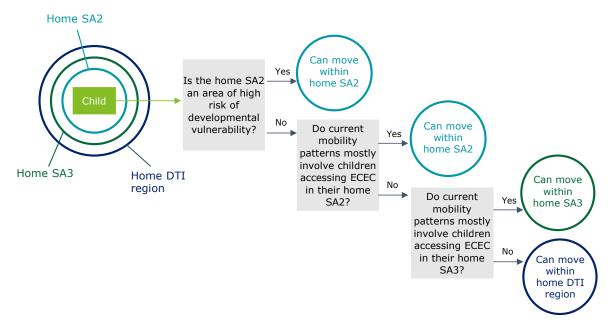
A stylised overview of the process in setting the mobility region is given in Figure 3.1.

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¹⁴ Note that 'high' risk refers to a child who is identified by the BetterStart risk prediction model as being at risk of going on to be developmentally vulnerable on one of more domains of the AEDC. It does not refer to a child who is 'developmentally at risk', per the AEDC definition: "Children who score between the 10th and 25th percentile (on a particular domain), determined using the cut-off points established in 2009, are classified as 'developmentally at risk'."

¹⁵ BetterStart Health and Development Research centre modelling, 2023, provided data.

Figure 3.1: Assumptions regarding child mobility by locality



Source: Deloitte Access Economics (2023)

A breakdown of the mobility regional assumptions is presented in Table 3.1. There are:

- 50 mobility regions where demand is limited to the preferred SA2
- 14 mobility regions set at the SA3 level, accounting for 75 SA2s
- 5 mobility regions set as DTI regions, accounting for 49 SA2s.

With SA2s being geographically larger in non-metropolitan areas, inter-regional mobility is considerably less, with 53 per cent of non-metropolitan SA2s having their mobility limited to the SA2 level, compared to only 12 per cent for metropolitan SA2s.

Table 3.1: Mobility region assumptions by regionality

	Metro	Non-metro
SA2 regions	12	38
SA3 regions	5	9
DTI regions	4	1

Source: Deloitte Access Economics (2023)

3.1.4 Identifying disadvantaged cohorts

Under Scenario 3B three-year-old preschool for more disadvantaged cohorts is assumed to be delivered through commissioned places in services which are integrated with other public services and wraparound supports.

As a proxy measure of the proportion and geographic distribution of the population that would be eligible to receive these commissioned services, the modelling draws on findings from research conducted by the BetterStart Health and Development Research centre at the University of Adelaide.

The Royal Commission summoned BetterStart to provide a state-wide risk prediction model for developmental vulnerability, with deidentified data provided at SA2 level. This model uses available data to try to predict the share of children in each SA2 who were developmentally vulnerable on one or more domains of Australian Early Development Census (AEDC). The 23 predictors include maternal characteristics (such as age, previous births, antenatal presentations),

measures of socioeconomic disadvantage (including postcode at birth, housing arrangements, employment and labour force status of family), and history of parent contact with child protection, inpatient hospitalisation, and/or imprisonment.

The scenario modelling uses the BetterStart modelling results at an SA2 level to inform a stylised policy scenario, in determining where targeted, supplementary support is provided through commissioned services for at-risk cohorts.¹⁶

To identify the regions in which children at 'high' risk of developmental vulnerability would be supported through commissioned places, two thresholds are applied:

- **Sensitivity,** which refers to the effectiveness of the model in identifying developmentally vulnerable children within the 'at-risk' group.
- **Positive predictive value,** which refers to the proportion of children in the 'high' risk group that were developmentally vulnerable on one or more domains of AEDC for that SA2.

Applying a sensitivity threshold of 50 per cent identifies 27 SA2s, where the positive predictive value in all regions exceeds 37 per cent. The resident population in this cohort is equivalent to 8 per cent of the 2021 South Australian population.

Filtering using these measures is intended only to provide an initial illustrative example of how the data could be used to target services. The approach outlined above could be understood to supplement support to SA2s where the model will more accurately identify developmental vulnerability, rather than SA2s with the highest number or concentration of developmentally vulnerable children (noting that accuracy of identification appears relatively well correlated with concentration of development vulnerability). The estimates develop under this approach are intended to reflect a potential approach to identifying and supporting vulnerable cohorts. The approach to determining eligibility for supplementary funding and/or specialist provision is ultimately a policy decision for the Royal Commission.

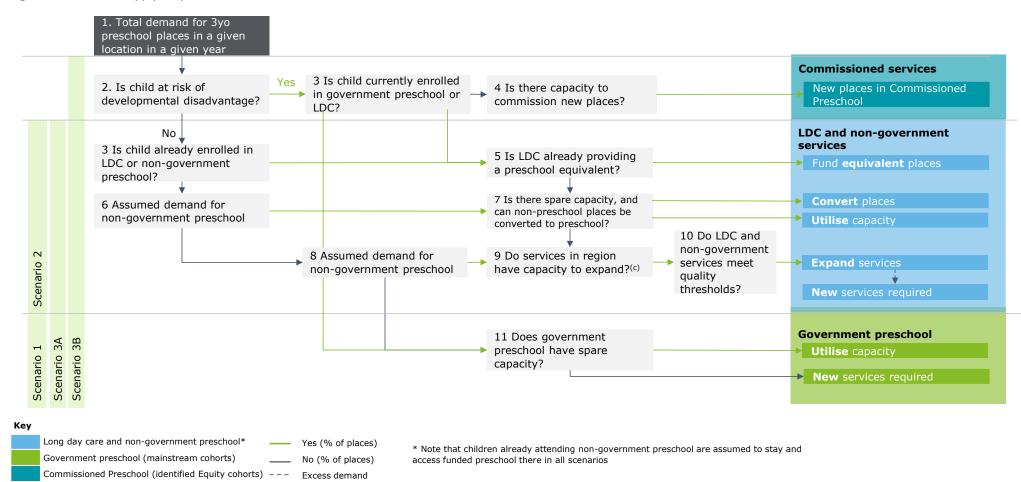
3.2 Supply responses and policy scenarios

The process through which supply is assumed to respond to meet increased demand is a function of both policy rules – relating to the design of the scenarios – and the capacity and expansion ability of the various segments of the sector. The steps to increasing sector capacity are set out in Figure 3.2 and explained in the following subsections.

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¹⁶ Note that 'high' risk refers to a child who is identified by the BetterStart risk prediction model as being at risk of going on to be developmentally vulnerable on one of more domains of the AEDC. It does not refer to a child who is 'developmentally at risk', per the AEDC definition: "Children who score between the 10th and 25th percentile (on a particular domain), determined using the cut-off points established in 2009, are classified as 'developmentally at risk'."

Figure 3.2: Flow of supply responses under each scenario



Source: Deloitte Access Economics (2023).

3.2.2 Maximum enrolments that can currently be supported by existing services

The services in scope to provide preschool places to three-year-old children have varying levels of enrolments and spare capacity that could be used for three-year-old preschool. Estimates of the three-year-old children that could be absorbed into this current capacity are differentially derived for the government and LDC sector. There is limited data available for non-government preschools, and as a conservative assumption, it is assumed that these services are operating at full capacity.

3.2.2.1 Capacity within the government preschool sector

For South Australian government preschools, the current level of enrolments is compared to the legal maximum, as specified by the Australian Children's Education and Care Quality Authority (ACECQA), according to the National Quality Framework (NQF) guidelines.

First, all services are assigned a legal maximum total number of enrolments, per ACECQA. For Government preschool services with other programs requiring these spaces (for example, rural or integrated care), the total number of *preschool* places has been used, as specified by the Department for Education. These figures are taken as the maximum capacity for children at a point in time.¹⁷ Assuming each service can be open for five days per week, this provides the total, legal maximum for child place days.

Noting it may not always be efficient or viable for services to operate at their legal capacity, this legal maximum capacity is rounded down to the nearest multiple of 10, as determined in concert with the Department for Education. This is a conservative assumption in line with the 1:10 staff to child ratios employed in Category 1 services.

The current utilisation of the preschool is then derived using enrolments and the current dosage of 15 hours (resulting in 2.5 days per week) from Department for Education Term 3 2022 figures. The remaining place days are then assumed as spare capacity that could be available for three-year-old preschool enrolments.

While the central modelling assumes that it is possible for all spare places to be used for three-year-old enrolments, other activities requiring the same space or resources, such as playgroup programs, may reduce the practical use of these spaces.

Spare capacity is estimated at a government preschool service level and aggregated to the SA2 level for modelling purposes.

3.2.2.2 Capacity within the LDC sector

Each LDC service is assigned a legal maximum number of children that can be cared for at one time, based on the licensing regime overseen by ACECQA. Multiplying licensed capacity by days open provides a maximum number of children that can be cared for per week (if each child only attended for one day a week), or maximum *child place days*. The total place days purchased per week can be derived from CCSS data. For the purposes of conservatively estimating capacity, the busiest week in the most recent data provided, for September 2022, has been used. Subtracting the total days purchased from the place days available produces an estimate of the number of place days remaining at the service for the week.

It is assumed that some degree of minimum spare capacity is required in the system for operating purposes. Using data from the National Workforce Census (NWC), non-government centre-based day care services reported typically offering 95 per cent of their licensed capacity, on average. This value is applied to limit the upper threshold of unused capacity that could be offered to three-year-old children.¹⁸

¹⁷ The NQF and accompanying legislation set limits for the number of children in early childhood education and care settings based on the physical space and configurations of a service.

¹⁸ Where services are currently operating at 100 per cent of their licensed capacity, no change is made, and no capacity is assumed to be available for three-year-old preschool.

LDC services typically cater to children from birth to age six, and many have different rooms or configurations that prevent the substitution of capacity across age groups. For example, capacity within a room for babies would not be appropriate for a new three-year-old enrolment.

To estimate the capacity for three-year-old enrolments, age cohort data of the *typical* places offered by services relative to the *maximum licensed* places by age has been used, as reported in the NWC. At a South Australian system level, 48 per cent of the capacity in the system is for children aged three to five (see Table 3.2).

Noting this capacity may not all be allocated to three-year-old children, a conservative assumption of one third of this capacity is assumed possible to allocate to three-year-old children.

Table 3.2: Distribution of capacity across age bands for centre-based day cares in South Australia, 2021

	0-24 months	25-35 months	3-5 years	6+ years	All
Maximum places	7,213	7,914	15,347	702	31,176
Typically offered places	6,006	6,697	13,005	592	26,300
Difference between maximum and typically offered	1,207	1,217	2,342	110	4,876
Share of capacity, by age	25%	25%	48%	2%	_

Source: National Workforce Census (2021).

Further, amid the policy context of potential forthcoming changes to Child Care Subsidy (CCS), it is likely that some of the existing spare capacity for three-year-olds will need to be set aside for increased childcare usage. Gong and Breunig (2012) estimate that a one per cent decrease in out-of-pocket fees will increase LDC hours by 0.246 per cent.¹⁹ Based on the changes to CCS that have been announced, this would translate to a 7.2 per cent increase in LDC hours.²⁰ The modelling assumes that the increased demand for LDC generated by these changes does not displace demand for kindergarten and the total hours of ECEC will increase. It does, however, assume that some existing capacity is absorbed by the demand that the CCS changes generate.

Accounting for the additional demand, approximately 57 per cent of the spare capacity for three-year-old children will be available for three-year-old *preschool* programs.

The total LDC place days assumed available for three-year-old preschool enrolments is then derived from aggregating the assumed three-year-old proportion of spare capacity at a site level to the SA2 level. This is normalised to the number of children that could be enrolled using three-year-old preschool dosage.

3.2.2.3 Operational expansions

In the South Australian Early Childhood Education and Care Sector Survey, survey respondents reported on operational changes that could facilitate expanded enrolments for three-year-old preschool. However, this is likely to include additional enrolments counted under 'utilising spare capacity', so the survey responses are not included in the model.

¹⁹ Gong, X., & Breunig, R. (2012), Estimating net child care price elasticities of partnered women with pre-school children using a discrete structural labour supply-child care model (No. 2012-01), Treasury Working Paper.

²⁰ Under the CCS change, families earning up to \$80,000 will get an increased maximum CCS amount, from 85% to 90%. Families earning over \$80,000 will receive a subsidy, starting at 90% and decreasing by 1% for each \$5,000 increase in income. Based on the income distribution of families in South Australia, it is estimated that out-of-pocket expenses will decrease by 29% on average.

3.2.3 Estimating transitions of non-preschool programs to preschool programs

The model considers existing three-year-old enrolments in ECEC programs. Where three-year-old children are not currently receiving a formal, funded preschool program, non-government services can be classified into three groups:

- Services that offer a preschool-equivalent program: The model assumes that in Scenarios 2, 3A and 3B, these are funded as preschool programs, and converted without additional workforce or capital costs.
- Services that could convert their existing program to a preschool program: The model assumes that in Scenarios 2, 3A and 3B, these are funded as preschool programs, and require an Early Childhood Teacher, representing additional workforce costs and supply. The additional workforce is incremental in this scenario, representing a change in workforce composition required for these services, with a need for more ECTs and fewer (non-teaching) educators.
- Services that could not convert their existing program to a preschool program: The model assumes that these services do not convert their program in any Scenario. However, it is worth noting that, over time, the market may respond to more demand for three-year-old preschool.

While the provider survey results (see Section 4.2) provide a point of reference for the current sentiment of the sector and the potential barriers to transition, the model assumption can be adjusted to reflect that all LDC providers are understood to eventually be able to convert their programs, with sufficient lead time, incentives and access to relevant workforce.

3.2.4 Capital expansion

The model uses survey data from the *South Australian Early Childhood Education and Care Sector Survey* to consider which LDC and non-government preschool services are able to physically expand (see Table 4.1).²¹ Services were asked if they would be able to expand physically to enable more three-year-old children to participate in three-year-old preschool, if they were at capacity. 19 per cent of long day care services, and 16 per cent of non-government preschools reported that they would be able to make physical modifications to their site to enable more three-year-old children to attend.²² These represented 15 per cent and 27 per cent of approved places among the survey respondents, respectively. It is assumed that all of these places would be available for three-year-old preschool.

Capital expansion is also assumed to include further demand for workforce, including both capital and workforce assumptions.

Similar data do not exist for government services. The model assumes that government capital expansions would take the form of new standalone services (i.e. zero provider capacity to expand). Under Scenario 3B, these standalone services would take the form of specifically commissioned new integrated hubs, where they are opened in areas of high disadvantage. See 3.2.5 Estimating excess demand and assuming new service delivery profile .

3.2.4.1 Applying quality thresholds

The model includes an optional user input to apply thresholds for those services eligible to expand using government funding. This option is included to reflect that the South Australian Government may choose to only provide funding for expansion to services meeting a certain quality threshold. The model stylises three approaches to introducing a quality threshold. The choice of options is partly developed to recognise the significant variance in currency, and therefore reliability, of services' assessments against the National Quality Standard (NQS) (see Table 4.1). The approaches look to include a measure of experience, or staff continuity at the service, as an

²¹ Deloitte Access Economics, SA ECEC Sector Survey (2023). Unpublished data commissioned by the Royal Commission into Early Childhood Education and Care, South Australia.

²² Deloitte Access Economics, SA ECEC Sector Survey (2023). Unpublished data commissioned by the Royal Commission into Early Childhood Education and Care, South Australia.

indicator of quality. This reflects the relationship between ECEC quality and experience of staff.²³ These three options for setting a threshold on the share of providers eligible to expand services use data from:

- 1. Assessments against the NQS services that are 'working towards the NQS' would not be eligible for support
- 2. Experienced members of staff services that do not have at least one member of staff with a minimum of fifteen years' ECEC experience would not be eligible for support.²⁴
- 3. Assessments against the NQS and ECEC experience services that either are assessed as 'working towards the NQS' or do not have at least one member of staff with a minimum of fifteen years' ECEC experience would not be eligible for support.

Applying the quality threshold (option 1 described above) is the central assumption used to model the Interim Results and indicates around 17 per cent of LDC services (representing 18 per cent of places in the system) would be excluded from expanding, alongside 6 per cent of non-government preschools, representing 5 per cent of approved places. Applying the ECEC experience thresholds would exclude 9 per cent of LDC services (also representing 9 per cent of approved places) from expansion support. Applying either threshold would exclude 24 per cent of LDC services from expanding, recognising an overlap between services meeting neither threshold.

'Other' service types of Aboriginal services and Child Centres were not included in the modelling of expansion exclusions, based on an understanding of the policy intention to ensure that provision and capacity for disadvantaged cohorts remains high. It also reflects limited data about these services, in particular Aboriginal services, which are not required to be registered with ACECQA in the same manner as other centre-based services.

3.2.5 Estimating excess demand and assuming new service delivery profile

Per the logic set out in Figure 3.2, the model assumes that after existing capacity and new places of service expansion are filled, any remaining demand for three-year-old preschool would be met by new places in LDC and government services.

The assumed three-year-old enrolment rate is used to calculate the number of three-year-old preschool places required. The excess demand figure represents the places expected to be required after all existing and expanded supply is exhausted. The excess demand is estimated at a service type (LDC, government and non-government preschool) and mobility region level. The mobility regions are used to aggregate the additional supply, in order to aggregate demand for new services.

Where the modelling indicates a requirement to construct new services, the capacity of these new services is based on median provider size by service type based on data from ACECQA and South Australian Department for Education (Table 3.3). Commissioned preschool is assumed to have the same average size as government preschools, noting that the estimated cost of commissioned preschool is doubled to account for the intent to ensure physical capacity is available for these children at four years old. See Section 4.3 for a further discussion of assumptions relating to service size.

Table 3.3: Median provider size by service type

Service type	Median size (approved places)		
Government (standalone)	44		
Long day care	75		
Non-government preschool	41		

Source: ACECQA, South Australian Department for Education

²³ This is captured in the NQS Element 4.1.2: 'Continuity of staff' - a measure that 'every effort is made for children to

experience continuity of educators at the service'. ²⁴ Data was only available for one non-government preschool on tenure (from the NWC). In the event that this threshold is applied, the model assumes that all non-government preschools and all government preschools would be eligible to expand.

3.3 Resourcing needs

3.3.1 Workforce

For the purposes of the modelling, the increased capacity of the sector's three-year-old preschool places is not constrained by workforce supply. The model calculates the number of workers required to deliver a given volume of three-year-old preschool across the service types (as opposed to how much preschool can be delivered by a given the currently available workforce). Adjustments to the workforce supply can be made by changing the *input* of the demand uptake rate, which affects the time taken to implement the policy. Therefore, if the model user determines that the workforce supply *output* is infeasible, this can be adjusted via the demand uptake rate variable. There is no excess demand in this model as it is assumed that there is workforce available to meet demand in any given time period.

The key assumptions and inputs underpinning the workforce modelling include:

• The educator to child, and teacher to child ratios across the service types (Table 3.4)

Table 3.4: Key workforce assumptions - child to educator ratios

	Government	Non-Gov	LDC (preschool)	LDC (non-preschool)	Commissioned place
Child to educator ratio	10:1	10:1	11:1	11:1	10:1
Child to teacher ratio	25:1	25:1	25:1	-	25:1

Source: ACECQA National Quality Framework

- The dosage and number of funded days per child
- The typical composition of the workforce by level of qualification level (Certificate, Diploma, Bachelor). The modelling assumes that of the non-teaching educators, half hold Certificate qualifications, with the remaining holding Diplomas.

The model determines the uplift in workforce associated with increased preschool usage. It also considers the potential decrease in workforce demand for non-preschool programs in LDC as children move to preschool. However, the extent to which these workforce impacts offset each other is uncertain, given that services' individual resourcing requirements and staffing arrangements vary. For instance, the requirement for a second ECT in some LDC centres to ensure pedagogical leadership may mean that there is not a direct transfer of employment from the LDC sector to the government preschool sector. The workforce impacts presented in the Commission's *Interim Report* demonstrate the additional workforce requirements under the conservative assumption that no workers transfer from LDC to government preschool as enrolment demand shifts.

3.3.2 Capital costs

Capital costs for expansions and new services have been derived from Rawlinsons Australia Constructions Guide (2021) and data from the Department for Education, based on the parameters set out in Table 3.5 below. All capital costs were applied an annual 2.5 per cent inflation rate.²⁵

These parameters are combined with the following assumptions about (1) the minimum indoor and outdoor space requirements per child and (2) estimates of the additional children supported through physically expanded and newly constructed services by service type, to estimate a total cost. Capital costs are limited to construction costs, and do not consider the costs of land acquisition and demolitions.

 $^{^{\}rm 25}$ Based on the Commonwealth Budget October 2022 Economic outlook.

Table 3.5: Capital cost inputs (2023 dollars)

	Expanded service (cost per 15-hour place)	New service (cost per 15-hour place)	Place in commissioned service (cost per 15-hour place, with a child enrolled for two years)
Capital costs included	New room, 7.15m² per child, space for 10 children per room, airconditioned, unfurnished	New build, 7.15m² per child, space for 10 children per room, airconditioned, landscaping with 9.3 m² outdoor space per child, unfurnished	New build of ECEC Centre, 7.15m² per child with smaller collocated children's centre with 3.58m² per child, airconditioned, landscaping with 9.3 m² outdoor space per child, unfurnished
Metro	\$8,500 - \$9,400	\$8,800 - \$9,700	\$23,700 - \$26,000*
Non-Metro	\$10,300 - \$11,400	\$10,600 - \$11,700	\$28,500 - \$31,200*

Source: Rawlinsons Australian Construction Guide (2021) - Edition 39, DfE data. Note: Figures rounded to nearest \$100. *The average cost per three-year-old place in commissioned service is higher than for other sectors as it accounts for children remaining in the service when they are four years old.

3.3.3 Recurrent costs

Estimates of the aggregate recurrent cost to the South Australian Government are derived from the per-child figures presented in Table 3.6. These figures take an estimated base cost with additional layers to recognise costs associated with regional delivery, additional wraparound supports to families and children, and costs of case management and outreach. The parameters have been derived based on bottom-up modelling conducted by Deloitte Access Economics, using data on current funding for the South Australian four-year-old preschool program as a point of reference. Table 3.6 provides an overview of the breakdown of recurrent cost estimates for the South Australian Government.

The estimated 'base cost' to the South Australian Government covers the incremental cost of delivering a preschool program.

In LDC, this is the differential cost of employing a teacher relative to an educator and recognising additional adjustments to working conditions. Wage rates are estimated with reference to relevant awards and ABS data.

The modelled adjustments to working conditions include:

- an additional two hours of non-contact time per week for teachers;
- an additional two days of paid leave for professional development; and
- an additional \$400 spent towards professional development per 15-hour enrolment.

In government preschool, the estimated base cost to the South Australian Government is developed to cover the cost of delivering each place in a standard setting. Estimates were drawn from wage data provided by the Department for Education and the assumption that non-wage costs represented 15 per cent of the total estimated cost of delivery.

An adjustment is applied to account for variation in delivery costs in non-metropolitan areas. This adjustment reflects differences in observed wages between metropolitan and non-metropolitan settings as well as differences arising from the diseconomies of scale that services in regional, rural and especially remote locations commonly face.

Additional to this estimated base cost is the costs of supporting children with additional needs. This cost varies by SEIFA and is applied on a per 15-hour enrolment basis based on the current Inclusive Education Support Program (IESP) payments. In addition to this, costs associated with case management are estimated, reflecting the outreach function associated with inclusion support, based on wages for Community Development Coordinators. Case management costs are applied on a per 15-hour enrolment basis in SEIFA 1 and 2 regions.

The cost of Student Support Services provided to children and young people with specific educational needs is considered at a state-wide level and is applied to all children based on their applicable SEIFA. The variation of Student Support Services costs by SEIFA is based on data provided by the Department for Education.

An annual wage inflation rate of 3 per cent is applied to all the recurrent costs over time.²⁶

Table 3.6: Estimates of cost to South Australian Government, per child by service type (2022 terms)

Components of cost:	LDC preschool program	LDC preschool program, additional non- teaching time	Non- Government Preschool	Government Preschool	Commissioned preschool ²⁷
Base costs to South Australian Government (Metro)	\$1,574	\$2,307	\$10,550	\$10,550	\$10,550
Base costs to South Australian Government (Non-metro)	\$1,716	\$2,499	\$12,687	\$12,687	\$12,687 ²⁸
+ Cost of additional supports (varies by SEIFA 1-5)	\$248 - \$1,159	\$248 - \$1,159	\$248 - \$1,159	\$248 - \$1,159	\$248 - \$1,159
+ Case management costs (applied SEIFA 1 -2)	\$391 - \$782	\$391 - \$782	\$391 - \$782	\$391 - \$782	\$391 - \$782
+ Student Support Services	\$220 - \$605	\$220 - \$605	\$220 - \$605	\$220 - \$605	\$220 - \$605

Source: Deloitte Access Economics (2023).

 26 Based on 2020-2024 growth rates in the Victorian Enterprise Agreement.

²⁷ Funding for commissioned places includes the base funding for Government Preschool, plus a loading of \$1,367. The loading has been developed based on current funding for the IESP and student support services.

²⁸ This per-15-hour dose funding rate is equal to the rate in a 'standard' government preschool rate, noting that the 30-hour dosage assumed for this cohort results in a doubling of the recurrent cost of delivery per child.

4 Data and assumptions

4.1 Underlying data and general assumptions

A rich and diverse set of data on ECEC provision was sourced to inform the development and parameterisation of the model. This includes data on provision, funding and child characteristics in non-preschool programs through Child Care Subsidy (CCS) data and in preschool programs through the South Australia Department for Education. Table 4.1 below summarises the data sources underpinning the modelling, as well as the model's general assumptions, organised with reference to the modelling elements numbered in Figure 2.3Subsequent sub-sections detail the assumptions specific to demand, workforce and costing.

Table 4.1: Underlying data and general assumptions

Information input into the model	Data source(s) ²⁹	Notes and assumptions	Central scenario parameter
1. Total demand for t	hree-year-old prescho	ol places in a given location in a gi	ven year
Number of three- year-old children residing in each SA2 in each year	ABS Census data and DTI population projections		21,489 three-year-old children by 2032
Mobility of children accessing ECEC across SA2 regions	Child Care Subsidy System (LDC services) Department for	See section 3.1.3 for further details. Demand is limited to the SA2, SA3 or DTI region based on the degree of	Demand for children in 50 SA2s restricted to home SA2 (29%).
	Education, South Australia 2023, provided data (government services, PRA non-government services)	mobility across regions and the ease with which families can access services outside their preferred SA2s.	Demand for children in 75 SA2s restricted to home SA3 region (43%)
			Demand for children in 49 SA2s limited to home DTI region (29%)
Targeted enrolment rates	Assumption	Based on a marginal increase on the enrolment rate for existing-four-year-old children (pre-COVID).	97%
Period of transition to reach target enrolment rate	Assumption		7 years linear growth (2026-2032)
2. Is the child at risk	of developmental disa	dvantage?	
Regions in which a targeted approach is required for equity cohorts	BetterStart Health and Development Research centre modelling	Used only a set of SA2s identified as highly predictive and highly specific. Represents approximately 8% of state population.	27 SA2 regions (See Appendix A)
3. Is the child curren	tly enrolled in LDC, no	n-government preschool or govern	ment preschool?
Proportion of three- year-old children enrolled in ECEC services by region	ABS Preschool Education; Department for Education data (2021)	Department for Education provided data is used for Government preschool enrolments, ABS Preschool is used to determine LDC and non-government enrolments, as	10,700 three-year-old children enrolled in LDC (56%) 500 children enrolled in
		at 2021.	government preschool (3%)

²⁹ Note that the South Australian Early Childhood Education and Care Sector Survey uses non-government preschool to refer to services defined by ACECQA as preschools that are not operated by the Department for Education. The model and this document considers non-government preschools to be services that currently receive some funding from the Department for Education to deliver preschool.

Information input into the model	Data source(s) ²⁹	Notes and assumptions	Central scenario parameter
			100 children enrolled in non- government preschool (1%)
4. Is there capacity t	o commission new pla	ces?	
Regions that can commission new places	BetterStart Health and Development Research centre modelling	Regions identified as being 'high' risk are assumed to be able to commission new places, meeting demand by the equity cohort in the region	27 SA2 regions (See Appendix A)
		Note that this is only applicable for Scenario 3B: A mixed approach for delivery, with equity targeting	
5. Is LDC already pro	viding a preschool equ	uivalent?	
Weighted proportion of places from long day care centres	South Australian Early Childhood Education and Care Sector Survey, informed by	44% of LDC survey respondents representing 41% of approved places reported delivering preschool-equivalent programs.	41% of existing LDCs are offering preschool equivalent programs
reporting they offer a preschool- equivalent program.	responses to the survey question Survey_5_1	100% of non-government preschools were assumed to be offering a preschool-equivalent programs.	100% of non-government preschools have preschoolequivalent programs
Non-government preschools offering a preschool-equivalent program.		While these services are offering preschool-equivalent programs, they are currently unfunded and not treated as preschool.	
6. Assumed demand	for preschool in LDC		
Proportion of children estimated to enrol in government or non-	ABS Preschool Education (2021); Department for Education data	Differs across scenarios, with further details set out in section 2.2. This is based on a mix of existing parental preferences, and eligibility	Scenario 1: 0% of enrolments Scenario 2: 100% of
government services	(2021); Scenario assumptions	to deliver preschool programs across scenarios.	enrolments
			Scenario 3A: 71% of enrolments
			Scenario 3B: 67% of enrolments
7. Is there capacity o	r can non-preschool p	laces be converted to preschool?	
Weighted proportion of places from long day care centres reporting they would be able to convert their existing three-year-old program to a preschool program or have capacity for three-year olds already in preschool programs.	South Australian Early Childhood Education and Care Sector Survey, informed by responses to the survey question Survey_5_4	66% of LDC survey respondents that did not already offer a preschool-equivalent program, representing 41% of all approved places in the sample of services, reported that they could convert their program to a preschool program.	41% of LDCs convert their program to preschool
Estimate of capacity for LDCs	CCSS and ACECQA data on existing enrolments and potential capacity	See section 3.2.2.2 for details on how spare capacity is calculated. The modelling accounts for potential CCS changes and assumes a level of spare capacity cannot be used for three-year-olds.	Up to an additional 1,200 enrolments can be supported in LDCs in the state using spare capacity

Information input into the model	Data source(s) ²⁹	Notes and assumptions	Central scenario parameter
8. Assumed demand	for non-government p	reschool	
Proportion of children estimated to attend	ABS Preschool Education (2021); Department for	Differs across scenarios, with further details set out in section 2.2. This is based on a mix of existing	Scenario 1: 100% of enrolments
government services and commissioned	Education data (2021); Scenario	parental preferences, and eligibility to deliver preschool programs	Scenario 2: 0% of enrolments
places	assumptions	across scenarios	Scenario 3A: 29% of enrolments
			Scenario 3B: 33% of enrolments
9. Do services in regi	on have capacity to e	xpand?	
Weighted proportion	South Australian	Informed by responses either 'We	15% of LDCs able to expand
of places from non- government services reporting that they would be able to expand	Early Childhood Education and Care Sector Survey	are already planning this' or 'Possible' to the survey questions Survey_6_1 and Survey_7_1) 19% of LDC survey respondents, representing 15% of all approved places, estimated they would be able to expand capacity by making physical changes. 16% of non-government preschool survey respondents, representing 27% of all approved places, estimated they would be able to expand capacity by making physical changes.	27% of non-government preschools able to expand
Estimated additional places from non-government services reporting that they would be able to expand	South Australian Early Childhood Education and Care Sector Survey	Informed by responses to the survey questions Survey_6_3 and Survey_7_3 (See Appendix B) LDC survey respondents estimated they would be able to create on average 13.2 additional places by making physical changes. Non-government survey respondents	13.2 additional places for each LDC able to expand 26.6 additional places for each non-government preschool able to expand
		estimated they would be able to	
		create on average 26.6 additional places by making physical changes.	
LO. Do LDC and non-	government services i	meet quality thresholds?	
Weighted proportion	ACECQA, NQF Q4 22	17% of LDCs, representing 18% of	18% of LDCS not available
of places from non- government services below the quality threshold	Register	approved places, assessed as 'working towards NQS'.	to expand due to not meeting quality threshold.
		6% of non-government preschools, representing 5% of approved places, assessed as 'working towards NQS'.	5% of non-government preschools not available to expand due to not meeting quality threshold.
		The data represent current assessments for 94 per cent of government services, 95 per cent of long day care services, and 97 per	

Information input into the model	Data source(s) ²⁹	Notes and assumptions	Central scenario parameter
		cent of non-government preschools. It should be noted that assessments remain 'current' indefinitely, and many assessments are not a contemporary measure of quality. However, in the absence of other indicators, this dataset represents the most comprehensive assessment of service quality. Further considerations of quality based on staff experience are given in section 3.2.4.1 but have not been applied to the central modelling.	
11. Does governmen	t preschool have capa	city?	
Estimate of capacity for government preschools	DfE data on current enrolments, ACECQA licensed places; DfE enrolment caps	The modelling is based on total number of preschool places, and the legal maximum capacity is rounded down to the nearest multiple of 10 to ensure that costly and inefficient ratios of staff to children are not required.	Up to an additional 11,800 places throughout the State using spare capacity

Source: Deloitte Access Economics (2023)

4.2 Demand side assumptions and limitations

The key assumptions as they relate to the estimated enrolment rates and demand for three-yearold preschool are as follows:

- Total enrolment demand is a function of the assumed enrolment target and path to achieving it
 within a defined time period. Modelling demand in this way does not consider the feasibility of
 achieving the enrolment target. This may be a particular limitation in Scenarios 1 and 2, where
 some children are expected to move service types to enrol in preschool programs. In practice,
 parental choices or other policy settings may lead to more limited preschool enrolment or
 movement across service types.
- 2. Assumptions on preschool dosage have material impacts on workforce requirements and how existing capacity can be used. The workforce requirements are modelled on a per-15-hour enrolment basis. Increasing the dosage beyond 15 hours would result in increases to workforce requirements. In contrast, alternative delivery models, such as 12 hours or two days of preschool per child, could allow more enrolments to be accommodated within existing services.
- 3. The modelling assumes that for children already enrolled in LDC, the policy only changes the composition of their hours between preschool and non-preschool programs. The model assumes children's total hours demanded for ECEC (preschool and non-preschool programs) will remain unchanged as a result of the policy. If children already in LDCs choose to add preschool hours rather than to substitute existing LDC hours, existing places in LDC non-preschool programs cannot be freed up for conversion to preschool, leading to additional resourcing requirements.
- 4. Demand is modelled by service type and is not assumed to be responsive to available supply. The modelling does not allow for children to move across sectors in response to supply. For instance, for a child demanding a preschool program in the LDC sector, they are assumed to be unwilling to access the program within a government preschool even if there is spare capacity. Instead, supply is assumed to adjust in meeting demand. Consequently, assumptions on the composition of demand (which differs across scenarios) are a key driver of the modelling results.

4.3 Supply side assumptions and limitations

Once the enrolment profile is established in the demand-side of the model, the model captures how supply is able to respond to a new fixed level of demand. On the supply side, the key characteristics of the modelling approach which drive results are as follows:

- 1. Spare capacity in existing services is a key driver of results. While the extent of spare capacity in the government and LDC sectors has been estimated based on the most contemporary and comprehensive data available (via the Department for Education and CCSS respectively), there remains uncertainty over the estimates, especially as configurations will vary at the provider level. Spare capacity in non-government services has not been considered due to data limitations. The extent of spare capacity in services particularly in government services that are assumed to be available for three-year-old preschool affects the extent to which new places will be required to meet additional demand. The extent of this impact is described in Section 4.5.1
- 2. Some parameters in the model rely on responses collected from the *South Australian Early Childhood Education and Care Sector Survey* fielded to inform the Royal Commission. Centrally, the assumptions around the proportion of LDC programs that can be converted to preschool are informed by provider-self-reported measures. Changing these assumptions affects the extent to which new places will be required to meet additional demand. The extent of this impact is described in Section 4.5.2.
- 3. The modelling indicates the additional places required to meet the overall increase in demand for three-year-olds. Exactly how these places are delivered under each scenario that is, the configuration of new services will vary from region to region. In contemplating how many new services may be required, the modelling utilises assumptions regarding the typical size of services in each provider type category, with the concept of 'service-equivalent' terms adopted in recognition of the fact that, in reality, the service response may not be a new service that is characteristic of today's typical services but, rather, a variant thereof. This is especially true in regions where the requisite new capacity is less than that associated with a typical service. It is also acknowledged that the construction of new LDC services will see demand shift from existing services in ways that creates additional capacity beyond what currently exists.
- 4. The modelling does not consider the implications of changing demand for non-preschool programs delivered in new or existing LDC services. As such, the model is limited in its ability to estimate the impact of children receiving preschool in government services (Scenario 1) on the viability of existing LDC services. In a scenario of government-only provision, there may be a proportion of families that chooses to send their child/ren to a government preschool instead of their existing LDC service, as only government preschools are funded.

Analysis of the *South Australian Early Childhood Education and Care Sector Survey* results found that approximately half of four-year-old children attending LDCs also attend preschool at a government preschool site, according to services.³⁰ Results show that 39 per cent of services that did not seek funding to provide four-year-old preschool under the Preschool Reform Agreement indicated that there are insufficient four-year-old children in their preschool program because of proximity and access to a government preschool. Services indicated a number of reasons for this, including that families wanted their children to interact with the children they would go to school with, and that government schools have lower fees for families. Conversely, some services indicated that families preferred to access a preschool program at an LDC, due to more convenient hours which generally better reflected their working arrangements and hours.

³⁰ Deloitte Access Economics, Mapping long day care and non-government preschool in South Australia, (report commissioned by the Royal Commission into Early Childhood Education and Care, South Australia, 17 March 2023 < https://www.royalcommissionecec.sa.gov.au/documents/Mapping-long-day-care-and-non-government-preschool-in-South-Australia.pdf>).

4.4 Workforce and costing assumptions

The key assumptions as they relate to the ECEC workforce demand and estimated costs of delivering the policy are as follows:

- The model is focused on estimating additional demand for Early Childhood Teachers, Educators and Directors. In practice, the provision of high quality ECEC relies on a variety of other workers, including child support staff, allied health professionals and administrative professionals to reach families and deliver programs. The potential demand for these workers is not included in the estimates. However, it is noted that the estimated recurrent cost in terms of wages for additional support workers has been captured in the estimated additional needs funding (see Section 3.3.3).
- 2. The modelling does not consider the full costs associated with new services. The costs associated with new services include the applicable indoor space requirements for new children, air-conditioning and outdoor landscaping. Land acquisition and demolition costs are not considered. Reflecting that estimates of new services required assume *all* new capacity can be devoted to three-year-olds, the capital costs of developing these services may in practice be higher where the design and size accounts for a mix of ages.

4.5 Model sensitivity to key parameters

This section demonstrates the sensitivity of the modelling results to three parameters where there is considered to be a particularly high degree of uncertainty:

- Volume of existing spare capacity
- Transition of non-preschool programs in LDCs
- Mobility in accessing preschool programs.

The sensitivity ranges are stylised but nevertheless serve to demonstrate the uncertainty that accompanies the results.

4.5.1 Spare capacity in existing services

Under the central modelling, it is estimated that up to an additional 13,000 three-year-old preschool enrolments can be supported in existing LDCs and government preschools, with the majority (11,800 enrolments) in government preschools.

Sensitivity analysis testing a 25 per cent uniform change in spare capacity across the regions and sectors is undertaken, with the impact on new places required summarised in Table 4.2. Spare capacity assumptions have the largest effect on the Scenario 1 results, given preschool delivery is limited to the government preschool sector, where current spare capacity is concentrated.

Table 4.2: Change in new places required relative to central case: spare capacity sensitivity

	Scenario 1: Government S	cenario 2: LDC	Scenario 3A:	Scenario 3B: 3A, with equity
Scenario	preschool only	and non-gov M	lixed approach	targeting
High spare capacity +25%	-16%	-2%	-6%	-4%
Low spare capacity -25%	+18%	+2%	+8%	+5%

Source: Deloitte Access Economics (2023)

4.5.2 Transition of non-preschool programs in LDCs

Under the central modelling, up to 41 per cent of places in LDCs not currently offering preschool-equivalent programs for three-year-olds are able to be converted to meet additional preschool demand. Given uncertainty over the survey results, the impacts of a uniform 20 per cent change in the number of places that can be converted is presented in Table 4.3.

The conversion sensitivities are expected to shift the number of new places required relative to the central case by between eight per cent and 15 per cent. The effects are larger in relative terms for scenarios 3A and 3B as fewer new places are required under the central modelling compared to Scenario 2.

Table 4.3: Change in new places required relative to central case: conversion sensitivity

Scenario	Scenario 1: Government preschool only	Scenario 2: LDC and non-government	Scenario 3A: Mixed approach	Scenario 3B: Mixed with equity targeting
High conversion ability +20%	+0%	-8%	-14%	-10%
Low conversion ability -20%	+0%	8%	+15%	+11%

Source: Deloitte Access Economics (2023)

4.5.3 Mobility in accessing preschool programs

As set out in section 3.1.3, the modelling balances demand and supply within mobility regions. Changing the size of the mobility regions to reflect families' ability and willingness to move across SA2s in accessing preschool will affect the results (Table 4.4). A higher level of mobility will reduce requirements for new places, as families are able to travel further to access existing services with spare capacity. Conversely, a lower level of mobility will increase the new places required as a more precise matching between demand and supply is required for each region.

Table 4.4: Change in new places required relative to central case: mobility sensitivity

Scenario	Scenario 1: Government preschool only	Scenario 2: LDC and non-government	Scenario 3A: Mixed approach	Scenario 3B: Mixed with equity targeting
High mobility (DTI regions) *	-9%	-1%	-7%	-5%
Low mobility (SA2s) *	+8%	+0%	+8%	+5%

Source: Deloitte Access Economics (2023). *There are 68 mobility regions in the central case. There are 19 DTI regions, and 174 SA2s.

Appendix A: Developmental vulnerability data

Table A.1 sets out the 27 SA2s for which a share of children are used to estimate the cohort eligible for additions support under Scenario 3B: A mixed approach for delivery, with equity targeting. The proportion of children within SA2 classified as at 'high' risk³¹ has been converted to a population of three-year-old children using ABS Census data.

Table A.1: Inputs from BetterStart

SA2	% DV1 within each SA2 ³²	% DV1 across SA2 ³³		Mean probability	% of children within SA2 classified as at 'high' risk	Sensitivity	PPV	% CP and/or DV1 among those classified as at 'high' risk	3year-old	Implied At-risk population
Quorn - Lake Gilles	20%	0.1%	0.24	0.27	32%	100%	62%	62%	18	6
Elizabeth	43%	1.6%	0.35	0.39	61%	75%	53%	75%	138	85
Smithfield - Elizabeth North	40%	2.0%	0.36	0.38	64%	74%	46%	72%	176	113
Wallaroo	26%	0.1%	0.27	0.32	43%	71%	43%	70%	40	18
Davoren Park	34%	2.5%	0.32	0.35	55%	71%	43%	67%	312	173
Coober Pedy	34%	0.1%	0.31	0.35	50%	69%	47%	74%	16	8
Port Pirie	31%	1.3%	0.28	0.31	45%	68%	46%	67%	156	71
Elizabeth East	35%	6 1.6%	0.30	0.33	3 50%	67%	47%	68%	5 212	2 106
Port Augusta	38%	6 1.9%	0.30	0.34	50%	66%	51%	67%	b 16:	1 81
Salisbury	33%	6 1.6%	0.30	0.32	2 50%	66%	44%	64%	b 25:	1 126
Murray Bridge	29%	6 1.4%	0.27	0.30	40%	63%	45%	66%	b 229	9 92

³¹ Note that 'high' risk refers to a child who is identified by the BetterStart risk prediction model as being at risk of going on to be developmentally vulnerable on one of more domains of the AEDC. It does not refer to a child who is 'developmentally at risk', per the AEDC definition: "Children who score between the 10th and 25th percentile (on a particular domain), determined using the cutoff points established in 2009, are classified as 'developmentally at risk'."

³² Proportion on children in SA2 that were developmentally vulnerable on one or more domains of AEDC (row %). An example interpretation based on the results in row 1 is that the results indicate that there were 20% of children within Quorn - Lake Gilles who were developmentally vulnerable on 1+ domains.

³³ Proportion on children that were developmentally vulnerable on one or more domains of AEDC lived that SA2 (column %). An example interpretation based on the results in row 1 is that the results indicate that of *all* children who were developmentally vulnerable, 0.1% resided in Quorn - Lake Gilles at birth.

SA2	% DV1 within each SA2 ³²	% DV1 across SA2 ³³		probability	% of children within SA2 classified as at 'high' risk	Sensitivity		% CP and/or DV1 among those classified as at 'high' risk	SA2 3year-old population	
Whyalla	28%	6 1.9%	0.27	0.30	40%	63%	6 44%	70%	238	96
Christie Downs	30%	6 0.8%	0.27	0.31	40%	61%	45%	71%	104	42
Berri	26%	6 0.4%	0.25	0.28	33%	6 58%	45%	55%	37	13
Hackham West - Huntfield Heights	31%	6 0.9%	0.28	0.33	46%	6 57%	39%	71%	100) 47
Goyder	25%	6 0.3%	0.21	0.23	23%	6 56%	61%	65%	37	9
Salisbury North	32%	6 2.0%	0.27	0.29	40%	6 56%	6 44%	63%	266	5 108
West Coast (SA)	24%	6 0.2%	0.21	0.24	21%	6 55%	61%	72%	5 47	10
Ceduna	36%	6 0.3%	0.25	0.29	30%	6 53%	65%	77%	5 40	12
Enfield - Blair Athol	24%	6 1.9%	0.24	0.27	33%	6 52%	38%	57%	340	113
Christies Beach	27%	6 0.7%	0.22	0.25	27%	6 51%	53%	74%	97	26
Woodville - Cheltenham	23%	6 1.0%	0.21	0.24	26%	6 51%	45%	58%	207	7 55
Port Lincoln	25%	6 1.0%	0.23	0.26	31%	6 50%	40%	66%	5 195	62
Goolwa - Port Elliot	17%	6 0.3%	0.21	0.22	18%	6 50%	45%	61%	65	5 12
Nailsworth - Broadview	14%	6 0.1%	0.12	0.16	9%	6 50%	₆ 78%	89%	5 71	. 7
Mount Gambier - West	14%	6 0.0%	0.20	0.18	7%	6 50%	6 100%	100%	5 158	3 12
Loxton	21%	6 0.4%	0.21	0.22	21%	6 50%	51%	66%	53	3 11

Source: BetterStart Health and Development Research

Appendix B: South Australian Early Childhood Education and Care Sector Survey

The characteristics of current and future three-year-old ECEC delivery in centre-based care services is informed by the South Australian Early Childhood Education and Care Sector Survey, conducted by Deloitte Access Economics between January and February 2023. The survey was completed by 337 non-government services, representing 70 per cent of long day care centres and 61 per cent of non-government preschools.

Survey data were used to inform the proportion of places for three-year-old children that are already delivered to a preschool-equivalent program, and those that could be converted. Survey data also informed the potential expansion of existing services.

Survey data, collected at a service level, were weighted by the number of approved places as documented by ACECQA.

Table A.2: Survey questions

Survey question number	Survey text	Survey response options
Survey_5_1	Did the three-year-olds at your service in 2022 participate in a program that meets the current definition of preschool in South Australia?	Yes/No
	(I.e. a preschool program delivered by a degree qualified early childhood teacher registered with the Teacher's Registration Board of South Australia that at a minimum, meets National Quality Framework qualification requirements, with a teacher: child ratio of 1 to 11)	
Survey_5_4	Would your service be able to convert its existing three-year-old program to a three-year-old preschool program?	Yes/No/Unsure
	No policy decision regarding the form of three-year-old preschool has yet been determined. Please consider a preschool program aligning with the current requirements for four-year-old preschool for this question. This includes allowing children to attend for more hours than the State Government funded 15 hours.	
Survey_6_1	If your service was running at capacity, which of the following operational changes would be possible to increase the number of three-year-olds participating in preschool at your service?	We are already planning this/possible/possible
	 Changes to staff rostering Changing the hours of existing programs Changing the mix of places available by age Extending service hours Other 	but difficult/not possible/not applicable
Survey_6_3	How many additional places for three-year-old preschool do you estimate these operational changes could create?	Free text
Survey_7_1	If your service was running at capacity, which of the following physical changes would be possible to increase the number of three-year-olds participating in preschool at your service?	We are already planning this/possible/possible but difficult/not

Survey question number	Survey text	Survey response options
	 Converting a space in your service to a preschool room (for example, storage space or other room not currently used for children) Building an additional room using outside space at your service Expanding your capacity by adding an additional storey to your service Expanding the footprint of the service through acquiring adjacent property or vacant land Other 	possible/not applicable
Survey_7_3	How many additional three-year-old places do you estimate these physical capacity changes could create at your service?	Free text

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