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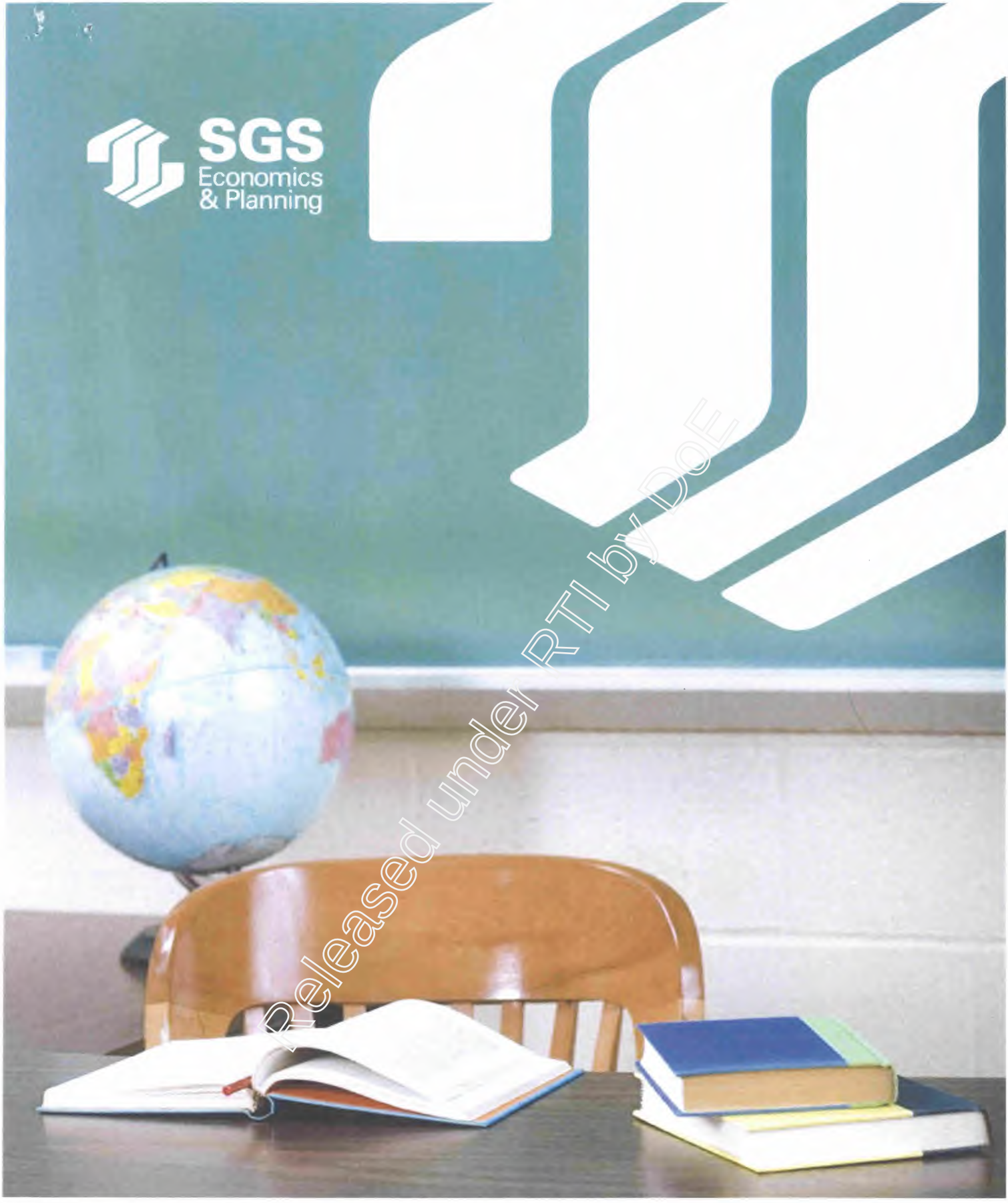

INNER CITY ENROLMENT STUDY

FINAL REPORT
JANUARY 2019

Prepared for
Department of Education

Independent insight.

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B Corporation

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TABLE OF CONTENTS

LIST OF FIGURES

1. INTRODUCTION

This work updates a 2017 study by SGS which forecast demand for government schools in inner areas of Brisbane. This 2018 study uses more recent data, such as the 2016 Census, and a refined modelling method to update demand forecasts.

Inner city areas in South East Queensland are increasingly becoming highly demanded places where people are looking to settle and build families. The rise of service based employment which clusters in central locations; the relative increasing remoteness and unaffordability of the Australian dream of a detached house on a large lot in the suburbs; the increased engagement of females in the workforce; and a shift in preferences for vibrant well-connected communities are all contributing to this reawakening of inner city neighbourhoods.

This return to the core has profound implications on how we plan our cities, and on the infrastructure we need to enable markets to function and for people to pursue meaningful lives. This is particularly evident in planning for schools. The shift tempers decades of flight to outer suburbs, where land was more readily available to provide schools. The novelty of this trend in Australia means policy makers are still getting a handle on what this means for the provision of schools.

SGS is assisting the Queensland Department of Education (the Department) to unpack this issue and prepare for the future.

This work updates a 2017 study by SGS which forecast demand for government schools in inner areas of Brisbane. This 2018 study uses more recent data, such as the 2016 Census, and a refined modelling method to update demand forecasts.

SGS has reviewed trends of population growth in Brisbane with a focus on inner city areas characterised by higher density dwellings. We have zoomed in on these areas and hypothesised on the extent that families with school aged children will live there, now and into the future. This knowledge will inform the Department on the extent of demand for schools and the planning which needs to happen to meet this demand.

SGS notes that the outputs produced in this project represent a scenario where substantial, but plausible, changes to the way families live are realised. With this in mind, it is necessary that the SGS results differ from other population forecasts.

1.1 Project Scope and Objectives

The overarching objective of this project is to analyse, based on current available data, the shift towards apartment living in Queensland to determine the potential impact on school infrastructure needs across Brisbane.

The specific scope of this project focuses on government schools and focuses on inner city areas (41 SA2s only) with the overarching objective of estimating underlying enrolment demand.

There is a data spreadsheet with detailed SA2 results which should be consulted alongside the summary results presented in this report.

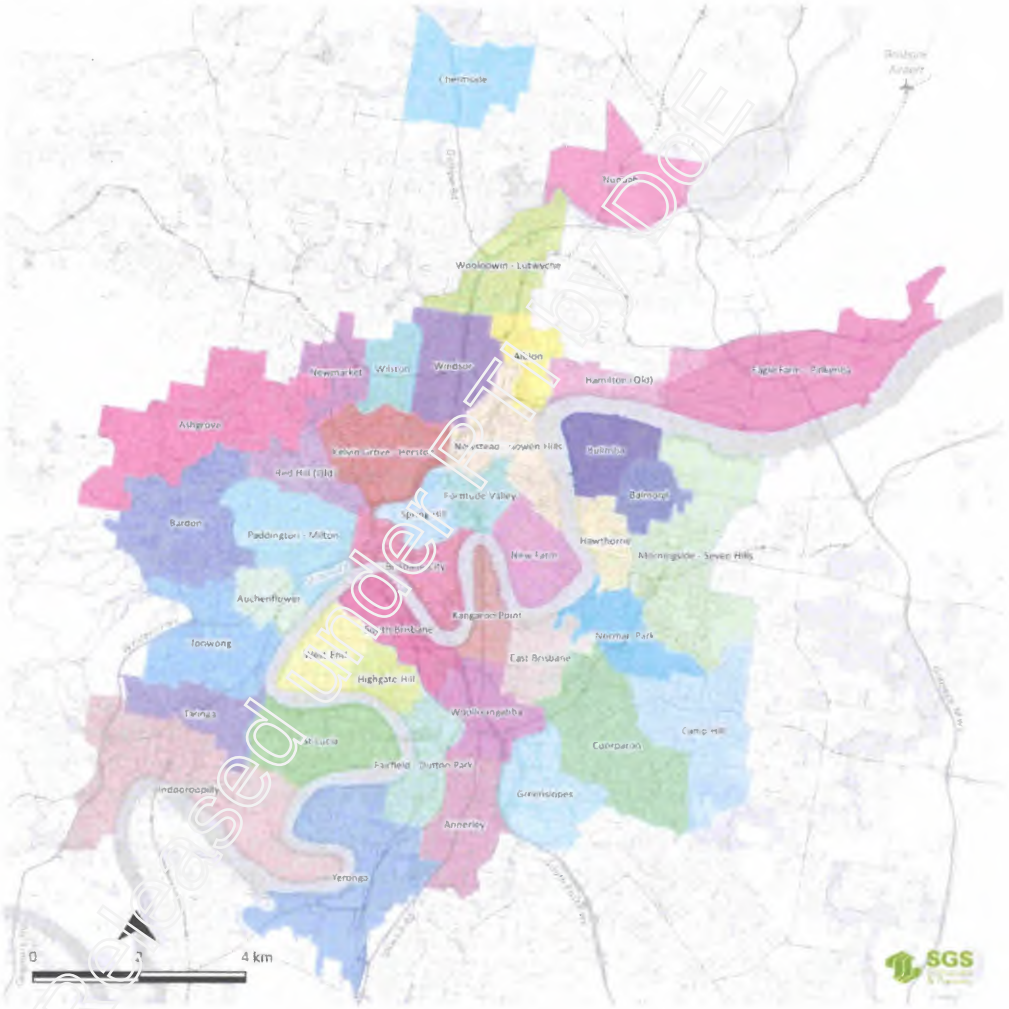
1.2 Study Area

The study area takes in inner city areas of Brisbane typified by higher dwelling densities, high apartment development activity and proximity to the Brisbane CBD.

These areas are illustrated in the figures below. Inner Brisbane, takes in the CBD and surrounding fringe suburbs, primarily along the Brisbane River. Select centres close to the CBD which have high density development, such as Chermside, are also included.

The 41 SA2s are listed in Appendix 1 of this report.

FIGURE 1: INNER BRISBANE STUDY AREA



Source: SGS Economics and Planning, 2018

2. CHANGES IN HOW WE LIVE

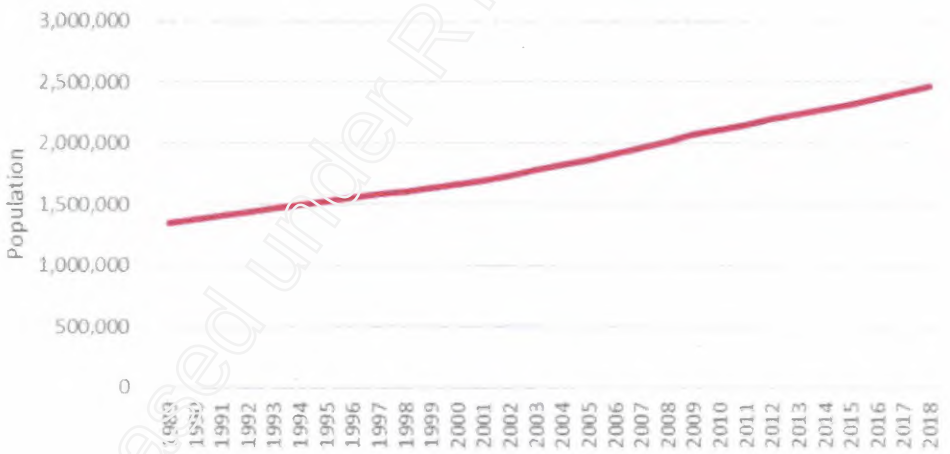
The inner city is complex and a rapidly evolving part of Brisbane. The following section seeks to highlight some of the broader policy, economic and demographic trends that are impacting the central city. These trends will in turn significantly impact enrolment demand and provision needs.

2.1 Economies in transition

As with all large cities, Brisbane is a complex entity, with millions of residents and billions of dollars of economic activity contained within its boundaries.

For an extended period, economic growth in Brisbane has been fuelled by population migration. The last thirty years have seen Greater Brisbane add around a million residents. While the reasons people move to Brisbane are diverse, major attractors for people from the southern states include employment opportunities, cheaper housing and lifestyle benefits.

FIGURE 2: BRISBANE POPULATION 1989 - 2018

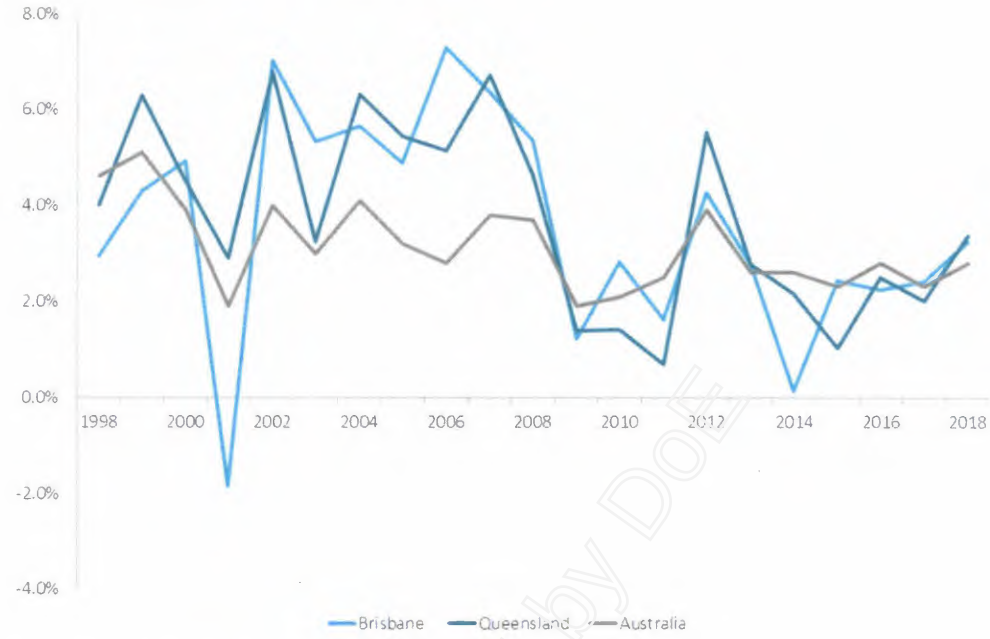


Source: Australian Bureau of Statistics Catalogues 3105 and 3235, 2018

Intertwined with this population growth throughout the 1990s, Brisbane enjoyed an economy growing at a higher rate than most other Australian cities. Though this growth swung around dramatically towards the end of the 1990s and the early 2000s. The introduction of the GST in 2000 produced a particularly deep drop in GDP growth in Brisbane.

As shown in Figure 3, as economic activity associated with the minerals boom made its way to Brisbane, growth picked up, again providing Brisbane with above average economic growth throughout the 2000s. More recently, Brisbane's GDP growth has once again displayed sensitivity with significant volatility spurred by the 2008-09 Global Financial Crisis, as well as major floods in 2010-11.

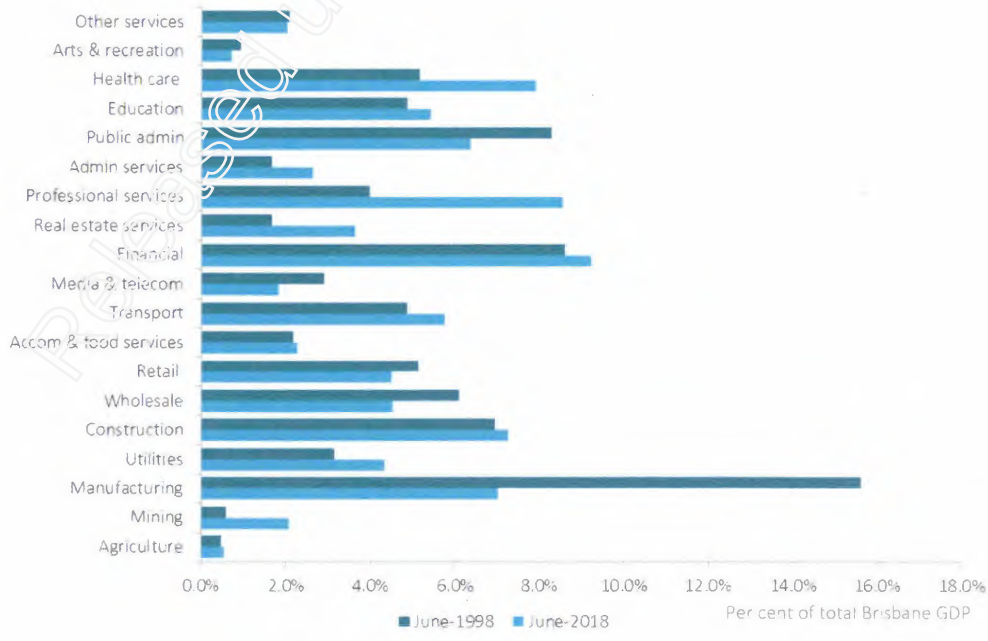
FIGURE 3: BRISBANE GDP GROWTH 1998 -2018



Source: SGS Economics and Planning, 2018

Over the past two decades the economic structure of the city has shifted dramatically. The manufacturing sector which once dominated Brisbane's economy has halved in terms of its proportional contribution to GDP. This contrasts with the growing importance of services such as health care, professional services, real estate, and financial services. Population growth and a housing boom has also contributed to growth in the construction sector.

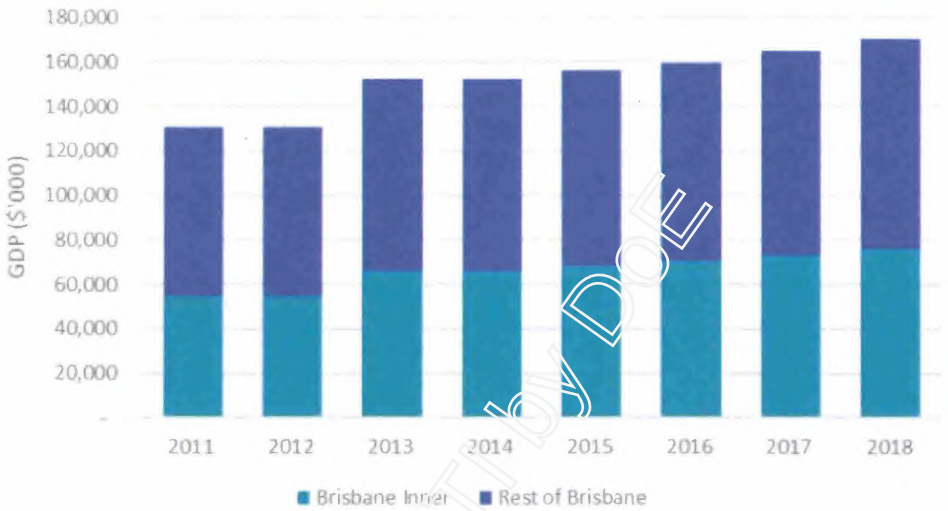
FIGURE 4: BRISBANE INDUSTRY STRUCTURE



Source: SGS Economics and Planning, 2018

This evolving economic structure has resulted in a significant proportion of jobs locating in Brisbane's inner areas with these jobs generating a large chunk of economic value. Illustrated below is Brisbane's economic output split between inner Brisbane (as defined by this study) and the rest of Brisbane. With the significant economic activity and consequently high paying jobs locating in inner areas, it follows that people would choose to live close to these areas.

FIGURE 5: GDP FOR BRISBANE INNER AND REST OF BRISBANE



Source: SGS Economics and Planning, 2018

Note: Rest of Brisbane is defined as the ABS Greater Brisbane GCCSA less the study area.

Future growth may continue this pattern as the mining boom winds down and further concentration of employment in the high value service industries is expected. Additionally, sectors such as education and tourism are poised to take advantage of the lower Australian dollar and expanding middle class in Asian nations.

2.2 Housing in transition

The South East Queensland housing market is expected to continue to move towards higher density living. In the past, local amenity factors were paramount in driving housing demand. These included access to views and breezes, local leafiness, perceived safety and neighbourhood character. These are still important but increasingly they are being outdone by locational 'access to opportunity' features.[1] Furthermore, decades of relatively high population growth have impacted the affordability of traditionally desirable detached housing.

The new knowledge economy, and its preference to locate in the inner core of Brisbane has had ramifications for the land and housing industry and distribution of economic opportunities. There are clear signs of an emerging new market for more dense housing forms located in well-connected areas. The most well connected areas of Brisbane are illustrated in Figure 6 with the redder areas having the highest connectivity to employment.

FIGURE 6: EFFECTIVE JOB DENSITY BRISBANE

Source: SGS Economics and Planning, 2018

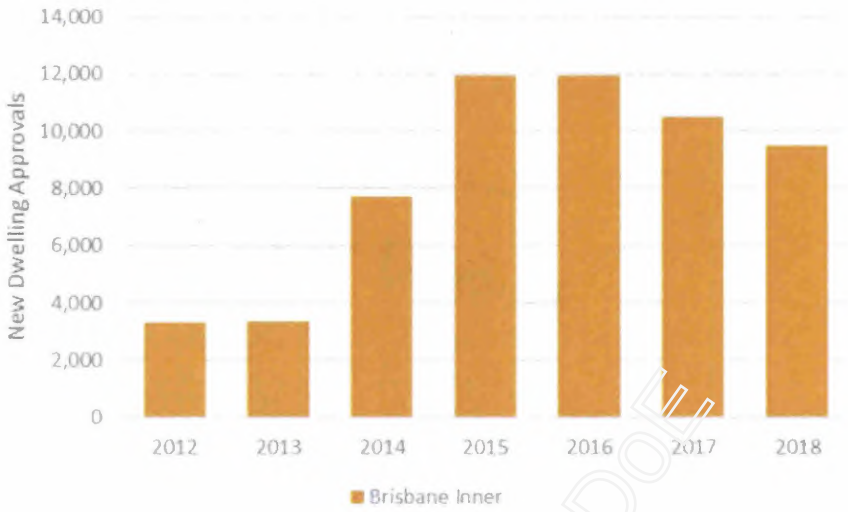
Note: Effective job density' (EJD) score measures the relative concentration of employment, derived from the density and accessibility of all jobs across a region. The EJD effectively illustrates the benefits of this agglomeration phenomenon. A resident living in the areas with the deepest blue shading have access to a dense array of employment. Residents in pale blue areas have access to a much reduced share of metropolitan employment.

As the best connected areas are closer to the centre of Brisbane where land supply is scarce, higher housing densities are necessary. The housing market is already starting to meet this demand for well-connected living. Since 2011, more than 50 percent of new dwellings approved in SEQ have been 'apartments, townhouses and the like' (DILGP, 2017).

The inner areas of Brisbane have been particularly impacted by this boom in higher density dwellings. The chart below shows new dwelling approvals (a proxy for construction) in Inner Brisbane growing strongly from 2012 to 2018. While growth in approvals has somewhat tapered off since 2016, the level of approvals remains high.

[1] The Grattan Institute has found that people value both dwelling features (such as size) and, increasingly, locational factors such as being close to shops and transport. (Grattan Institute, 2011)

FIGURE 7: NEW DWELLING APPROVALS 2012 – 2018



Source: Australian Bureau of Statistics Building Approvals, 2018

Likewise, the Government also recognises this shift. Queensland's South East Queensland regional Plan Shaping SEQ highlights that 'residents' strongest preference for higher density housing lies in the inner city of Brisbane', with strong support for medium density in major suburban areas (DILGP, 2017).

The plan reveals that community attitudes are also starting to shift with 50 percent of residents supporting medium density housing in their suburbs. Furthermore, residents 'believed higher density living provides easier access to the CBD or town centres and jobs as well as shopping, entertainment and recreation options'.

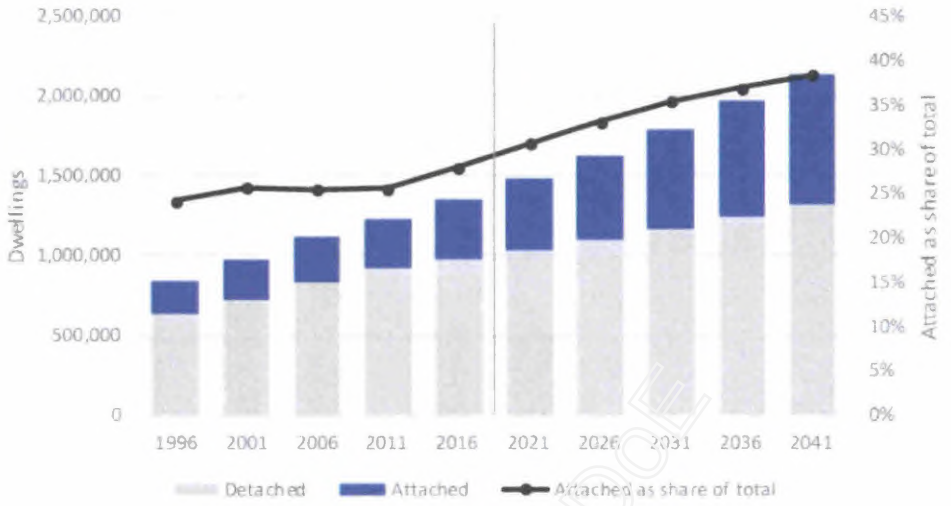
Shaping SEQ outlines a strategy to provide greater housing choice by delivering a mix of dwelling types and sizes in infill and greenfield locations as well as planning and delivering a 'greater range of 'missing middle' housing forms in suitable locations' (DILGP,2017).

The strategies and benchmarks set out in Shaping SEQ indicate a level of policy support at a State level for the continued shift towards higher density living and urban consolidation over the next 25 years.

In the coming years, Brisbane is expected to see more varied household forms due to an aging population (more retirees) and other societal factors (more lone/split households). These more complex family structures require more complex and diverse housing forms.

Figure 8 shows historical and projected dwelling growth by type for the SEQ over the next 20 years and demonstrates that attached dwellings will continue to increase as a share of the total housing stock.

FIGURE 8: HISTORICAL AND PROJECTED DWELLING GROWTH BY TYPE, SEQ



Source: ABS and Queensland Government Household and Dwelling Projections, 2015 edition, unpublished data

The increase in attached dwellings has created opportunities for certain households such as retirees to downsize, essentially leading to a reshuffling of housing stock. As households align themselves with a more suitable housing product and take up apartments, larger dwellings on the city fringe (such as medium density town houses and detached houses) are freed up for families.

This shift to higher densities does not necessarily mean high rise apartment towers, but can also take on a more gradual form with families taking up townhouses, 4 storey apartments, and subdivisions.

It is this reshuffling effect which accounts for the increased presence of families in inner city fringe areas and is contributing to pressure on inner city school enrolments.

3. DENSITY AND STUDENTS

Having covered some of the broader spatial and economic trends impacting increased higher density living, this section focuses on the relationship between student enrolments and density.

3.1 Households in dense areas

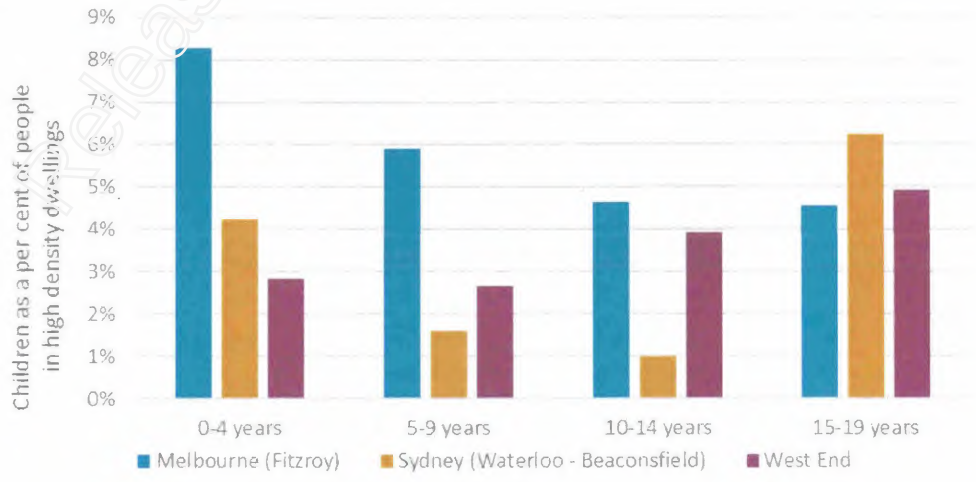
The preference for inner city locations close to employment is particular to households tied to the knowledge economy, which benefit from locating close to deep and diverse economic markets (SGS, 2015; Shoory, 2016; Mccrindle, 2015).

While population growth and employment opportunities are the overarching drivers for households locating in dense areas (Shoory, 2016; Mccrindle, 2015), SGS has undertaken a review of the literature and identified a range of key attractors and enablers for families to locate in inner-city areas:

- Increased prices for blocks of land and detached housing
- Improved apartment design, market beginning to adapt and cater for families
- Convenience
- Reduced travel times (i.e. commute to work)
- Access to public transport
- Proximity to amenity/cultural/ recreational attractions
- Increased access to services
- Improved safety/less crime in inner-city locations
- International policies for family friendly cities shifting perceptions.

Families are already starting to embrace inner city living. Figure 9 shows children, as a proportion of all people, living in high density dwellings for selected city fringe locations in Brisbane, Melbourne and Sydney in 2016.

FIGURE 9: CHILDREN AS A PER CENT OF PEOPLE IN HIGH DENSITY DWELLINGS – CITY FRINGE LOCATIONS, 2016



Source: ABS SA2 by Dwelling Structure & Age in Five Year Groups, 2016
Notes: High density dwelling takes in the category of Flat, unit or apartment in a four or more storey block. This chart compares the proportion of children in high density dwellings in a selected city fringe location.

For these locations, there are a higher proportion of young children in apartments in the cohorts 0-4 and 5-9 indicating the appeal of apartments to young establishing families. The high proportion of 0-4 aged children indicates the need for childcare facilities and the latent demand for primary education in inner city areas.

As children approach the 10-14 bracket, their presence in apartments decreases. This is likely due to the lifecycle effect of families shifting out as children grow and approach their teens. It is likely more attractive to raise smaller primary school aged children in an apartment than teenagers.

This trend is likely to continue for those 15-19 year old who are still dependent. The 15-19 age group takes in 18 and 19 year old independent tertiary students which explains the spike in this age group for Pyrmont – Ultimo in Sydney, given its proximity to universities.

From this breakdown, it is evident that a higher population of children in inner city areas could be possible for Brisbane.

FAMILIES IN APARTMENTS

As property prices increase and apartment designs improve, apartments are fast becoming a viable alternative. Apartments are particularly appealing to young professional couples on a dual income, willing to make the trade-off between convenience/proximity to work and amenity and a 'backyard'.

The housing market is beginning to adapt and even cater for families with flexible designs and the inclusion of childcare facilities in new developments (see Figure 10).

This coincides with an increasing interest in adaptable housing design which allows the spatial flexibility for the modification of homes to adapt to 'individual needs, desires and changing circumstances' over a household's lifecycle (Bertram et al, 2015).

FIGURE 10: LANE COVE FAMILY FRIENDLY RESIDENTIAL PROJECT

Source: Eva Lane Cove, 2017.

Eva Lane Cove by Haecorp Property Group (winner of the Urban Taskforce Medium Rise Apartments Development Excellence Award for 2016) is an example of the kind of family friendly development appearing in Melbourne and Sydney's inner city areas.

This development was "designed with families in mind" and comprises a mix of larger one, two and three bedroom homes. Haecorp have marketed the development as the "best of traditional property, alongside a modern lifestyle" (Eva Lane Cove, 2017). The site also includes a childcare centre with capacity for up to 60 children.

3.2 School type preferences

Studies on parental choice and different market segments undertaken to date have found little variation between different socio-economic groups when it comes to key school selection criteria (Bussell 2000, p.374). Universally important criteria for parents in choosing schools includes:

- Proximity to home and or convenience
- Quality of teaching
- Educational performance/past success
- Discipline

Other contributing factors may also include the number of pupils in the school, appearance of the buildings, and availability of help for pupils with special needs (Bussell, 2000).

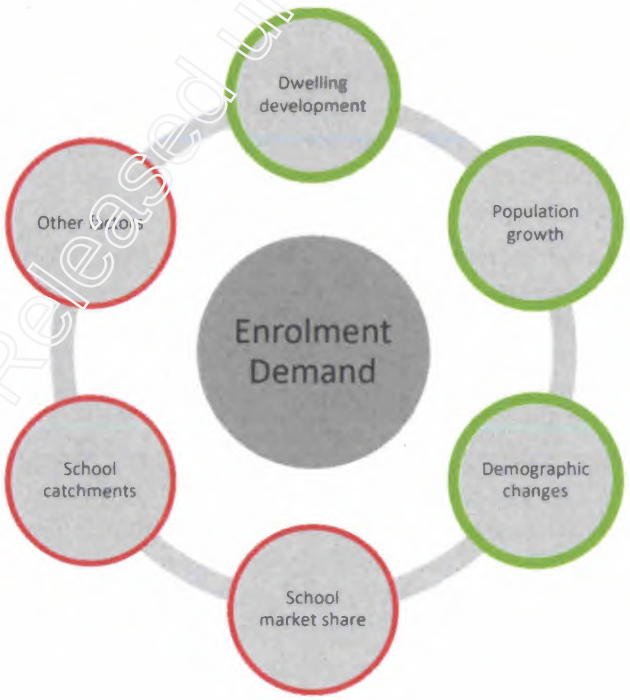
Notwithstanding this, there is some evidence to suggest that household parameters correlate with demand for school type. An Australian example is higher incomes being associated with higher demand for independent schools and households identifying as Christian being more likely to choose Catholic schools (SGS for the Catholic Education Office, 2016).

For simplicity in this study, we have taken existing preferences as reported in the 2016 Census, for school types as constant over the projections. This is reasonable as the household characteristics which impact demand for different school types are likely to remain relatively stable over the projection period.

3.3 Other key issues

Enrolment demand at any particular school arises from a range of interrelated factors. Some of these are illustrated in the figure below. This project which models resident students, focuses on demand related to dwelling development, population growth, demographic changes, and school market share. These can loosely be classified as demand side factors.

FIGURE 11: FACTORS IMPACTING ENROLMENT DEMAND



There are, however, other factors which impact enrolments at schools which relate to the supply side of the equation. While supply side factors are outside the scope of this study, we outline some of the key issues here.

Travel behaviour

The travel behaviour of parents impacts school enrolments. The increasing concentration of employment in Brisbane city's core has likely influenced growing demand for school places close to the city.

For parents working in the city and commuting from middle or outer suburbs, an inner city school can provide a convenient and practical option for dropping off and collecting children on the journey to and from work. While this study focuses on enrolment demand from students' residing in inner city areas in Brisbane, the impact of commuting patterns on out of area demand for inner city schools is an area which should be explored further.

School attractors

Schools with desirable characteristics can be attractors in and of themselves, and inner city schools with reputations for academic excellence may 'compete in a city wide market for higher achieving students' (Hastings, 2005). Such schools may be drawing students from inner and middle ring suburbs despite the presence of local alternatives.

Brisbane State High School, Queensland's largest state secondary school, is an example of a high-demand state school with a reputation for academic excellence which has experienced 'exceptional, unabated and unprecedented growth' in its school population over the past 5 years (DoE, 2017).

The school has a Selective Entry program for Academic, Sporting and Culture, available to students outside of the catchment, and at present has capacity to accommodate over 1000 selective entry students.

Highly desirable schools located in inner city areas can be an important factor for families considering higher density living in inner city areas. There is anecdotal evidence of parents moving into the inner city to specifically qualify for a school's local catchment.

School catchments and network optimisation

Brisbane's school catchment boundaries are used as a blunt tool to manage demand where capacity is limited. Available capacity may be limited at certain schools due to growth in resident student demand as well as the travel behaviour and attractor school issues touched upon above.

A more strategic approach to managing demand would be to use a network-based approach. For example, SGS has developed an approach to community facilities to optimise demand and supply. The optimised allocation model uses an algorithm to perform supply and demand analysis for community facilities. The algorithm allocates residents to the nearest available community facility until it reaches capacity, where it then allocates residents to the next closest, and continues until all capacity has been exhausted.

The results show in spatial detail areas where residents must travel long distances to find a facility with capacity, or where residents are left without because capacity has been exhausted. Although unlikely to represent the true travel pattern for all residents, this method effectively highlights the locations experiencing the most pressure.

4. MODELLING METHOD

This section outlines SGS's approach to the enrolment modelling process

The most recent edition of the QLD Government dwelling and population projections (referred to as QG) was published by the Queensland Government Statisticians Office (QGSO) in 2015, based on 2011 Census data. For this study SGS has taken these projections as the base case and updated them to reflect updated information about population change and urban development from the 2016 census, 2018 resident student numbers and other sources. SGS's modelling of dwellings, population and resident students is referred to as the SGS 2018 Revised Projections (referred to as SGS18).

The SGS18 Projections update the population and dwellings to 2018 and undertake sensitivity testing using a scenario based on a substantial but realistic shift in families with school aged children choosing state schools over non-government schools.

4.1 QGSO Base Case Forecasting Method

The primary forecasting method used by QGSO involves the construction of a detailed cohort component model at the larger SA4 level. A simpler cohort component model is used to estimate population growth at the SA2 level and involves:

- Applying a fixed migration probability by age group (derived from the place of usual residence five years ago in the 2011 Census) to calculate the net growth in each projection period.
- Applying a fixed mother-child ratio (derived from 2011 Census) to estimate the number of children aged 0 to 4 years at each projection period.
- Adjusting growth by incorporating planning assumptions sourced from the local government authority in 2014 around future development.
- Adjusting SA2 population figures to match the SA4 level projections.

Elements of this method have been adopted by SGS in order to update the resident student number projections as outlined below.

4.2 Update to 2018

Since the 2015 edition of the QGSO projections the full outputs of 2016 Census have been released, along with several updates to the planning for areas within the network. The SGS18 revisions use the new data and were created using a process similar to the QGSO projections and detailed in the method section below.

Data Sources

The following data sources were used to create the SGS18 revised projections:

FIGURE 12. DATA SOURCES

Source	Publication
ABS	Estimated resident population by SA2, age and sex 2016
ABS	2016 census, place of usual residence 5 years ago by SA2 and age
QGSO	Dwelling projections by SA2, 2015 edition
BCC	Brisbane City Council City Plan 2014 zoning and neighbourhood plan updates
ABS	2006, 2011 and 2016 census, type of institution attended by SA2 and age

Method

The following steps were undertaken to create the SGS18 revised projections:

1. **Establish the base:** The 2016 estimated resident population by five-year age group and SA2 were used as the base for the updated projections.

2. **Change through migration**: Migration probabilities by SA2 and age group were defined using the place of usual residence five years ago (from the 2016 Census) and applied to each projection period.

3. **Calculation of new development**: The number of additional dwellings projected by the QGSO at each time period was supplemented with an estimate of the additional dwelling development permitted by post-2014 changes to planning in areas including:

    - Kangaroo Point Peninsula Neighbourhood Plan (Draft)
    - Dutton Park-Fairfield Neighbourhood Plan
    - Coorparoo and Districts Neighbourhood Plan (Draft)
    - Yeronga Priority Development Area
    - City West Neighbourhood Plan
    - Newstead North Neighbourhood Plan
    - Albion Neighbourhood Plan
    - Bulimba Barracks Master Plan

4. **Change through dwelling development**: The maximum number of residents for each SA2 in each time period was calculated using the number of projected attached and detached dwellings, applying a constant ratio of residents to dwellings as recorded in the 2016 Census.

5. **Alignment of migration and planned development**: The projected population change from migration was scaled to reflect the population accommodated in planned development.

6. **Conversion of population to resident student numbers:** Ratios calculated from the 2016 population by age by institution type (e.g. government, catholic and other non-government schools) were applied at each projection period to estimate the resident student population in each SA2.

7. **Rebasing to actual RSN:** The RSN projections derived from census data were rebased to the actual 2018 RSN recorded by the Department of Education. It was found the projections underestimated the number of students in most SA2s. The difference between the 2018 actuals and expected 2018 students was carried through as a constant for each subsequent projection period.

8. **Smoothing outliers:** The underlying migration rates of the Eagle Farm – Pinkenba SA2 were adjusted to reflect the average for inner Brisbane in order to correct for variability caused by a small initial population. The number of 10-14-year-old children moving into inner Brisbane was lowered slightly in subsequent projection years to adjust for a spike in the 2011-2016 rates.

9. **Sensitivity testing:** Two scenarios were produced through increasing the proportion of students attending a state school, reflecting an expected increase in the market share of state schools as private institutions in the inner city fill up.

   Scenario One

   - **Primary students:** The state share of students was increased by 2 percentage points in the first projection period of 2023, and then by 1 percentage point for each subsequent period.
   - **Secondary students:** The state share of students was increased by 1 percentage points in the first projection period of 2023, and then by 0.5 percentage point for each subsequent period.
   - This scenario redistributes forecasted resident students in the SGS18 scenario from private schools to state schools and assumes no uplift in resident students. Where the above methodology results in an uplift in resident student numbers, the results were prorated across Inner Brisbane to ensure no resident student uplift was present.

   Scenario Two

   - **Primary students:** The state share of students was increased by 4 percentage points in the first projection period of 2023, with the increase dropping by 1 percentage point for each subsequent period (i.e. 3 percentage points in the second projection period, 2 percentage points in the third projection period, and 1 percentage point in the fourth projection period).
   - **Secondary students:** The state share of students was increased by 2 percentage points in the first projection period of 2023, with the increase dropping by 0.5 percentage point for each subsequent period (i.e. 1.5 percentage points in the second projection period, 1 percentage point in the third projection period, and 0.5 percentage points in the fourth projection period).
   - Where the above methodology results in a negative number of private school resident student numbers, it is assumed there will be zero private school resident students. All students are assumed to attend a state school.
   - This scenario redistributes forecasted resident students in the SGS18 scenario from private schools to state schools and assumes no uplift in resident students. Where the above methodology results in an uplift in resident student numbers, the results were prorated across Inner Brisbane to ensure no resident student uplift was present.

   The above methodology and selected percentage point changes were estimated based on historical state share of students obtained from the Australian Bureau of Statistics Census Data. Historically, primary student state share on average changed by between 2 and 5 percentage points per 5-year period. In contrast, secondary student state share on average changed by between 0.5 and 2 percentage points per 5-year period.

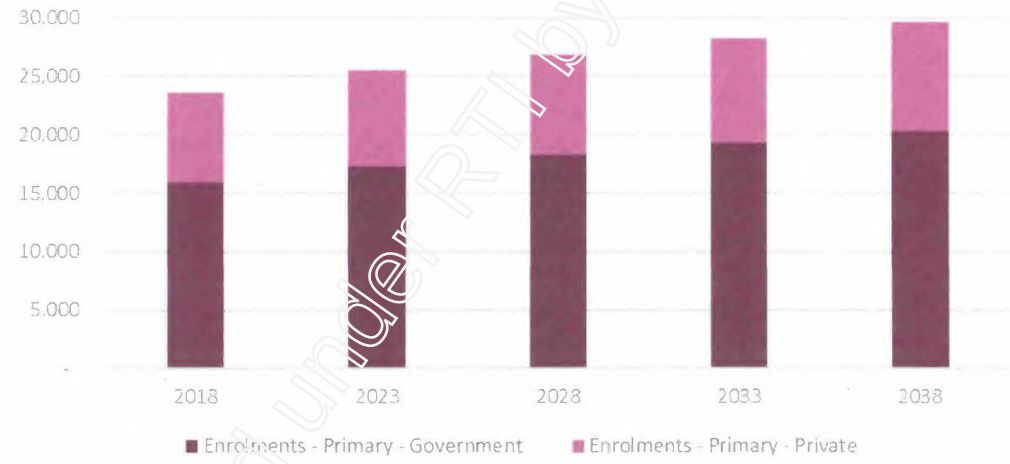
5. MODELLING RESULTS

This section presents an overview SGS's modelling results

5.1 Resident students

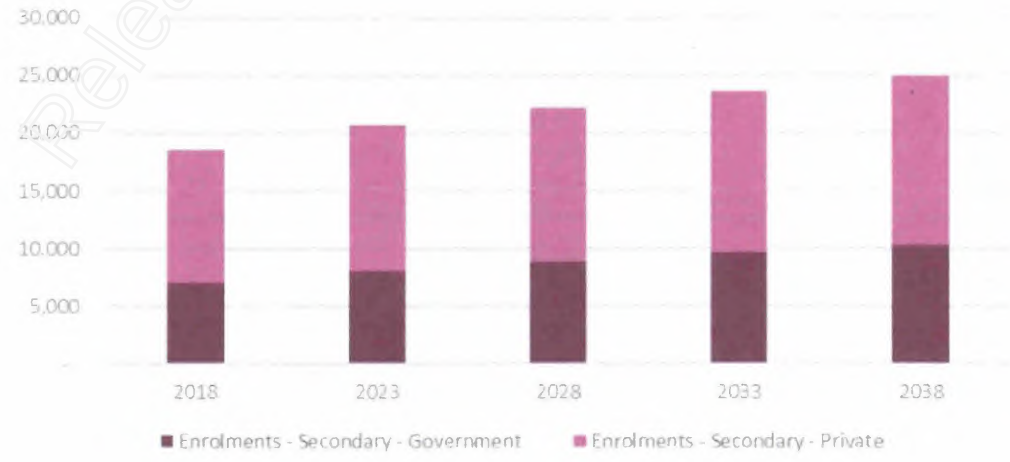
SGS has projected resident students for Inner Brisbane. As illustrated below (Figure 13 and Figure 14) , a broad trend of strong growth in demand for primary and secondary resident students is apparent from students living in all inner areas. Preference for higher density living closer to employment, facilities and services results in the growth of school students in the inner Brisbane study area.

FIGURE 13: SGS18 INNER BRISBANE RESIDENT PRIMARY SCHOOL STUDENTS



Source: SGS Economics and Planning 2018

FIGURE 14: SGS18 INNER BRISBANE RESIDENT SECONDARY SCHOOL STUDENTS

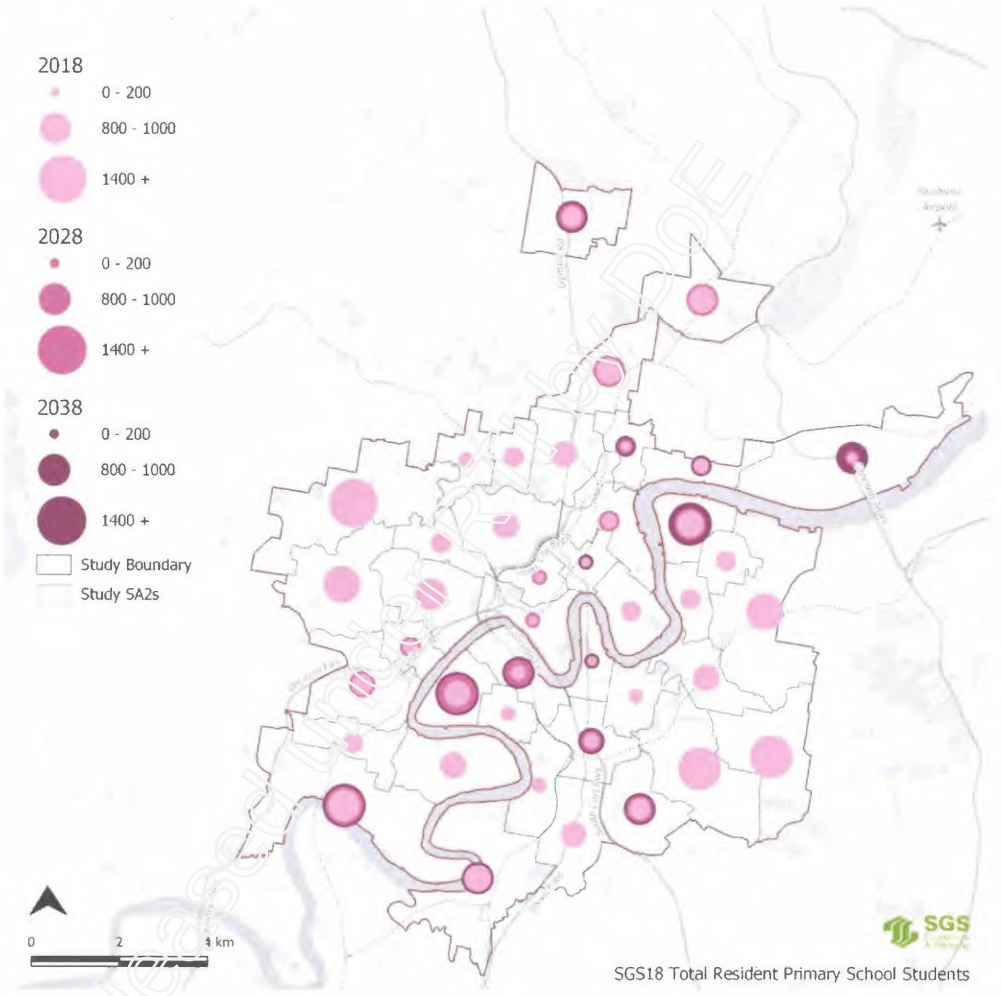


Source: SGS Economics and Planning 2018

The growth in resident student numbers is not predicted to be evenly distributed across the study area.

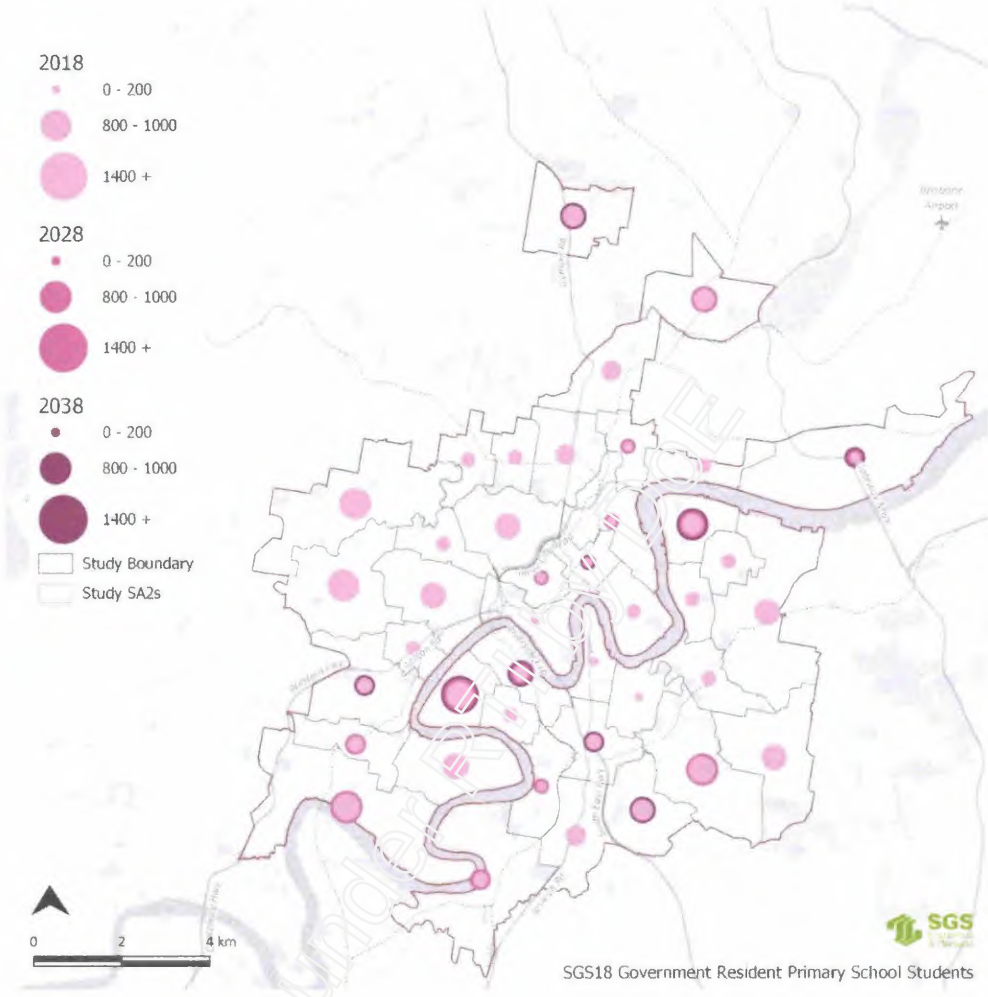
Figure 15 shows projected growth in primary school students across the study area, aligning with anticipated dwelling development in areas including South Brisbane, Coorparoo, Bulimba Barracks and Newstead. Figure 16 shows the expected number of government state school students should the current state market share be maintained.

FIGURE 15: SGS18 TOTAL RESIDENT PRIMARY SCHOOL STUDENTS



Source: SGS Economics and Planning 2018

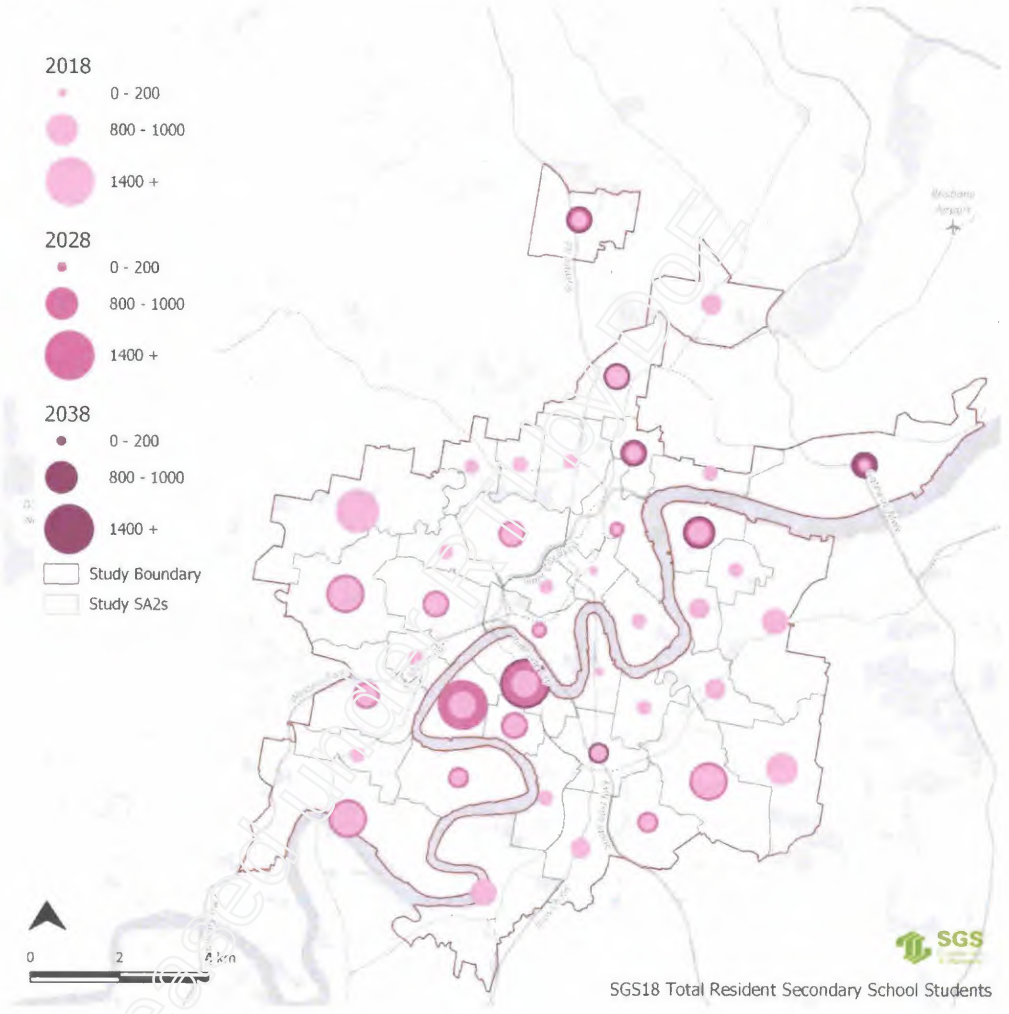
FIGURE 16: SGS18 GOVERNMENT RESIDENT PRIMARY SCHOOL STUDENTS



Source: SGS Economics and Planning 2018

Figure 17 shows projected growth in secondary school students across the study area, again aligning with anticipated dwelling development in areas including West End and South Brisbane, Coorparoo, Bulimba Barracks and Newstead. West End and South Brisbane show particularly strong predicted growth in Secondary students assuming continued high levels of migration into the area by people within this group as experienced between 2011 and 2016.

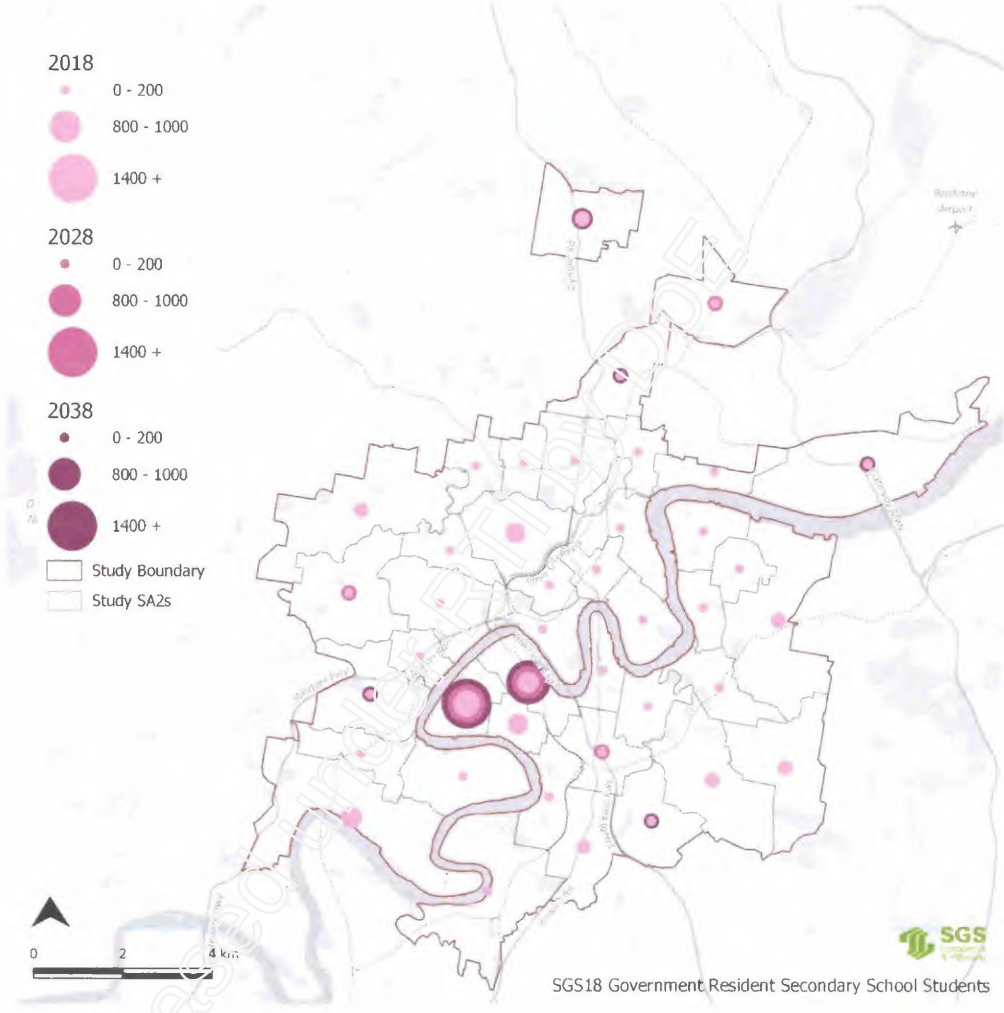
FIGURE 17: SGS18 TOTAL RESIDENT SECONDARY SCHOOL STUDENTS



Source: SGS Economics and Planning 2018

Figure 18 shows the expected number of government state secondary school students should the current state market share be maintained. This map highlights particular pressure in the inner south of the city where a large proportion of school aged residents attend the local state high school.

FIGURE 18: SGS18 GOVERNMENT RESIDENT SECONDARY SCHOOL STUDENTS



Source: SGS Economics and Planning 2018

5.2 Comparisons to QGSO 2015 projections

Figure 19 shows the comparison between the SGS18 rebased projections and the QGSO 2015 edition projections for each 5-year age group in the inner Brisbane area. These charts show that the actual growth in school aged children within inner Brisbane areas in 2018 has been higher than anticipated, and is predicted to be between 1,000 and 2,000 more people for each age group by 2038 higher for each age group than previously forecast. Assuming continuation of recent migration trends, trends the SGS18 projections predict a faster increase in the proportion of children living within Inner Brisbane.

FIGURE 19: SGS18 V. QGSO POPULATION BY AGE PROJECTIONS

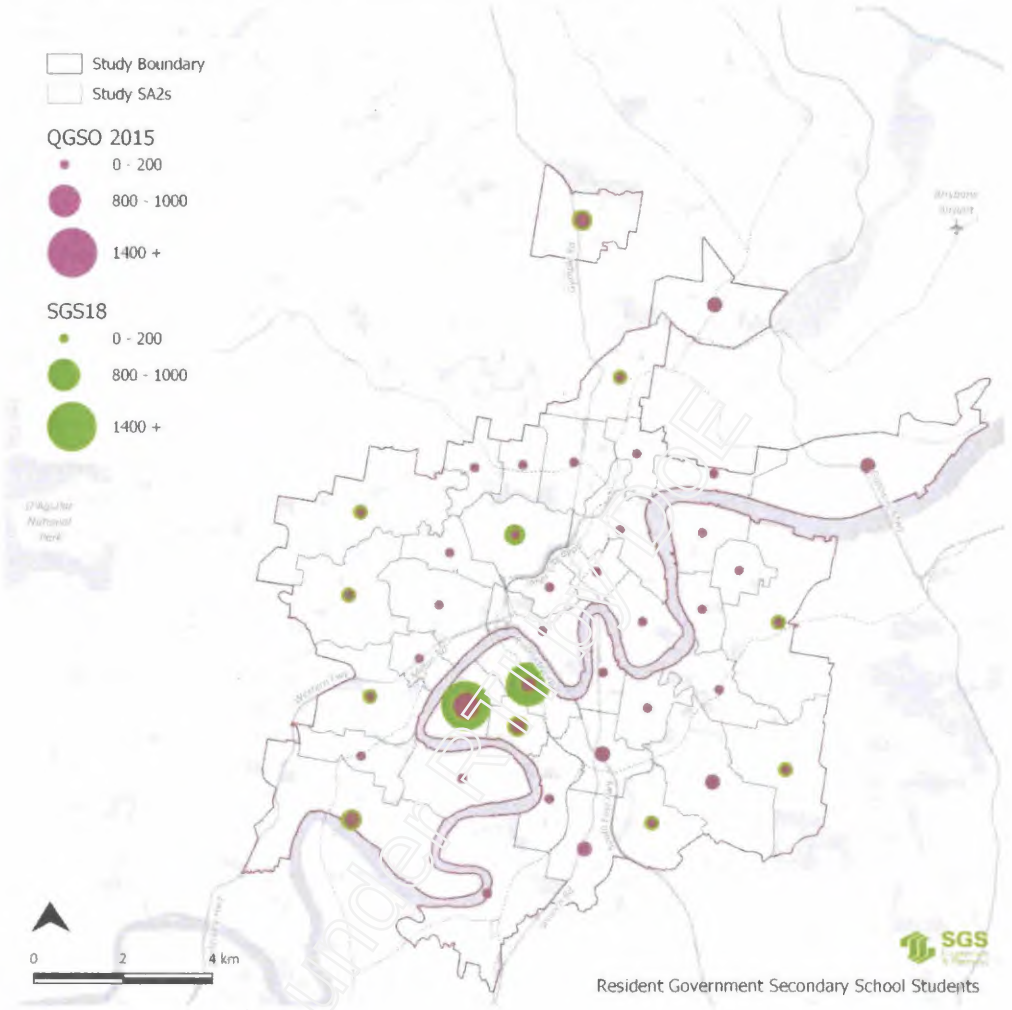
Source: SGS Economics and Planning 2018

Assuming the current state share of students and migration by age pattern continues, Figure 20 and Figure 21 show the differences in projected resident students by SA2 in Inner Brisbane. Figure 20 shows that the SGS18 forecasts predict a higher number of primary school students than the previous QGSO forecasts, particularly in the inner west of Brisbane. Figure 21 similarly show that the SGS18 forecasts predict a higher number of secondary school students than the previous QGSO forecasts but, concentrated in the inner south.

FIGURE 20: SGS18 V. QGSO FORECAST RESIDENT PRIMARY SCHOOL STUDENTS 2038

Source: SGS Economics and Planning 2018

FIGURE 21: SGS18 V. QGSO FORECAST RESIDENT SECONDARY SCHOOL STUDENTS 2038



Source: SGS Economics and Planning 2018

5.3 Sensitivity testing

Investigations into student enrolment growth in the inner south area of the city showed that an increase in the proportion of students attending state schools, rather than development, in that area was the biggest driver of higher than anticipated enrolment growth.

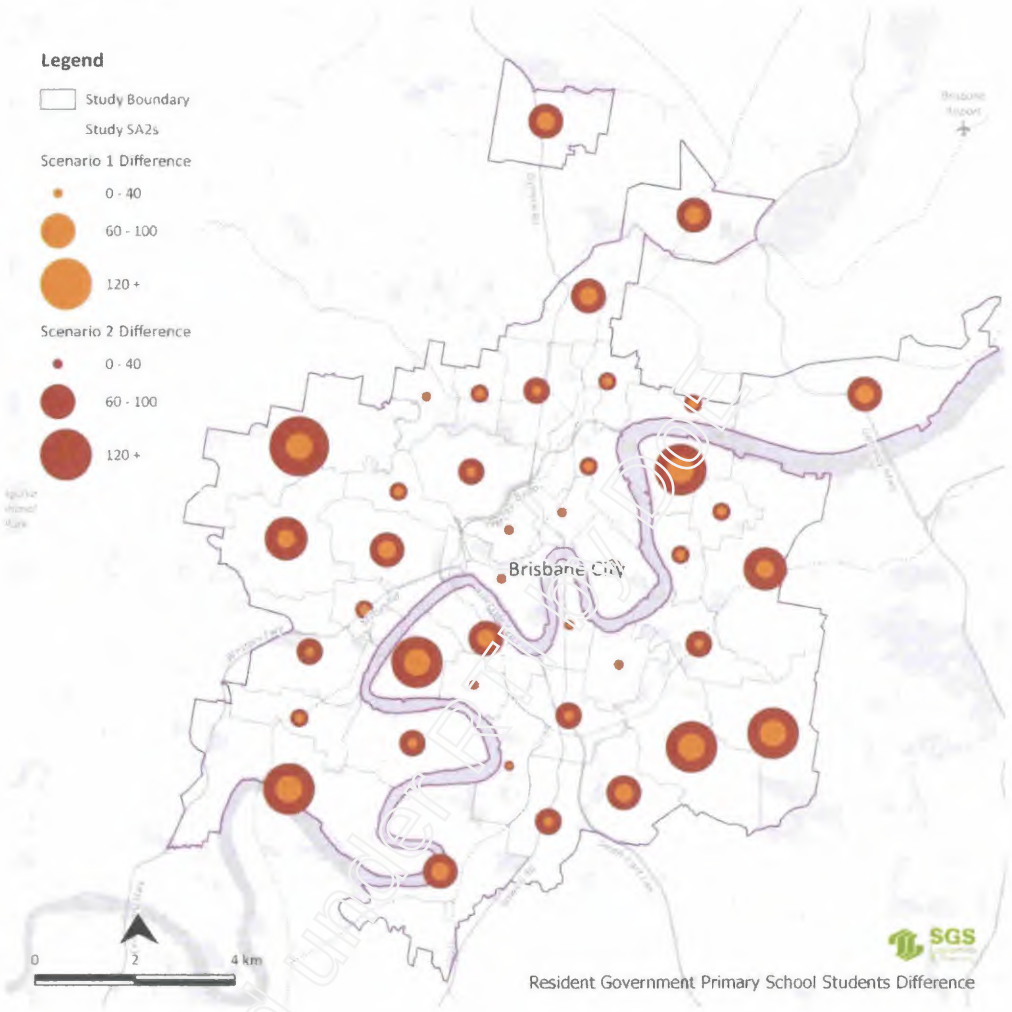
Applying these findings, the figures below illustrate two additional scenarios (as outlined in section 4.2) where the proportion of resident school students attending a state school is increased slightly though the projection periods.

Scenario 1 focuses on a medium level of growth in resident student numbers within Inner Brisbane. Under this scenario, the state share of students is initially expected to increase at a moderate level (compared with historical changes to state share), and then is expected to stabilise at a lower level for the remainder of the projection period. It is assumed that a moderately strong student enrolment growth within parts of Inner Brisbane will drive these high state shares in the future.

Scenario 2 focuses on a high level of growth in resident student numbers within Inner Brisbane. Under this scenario, the state share of students is initially expected to increase at a high level (compared with historical changes to state share), and then is expected to slowly decline for the remainder of the projection period towards a moderate level by 2036. It is assumed that a strong student enrolment growth within parts of Inner Brisbane will drive these high state shares in the decades to come.

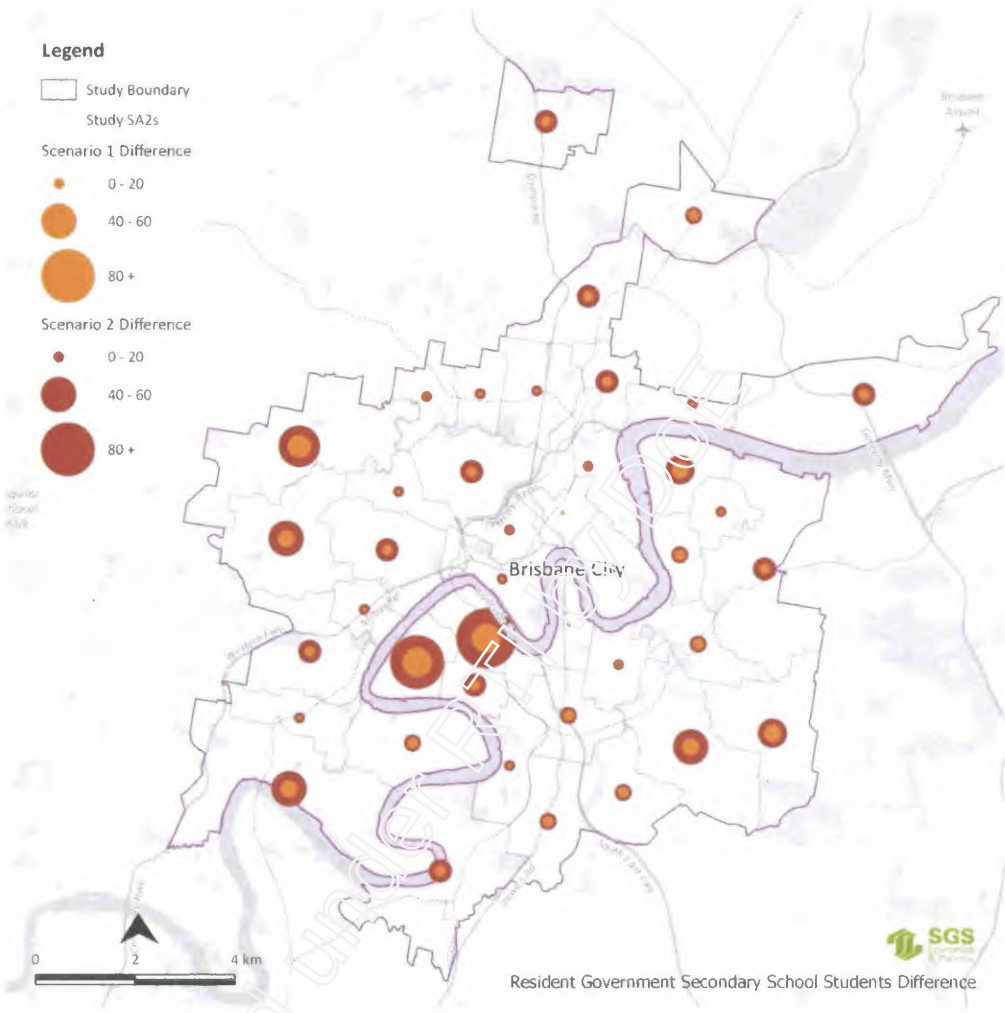
Figure 22 and Figure 23 illustrate the difference in predicted resident primary and secondary school student numbers in inner Brisbane respectively, for both scenarios in comparison to SGS18. Both figures illustrate that resident student numbers are moderately higher than SGS18 in Scenario 1 by 2038, and significantly higher than SGS18 in Scenario 2 by 2038.

FIGURE 22: SCENARO 1 V. SCENARIO 2 – DIFFERENCE IN FORECAST RESIDENT PRIMARY SCHOOL STUDENTS WITH SGS18, 2038



Source: SGS Economics and Planning 2018

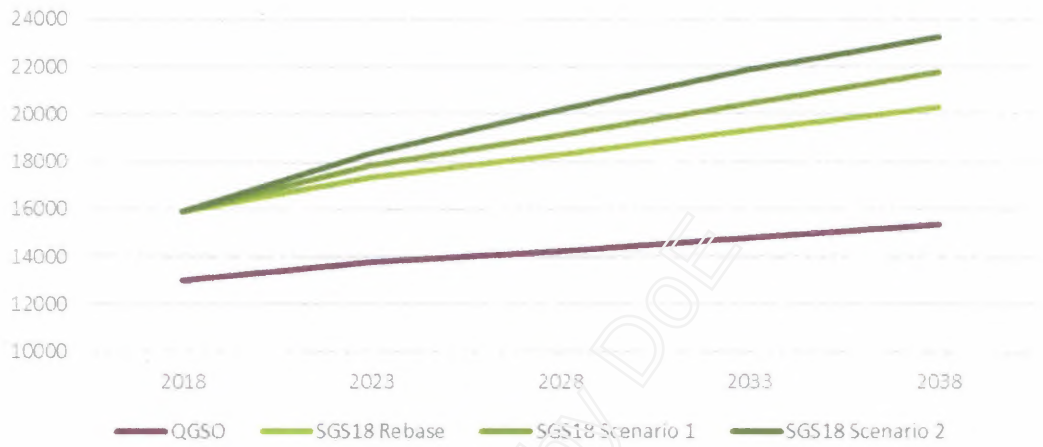
FIGURE 23: SCENARO 1 V. SCENARIO 2 – DIFFERENCE IN FORECAST RESIDENT SECONDARY SCHOOL STUDENTS WITH SGS18, 2038



Source: SGS Economics and Planning 2018

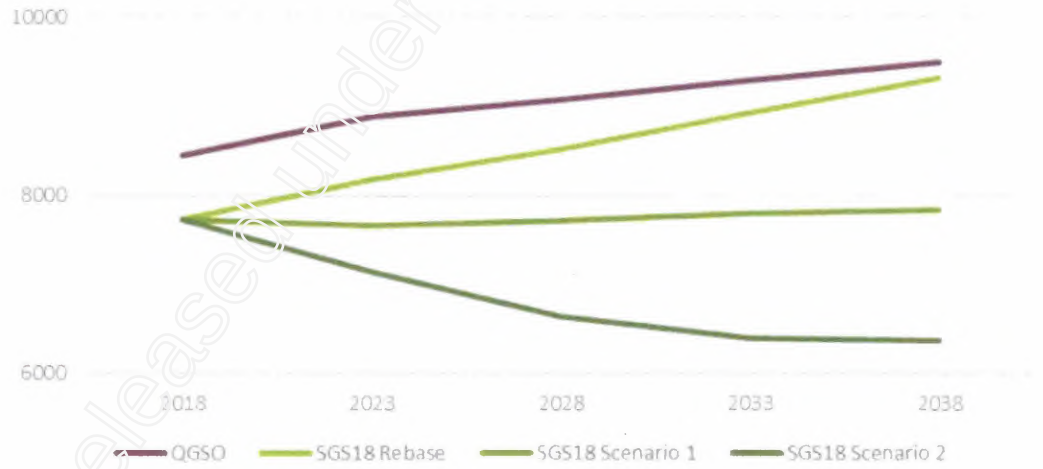
Figure 24 and Figure 25 show predicted resident primary school student numbers in inner Brisbane should the state share of students increase, with a difference of about 2,000 students between the low and high state share scenario at 2038.

FIGURE 24: RESIDENT GOVERNMENT PRIMARY STUDENT SCENARIOS



Source: SGS Economics and Planning

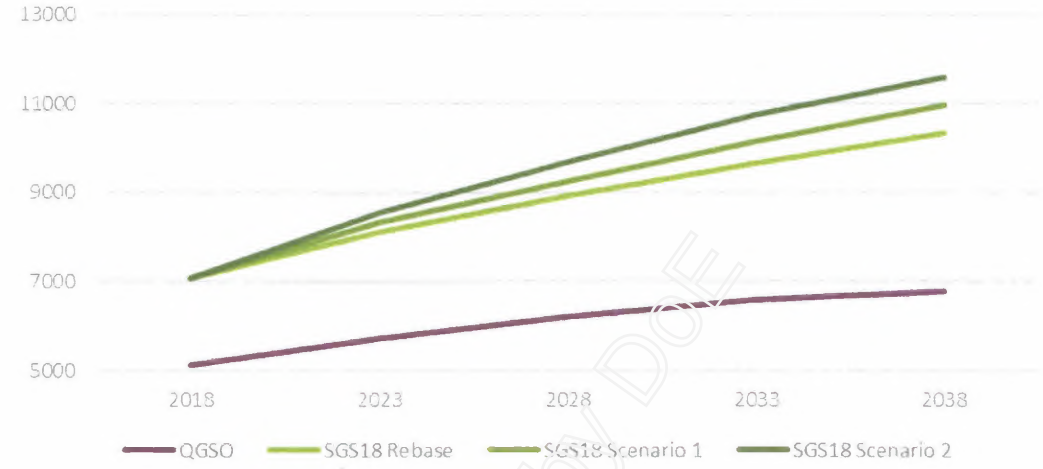
FIGURE 25: RESIDENT PRIVATE PRIMARY STUDENT SCENARIOS



Source: SGS Economics and Planning

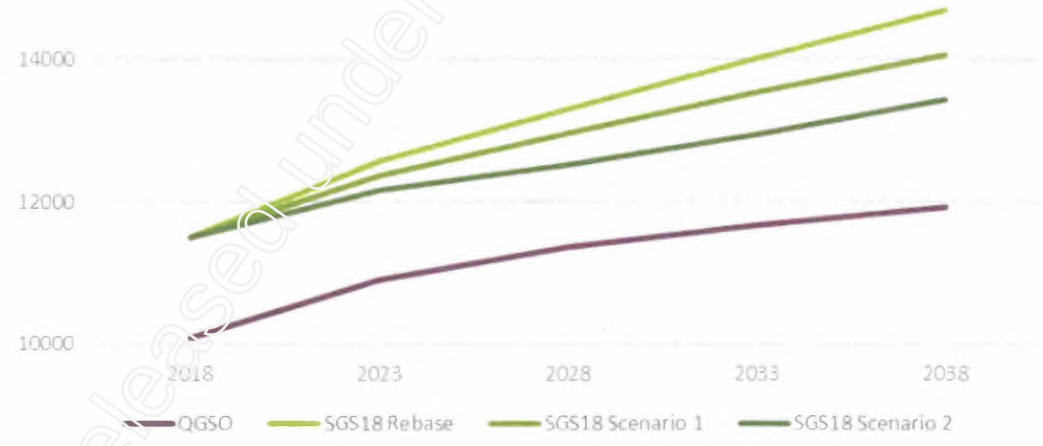
Figure 26 and Figure 27 similarly show predicted resident secondary school student numbers in inner Brisbane should the state share of students increase, with a difference of about 2000 students between the low and high state share scenario at 2038.

FIGURE 26: RESIDENT GOVERNMENT SECONDARY STUDENT SCENARIOS



Source: SGS Economics and Planning

FIGURE 27: RESIDENT PRIVATE SECONDARY STUDENT SCENARIOS



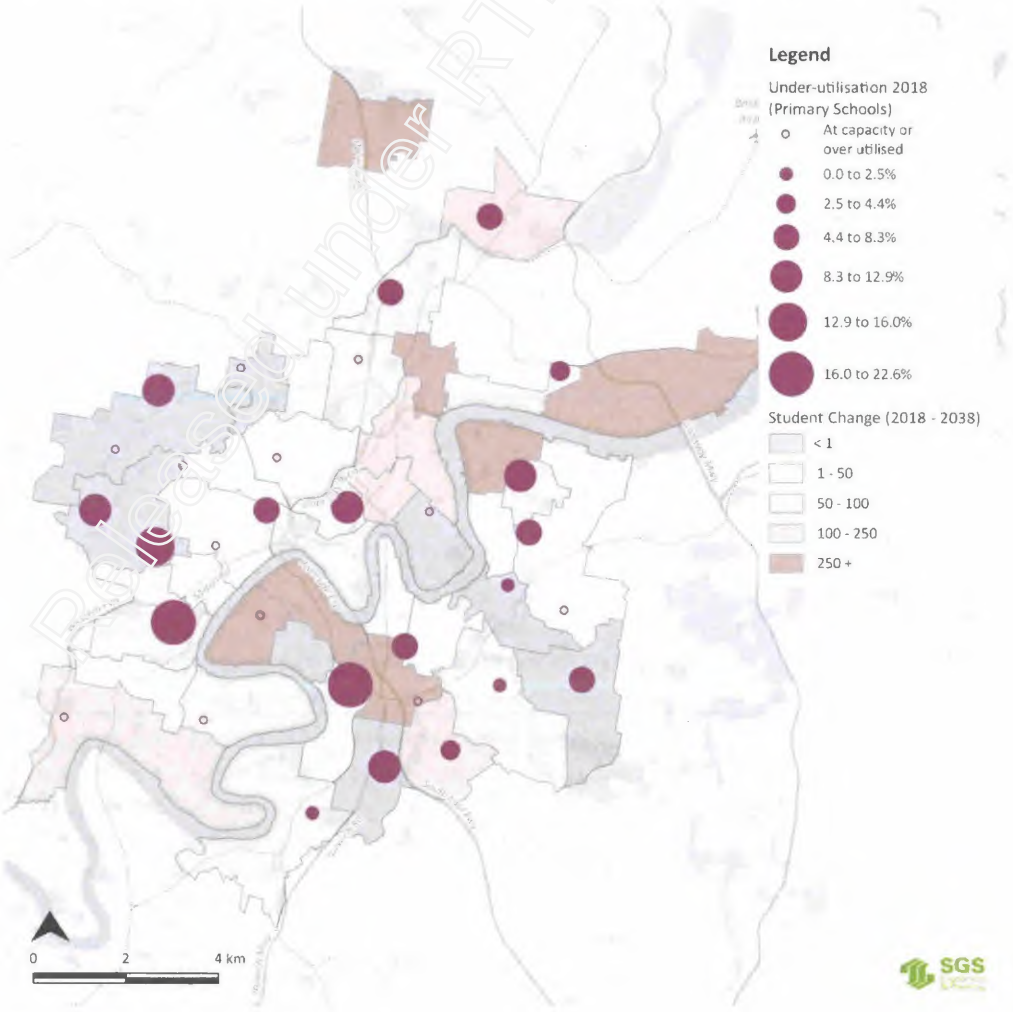
Source: SGS Economics and Planning

6. INFRASTRUCTURE IMPLICATIONS

The proceeding modelling and analysis focuses on the demand side; of school students by place of residence. This section covers some of the key supply side issues including pressure on the network of school assets.

Figure 28 shows current primary school utilisation (i.e. proportion of spare capacity against enrolments at 2018) superimposed on a predicted change in resident students by SA2. This map shows that whilst there is capacity within the system, some areas where student numbers are predicted to grow, such as Indooroopilly and West End do not have additional capacity. Interestingly, some areas where capacity is exhausted are surrounded by schools with substantial excess capacity, for example, Woolloongabba and surrounds.

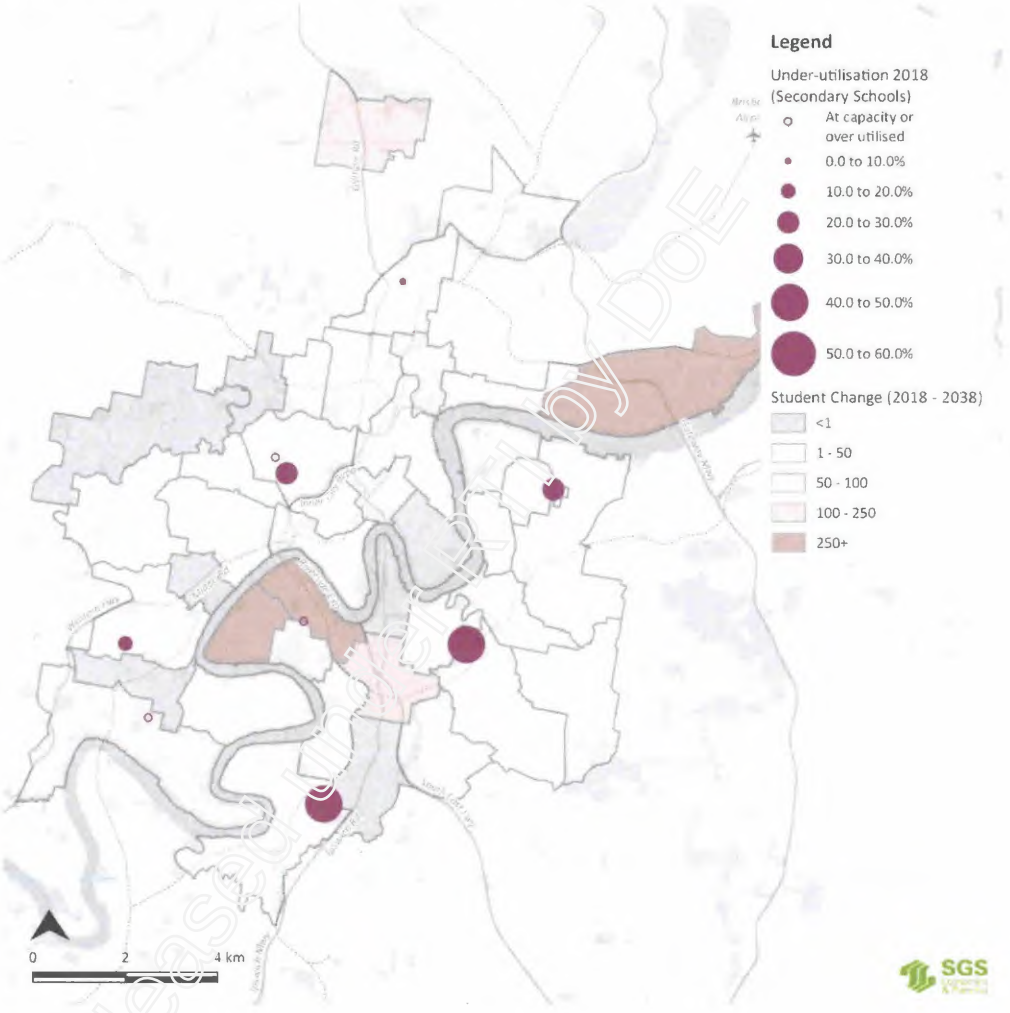
FIGURE 28: CHANGE IN RESIDENT STUDENTS 2038 AND CURRENT PRIMARY SCHOOL CAPACITY



Source: SGS Economic and Planning 2018

Figure 29 shows current secondary school utilisation (at 2018) superimposed on a predicted change in resident students by SA2. This map shows that there is limited capacity within the system with pressure in the West End/South Brisbane and Newstead inner north areas of Brisbane. within the system.

FIGURE 29: CHANGE IN RESIDENT STUDENTS 2038 AND CURRENT SECONDARY SCHOOL CAPACITY



Source: SGS Economic and Planning 2018

It is important to note that inner Brisbane is not a self-contained system, with a net inflow of students from outside the area commuting to inner Brisbane schools, especially for Secondary School.

22% of students at inner Brisbane primary schools come from outside the defined area, although the proportion of students is greater for those schools at the edge of the inner Brisbane area. This proportion increases to 54% for inner Brisbane secondary schools, although again it is noted that this proportion is higher for schools at the edge of the study area and that the study area does not align precisely with school catchments.

7. CONCLUSION

This SGS study has explored how changing patterns in the way Brisbane is structured, economically, demographically, and spatially, is impacting the demand for schools in areas around the Brisbane CBD.

We found that Brisbane's economy is becoming increasingly concentrated in high value services, services which put a premium on spatially clustering with like minded firms. Related to this is the revitalisation of greyfield sites close to Brisbane's CBD, with the residential urban form in these areas becoming increasingly dense. After decades of exile in outer suburbs, people and, significantly, families are returning to live in these inner city areas. They value the lifestyle this affords them, with convenient commutes, access to restaurants and cafes, open space, and good schools.

SGS has studied the extent of these shifts, primarily through the changes occurring between the 2011 and 2016 Census. Subsequently, we have updated the 2015 QGSO population projections to create projections which better align with recent trends. Our work has found that if these recent trends persist over the next two decades, there could be demand for an additional 6,000 school places in inner Brisbane, compared to what QGSO projected in 2015. This demand could be even higher if the share of parents choosing state schools over private schools increases, as we have postulated in our scenarios.

A suggested area for further work is exploring how DoE's infrastructure network could be optimised to meet student demand. When a particular school is experiencing capacity pressures, it is not always necessary to invest in a completely new school. A network optimisation framework could help meet demand in a strategic way.

SGS notes that towards the final stages of this project, in late 2018, QGSO released updated population projections. A comparative study and update to the 2018 SGS work could be another stream of future work.

FIGURE 30: BRISBANE'S FIRST VERTICAL SCHOOL – INNER CITY NORTH STATE SECONDARY COLLEGE

Source: Cox Architecture

APPENDIX 1 – STUDY AREA

Study Area SA2 List

SA2 Code	SA2 Name
303021053	Coorparoo
303021054	Fairfield - Dutton Park
303021052	Annerley
305021117	Morningside - Seven Hills
305021118	Norman Park
305021115	East Brisbane
305021116	Hawthorne
303011047	Camp Hill
305021113	Balmoral
305021114	Bulimba
305011111	Spring Hill
305011112	West End
303021059	Yeronga
305031126	Kelvin Grove - Herston
303021058	Woolloongabba
303021055	Greenslopes
305031124	Hamilton (Qld)
305031119	Albion
305041133	Auchenflower
305041134	Bardon
305031131	Wooloowin - Lutwyche
305041132	Ashgrove
305031129	Wilston
305031130	Windsor
305031127	Newmarket
305031128	Newstead - Bowen Hills
305041137	Toowong
305041135	Paddington - Milton
305041136	Red Hill (Qld)
302021028	Chermside
304031094	Indooroopilly
302031037	Eagle Farm - Pinkenba
304031097	Taringa
304031096	St Lucia
305011109	New Farm
305011110	South Brisbane
305011107	Highgate Hill
305011106	Fortitude Valley
305011108	Kangaroo Point
302031040	Nundah
305011105	Brisbane City

APPENDIX 2 – COMPARISON WITH PREVIOUS STUDY

Comparison between SGS17 and SGS18

In mid-2017 SGS was engaged by the department to prepare an analysis of resident school students in the inner areas of Brisbane. This analysis involved adjusting the official QGSO 2015 edition projections to create alternative forecast scenarios called SGS17. This edition was prepared prior to the release of the 2016 census data. The release of 2016 census data enabled SGS to update a greater range of factors in the preparation of SGS18. Census data is considered more reliable than population estimates (ERP) produced between census years.

The key differences between the approached used for the analysis are outlined below:

Study area

The inner Brisbane study area for SGS17 was smaller than the SGS18 edition with 27 rather than 41 SA2s covered.

Forecast period

The SGS18 projections are rebased to 2018 rather than 2016 and are produced in 5 year time intervals from this point.

Population base year

SGS17 utilised the pre-census 2016 ERP numbers whilst SGS18 used post-census numbers.

Age profile and migration

SGS17 estimated the change to age profile of inner Brisbane areas in reference to inner city suburbs of Sydney and Melbourne. SGS18 utilises the 2011 – 2016 SA2 migration rates by age group from the 2016 census.

Dwelling development

SGS17 estimated future development by adjusting QGSO dwelling projections through extrapolation of recent dwelling approval trends. SGS18 identifies planning scheme changes since the QGSO dwelling projections were produced and adds dwellings to future years in accordance with the additional capacity created.

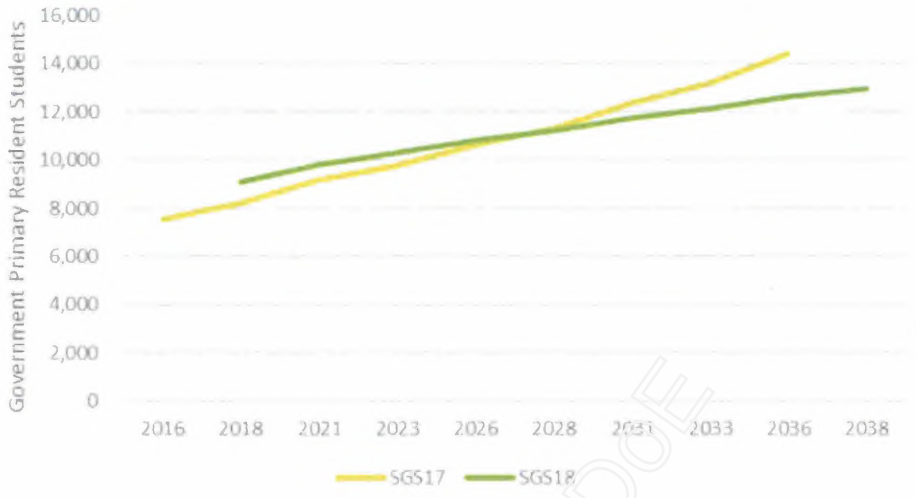
Scenarios

Sensitivity testing through SGS17 scenarios was principally based on adjusting for an underestimate of school students in the pre-census ERP. This issue is resolved with the release of 2016 census data. Instead scenarios in SGS18 are created by adjusting the state-share of resident students in the future following a case study analysis undertaken for selected SA2s in the inner-west which identified the increasing state share of students as the primary factor driving higher than anticipated enrolment growth.

Charts

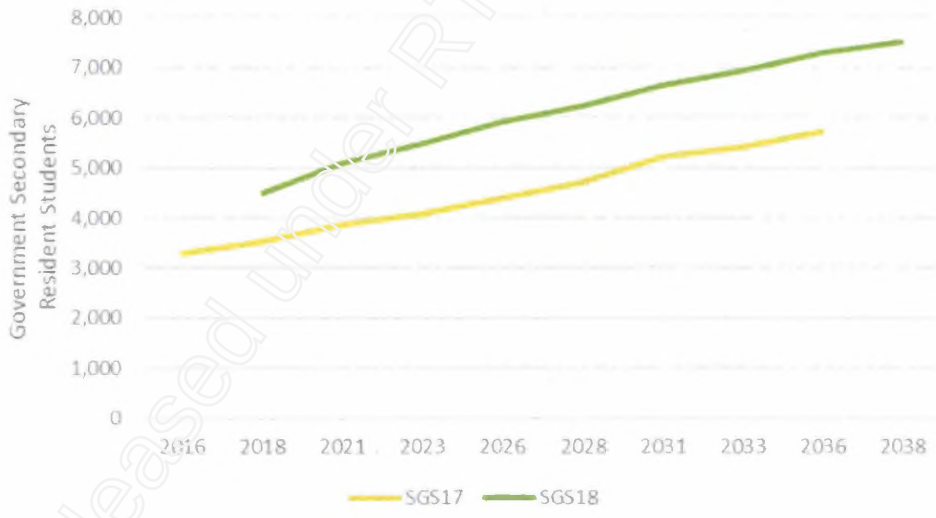
Figure 31 and Figure 32 compare the two-projection series. For these charts SGS18 has been limited to the smaller area of the 2017 study to allow for direct comparison. The SGS18 shows an initial underestimate of both secondary and primary students whilst growth in primary school students is slower than previously predicted based on the latest migration data.

FIGURE 31: SGS17 V. SGS18 RESIDENT PRIMARY SCHOOL STUDENTS



Source: SGS Economic and Planning 2018

FIGURE 32: SGS17 V. SGS18 RESIDENT SECONDARY SCHOOL STUDENTS



Source: SGS Economic and Planning 2018

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