Population & Growth Scenarios: Geelong Settlement Strategy

Amendment C395

October 2019

Expert Evidence Statement
Amendment C395

Jeremy Reynolds
Demographer: Spatial Economics Pty Ltd

Instructed by Harwood Andrews Lawyers

Spatial Economics

29/10/2019

Final Version 1.3

Spatial Economics Pty Ltd

ABN: 56 134 066 783

www.spatialeconomics.com.au

info@spatialeconomics.com.au

CONTENTS

1.0 Summary of findings 4
2.0 Introduction 5
3.0 The scope of this witness statement 5
4.0 Long term growth trends 5
5.0 The drivers of growth 10
6.0 Population projections for Geelong 11
7.0 Development of growth scenarios for Greater Geelong 13
8.0 Issues raised in submissions 15
APPENDIX A: REQUIREMENTS OF PLANNING PANELS VICTORIA – EXPERT EVIDENCE 16

1.0 Summary of findings

Population growth does not have a linear relationship with amounts of dwelling construction. But in the long term, population growth is by far the most significant contributor to growth in the underlying demand for housing. Economic cycles often lead to short term cycles in development activity, but in the long term, there are quite consistent trends in the relationship between population and household and households and dwellings. So, the focus here is on long term population growth and its impact on demand.

At the outset, in 2016, there appeared to be a clear picture of population growth for Greater Geelong. Population growth was rising up to above 1.5% per year. State Government projections and projections Commissioned by Council each projected annual growth of around 1.6% per year. Meanwhile G21 adopted the aspiration of raising annual growth to 2.5%.

Over the last three years those perspectives have had to be modified. ABS population estimates published in 2016 and 2017 showed that annual population growth was increasing rapidly, above 2%. ABS estimates at that time used the 2011 census as a base. Following the release of the 2016 census, Victoria's and Greater Geelong's estimates were revised upwards, in Geelong's case by over 4,000 people. Over the last two years annual growth rates has stabilised at around 2.6%.

There is always volatility with population change, much of it due to external factors. There is always uncertainty about the future, particularly when looking at smallish areas and looking decades ahead. Consequently, Spatial Economics' advice was to adopt an anticipated growth rate but also bear in mind that growth could be faster or slower – ie be prepared for ongoing monitoring, flex plans according to circumstances.

After adjustments for new trends, Spatial Economics recommended three scenarios - a high growth scenario of 2%, an aspirational one of 2.5% and a surge growth one of 3%. 2.5% was the preferred view and corresponded closest to current trends. Lower scenarios (based on 1.3% and 1.6% annual growth) were abandoned owing to the changed circumstances. For each, we calculated underlying demand for dwellings and impacts on land availability.

Given Greater Geelong's dynamism it will be appropriate to closely monitor future annual population estimates and dwelling activity.

2.0 Introduction

In 2016, I became a member of the Spatial Economics team consulting for the City of Greater Geelong on the development of the Settlement Strategy. Through the latter half of 2016 and most of 2017 I was involved in preparing background papers on the prospects and scenarios for future growth and development, in preparing our recommendations regarding the Settlement Strategy to present findings to Council staff and other stakeholders.

This work was somewhat constrained by the impending release of 2016 census data in the latter half of 2017. Census data and the subsequent revision of population estimates always had the potential to offer new perspectives on growth and its direction. And so it proved. I worked on an addendum report and the modification of growth scenarios into the first half of 2018.

3.0 The scope of this witness statement

Spatial Economics was commissioned to provide advice to the City of Greater Geelong on the Settlement Strategy. A critical part of any strategy is for there to be fifteen years supply of developable land. This raises questions about the extent of future growth of the City and how much and when additional developable land will be needed to maintain fifteen years' supply.

The link between population growth and dwelling construction is not linear. Population growth, however, creates an underlying demand for housing. Factors such as economic cycles impact on the take up of that demand and in a city such as Greater Geelong there is the role of the second homes market. Population growth leads to household formation and that in turn leads to the demand for additional dwellings. In the long term, there are consistent trends in those relationships. So the focus here is on the likely and possible magnitude of long term population growth and its subsequent translation into dwelling demand.

The tasks I have been involved in the background work to the Amendments were as follows:

1. Analysing long term demographic trends
2. Analysing the drivers of change
3. Reviewing existing projections for Greater Geelong
4. Specifying Spatial Economics view of Greater Geelong's future growth prospects.
5. Developing alternative scenarios as a strategic management tool to allay for uncertainty about rates and amounts of future growth
6. Providing an addendum following the release of 2016 census results in order to review tasks 1-5.

4.0 Long term growth trends

While the Settlement Strategy focussed on the time through to 2036, it was necessary to consider what might happen beyond that, to the middle of the century. In order to retain fifteen years supply of developable residential land, Spatial Economics needed to consider the potential size of the population and the number of households and dwellings that would generate in 2051.

Population is linked to housing demand through households, an individual or group of people inhabiting a private dwelling with common living arrangements. Population growth coupled with household formation drives the long term demand for dwellings.

Data such as the Census gives us detailed information on past patterns of household formation. These patterns have changed significantly in Australia over the last 50 years as a result of a combination of demographic, social and economic factors. For example:

- the ageing of the population has contributed significantly to an increase in the percentage of one and two person households;
- social trends have seen higher rates of marriages breaking up resulting in greater numbers of lone person households and single parent families; and
- economic pressures, including the increasing cost of housing, have children leaving home later and returning more commonly.

Sometimes these types of factors are connected in complex and difficult to forecast ways. We see more people travelling and a generally more mobile populace. People change jobs more frequently. They commute longer distances partly because many people now have more flexible work patterns. Young adults spend longer periods in formal education and with many returning to advanced education during their working lives.

While demand for housing is underpinned by population growth, there are a large variety of different components of this macro level demand that mean that the supply solutions required to meet this demand are far from simple or homogeneous.

Generally speaking, macro level demand, which is sometimes referred to as 'underlying demand' for housing is driven by population growth – a combination of natural increase and migration. This demand is looking for supply locations, reflecting the different requirements that different households have. Some seek space at the expense of accessibility. Other have the opposite preferences.

Economic conditions and changing cultural traits have profound effects on the propensity of populations to form households of different types and to buy or rent housing.

Average household sizes in Australia and Victoria have been declining for over a hundred years mostly due to declines in fertility rates and to long term ageing of the population. The recent economic and social changes described above have now led to a considerable slow-down in that decline.

To make an assessment of Greater Geelong's potential size thirty five years ahead, an analysis of Greater Geelong's growth over the last twenty five years (with time series data) and the lessons learned from that, is pertinent.

The following table shows the historical population rates of Greater Geelong as published by the ABS at the time the initial work on the Settlement Strategy was being undertaken:

Table 1: Estimated Resident Population, Preliminary – 1991 to 2016

Year	Estimated Resident Population	Five year av. annual growth rate
1991	181,277	
1996	183,534	0.2%
2001	191,534	0.9%
2006	201,495	1.0%
2011	215,837	1.4%
2016	235,390	1.7%

Source: Australian Bureau of Statistics

The table shows the ongoing recovery of Geelong from the early 1990s when it, and Victoria's economy, were going through a sharp downturn, with low levels and shares of overseas migration and significant losses of population interstate. It became evident that, when the ABS published its first 2016 population estimates in April 2017, that Greater Geelong's population growth was recovering strongly:

Table 2: Estimated Resident Population, Preliminary - Annual, 2011 to 2016

Year	Estimated Resident Population	Annual growth	Annual growth rate
2011	215,837		
2012	218,125	2,288	1.1%
2013	221,290	3,165	1.5%
2014	224,906	3,616	1.6%
2015	229,420	4514	2.0%
2016	235,340	5920	2.6%

Source: Australian Bureau of Statistics

Bear in mind here, that both the State Government Victoria in Future population projections and i.d Consulting projections for the City of Greater Geelong (reviewed below) being used by the City of Greater Geelong (and others) were prepared without the benefit of the 2016 estimates.

The understanding of Greater Geelong's (and incidentally Victoria's) growth became clearer following the release of 2016 census data and the subsequent revision of population estimates. The ABS found that the previously published 2016 population had under-estimated Victoria's population by over 100,000 and Greater Geelong's by over 4,000.

The revised 2012-2016 estimates plus the subsequent 2017 and 2018 estimates now shows the following trend from 2011 (Table 3 below).

Table 3: Estimated Resident Population, Revised - Annual, 2011 to 2018

Year	Estimated Resident Population	Annual growth	Annual growth rate
2011	215,837		
2012	219,152	3,315	1.5%
2013	223,357	4,205	1.9%
2014	227,744	4,387	2.0%
2015	232,926	5,182	2.3%
2016	239,529	6,603	2.8%
2017	245,728	6,199	2.6%
2018	252,217	6,489	2.6%

Source: Australian Bureau of Statistics

The above analysis may appear to be full of unnecessary statistical detail. There are three reasons for providing this detailed explanation:

1. Population data in Australia is by international standards of high quality. The ABS is under considerable scrutiny, given the importance population estimates play in determining financial allocation between Commonwealth, State and Local governments and in determining electoral boundaries. Nevertheless in between censuses the ABS has to rely mainly on Medicare and dwelling data to update estimates. Estimates can change and as shown above can be revised substantially. Therefore, in looking to the future, planners should recognise that the data are a best available assessment of current trends and are therefore a guide rather than being a sure pointer to amounts of future growth.
2. Population growth is very volatile as can be seen by any chart of annual population change in Australia or Victoria. This volatility usually occurs through external events beyond the control of Australian governments: global economic downturns or booms, world wars, pandemics such as the Spanish flu or technological and social changes such as the introduction and acceptance of oral contraception. This volatility is transferred through to regions and local areas. The lesson here is to keep monitoring trends, keep an open mind about the future, especially the long term, and be prepared to adjust strategies accordingly.
3. Despite the above, it is clear that Geelong has recovered strongly from the slow growth days of the 1990s. There are now higher levels of population growth which translates into greater demand for housing and land. Later on in this report will show the changing sources of growth and the 'big picture' issues, Greater Geelong will face in the future.

Growth has been variable within Greater Geelong:

Table 4: Estimated Resident Population, by SA2, 2011 to 2016

	Population 1991	Population 2016	Annual Growth Rate 1991 to 2016	Annual Growth Rate 2011 to 2016
Belmont	14,574	14,255	-0.4%	0.5%
Corio – Norlane	28,251	26,894	-1.0%	0.3%
Geelong	13,155	13,016	0.0%	0.9%
Geelong West - Hamlyn Heights	18,795	19,788	0.2%	0.6%
Grovedale	12,461	23,763	2.6%	3.4%
Highton	12,599	22,714	2.4%	2.7%
Lara	10,644	18,552	2.2%	3.2%
Leopold	5,282	13,004	3.7%	4.9%
Newcomb – Moolap	13,673	14,757	0.3%	-0.3%
Newtown	10,273	10,541	0.1%	1.0%
North Geelong - Bell Park	14,426	15,109	0.2%	0.8%
Clifton Springs	8,432	13,194	1.8%	2.1%
Ocean Grove - Barwon Heads	12,928	24,102	2.5%	5.0%
Portarlington	5,078	7,527	1.6%	2.5%

Source: Australian Bureau of Statistics

SA2s are areas defined by the ABS. They do not correspond to local government boundaries nor to what local people would know as established suburban or town boundaries. Nevertheless they provide time series data which demonstrate the different growth rates and housing demands which exist within the City of Greater Geelong.

The SA2s that have had broad-hectare sites have all grown strongly throughout the period shown. In particular Highton, Grovedale and Lara have all had growth averaging over two per cent per annum for the past five years (2011-2016). This points to the role of these areas as suburban growth areas for Geelong over the past decades.

The towns on the Bellarine Peninsula have generally seen steady to strong growth, with the exception being very strong growth in Leopold. This difference indicates a distinction in the function of the part coastal village, part holiday areas of Clifton Springs, Ocean Grove-Barwon Heads and Portarlington, compared to Leopold which is inland and acts more as a growth front just beyond the city of Geelong borders, in much the same way as Lara does to the north (albeit without the looming growth of Wyndham next door).

Just this basic set of data gives us an indication of a diversity of roles within Greater Geelong – former declining urban and suburban areas that are now regenerating, coastal villages with their fluctuating seasonal populations, typical broad-hectares development fronts on the edge of Geelong, and the growing towns just beyond the borders of Geelong that are experiencing broad-hectares demand as well.

5.0 The drivers of growth

Currently, Greater Geelong's population is estimated to be growing by about 6,500 per year. Just less than 1,000 of that growth comes from natural increase – the excess of births over deaths. The rest comes from net migration: from overseas, from other states, from other parts of regional Victoria and from Melbourne.

Governments have, or choose to have, limited control over migration. With overseas migration, the Commonwealth government has caps on only two categories: skilled migration and the humanitarian or refugee intake. Four years ago, these two categories only accounted for about 40,000 of the then total net overseas migration to Australia of 180,000. Students alone accounted for twice that amount of net overseas migration. To complicate matters, some temporary migrants 'category jump' and gain permanent residency while in Australia. The Australian Government no longer publishes details on migration categories and flows but it should be noted that, according to the ABS, net overseas migration had crept up to 248,000 in 2018. Ten years earlier net overseas migration was over 300,000. Victoria's share of overseas migration has however declined over the last two years.

No government controls movements within Australia. The reality is that people will move to areas that offer them better housing, employment prospects and other amenities. In this regard, Geelong clearly ticks all those boxes: cheaper housing than Melbourne, burgeoning and diverse local employment opportunities and improved transport links to Melbourne. Furthermore it is on the coast, a well-established living preference of Australians. Governments can and do invest to improve the attractiveness of places but in the end people make their own judgements about which place serves them better.

The census asks questions about where people lived one year and five years prior to the census. This is then used to show the mobility and migration of people within Australia. Owing to the nature of the question and people's uncertainty about their past addresses, the picture it provides is not comprehensive. It does, however, provide some indication where Greater Geelong's migrants are coming from and how the sources of growth might be changing:

Net migration flows, Greater Geelong

Table 5: Net migration flows, Greater Geelong

	2001-2006	2006-2011	2011-2016
Rest of Region	+54	+219	-433
Rest of Regional Victoria	+2,311	+1,611	+3,676
Melbourne	+1,672	+3,302	+4,867
Interstate	-200	+197	+820
Total internal	+3,837	+5,766	+6,920
Overseas migration arrivals*	3,991	5,766	6,920

Source: Australian Bureau of Statistics
* Do not know overseas departures

The table shows the following:

1. Greater Geelong attracts people from many sources. The only losses are to places within the broader region – basically people boundary hopping into Surf Coast and Bannockburn.
2. Greater Geelong is attracting more people over time which corresponds with its rising population growth.
3. Regional Victoria is an important source of migrants – perhaps suggesting that Greater Geelong offers some of the advantages of big city services and employment opportunities but without the perceived disadvantages of Melbourne. South western and western Victoria are the regions where Geelong gains most population from.
4. Melbourne is the most important source of growth and as Melbourne gets bigger, it will have an enduring impact on Geelong.

It is this last point, Melbourne's size and growth, which provides the biggest influence on Geelong's future size and growth. Greater Melbourne is projected by the ABS and the State Government to continue to grow considerably.

While planning policies should keep a physical separation between Melbourne and Geelong, it seems clear that Geelong and Melbourne's future will be even more closely linked than in the past. Of all the regional centres, Geelong is the one closest to Melbourne, has the best road and rail links and has the closest employment and commercial links.

6.0 Population projections for Geelong

As mentioned above, at the time Spatial Economics undertook most of its work advising the City of Greater Geelong on its Settlement Strategy, there was no evidence of the rise of growth that has occurred since.

The Department of Environment, Land, Water and Planning (DELWP) prepares population projections for use across government under the title Victoria in Future (VIF). i.d Consulting prepares projections for local government clients.

The VIF projections are comprehensive for Victoria, covering all regions, local government areas and SA2s. They project total populations, the age structures of those populations, households, household types and dwellings. They extend out to 2056 for Melbourne and regional Victoria and for SA4 regions, of which they are eight covering regional Victoria. For smaller areas, projections extend out to 2036.

i.d Consulting projections are for specific local government areas and, importantly, for local areas within LGAs. These extend to 2041. They have a similar range of outputs to the VIF projections: populations, age structures households and household types and use similar methodologies

At the broad regional level, projections are made using a standard international technique: the cohort survival method. The age structure of the population is taken at the base year and aged one year to produce a projection for the next year. In doing so that population is subject to change. Using life tables some die. Women produce children according to assumptions about age specific birth rates. Populations are added or subtracted from using assumptions based on migration trends. It is a top down method. State projections are made first, then ones for Melbourne and regions, ensuring that all totals add up to state ones. Populations are converted to households

using models of household formation. Households (ie occupied private dwellings) are converted to dwelling demands using assumptions about dwelling occupancy or vacancy rates.

That method is then reversed for local area projections. Land constraints are significant in all urban areas. So projections are made using a bottom up method which projects numbers of additional dwellings to be constructed on greenfield land or as infill in established residential areas or as major redevelopments. Those dwellings have to add up to regional dwelling totals projected by the earlier top down methods. From dwellings households are calculated using occupancy data and populations and their age structures by using household composition data.

A summary is provided in the table below:

Table 6: Projection Summary Methodology

Projection geography	**Key Assumptions**	**Output**
National (unconstrained)	Births Deaths Overseas Migration	Population by Age and Sex
State (unconstrained)	add Interstate migration	Population by Age and Sex
Regional (unconstrained)	add within-state migration	Population by Age and Sex
Regional (constrained)	Total Dwelling Capacity	Dwellings and households
Small Area – LGA, SA2 etc.	Household formation Dwelling demand Land supply / dwelling capacity	Population by Age and Sex Households (possibly by type and age) Dwellings (possibly by type)

The DELWP describes its Victoria in Future projections in this way:

> *"Population projections are estimates of the future size, distribution and composition of the population. They are developed using mathematical models and expert knowledge, relying on trend analysis and assumptions about future change. They should not be interpreted as exact projections or forecast of the future.*
>
> *Uncertainty about the future increases over longer projection horizons and with smaller geographical areas. Different policy settings and changes in the economy could result in changes to the expected size, distribution and composition of the population".*

Both the DELWP and i.d Consulting projections make a single projection. Part of the reason for this is the sheer complexity of making an alternative set of assumptions, especially at the local level and operationalising them. In the case of the DEWLP and probably i.d Consulting, a single set of projections avoids confusion and dispute in the various planning projects that rely on the data. Both are committed to frequent updates to take account of changed circumstances.

At the time Spatial Economics was preparing advice for the development of the Settlement Strategy, both the DELWP and i.d Consulting projections relied on published ABS population trend data that, (a) was prior to the sudden rise in Greater Geelong's growth rates from 2015 onwards and (b) had not envisaged or taken into account the extent of adjustment that the ABS made to estimates following the 2016

census. Following the changes, both the DELWP and i.d Consulting have prepared new projections.

The new DELWP projections – Victoria in Future 2019 – make the following projections for the City of Greater Geelong:

Table 7: VIF2019 Projections - Geelong

	2016	2018	2021	2026	2031	2036	Absolute change, 2016-36	Av. Annual growth, 2016-36
Population	239,530	252,220	271,250	301,560	330,720	360,250	+120,720	2.1%*
Households	97,660		110,940	123,940	136,930	150,770	+53,110	2.2%
Dwellings	106,480		121,160	135,540	149,880	165,020	+121,160	2.2%

Source: Department of Environment, Land, Water & Planning. Victoria in Future 2019.
* Note that that the projected population growth is 108,030 between 2018 and 2036, equivalent to an annual rate of change of 2.0%.

i.d Consulting's latest 2019 projections for the City of Greater Geelong are as follows:

Table 8: i.d.Forecast Projections - Geelong

	2016	2021	2026	2031	2036	2041	Absolute change, 2016-41	Av, annual growth, 2016-41
Population	239,531	268,984	298,716	330,428	361,014	393,216	153,685	2.0%
Households	95,840	107,371	119,467	132,332	144,822	158,111	62,271	2.0%
Dwellings	106,568	119,653	133,643	148,103	161,978	176,622	69,964	2.0%

Source: i.d. Forecast

Comparing the two, one is struck by the similarities. Both are projecting significant population, household and dwelling increases and the annual rates of change contract over time in both cases. In the case of population growth, the rates of change are significantly below the current rate of change shown by the latest ABS estimates and, in the case of dwellings, well below amounts of lot construction. However, a growth rate of around 2% per annual corresponds with the annual rate of change between the 2011 and 2016 censuses

It is not intended to comment here on either the DELWP's projections for SA2s or i.d Consulting's projections for sub areas of the City of Greater Geelong. The distribution of future demand within the City will be determined by the way the Settlement Strategy policies are implemented.

7.0 Development of growth scenarios for Greater Geelong

The future is uncertain. The recent changes to growth rates in Greater Geelong plus the issues arising from the ABS's revisions, however, has created a heightened sense of uncertainty about the future extent of growth in Geelong. There are also dangers associated in using just one projection of the future. Often unexpected events have scuppered the best researched projections. Often this has been due to unexpected external events and their consequent local impacts.

Therefore Spatial Economics decided at an early stage of this project not to try to develop a single 'better than anyone else' projection but reflect the current uncertainty through the development of alternative scenarios.

A recent strategic planning exercise for the San Francisco Bay Area elegantly described the role of scenarios in urban planning:

"Scenario planning is not about predicting the future. It is a way of understanding choices, chains of events, alternatives and possible outcomes to support better decision making in the future with great uncertainty"

To enable this assessment Spatial Economics developed five growth scenarios of the City of Greater Geelong:

1. A long term growth scenario where future growth was consistent with long term growth rates. In the case of Greater Geelong, the data records go back to 1991. Between 1991 and 2016 the average annual growth rate was 1.3%.
2. A current / official projected growth rate. At the time this assumption was consistent with the DELWP and i.d Consulting projections available at the time. The assumed growth rates were around 1.6% per annum.
3. A strong growth scenario which was based the most recent growth available at that time: 2% per annum.
4. A G21 Aspirational growth rate of 2.5%per annum. This reflected the rising growth trend and the potential for future leakage from Melbourne's burgeoning population growth.
5. A fifth scenario was added following the release of the revised growth figures in 2017. This is called the surge scenario and assumes a population growth rate of around 3%.

For the purposes of this project, Spatial Economics has focussed on the last three scenarios. Events have overtaken the value of the lower growth scenarios. Scenario 3, Strong growth, is consistent with the last inter-censal period and with both the DEWLP and i.d Consulting projections (ie 2%-2.2%). Scenario 4 remains the G21 aspiration and one closest to the most recent ABS estimates. The surge scenario is included given the possibility that growth rates may be increasing further.

It is acknowledged that higher growth rates are a challenge for the City of Greater Geelong and other providers of infrastructure, services and housing. Long term settlement and infrastructure planning and delivery move slowly and take a long time from planning to completion. For this reason, a core growth rate of 2.5% was recommended as opposed to the official State Government projection of 2.0 to 2.1%. It is also appropriate that long term planning allow for the possibility of higher (ie 3% per annum) than current rates of growth so that the land use and infrastructure planning processes do no become impediments to the delivery of needed housing.

Growth rates of higher than 3% were discounted. No local government area in regional Victoria has growth rates at 3% or over. Furthermore, Victoria's population growth appears to be slowing, down from 2.5% to 2.2% over the last two years.

Although there are costs associated with premature delivery of works, planning for higher growth is not wasted. Regular reviews and revisions will likely require less work if less capacity is consumed within a given time frame and suitable 'triggers' are identified for land releases and commitment of infrastructure projects. And, assuming very long term demand holds up to some extent, the higher capacity planned for, will eventually be needed.

A summary of these three scenarios for 2036 is shown below:

Table 9: Growth Scenarios – Geelong Settlement Strategy

	Strong growth	G21 Aspirational	Growth Surge
Population Growth Rate	2.0%	2.5%	3.0%
Dwelling Growth Rate	2.2%	2.7%	3.2%
Total Dwelling Requirement	54,158	70,159	91,543
Av Annual Dwelling Requirement	2,850	3,693	4,577

Source: City of Greater Geelong Settlement Strategy

Monitoring is essential. It should be continuous. Council currently undertakes ongoing monitoring of development and will continue to do so. As for the ABS, it produces quarterly estimates of population growth at the State and national levels and annual population estimates for local government areas and SA2s. Probably the best time for reviewing long term population trends in Geelong will be in late 2022, when, following the release of the 2021 census, the ABS finalises its estimates for 2017 to 2021.

8.0 Issues raised in submissions

The following issues were raised in submissions:

- The Settlement Strategy should have the ability to change its adopted growth rate (2.5%) should evidence suggest that this is no longer appropriate
- The City should plan for a growth rate above 3% and recognise and use the VIF2019 projection produced by the DELWP
- Growth rates and demographic circumstances vary considerably within the City (Portarlington, Ocean grove, Barwon Heads and Lovely Banks were cited). The Settlement Strategy needs to acknowledge this more.

My responses are as follows:

- The advice provided was to emphasise the extent of future uncertainty and advise that the strategy should be prepared to be flexible over time and not lock itself into any single future. The purpose of the three scenarios was to show a range of possible outcomes and speed at which land would be consumed.
- The range of scenarios here was determined by the evidence to hand. Note that no council areas outside of Melbourne currently have growth rates above 3%.
- It should be noted that Victoria in Future 2019's projected annual growth rate for the City of Greater Geelong over 2018-2036 is 2% (2.1% between 2016 and 2036).
- It is acknowledged that population and dwelling growth rates vary considerably within different parts of Greater Geelong and therefore differ from the average Council average (currently 2.6 %). This is due to the different demographic profiles, housing demands and housing choices within the City. I am confident that the Settlement Strategy addresses this diversity.

APPENDIX A: REQUIREMENTS OF PLANNING PANELS VICTORIA – EXPERT EVIDENCE

Name:
Jeremy Reynolds, Demographer Spatial Economics Pty Ltd

Address:
11 Munster Avenue, Carnegie, Vic 3163

Qualifications:

- Bachelor of Social Science, University of Bristol (1971)
- Post Graduate Diploma in Social and Environmental Planning, Polytechnic of Central London, 1975

Experience:
My background is in urban and regional planning and demographics. I worked in government for over forty years, including ten with the MMBW and almost thirty years with the state Government's Department of Planning. I was a member of teams that prepared successive metropolitan strategies for Melbourne and I contributed to regional planning and regional economic development strategies. From 1993, I directed the Planning Department's planning research which focussed, especially in early years, on demographic change and its ramifications. I was responsible for the Victoria in Future population projections during this time. I left the Victorian public service in 2014.

I have regularly lectured on the planning courses at RMIT and Melbourne Universities. In 1982 I was a founding member of the editorial board of the journal Urban Policy and Research and remained on the board until 2000.

My career has been one of dedicated public service for which I have received several awards.

Areas of Expertise:
Analysis of urban and regional change, urban and regional planning, demographic forecasting

Other Significant Contributors to the Report:
NA.

Instructions that Define the Scope of the Report:
To provide projections of population change based on an analysis of demographic trends and urban and regional change.

Expert Declaration:
I have made all inquiries that I believe are desirable and appropriate and no matters of significance which I regard as relevant have to my knowledge been withheld from the Panel.

Jeremy Reynolds
Demographer, Spatial Economics Pty Ltd

29/10/2019