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# LAND SUPPLY REVIEW

## Shepparton-Mooroopna 2050: Regional City Growth Plan

November 2020

Final

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25/11/2020

Final Version 1.1

**Spatial Economics Pty Ltd**

ABN: 56 134 066 783

[www.spatial economics.com.au](http://www.spatial economics.com.au)

[info@spatialeconomics.com.au](mailto:info@spatialeconomics.com.au)



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## Main Findings

Spatial Economics Pty Ltd was engaged by the Greater Shepparton City Council to assess the adequacy to meet likely future demand of the areas identified for future residential and industrial development in the draft Shepparton-Mooroopna 2050: Regional City Growth Plan. Spatial Economics has many years of experience in assessing residential and industrial land supplies for both the State and Local Governments across Victoria.

Spatial Economics assessment of likely future demand for residential and industrial land was focussed on the official (*Victoria in Future 2019*) Victorian Government growth projection for Shepparton-Mooroopna. These growth forecasts were used in preparation of the Shepparton-Mooroopna 2050: Regional City Growth Plan. Given the unavoidable uncertainty regarding growth rates to 2050, Spatial Economics also developed two realistic alternative growth scenarios (one higher and one lower than VIF 2019) to test the robustness of Shepparton-Mooroopna's planned land supply.

The VIF2019 growth forecast for Shepparton-Mooroopna assumes average annual population growth of 1.16% to 2036 and 1% from 2036 to 2050. The higher growth scenario prepared by Spatial Economics assumes average annual population growth of 1.3%. This is the estimated growth rate achieved by Shepparton-Mooroopna from 2011 to 2016 and is similar to the growth rate of Albury Wodonga over the last decade or more. Spatial Economics lower growth scenario assumes average annual population growth of 0.8%. This is just below Shepparton-Mooroopna's estimated growth rate (0.9%) from 2016 to 2019 and above the estimated growth rate (0.6%) from 2001 to 2006.

In summary our analysis indicates that:

- even under the higher growth scenario Shepparton-Mooroopna has sufficient residential land (zoned and unzoned) to satisfy demand until 2050.  
If this higher growth rate is maintained until 2050 it will be necessary, beginning around 2038, for Council to take steps to identify additional land supplies to ensure that Shepparton-Mooroopna has a clear strategy to provide for potential housing demand after 2050. A decision on rezoning of such identified land could be delayed until closer to 2050. This will ensure that in 2050 Shepparton-Mooroopna will continue to have at least the minimum 15 year land supply required by State Planning Policy. There is ample time available to monitor actual development trends before such action is required;
- if actual population growth in Shepparton-Mooroopna is in line with the VIF2019 projection the city has sufficient residential land to provide for housing demand until at least 2058. In this case, action to decision on rezoning of an additional residential land supply would not need to be made until closer to 2043; and
- If population growth were to decline to the level in the low growth scenario the already identified residential land supply would be sufficient to ensure that Shepparton-Mooroopna still had more than the required minimum 15 year land supply in 2050.

For industrial land our analysis indicates that, depending upon which of the three demand scenarios is assumed, Spatial Economics has calculated that Shepparton-Mooroopna has between a 13 to 20 years supply of zoned industrial land. In addition, there is a 20 to 31 year supply of land identified, but not yet zoned, for future industrial use. That is a total potential industrial land supply of between 33 and 51 years depending on the level of average annual demand. In summary, even under the highest growth scenario, the Shepparton-Mooroopna 2050: Regional City Growth Plan appears to have made an adequate provision for likely future industrial land requirements.



Spatial Economics recommends that Council continues to monitor, on a regular basis, actual population growth and residential and industrial development trends so that prompt action can be taken to increase land supplies should this become necessary in future.



## 1.0 Report Scope and Structure

As part of its preparation for ongoing community consultation on the Shepparton-Mooroopna 2050: Regional City Growth Plan, the Greater Shepparton City Council engaged Spatial Economics to provide an independent assessment of the adequacy of the residential and industrial land supplies identified in the Growth Plan.

Spatial Economics has wide experience in evaluating the likely future demand and supply of both residential and industrial land. This includes undertaking previous residential and industrial land supply assessments for the City of Greater Shepparton and other Victorian and inter-state councils as well as providing advice to both state and local governments on best practice arrangements for land supply monitoring.

It is important to note that Spatial Economics was not asked to review the objectives, strategies and policies set out in the Shepparton-Mooroopna 2050: Regional City Growth Plan. We have taken as our starting point the spatial structure set out in the growth plan and focussed on testing this against realistic assumptions regarding future growth rates. That is, we have limited our assessment to the adequacy of the planned land supply and not addressed the issue of whether the form of Shepparton's growth should be primarily north-south or include expanded development to the east.

This report is structured as follows:

- An overview of population growth and residential land development trends in Shepparton-Mooroopna over the past decade;
- A review of population and housing demand growth forecasts including consideration of the implications of the unavoidable uncertainty regarding medium to longer term growth rates;
- Consideration of the adequacy of the proposed supply of residential land set out in the Shepparton-Mooroopna 2050 Regional City Growth Plan in the light of our assessment of the population and housing forecasts;
- An overview of recent industrial land trends and consideration of the adequacy of the proposed supply of industrial land set out in the Shepparton-Mooroopna 2050: Regional City Growth Plan; and
- An outline of our views on an appropriate approach to ongoing management of the land supply in the context of uncertainty regarding the level of future demand.



## 2.0 Recent growth trends in Shepparton-Mooroopna

### 2.1 Recent Population Growth Trends

The overall demand for housing is driven by population growth. Population growth comes from two main sources: natural increase (i.e. births minus deaths) and from migration. Migration may be from (or to) other parts of Victoria/Australia or from overseas.

Over recent years population growth in the City of Greater Shepparton has been driven both by significant natural increase and by net migration from overseas. The population gain from net overseas migration has been more than sufficient to offset a significant loss of population to other parts of Victoria and Australia.

In summary:

- Shepparton-Mooroopna's largest source of population growth is overseas migration;
- while there are large numbers of people moving both into and out of Shepparton - Mooroopna and to other parts of Australia there is a net loss through internal migration; and
- natural increase is a significant contributor to growth.

This is shown in the table below.

**Table 1:** Sources of Shepparton-Mooroopna's population growth (2016/17-2018/19)

<i>Births</i>	2,184
<i>Deaths</i>	1,260
<b>Natural Increase</b>	<b>924</b>
<i>In-migration from other parts of Australia</i>	14,249
<i>Out-migration to other parts of Australia</i>	15,207
<b>Net Internal Migration</b>	<b>-958</b>
<i>In-migration from overseas</i>	2,273
<i>Out-migration to overseas</i>	843
<b>Net overseas migration</b>	<b>1,430</b>
<b>Total population growth</b>	<b>1,396</b>

Census data show that Greater Shepparton gains population from other regional shires including Moira, Campaspe, Strathbogie and Swan Hill but loses population to Geelong, Bendigo and especially, local government areas in Melbourne. This is shown in the table below.

It should be noted that census data are only published at the LGA level and not for individual cities. In the case of the Shepparton-Mooroopna, this does not affect the conclusions that can be drawn for ongoing planning.



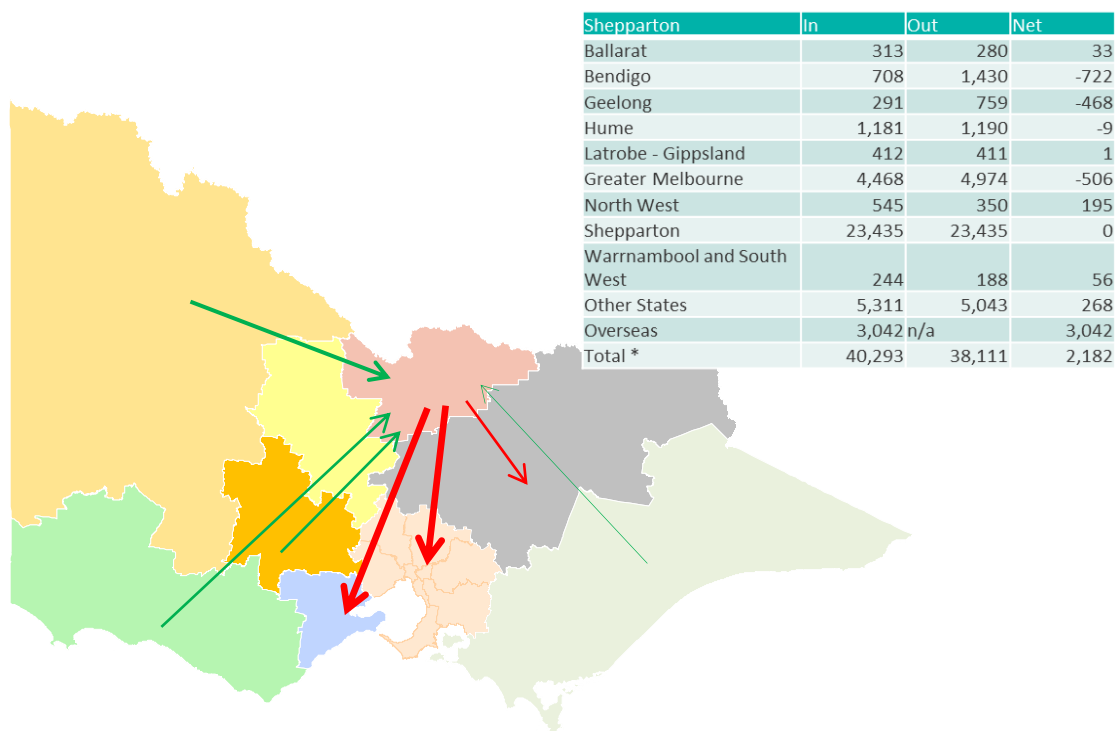


**Table 2:** Greater Shepparton LGA – top population gains and losses to other LGA’s, 2011-2016

Most net gains		Most net losses	
Moira	+236	Greater Geelong	-290
Campaspe	+108	Greater Bendigo	-225
Strathbogie	+46	Hume*	-150
Swan Hill	+39	Casey*	-122
		Whittlesea*	-119
		Wyndham*	-100
		Melbourne*	-96

At the regional level, there is a movement out of the Shepparton region, to regions focussed on bigger population centres. This is consistent with Victoria and Australia wide trends, especially for younger people to move to larger cities in search of higher education and employment opportunities.

**Map 1:** Inter-regional migration, Shepparton region, 2011-2016



Source: 2016 census, ABS and DELWP

Overall, the estimated resident population of Shepparton-Mooroopna grew from 42,835 in 2001 to 52,104 in 2019. Average annual growth rates have varied over this time – from 0.6% per annum from 2001-2006, to 1.5% from 2006-2011, to 1.3% from 2011-2016 and 0.9% between 2016 and 2019.



## 2.2 Recent Residential Land and Housing Development Trends

Over recent years (since 2011) annual residential building approvals in Shepparton-Mooroopna have averaged 280 per annum, representing 84% of implied housing construction across the municipal area. There has been variation in these numbers from year to year, ranging from a low of 220 in 2016/17 to a high of 360 in 2018/19.

Over the same period residential lot construction averaged just over 300 per year but there has been substantial variation in lot production from year to year.

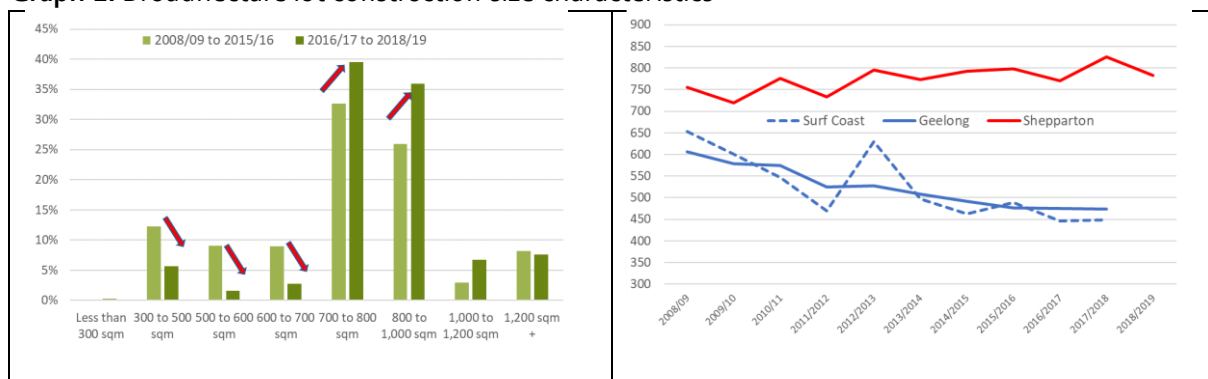
In summary, over the last decade, on average over 85% of new housing in Shepparton-Mooroopna has been developed on newly subdivided land in the city’s growth areas. This has included a significant component (some 17% of total ‘greenfield’ housing numbers) of – mainly detached - dwellings specifically targeting the older households market.

Infill housing (either building on vacant lots in established suburbs or replacement of detached housing with new dwellings at a higher density) has, on average, accounted for 11% of all new dwellings. The average falls to 9% of all new dwellings if the abnormally high level of dwelling construction on infill lots in 2010 is excluded. For planning purposes there is no evidence to suggest that infill housing will contribute much more than 10% of Shepparton-Mooroopna’s total housing needs in coming years.

One notable feature of the Shepparton-Mooroopna housing market is that there have been very few dwellings constructed on rural residential allotments (over the decade only around three per year on average). This may reflect a shortcoming in the available mix of allotments. There is evidence from some other regional cities that demand has been shifting from larger, un-serviced, rural residential allotments to smaller, serviced, low density residential allotments (hydraulic servicing). If Council were to facilitate such serviced low-density residential development on some areas currently zoned for rural residential living, there is potential to divert some demand from more conventional ‘greenfield’ housing estates.

Over the past decade the median size of new residential lots in Shepparton-Mooroopna has not varied greatly although there has been some increase in the percentage of larger lots constructed (see graph below). This is somewhat different to the trend in higher priced locations closer to Melbourne and other major regional centres where lot sizes have tended to reduce as developers struggle to keep lot prices within key price points.

**Graph 1: Broadhectare lot construction size characteristics**



Spatial Economics has therefore decided to use the current median lot size in estimating likely yields from remaining ‘greenfield’ areas. This assumption has been used where there is no more definite information (such as an approved Precinct Structure or Development Plan) available regarding anticipated lot yields.



## 2.3 Recent Industrial Land Development Trends

From 2015/16 to 2018/19<sup>1</sup> there were 49 industrial lots constructed in Shepparton-Mooroopna. More than 40% (21 lots) of these lots were between 0.5 and 5 hectares in size with the majority (57% or 28 lots) being 0.5 hectares or less in size. Only one lot of more than 5 hectares was constructed over this period.

The majority (78% or 38 lots) of industrial subdivision activity has been on land zoned Industrial 1 (IN1Z), 18% or 9 lots zoned Commercial 2 (C2Z) and the remainder (4% or 2 lots) zoned Industrial 3 (INZ3).

Over the last decade there has been a significant increase in the rate of development of industrial land. From 2009 to 2015 it averaged 3.45 hectares per annum. The average annual area developed increased to 6.27 hectares from 2015 to 2017 and to 7.51 hectares from 2017 to 2019.

Over the last five years slightly less than 60% of the total area of industrial land consumed (i.e. lots on which a factory or warehouse construction occurred) was in East Shepparton, with smaller amounts (almost 30%) in North Shepparton and most of the balance in Kialla. There was minimal consumption of industrial land in the Mooroopna, Lemnos and North West Shepparton industrial precincts. Over 70% (50 lots) of all the lots on which development occurred over this period were 0.5 hectares or smaller in size. Just over a quarter (27% or 19 lots) were between 0.5 and 5 hectares in size. Only one lot of more than 5 hectares was consumed over this period.

Map 3 illustrates the location of the industrial precincts.

The increase in construction of industrial lots in Shepparton-Mooroopna is consistent with other available indicators of development in local industrial activity. For example, in recent years the value of industrial building approvals has increased significantly (from \$13.8 million in 2016/17 to over \$20 million in the year to the March quarter of 2019). The Gross Regional Product (GRP) for Greater Shepparton has also increased significantly.

The processing and distribution of agricultural products is a key driver of consumption of industrial land in Shepparton-Mooroopna. Since 2010/11 employment in the agricultural sector in Greater Shepparton increased by almost a quarter (24%). This is more than three times faster than total employment which grew by only 7% over the same period.

In summary, the consumption of industrial land in Shepparton-Mooroopna has increased significantly over recent years and this trend is consistent with other indicators of economic activity, in particular strong growth in the production, processing and distribution of agricultural products. While, to date, these are only short term trends they do suggest that planning for future industrial land demand should include one or more 'strong demand growth' scenarios.

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<sup>1</sup> Measured to the March quarter 2019



### **3.0 The population growth and housing demand assumptions underlying the 2050: Regional City Growth Plan**

#### **3.1 The population and housing growth assumptions used in preparing the draft 2050: Regional City Growth Plan**

The population, household and dwelling growth assumptions used in preparing the draft Shepparton-Mooroopna 2050 Growth Plan are drawn from the Victorian Government's official population projections 'Victoria in Future 2019' (VIF 2019). This publication sets out population, household and dwelling growth projections to 2036 for all regions and local government areas in Victoria.

For the City of Greater Shepparton VIF 2019 forecasts average annual population growth of 0.9%, or a total population increase of 11,690 people, from 2018 to 2036. VIF 2019 also forecasts an additional 6,857 households in the City of Greater Shepparton by 2036.

VIF 2019 also presents population and dwelling forecasts for sub-areas within Local Government Area boundaries.

For Shepparton-Mooroopna VIF 2019 projects total population growth of 11,212 between 2018 and 2036 (up from 51,631 to 62,843). Over the same period dwelling numbers are projected to increase by 6,156 (growing from 21,555 to 27,711) or an average of 342 per year.

VIF 2019 does not publish data beyond 2036 for individual Council areas or parts of Council areas. It is understood that in preparing of the Shepparton-Mooroopna 2050: Regional City Growth Plan unpublished VIF projections were used for 2050 and that these amounted to a projected population growth for Shepparton-Mooroopna of 1% per year between 2036 and 2050. This equates to an additional dwelling requirement of 4,100 from 2036 to 2050.

#### **3.2 Should a single growth forecast be relied upon for longer term strategic planning?**

As noted above preparation of the Shepparton-Mooroopna 2050: Regional City Growth Plan was based upon the single set of forecasts for the City of Greater Shepparton and Shepparton-Mooroopna set out in VIF2019.

These forecasts are approved by the State Government and are prepared using a well-established and accepted methodology and incorporate sound assumptions.

However, it is reasonable to question whether a single set of growth forecasts should be used in preparing a long-term strategic plan, such as the Shepparton-Mooroopna 2050: Regional City Growth Plan.

Spatial Economics believes that current best practice is to utilise a realistic range of growth scenarios when preparing medium and longer-term strategic plans. This has the advantage of recognising the inherent uncertainty involved in any medium to longer-term forecast. It also allows the strategy to be 'stress tested' and helps ensure that land use and infrastructure plans have the flexibility to cope with unexpected change in growth rates.

The inherent uncertainty associated with any medium to longer-term forecast of population growth is widely accepted.



For example, VIF2019 presents a range of growth forecasts for Victoria and, in its introduction says:

*"Population projections are estimates of the future size, distribution and characteristics of the population. They are developed by applying mathematical models and expert knowledge of the likely population trends to the base population.*

*Projections provide information about population change over space and time but they are not predictions of the future. They are not targets nor do they reflect the expected effects of current and future policies.*

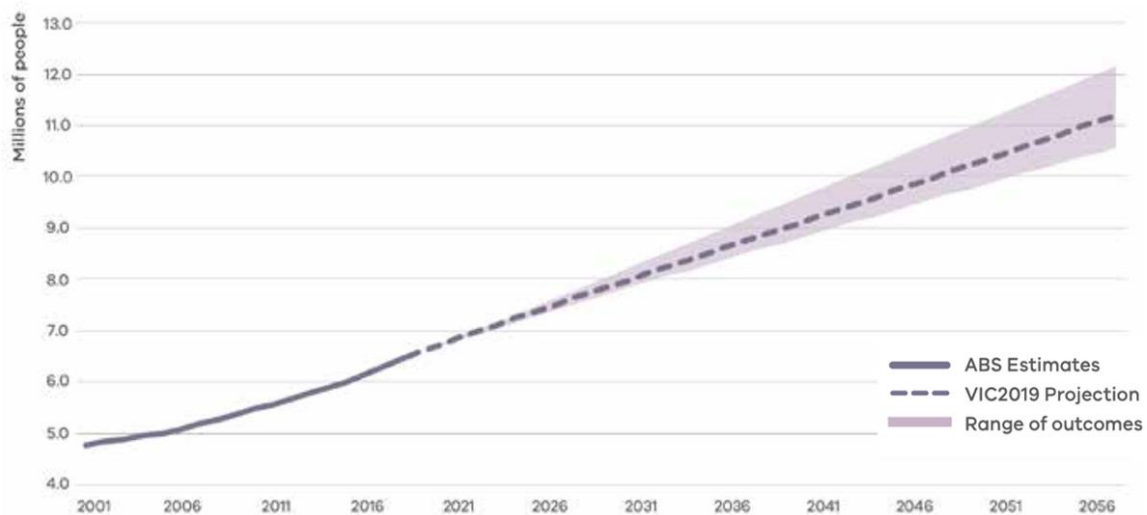
*The projections give an idea of what is likely to happen if current trends continue. They may indicate a need to manage change to achieve preferred outcomes or to mitigate the impacts of no-preferred outcomes"*

In relation to growth projections for Victoria as a whole VIF2019 says:

*"Under the VIF2019 assumptions Victoria is projected to add 4.7 million people from 2018 to 2056, reaching a population of 11.2 million. This represents annual average growth of 125,000 people, at a rate of 1.5% per annum.*

*Conditions and trends may change in the future, however, and if other assumptions were used, different growth levels would result. Migration levels are more sensitive to changes in policy or economic conditions than births or deaths. Graph 1 (see below) shows population growth outcomes with different migration assumptions, illustrating average annual growth in each scenario, not the volatility of growth in individual years."*

**Graph 2: Projected population, Victoria" range of outcomes**



The unavoidable uncertainty associated especially with assumptions regarding the rate of net overseas migration is very clearly illustrated by the current experience with the impact of the Covid19 pandemic on migration and population growth. As a result of a drastic fall in overseas migration growth rates for Australian, Victorian and regional areas will be substantially reduced for, at least, two years.

VIF2019 does not present multiple growth scenarios for individual regions or municipal areas. This presumably reflects a judgement that to do so would be likely to lead to confusion and could result in 'projection shopping' by those seeking to advance particular points of view either in favour of or expressing concern regarding future growth.



However, the decision to present only a single set of projections in VIF2019 does not remove the uncertainty associated with regional and municipal projections. Instead it avoids addressing the issue. Indeed, the smaller the forecast area (e.g. region as against State, municipal as against region) the greater the uncertainty that is unavoidably associated with any medium or longer-term growth projection.

The question must still be addressed - how robust can we expect population projections for a regional city the size of Shepparton-Mooroopna to be?

Demographer Tom Wilson of Charles Darwin University has reviewed state government prepared population projections for sub-state regions and municipalities in Australia. He has done so with both the benefit of hindsight and with local and regional population estimates that the ABS has published since the time projections were prepared. His conclusions were as follows:

- Five year projections were better than ten year projections;
- Large area projections were a lot better than small area projections;
- While small area projections have large errors, for places of more than 100,000 people most projections were within 5% for a ten year period;
- For areas under 10,000 people, projections were highly error prone.
- For places over 25,000 people, the correct direction of change ( i.e. gain or loss) was projected in 90% of cases;
- For places under 2,000 people, 60% of projections did not project the correct direction of population change.

These findings correspond with similar research undertaken in the UK. This led Wilson to suggest a realistic 'shelf life' for projections.

**Table 3:** Shelf life of population projections

Place size (pop'n)	Shelf life of population projections (years)
<2,500	3
2,500 – 10,000	7
10,000 – 50,000	12
50,000 – 100,000	14
>100,000	15

Source: Tom Wilson, Paper presented to Australian Population Association conference, 2016

For the current purpose the key point is that longer term projections are inherently problematic and this needs to be taken into account in sound strategic planning.

Spatial Economics has therefore chosen to utilise a range of growth forecasts in assessing the adequacy of residential and industrial land supplies in Shepparton-Mooroopna.

### 3.3 Identifying a realistic range of growth scenarios for Shepparton-Mooroopna

The growth projections (or scenarios) prepared by Spatial Economics are for the Shepparton-Mooroopna urban area, not the Greater Shepparton municipality.

Spatial Economics projections build on the VIF2019 projections for population, households and dwellings. They do not contradict the VIF2019 projections in any way. The Spatial Economics projections for Shepparton-Mooroopna are for exactly the same area as the VIF 2019 projections



(i.e. in terms of the Australian Bureau of Statistics definitions, a combination of the Shepparton North, Shepparton South and Mooroopna SA2s).

Instead Spatial Economics has expanded VIF2019 projections in two ways. Firstly, we have extended the VIF19 projections from 2036 to 2050. VIF2019 projected that Shepparton-Mooroopna population would grow by 1% in that final year (i.e. 2035/36). Spatial Economics has assumed this 1% annual rate of growth will continue through to 2050. Secondly, we have developed two alternative population growth scenarios, one higher, one lower. Both the higher and lower projections are based upon what Spatial Economics believes are potentially realistic alternative assumptions regarding future growth trends in Shepparton-Mooroopna.

These alternate growth scenarios are not what we forecast will occur. Instead they are used to demonstrate the impact of possible different growth rates on the demand for dwellings and residential land. Like all projections, the growth scenarios presented in this report should be seen as a way to help better inform decision making.

Spatial Economics' high growth scenario assumes that Shepparton-Mooroopna's population growth rate rises in 2023 to 1.3% per year – the rate of growth that Albury-Wodonga has experience over the last ten years – and remains at that rate until 2050.

The low growth scenario assumes that Shepparton-Mooroopna's growth drops to 0.8% per year in 2023 and remains at that rate until 2050. This is the rate of growth that Mildura-Wentworth has experienced over the last ten years.

It will, no doubt, be argued by some that our suggested higher growth scenario is too modest. Higher growth rates experienced in some other regional cities (such as Bendigo or Geelong), or short-term upturns in demand and development activity in Shepparton-Mooroopna may be quoted in support of such a view. However the evidence from across Victoria and New South Wales is clear – growth rates are strongly influenced both by city size (larger cities grow faster) and by distance from the state's main metropolitan area (cities closer to Melbourne or Sydney benefit most from 'overflow demand' from the higher priced metropolitan area).

Furthermore, VIF 2019 already assumes that, over time, the Shepparton region gains rather loses people to other parts of Victoria. This compensates for lower and even negative natural increase as the population ages.

In this context the VIF2019 projection, and our two additional scenarios, represent the likely realistic range of future growth for Shepparton-Mooroopna.

The projected population and dwelling numbers associated with each of the three (VIF 2019 plus Spatial Economics higher and lower) scenarios are summarised below.

**Table 4:** VIF2019 extended - Shepparton-Mooroopna projected population and dwelling change from 2018

	2018 to 2025	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050
<b>Population</b>	4,405	3,225	3,155	3,179	3,336	3,506
<b>Dwellings</b>	2,258	1,795	1,755	1,441	1,469	1,544



**Table 5:** Higher growth - Shepparton-Mooroopna projected population and dwelling change from 2018

	2018 to 2025	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050
<b>Population</b>	4,464	8,206	12,198	16,456	20,998	25,843
<b>Dwellings</b>	2,339	4,360	6,486	8,435	10,435	12,569

**Table 6:** Lower growth - Shepparton-Mooroopna projected population and dwelling change from 2018

	2018 to 2025	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050
<b>Population</b>	3,364	5,559	7,926	10,346	12,865	15,487
<b>Dwellings</b>	1,871	3,321	4,609	5,711	6,819	7,972

**Table 7:** Average annual dwelling change - Shepparton-Mooroopna, by growth scenario

	2018 to 2025	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	2018 to 2050
<b>VIF2019 (extended)</b>	323	359	351	288	294	309	321
<b>High</b>	334	404	425	390	400	427	393
<b>Low</b>	267	272	276	220	222	231	249

In summary the higher scenario implies an approximately 15% increase in terms of total dwelling demand to 2050 when compared to the 'medium level' VIF2019 projection. The lower scenario results in an approximate 17% reduction in total dwelling demand to 2050 when compared to VIF2019.





## 4.0 The Demand for and Supply of Residential Land in Shepparton-Mooroopna

### 4.1 Some preliminary comments on uncertainty in planning for residential land supply

As noted in the preceding section of this report uncertainty is unavoidable when considering medium to longer term population growth – especially at a regional and small area (i.e. regional city) level.

It is equally difficult to predict medium to longer changes in housing preferences and therefore in the demand for newly serviced (or 'greenfield') residential land. Over time there will be changes in the relative demand for dwelling types (detached housing versus townhouses or apartments), locations (established suburbs versus greenfield housing estates), and type and size of allotment (smaller versus larger lots).

Variation in demand for particular types of housing and residential land may result from demographic change (smaller and older households), from the preferences of purchasers and renters (for locations closer to jobs and facilities versus dwelling size), or from increased costs and ability to pay (leading, for example, to choice of smaller dwellings and allotments).

Housing trends may change more slowly in smaller cities and regional areas than in larger, and higher cost, metropolitan areas. But changes will still occur and will add to the uncertainties that must be addressed in longer term strategic plans. Planning that is based on one set of demand projections, or that locks in controls based upon current dwelling preferences, make it difficult for the market to adjust supply to cater for unexpected changes in housing demand.

There are two key approaches that can help ensure that strategic plans have the best chance to cope effectively with this kind of uncertainty:

- the first is to err on the side of assuming stronger growth overall and in any given market segment. That is to ensure that (within reason) there is scope to meet any unexpected upturn in demand; and
- secondly, to plan for a diversity of supply types and locations.

It may not seem obvious why planning should err on the side of assuming stronger rather than weaker growth. However, in summary, the experience in other places is underestimating future housing demand has more serious effects (for example, limiting growth or leading to unnecessary increases in housing costs) and takes longer to correct.

### 4.2 Total housing demand and demand for 'greenfield' residential land

Not all future demand for new housing in Shepparton-Mooroopna will translate into a demand for new serviced residential land. A portion of the total additional demand for housing will be met by the construction of medium and higher density housing (town houses and apartments) in established parts of Shepparton-Mooroopna. The Shepparton -Mooroopna 2050: Regional City Growth Plan identifies a range of possible locations for such housing.

As noted earlier in this report, over recent years approximately 87% of new housing in Shepparton-Mooroopna has been constructed on new serviced ('greenfield') land. For the purpose of assessing potential future requirements for greenfield land Spatial Economics has assumed that this percentage will not reduce.

This may be a conservative assumption – as cities grow, and as housing costs and journey to work times increase, it can usually be expected that there will be a higher percentage of medium and higher density housing. For a city the size of Shepparton-Mooroopna, it is likely that any switch to a higher share of medium density housing will be slow and limited. It is therefore sensible to err on the side of caution and assume no change in the mix of dwelling types and share of housing needs



likely to be met by redevelopment in established suburbs. This will help ensure that the future requirement for 'greenfield' residential land is not underestimated.

### 4.3 Assumed dwelling yields from future 'greenfield' housing estates

Spatial Economics has also assumed that there will be no decrease in average residential block sizes in future 'greenfield' residential estates and therefore that average housing yields from greenfield residential land will not change from that achieved over recent years. Obviously, where known, specific allowance needs to be made for local constraints (for example, areas subject to flooding or with protected native vegetation) when assessing likely allotment and dwelling yields.

Again, this is a conservative, but we believe well justified, assumption. In most Victorian regional cities, where land prices have not risen to near metropolitan levels, there is a clear preference for larger allotments.

There is one market segment where Spatial Economics do believe there is potential for average lot sizes to fall. This is in relation to the development of rural living/low density residential allotments. In recent years Shepparton-Mooroopna has seen a relatively low percentage of rural residential allotments developed when compared to other similar sized regional cities.

We believe that this may be a result of a limited supply of land currently zoned for low-density residential development. The share of total housing demand going to low-density residential estates could therefore increase (with a compensating reduction in rural residential demand) if Council makes a decision to increase the area zoned for low-density residential development.

### 4.4 Future residential land requirements under the three growth scenarios

The projected number of new greenfield dwellings required in each period to 2050 under each of the three growth scenarios, is summarised in the table below:

**Table 8:** Projected Greenfield Dwelling Requirements, Shepparton – Mooroopna

	2018 to 2025	2025 to 2030	2030 to 2035	2035 to 2040	2040 to 2045	2045 to 2050	2018 to 2050
<b>VIF2019 (extended)</b>	1,912	1,550	1,538	1,308	1,266	1,330	8,905
<b>High</b>	1,954	1,728	1,834	1,719	1,718	1,833	10,786
<b>Low</b>	1,599	1,223	1,198	1,142	956	995	7,114

### 4.5 Adequacy of the residential land supply proposed in the 2050: Regional City Growth Plan

To translate this projected 'greenfield' housing demand into an assessment of the adequacy of the provision for 'greenfield' residential land supplies made in for Shepparton-Mooroopna 2050: Regional City Growth Plan it is necessary to consider both the total area of land identified for future residential development and the likely allotment yield from this land.

The table below lists all of the areas identified for future 'greenfield' residential development in the Shepparton-Mooroopna 2050: Regional City Growth Plan together with the size and current planning status (unzoned, zoned but requiring preparation of a Structure Plan, zoned and development able to proceed) of each area.

Spatial Economics has used likely site-specific allotment yields (drawn from Council assessments and prior Spatial Economics land supply assessments) where this is known. For all other areas either zoned or identified for residential development Spatial Economics has assumed recent average yields (see earlier discussion).



On this basis the estimated yield from areas already zoned for residential development, or identified for future residential development in the 2050 Growth Plan (see map 2) is summarised in the table below:

**Table 9: Residential Broadhectare Land Supply Stocks – Shepparton/Mooroopna**

Locality	Zoned Stocks	UGZ - PSP Required	Potential Residential (unzoned)	Total
Congupna	0	0	840	<b>840</b>
Grahamvale	870	0	1,160	<b>2,030</b>
Kialla	1,257	1,000	1,000	<b>3,257</b>
Mooroopna	375	0	791	<b>1,166</b>
Shepparton	1,494	0	2,500	<b>3,994</b>
Shepparton North	545	0	0	<b>545</b>
<b>Total</b>	<b>4,541</b>	<b>1,000</b>	<b>6,291</b>	<b>11,832</b>

Source: Spatial Economics, 2019. Residential Land Supply & Demand Assessment.

**Note:**

1: Includes the Radio Australia potential residential site contained in the Shepparton-Mooroopna 2050 Regional City Growth Plan. This site was not included in the 2019 land supply assessment.

2: As at March 2019 the Shepparton North East Precinct (Grahamvale) was unzoned. However as at October 2020 the precinct was zoned Urban Growth and subsequently classified as zoned broadhectare residential.

As at March 2019, there was a residential lot capacity within zoned broadhectare sites of approximately 4,540 in Shepparton/Mooroopna.

Within Shepparton/Mooroopna, the zoned broadhectare lot supply is located in:

- Grahamvale -870 lots (19% of supply);
- Kialla -1,257 lots (28% of supply);
- Mooroopna -375; lots (8%);
- Shepparton– 1,494 lots (33%); and
- Shepparton North -545 lots (12%).

Sites for future residential development are identified within various Council strategy planning documents. Precinct structure planning and rezoning processes are required before residential development can proceed on such sites.

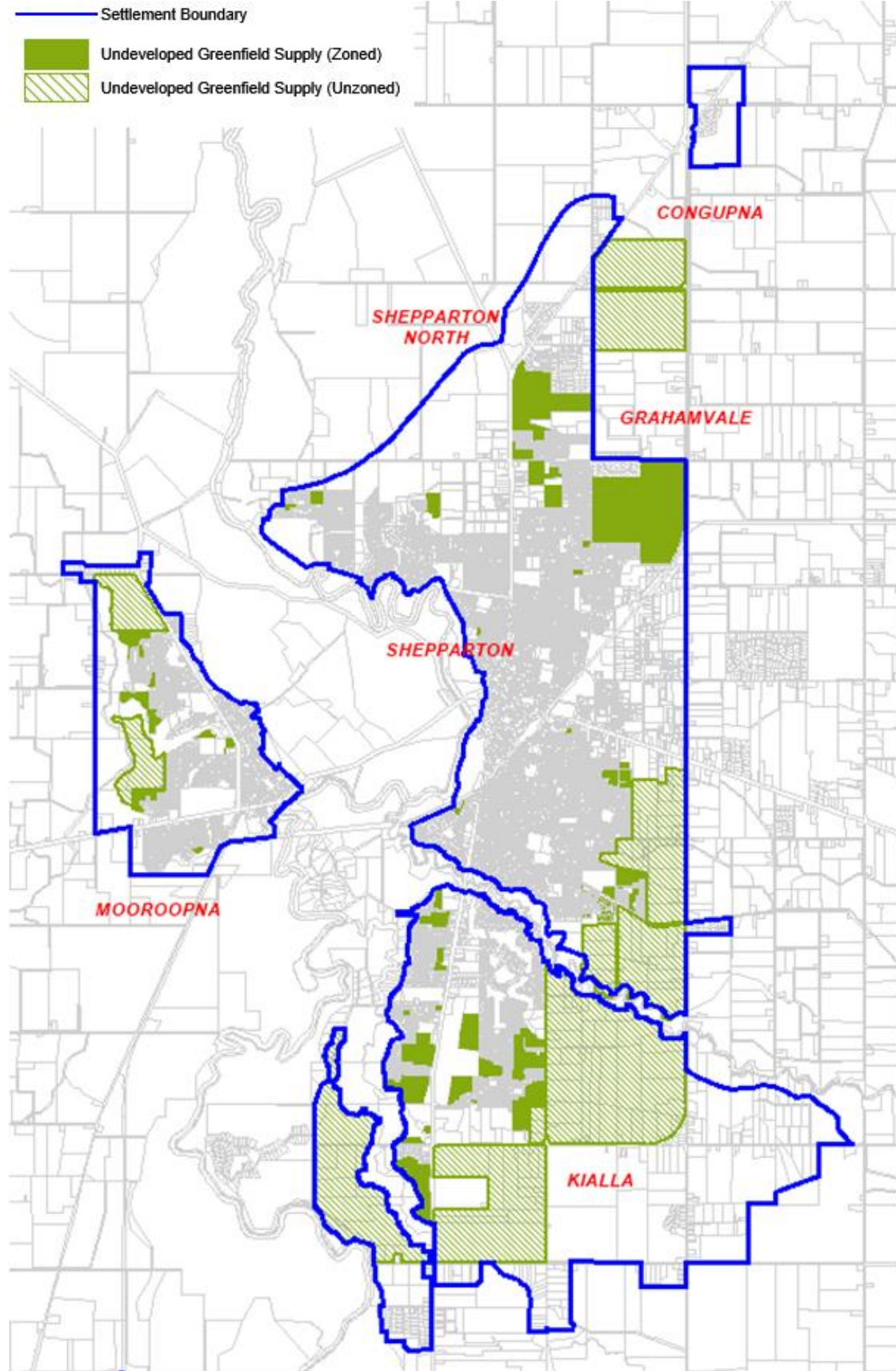
There are approximately 1,613 hectares of land (with an estimated yield of 7,300 dwellings) identified for potential future broadhectare residential development in Shepparton/Mooroopna. By locality, the stock of potential (unzoned) broadhectare land are located in:

- Congupna - 840 lots (98 hectares);
- Grahamvale -1,160 lots (128 hectares);
- Kialla - 2,000 lots (920 hectares);
- Mooroopna -791 lots (109 hectares); and
- Shepparton – 2,500 lots (352 hectares).

Map 2 illustrates the site location of the zoned/unzoned undeveloped residential broadhectare land stocks.



**Map 2:**Undeveloped Residential Greenfield Land Stocks, Shepparton-Mooroopna



It should be noted that a number of the areas identified for future development have drainage issues which have restricted their estimated yield. Given investment in suitable drainage works it



is possible that yields from some of these areas could be significantly increased.

In terms of years of residential land supply under each of the three population growth scenarios outlined earlier in this report this equates to:

**Table 10:** Estimated Years of Broadhectare Residential Land Supply

	Zoned	Unzoned	Total
VIF2019 (extended)	14	25	39
Higher growth	13	21	34
Lower growth	18	32	50

Note: measured at 2019

In summary:

- even under the higher growth scenario Shepparton-Mooroopna has sufficient residential land to satisfy demand until 2050. If this higher growth rate occurs – and is maintained - if would be necessary for council to take steps by 2038 to identify and zone additional land supplies in order to maintain at least the minimum 15 year land supply required by State Planning Policy after 2050. There is ample time available to monitor actual development trends before such action is required;
- if actual population growth in Shepparton-Mooroopna is in line with the VIF2019 projection the city has sufficient residential land to provide for housing demand until at least 2058 and action to decision on rezoning of an additional residential land supply would not need to be made until closer to 2043.
- If population growth were to decline to the level in the low growth scenario the already identified residential land supply would be sufficient to ensure that Shepparton-Mooroopna still had more than the required minimum 15 year land supply in 2050.

We have made recommendations later in this report regarding the ongoing monitoring of population growth and residential development trends so that Council can take timely action should higher growth rates occur and there is a need to identify and zone additional residential land supplies.



## 5.0 Provision for future industrial land supply

As noted earlier in this report, development and consumption of industrial land in Shepparton-Mooroopna has accelerated over recent years. It increased from an average of 4.8 hectares per annum over the decade from 2009 to 2019, to 6.9 hectares per annum from 2015 to 2019 and 7.5 hectares per annum from 2017 to 2019.

Such short-term trends cannot be relied upon in forecasting future demand. However they do suggest that it is appropriate for Council to take a cautious approach in planning for possible future industrial land needs. Spatial Economics has therefore adopted a scenario-based approach to assessing potential future industrial land demand and the adequacy of the currently identified stocks of industrial land. This is consistent with the approach adopted in assessing local industrial land needs in the State Government's '*Regional Urban Development Program*'.

Specifically, Spatial Economics has chosen to use three demand scenarios in assessing potential future industrial land requirements. These are:

### Scenario 1: The longer term trend

This scenario assumes average annual demand for 4.8 hectares of industrial land. That is, continuation of the average annual consumption over the decade from 2009 to 2019.

### Scenario 2: The trend over the last five years

This scenario assumed average annual demand for 6.9 hectares of industrial land. This is the average level of consumption of industrial land for the five years from 2015 to 2019. It implies a more than 40% increase in average annual demand compared to scenario 1.

### Scenario 3: An accelerated growth trend

This scenario assumed that the stronger (7.5 hectares per annum) demand experienced over the two years from 2017 to 2019 will be sustained into the future. This equates to a 56% increase in demand compared to scenario 1.

In considering likely future demand for industrial land it is also relevant to take account of current stocks of vacant industrial lots. In this regard Shepparton-Mooroopna has a relatively tight supply – only 107 vacant industrial lots or a lot vacancy rate of 12%. By way of comparison other major regional centres in Victoria, and Melbourne, typically have a vacancy rate of 25% to 30%. Outside the East Shepparton and Kialla industrial precincts there are minimal vacant industrial lots. Furthermore, there are especially tight vacant lot stocks in some important lot size ranges – for example only 31 vacant lots of over 0.5 hectares in size and only 5 lots of greater than 5 hectares in size.

This would suggest that, at least in the short term, there is a good likelihood that the actual rate of annual lot development will be towards the higher end of the three scenarios set out above.

As at March 2019 Shepparton-Mooroopna had a total supply of 614 hectares of zoned industrial land of which 137 hectares is zoned and vacant.

The largest stock of vacant zoned industrial land (70 hectares) is in East Shepparton. The balance of the zoned and vacant industrial land stock is distributed between Kialla (21 hectares), Mooroopna (8 Hectares), North Shepparton (4 hectares) and 2 hectares in Lemnos North-West Shepparton respectively.

In addition, there are four major locations ('investigation areas') identified for potential future industrial zoning across Shepparton-Mooroopna. Of these areas the largest (of 162 hectares) is in North Shepparton, two (of 38 and 14 hectares) are in Lemnos and one (of 20 hectares) is in Mooroopna. That is a total gross identified supply of unzoned future industrial land of 234 hectares.

Depending upon which of the three demand scenarios is assumed, Spatial Economics has calculated that Shepparton-Mooroopna has between a 13 to 20 years supply of zoned industrial land. In



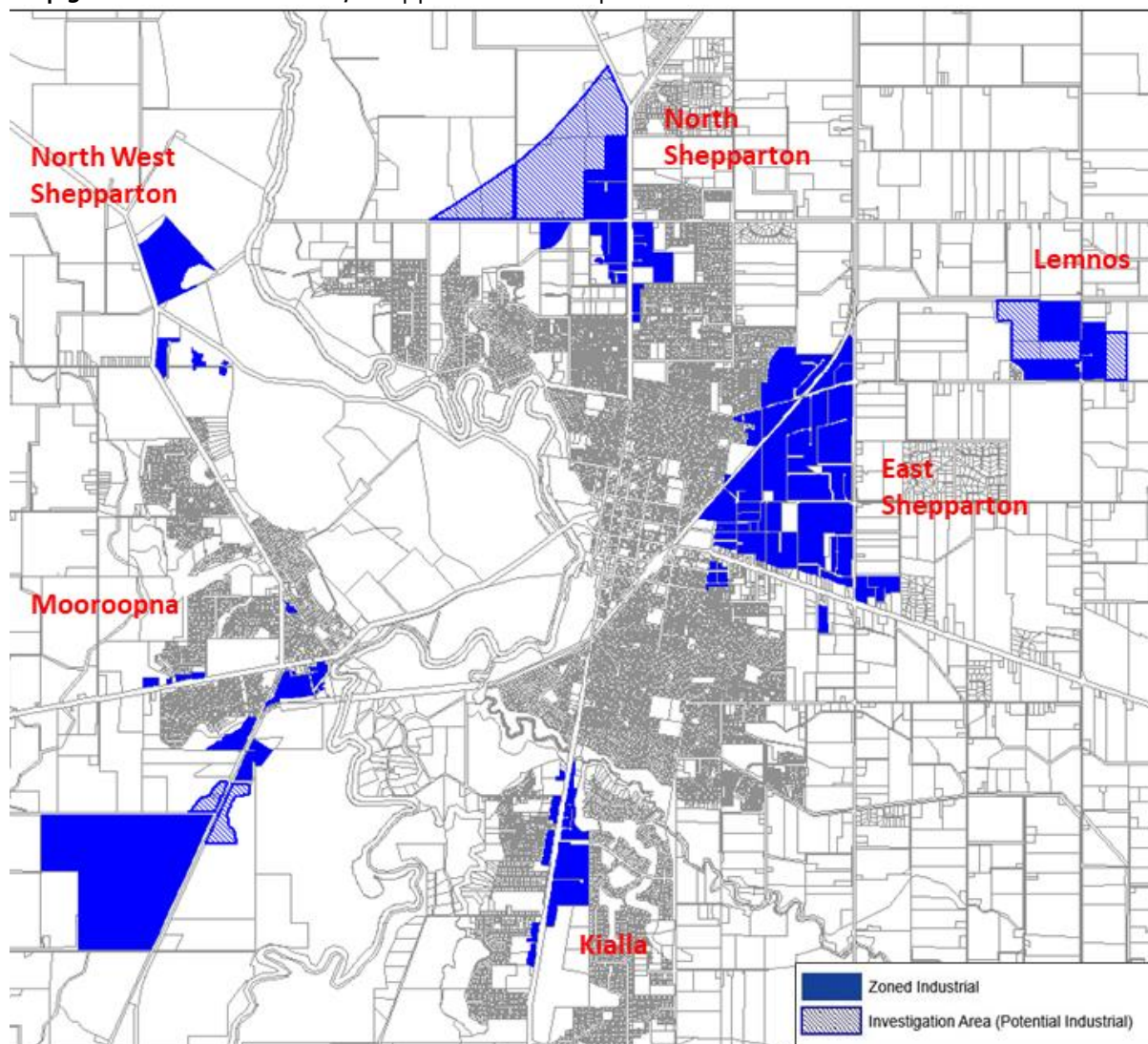
addition, there is a 20 to 31 years supply of land identified, but not yet zoned, for future industrial use. That is a total potential industrial land supply of between 33 to 51 years of supply depending on the level of average annual demand.

**Table 11:** Estimated Years of Industrial Land Supply

	Zoned	Unzoned	Total
<b>Scenario 1: The longer term trend</b>	20	31	<b>51</b>
<b>Scenario 2: The trend over the last five years</b>	15	21	<b>36</b>
<b>Scenario 3: An accelerated growth trend</b>	13	20	<b>33</b>

In summary, even under the highest growth scenario, the Shepparton-Mooroopna 2050: Regional City Growth Plan appears to have made an adequate provision for likely future industrial land demand.

**Map 3:** Industrial Land Stocks, Shepparton-Mooroopna



## 6.0 Ongoing management of land supplies given uncertainty regarding future growth rates

Planning for housing and industrial development thirty years into the future inevitably involves considerable uncertainty. Economic development and population growth trends will change over time. So will housing preferences and methods of industrial production. Council's strategic planning must provide for the likelihood of such changes.

Some might argue that the answer to planning for such uncertainty is just to provide for a much more than ample supply of developable land so that any potential upturn in demand can be catered for. But to do this would involve substantial costs to both Council and the community. It is likely to mean added costs in the planning and provision of infrastructure. It could also lead to unnecessary speculative increases in land prices, and as a consequence in rates and land taxes, on rural land that may never be required for development. It could thereby threaten the viability of existing activities such as agriculture. It would make it harder for local businesses to plan effectively to meet future needs. Finally, and importantly, it would also add to the uncertainty faced by the community regarding the potential impacts of ongoing growth.

A better, more practical, approach is to make provision for a more modest, realistic, increase in the forecast rate of development and combine this with regular and systematic monitoring of actual development trends. This will enable timely action to be taken, if necessary, to update planning strategies and provide for additional land supplies.

Earlier in this report we set out a 'higher growth' scenario that assumes an increase in forecast annual population growth from 1% to 1.3% (i.e. a sustained 30% increase on average growth rates over the last decade). This higher growth forecast has been used to 'stress test' the provision made for future housing development in the 2050 Growth Plan. If population increases in Shepparton-Mooroopna reach and maintains the level projected in this high growth scenario our land supply analysis suggests that Shepparton-Mooroopna will still have sufficient residential land to meet demand until at least 2050.

In summary the Shepparton-Mooroopna 2050: Regional City Growth Plan provides a significant buffer to provide for a potential future upturn in housing demand.

Similarly, our assessment is that the planned industrial land supply is currently insufficient zoned broadhectare land stocks to meet the requirements in the medium to longer term. Shepparton-Mooroopna is currently experiencing a rapid increase in the actual consumption of industrial land at unprecedented levels. However, in terms of longer term provision, there is sufficient unzoned stock to meet longer term requirements.

However, growth trends and market preferences can change fairly quickly. It is therefore imperative that forecasts are regularly assessed against actual development activity. Actual development activity can vary significantly from longer term forecasts even over a short period. An example is the sudden upturn in residential development activity seen in Shepparton-Mooroopna over a number of recent years. Such short-term upturns in demand may be driven by short term factors and will probably not be maintained over a longer period. However it is important that planning authorities are not caught out by such unexpected changes in development trends.

We recommend that Council commit to a continuing program of monitoring of development trends and of the adequacy of both the residential and industrial land supply. This will ensure that Council is in a position to move quickly to update the Shepparton-Mooroopna 2050: Regional City Growth Plan should this become necessary.

This ongoing monitoring program should include:

- Continuing monitoring of changes in the Estimated Resident Population data released by the ABS. This should be done at both a municipal and ABS SA2 level. It is particularly





important to do this after the 2021 census results are released. Past experience is that the ABS will then revise its population trend estimates, sometimes significantly. This in turn raises the need for review/revise population projections;

- Monitoring the quantum, location and type of residential subdivision approvals and housing planning and building approvals using Council's internal data sources;
- Annual monitoring of the actual 'consumption' (i.e. subdivision) of 'greenfield' residential land and updating of estimates of residual capacity for all remaining 'greenfield' land parcels;
- Regular monitoring of price trends for both 'greenfield' and subdivided land. Price trends are often a key indicator of supply problems;
- Equivalent monitoring processes for land stocks, development activity and sale prices of industrial land.

A well designed, and consistently implemented, monitoring program can help early identification of changes in key 'drivers' of demand, track where growth is going, and assess how well the various pieces of the Growth Plan are working. Information from a monitoring program can help Council fine tune land use planning policies to better achieve the Growth Plan goals. It is a more useful and cost-effective option than seeking to provide for uncertainty by unnecessarily designating additional land for possible development at some future time.

In addition, we recommend that Council hold annual 'development forums' with the local development and real estate industry for the purpose of gathering relevant intelligence. This should include any evidence of significant changes in development trends (such as changes in pricing and in demand for different types of housing and/or industrial development) and any particular issues being faced by the land development industry. Such 'development forums' provide a good opportunity both for Council to share information with the industry and also to gain an early warning of any emerging issues that may require changes to the Planning Scheme or the Shepparton-Mooroopna 2050: Regional City Growth Plan.



## Attachment 1: The methods used in Spatial Economics population and dwelling projections for Shepparton-Mooroopna

The purpose of this note is to clearly set out the methods and assumptions used by Spatial Economics in making population and dwelling projections used in its review of the residential and industrial land supply provided for in the Shepparton-Mooroopna 2050: Regional City Growth Plan.

Like other regional centres in Victoria (e.g. Bendigo, Horsham, Mildura, Bairnsdale) the Shepparton-Mooroopna urban area is surrounded by a large rural area dotted with small towns which are still part of the City of Greater Shepparton. The Greater Shepparton municipality is large, three times the size of the combined local government areas of Albury and Wodonga. It is important to note that the Spatial Economics projections are for the Shepparton-Mooroopna urban area, not the Greater Shepparton municipality.

The Spatial Economics projections use and build on the Department of Environment, Land, Water and Planning's (DELWP) Victoria in Future (VIF19) state, regional, local government area and small area (SA2) projections for population, households and dwellings. The Spatial Economics projects do not contradict the VIF19 projections in any way.

Spatial Economics has expanded the VIF19 projections in two ways. Firstly it has extended the VIF19 projections from 2036 to 2050. Secondly it has developed two alternative population growth scenarios, one higher, one lower, to demonstrate the impact of possible different growth rates on the future demand for dwellings in Shepparton-Mooroopna.

Like all projections, they should be interpreted as a technique to help decision making and not as a prediction of what the future will be. In its introduction VIF19 says:

*"Population projections are estimates of the future size, distribution and characteristics of the population. They are developed by applying mathematical models and expert knowledge of the likely population trends to the base population.*

*Projections provide information about population change over space and time but they are not predictions of the future. They are not targets nor do they reflect the expected effects of current and future policies.*

*The projections give an idea of what is likely to happen if current trends continue. They may indicate a need to manage change to achieve preferred outcomes or to mitigate the impacts of no-preferred outcomes"*

Source: *Victoria in Future 2019*, DELWP, Victoria

### The geographical extent of the Shepparton-Mooroopna projections

VIF19's most geographically detailed projections are for SA2s (statistical area level 2). SA2s are part of the standard geographical classification used by the ABS for Australia. In Greater Shepparton there are five SA2s. Three of these, Mooroopna, Shepparton North and Shepparton South cover the urban area of Shepparton-Mooroopna. The VIF19 projections for the Shepparton-Mooroopna urban area is the amalgamation of these three urban SA2s.

The remainder of Greater Shepparton is covered by the SA2s of Shepparton East and Shepparton West. The Spatial Economics projections are for the same area.

### Projecting populations

The VIF19 projections for Shepparton-Mooroopna are part of a large suite of top down projections for (a) Victoria, (b) then, Greater Melbourne and Regional Victoria (c) then, regions of Victoria (or SA3s in ABS parlance), (4) then SA2s and (5) local government areas.

The VIF19 projections for Shepparton Mooroopna are backed by extensive research and assumption making based on birth and death rate trends, overseas and within Australia migration trends. Most of these data are sourced from the ABS.



The VIF19 population projection for Shepparton-Mooroopna assumes the population growth rate rises from 1% in 2018/19 to 1.2% between 2022 and 2025 and drops back to reach 1% by 2036.

The Spatial Economics projection has these same assumptions and numbers in its medium or main projection.

### **Converting population projections into projections for dwellings**

Population projections are converted into household and dwelling projections through the three steps set out below:

The first step to making household projections is to set aside the so-called 'population in non-private dwellings'. These are people who live in institutions such as school boarding houses, college hostels and aged care accommodation.

In Shepparton-Mooroopna it amounted to almost 800 people or 1.5% of the population at the last census in 2016. The remaining 98.5% of the population is the population in private households. VIF19 assumes that the proportion of the population in non-private households rises over time (mainly due to ageing) reaching 2.1% by 2036.

1. The projected number of households is derived by dividing the population in private households by the average household size.

If a population of 60,000 has an average household size of 3 it will need roughly 20,000 dwellings to accommodate it. If the average household size is 2, 60,000 people will need roughly 30,000 dwellings. Along with population growth, declining household sizes are therefore make a significant contribution to dwelling growth.

VIF19 assumes the average household size in Shepparton-Mooroopna falls from the 2016 census figure of 2.46 to 2.3 by 2036. Average household sizes have been falling almost universally over the last hundred years due to lower birth rates, more adults remaining single and an ageing population. In preparing the VIF projections DELWP (and the ABS and relevant departments in other states) research household formation trends to derive household size assumptions. They can differ significantly from place to place.

2. An allowance is made for vacant dwellings. The ABS defines the number of occupied dwellings as the number of households. However in making dwelling projections allowance has to be made for the stock of dwellings that are vacant. This can include, for example, holiday homes, dwellings which have been constructed but not yet occupied and houses vacant in between people making moves.

VIF19 assumes that for Shepparton-Mooroopna this vacancy rate is constant at 3.3%-3.4% throughout the projection period. In other words the dwelling projections adds 3.3% or so to the projected stock of occupied private dwellings.

The Spatial Economics medium projection to 2036 has these same assumptions, processes and numbers as the VIF19 projection.

### **Extending the VIF 2019 population projections from 2036 to 2050**

Spatial Economics has taken the simplest, most easily understood approach to the assumptions used in extending the VIF 2019 projections to 2050. We have basically assumed that all assumptions remain constant from 2036 through to 2050.

That is:

1. The annual population growth remains constant at 1%;
2. The proportion of people in non-private households remains constant at 2.1%;
3. The average household size remains constant at 2.3;



4. The dwelling vacancy rate remains constant at 3.3%

#### **The impact of COVID-19 on short term population growth**

There will inevitably be questions about the impact of the COVID-19 pandemic on long term population mobility and growth. Spatial Economics has therefore considered whether short term population growth assumptions for Shepparton-Mooroopna should be adjusted to take account of the possible impact of the pandemic.

Two thirds of Shepparton-Mooroopna's growth comes from natural increase. The remaining third comes from the net effect of overseas and internal migration. It would be reasonable to assume that there will no overseas migration between the last third of 2019/20 and all of 2020/21 together with much lower levels of internal migration. If this was the case the net impact on Shepparton-Mooroopna would be close to zero. This is because the city gains slightly more from overseas migration than it loses through internal migration.

Consequently, Spatial Economics has not adjusted its VIF19 based projections or the other two variations. If users have different views and would like the projections to be re-run under a different set of assumptions then it can be done.

#### **Conclusion**

The discussion above seeks to openly explain the assumptions and techniques used in making the three projections presented in this report. If the Council wish to amend some of the assumptions or seek more detailed explanations of techniques used, then Spatial Economics can readily provide this additional information.



## Attachment 2 Method for Estimating Residential Land Supply

The following provides a brief outline of the methodology and approach used in the assessment of recent residential lot construction, residential land supply areas, dwelling demand scenarios and determination of assessing adequacy of residential land stocks.

The methodology that Spatial Economics has employed for this project is based on the simple premise of matching the supply type with demand. This methodology assesses recent construction and future supply using the same criteria with the supply type definitions based on outcomes and on a lot by lot basis rather than administrative boundaries.

The methodology used by Spatial Economics is consistent with other State Government methodologies around Australia, including the Victorian State Governments Regional Urban Development Program. The criteria used to define the supply types are explained below.

### Future Dwelling Requirements

In the 2019 municipal wide land supply assessment undertaken by Spatial Economics for the Greater Shepparton City Council population and dwelling projections undertaken by id Forecast commissioned were utilised to estimate growth requirements.

The current review of dwelling and residential land requirements for Shepparton-Mooroopna, utilises the recently released forecast data from the State Government – Victoria in Future 2019 (VIF2019) supplemented by two additional (higher and lower) growth projections prepared by Spatial Economics. Details of the assumptions in these growth forecasts are set out in Attachment 1

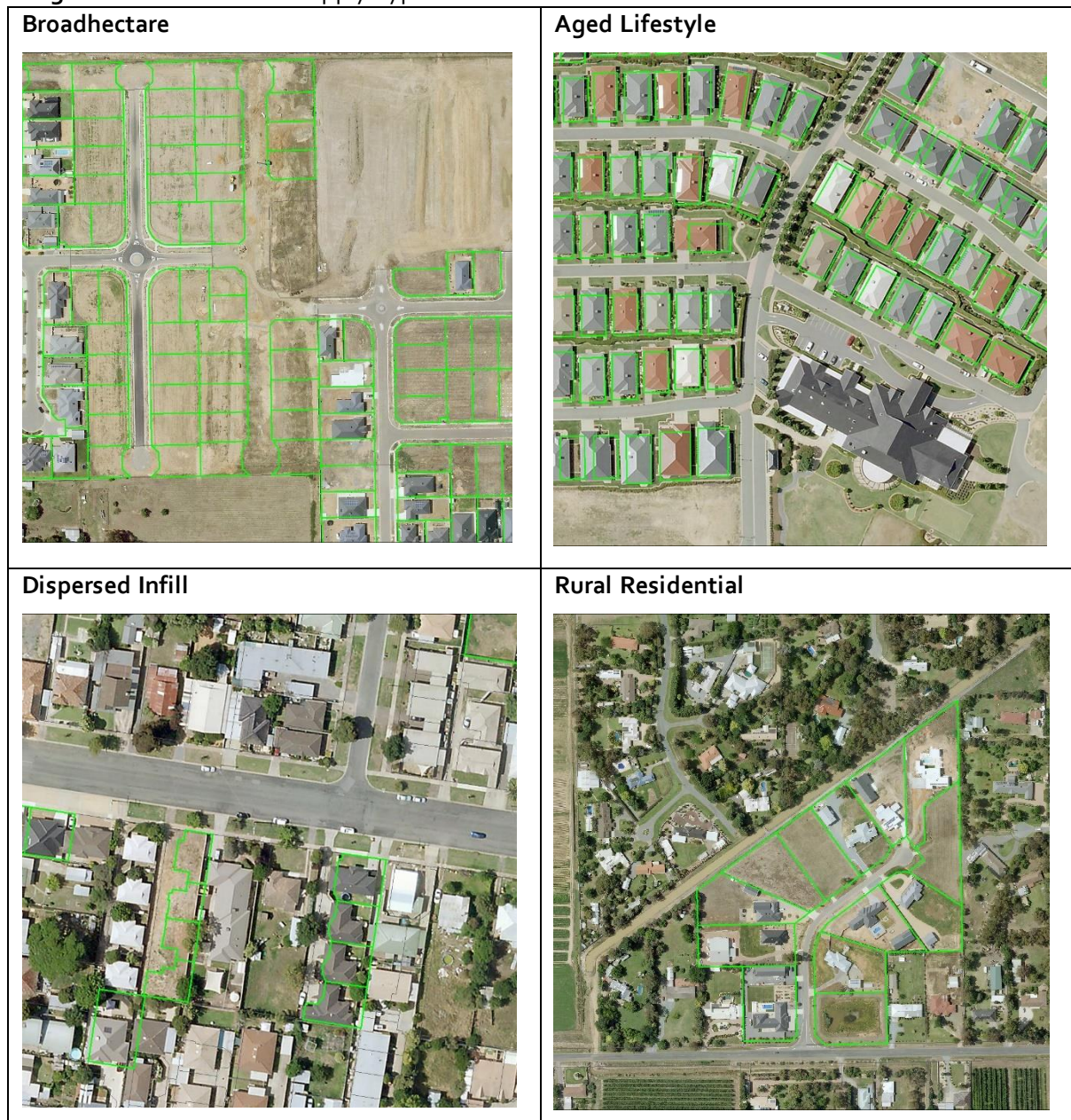
### Land Supply Type Definitions

1. **Broadhectare** is defined as residential development on greenfield sites (sites that have not been used previously for urban development purposes or previously subdivided for normal/urban density development) and typically located on/or near the urban fringe. In the case of Shepparton-Mooroopna this includes two sub-categories – general housing development and also housing built on broadhectare land that is specifically targeted for aged persons/households. Typically, in Shepparton-Mooroopna these are detached dwellings within lifestyle villages.
2. **Dispersed Infill** is from a lot/dwelling construction perspective, residential development occurring within the established urban area (not on broadhectare sites) that yield less than 10 dwellings per individual construction project. Typically, it entails 'backyard' style subdivision projects.  
(It is worth noting that to date/over the last ten years in Shepparton-Mooroopna there have not been any major redevelopment projects i.e. projects yielding 10 or more dwellings)
3. **Aged Care** covers specialist aged care developments. In the case of Shepparton-Mooroopna, aged care development that has been located within the established urban area of Shepparton.
4. **Rural Residential** is from a dwelling construction perspective, all activity on land zoned Rural Residential and Low Density Residential.



The images below illustrate the supply types.

**Image 1: Residential Land Supply Types**



### **Residential Lot Construction**

Residential lot construction has been determined via assessment of changes to the residential cadastre and the application of this cadastre to the land supply types identified above.

A constructed lot is defined by the year of construction and the finalisation of certificate of title.

Lot construction is only captured if it is for residential purposes.

It is noted, where new lot construction occurs (typically within mixed use type zones) and one lot results in multiple dwellings, the dwelling count is collected.

Construction activity has been assessed on an annual financial year basis from 2008 to March 2019.



Lot and dwelling construction have been undertaken for the following supply types:

- Rural Residential;
- Dispersed Infill;
- Aged Care; and
- Broadhectare (including a sub-category of 'lifestyle' developments targeted at older households).

### **Lot Yields**

Lot yields on a site basis has been undertaken for broadhectare (zoned and unzoned) and rural residential supply types.

In establishing the lot yield for each individual land parcel, the following information was used:

- zoning,
- existing structure or development plans where these have been completed.
- the extent and location of native vegetation,
- other natural features such as creeks, floodways, escarpments, etc
- localised current/recent market yields
- ability to be sewerred (especially in relation to land zoned rural living)

In addition to taking account of such site specific issues, Spatial Economics has made allowance for 'standard' land development take-outs (local and regional) such as local roads and open space requirements. The amount/proportion of such take-outs are dependent on the size of the land parcel (i.e. a 1ha site will have less take-outs than say a 50ha site). Further intelligence and verification are sourced from the local land development industry (as part of Spatial Economics 2019 residential land supply update) and Council officers.

### **Rural Residential**

Rural Residential allotments have been established via the assessment of the cadastre and zoning information. All allotments zoned either Rural Living (RLZ) and Low Density Residential (LDRZ) is included. This information has primarily been assessed via aerial imagery interpretation.

### **Years of Supply**

With the amount of supply and demand estimated, adequacy is described in years of supply. For example, it can be stated that there are X years of supply based on projected demand within a given geographic area.

In assessing the number of years of broadhectare residential land supply, only a component of the total projected demand is apportioned to estimate future demand. The remainder is apportioned for future demand of other forms of residential supply such as dispersed infill and rural residential.

Spatial Economics in undertaking the review of residential land stocks for the Shepparton - Mooroopna 2050: Regional City Growth Plan, has been particularly conservative in assessing broadhectare land stocks i.e. not risking underestimating the share of demand going to broadhectare development.

Specifically, Spatial Economics have assumed a constant 87% broadhectare share of total residential development. Given the relatively small historical share of both infill and rural residential development, there is a strong possibility this form of development in Shepparton-Mooroopna over-time may increase, therefore increasing the 'years of supply' of broadhectare stocks.



### Attachment 3 Method for Estimating Industrial Land Supply

The following provides a brief outline of the major methodologies and approach in the assessment of recent industrial lot construction, industrial land supply areas, industrial land consumption and associated demand projections and determination of assessing adequacy of industrial land stocks.

#### Industrial Land Supply

Industrial land is used for a defined set of industrial uses although there are often a significant proportion of non-industrial uses that occupy industrial land. In line with the definition used by the State Government in the Metropolitan and Regional Urban Development Program, the zones that are considered primarily for industrial use across Shepparton-Mooroopna include: Industrial 1 Zone (IN1Z), Industrial 3 Zone (IN3Z), Commercial 2 Zone (C2 Zone) and select Special Use Zones.

Future (unzoned) industrial land is identified through various strategic planning policy documents and consultation with municipal officers. Future industrial land is currently unzoned to support industrial development; however the land is designated for future industrial purpose.

In this project every parcel of land is deemed to be unavailable or available as supply.

- *Supply* – zoned industrial land classified as available for industrial development. This includes land that is vacant, disused or assigned to marginal non-industrial uses with little capital value, such as farm sheds.
- *Unavailable* – zoned industrial land classified as unavailable for industrial development. This includes land already occupied by industrial uses, construction sites, major infrastructure, capital intensive farming operations, established residential premises or where it is known that the owner has strong intentions not to develop the land in the medium to long term or when there is a known development commitment.

For all industrial land, each individual parcel is recorded with its size and the applicable zone. This enables an assessment of the overall or gross stock of land either as unavailable or available as supply.

In instances where industrial land was in the process of being approved for rezoning to another use (for example a Commercial, Residential or Mixed Use Zone) and, based on Council feedback, the land is identified as unavailable.

In several instances, discrete parcels of land (within one title) have been created to demonstrate a high degree of availability for development on a particular site. For example, where there is a significant area of land with a specific use operating from a small portion of the land and it is understood the balance of the land is regarded as a potential development site, the title area has been split to show the occupied and vacant components of the land.

The supply of industrial land must take into account the likelihood of a reasonable level of infrastructure servicing. However, the level of servicing required for industrial land in small towns is not necessarily high and industrial land may be considered as supply with only limited services available.

All industrial land that is identified as available as supply, is assessed to determine the “net developable land” which is the land available to develop for industrial uses. This is after allowing for local roads and open space as well as allowing for any constraints that are on the land. These constraints including native vegetation, flooding, or terrain can be very significant and have large effects on the availability of land. The determination of net developable land is done on a site by site basis with reference to any constraints.





### **Industrial Lot Construction**

Analysis of the cadastral database on land zoned for industrial purposes from July 2008 to March 2019 was undertaken to determine the location, volume and resultant lot size of industrial lot subdivisions.

### **Industrial Land Consumption**

To determine industrial land consumption, examination of aerial imagery between specific periods was undertaken and updated to March 2019 via a land use survey of each previously identified vacant industrial allotment.

In comparing the extent to which consumption has occurred, land has been 'back cast' against previous periods to ensure like for like areas have been compared. This has been done to ensure that the effect of the rezoning of new industrial land or the rezoning of industrial land to non-industrial uses does not distort the actual consumption that has occurred between periods.

### **Future Demand**

Projected industrial land demand has been based on the recent industrial land consumption method that calculates the use of industrial land by location, by zone and importantly area. This method is utilised by State Governments' Metropolitan and Regional Urban Development Program.

This method is particularly appropriate for large metropolises, regional centres and townships where there is sufficient demand for industrial land as well as unconstrained supply.

Historical industrial land consumption under the above conditions is a sound base to assess future consumption of industrial land consumption. However, economic/employment activity can and will invariably change. Specifically, as local resident population increases so will the requirement for additional employment land to 'service' the resident population needs. In addition, there is always the likelihood of 'export' related industry development that would require additional industrial land.

Due to this uncertainty relating to forecasting industrial land requirements, three demand scenarios are presented, namely:

**Scenario One: Long Term Trend** – is assumed at an average annual rate of industrial land consumption of 4.8 hectares. This represents actual industrial land consumption from 2009 to 2019.

**Scenario Two: Recent Trend** - is assumed at an average annual rate of industrial land consumption of 6.9 hectares. This represents actual industrial land consumption from 2015 to 2019.

**Scenario Three: Sustained Accelerated Growth** – is assumed at an average annual rate of industrial land consumption of 7.5 hectares. This represents actual industrial land consumption from 2017 to 2019.

Due to the demand for industrial land being relatively 'lumpy' (compared to residential land) the above approach provides sensitivity testing to allow for plausible significant increases in demand for industrial land.

### **Adequacy of Industrial Land Stocks**

Industrial land 'adequacy' is illustrated by using the number of years of supply through the interaction of both demand and supply. The number of 'years of supply' is measured by dividing estimates of both zoned and unzoned areas (net developable) by the average annual rate of industrial land consumption.



Demand scenarios have been developed for potential higher levels of future demand, to take into account either higher population growth or specific changes to the employment/industrial land market i.e. increased economic development activity.

Industrial land is usually clustered together in definitive nodes or clusters due to the negative external effects of industrial uses on other land uses. Hence, industrial land is analysed through identified industrial precincts.

For Shepparton-Mooroopna, the following industrial precincts have been identified, and subsequently land supply information reported and assessed at an industrial precinct and total study area (Shepparton-Mooroopna):

- East Shepparton
- Kialla
- Lemnos
- Mooroopna
- North Shepparton
- North West Shepparton

The adequacy of industrial land stocks is reported at a total study area level.

