Pickering Brook townsite sustainability assessment

Disclaimer:

This is a working document and the conclusions and recommendations do not represent a position of Government regarding potential expansion of the Pickering Brook townsite. This document will inform further consideration and assessment by the Project Working Group, Taskforce and Western Australian Planning Commission to inform the development of the Pickering Brook and Surrounds Sustainability and Tourism Strategy.

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Executive summary

This report provides a sustainability assessment to examine the preferred location(s) for townsite expansion in Pickering Brook. This assessment considers the 80 net hectare Pickering Brook Planning Investigation Area (PBPIA) and the 40-hectare site at Lot 81 Cunnold Street. This assessment draws on data collected and prepared from a variety of professional sources, taking into account previous assessments of the study area by State Government agencies and the City of Kalamunda.

Literature review

A comprehensive review of past studies, reports and relevant Government policies formed the basis for this assessment. It identified a range of issues and requirements necessary for the sustainability assessment. This review informed the development of the framework and criteria for the sustainability assessment.

Sustainability assessment

The sustainability assessment used the strategic 'directions' as defined by the WAPC's *State Planning Strategy 2050* to develop a framework for the sustainability assessment. This provided five high-level areas to group the sustainability criteria:

1. **Economic development**: including the preservation of high quality and priority agricultural land, buffer requirements associated with residential proximity to orchardist activity and meeting dwelling demand.
2. **Physical infrastructure**: including water reticulation, sewerage, electricity telecommunications and traffic impact of potential development in the area.
3. **Social infrastructure**: including education, the local economy and ensuring that local identity and amenity are maintained.
4. **Environment**: covering water management and natural ecological values, including conservation-significant species. Development considerations should address public drinking water protection and align with the Government's Sewerage Policy.
5. **Security**: bushfire risk and the safety of residents and buildings.

A multi-criteria analysis was undertaken in consultation with the Project Working Group to gauge the relative importance of criteria associated with the above categories. Some of the relevant criteria were applicable to the entire area, referred to as "broad-area criteria", while others were dependent on the development scenario assessed, referred to as "area-specific criteria".

Broad-area criteria was acknowledged and discussed through text and expert opinion. Area-specific data was placed into a program which allowed the layering of various maps of each sub-criterion from maps of high-quality agriculture to fire risk. Combining these maps with the broad-area criteria determined the preferable development scenario(s) for the potential expansion of the Pickering Brook townsite.

Figure 1. Pickering Brook Planning Investigation Area

Source: Department of Planning, Lands and Heritage

Development scenarios

The Department of Planning, Lands and Heritage in consultation with the City of Kalamunda, the bushfire consultant and the economic consultant, developed urban development scenarios for the Pickering Brook Planning Investigation Area. Six potential development scenarios were tested including the original site proposed for expansion of the Pickering Brook townsite (formerly Carilla townsite) at Lot 81 Cunnold Street, and progressive development scenarios within the Pickering Brook Planning Investigation Area.

Figure 2. Scenario 1

Source: DPLH 2020; macroplan 2020

The following maps show the scenarios for the progressive development of the Pickering Brook townsite.

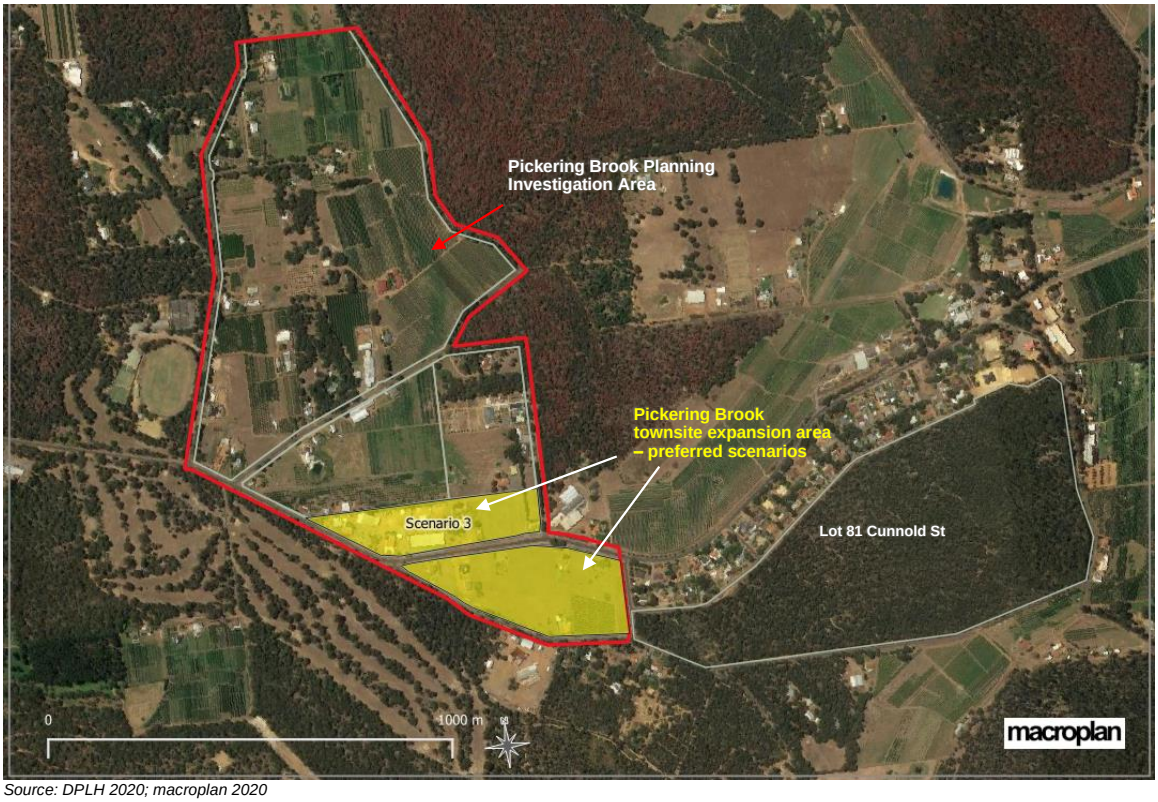
Figure 3. Pickering Brook Planning Investigation Area: Development Scenarios 2A/2B, 3, 4, 5 & 6

Source: DPLH 2020; macroplan 2020

Preferred townsite expansion scenario

The preferred development is **Scenario 3**, with a small 'town centre' (as per **Scenario 2B**). The second ranking Scenario was **2B**, followed by **2A**.

Figure 4. Pickering Brook preferred townsite expansion scenario



Source: DPLH 2020; macroplan 2020

Indicative yields: for the preferred scenarios:

Scenario 3 includes 13.7 hectares of developable land with an estimated dwelling yield of 44 and population yield of 131. This may result in approximately 14 primary school aged children.

Scenario 2A includes 8.4 hectares of developable land with an estimated dwelling yield of 27 and population yield of 80. This may result in approximately 8 primary school aged children.

Scenario 2B includes the same 8.4 hectares of developable land, but involves a town centre, lowering total estimated dwelling yield to 26 and population yield to 78. This scenario may result in approximately 8 primary school aged children.

All other development scenarios did not meet the high-priority criteria for the following reasons:

Scenario 1	Entire site (Lot 81) has existing remnant vegetation and clearing may potentially impact on protected fauna. Therefore, it would likely require strategic assessment under the *Environmental Protection and Biodiversity Act 1999* (EPBC).
Scenario 4	This area has a large drainage depression and is within 100 metres of a waterway, making it unsuitable for residential development as it is more likely to conflict with the Government's Sewerage Policy.
Scenario 5	In addition to the issues affecting Scenario 4, this land has existing vegetation that has previously been identified for retention (by the City of Kalamunda).
Scenario 6	In addition to the issues affecting Scenario 4 and 5, this additional land has been identified as high value agricultural land and is used for agricultural production and has existing vegetation identified for retention.

Executive summary

Table 1. Development scenarios – suitability for townsite expansion summary table

Scenario	Economy	Physical Infrastructure	Social Infrastructure	Environment	Security	Overall score	Concluding comment
1	High – Large population yield with no loss of productive land	Medium – may require some additional transport and water upgrades	High – Large population yield meaning increased community activity	**Unsuitable for development –** Due to remnant vegetation	Medium – Clearing of land will reduce bushfire risk to existing dwellings	**Unsuitable for development**	Lot 81 is not suitable due to environmental constraints (remnant vegetation).
2A	Medium – Adds population without losing land currently used for agriculture	High – Does not require any significant infrastructural upgrades	Low – Population yield of roughly 80 residents	High – Little impact on environment	Low – Adjacent to existing vegetation	Medium/High	Scenario 2A scores well on most criteria. It has no significant negative effects on the local economy or environment and does not require significant physical infrastructure upgrades.
2B	Medium/High – Adds population without losing land currently used for agriculture + town centre	High – Does not require significant physical infrastructure upgrades	Low – Population yield of roughly 78 residents	High – Little impact on environment	Low – Adjacent to existing vegetation	High	Scenario 2B has the same outcomes as 2A with the benefit that it provides for a small scale 'town centre'. This means a reduction of one dwelling (from Scenario 2A), which is offset by commercial development (size and type to be determined).
3	High– Large population yield with no loss of productive land	High – no major additional infrastructure or upgrades required.	Medium – Population yield of roughly 131 residents	High – Little impact on environment	Medium – Mostly surrounded by cleared land.	High	Scenario 3 scores well on all criteria. It has no significant negative effects on the local economy or environment and does not require significant physical infrastructure upgrades. It also adds around 44 dwellings (131 residents), helping to support the local community and economy.
4	Low – Loss of agric. land	Low – May require additional water main	Medium – Population yield of roughly 232 residents	Low – Whole of area is within 100m of water course and associated waterlogged buffer area	Low – Adjacent to existing vegetation	Low	Proximity to a water course and Government Sewerage Policy potentially creates critical constraint to this scenario.

Executive summary

Scenario	Economy	Physical Infrastructure	Social Infrastructure	Environment	Security	Overall score	Concluding comment
5	Low – Loss of agric. land	Low – May require additional water main	High – Population yield of up to 290 residents	Low – Development constrained by presence of remnant vegetation. Area also partially within 100m of water course and associated waterlogged buffer area.	Low – Adjacent to existing vegetation	Low	In addition to comments from Scenario 4, this Scenario would entail significant loss of existing high quality, productive agricultural land.
6	Low – Significant loss of agric. land	Low – Drainage and geotech issues affect viable development land. Would require additional water main and supply tank.	Medium – Population yield of up to 770 residents	Low – Development constrained by proposed retained remnant vegetation. Significant areas are within 100m of water course and associated waterlogged buffer area	Low – Is adjacent to existing vegetation and has vegetation within the site.	Low	In addition to comments from Scenarios 4 and 5, this Scenario would entail significant loss of existing high quality, productive agricultural land. Loss of existing rural character.

Source: macroplan 2020

Introduction

On behalf of the Pickering Brook and Surrounds Working Group, the Department of Planning, Lands and Heritage engaged Macroplan to prepare a sustainability assessment for the potential expansion of the townsite in Pickering Brook. This report describes a comprehensive process to test the various townsite expansion scenarios against sustainability criteria which were developed as part of the process.

The assessment drew on data collected and prepared from a variety of professional sources, taking into account previous assessments of the study area by State Government agencies and the City of Kalamunda, and considering the priorities of the State Government outlined in State Planning Policies.

Study background

In October 2017, the City of Kalamunda submitted a proposal to the Western Australian Planning Commission (WAPC) proposing a Metropolitan Region Scheme (MRS) amendment to rezone approximately 80 net hectares of 'Rural' land in Pickering Brook to 'Urban' for expansion of the townsite.

The WAPC resolved to refuse to initiate the proposal for the following reasons:

- The proposed amendment area is not identified for urban expansion in the draft North-East Sub-regional Planning Framework;
- It does not comply with the requirements of State Planning Policy 3.7 – Planning in Bushfire Prone Areas as an extreme hazard exists, making the location unsuitable and inappropriate for intensification; and
- A District Water Management Strategy (DWMS) has not been approved by the Department of Water and Environmental Regulation (DWER).

Study purpose

The land which was the subject of the proposed MRS amendment is classified as a Planning Investigation Area (PBPIA) in the Perth and Peel @ 3.5 Million North-East Sub-regional Planning Framework (2018). The State Government has undertaken to prepare a Pickering Brook and Surrounds Sustainability and Tourism Strategy (the "Strategy") which will include the necessary investigations for the PBPIA and will:

- Have regard to a range of key planning considerations;
- Determine if it is possible and/or appropriate to support a change in land use for any part of the PBPIA land to accommodate sustainable expansion of the townsite;
- Identify and consider relevant constraints, opportunities, and scenarios for the potential sustainable expansion of the Pickering Brook townsite; and
- Will include consideration of any implications for any high quality and priority agricultural land within the PBPIA, and from any potential increased tourism attraction and activity throughout the study area.

The Strategy will, among other things, provide a strategic land use recommendation for the PBPIA to inform a future review of the North-East Sub-regional Planning Framework.

Taskforce and Working Group

To prepare and manage the Strategy, the Western Australian Government has formed a Taskforce and Project Working Group (PWG) to investigate the future land uses for a significant portion of the Perth Hills between Paulls Valley in the north and Roleystone in the south. The Project Taskforce and Working Group include members representing Parliament, WAPC, relevant State Government agencies, and the cities of Kalamunda and Armadale.

The original members of the Project Working Group include representatives from the following organisations:

- Department of Planning, Lands and Heritage (DPLH) - Project Manager;
- Department of Primary Industries and Regional Development (DPIRD);
- Department of Water and Environmental Regulation (DWER);
- Department of Jobs, Tourism, Science and Innovation (JTSI) - Tourism WA;
- Department of Fire and Emergency Services (DFES);
- City of Kalamunda; and
- City of Armadale.

The Department of Biodiversity, Conservation and Attractions (DBCA) is also assisting the PWG.

The PWG is investigating opportunities related to planning and economic development, considering constraints and developing scenarios to revitalise the Pickering Brook townsite and surrounding area. The findings from this process will be used to develop a sustainable planning and tourism strategy with recommendations submitted for consideration by the Taskforce, representing the State Government.

Study process

The sustainability assessment covered in this report covers identifying scenarios for the potential expansion of the townsite within the PBPIA, using a multi-criteria analytical approach to assess the scenarios, and preparing recommendations. This sustainability assessment is a key input to the subsequent preparation of the Strategy.

The PWG is tasked with identifying and considering planning-based solutions that may assist with the economic and social revitalisation of the Pickering Brook townsite and surrounding area. This includes reviewing the value and future potential of the agriculture and tourism industries within the study area.

This sustainability assessment has been informed by other work being undertaken by the PWG including:

1. Land capability assessment prepared by Department of Primary Industries and Regional Development (DPIRD) – which is to identify high quality and priority agriculture land within the study area;
2. Perth Hills Tourism Gap Analysis (currently being prepared by Tourism WA);
3. Advice from a bushfire specialist consultant;
4. City of Kalamunda District Water Management Strategy (DWMS);
5. Results of preliminary community consultation; and
6. Traffic impact assessment by a traffic consultant.

Pickering Brook Planning Investigation Area (PBPIA) and surrounds

While the overall study area for this assessment covers parts of the City of Kalamunda and parts of the City of Armadale (see Appendix A), this report focuses on the land uses within the Pickering Brook Planning Investigation Area (see Figure 5), which covers nearly 80 net hectares of predominantly rural land, and Lot 81 Cunnold Street which contains remnant bushland.

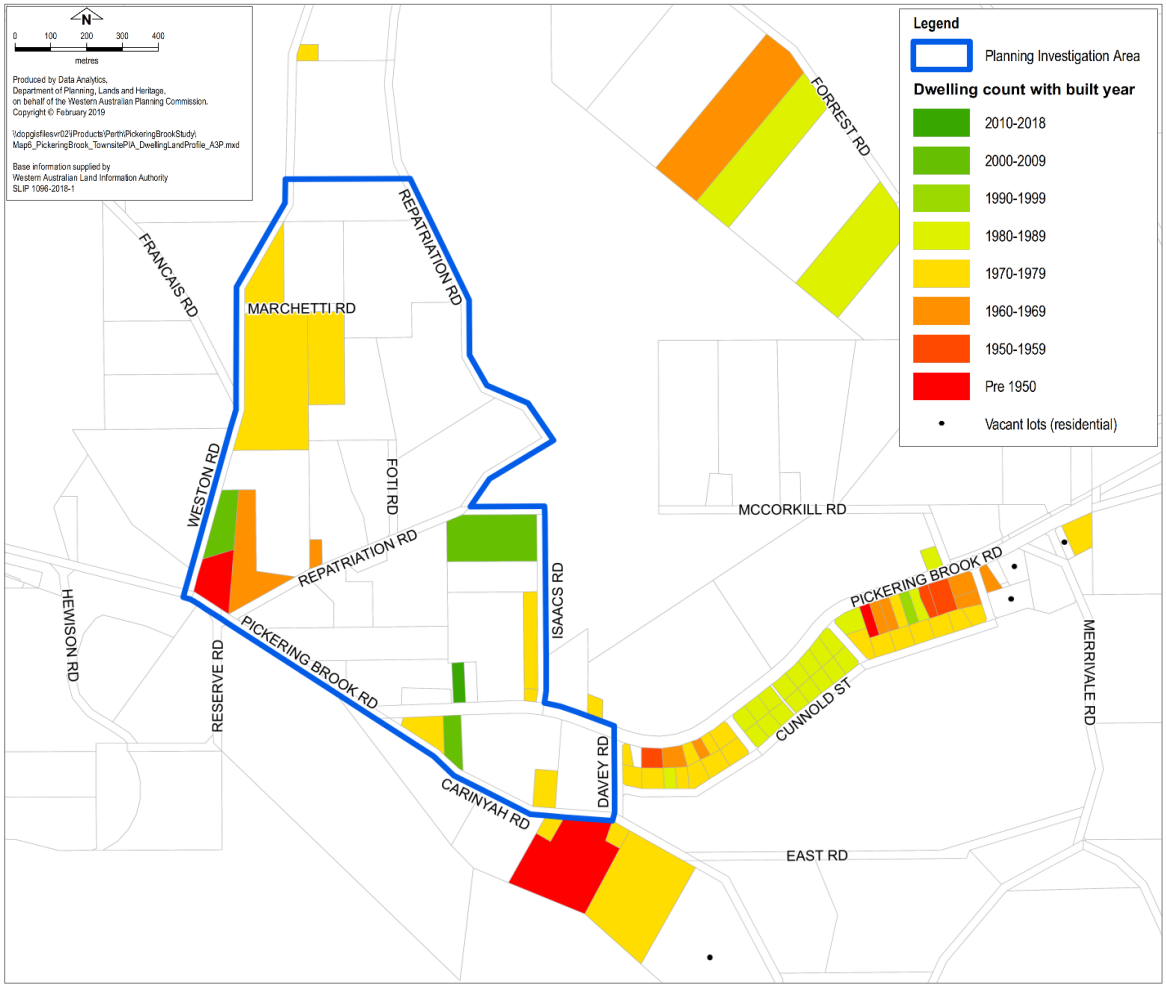
Figure 5. Pickering Brook Planning Investigation Area

Source: DPLH 2019

As at the latest Census in 2016, the PBPIA had over 50 dwellings and about 135 residents. It also had several rural businesses.

The existing housing in Pickering Brook was developed mainly throughout the 1970s and 1980s, although there are some older houses that date back to before the 1950s. Within the PBPIA, there has been some new housing that has been developed in the past decade, suggesting renewed investment in the area. The following map shows the decade of construction of the housing that was present in 2019. It also indicates that very few residential lots are vacant.

Figure 6. Dwelling profile in the PBPIA and surrounds



Source: DPLH 2019

Existing major land use and economic activities in Pickering Brook

Agricultural production has been a staple economic activity and consists largely of fruit growing for domestic consumption and export. There are also a small number of accommodation facilities in the surrounding area.

There are several arts, cultural and tourism facilities in the area attracting day visitors and overnight stays in the area. This includes the annual Bickley Harvest Festival (incorporating Carmel and Bickley in addition to Pickering Brook), held in autumn and the Perth Hills Spring Festival.

Approach to the sustainability assessment

A summary of the approach used for the sustainability assessment is included below. Note that a more detailed description of the methodology is included **Appendix B**.

The sustainability assessment process is summarised in the following points:

- Consultation with the Department of Planning Lands and Heritage to confirm the relevant literature, document, data and stakeholders for the project.
- Site visit to Pickering Brook.
- Review of the documentation provided and a research process to begin forming the framework for the sustainability assessment and the subsequent write-up as provided in the following section.
- The sustainability assessment methodology was developed specific to Pickering Brook's existing and emerging land use and economic activities. The sustainability framework was based on strategic directions from the *State Planning Strategy 2050*:
- The sustainability assessment used a multi-criteria assessment (MCA) process to determine how the stakeholders value ('weight') each criterion and how well each proposed scenario addresses ('scores') the criteria.
- The Project Working Group was then consulted on the proposed methodology. Following this, there were a series of online and phone consultations to gather further information for the assessment.
- Once the criteria were finalised in consultation with select members of the PWG the MCA workshop was held in January 2020. A detailed description of the workshop outcomes is provided in **Appendix C**.
- Results from the workshop were analysed and incorporated into this report with a preferred development scenario based on the optimal sustainability outcome.

Pickering Brook demographic profile

The first set of displayed data is at suburb level, assessing all respondents residing in Pickering Brook as at Census date in 2016.

Pickering Brook suburb profile

The median age across the Pickering Brook suburb in 2016 was 46, higher than both the State and national medians which were 36 and 38 respectively. Pickering Brook had a total population of 573, 52.0 per cent male and the remaining 48.0 per cent female. The age cohorts with the highest population were 45 to 49 years, with 49 residents, 50 to 54 years with 50 residents and 60 to 64 years with a further 50 residents (50 residents = roughly 8.7 per cent of the suburb population).

As at 2016, 45.0 per cent of the suburb composed of couple families with children, and 13.0 per cent were one parent families. There were 65 couple families with no children, 40.0 per cent of the total, and the remaining 2.0 per cent were classified as "other" families, which are relationships that are neither couple nor parent-child relationships (eg. siblings living together without dependants.)

Table 2. Family composition in Pickering Brook suburb

Family composition	Number of households	(%)
Couple family with no children	65	40.0
Couple family with children	72	45.0
One parent family	21	13.0
Other family	3	2.0
Total	**229**	

Source: Australian Bureau of Statistics, Census of Population and Housing, 2016

Pickering Brook has a low dwelling vacancy rate with unoccupied private dwellings comprising only 5.0 per cent of the suburbs' dwelling profile. The remaining 95 per cent were occupied private dwellings. The tenure type across the suburb is displayed in the table below. Roughly 43.0 per cent of households owned their home outright, and 28.0 per cent owned their home with a mortgage. A further 12.0 per cent were renting.

Table 3. Pickering Brook suburb tenure type

Tenure type	Number of households	(%)
Owned outright	99	43.0
Owned with a mortgage	63	28.0
Rented	27	12.0
Occupied rent-free	7	3.0
Other tenure type	4	2.0
Tenure type not stated	19	8.0
Tenure type not applicable	8	4.0
Total	**228**	-

Source: Australian Bureau of Statistics, Census of Population and Housing, 2016

The top three industries of employment as at 2016 across Pickering Brook suburb were:

1. Agriculture, Forestry and Fishing (18.0 per cent)
2. Construction (9.0 per cent)
3. Education and Training (9.0 per cent)

The top three occupations were:

1. Managers (28.0 per cent)

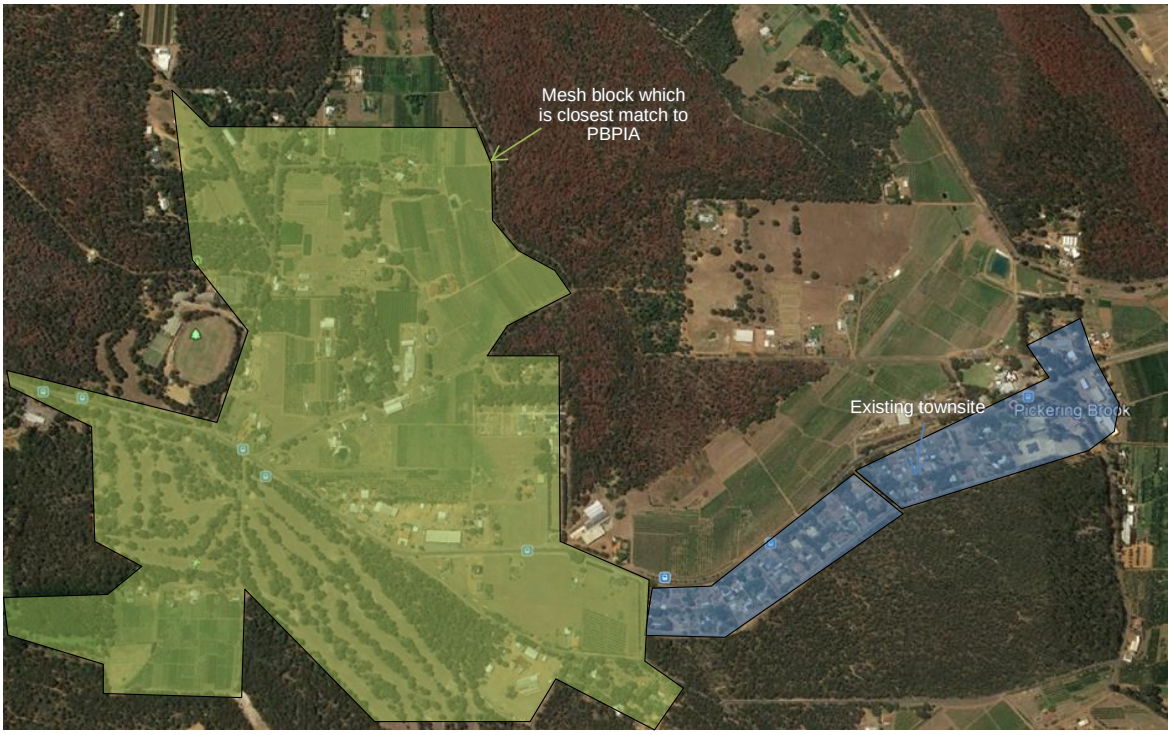
2. Technicians and Trade Workers (15.0 per cent)
3. Clerical and Administrative Workers (14.0 per cent)

In 2016, the Pickering Brook suburb recorded a median household income of $1,587, higher than the State and country as a whole which recorded weekly household income figures of $1,210 and $1,203 respectively.

Pickering Brook Planning Investigation Area profile by mesh block

The following data narrows the demographic profile to three areas displayed in the map below. The area shaded green represents the 'PBPIA' mesh block, and the two areas shaded blue are the mesh blocks, referred to as the 'existing townsite' in this report.

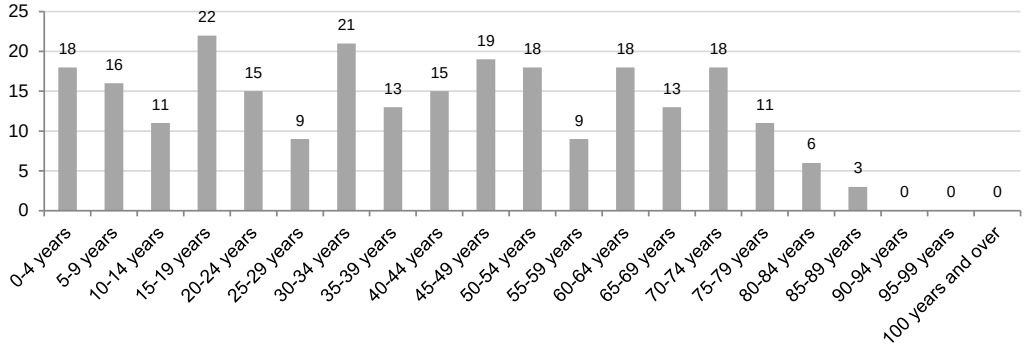
Figure 7. Pickering Brook mesh blocks



Source: Google Earth 2019, ABS ASGS 2016 mesh blocks

The PBPIA and the existing townsite had a total combined population of 265 in 2016. The age profile is displayed in the figure below. There were no residents aged above 90 in the area, likely due to the lack of aged care facilities and limited access to medical services. In total, 27.1 per cent of the population was aged between 60 and 89, and a further 23.9 per cent between the ages of 40 and 59. Of the remaining 49.0 per cent, 26.3 per cent were residents between the ages of 0 and 19, and 22.7 per cent between the ages of 20 and 39.

Figure 8. Age profile of the PBPIA and existing townsite

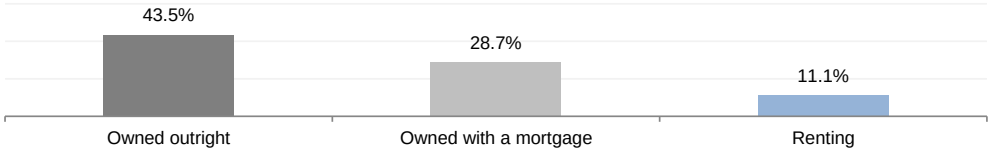


Source: Australian Bureau of Statistics, Census of Population and Housing, 2016

As at 2016, 31.6 per cent of the PBPIA and surrounds were couple families with children, while couple families with no children were 28.6 per cent of households. One parent families composed 8.2 per cent of dwellings and a further 12.2 per cent were lone person households.

According to Census data, the existing townsite had a total of 50 occupied dwellings and six unoccupied dwellings, while the PBPIA recorded a total of 55 occupied private dwellings, with 0 unoccupied. In terms of dwelling tenure, across the PBPIA and surrounds, 43.5 per cent of residents owned their homes outright, and a further 28.7 per cent owned their homes with a mortgage. An additional 11.1 per cent were renting in the area.

Figure 9. Dwelling tenure – PBPIA



Source: Australian Bureau of Statistics, Census of Population and Housing, 2016

**Note the numbers will not add up to 100 as the ABS will randomise figures when looking at small spatial areas

The following table displays ABS data on mobility for the PBPIA and existing townsite both 1 year and 5 years ago. Data suggests that most people do not move out of the area with 81.5 per cent of residents recording no change in their address over the past five years.

Table 4. Mobility statistics in the PBPIA and existing townsite

	In the last year (%)	In the last five years (%)
All residents have changed address	5.7	18.5
No residents have changed address	94.3	81.5

Source: Australian Bureau of Statistics, Census of Population and Housing, 2016

In terms of labour force status, 25.5 per cent of residents within the PBPIA were working full time, and a further 15.3 per cent working part time. For the existing townsite, 31.5 per cent of residents were working full time, and 23.1 per cent were working part

time. This is low by comparison to State averages which recorded 57.0 per cent working full time and 30.0 per cent working part time. However, despite this, unemployment in the area does not appear to be a significant problem with more people out of the labour force than unemployed and looking for work. This is likely a result of the volume of retirees in the community.

Table 5. The top 10 industries of employment in the PBPIA and existing townsite

	Industry of employment	Number of residents employed	Percentage of working population (%)
1	Manufacturing	12	9.2
2	Transport, Postal and Warehousing	12	9.2
3	Agriculture, Forestry and Fishing	9	6.9
4	Retail Trade	9	6.9
5	Education and Training	9	6.9
6	Mining	8	6.1
7	Accommodation and Food Services	8	6.1
8	Construction	6	4.6
9	Administrative and Support Services	6	4.6
10	Wholesale Trade	5	3.8

Source: Australian Bureau of Statistics, Census of Population and Housing, 2016

Approximately 66.0 per cent of the PBPIA and surrounds were not attending any form of educational institution as at Census date 2016, and a further 12.1 per cent did not state any answer. Excluding these groups, focusing only on the portion of the population who were attending some form of educational institution (55 students in total), 24 residents were primary school students, with a majority attending government primary schools. A further 17 were secondary students, with 10 of these attending a government school and the remaining seven attending catholic schools. Beyond formal schooling, four residents were attending a technical or further education institution. There were 10 residents studying at university, six of these full-time students under the age of 24, and the remaining four, part-time students over the age of 25.

Section 1: Government policies, previous planning and technical investigations

This sustainability assessment has considered relevant State Government policies and related planning, economic and other technical assessments undertaken by the City of Kalamunda. Various members of the PWG have also undertaken further community consultation and technical studies to inform the MCA process.

1.1 Preliminary research sources

The source documents reviewed in this assessment include:

1. Documents prepared and commissioned by the City of Kalamunda to prepare the proposed MRS amendment and submitted to the WAPC in 2017;
2. Additional research undertaken by DPLH and the Project Working Group including a community survey;
3. Contributions from the Project Working Group from existing information sources and research commissioned by PWG members specifically for this assessment; and
4. Government policies including new policies that have been introduced up until the end of 2019.

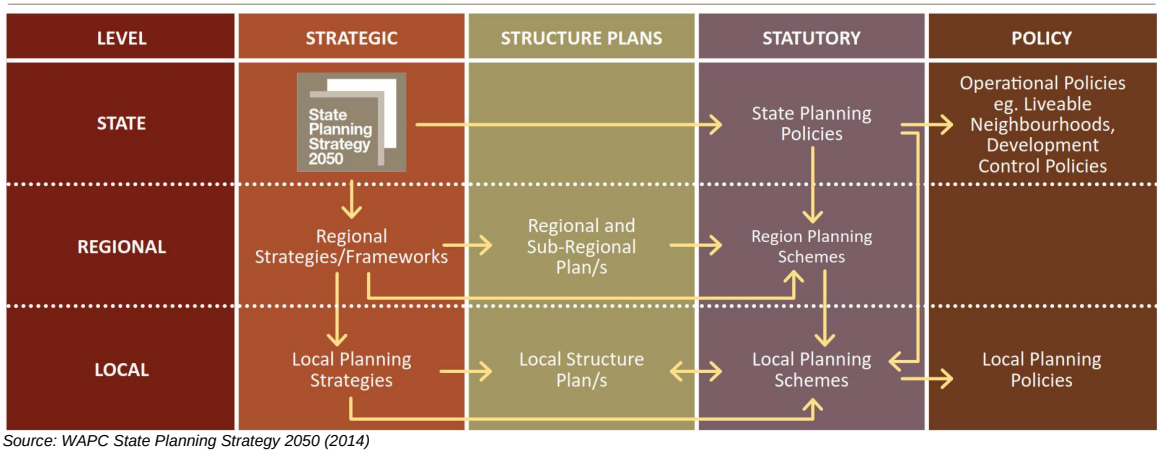
State Government documents

The WAPC is the responsible authority for land use planning in Western Australia and it coordinates the strategic and statutory planning requirements across the State. Its framework of strategic land use plans, statutory region schemes and planning policies therefore provides a logical starting point to review the relevant literature for the PBPIA.

State Planning Strategy 2050

The State Planning Strategy 2050 published by the Western Australian Planning Commission in 2014 sets planning principles and strategic goals to guide local communities in land-use planning and development applications and amendments across Western Australia.

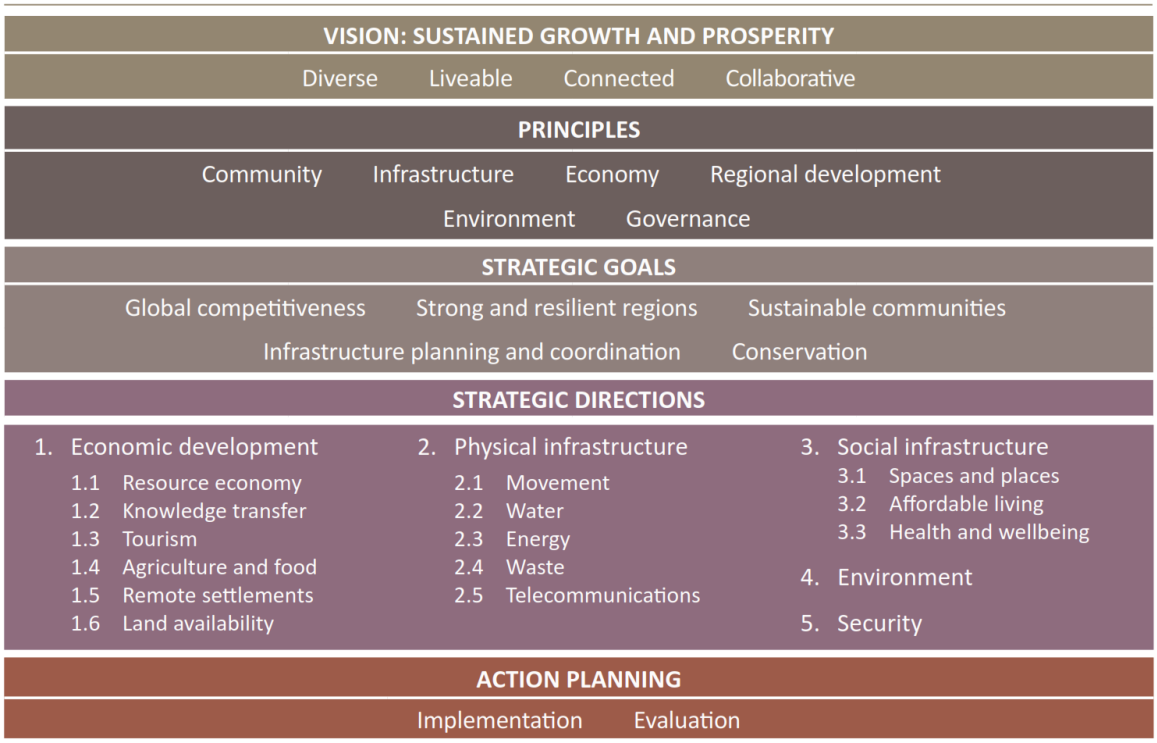
Figure 10. Overview of the Western Australian planning system



Source: WAPC State Planning Strategy 2050 (2014)

The State Planning Strategy provides a strategic framework for all State Government responsibilities (as well as those of Federal and local governments); and provides an appropriate way of ensuring the widest possible coverage of elements to be included in the assessment.

Figure 11. State Planning Strategy structure



Source: WAPC State Planning Strategy 2050 (2014)

The *State Planning Strategy 2050* is discussed in more detail in Section 3 of this report, including its application to the sustainability assessment framework.

Perth and Peel @ 3.5 million 2018, and North-East Sub-regional Planning Framework 2018

Perth and Peel @ 3.5 million was published by the WAPC in 2018 detailing where sustainable development should occur over a thirty-year timeframe, assessing land capacity and clearly identifying key areas to be investigated for urban expansion in a residential, commercial and industrial sense. Pickering Brook is identified as an urban investigation area in the North-East sub-region.

To deliver the objectives first outlined in 2010 by the WAPC in *Directions 2031*, a series of area-specific sub-regional frameworks were released in 2018 to "*establish a long-term, integrated planning framework for land use and infrastructure to guide future growth across the sub-region*" (page 1).

The *North-East Sub-regional Planning Framework 2018*, identifies Pickering Brook as a planning investigation area, stating "*These investigations will determine whether it is possible and/or appropriate to rezone the land. The investigations will be required to be undertaken prior to any related MRS amendment process*" (p. 23).

The five key considerations listed for Pickering Brook covered:

1. Protection of priority agricultural land
2. Impacts on the public drinking water source (as Pickering Brook is a Priority Area 2 in the Middle Helena Catchment)
3. Bushfire risk
4. Availability of reticulated water
5. Availability of wastewater infrastructure.

State planning policies

State planning policies (SPP) provide the highest level of planning policy control and guidance in Western Australia. Prepared under Part 3 of the *Planning and Development Act 2005*. They provide a critical guide as to the criteria necessary to be assessed in detail for this report.

For this assessment, the relevant SPPs considered for the Pickering Brook sustainability assessment were:

- SPP 2.4 Basic Raw Materials (July 2000)
- SPP 2.5 Rural planning
- SPP 2.7 Public drinking water source (June 2003)
- SPP 2.8 Bushland Policy for the Perth Metropolitan Region (June 2010)
- SPP 2.9 Water Resources (December 2006)
- SPP 3.2 Aboriginal Settlements (May 2011)
- SPP 3.5 Historic Heritage Conservation (May 2007)
- SPP 3.7: Planning in Bushfire Prone Areas (December 2015)
- SPP 5.2 Telecommunications Infrastructure (September 2015)
- SPP 5.4 Road and Rail noise (September 2019)

Note that some of the above State Planning Policies were further researched and found not to be relevant to the Pickering Brook investigation area and as such are not discussed as they have been ruled out. A further explanation of this process has been provided in **Appendix B.**

Guidelines for Separation of Agricultural and Residential Land Uses: Establishment of Buffer Areas 2012

The DOH prepared the *Guidelines for Separation of Agricultural and Residential Land Uses: Establishment of Buffer Areas* in 2012 to supplement the WAPC's State Planning Policy 4.1 State industrial interface (1997) and the EPA's *Guidance for the Assessment of Environmental Factors No 3 Separation distances between industrial and sensitive land uses* (June 2005).

The Guidelines consolidate DOH's position regarding buffers in new residential subdivisions where conflicts with existing agricultural land uses exist (particularly residential uses).

Table 6. Buffer distance for various agricultural uses for spray drift, dust, smoke and ash

Industry	Description of industry	Buffer distance
Market Gardens	Broad Scale Operations	300 – 500m
Orchards		500m
Turf-farms and lawns		500m
Vineyards		500m

Source: DOH 2012 Guidelines for Separation of Agricultural and Residential Land Uses: Establishment of Buffer Areas 2012

The policy states:

> The following minimum requirements will be considered suitable by the DOH:
>
> 1. A separation distance of 300m for to control spray drift, dust, smoke and ash.
>
> 2. Alternatively a 40 m separation distance can be used where a vegetative buffer has been adequately designed, implemented and maintained in accordance with these guidelines.
>
> 3. Vegetative buffers will not be operational until trees reach the minimum effective height to control spray drift. Residential areas should not be developed within 300m until this time.
>
> Natural geographical features (watercourses and ridge lines), public open spaces, road reserves etc. can be used to meet the required separation distances. Areas reserved for public open spaces should not be designed for recreational use (eg. playground, community facilities) until agricultural activities are ceased. (page 4).

There is some flexibility in the application of the buffer depending on the chemicals used and the method of their application. As a minimum requirement, DOH noted that there should be a 500m separation from spray drift, dust, smoke and ash (for orchards); or a 40m separation distance can be used where a vegetative buffer has been adequately designed, implemented and maintained in accordance with DOH guidelines. It should be noted vegetative buffers will not be operational until trees reach the minimum effective height to control spray drift and as such any residential development should not occur within 300m until such a time arises.

Fundamentally, the published buffer is 500m, if a vegetated buffer that complies with the DOH guidelines is in progress this buffer may be reduced to a minimum of 300m until the vegetated buffer is established and deemed effective enough to stop the spread of spray drift and other risks. Once the buffer is suitable, the buffer distance may reduce to 40m.

Government Sewerage Policy 2019

The Department of Planning, Lands and Heritage (hereon referred to as DPLH), together with the Department of Health (DOH) and Department of Water and Environmental Regulation (DWER) released a revised Sewerage Policy in September 2019, to replace the *Government Sewerage Policy – Perth Metropolitan Region (1996)*. This document guides all planning, subdivision and development for the provision of sewage disposal in Western Australia.

Reticulated sewerage is promoted as the best disposal method. However, where reticulated sewerage cannot be provided, the policy covers the requirements for on-site sewage treatment and disposal.

There is no reticulated wastewater system currently in immediate vicinity of the investigation area, and the site is classified as a Priority 2 Public Drinking Water Source Area (PDWSA).

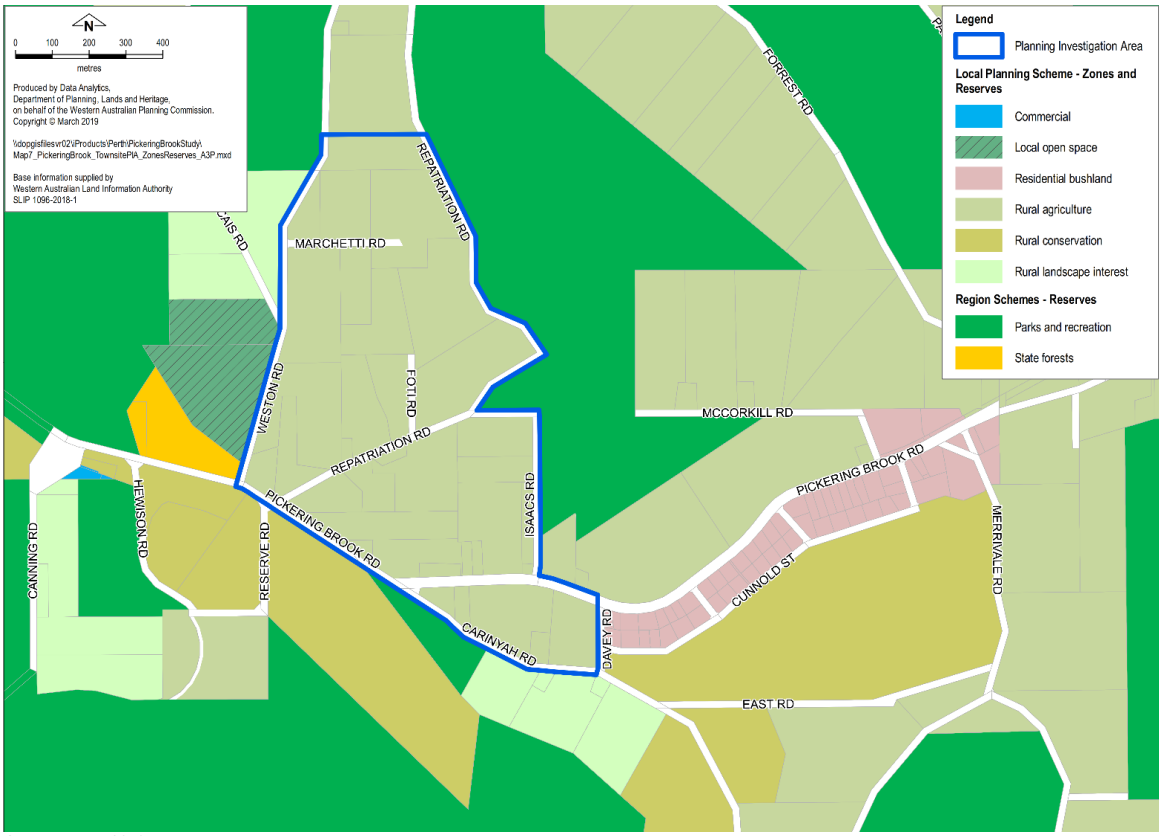
City of Kalamunda documents

The City of Kalamunda has produced a range of documents relevant to the long-term future of the Pickering Brook area that inform the planning investigation of the area.

City of Kalamunda, Local Planning Scheme No. 3

The PBPIA is zoned 'Rural' under the Metropolitan Region Scheme and 'Rural Agriculture' under the City of Kalamunda's Local Planning Scheme No. 3.

Figure 12. City of Kalamunda, Local Planning Scheme No 3 zones and reserves in the PBPIA



Source: DPLH 2019

The City of Kalamunda has a 'residential bushland' zone, which allows for low-density residential and 'residentially-compatible' use and development on land which has special environmental characteristics including land predominately covered with vegetation. This zoning applies predominantly to the Bickley, Carmel and Pickering Brook townsites.

The Residential Bushland zone permits lots ranging in size between 2,000 sqm and 1 ha; however, 4,000 sqm is considered an ideal lot size to preserve substantial amounts of natural vegetation. These lots have a requirement to connect to reticulated water services, but do not have a requirement to connect to reticulated sewerage services.

Shire of Kalamunda, Local Planning Strategy 2010

The *Shire of Kalamunda Local Planning Strategy 2010* was prepared in accordance with the local authority's requirements under the *Planning and Development Act 2005* to forward the objectives of *Directions 2031* (now *Perth and Peel @3.5Million*). This included a review of the Pickering Brook townsite with the intention of consolidating the uses and giving it a community hub/focus. The Local Planning Scheme proposed to "Undertake comprehensive planning analysis of the Pickering Brook townsite and surrounds to investigate potential for the creation of new lots." (page 25).

The *Local Planning Strategy 2010* noted:

> Some scope exists for further subdivision of the land in the townsite of Pickering Brook to a minimum of 2,000sqm and the expansion of the Residential Bushland (4,000sqm lots) zone to land immediately abutting the townsite to allow for the creation of additional lots. There is also potential for a small commercial activity centre at the centre of Pickering Brook to cater for neighbourhood services and to create a focus for the settlement. Consideration should therefore be given to the preparation of a structure plan for the Pickering Brook Townsite to guide further subdivision in the townsite area. (pages 89-90).

The Shire of Kalamunda included the future development of Pickering Brook as one of the areas that would contribute to the total target of 21,578 additional dwellings by 2031 (as part of local government's commitment to delivering *Directions 2031*). The *Local Planning Strategy 2010* indicated the area could produce a total of 114 additional residential lots and 285 more residents.

Table 7. Pickering Brook proposed future lots and population to 2031

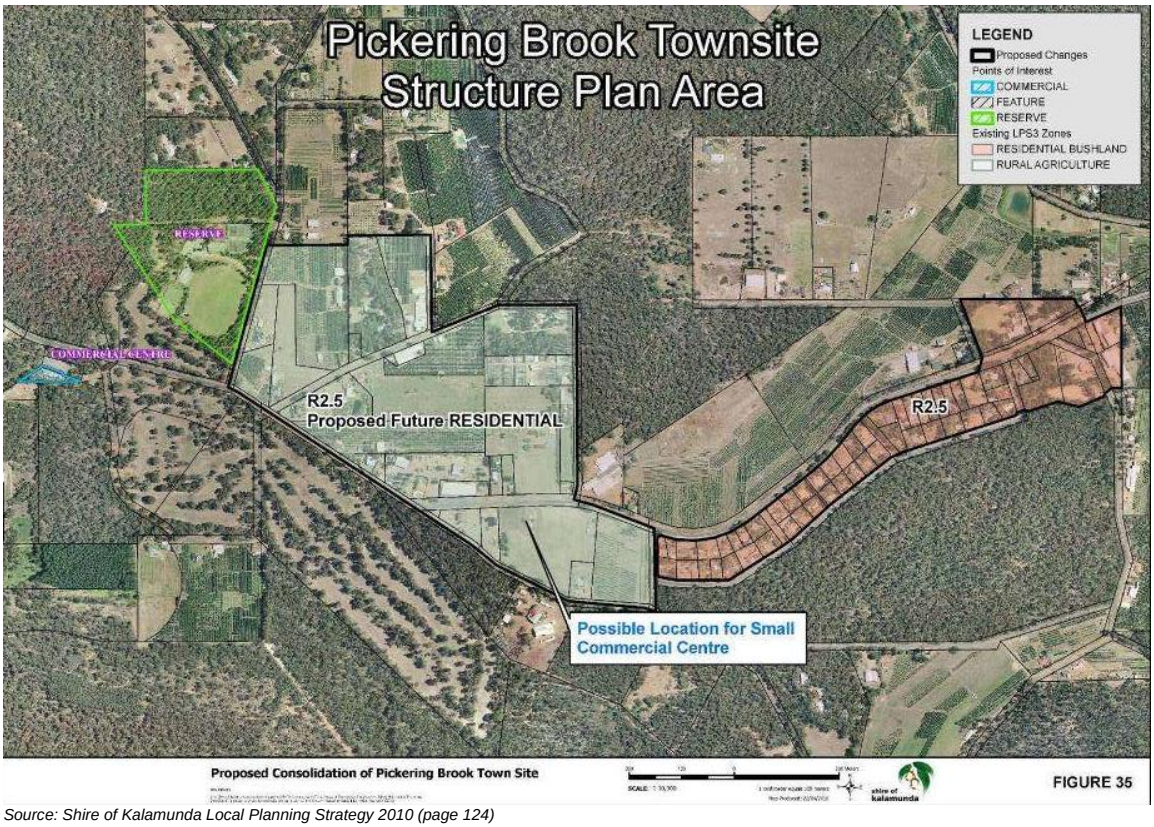
Rural Investigation Area	Lots	Population
Pickering Brook Townsite Expansion	76 @ R2.5 38 @ R5	285

Source: Shire of Kalamunda Local Planning Strategy 2010

The Local Planning Strategy also identified that Pickering Brook had a growing tourist industry with tourist accommodation and attractions (including Korung national Park (formerly Pickering Brook National Park) and Pickering Brook Show).

The Strategy also identified that Pickering Brook was an important contributor to the total value of agricultural production in the area.

Figure 13. Proposed consolidation of Pickering Brook Townsite



Source: Shire of Kalamunda Local Planning Strategy 2010 (page 124)

The Strategy also noted that "The settlement of Pickering Brook is scattered haphazardly, and it is believed that on overall plan to give it a focus would be an economic and a social advantage for the community." (page 125). It also noted that some of the challenges with the existing land uses in terms of limited economic opportunity and that there was a need to "Review the viability of the orchard properties in the rural areas." and that by expanding the townsite, the local government should "Plan for the consolidation of the Pickering Brook settlement to provide better accommodation choice and give the settlement a better focus." (page 150).

The following table summarises the community values as identified through the consultation undertaken in the East Ward (including the Pickering Brook area) to produce the Local Planning Strategy 2010. This identified several issues important to the Pickering Brook community which are still relevant to the community today.

Table 8. Values of Kalamunda's East Ward (incorporating Pickering Brook) community

Social	Economic	Environmental
1. Rural background, lifestyle and atmosphere (83) 2. Community spirit particularly that the community can come together in times of need (bushfire) (57) 3. Low crime rate, making it a safe and friendly place for young children (52)	1. Western Power – power station/substation and related electricity towers (66) 2. Failure of Shire to support Pickering Brook Sports Club – not progressing well (36) 3. Orchard industry becoming unviable – due to aging orchards, lack of young people on the industry, cheap imported competition, growing costs (fuel, electricity), pests, short staffed (19) 4. Difficulty in selling orchard as a going concern – unable to subdivide large acres into smaller lots (e.g. 5 acres) (13)	1. Illegal use of off-road vehicles (trail bikes) in the forest (38) 2. Too many horses/paddocks – concerns about land degradation (27) 3. Bush not being burnt back regularly (CALM) (26) 4. Motorbikes (particularly on Mundaring Weir Rd) (23) 5. Weekend traffic – cyclists/ motorbike riders (21) 6. Lack of rubbish collection – kerbside collection (17) 7. Destruction of state forest and environmental damage to existing areas (14) 8. Overuse and decline of groundwater reserves, damage to water table, pollution of streams and underground aquifers (14) 9. Subdivision/development of bush on Cunnold St (11)

Social	Economic	Environmental
4. Small and friendly community where you can know your neighbours (49) 5. Low population density (27) 6. Strong family history, family orientated community, three generations of hardworking Australian families (26) 7. The sporting/social club is unique and valued – Pickering Brook (especially the show) (20) 8. Healthy and active lifestyle (10) 9. Country/ agricultural values (10) 10. The Shire's art's focus (6) 11. Diversity of lifestyle, architecture and recreational pursuits (6) 12. History (5) 13. Freedom (4)	5. Without subdivision Pickering Brook will die (11) 6. Subdivision and the possibility of block sizes smaller than 15 acres (10) 7. The orchards right to farm could not be maintained unless there is careful consideration with town planning (10) 8. The landscape could be changed significantly if there is too much development (10) 9. Subdivision policy in the rural zone is too rigid (8) 10. Erosion of viable agribusiness by anti-development bureaucracy (8) 11. Haphazard/inappropriate development that doesn't consider the environment (6) 12. Charging for water (6) 13. Potential failure/lack of viability for local shops (6) 14. Illegal tenants (4) 15. Lack of space for school to increase in size (4) 16. Developers moving into the area and building a lot of small/similar houses (4)	10. No subdivision between Cunnold St and East Rd (11) 11. Upkeep of roads (10) 12. Litter in the bush (10) 13. Non subdivision off blocks off main roads (10) 14. Visual/noise impact on the environment (10) 15. Feral cats, foxes and rabbits (8) 16. Lack of appropriate speed signage on Mundaring Weir Rd (8) 17. Inadequate maintenance and design of stormwater drains and verges (8) 18. Dip in Canning Rd near Melville's Nursery – needs more lighting (7) 19. Neglected properties (6) 20. Poor signage (6) 21. Trimming of verges by Western Power – need for underground power (6) 22. Orchards that are being removed are not reforested (5) 23. Poor architecture – not environmentally friendly (5) 24. Possibility of ending up suburban (like Mandurah or Forrestfield) (4) 25. Litter along roads (4) 26. Through traffic (4) 27. Agricultural spraying (4) 28. Inability to keep animals of choice (4) 29. Loss of wildlife (4)

Source: Shire of Kalamunda Local Planning Strategy 2010 (page 124)
Note: The values in brackets refer to the number of times an issue was raised.

The community also identified several options and directions for future development of the area which are relevant to assessing the Pickering Brook townsite expansion.

Table 9. Visions of Kalamunda's East Ward (incorporating Pickering Brook) community for future development

Social	Economic	Environmental
1. A retirement village/aged facility (perhaps in the bush behind the sports club) (32) 2. Flexible subdivision – 15 acre lots are hard to maintain, smaller lots will allow financial independence for younger people; thereby preserving the culture of family values/respect for older generations (26) 3. Population increase to provide staff for orchards/farms, club members, shop customers, community (23) 4. Better Shire representation (17) 5. Use club facilities as a meeting place for the community to get together, provide activities for newcomers and present residents (14) 6. Being able to continue living in the area after retirement (13) 7. Subdivision to allow more young families into the area (13) 8. Low crime (12) 9. Re-invent community spirit – revive the club, action, community groups and festivals (12) 10. Community to rally together to reject the Western Power substation proposal (11) 11. Subdivision (ability to subdivide) to give to children (11) 12. Viable sporting facilities (10) 13. Ability to retire on a smaller rural block (10) 14. A mix of leisure facilities that reflect the area, such as camping and bushwalking (6) 15. Privacy maintained (6) 16. Barton's Mill developed into community facility (5) 17. Service centre to provide for community needs (5) 18. Future plans in keeping with rural villages (5) 19. More youth enjoying the country atmosphere (5) 20. Retain the valued loved in the area such as lifestyle, lack of noise and the environment (4) 21. Make Pickering Brook a gated community with restricted access to unauthorised persons (with the community to approve all developments) (4) 22. Community consultation and involvement in the process of change within the district (4) 1. 23. Work with groups (i.e. cyclists) so there is better community relations between residents and clubs, to avoid conflict (4) 2. 24. Opportunity for children to live on separate title(s) on the parents property (subject to relevant conditions such as sewerage) (4)	1. A stronger focus on tourism (hobby wineries, rose farms, chocolate factories, microbreweries Spring in the Valley, Harvest Festivall (20) 2. Railway connection to Midland train station (11) 3. Direct bus/train to Kenwick train station (11) 4. A mix of agriculture, residential, tourism and hobby-farm land uses (10) 5. Better public transport – an extra bus at each end of the day (9) 6. Value adding to agribusiness (e.g. tourism) (8) 7. Viable vineyards and orchards (6) 8. 2 Hectare subdivisions (nothing smaller than 5 acres) (6) 9. Eco-friendly and sustainable development (6) 10. Swimming facilities – local pool (6) 11. Community accommodation for farm workers, tourists, farm stays, backpackers (5) 12. No high-density housing (5) 13. Some subdivisions (5) 14. Blocks subdivided to 10 acres (5) 15. Limited subdivisions with strict conditions attached (4)	1. Revegetate cleared areas (17) 2. Biomax sewerage systems/biocycles – to overcome environmental problems of closer housing (14) 3. Maintain and improve both the visual and environmental condition (unpolluted) (14) 4. Clean and tidy road verges, general clean-up of the area (14) 5. No traffic lights (12) 6. Retain the integrity of the bush in the townsite area (Cunnold St) (11) 7. Minimum block size of 15 acres (11) 8. Subdivision of blocks along main roads (10) 9. State forest left intact (8) 10. Slower speed limit from Croxton Rd to Bahen Rd on Mundaring Weir Rd, improve the safety of this road (bigger signs, more policing) (8) 11. Increased wildlife (7) 12. Stop people coming into the area bringing their rubbish (7) 13. No more through traffic at the end of Pickering Brook Rd (7) 14. Better sewerage, to protect Perth's water quality (5) 15. Close Pickering Brook Rd at the last property in a cul de sac (4) 16. Provide access to Ashenden Rd via Illawarra/Dale Roads (4) 17. Clamp down on illegal traffic (motorbikes) (4) 18. Beautification of roadside properties – removal of unsightly rubbish and/or by planting screening plants (4) 19. Free access to local bulk rubbish collection (4)

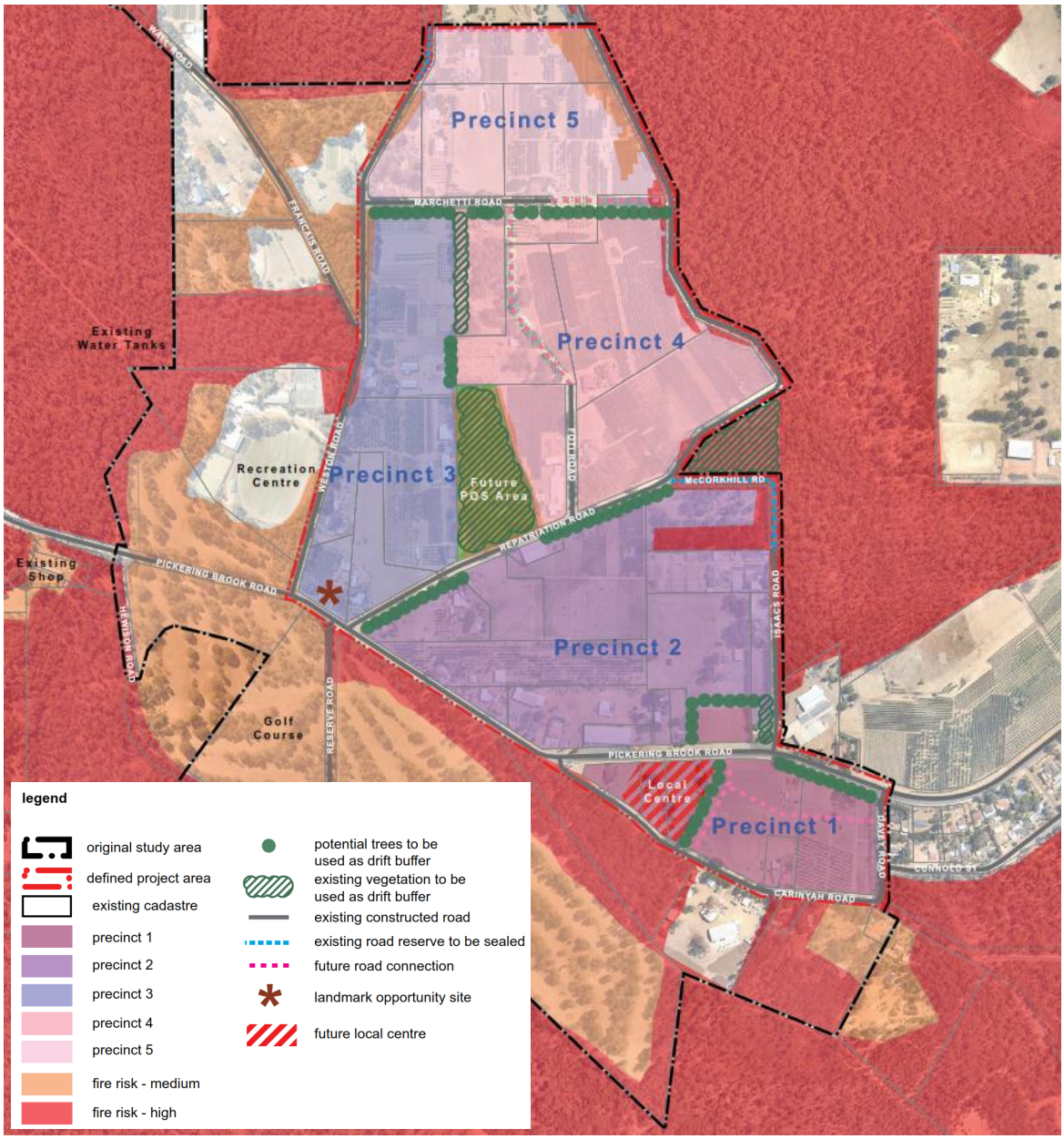
Source: Shire of Kalamunda Local Planning Strategy 2010 (page 124)
Note: The values in brackets refer to the number of times an issue was raised.

Section 1: Literature Review

Proposed Metropolitan Region Scheme Amendment 2017

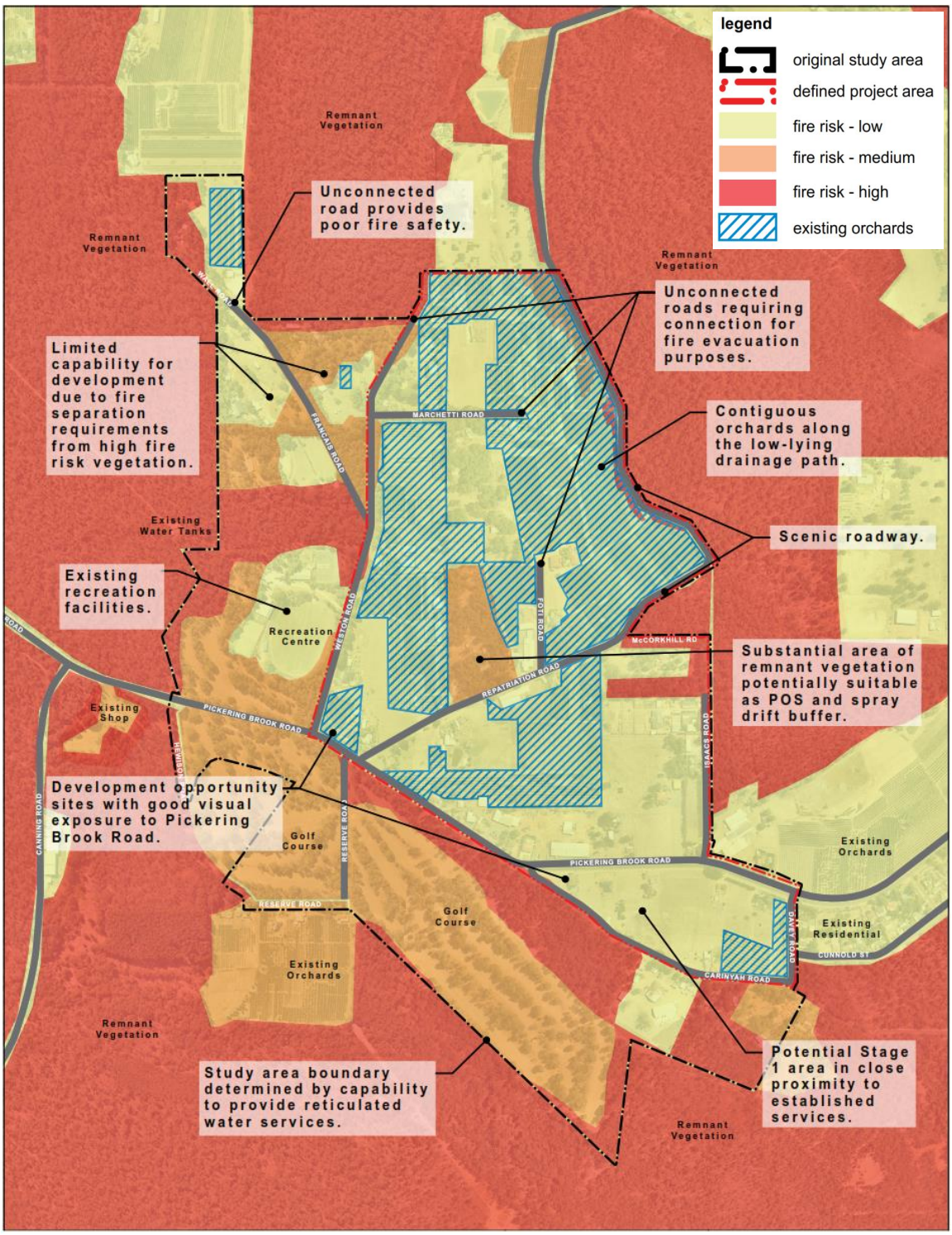
The City of Kalamunda submitted a Metropolitan Region Scheme (MRS) amendment proposal to re-zone the Pickering Brook investigation area from 'Rural' to 'Urban' to revitalise the area through townsite expansion. The proposed MRS amendment allowed for a potential staged or partial development of the area across five precincts. A potential local commercial centre in precinct 1 was also included in the planning proposal.

Figure 14. Pickering Brook Indicative Development Precinct Plan and fire risk



Source: TPG 2016 Proposed Metropolitan Region Scheme Amendment: Pickering Brook Townsite Expansion

Figure 15. Pickering Brook opportunities-constraints map



Source: TPG 2016 Proposed Metropolitan Region Scheme Amendment: Pickering Brook Townsite Expansion

Documents produced and reviewed from the MRS amendment proposal:

- Coterra Environment, *Environmental Assessment Report Pickering Brook Townsite Expansion 2016*
- FirePlan WA *Bush Fire Hazard Assessment* 2014
- KCTT *Infrastructure Servicing Report Pickering Brook Townsite Expansion* 2016
- KCTT *Transport Impact Assessment Pickering Brook Townsite Expansion 2016*
- Strategen Environmental Consultants Pty Ltd *Pickering Brook District Water Management Strategy 2016*
- The Planning Group *Proposed Metropolitan Region Scheme Amendment Pickering Brook Townsite Expansion 2016*

Coterra Environment, Environmental Assessment Report Pickering Brook Townsite Expansion 2016

The report by Coterra investigated environmental constraints to the expansion of the Pickering Brook townsite. Risk mapping for Acid Sulphate Soil (ASS) showed "low to nil" risk of acid or potentially acid sulphate soil anywhere more than three metres below the ground and as such no further investigation was required. There were no contaminated sites in proximity to the investigation area according to the DWER Contaminated Sites database.

The report noted that future development would change the current land use structure which is agricultural in nature, particularly with active orchards, and as such acknowledged the importance of buffers that align with advice from the Department of Health.

In their assessment of flora and vegetation, Coterra drew on expertise from Del Botanics in 2014 which found no species of conservation significance were recorded anywhere across the site. Much of the natural and agricultural land was recorded as being "completely degraded" from historical clearing for agricultural activity. Remnant vegetation that remains within the investigation area on 30 Repatriation Road and 30 Foti Road was deemed "Degraded". Vegetation on 24 Marchetti Road and 55 Repatriation Road, as well as the linear strip of native trees along Weston Road were considered to be in "Good" condition.

In terms of fauna and habitats, while there are several species of conservation significance across the surrounding area, only six were considered to be visiting or utilising the site. Given the degraded condition of most vegetation in the area and the substantial areas surrounding the site with Korung National park land, it is unlikely that any of the identified species would consider the site significant.

Their investigation found no listed Aboriginal heritage places within or near the site, but one non-Aboriginal heritage place is located within the area, Temby's home on 30 Foti Road.

The Coterra report, consistent with Strategen, identified that the area would have to be reclassified prior to development so it is no longer listed as a Priority 2 Public Drinking Water Source Area (PDWSA).

KCTT Transport Impact Assessment Pickering Brook Townsite Expansion 2016 & FirePlan WA Bush Fire Hazard Assessment 2014

There are two major issues associated with road infrastructure in the investigation area. The first is the potential traffic impact of townsite expansion both within Pickering Brook and its surrounds, covered by KCTT in their contribution to the MRS amendment in 2016, and the second relates to community safety, addressed by FirePlanWA in their Bush Fire Hazard Assessment in 2014.

Findings indicated there were three areas that may require further infrastructure, stemming from high fire risk in the region. TPGs report drew on advice provided by FirePlanWA, stating that *"Francais Road, Weston Road, Foti Road and Isaacs Street are currently no through roads that will be required to be linked into the proposed road system to improve access and egress in the*

case of an emergency". Resultantly, there are added infrastructural costs if any development is to eventuate in scenarios where these specific roads are in question.

Traffic impact will be assessed in a separate report as part of the current PWG to ensure the most up-to-date and accurate statistics. However, KCTTs assessment of the region suggested no issues with traffic congestion after townsite expansion.

FirePlan WA also noted that fire hydrants would need to be installed in accordance with *Water Corporations No. 63 Water Reticulation Standard.* In the event that no reticulated water supply is available, then water tanks would have to be provided at a ratio of 50,000 litres per 25 lots.

KCTT Infrastructure Servicing Report Pickering Brook Townsite Expansion 2016

Using Western Power's Network Capacity Mapping Tool, KCTT quoted the forecast capacity that remained across the area in 2017 to be between 20 and 25 MVA (mega volt-amps) of available network capacity through to 2034.

In the time period that KCTT was writing their report for the MRS amendment no NBN services were available, however NBN Co were actively seeking to locate a tower in the area for improved telephony and internet services.

NBN does provide internet services in the PBPIA. The quality of these NBN services may need further investigation as internet access is an integral part of modern-day living and business.

No gas reticulation services are available in proximity to the investigation area.

Strategen Environmental Consultants Pty Ltd Pickering Brook District Water Management Strategy 2016 (draft)

As part of the investigations to support the proposed MRS amendment, Strategen prepared a draft Pickering Brook District Water Management Strategy 2016. DWER's assessment of the Strategy concluded that given the subject area is within the Middle Helena Drinking Water Catchment Area, additional work was required before it could be approved:

> "The DWER considers that the draft [District Water Management Strategy] DWMS does not sufficiently address the impacts, risks and management of the Middle Helena Drinking Water Catchment Area. When urban development is approved in a public drinking water source area, the risk of water quality contamination increases, because there are more sources of contamination (i.e. people, houses, roads, and infrastructure). Even if best management practices are applied, such as connection to reticulated sewer and water sensitive urban design, the proposed land use change and associated activities still pose a maximum (or inherent risk) to the water resource, because best management practices can fail."
>
> *DWER advice to City of Kalamunda 2 May 2019 (page 2)*

DWER's advice also noted that a land capability assessment was required to support the District Water Management Strategy if the proposed development was not connected to a reticulated sewerage system.

The investigation area is currently classified as a Priority 2 PDWSA, a classification that means the area is to be *"managed to ensure there is no increased risk of pollution to the water source"* (Strategen 2016; SPP 2.7). The study area forms part of the Middle Helena Catchment, flowing to the Helena Pumpback Dam (HPD). The Middle Helena Catchment covers roughly 11,260 ha, and the proposed 80 net hectares development is 0.8 per cent of the total area. The initial proposal was a change from Priority 2 PDWSA which requires a minimum lot size of 2 hectares or greater, to a Priority 3 PDWSA which while still managing pollution risk to the water source is not as limited in its land use possibilities, allowing residential, commercial and light industry uses, but no polluting heavy industry.

Surface water monitoring (water before any filtration processing) in the region did indicate that the water quality in the catchment had been impacted by horticultural activities, however the severity of this is not touched on and there is no accompanying text indicating this to be detrimental to the health and safety of the population. Nonetheless, further investigation may be necessary.

Strategen proposed that potable water in the area would be connected to the reticulated water supply system which the site has access to, and according to DWMS, "Water Corporation advises that minimal constraints are present to developing the entire area". It was noted that minor upgrades to some reticulation pipes may be required. In terms of non-potable water the report stated that not all residents will intensively landscape and irrigate their entire lot but nonetheless all should be encouraged to reduce landscaped areas and associated irrigation, as well as retain as much native vegetation, treat wastewater to a high standard for on-lot irrigation purposes and consider using rainwater tanks for general water use.

Note that additional information on the Water Corporation advice for future development is covered in Section 4.3 of this report.

In terms of wastewater, the cost of connecting the site to reticulated sewerage is considered preventative and instead wastewater would be more cost-effectively treated and disposed of on-site. Aerobic treatment units (ATUs) were proposed, and it was acknowledged that these should be developed in conjunction with the Department of Health and Department of Water and Environmental Regulation.

After undertaking a risk assessment for the scenario that development was to go forward in Pickering Brook, Strategen noted three major key risk changes and management measures:

1. A 30-metre foreshore buffer that prevents the potential water contamination from fertiliser and/or pesticides
2. Treating run-off prior to entering the creek to reduce pollutant loads
3. The use of nutrient reducing ATUs for wastewater treatment.

Other City of Kalamunda publications

Hills Orchard Study 1988 and Draft Hills Orchard Study Review 2013

The Shire of Kalamunda prepared The *Hills Orchard Study 1988* to develop a long-term approach to the planning and development of orchardist activity in the local government area. It evaluated the existing and forecast physical, social and economic factors affecting the future sustainability of orchards and the types of land use classifications to support future development.

The 1988 Study recommended:

- The introduction of new rural Scheme zonings (Rural Agriculture, Rural Conservation, Rural Landscape Interest, Rural Living and Residential Bushland). The requirements for which were prepared in such a way to take into consideration the capability and suitability of the land to sustain the development which could be considered in each.
- The introduction of subdivision policies to guide future subdivision in the rural areas, based on the capability of the land to support increased development, having regard to the availability of services amongst other matters.
- The introduction of development control policies designed to preserve the amenity of the rural areas.
- The establishment of a promotional programme for the rural areas, based on the concept of maintaining valuable fruit producing areas as a viable economic resource.

A review of the *Hills Orchard Study 1988* resulted in the draft Hills Orchard Study Review 2013 which had the following objectives:

- To allow traditional growers more flexibility in potential land uses.

- To encourage additional land uses ancillary to the primary horticultural production.
- To consider the potential for future subdivision in the area.
- To review the current zoning in the area.
- To create incentives and support horticultural production in the area.
- To protect the rural character of the area through landscape protection.
- To protect the quality of water.

The draft 2013 Study recommended:

1. *Reviewing* current zoning and land use in the study area to identify where changes in zoning and land use can be proposed based on the predominant land use, land capability, and trends observed in the areas.
    - *Changing* Rural Agriculture to Priority Agriculture zoning in recognition of its identification as an agriculture management priority area in accordance with the SPP 2.5.
    - *Reviewing* Rural Conservation, Rural Landscape Interest, and Special Rural to be reviewed and potentially rezoned into Priority Agriculture, Rural Conservation, or Special Rural.
    - *Expanding* the Shire of Kalamunda Local Planning Scheme Table 1 (Zoning Table) to account for these new classifications.
2. *Establishing* Priority Agriculture zone with potential for future subdivision
    - Considering Priority Agriculture Ancillary lots to allow the land uses such as agri-tourism and a single dwelling within the new Priority Agriculture zone.
    - *Allowing* for minimum lot sizes to be 4 ha, subject to satisfying criteria, in accordance with the Middle Helena Water Catchment Policy.
    - *Requiring* subdivision applications to prepare an Agricultural Impact Statement, with a lot area for the ancillary lot to be a minimum of 2 hectares and the balance Priority Agriculture lot to be a minimum of 4 hectares with at least 50% of the balance lot under full production.
3. *Facilitating* future development of the area by defining and clarifying the vision, guided and supported by an overarching Economic Development Strategy. Such framework would have to be established by the Shire, State and Federal governments, and in consultation with local businesses and would guide and facilitate investment and planning decisions in the area.
4. *Addressing* the agriculture protection objectives for the area by acknowledging the importance of a collaborative approach between all the relevant State departments, particularly DoP [now DPLH], DoW, Water Corporation, DAFWA, Tourism WA, and the Shire.

Hills Rural Study 2014 (and Hills Rural Study Economic Development Discussion Paper 2013)

The *Hills Rural Study 2014*, considered several complex issues relating to the future planning and development of rural properties in the City of Kalamunda. As noted in the study, this aimed to address future productive use of land in the area and balance economic and intergenerational issues:

> In recent years, many landowners who want to subdivide their properties in the Study area have approached the Shire. These landowners primarily wish to subdivide because they are second or third generation members of orchard families who earn their living in other industries, and no longer have time to manage orchards on a full time basis. Furthermore, it is apparent that the profitability of agricultural/horticultural production in the Study area has declined, making it difficult for land owners to maintain agriculture/horticulture as a sole means of income. Land owners in the area, however, have a strong identity with their locality and do not want to live elsewhere. (page i).

The economic challenges identified in the Study included:

- Water availability for irrigation has steadily reduced
- Economies of scale not competitive - most growers are not of a large enough scale to cater to the large food buyers, and local markets are too small to accommodate all the growers
- Increasing globalisation has become too competitive because of primary produce from countries with cheaper labour costs
- Inability to attract and retain a sufficient workforce as the labour market becomes more competitive and other industries are more attractive for younger workers
- Inability to subdivide large rural landholdings to pass on to subsequent generations
- Increasing cost and restrictions on pest control/management which makes production more expensive/less profitable.

The final recommendations from the *Hills Rural Study 2014* were:

1. Commit to supporting landowners in the Kalamunda Hills Rural area with developing and implementing economic development initiatives aimed at diversifying and improving the viability of agriculture/horticulture activities. This support may occur by way of Councillor and staff involvement, liaising with State Government Departments, obtaining grants and research assistance, or other means of support deemed appropriate.
2. Commence a Local Planning Scheme 3 Amendment for the purpose of:
    a. Rationalising rural zones in the Study area;
    b. Introducing new permissible land uses to rural zones in the Study area which may increase land use flexibility for land owners; and
    c. Introducing a new 'Priority Agriculture' zone over land which is deemed to be of State, regional or local significance for food production purposes, due to its collaborative advantage in terms of soils, climate, water (rain or irrigation) and access to services, in accordance with *State Planning Policy 2.5 – Land Use Planning in Rural Areas*, and the WAPC's *Rural Planning Guidelines 2014*.
3. Write to the WAPC and the DAFWA (Department of Agriculture and Food WA) to:
    a. Advise that the Shire acknowledges their positions regarding further subdivision of the Kalamunda Hills Rural area, and furthermore, that the Shire will not be progressing any planning in this regard following the conclusion of the *Hills Rural Study 2014*; and
    b. Request that the DAFWA (now DPIRD) initiate a study into the agricultural productivity of the area for the purpose of assisting the Shire to delineate the boundaries of a new 'Priority Agriculture' zone in accordance with the WAPC's *Rural Planning Guidelines 2014*.

Tourism Development Strategy 2019 – 2025

The City of Kalamunda published a preliminary report which identified the current tourism offerings, constraints to growth and future ideas to be further investigated in June 2019. This called for the expansion and diversification of the region's offerings. Constraints were identified as the process and policies in place regarding subdivision and development in the Pickering Brook region. As a short summary that focuses only on areas of the Perth Hills in close proximity to the investigation area, identified current tourism product ranged from restaurants and wineries to pick-your-own experiences at local orchards.

Future ideas for the region included a farmer's market and the creation of a food and wine trail. Ultimately, the plan was to spread further into ecotourism and agritourism opportunity. Note that these tourism plans are likely to be endorsed by government entities, aligned with Tourism Western Australia's *Two-Year Action Plan for Tourism Western Australia (2018 – 2019),* and with tourism being a key part of economic diversification in Western Australia.

Documents prepared as part of the current Pickering Brook planning investigation

Pickering Brook and Surrounds Sustainability and Tourism Strategy Preliminary Community Consultation Summary 2019

Through a series of face-to-face meetings and a survey questionnaire conducted by DPLH, key constraints and opportunities associated with urban expansion in Pickering Brook were identified and summarised in the following table.

Table 10. Preliminary Community Consultation Key Themes (2019) - Pickering Brook and surrounds Sustainability and Tourism Strategy

Pickering Brook	• Retirement facilities • Economic diversification	• Short-stay accommodation • Population and housing	• Unused rural land • Location and scale of townsite expansion
Processes	• Government requirements	• Approval processes	• Communication
Environment	• Middle Helena Water Catchment Area	• Bushfire risk	• Unique climatic conditions
Agriculture	• Land use conflict • Lot size • Protection of agricultural land	• Loss of productive orchards • Water availability • Unauthorised access	• Viability • Economic diversification • Unique climatic conditions
Tourism	• Scale and use • Tourist information	• Land use conflict • Support and investment	• Rural character and amenity • Anti-social behaviour
Infrastructure	• Upgrades • Telecommunications	• Water availability • Public transport	• Parking • Road use

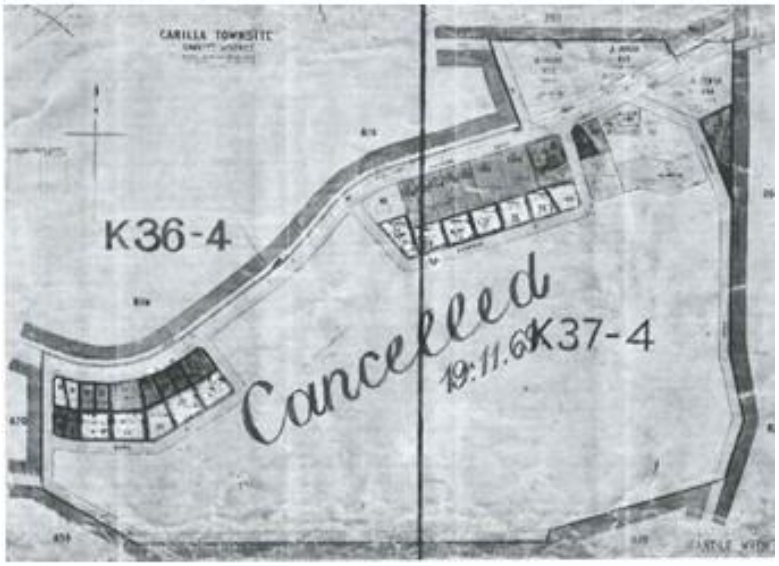
Source: Department of Planning, Lands and Heritage, 2019

One of the primary concerns held by local participants was the possibility of losing their community identity and rural character with an expansion in residential offerings. They also raised concerns regarding the ageing demographic in the area. There was acknowledgement of the need for economic diversification and in general most participants were supportive of further tourism development.

The original land identified for the Carilla townsite (Lot 81 Cunnold St) was raised by the community with some people requesting it be taken into consideration for development as it was previously identified as a potential future townsite. The area has been included in this assessment (as Scenario 1).

Section 1: Literature Review

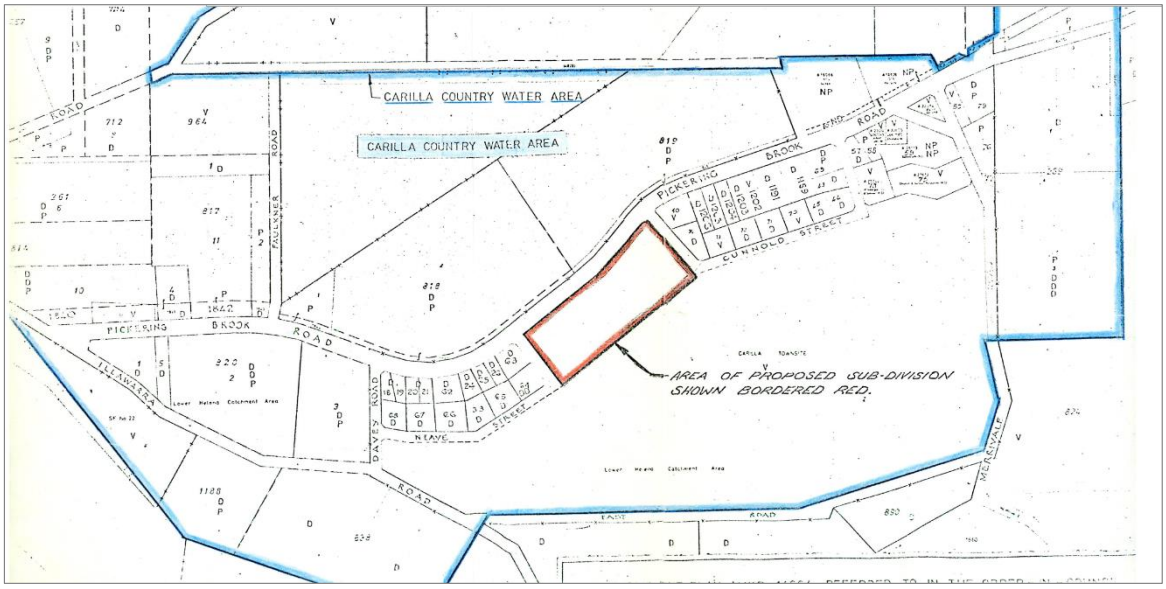
Figure 16. Proposed Carilla townsite plan



Source: DPLH, 2020

These plans also identified the strip of housing between the existing residential developments for subdivision, which did later happen but not until the 1980s.

Figure 17. Carilla subdivision proposal (Lot 81 Cunnold St)



Source: DPLH, 2020

More recently, applications were put forward in 2008 for the sale of the unallocated crown land to the east of Cunnold Street, just off Pickering Brook Road. The proposal suggested sale of the land at current market price, or alternatively, leasing of the whole land area to the owner of Lot 57.

Pickering Brook and Surrounds Perth Hills Tourism Product Gap Analysis 2019 [Draft]

On behalf of the PWG, Tourism WA has undertaken a tourism product gap analysis report to identify viable opportunities in the Perth Hills heading into the future. The report identified the current key trends in tourism that may be capitalised on to revitalise the study area.

Trend 1 "The Experience Economy" – there is an apparent trend toward experiences and services rather than material, tangible product. The Perth Hills has an opportunity to tailor unique visitor experiences that show the rural character of the community

Trend 2 Agritourism – This type of tourist attraction is predominately what builds the current offering in Pickering Brook and will remain important to its future. This involves pick-your-own fruit experiences, farm gate sales and some farm stays. Through this agritourism trend, the Pickering Brook and Surrounds Study Area has the opportunity to diversify its offerings further, cementing the area as a place to go for a family-friendly day trips that provide a country-feel escape while still being in the city.

Trend 3 Cultural Tourism – While this is less relevant to the investigation area, the modern tourist seeks more than simply a museum, leaning toward an immersive cultural experience such as Aboriginal tourism. This provides a major opportunity for the broader Perth Hills which may subsequently bring people into Pickering Brook afterward for lunch at the cidery, or one of the fruit-picking farm experiences.

Trend 4 Soft Adventure – mountain biking and road cycling, as well as complementary experiences like hiking, camping and specialty accommodation are becoming an increasingly popular across Western Australia. The analysis stated just over 350,000 overnight visitors to the State in 2019 underwent cycling as part of their stay.

There were three additional areas addressed by the tourism gap analysis. One is "responsible tourism", which refers to the modern travellers' global consciousness encouraging eco-tourism, and the growing search for a sense of self and relationship with nature. Another is "niche accommodation", providing a unique getaway, potentially in the form of a green retreat or wellness stay. "Astro-tourism" is the third, referring to visitors who travel in search of a place that provides an unpolluted view of our solar system.

Preliminary Bushfire Advice - Pickering Brook Investigation Area - Emerge Consultants (January 2020) [Draft]

The ***State Planning Policy 3.7: Planning in Bushfire Prone Areas*** was established in 2015 to address bushfire risk management in areas deemed bushfire prone by the Department of Fire and Emergency Services (DFES).

One of the major constraints to development in the area is Bushfire risk, as identified both in local consultation and by key stakeholders within the working group. An independent Bushfire consultant was contracted to provide both BAL and BHL assessments for the area. A range of planning policy and research documentation on fire risk in the investigation area were analysed by the consultant.

The Government's Position Statement: *Planning in bushfire prone areas – Demonstrating Element 1: Location and Element 2: Siting and design* (4 November 2019) clarifies the considerations of future development within bushfire prone areas:

> "If areas adjoining the subject site have an extreme BHL, consideration should be given to the level of bushfire exposure of the subject site from the type and extent of the vegetation that adjoins the subject site. If areas within the subject site have an extreme BHL, it should be demonstrated that development design strategies, including the removal or modification of hazardous vegetation in perpetuity and/ or that sufficient separation of these areas from development, can be incorporated into the design. This could be in the form of public roads, drainage reserves and managed public open space.

> Any areas that, on completion of the development, will retain an extreme BHL within the subject site should not create isolated pockets of developable land".

The Pickering Brook townsite is surrounded by forest for a contiguous distance of greater than 5km and is classified as an extreme bushfire hazard level. The following summary discusses the potential BAL determinations and risk reduction measures in the proposed development scenarios, and the requirements each bring with them. No extreme BHL will be retained or introduced within the subject site.

This is not a comprehensive account of all the requirements necessarily and further investigation and planning care should be taken is required if development is to eventuate. This is purely to provide an indication of the elements that may be involved.

All residential development, Class 1-3 and 10a, within a bushfire prone area is subject to the construction requirements applicable to bushfire prone areas as described in the National Construction Code. There are six construction levels in ascending risk response order BAL-Low, BAL-12.5, BAL-19, BAL -29, BAL-40, and BAL FZ.

BAL-Low incurs no additional special construction requirements and BAL-Low, BAL-12.5, BAL -19 to BAL -29 are beyond flame contact, while BAL-40 and BAL-FZ are within flame contact. Notwithstanding, a BAL assessment only applies to buildings within 100 m of classified vegetation; building losses can occur from ember attack at distances up to 5km from the fire front.

It is the case that the larger and more regular the shape of the development area is, the greater the area that is separated from the interface with the high radiant heat and potential direct flame contact (first 100 m). All scenarios are large enough to provide a substantial proportion below BAL-29 and a BAL-Low area within their area.

Whilst buildings within 100m of the adjoining forest will be within the range of BAL classifications, the actual classification is dependent upon the building's separation from classified vegetation. All buildings beyond 100m within the Pickering Brook townsite could be affected by ember attack and potentially subject to ignition, which in turn could cause the ignition of a neighbouring building. This is referred to as a penetration into an urban area.

To avoid penetration into the urban area, all new residential construction should respond to the identified risk, ie. minimum BAL 12.5. It is equally important to ensure the immediate grounds of a building are not conducive to the ignition or spread of a fire and flame contact upon a building. This includes ensuring adjacent structures are sited or constructed to not present a secondary ignition risk. Collectively this restricts the opportunity for the urban penetration to occur and a dependency upon fire-fighting services and resources ie. water.

It has been identified that no residential building needs or should be constructed with exposure to flame contact BAL-40 or BAL-FZ. The proposed lots are minimum of 2,000sqm as required by the Government Sewerage Policy, and careful design, through overlapping asset protection zones (excluded areas) and separations including perimeter roads, can avoid the necessity to build in BAL-40 or BAL-FZ without a significant reduction in overall yield.

There is also no vegetation identified within the scenario options that would restrict the establishment of bushfire land management measures. The Pickering Brook community and management bodies have a number of initiatives in place to minimise their susceptibility to bushfire. Bushfire fuel reduction is actively undertaken by the Parks and Wildlife Service for the Department of Biodiversity Conservation and Attractions in the adjacent National Park areas, the last being in 2019. Fuel reduction practices present an opportunity to employ the efficacy of traditional owner land practices as part of future land management.

Evacuation is the primary concern, ensuring that people can get out in the event of a fire quickly and safely. Traffic impact reports were constructed as a result and further investigations were undertaken by the consultant (not yet finalised) to look into trees in evacuation routes, ensuring any damage or tree falling would not prevent residents from leaving.

Notably, regardless of the above sentiment the consultant did state that "*Knowledge of bushfire behaviour continues to evolve at the same time as the environment is changing. The nature and behaviour of bushfire remain unpredictable*".

Section 2: Development scenarios

This section describes the potential development scenarios that were tested in this process to identify the preferred areas for the expansion of the Pickering Brook townsite. These scenarios were developed by DPLH in consultation with the City of Kalamunda, the bushfire planning consultant and the economic consultant. The assessment included all the land within the PBPIA as well as the Unallocated Crown Land (UCL) at Lot 81 Cunnold St, Pickering Brook ("Lot 81"). Lot 81 was the original area identified for the expansion of the townsite. Note that Lot 81 was not included in the City of Kalamunda's proposed MRS amendment.

2.1 Development scenarios

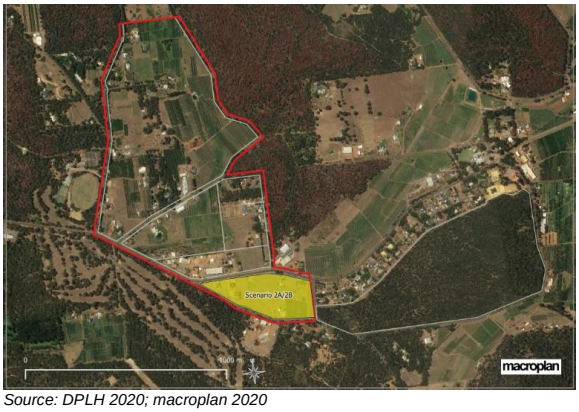
The following maps detail the potential development scenarios and their theoretical (maximum) estimated yields if urban expansion were to be approved in the PBPIA. The maps show each of the land areas that were used for the assessment. Scenario 1 tests the development of Lot 81 Cunnold Street first as per the original plans for the Pickering Brook townsite expansion. This is a stand-alone scenario that was included to address the potential development of the site as raised during the community consultation process.

Figure 18. Scenario 1 (Carilla townsite)

Source: DPLH 2020; macroplan 2020

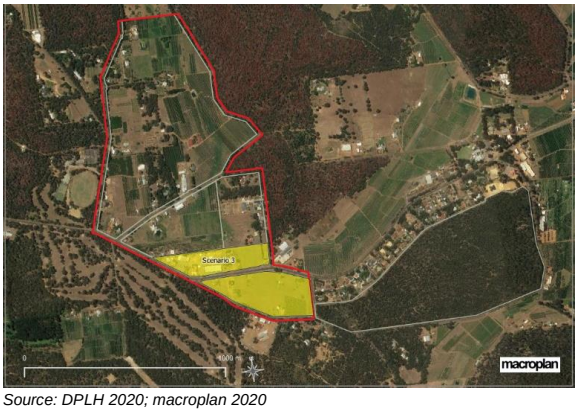
Scenarios 2A to 6 consider a potential progressive expansion of the Pickering Brook townsite. The difference between Scenario 2A and 2B is that the second scenario provides for a small 'town centre' development of up to 1,500 square metres commercial floorspace.

Figure 19. Scenario 2A/2B



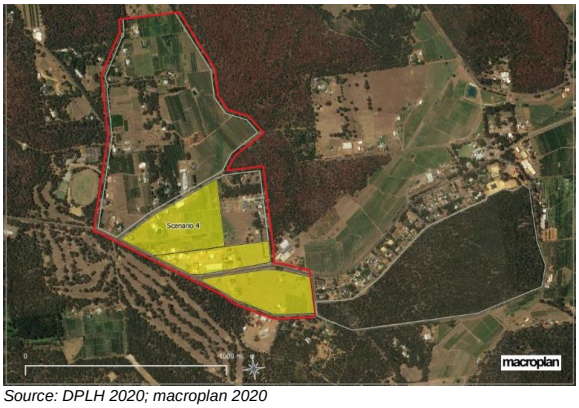
Source: DPLH 2020; macroplan 2020

Figure 20. Scenario 3



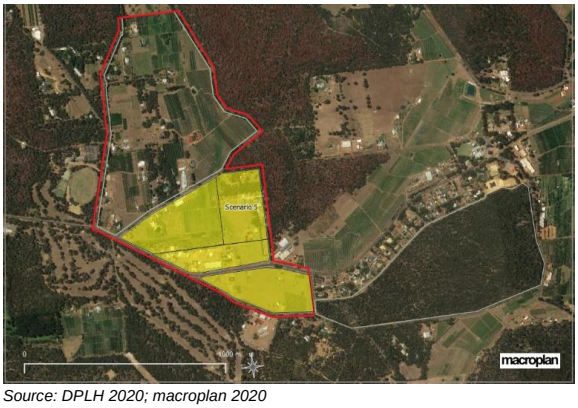
Source: DPLH 2020; macroplan 2020

Figure 21. Scenario 4



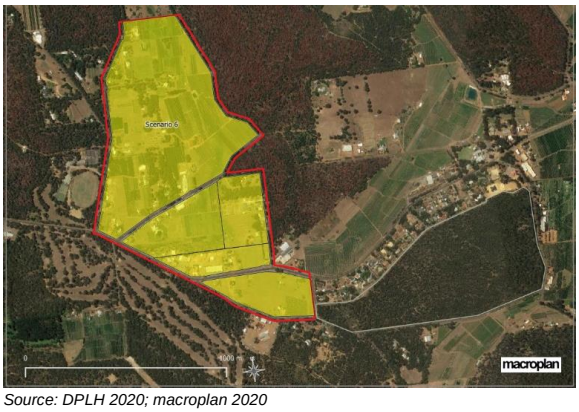
Source: DPLH 2020; macroplan 2020

Figure 22. Scenario 5



Source: DPLH 2020; macroplan 2020

Figure 23. Scenario 6



Source: DPLH 2020; macroplan 2020

Section 2: Development scenarios

The following table provides a summary of each of the lots within in the development groups (or precincts) within the PBPIA. The cadastral area in this table refers to the total lot area as per the property title, rather than the total area available for development.

Table 11. Precinct groupings and total land areas

Development scenario(s)	Properties	Cadastral area (sqm)
Scenario 1	Pickering Brook Town Lot - Lot 81	403,119
Scenarios 2A/2B	140 Pickering Brook Road 112 Pickering Brook Road 104 Pickering Brook Road 98 Pickering Brook Road 37 Carinyah Road	83,784
Scenario 3	Properties in Scenarios 2A/2B plus: 85 Pickering Brook Road 91 Pickering Brook Road 95 Pickering Brook Road 99 Pickering Brook Road 101 Pickering Brook Road 109 Pickering Brook Road (Partial) 115 Pickering Brook Road 20 Isaacs Road (Partial)	83,784 + 53,106 = 136,890
Scenario 4	Properties in Scenario 4 plus: 71 Pickering Brook Road 19 Repatriation Road Lot 200 Repatriation Road Lot 201 Repatriation Road 31 Repatriation Road	136,890 + 106,190 = 243,080
Scenario 5	Properties in Scenario 3 plus: 109 Pickering Brook Road (Partial) 20 Isaacs Road (Partial) 16 Isaacs Road 55 Repatriation Road	243,080 + 60,602 = 303,682
Scenario 6	Remainder of PBPIA	303,682 + 502,565 = 806,247

Source: DPLH 2020

The theoretical (maximum) estimated yields from each development scenario are shown in the following table. The scenarios have been developed in a way that scenario 1 is a stand-alone potential development. Scenarios 2A to 6 are cumulative and represent a logical extension to the existing residential area in Pickering Brook (to the south of Pickering Brook Road).

For the purposes of this assessment the theoretical yield assumptions are based on a minimum size of 2,000m^2 per lot which is consistent with the requirements of the Government Sewerage Policy and the City of Kalamunda's Residential Bushland zone. As the planning progresses to more detailed subdivision design, a range of appropriate lot sizes for each location/situation will be considered (albeit greater than 2,000m^2). Therefore, this assessment considers the maximum residential lot yield under each scenario and the actual yields may reduce if some larger residential lots are introduced.

Section 2: Development scenarios

Table 12. Development scenarios and estimated dwelling yields

Scenario	Cadastral area (sqm)	Cadastral area (ha)	Reduction - 0% local open space	Reduction - 25% local road infrastructure	Reduction - town centre	Dwellings per net hectare	Dwelling yield	Housing occupancy ratio	Population yield	Minimum lot size per dwelling (ha)	Minimum lot size per dwelling (sqm)	Closest applicable R-code
1	403,119	40.3	4.03	10.08	NA	5	131.0	2.94	385.2	0.2	2,000	R5
2A	83,784	8.4	0.84	2.09	NA	5	27.2	2.94	80.1	0.2	2,000	R5
2B - w / Town Centre	83,784	8.4	0.84	2.09	0.15	5	26.5	2.94	77.9	0.2	2,000	R5
3	136,890	13.7	1.37	3.42	NA	5	44.5	2.94	130.8	0.2	2,000	R5
4	243,080	24.3	2.43	6.08	NA	5	79.0	2.94	232.3	0.2	2,000	R5
5	303,682	30.4	3.04	7.59	NA	5	98.7	2.94	290.2	0.2	2,000	R5
6	806,247	80.6	8.06	20.16	NA	5	262.0	2.94	770.4	0.2	2,000	R5

Source: DPLH 2020

Potential implications of additional population

Demand for primary and secondary school places

Established in 1915, Pickering Brook Primary School on 241 Pickering Brook Road is an important part of the community. As at Semester 2 2019, the school employed more than 30 staff and had 139 student enrolments. Research was conducted to assess the schools' capacity to cater for increased student numbers if urban expansion were to attract more families to the area.

Enrolments have been on a general decreasing trend with a relatively significant decline in recent years. However, this trend is not dissimilar to that of other primary schools on Perth's outer fringe, particularly those in Herne Hill, Chidlow and Orange Grove.

The table below displays the forecast enrolment trends at Pickering Brook Primary School from the Department of Education. The maximum capacity of the school is 226 students. As at 2019, the school had 139 student enrolments, leaving room for an additional 87 students. By 2021, the school is forecast to have 136 enrolments, increasing its capacity as it will be able to facilitate an additional 90 students. Through to 2023 the Education Department forecasts capacity for 98 new enrolments.

Table 13. Enrolment trends and spare capacity at Pickering Brook Primary School

	Capacity	2019	2020	2021	2022	2023
Student number	**226**	139	140	136	129	128
Spare capacity		87	86	90	97	98

Source: Department of Education 2020; macroplan 2020

The notional yield in the Pickering Brook locality is currently 0.31 primary-aged students per dwelling. Based on this ratio, the Pickering Brook Primary School has the capacity to accommodate the additional students potentially generated by all scenarios. In Scenario 6 where the 80-hectare PBPIA is developed, it is estimated that there would be an additional 262 dwellings and an additional 81 primary school-aged students.

Table 14. Student yield - Pickering Brook Primary School

Scenario	Dwelling yield	Additional students
Scenario 1	131	41
Scenario 2A	27	8
Scenario 2B	26	8
Scenario 3	44	14
Scenario 4	79	24
Scenario 5	99	31
Scenario 6	262	81

Source: Department of Planning, Lands and Heritage, 2020; macroplan 2020

Beyond Primary education, the investigation area is within the catchment boundary for Lesmurdie Senior High School. According to the Department of Education, the school does have enough capacity to take on additional students if the PBPIA (Scenario 6) is developed.

Section 3: Sustainability analysis framework

Multi-criteria analysis is used to assess planning and economic development initiatives to consider multiple quantitative and/or qualitative criteria. The technique aims to internalise the external costs of development in order to assess the true costs and overall benefits of the project extending analysis beyond monetary figures.

The following assessment framework was developed based on the WAPC's *State Planning Strategy 2050* (the Strategy). This uses a top-down approach, drawing on the 'strategic directions' and 'approach elements' as from the Strategy. Given that the State Planning Strategy provides a strategic framework for all State Government responsibilities (as well as those of Federal and local governments); it provided an appropriate way of ensuring the widest possible coverage of elements to be included in the assessment.

Table 15. Framework for Pickering Brook Sustainability Assessment

1. Economic development	2. Physical infrastructure	3. Social infrastructure	4. Environment	5. Security
1.1 **Resource economy** (basic raw materials) 1.2 **Knowledge transfer** (learning, innovation, R&D, workforce skills) 1.3 **Tourism** (infra., planning, nature conservation, investment, cultural planning) 1.4 **Agriculture and food** (security, prime land, competitiveness, infra.) 1.5 **Remote settlements** (land tenure, housing and essential services, social services access) 1.6 **Land availability** (population growth pressures, supply, affordability and accessibility, infrastructure, fragmentation, tenure)	2.1 **Movement** (networks, connecting communities, congestion, modal shift, freight) 2.2 **Water** (security, efficiency/conservation, wastewater, sustainability) 2.3 **Energy** (investment, renewables, security) 2.4 **Waste** (reduction, sites, recycling integrated management)) 2.5 **Telecommunications** (accessibility, infrastructure network, quality / speed / reliability)	3.1 **Spaces and places** (local economy, identity, accessibility and connectivity, liveability, social inclusion, diversity) 3.2 **Affordable living** (housing diversity, compact settlement structures, resource-efficient design, cost of living) 3.3 **Health and wellbeing** (active living, provisioning, mobility, community services, building environment)	4.1 **Biodiversity and biosecurity** 4.2 **Climate change** (protecting vulnerable areas/habitats/species) 4.3 **Atmosphere** (air quality, pollution controls) 4.4 **Strategic assessment** (strategic environmental planning) 4.5 **Natural resource conservation** (water, agric. land, energy, basic raw materials) 4.6 **Resource consumption** (renewables, efficiency of consumption – replace, reduce, reuse, recycle)	5.1 **Defence land** (ADF assets & training facilities) **5.2 Defence infrastructure** (support infrastructure) **5.3 Auxiliary industries** (support businesses) 5.4 **Border and biosecurity** (disease threats) 5.5 **Natural hazards** (fire, storm, earthquake) 5.6 **Climate change** (vulnerable areas, contingency plans) 5.7 **Natural resource depletion and global trade** (protecting trade value of natural resources, reducing local vulnerability to non-renewables) • Physical safety of citizens • Capacity to withstand or limit damage • Resilience to recover from disruption

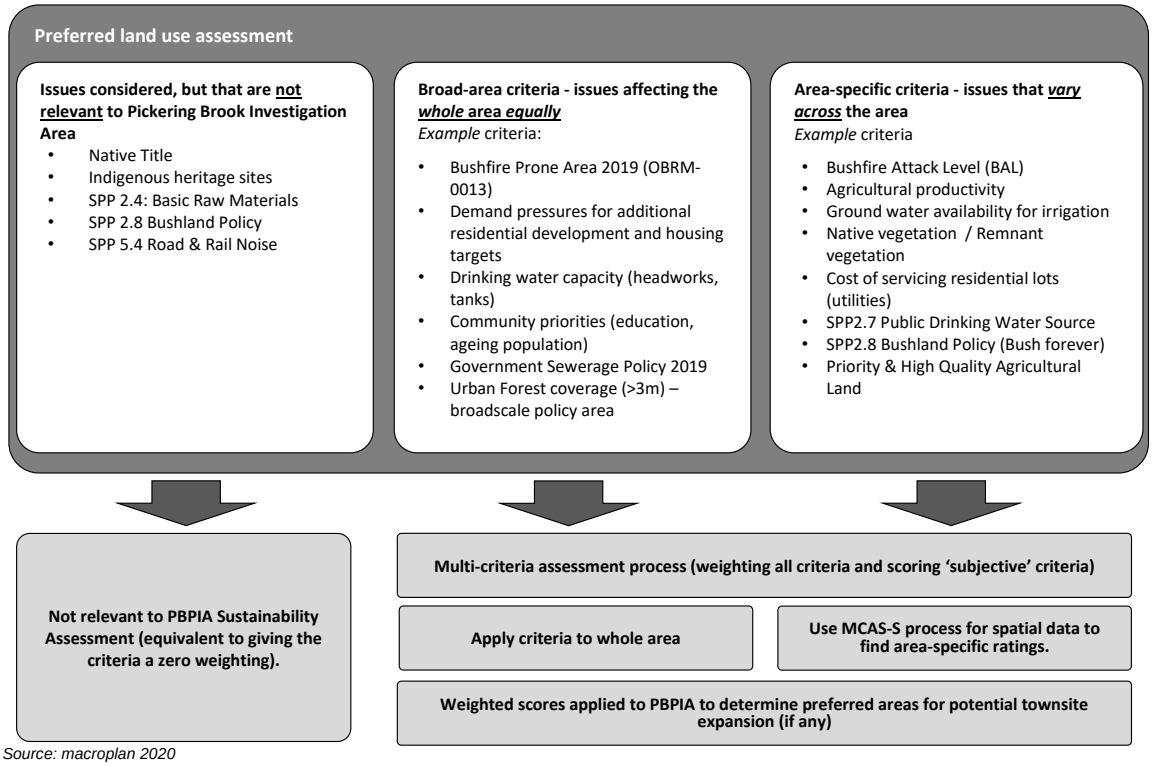
Source: WAPC (2014) State Planning Strategy 2050; macroplan 2020

3.1 Sustainability assessment methodology

The following diagram shows the process for sorting the criteria into one of three categories:

1. Criteria considered but were found not to have any relevance to the PBPIA. These included Native Title and Indigenous Heritage Sites. These are included in the assessment to demonstrate they have been considered and ruled out.
2. Criteria that apply to the whole of the PBPIA. These are the criteria that are relevant to the area but apply equally across the whole of the investigation area. For example, the whole of the area is designated as a Bushfire Prone Area and the State Sewerage Policy applies equally across the whole of the area.
3. Criteria that vary across the area and therefore have a different impact on different parts of the PBPIA. These were the focus of the spatial assessment.

Figure 24. Sustainability assessment methodology



Source: macroplan 2020

Section 4: Multi-criteria analysis for Pickering Brook

4.1 Assessment criteria taken into consideration

Throughout the assessment process, the issues were narrowed and grouped to produce a concise but comprehensive list of criteria to be evaluated by the Project Working Group to gauge their relative importance in the expansion of the Pickering Brook townsite. A copy of the worksheet provided to the working group is contained in **Appendix C** and a short explanation of comments and additions to the criteria are attached. The following table details the categorisation and relevant criteria assessed at the multi-criteria analysis workshop in the preliminary stages.

Table 16. Assessment framework and criteria

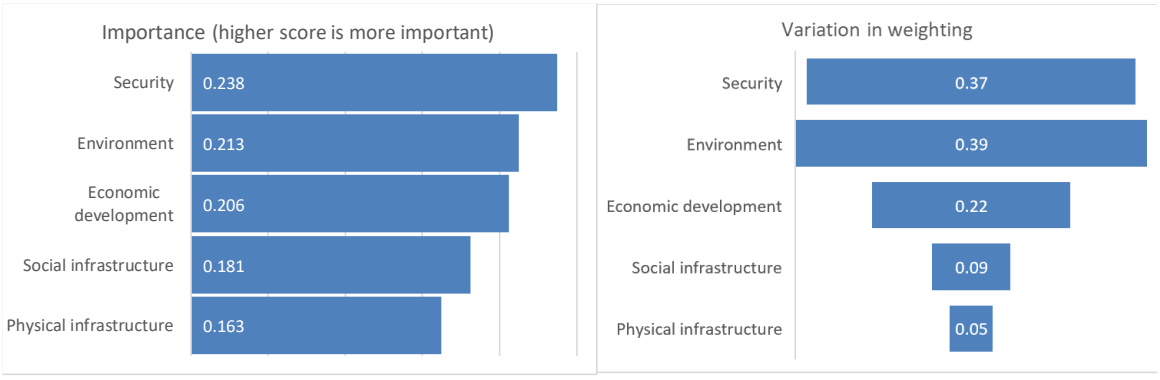
1. Economic development	2. Physical infrastructure	3. Social infrastructure	4. Environment	5. Security
High quality and priority agricultural land Tourism potential Dwelling demand pressures Buffer to agricultural uses	Telecommunications infrastructure Electricity distribution lines Water reticulation Drinking water capacity Traffic impact	Education services (schools) Local identity and social inclusion economy Local economy	Potential for remnant vegetation and threatened ecological species Public drinking water source Urban forest / Bushland policy (Bush forever) Government Sewerage Policy (2019) Water management strategy Vegetation condition	Bushfire risk Bushfire Prone Areas 2019 Bushfire Attack Level

Source: macroplan 2020

4.2 Criteria weighting outcomes

Workshop participants (listed in **Appendix C**) ranked the broad criteria from one through to five, with one being the most important and five being the least. Responses varied across organisations however “Environment” and “Security” ranked highly in most responses.

Figure 25. MCA weighting outcomes (normalised values)



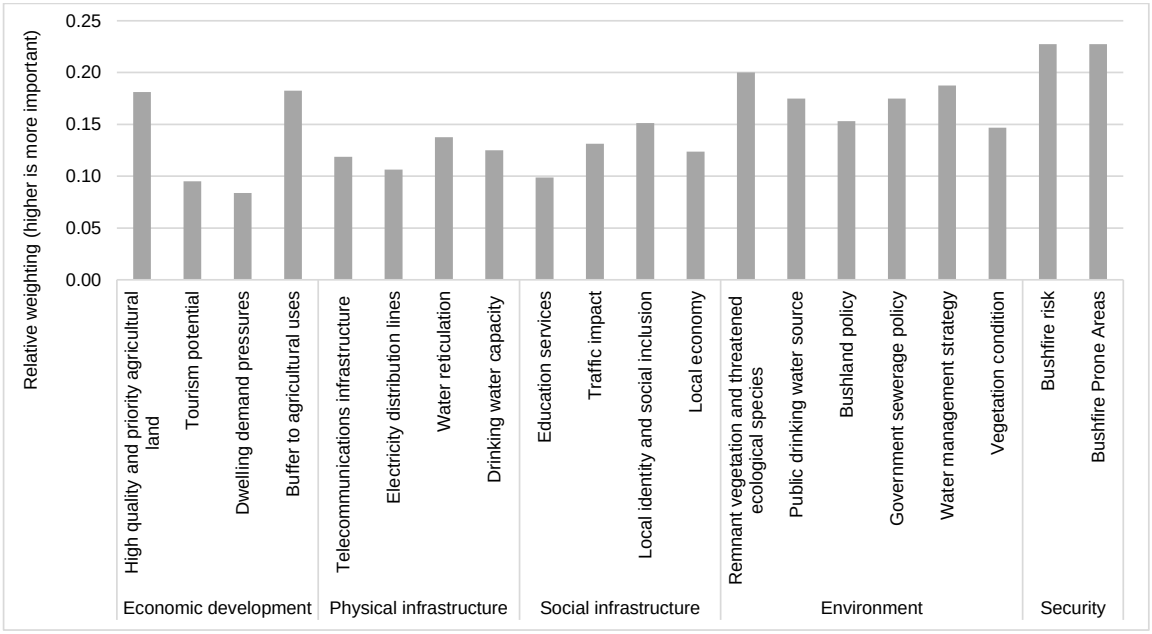
Source: macroplan 2020

The highest weighted category across the group was “Security” which had a mean weighting of 23.8 out of a possible 100. “Environment” followed relatively closely, likely given the interrelatedness of “Environment” and “Security”, with a mean weighting of 21.3. Variances within the environmental category were high indicating some contention between participants. The highest variance within the category related to the importance of the area being a PDWSA with some rating the criteria as being of high importance, while others disregarded it almost entirely.

“Economic Development” generated a mean weighting of 20.6 out of a possible 100. Again high variance was an issue and when narrowing this to the individual sub-criteria there is less disparity in reference to “buffers to agricultural uses” and “high quality and priority agricultural land”, in which it would seem there was general consensus that high priority agriculture should be preserved and that buffers are of relative importance. However, relatively large discrepancies were present in the importance of tourism potential and dwelling demand pressures to the project outcome.

Both “Social Infrastructure” and “Physical Infrastructure” recorded mean weightings of 18.1 and 16.3 respectively out of a possible 100, suggesting they are of the least importance to most of the workshop participants. However, variances in the category were large. This variation applied in all sub-categorical areas of the assessment from the importance of telecommunications infrastructure to traffic impact and education services.

Figure 26. MCA weighting outcomes – detailed results (normalised values)



Source: macroplan 2020

4.3 Assessment of development scenarios

The "Do Nothing" scenario

Economic implications: High quality agricultural land would be maintained with no land clearing. Tourism related activity in the area would continue to attract similar visitor numbers. There would be no issues with land-use conflict associated with buffers to orchardist or other agricultural uses. However, dwelling demand pressures would not be eased.

Physical infrastructure implications: There would be no impact on traffic in the area given no additional residential development, and no impact on electricity, telecommunications infrastructure nor provision for additional water reticulation.

Social infrastructure implications: Limiting future residential development is likely to reduce the potential revitalisation of the townsite and local economy in the future. In the short-term, Pickering Brook School enrolments would remain similar to existing levels. Natural demographic changes that occur over time, mean that the age cohort of the area may reduce to align with the metropolitan average as more families would be expected to move into the area. Future enrolment growth will be dependent on new families entering the community. The local economy would be unlikely to change significantly from its present state. Expenditure in the existing shops in proximity to the Pickering Brook townsite would remain largely at current levels. Membership and attendance at the Pickering Brook Sports Club would likely remain at existing levels.

Environmental implications: No increased risk for the quality of the local environment including impact on drinking water quality or public health risks associated with the Middle Helena Catchment. Remnant vegetation would be untouched and threatened ecological species that may live, breed and/or feed in the area will not lose any habitat.

Security implications: The bushfire risk will remain the same in the area. Additional residents would not be located within a high bushfire risk area.

Expand the townsite

Broad-area criteria

This section discusses the critical risks across the whole of the PBPIA. These are issues that affect the whole of the area.

Economic implications: Increased residents in Pickering Brook should encourage local spending to increase. The increased availability of land for residential holdings will reduce housing availability pressures for people who want to move into the area. An additional local labour force may also assist businesses in the area needing employees.

Physical infrastructure implications: There are likely costs associated with upgrades to road and telecommunications infrastructure, but these may be necessary regardless of whether further development occurs.

Social infrastructure implications: Some form of development in the area should encourage the revitalisation of Pickering Brook through greater participation in local activities/facilities. There is potential for new development to attract families and increase enrolments at the Pickering Brook Primary School. With more people in the area, some income from the additional residents will then be injected into local business.

Environmental implications: The townsite and the PBPIA are within the Middle Helena Catchment Area. The Government Sewerage Policy seeks to protect water quality and is a key consideration for the potential townsite expansion.

Security implications: The PBPIA and broader locality is currently identified as a bushfire prone area by the Fire and Emergency Services Commissioner. It is likely that any townsite expansion would need to meet the requirements of State Planning Policy 3.7: Planning in Bushfire Prone Areas, which may result in increased construction costs.

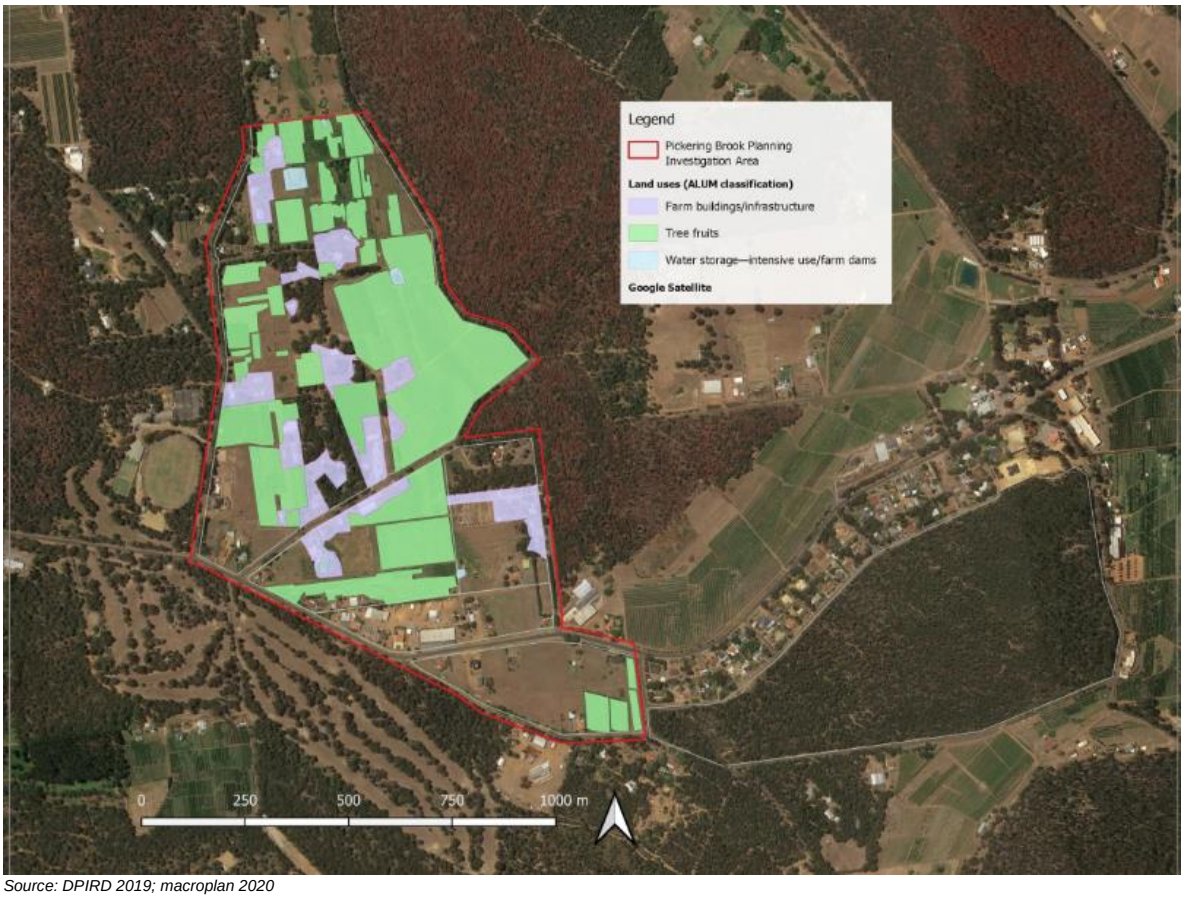
Area-specific criteria

This section addresses the sustainability assessment criteria that have different impacts across the PBPIA and Lot 81 areas. These criteria were assessed through a Geographic Information System (GIS) process and spatial datasets provided by the PWG member agencies and by consultants undertaking specific work for this study.

1. Economic development

The most relevant criteria for economic development are the agricultural production value of the land. The following figure shows the areas actively being used for agricultural production as at 2019 based on a land use survey by DPIRD.

Figure 27. Pickering Brook land use survey 2019



Source: DPIRD 2019; macroplan 2020

DPIRD also provided mapping of high-quality agriculture land for the MCA workshop. This included the outcomes of *Soil Survey of the Pickering Brook Planning Investigation Area Phase 1 2020*, prepared by Western Australian Horticultural Consulting for DPIRD. This assessment identified five soil landscape units across the PBPIA. The soil groups found in each soil landscape unit

were identified and the capability of each soil landscape unit for perennial horticulture was rated using the DPIRD five class capability rating system. Note that the capability assessment did not take into account the availability of irrigation water. The following table shows DPIRD's five-class system, based on the Australian Land Use and Management (ALUM) Classification guidelines to define land capability.

Table 17. Land capability class for given land use types

Capability class	General description
1 Very high	Very few physical limitations present and easily overcome. Risk of land degradation is negligible.
2 High	Minor physical limitations affecting either productive land use and/or risk of degradation. Limitations overcome by careful planning.
3 Fair	Moderate physical limitations significantly affecting productive land use and/or risk of degradation. Careful planning and conservation measures required.
4 Low	High degree of physical limitation not easily overcome by standard development techniques and/or resulting in high risk of degradation. Extensive conservation measures and careful ongoing management required.
5 Very low	Severe limitations. Use is usually prohibitive in terms of development costs or the associated risk of degradation.

Source: DPIRD Soil Survey of the Pickering Brook Planning Investigation Area Phase 1 2020, prepared by Western Australian Horticultural Consulting

This Sustainability Assessment used the 'very high' and 'high' classifications to inform the areas of agricultural land that had a high economic value. The following map displays the Class 1 and 2 land across the PBPIA. Class 1 land is set aside for nature conservation and should have no or limited intervention. Class 2 land under ALUM classifications should be subject to low intervention, and if used, the structure of the land should remain in-tact despite its use. It refers broadly to production from relatively natural environments. The loamy soils on the mid and lower slopes (Soil Landscape Unit 1) have a very high capability for perennial horticulture. The deep sandy gravels on the upper slopes and plateau surface (Soil Landscape Unit 2) have a high capability for perennial horticulture.

Based on the analysis from the *Soil Survey of the Pickering Brook Planning Investigation Area Phase 1 2020*, the MCA used the a modification of the standard DPIRD proportional approach which was based on differentiating between the very high quality loamy soils found on the lower slopes and valley floors and deep gravelly soils that are found on the plateau surface and upper slopes. This approach was taken to provide a better representation of the capability of the PBPIA for perennial horticulture.

Figure 28. Pickering Brook Australian modified Land Use and Management (ALUM) classification

Source: DPIRD 2019; macroplan 2020

Tourism potential was originally included in the MCA approach as an economic factor, however, there was insufficient information at this stage of the process to inform the MCA process. As the planning process progresses to a finer-grained assessment, the tourism potential should be considered in more detail, particularly regarding compatible land uses and potential conflicts.

2. Physical infrastructure

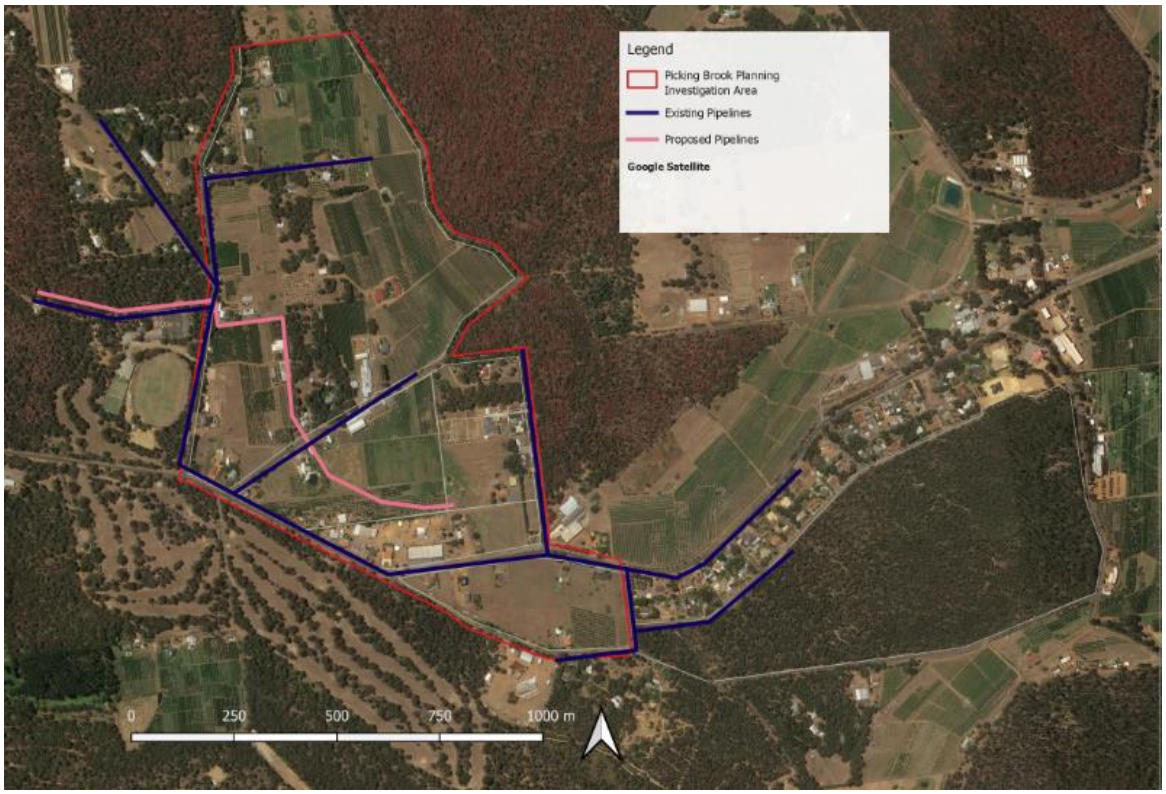
Regarding drinking water services, the Water Corporation has advised that:

> "The Corporation's desk-top assessment of the capacity of the system concluded that the initial stages of subdivision and development around Pickering Brook are unlikely to trigger the need for any headworks upgrades to the existing supply system.
>
> However, as development proceeds, the 150mm outlet and distribution mains from the tanks may need to be duplicated after approximately 100 new services are connected to the scheme. The need and timing of these upgrades will be the subject of further detailed assessment, as required.
>
> The ultimate/full development of the Pickering Brook townsite may also require the construction of an additional storage tank (nominally 225KL) as the Weston Rd Tank site in order to maintain adequate emergency storage for the scheme."

Water Corporation letter of 20 July 2016 to WAPC Chairman (p. 1)

The development of Scenarios 4, 5 or 6 would require additional water infrastructure consisting of an additional water storage tank and a new water main. This is technically feasible although it will have an impact on development costs and the potential financial viability of the subdivision, particularly for Scenario 4. The following map shows the Water Corporation's existing water pipelines and a desktop water planning concept prepared for the City of Kalamunda's structure planning for the area as part of the proposed MRS amendment.

Figure 29. Additional reticulated water infrastructure



Source: Water Corporation; TPG Development Concept for Pickering Brook; macroplan 2020

The Water Corporation has advised it has no plans or capital to provide reticulated sewer services to the area. As Pickering Brook is remote from any other sewerage networks and wastewater treatment plants, there are no plans to sewer the area, nor any viable mechanism to fund such infrastructure. In any event, R5 subdivisions should not need sewerage and will not be able to achieve enough flow in a gravity sewer pipe to adequately clear the sewer. This becomes a critical issue given it is a Priority 2 Public Drinking Water Source Area within the Middle Helena Drinking Water Catchment.

The MCA workshop had the benefit of results from a high-level traffic impact analysis which was provided by GTA Consultants who were engaged by DPLH to undertake the assessment. The comparative analysis identified overall impacts as well as differences of impacts for all scenarios. It recognised that none of the scenarios resulted in any significant road infrastructure upgrades that would be required as a result development of any scenarios (i.e. without scenarios development the upgrades would be expected to be required due to normal expected traffic increases to 2031). GTA Consultants are preparing the Pickering Brook Traffic Impact Assessment 2020, to provide a finer-grained assessment for the preferred scenario. However, this will not impact the conclusion of this sustainability assessment and will be used to inform any potential further planning.

Electricity infrastructure was assessed at a high level using the Western Power Network Capacity Mapping Tool which indicates that the Pickering Brook area is within the Kalamunda Substation zone which has more than 30MVA capacity to accommodate future growth and therefore does not require any upgrade to accommodate the potential expansion of the Pickering Brook townsite.

3. Social infrastructure

The social infrastructure element does not have any spatial criteria in terms of this assessment. This focusses mainly on the factors that will affect the overall community and local economy in the area. From a sustainability assessment perspective, thee is negligible impact of the spatial distribution of the population across the PBPIA.

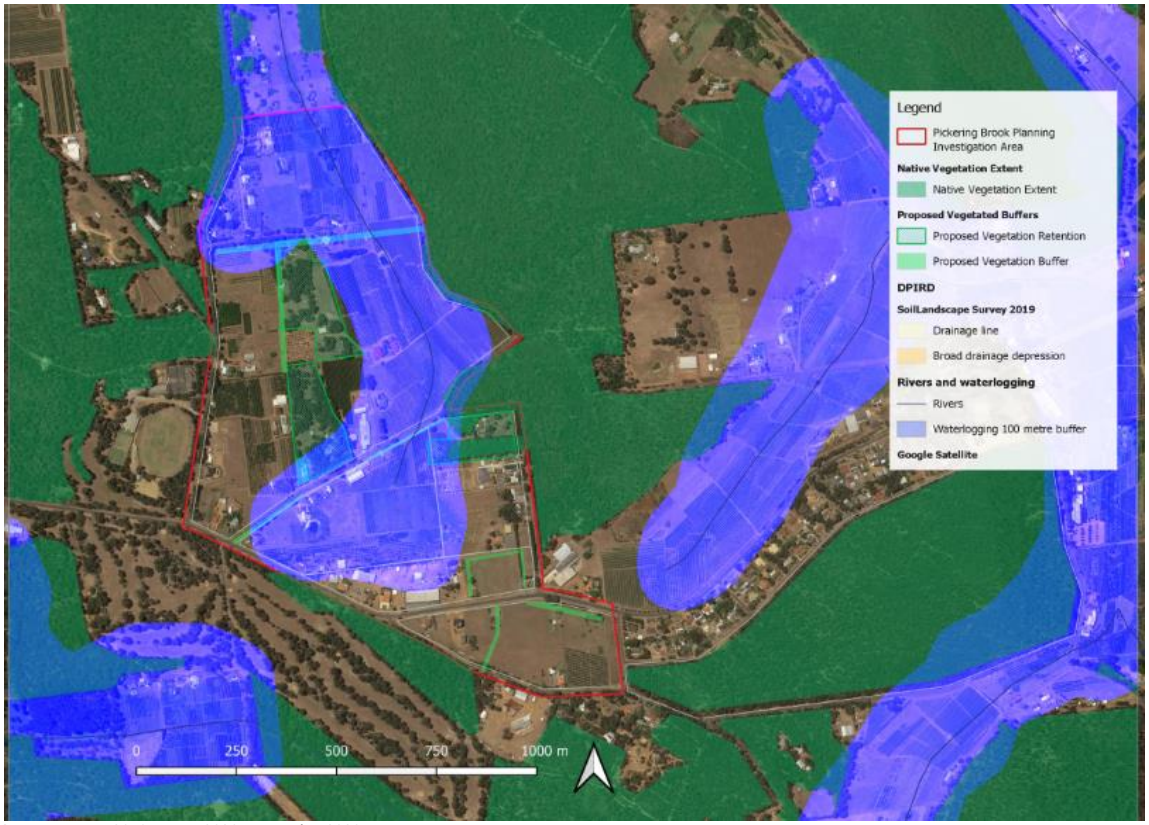
4. Environment

From the MCA process, two factors have been determined as being of the highest relative importance: the public drinking water source area (and its relationship to the Government Sewerage Policy) and vegetation (whether existing, for retention or future vegetated buffers).

Existing vegetation, vegetation retention and vegetated buffers

Any impacts on the remnant vegetation may potentially impact protected fauna. Development of this land may require referral to the Commonwealth under the *Environment Protection and Biodiversity Conservation Act* (EPBC). The following map shows that remnant vegetation covers all of Lot 81 which effectively rules Scenario 1 out of the assessment.

Figure 30. Existing, vegetation, proposed vegetated retention and vegetated buffer areas



Source: DPIRD 2019; DPLH 2020; macroplan 2020

The City of Kalamunda's assessment of the area for the MRS amendment process identified several areas for vegetation retention. This affects Scenarios 5 and 6, but it also means that those areas would need further detailed fire risk assessment. This also limits the yields from those two scenarios.

Buffers from waterways and Water Logging Risk Areas

As the PBPIA will not feasibly be connected to a reticulated wastewater (sewer) system and will rely upon on-site effluent disposal, and is identified as Priority 2 PDWSA, there are buffer requirements based on advice from the Government Sewerage Policy and

DWER in response to the City of Kalamunda's District Water Management Strategy. This requires a 100m separation of any residential development from waterways and water logging areas.

The following table details each of the development scenarios and whether or not they meet the separation requirement from waterways and/or Water Logging Risk Areas where the risk is 50 – 70 per cent moderate, high or very high. The table is a blanket "yes" or "no" approach to each development scenario assuming all of the developable land is taken up, as such a finer grain assessment may be necessary to determine the actual impact of these buffers on dwelling yields as some scenarios are significantly more affected than others.

Scenarios 2A/2B are the only scenarios which present no direct conflict with both separation from waterways and water logging risk areas. Scenarios 1 and 3 are partially affected by the buffer and this may be addressed through more detailed planning for those areas and conditions on the placement of on-site sewerage disposal units.

Notwithstanding the above, it is acknowledged that the Government Sewerage Policy and Middle Helena Catchment Area Land Use and Water Management Strategy state that any additional urban development in the catchment area should be connected to a reticulated waste water system.

Table 18. Buffer requirements for waterways and water logging areas in each scenario

Scenario	100m Separation from waterways can be achieved	100m Separation from water logging areas can be achieved
1	Mostly	Mostly
2A/2B	Yes	Yes
3	Mostly	Mostly
4	No	No
5	Partially	Partially
6	Partially	Partially

Source: DPLH 2020

5. Security

DPLH engaged a consultant (Emerge) in 2019 to undertake a bushfire risk assessment for the various scenarios. The assessment noted that the fundamental issue is tolerance to any bushfire risk and that despite effectiveness of detailed control measures that may be identified, all scenarios carried a 'medium' level risk. If that level of risk is deemed acceptable, then all scenarios could be managed from a bushfire risk perspective.

The report noted that for the various scenarios, from a bushfire risk perspective, a large regular shape is preferred as it has a minimal surface area and size helps, because it provides the distance to ameliorate the impacts of a bushfire attack. The impacts of flame contact travels a comparatively short distance, and the effect of radiant heat also dissipates over a distance of 100 to 300 metres. Given the seven scenarios tested, scale enables distance measures to be employed. In this instance, all scenarios have, sufficient depth to achieve a low BAL rating (radiant heat), provided the penetration of fire into the residential area (secondary building fires) is avoided.

The following figures shows the Bushfire Attack Levels (BAL) which affect Scenarios 2A/2B and Scenario 3. These risks can be managed though the dwelling construction and materials used as well as with the building envelope on lots that are subject to higher risks. The data includes six different BAL ratings: BAL-FZ, BAL-40, BAL-29, BAL-19, BAL-12.5 and BAL-LOW.

Section 4: Multi-criteria analysis for Pickering Brook

Figure 31. Bushfire Attack Levels – Scenarios 2A/2B

Source: emerge associates 2020; macropan2020

Figure 32. Bushfire Attack Levels – Scenario 3

Source: emerge associates 2020; macropan2020

4.4 Preferred Pickering Brook Townsite expansion scenario(s)

In order to determine the preferred expansion sites, spatial data relating to agricultural value, bushfire risk, water source protection and other factors were combined through the Multi-Criteria Analysis Shell for Spatial Decision Support (MCAS-S) developed by ABARES. This is covered in more detail in **Appendix B, C and D** of this report.

The MCAS-S provided a means to inspect the scenarios at a finer grain level to identify specific parcels of land that were more developable than others based on the priorities of the PWG.

Table 19. Development scenarios – suitability for townsite expansion summary table

Scenario	Economy	Physical Infrastructure	Social Infrastructure	Environment	Security	Overall score	Concluding comment
1	High – Large population yield with no loss of productive land	Medium – may require some additional transport and water upgrades	High – Large population yield meaning increased community activity	**Unsuitable for development –** Due to remnant vegetation	Medium – Clearing of land will reduce bushfire risk to existing dwellings	**Unsuitable for development**	Lot 81 is not suitable due to environmental constraints (remnant vegetation).
2A	Medium – Adds population without losing land currently used for agriculture	High – Does not require any significant infrastructural upgrades	Low – Population yield of roughly 80 residents	High – Little impact on environment	Low – Adjacent to existing vegetation	Medium/High	Scenario 2A scores well on most criteria. It has no significant negative effects on the local economy or environment and does not require significant physical infrastructure upgrades.
2B	Medium/High – Adds population without losing land currently used for agriculture + town centre	High – Does not require significant physical infrastructure upgrades	Low – Population yield of roughly 78 residents	High – Little impact on environment	Low – Adjacent to existing vegetation	High	Scenario 2B has the same outcomes as 2A with the benefit that it provides for a small scale 'town centre'. This means a reduction of one dwelling (from Scenario 2A), which is offset by commercial development (size and type to be determined).
3	High– Large population yield with no loss of productive land	High – no major additional infrastructure or upgrades required.	Medium – Population yield of roughly 131 residents	High – Little impact on environment	Medium – Mostly surrounded by cleared land.	High	Scenario 3 scores well on all criteria. It has no significant negative effects on the local economy or environment and does not require significant physical infrastructure upgrades. It also adds around 44 dwellings (131 residents), helping to support the local community and economy.
4	Low – Loss of agric. land	Low – May require additional water main	Medium – Population yield of roughly 232 residents	Low – Whole of area is within 100m of water course and associated waterlogged buffer area	Low – Adjacent to existing vegetation	Low	Proximity to a water course and Government Sewerage Policy potentially creates critical constraint to this scenario.
5	Low – Loss of agric. land	Low – May require additional water main	High – Population yield of up to 290 residents	Low – Development constrained by presence of remnant vegetation. Area also partially within 100m of water course and associated waterlogged buffer area.	Low – Adjacent to existing vegetation	Low	In addition to comments from Scenario 4, this Scenario would entail significant loss of existing high quality, productive agricultural land.

Section 4: Conclusion and recommendations

Scenario	Economy	Physical Infrastructure	Social Infrastructure	Environment	Security	Overall score	Concluding comment
6	Low – Significant loss of agric. land	Low – Drainage and geotech issues affect viable development land. Would require additional water main and supply tank.	Medium – Population yield of up to 770 residents	Low – Development constrained by proposed retained remnant vegetation. Significant areas are within 100m of water course and associated waterlogged buffer area	Low – Is adjacent to existing vegetation and has vegetation within the site.	Low	In addition to comments from Scenarios 4 and 5, this Scenario would entail significant loss of existing high quality, productive agricultural land. Loss of existing rural character.

Source: macroplan 2020

Section 5: Conclusion and recommendations

5.1 Findings from the sustainability assessment

The assessment described in this report used a top-down framework adapted from the *State Planning Strategy 2050* and a comprehensive bottom-up review of previous studies, Government policies and additional assessments. From this process, five strategic directions were derived covering the most important issues and then under each of those groups, specific criteria were identified to assess the outcomes.

During the process, a number of issues were considered and ruled out of the assessment as either not being relevant to the Pickering Brook Planning Investigation Area or having no material impact on the assessment. These issues included indigenous heritage sites, basic raw materials policy (SPP2.4), bushland policy (SPP2.8) and road noise (SPP5.4).

The remaining criteria were grouped into the five strategic directions from the *State Planning Strategy 2050* framework.

Table 20. Sustainability assessment framework and criteria

1. Economic development	2. Physical infrastructure	3. Social infrastructure	4. Environment	5. Security
High quality and priority agricultural land Tourism potential Dwelling demand pressures Buffer to agricultural uses	Telecommunications infrastructure Electricity distribution lines Water reticulation Drinking water capacity Traffic impact	Education services (schools) Local identity and social inclusion economy Local economy	Remnant vegetation and threatened ecological species Public drinking water source Urban forest / Bushland policy Government Sewerage Policy (2019) Water management strategy Vegetation condition	Bushfire risk Bushfire Prone Areas 2019 Bushfire Attack Level

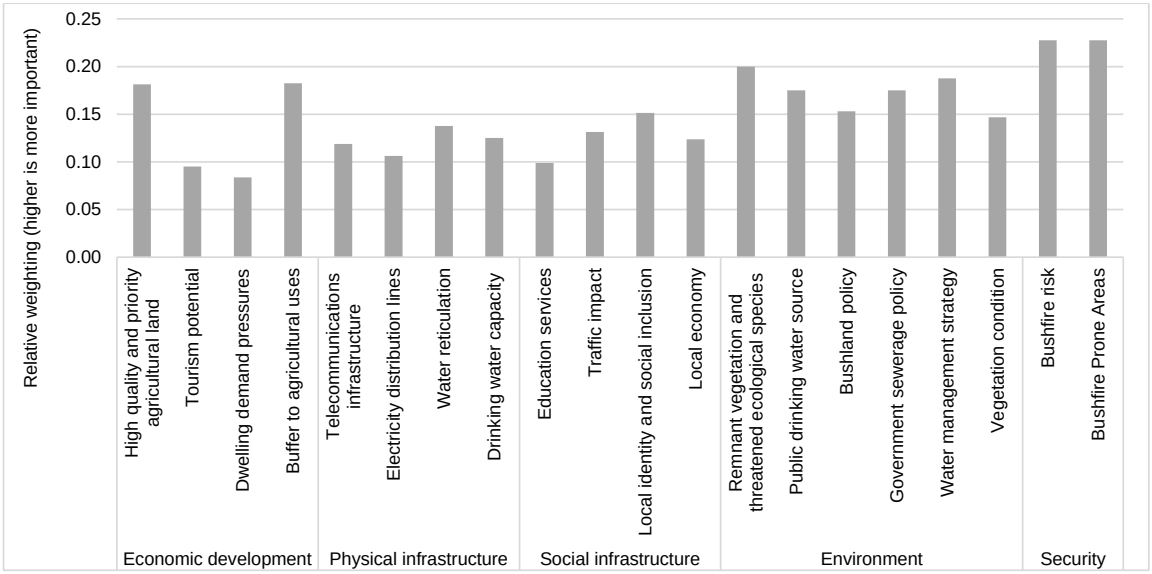
Source: macroplan 2020

Through a multi-criteria assessment process, the Pickering Brook Project Working Group provided their weighing on the importance of the criteria when considering the potential townsite expansion. The Group ranked 'security' as the most important element (which covers matters of public safety – in this case, risk of bush fires). The second-most important factor was the value of remnant vegetation in and around the investigation area. Therefore, the two most important criteria compete directly, as the presence of vegetation increases fire risk.

The third-most important criterion was protection of the drinking water source which will incorporates the Government Sewerage Policy.

The economic criteria relating to the continued agricultural activity in the area were ranked by the PWG as the next most important factors in the potential townsite expansion. These factors have flow on effects to the local character, employment and local economy.

Figure 33. MCA weighting outcomes – detailed results (normalised values)



Source: macroplan 2020

5.2 Development scenarios

The sustainability assessment considered seven scenarios for the potential expansion of the Pickering Brook townsite.

Scenario 1 considered the 40-hectare area originally planned for the 'Carilla' townsite, dating back to the 1930s (Lot 81 Cunnold Street). Although this was outside of the Planning Investigation Area (PBPIA), as it was raised by the community for potential expansion, it was considered in this assessment. During the assessment, Scenario 1 was eliminated due to impacts on remnant vegetation and potential related impacts on protected fauna species that inhabit the local area. Additionally, the area would unlikely be developable under the Commonwealth EPBC Act, and it would be inconsistent with maintaining the local character of the area.

Figure 34. Scenario 1

Source: DPLH 2020; macroplan 2020

Scenarios 2A/2B, 3, 4, 5 and 6 considered all land within the PBPIA for progressive development, to be contiguous with the existing residential development and then to provide for a logical progression for the development. These scenarios required a more detailed assessment to determine their suitability for townsite expansion.

Figure 35. Pickering Brook Planning Investigation Area: Development Scenario 1

Figure 36. Pickering Brook Planning Investigation Area: Development Scenarios 2A/2B, 3, 4, 5 & 6

Source: DPLH 2020; macroplan 2020

These scenarios went through a multi-criteria analytical process that considered both spatial and non-spatial data to determine the relative viability of each, and produce an indicative "best case" development scenario. This process and results are discussed in both Section 4 and Appendix B.

5.3 Sustainability assessment outcomes

The criteria and weightings from the MCA workshop were then added a spatial analysis tool (MCAS-S) which is described in more detail in **Appendices B, C and D** of this report. This allowed all the spatial criteria to be combined into a single output determining the preferred area for residential development. The final stage of the process was to then match those raw spatial outputs back to the agreed development scenarios agreed. This provided a logical filtering of the preferred development areas based on the contiguous expansion of the existing townsite.

The following table provides a summary of the sustainability assessment process and the criteria were considered. Section 4 of this report provides more information on the criteria tested. For specifics on the assessment process, refer to detailed explanation of the methodology in **Appendices B, C and D**.

Table 21. Sustainability assessment outcomes – suitability for townsite expansion summary table

Scenario	Economy	Physical Infrastructure	Social Infrastructure	Environment	Security	Overall score	Concluding comment
1	High	Medium	High	**Unsuitable for development**	Medium	**Unsuitable for development**	Lot 81 is not suitable due to environmental constraints (remnant vegetation).
2A	Medium	High	Low	High	Low	Medium/ High	Scenario 2A scores well on most criteria. It has no significant negative effects on the local economy or environment and does not require significant physical infrastructure upgrades.
2B	Medium/ High	High	Low	High	Low	High	Scenario 2B has the same outcomes as 2A with the benefit that it provides for a small scale 'town centre'. This means a reduction of one dwelling (from Scenario 2A), which is offset by commercial development (size and type to be determined).
3	High	High	Medium	High	Medium	High	Scenario 3 scores well on all criteria. It has no significant negative effects on the local economy or environment and does not require significant physical infrastructure upgrades. It also adds around 44 dwellings (131 residents), helping to support the local community and economy.
4	Low	Low	Medium	Low	Low	Low	Proximity to a water course and Government Sewerage Policy potentially creates critical constraint to this scenario.
5	Low	Low	High	Low	Low	Low	In addition to comments from Scenario 4, this Scenario would entail significant loss of existing high quality, productive agricultural land.
6	Low	Low	Medium	Low	Low	Low	In addition to comments from Scenarios 4 and 5, this Scenario would entail significant loss of existing high quality, productive agricultural land. Loss of existing rural character.

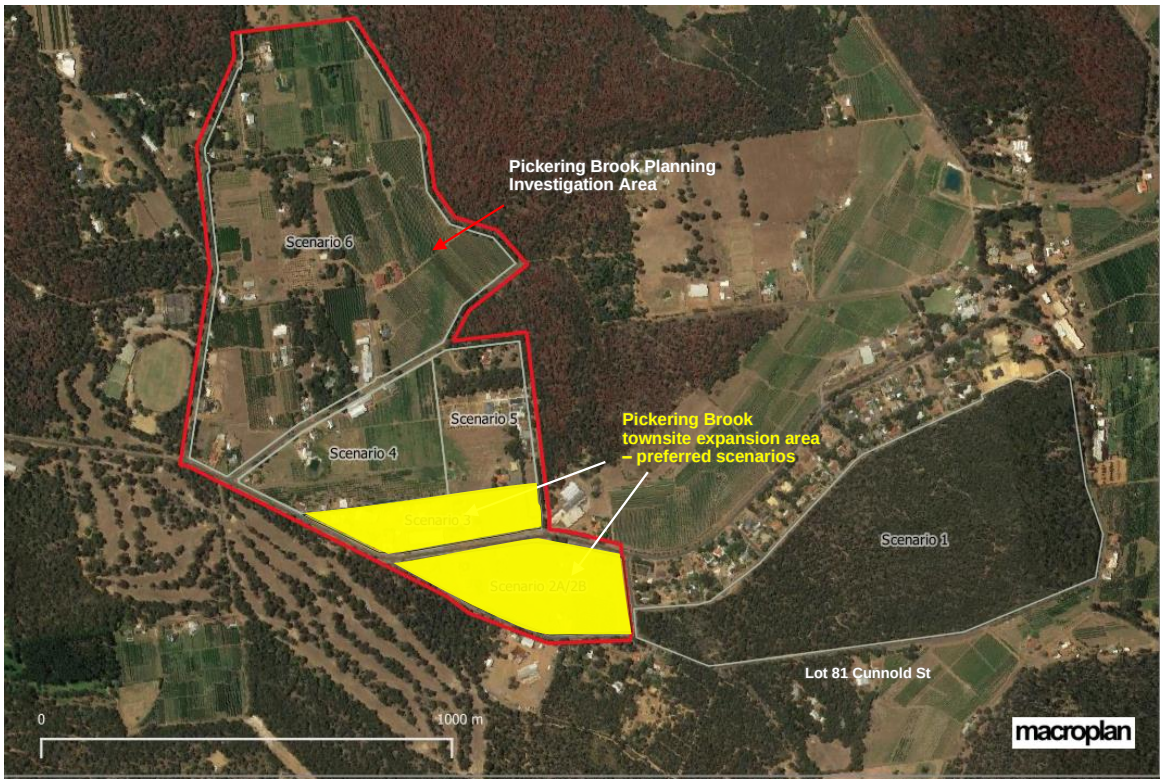
Source: macroplan 2020

5.3 Preferred scenario/s

The preferred scenario for potential townsite expansion is **Scenario 3**, with a small 'town centre' (as per **Scenario 2B**). The second ranking scenario was **Scenario 2B**, followed by **2A**. The strengths of these three scenarios over the others include:

- Don't encroach (significantly) on buffers to water courses and related water-logging areas required under Government Sewerage Policy and therefore minimise risk of contamination to the Middle Helena Catchment Drinking Water Resource.
- Have limited impact on high quality agriculture land and land use that directly support agricultural production
- Provide a logical extension of the existing Pickering Brook townsite
- Provide a reasonable potential for dwelling yield to meet some development pressures
- Can meet required buffers from high quality agriculture land
- Do not require any upgrades to reticulated water infrastructure
- Have potential to increase local primary school enrolments by around ten per cent
- Do not impact on remnant vegetation
- Will potentially provide some support for local businesses/economy including local shops and recreation centre.

Figure 37. Pickering Brook Scenarios 2A/2B and 3



Indicative yields: for the preferred scenarios:

Scenario 3 Includes 13.7 hectares of developable land with an estimated dwelling yield of 44 and population yield of 131. This may result in approximately 14 primary school aged children.

Scenario 2A Includes 8.4 hectares of developable land with an estimated dwelling yield of 27 and population yield of 80. This may result in approximately 8 primary school aged children.

Scenario 2B Includes the same 8.4 hectares of developable land, but involves a town centre, lowering total estimated dwelling yield to 26 and population yield to 78. This scenario may result in approximately 8 primary school aged children.

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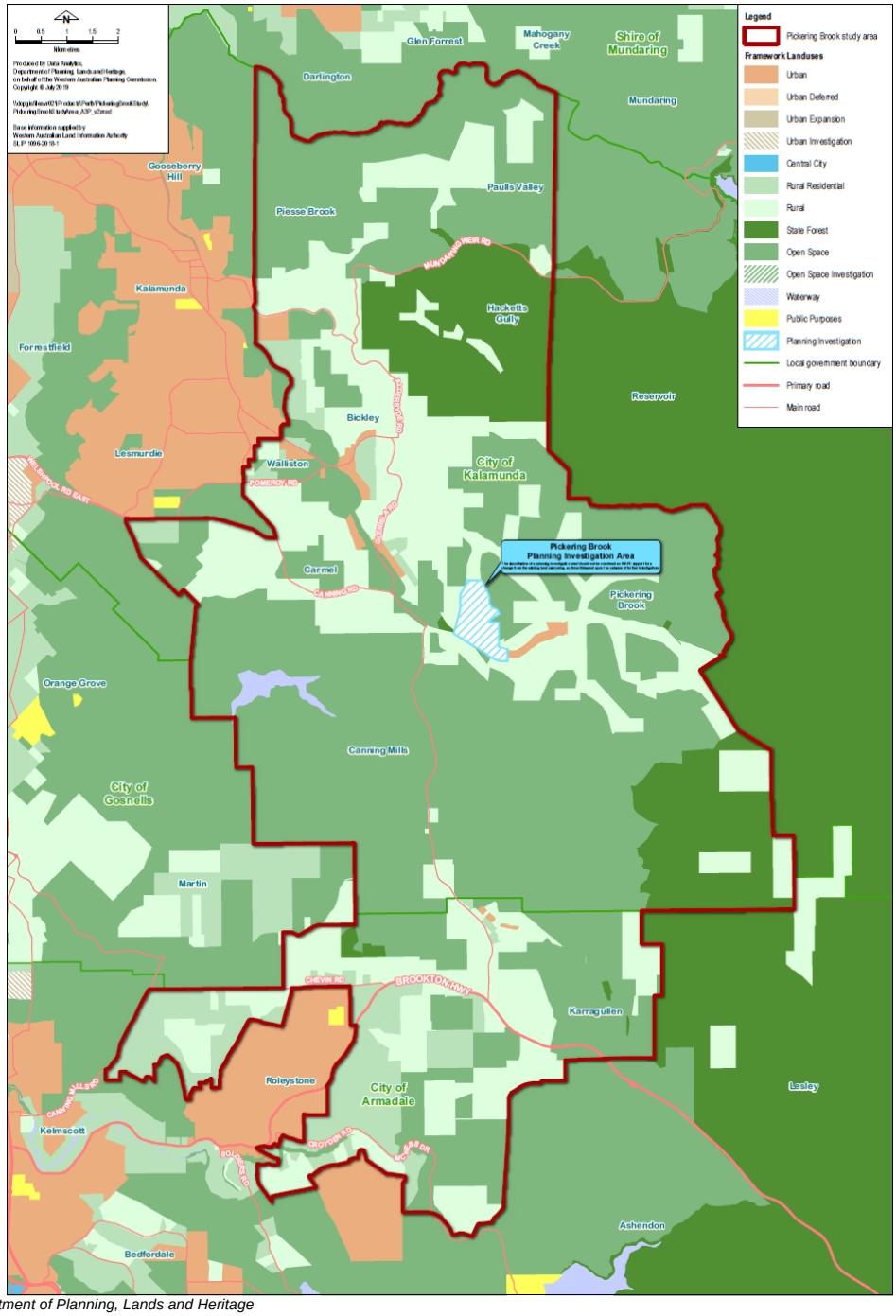
Western Australian Planning Commission, 2015, *State Planning Policy 5.2 Telecommunications Infrastructure*
Western Australian Planning Commission, 2019, *State Planning Policy 5.4 Road and Rail Noise*
Western Australian Planning Commission, 2014, *State Planning Strategy 2050*
Western Power Network Capacity Mapping Tool 2017, Available at https://westernpower.maps.arcgis.com/

Abbreviations and acronyms

ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
ALUM	Australian Land Use and Management
BAL	Bushfire Attack Level
DAFWA	Department of Agriculture and Food WA (now DPIRD)
DBCA	Department of Biodiversity, Conservation and Attractions
DFES	Department of Fire and Emergency Services (WA)
DOH	Department of Health (WA)
DOP	Department of Planning (now DPLH)
DOW	Department of Water (now DWER)
DPLH	Department of Planning, Lands and Heritage (WA)
DPIRD	Department of Primary Industries and Regional Development
DWER	Department of Water and Environmental Regulation
DWMS	District water management strategy
EPA	Environmental Protection Authority
JSTI	Department of Jobs, Tourism, Science and Innovation
MCA	Multi-criteria assessment
MCAS-S	Multi-Criteria Analysis Shell for Spatial Decision Support
MVA	Mega volt-amps
MRS	(Perth) Metropolitan Region Scheme
MVA	Mega volt amperes
PBPIA	Pickering Brook Planning Investigation Area
PDWSA	Public Drinking Water Source Area
PIA	Planning Investigation Area
PWG	Project Working Group
R-code	Residential Design Code
SPP	State Planning Policy
WAPC	Western Australian Planning Commission

Appendix A: Study area maps

Figure 38. Study Area for the Pickering Brook and Surrounds Sustainability and Tourism Strategy



Source: Department of Planning, Lands and Heritage

Appendix A

Figure 39. Pickering Brook Investigation Area map

Source: Department of Planning, Lands and Heritage

Appendix B: Detailed methodology

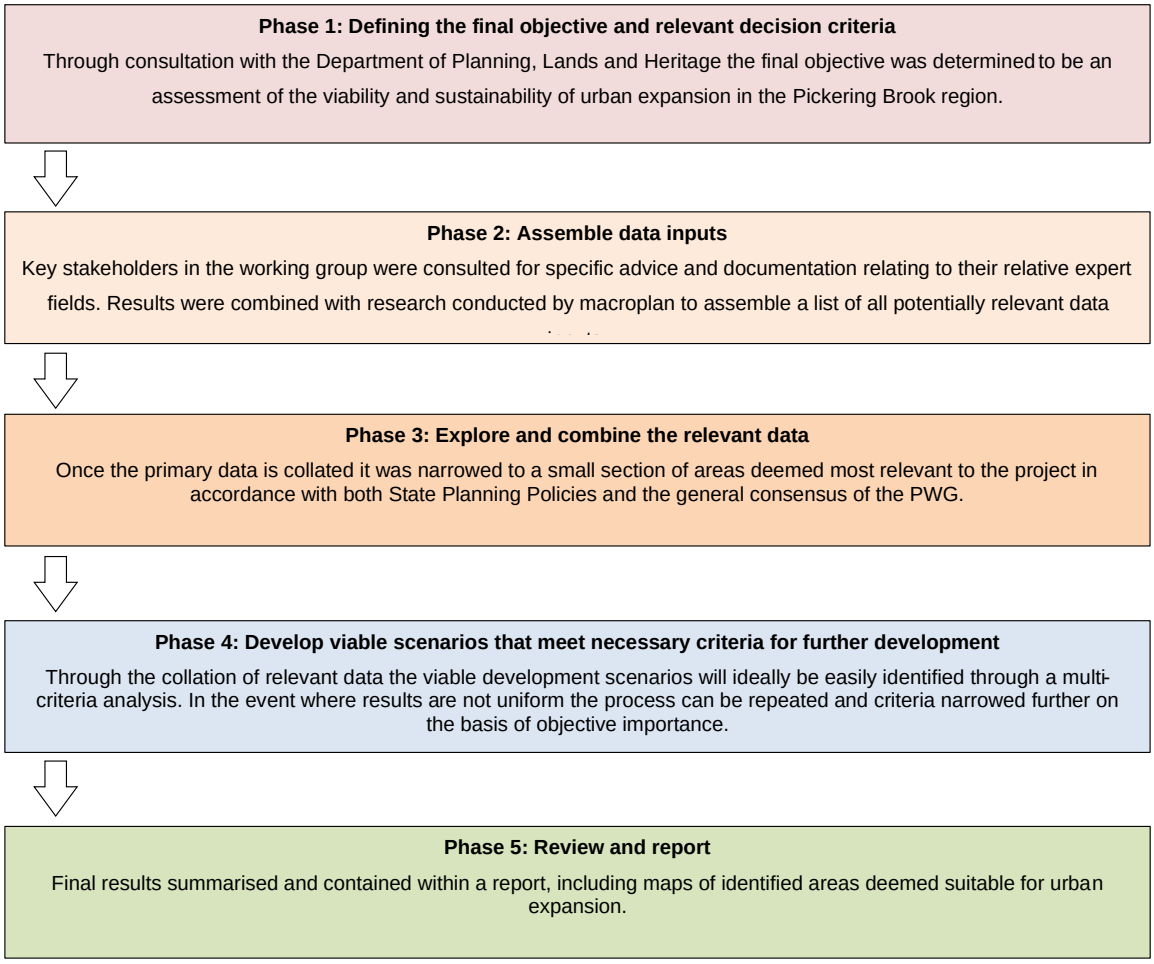
Methodology

A multi-criteria analysis (MCA) allows comparison between complex trade-offs. In terms of planning, the discipline considers a wide range of complex, often interrelated criteria ranging from sustainability to economic development. A MCA approach allows evaluation of both project-specific and broader criteria, as well as giving weight to the opinions of key stakeholders.

The process generally begins through defining the final objective. For Pickering Brook, the question isolated for this assessment was to assess the potential townsite expansion scenarios for urban development within the Pickering Brook Investigation Area.

The following outlines the approach taken by macroplan in determining the viability and sustainability of townsite expansion in the Pickering Brook Investigation Area.

Figure 40. Process overview



The following paragraphs describe each of these phases in more detail.

- Inception meeting held on the 26th of November 2019 began phase one with clarification of the final objective and determining the key stakeholders in the working group and relevant literature.
- Literature review of Government policies, previous planning and technical investigations, to identify key constraints and opportunities in the region as identified in previous reports and through State and local development strategies. A brief overview of this lengthy documentation is provided on the following pages.
- Primary data is categorised as either broad-area criteria that impact the whole investigation area, or area-specific criteria which vary across the 80 hectares net PBPIA and 40 hectares of Lot 81 Cunnold Street. It will also be matched with all relevant State Planning Policies.
- From the lengthy list of identifiable factors that may be relevant to the sites and their future development capacity macroplan, in consultation with the Department of Planning, Lands and Heritage and several other key stakeholders such as DFES and DPIRD, underwent a process to narrow-down this list of criterion, and address only key issues. This sustainability assessment covers environmental, social and economic factors that may provide barriers or windows of opportunity to the potential expansion of the Pickering Brook townsite.
- The results of the sustainability study are presented at the workshop and any points requiring clarification are addressed. This workshop identified the perceived importance of several non-spatial factors outside State Planning Policy which factored into the reports' conclusion. Ideally rankings given to criteria were objective however some level of subjectivity was expected and to an extent unavoidable.
- From the workshop data is combined and spatial information input into the Multi-Criteria Analysis Shell for Spatial Decision Support (MCAS-S), developed by the Australian Bureau of Agricultural and Resource Economics. Ideally this will determine land constraints and identify clear areas that are not suitable for expansion.
- Results obtained through the MCAS-S are then combined with the non-spatial data discussed in the workshop, forming the final output as to the scale and location of future urban expansion in Pickering Brook. A draft report will then be released for feedback from the PWG and reviewed accordingly.
- The definition of sustainability from the Brundtland Report, being *"development that meets the needs of the present without compromising the ability of future generations to meet their own needs"*. And the 'directions' identified in the WAPC's State Planning Strategy 2050. As such, the report takes into account:
    1. Economic development
    2. Physical infrastructure
    3. Social infrastructure
    4. Environmental impact
    5. Security

Criteria filtering process

There was a long list of criteria taken into account through the process of this assessment, and the elimination of criteria from this list occurred through consultation with the relevant stakeholders.

The importance and inclusion of most criteria was gauged from State policy documentation. As a result of these assessments, some were flagged as being important for the project, and others dismissed. Other criteria arose from the literature review, with the given documents providing an important guide as to the major development constraints in the area. There were also some that were added from site visits, community consultation and various other sources. The following table provides a summarised sample of the spreadsheet that guided this process.

Table 22. Sample spreadsheet for criteria elimination

State Planning Strategy (Strategic Direction)	Criteria	Comments	Government policy / position
1. Economic development	High Quality and Priority Agricultural Land		Govt policy statement: Diversify WA (jobs and economic development)
1. Economic development	Tourism potential	Traffic counts (visibility) and existing tourism (clustering)	Govt policy statement: Diversify WA (jobs and economic development)
1. Economic development	Dwelling demand pressures	DPLH (Perth&Peel @3.5M targets; WA Tomorrow forecasts)	Pressure to provide more housing to accommodate growth
1. Economic development	Buffer to Agricultural Uses (300m and 500m)		Department of Health, Guidelines for Separation of Agricultural and Residential Land Uses: Establishment of Buffer Areas 2012
2. Physical infrastructure	Telecommunications infrastructure		Supports urbanisation, economic development and public safety
2. Physical infrastructure	Electricity distribution lines		Urbanisation potential based on sub-station capacity
2. Physical infrastructure	Water reticulated services		Cost of connecting to existing reticulated mains (or extending mains if necessary)
2. Physical infrastructure	Drinking water capacity		Water Corporation - affects total costs of urbanisation
2. Physical infrastructure	Traffic impact assessment		Traffic is good for commercial and tourism exposure (passenger cars, not freight). Urbanisation will affect traffic. Tourism can have negative effects due to the period of high tourist activity (weekend, warmer months)
3. Social infrastructure	Education services (schools)	Assessment of primary and secondary schools servicing Pickering Brook	The School Education Act 1999 requires all enrolled student to attend school or participate in an educational program of the school.
3. Social infrastructure	Local identity and social inclusion economy	Community facilities and events	NA
3. Social infrastructure	Local economy	Availability of job opportunities in area for local residents. DPLH Land Use and Employment Survey	Govt policy statement: Diversify WA (jobs and economic development)
4. Environment	Potential for Remnant Vegetation and Threatened Ecological Species	May affect Lot 81	Commonwealth EPBC Act
4. Environment	Public drinking water source		WAPC SPP 2.7 Public drinking water source - PBPIA all in Middle Helena catchment area. Broader area is between this and the Victoria Reservoir
4. Environment	Government Sewerage Policy (2019)		WAPC / DoH / DWER
4. Environment	Urban forest		Urban forest 2016 mesh blocks, most of the PBPIA 25 to 30 per cent of canopy is above 3m. In one small pocket at the top of the PBPIA this percentage is slightly lower at 15 to 20 per cent
4. Environment	Water Management Strategy		DWER / WAPC / DPLH
4. Environment	Vegetation condition (good, degraded, completely degraded)		EPA / DBCA
5. Security	Bushfire risk	Technical details of assessment TBA. May include Bushfire Attack Level (BAL)	Building Codes of Australia. Australian Standard AS3959
5. Security	Bushfire Prone Areas 2019	Whole area is classified as a Bushfire Prone Area	Bushfire Prone Areas 2019 (OBRM-013) as designated by the Fire and Emergency Services (FES) Commissioner on 1 June 2019

Appendix C: Multi-criteria assessment workshop

The multi-criteria analysis workshop was held on 15 January 2020 at the Department of Planning Lands and Heritage involving 18 participants from 12 organisations, including PWG members. At least one representative from each relevant State and Local Government organisation and a representative from the community were present at the workshop. A list of the attendees and their organisation is below.

Member for Kalamunda	Matthew Hughes MLA JP
City of Kalamunda Councillor	John Giardina
Community Representative (Pickering Brook)	Michael Fernie
City of Kalamunda	Peter Varelis Stephanie Brokenshire
Department of Planning, Lands and Heritage (DPLH)	Chris Bebich Mathew Selby Sean O'Conner
Department of Primary Industries and Regional Development (DPIRD)	Heather Percy Dr Melanie Strawbridge Greg Doncon
Department of Water and Environmental Regulation (DWER)	Don Cummins Christa Loos
Department of Jobs, Tourism, Science and Innovation (JTSI) TourismWA	Campbell Fletcher
Department of Fire and Emergency Services (DFES)	Ron De Blank
Department of Biodiversity, Conservation and Attractions (DBCA)	David Mitchell

Bushfire planning and traffic engineering consultants also attended to assist with the process and provide technical advice as necessary. While these consultants provided information to participants to ensure understanding of their relative specialist areas, their input was not considered as part of the MCA weighting process.

GTA Consultants	Aaron MacNish
Emerge Consultants	Anthony Rowe

The workshop began with a recap from the DPLH which ran through the process to date. It also discussed the basics of each development scenario, detailing the dwelling yield and overall size in order to provide participants with a clear, uniform understanding of the various potential expansion ideas for the Pickering Brook townsite.

A presentation covered the key points of contextual understanding that each of the project working group attendees should know prior to their worksheet weightings in order to ensure a well-rounded evaluation. It began with an explanation of the macro categories taken directly from the *State Planning Strategy 2050* which were:

1. Economic development
2. Physical infrastructure
3. Social infrastructure
4. Environment
5. Security

Appendix C

The sub-criteria covered in each of these broad categories were then discussed to allow time for the working group to consider each of them in terms of their *Strategy* definitions rather than their own definitions. Worksheet 1 was completed by all individuals present at the workshop.

This pairwise comparison technique was used for ranking criteria at a macro level to gauge the core values of workshop participants. Results from this initial pairwise assessment are discussed below.

Results from each would suggest that most of the working group prioritise environmental and security considerations to most other factors. Economic development while of clear importance to some organisations was not a significant factor in any decision for others. In general, most participants seemed relatively impartial between categories, many hovering around “equal” and “somewhat prefer” options. However, there were others with strong opinions which allowed clear insight on their stance to particular issues which tended to be those concerned with environment and security. Results indicated that Social Infrastructure was not of high importance to most participants.

Figure 41. Worksheet 1

Contact name: _____

Organisation: _____

For each paired choice below, fill in the circle to indicate which of these strategic directions you feel are more important (or equal) for prioritising expansion of the Pickering Brook townsite

	strongly prefer	prefer	somewhat prefer	equal	somewhat prefer	prefer	strongly prefer	
1. Economic development	○	○	○	○	○	○	○	2. Physical infrastructure
1. Economic development	○	○	○	○	○	○	○	3. Social infrastructure
1. Economic development	○	○	○	○	○	○	○	4. Environment
1. Economic development	○	○	○	○	○	○	○	5. Security
2. Physical infrastructure	○	○	○	○	○	○	○	3. Social infrastructure
2. Physical infrastructure	○	○	○	○	○	○	○	4. Environment
2. Physical infrastructure	○	○	○	○	○	○	○	5. Security
3. Social infrastructure	○	○	○	○	○	○	○	4. Environment
3. Social infrastructure	○	○	○	○	○	○	○	5. Security
4. Environment	○	○	○	○	○	○	○	5. Security

Source: macroplan 2020

The above exercise allowed a macro insight into particular organisations’ priorities and the general concerns at hand for the group as a whole. Importantly though, it also began workshop participants through process as to what factors they consider of the upmost importance to them, which subsequently formed the key part of the next worksheet.

Before that worksheet could be completed, it was necessary to ensure that each member had access to enough information to evaluate criteria on its relative merit and not with each specialised group holding onto their own information and views. As such, DPIRD, GTA and Emerge consultants were given time to discuss with the group findings relating to their respective fields, high quality and priority agricultural land, traffic impact and bushfire risk at an area-specific level with findings varying depending on

the development scenario in question. Once the working group had an understanding of this, the second worksheet was distributed.

A copy of Worksheet 2 is provided below, this more detailed approach to weightings for the refined criteria list is loosely based on a structure developed by the Natural Resources Leadership Institute, part of North Carolina State University.

Worksheet 2 was completed in groups by organisation/agency. The City of Kalamunda and the Community Representative undertook their assessment after the workshop and then provided the worksheets to macroplan for inclusion in the overall assessment. The Community Representative and City of Kalamunda Councillor responses were combined with scoring on behalf of the City of Kalamunda.

The first task of the working group was to allocate a ranking of the five categories from 1 to 5 in order of importance. Both “Security” and “Economic Development” overall ended up equal first, however as will be further explained below, there was emphasis on “Security” by almost all participants, while “Economic Development” identified different perspectives among the working group. “Social Infrastructure” came in third overall, followed by “Physical Infrastructure” and lastly “Environment” although it should be noted that these overall rankings do not mean much by comparison to their relative weightings across the board which display quite different results. This is predominately since weightings and rankings identified variances among participants. Those who valued “Environment” weighted its importance significantly higher than those who considered “Economic Development” to be of the highest importance.

From this ranking they were asked to provide a weighting for the five groups which could be anywhere between zero (implying the criteria is not important whatsoever) and 100, which would imply that specific category held within it the only criteria that should be considered. In colloquial terms, the one category rated 100 contained a “fatal flaw”, an issue that cannot be resolved and as such would prevent any development from moving forward. The highest weighted category across the group was “Security” which had a mean weighting of 23.8 out of a possible 100.

“Environment” followed relatively closely, likely given the interrelatedness of “Environment” and “Security”, with a mean weighting of 21.3. Variances within the environmental category were high indicating contention between participants. The highest variance within the category related to the importance of the area being a PDWSA with some rating the criteria as being of high importance, while others disregarded it almost entirely.

While “Economic Development” generated a mean weighting of 20.6 out of a possible 100, the variance across the category was notably large. When narrowing this to the individual sub-criteria there is less of an issue in reference to “buffers to agricultural uses” and “high quality and priority agricultural land”, in which it would seem there was general consensus that high priority agriculture should be preserved and that buffers are of relative importance. However, large discrepancies were present in the importance of tourism potential and dwelling demand pressures to the project outcome.

Both “Social Infrastructure” and “Physical Infrastructure” recorded mean weightings of 18.1 and 16.3 respectively out of a possible 100, suggesting they are of the least importance to a majority of the present organisations within the working group. However, variances in the category were large. This variation applied in all sub-categorical areas of the assessment from the importance of telecommunications infrastructure to traffic impact and education services.

In the process of the workshop it was discussed that traffic impact should be moved from social infrastructure to physical infrastructure, and while this was relatively simple to move in tables, worksheets were already printed and could not be edited accordingly. Two organisations as a result of the discussion wrote traffic impact into the physical infrastructure category and rated

it highly in importance. To ensure the importance of the criteria was not understated and their opinion was included in the final analysis, traffic impact was given the highest possible weighting under the social infrastructure sub-category.

Figure 42. Worksheet 2

Pickering Brook townsite expansion suitability assessment

Contact name: _____

Organisation: _____

****IMPORTANT NOTE**: In the event that this worksheet remains unfinished or if more time is required, participants may take the sheet with them. Final rankings must be sent to Stuart McKnight at **stuart.mcknight@macroplan.com.au** by **5:00pm** on **Friday the 17th of January.**

Criteria	Rank (1-5)	Allocate 100 points	Sub-criteria	Sub-criteria weight
Economic development	1 - 5	0 - 100		
			High quality and priority agricultural land	
			Tourism potential	
			Dwelling demand pressures	
			Buffer to agricultural uses	
Physical infrastructure	1 - 5	0 - 100		
			Telecommunications infrastructure	
			Electricity distribution lines	
			Water reticulation	
			Drinking water capacity	
Social infrastructure	1 - 5	0 - 100		
			Education services	
			Traffic impact	
			Local identity and social inclusion	
			Local economy	
Environment	1 - 5	0 - 100		
			Remnant vegetation and threatened ecological species	
			Public drinking water source	
			Bushland policy	
			Government sewerage policy	
			Water management strategy	
			Vegetation condition	
Security	1 - 5	0 - 100		
			Bushfire risk	
			Bushfire Prone Areas	

Instructions

Step one: In the first column titled "**Rank**", number each of the broad categories from 1 to 5, with 1 being the **most** important, and 5 being the **least**

Step two: In the **second** column ("**Rating/100**"), allocate a weighting out of 100 to the broad area criteria based on how important that factor is to the assessment, with a **higher score / 100** indicative of **higher importance**.

For example: If "**Environment**" is considered the most important factor then it may have a rating of **40 / 100**. "**Security**" could then be rated closely behind at **38 / 100**.

Step three: In the column labelled "**Sub-criteria weight**" provide a **weighting based on the figure allocated to the group as a whole**.

For example: if the decision is made to rate "**Social Infrastructure" 25 / 100**, then each of the sub-criteria within "Social infrastructure" must be **ranked out of 25 as shown below**:

Education services 25 / 25
Traffic impact 10 / 25
Local identity and social inclusion 9 / 25
Local economy 12 / 25

Note that it is acceptable to score a particular category 0 in the event that the participant believes the area is of **no importance** to the

Source: macroplan 2020

Additional comments/changes made throughout the workshop:

- The traffic impact measure was moved from social to physical infrastructure based on recommendation from GTA consultants
- The bushfire consultant noted that while there are potential solutions to the bushfire risk issues in the area, some of these may not be viable.
- The representative from the Department of Fire and Emergency Services noted several apparent flaws in the weighting system as “bushfire risk” they believed was ill-defined as a number of factors (traffic, infrastructure, water availability) impact the level of risk, making it difficult to rate. It was also stated that the risk associated with bushfires should not be determined by a simple workshopped weighting system.
- The community representative for Pickering Brook did not feel that “local identity and social inclusion” necessarily matched with the residents’ concern with local amenity and as such added that as a criterion under “Social Infrastructure”. The model does not allow us to add categories after the fact, as such we made sure that “local identity and social inclusion” had the maximum possible weighting and noted the concern to ensure it was made clear where the community priorities lie.

Appendix D: Spatial analysis – detailed outputs

Spatial outputs

The spatial component of the sustainability analysis using the MCAS-S tool combined the MCA criteria weightings with the spatial data used to measure each criterion. This appendix provides a summary of that final stage of the process and the spatial outputs.

In summary the steps were:

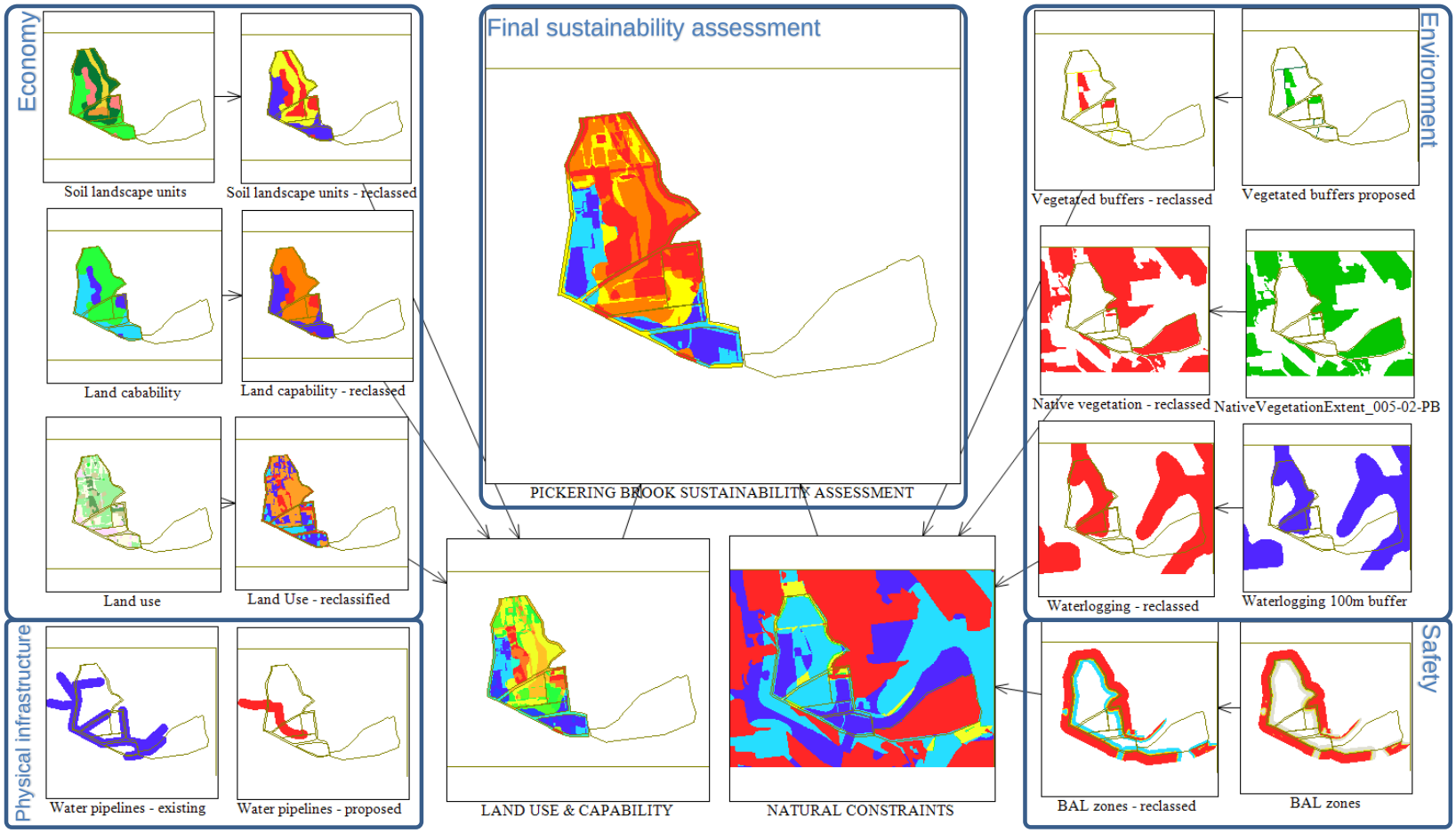
- All spatial datasets were converted to a standard format (raster files at a consistent resolution)
- The spatial data were loaded into the MCAS-S and formatted to their original colours (symbology)
- Spatial data were then reclassified from the MCA criteria analysis and workshop into five categories as per the following table
- The spatial data were combined using the weights from the MCA workshop
- The scenario boundaries were overlaid to determine the most suitable scenarios for expansion of the Pickering Brook townsite.

Table 23. Classification of areas for Pickering Brook townsite expansion

	Preferred areas for townsite expansion
	Areas 'okay' for townsite expansion
	Areas with both positive and negative aspects for expansion
	Areas not preferred for townsite expansion
	Unsuitable for townsite expansion

The spatial assessment then informed the final assessment which was to text each of the development scenarios. Based on this information the assessment determined that Scenario 3 was the optimal outcome, followed by Scenarios 2A/2B.

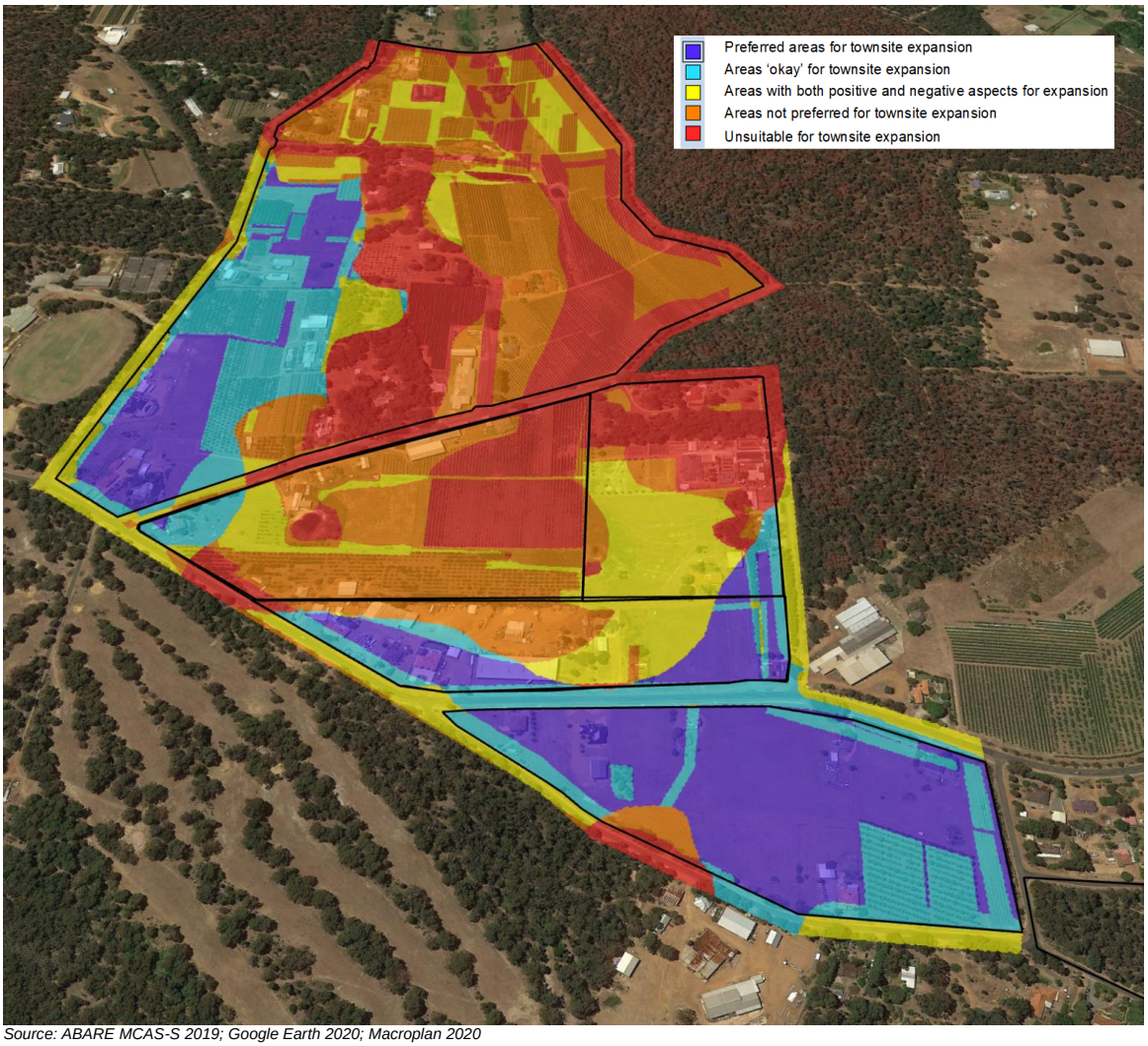
Figure 43. Spatial MCA analysis



Source: ABARE MCAS-S 2019; Macroplan 2020

Appendix D

Figure 44. Spatial output of the MCA Sustainability Analysis



Source: ABARE MCAS-S 2019; Google Earth 2020; Macroplan 2020

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