



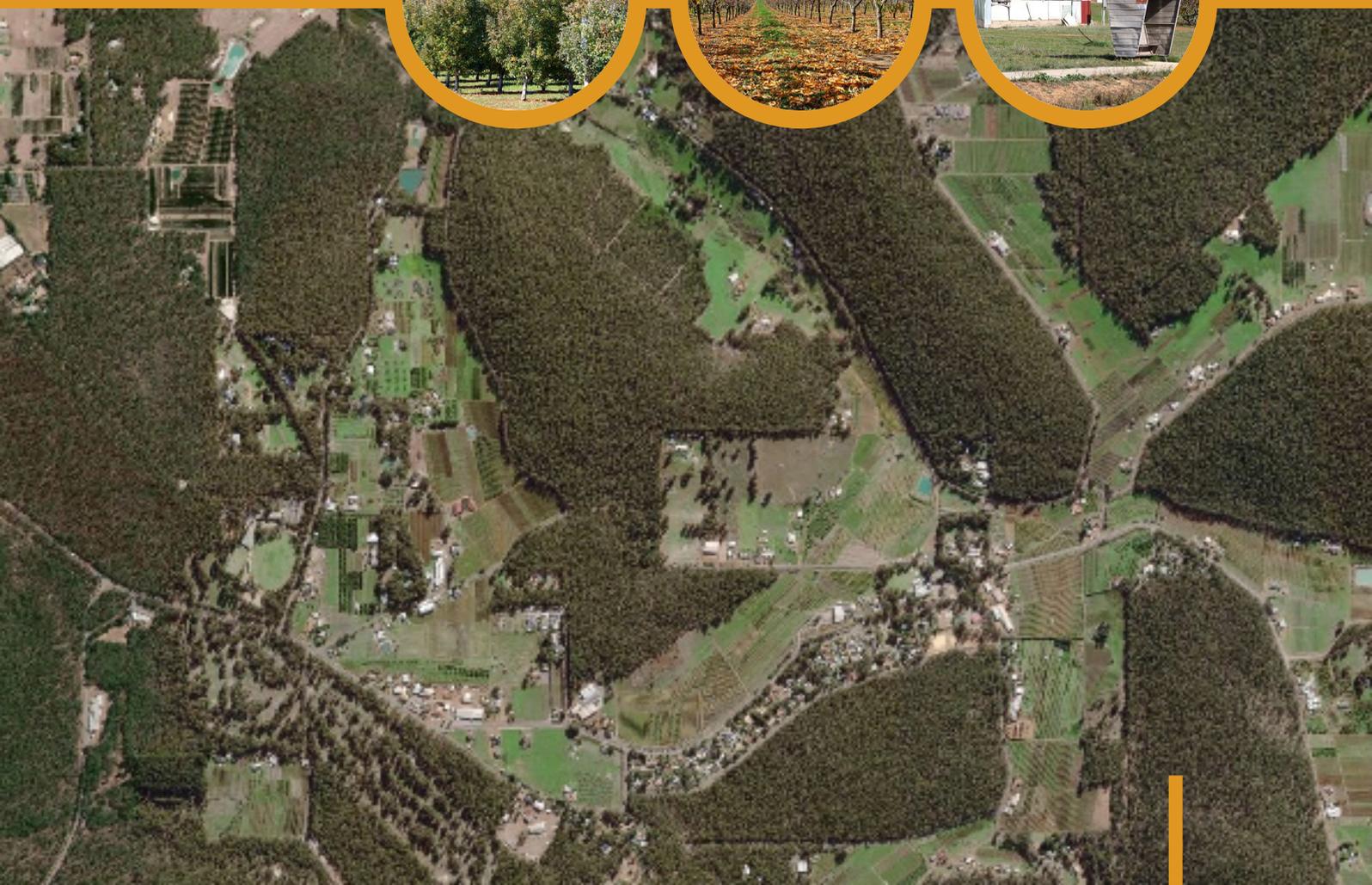
# Pickering Brook and Surrounds

## Sustainability and Tourism Strategy

### Part 1 – Pickering Brook Townsite

Working Group report and recommendations to the State Government Taskforce

November 2020



The Pickering Brook and Surrounds Sustainability and Tourism Strategy Working Group acknowledges the traditional owners and custodians of this land. We pay our respect to Elders past and present, their descendants who are with us today, and those who will follow in their footsteps.



# Contents

Foreword	v
Executive Summary	
<b>1. Introduction</b>	<b>1</b>
<b>2. Background and planning context</b>	<b>3</b>
2.1 <i>Perth and Peel@3.5million North-East Sub-regional Planning Framework (2018)</i>	3
2.2 City of Kalamunda Strategic Planning	5
2.2.1 <i>Local Planning Strategy 2010</i>	5
2.2.2 <i>Hills Rural Study 2014</i>	6
2.2.3 <i>Metropolitan Region Scheme Amendment Request - Pickering Brook Townsite (2016)</i>	7
<b>3. Townsite expansion investigations</b>	<b>9</b>
3.1 Pickering Brook profile	9
3.1.1 Demography	10
3.1.2 Population growth	10
3.1.3 Employment	11
3.1.4 Dwellings and land supply	11
3.2 Community consultation	13
3.3 Townsite expansion scenarios and yields	13
3.4 Perth Hills tourism	14
3.5 High-quality agriculture land	17
3.6 Service infrastructure	19
3.6.1 Reticulated water infrastructure	19
3.6.2 Reticulated sewerage infrastructure	19
3.6.3 Electricity infrastructure	19
3.7 Environment	20
3.8 Middle Helena catchment water resource	21
3.9 Traffic and Transport	24
3.10 Bushfire risk and management	24
3.11 Sustainability assessment	27
<b>4. Recommendations</b>	<b>30</b>
<b>Appendix 1</b>	<b>38</b>
<b>Appendix 2</b>	<b>41</b>



# Foreword

## **To the Members of the Pickering Brook and Surrounds Sustainability and Tourism Strategy Taskforce.**

The history of planning for change for the Pickering Brook townsite and its surrounds can be traced back to the 1980s. For the local community, the establishment of the Taskforce and the Working Group is seen as a once-in-a-generation opportunity for a sustainable expansion to occur.

I am pleased to have had a role in this important undertaking as chair of the Working Group and I thank my colleagues for their commitment and diligence to this project.

Through our deliberations, we have ensured that the project investigations included a review of all relevant previous work undertaken for Pickering Brook and surrounds; provided technical expertise to inform the development of the strategy; identified and discussed matters relevant to the development of the strategy including opportunities and constraints; ensured landowner and community views and expectations were considered, resulting in strategic recommendations to the Taskforce for consideration by the State Government.

The nine recommendations contained in the Report point the way for the sustainable and measured expansion of Pickering Brook. The modest scale of the proposal will protect the character of the town and preserve the dominant agricultural land use and rural amenity which provide and will continue to provide the foundation for new and compatible business development. It is agriculture and the district's rural amenity that make the town and district an attractive and increasingly popular tourism destination in the Perth Hills and we must ensure that this is preserved.

During the course of our deliberations it became clear that it would be sensible to deliver our response to the Taskforce in two parts; the first being recommendations on the feasibility of a sustainable expansion to the Pickering Brook townsite and the second being recommendations on options for the wider study area.

This report comprises Part One of the report to the Taskforce.

Our primary recommendation to the Taskforce is that it should support the City of Kalamunda to seek an amendment to the Metropolitan Region Scheme and its own Local Planning Scheme to facilitate the expansion of the Pickering Brook townsite in line with Scenario 3, as detailed in the report. It is noted that the Department of Fire and Emergency Services does not support the expansion.

The proposed amendment and detailed bushfire assessment and management plan has the support of City of Kalamunda representatives on the Working Group. The proposed zoning amendment, though significantly reduced in area from the City's original concept proposed in 2016, is consistent with the City of Kalamunda's strategic intent for rezoning of land that would allow for the sustainable expansion of the townsite. Should the Taskforce concur with the findings of the Working Group, it is expected that the detailed bushfire management requirements identified would be considered further in future stages of the planning and development process.

In making this recommendation, we have responded to the individual and particular circumstances of the Pickering Brook townsite. The scale of the proposed townsite expansion, while modest, is meaningful and has the potential to deliver what will be a long-awaited community outcome.

During the finalisation of the set of recommendations contained in the Report, the City of Kalamunda members of the Working Group requested that consideration be given to the inclusion of a further four hectares of adjacent land as a logical extension of Scenario 3. The Taskforce is now required to make a decision as to the extent of townsite expansion it is prepared to support.

On behalf of the Working Group, I commend the Report and its recommendations to the Ministerial Taskforce.



**Matthew Hughes JP MLA**  
Member for Kalamunda

# Executive summary

The Pickering Brook and Surrounds Sustainability and Tourism Strategy Taskforce and Working Group were established by the State Government to investigate planning-related opportunities and constraints for a significant portion of the Perth Hills, and develop strategic recommendations to facilitate future economic opportunities and growth within the study area.

The investigations include consideration for the potential expansion of the Pickering Brook townsite which has not experienced residential growth since the 1980s, in the context of a predominantly rural agriculture area, mainly orcharding, that has experienced a decline in productivity over recent decades due to changing economic, social and environmental factors.

The City of Kalamunda, through its local planning strategy, has identified a potential opportunity to increase the size of the existing townsite and subsequent additional population to support and grow existing services and facilities, provide a wider variety of housing options, and generally revitalize the townsite that is in decline.

The Working Group investigated future land use for 80ha of rural land located west of the townsite which is identified as a Planning Investigation Area (PIA) in the *Perth and Peel@3.5million – North East Sub-regional Planning Framework* (2018).

This report (Part 1) outlines the Working Group's investigations and recommendations to the Taskforce to achieve a sustainable expansion of the townsite.

The Working Group has undertaken community consultation and several specific investigative studies to address gaps in existing information including analysis of tourism growth potential, soil survey to identify high-quality agriculture land, impacts on the Middle Helena drinking water resource, traffic impacts, and bushfire risk assessment and management.

A comprehensive sustainability assessment by the Working Group was undertaken for several alternative townsite expansion scenarios, including for Town Lot 81 Cunnold Street which is not within the PIA, but has historically been identified as a potential site for townsite expansion. The assessment has considered relevant State Government policies and plans, and the findings and conclusions of the specific investigative studies, including a bushfire risk assessment and preparation of a detailed bushfire management plan for the PIA and townsite.

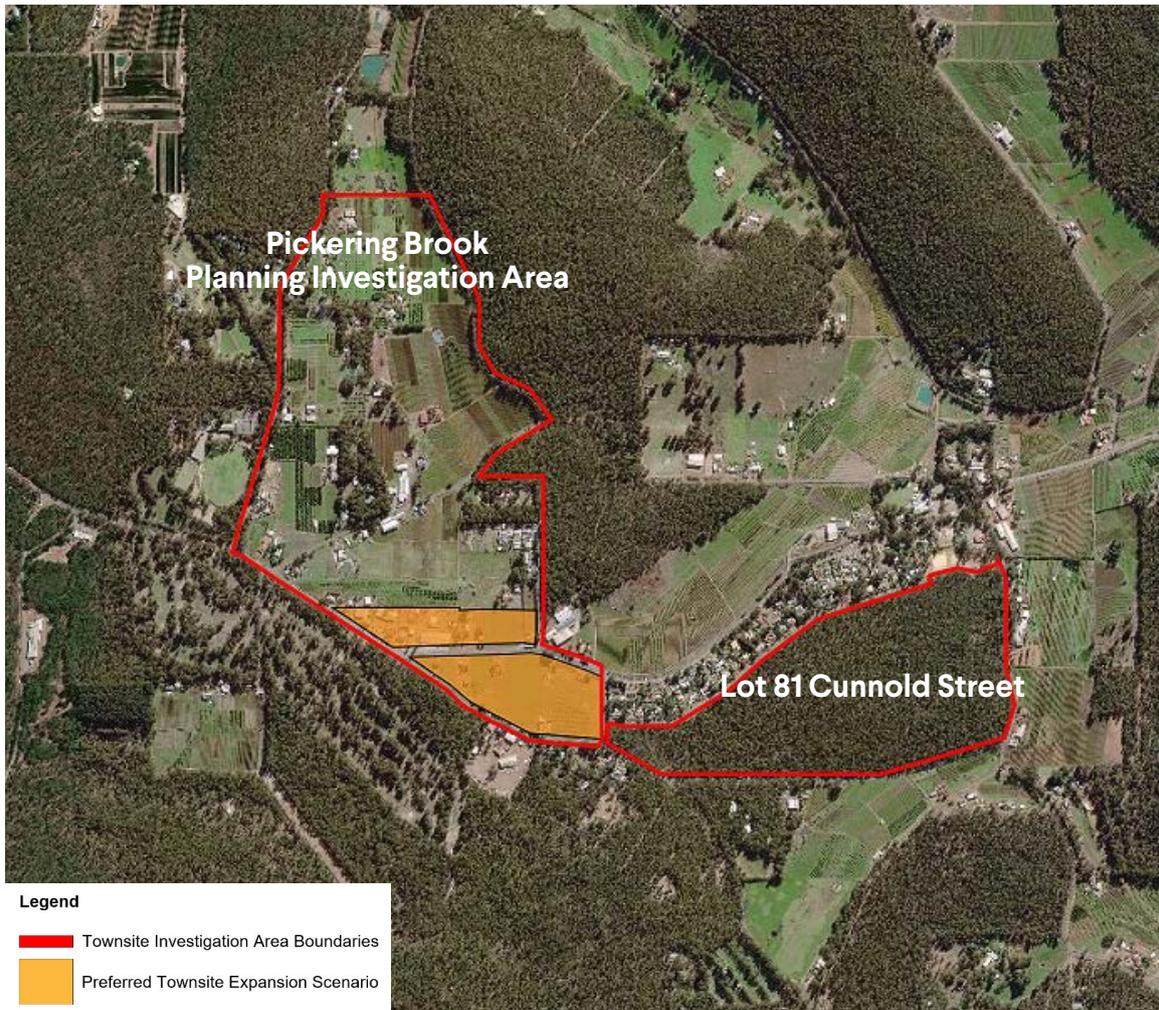
The Working Group has recommended support for a townsite expansion that is limited to the southern part of the PIA as shown in Plan 1. This support is subject to various conditions including that subsequent more detailed planning and decision making for any future subdivision and urban development consider the use of Department of Health approved on-site effluent disposal systems (such as aerobic treatment units with secondary treatment systems) and the recommendations in the *Pickering Brook Townsite Bushfire Management Plan* (Emerge 2020). The Working Group's recommendation to support a townsite expansion has taken into consideration that the Department of Fire and Emergency Services does not support any expansion of the townsite or intensification of land use in the Pickering Brook area due to concerns relating to the bushfire risk assessment and management plan.

The recommended expansion area relates to approximately 14ha of land that is estimated to potentially yield up to 44 additional dwellings and 131 additional residents, including 14 primary school age children. The preferred scenario includes the potential inclusion of a small commercial town centre which would have benefits to the local community however, this will need further consideration as part of more detailed local planning.

The following recommendations have been developed by the Working Group which has balanced consideration of the strategic local need for a relatively small but worthwhile townsite expansion with the key issues outlined above. The recommendations reflect the majority view of the Working Group and alternative recommendations or positions of individual members are outlined in Table 2 of this report for the Taskforce's consideration.

## Working Group Recommendations

1	Support an expansion of the Pickering Brook townsite for approximately 14ha of land located immediately west of the existing townsite in accordance with the preferred scenario shown in Plan 1.
2	The City of Kalamunda to prepare a <i>Metropolitan Region Scheme (MRS) Amendment</i> report and plans proposing to rezone the land identified in Plan 1 from Rural to Urban and submit a request for the rezoning to the Western Australian Planning Commission (WAPC) for its consideration.
3	The Department of Planning, Lands and Heritage to seek an independent peer review of the <i>Bushfire Management Plan – Pickering Brook Townsite Bushfire Risk Assessment 2020</i> to inform the WAPC’s consideration of the proposed MRS amendment.
4	Subject to approval of a related MRS Amendment to rezone the land from Rural to Urban, the City of Kalamunda to prepare a detailed Local Planning Scheme Amendment report and plans proposing to rezone the land identified in Plan 1 from Rural Agriculture to Residential, with an appropriate density coding, for submission to the WAPC requesting its consideration.
5	Subject to the MRS Amendment being initiated through the WAPC and Environmental Protection Authority, the City of Kalamunda to review its draft <i>Pickering Brook District Water Management Strategy (PBDWMS)</i> in consultation with the Department of Water and Environmental Regulation to relate to a townsite expansion for land identified in Plan 1 and include requirements for future urban development to utilise high-performance on-site effluent disposal systems that have secondary treatment capability and are Health Department approved.
6	The Minister for Planning, on behalf of the Taskforce, to request an exemption from the Minister for Health from the reticulated sewer connection requirement of the <i>Government Sewerage Policy 2019</i> for urban development for land identified in Plan 1 which is within the Middle Helena Public Drinking Water Source Protection Area.
7	Subject to approval of a related MRS Amendment to rezone the subject land from Rural to Urban: <ul style="list-style-type: none"> <li>a. The WAPC to review the <i>Middle Helena Catchment Area - Land Use and Water Management Strategy</i> to change the priority classification for the subject land from Priority 2 to Priority 3. <i>(Note: The Working Group suggests it would be timely and appropriate for the WAPC to undertake a full review of the Strategy to ensure it reflects current water protection policies and guidelines.)</i></li> <li>b. The City of Kalamunda to amend the relevant Special Control Area relating to the Middle Helena Water Catchment in its Local Planning Scheme to be consistent with the change of priority classification for the subject land from Priority 2 to Priority 3 in the <i>Middle Helena Catchment Area – Land Use and Water Management Strategy</i>.</li> </ul>
8	The relevant State Government agencies and City of Kalamunda to consider the recommendations outlined in the <i>Bushfire Management Plan – Pickering Brook Townsite Bushfire Risk Assessment 2020</i> when undertaking more detailed planning and decision making for any future subdivision and/or urban development proposals for the subject land. (See Appendix 1). <i>(Note: It is acknowledged that the establishment of the Pickering Brook Primary School or an alternative site as a community bushfire refuge/safer place will be subject to further consideration by the Local Emergency Management Committee and/or State Emergency Management Committee and other relevant stakeholders.)</i>
9	The Department of Biodiversity, Conservation and Attractions to investigate the inclusion of Town Lot 81 Cunnold Street, Pickering Brook, currently Unallocated Crown Land, into the Korung National Park.



**Plan 1 - Recommended Pickering Brook Townsite Expansion Scenario**

# 1. Introduction

*The Pickering Brook and Surrounds Sustainability and Tourism Strategy (the Strategy)* Taskforce and Working Group were established by the State Government to investigate planning and tourism-related opportunities and constraints for a significant area of the Perth Hills, including the Pickering Brook Townsite and locality, and to develop a related planning strategy. The Strategy includes recommendations relating to two distinct streams of planning analysis for the study area for consideration by Government. Strategic recommendations may also be relevant to areas within the broader Perth Hills that are outside of the study area.

The two streams of analysis that are reported separately are:

**Part 1** - Investigate the possible expansion of the Pickering Brook Townsite (this report).

**Part 2** - Develop a strategy for economic development initiatives, including growth of tourism activities, within the Hills rural areas.

The Working Group, on behalf of the Taskforce, has undertaken a series of supporting investigative studies to inform its recommendations relating to the potential for sustainable expansion of the Pickering Brook Townsite and actions to facilitate increased business opportunities, with emphasis on tourism, within the broader study area within the Perth Hills. The Working Group was tasked with addressing the following key considerations:

- Pickering Brook Townsite sustainability including community services
- Perth Hills-based tourism and economic diversity
- High-quality agricultural land
- Bushfire risk and management
- Drinking water catchments
- Water and sewerage services infrastructure

The Working Group has prepared this report for Part 1 of the Strategy – Pickering Brook Townsite - which outlines the planning context for a potential townsite expansion, related findings of the supporting investigations, and the Working Group’s position and recommendation/s for consideration by the Taskforce.

Where individual Working Group members have not achieved a consensus regarding a recommendation or position, these have also been documented in Table 2 of the report with a response from the Working Group Chairman.

The members of the Taskforce and Working Group are outlined below.

## Taskforce

**Hon. Rita Saffioti MLA**

Minister for Transport; Planning – Chairperson

**Hon. Alannah MacTiernan MLC**

Minister for Regional Development;  
Agriculture and Food; Ports; Minister Assisting  
the Minister for State Development, Jobs  
and Trade

**Hon. Paul Papalia MLA**

Minister for Tourism; Racing and Gaming;  
Small Business; Defence Issues; Citizenship  
and Multicultural Interests

**Mr David Caddy**

Chairman, Western Australian Planning  
Commission

## Working Group

**Mr Matthew Hughes MLA**

Member for Kalamunda – Working Group  
Chairman

**Mr Mathew Selby**

Department of Planning, Lands and Heritage

**Ms Derryn Belford**

Department of Jobs, Tourism, Science and  
Innovation (Tourism WA)

**Dr Melanie Strawbridge**

Department of Primary Industries and Regional  
Development

**Mr Ron De Blank**

Department of Fire and Emergency Services

**Mr Jason Moynihan**

Department of Water and Environmental  
Regulation

**Mr Michael Fernie**

Former City of Kalamunda elected member up  
to October 2019, Subsequently Seconded as  
community member

**Councillor John Giardina**

City of Kalamunda member from October 2019

**Mr Peter Varelis**

City of Kalamunda

**Mr Scott Jarvis**

City of Armadale (up to June 2019)

**Mr James Robinson**

City of Armadale (from June 2019)

**Councillor Grant Nixon**

City of Armadale

**Mr Benson Todd**

Seconded as Department of Biodiversity,  
Conservation and Attractions member from  
November 2019

## Working Group Support

**Mr Chris Bebich**

Department of Planning, Lands and Heritage -  
Project Manager

**Mr Sean O'Connor**

Department of Planning, Lands and Heritage -  
Project Officer

**Ms Nicole Lucas-Smith**

Department of Planning, Lands and Heritage  
(up to November 2019)

**Mr Campbell Fletcher**

Department of Jobs, Tourism, Science and  
Innovation (Tourism WA)

**Ms Heather Percy**

Department of Primary Industries and  
Regional Development

**Mr Don Cummins**

Department of Water and Environmental  
Regulation

**Ms Stephanie Brokenshire**

City of Kalamunda

**Mr Luis Puig**

City of Armadale

**Mr Jackson Parker**

Department of Fire and Emergency Services

As the Pickering Brook townsite is located within the City of Kalamunda, the City of Armadale Working Group representatives have not participated in the investigations for the potential expansion of the townsite.

## 2. Background and planning context

### 2.1 *Perth and Peel@3.5million North-East Sub-regional Planning Framework (2018)*

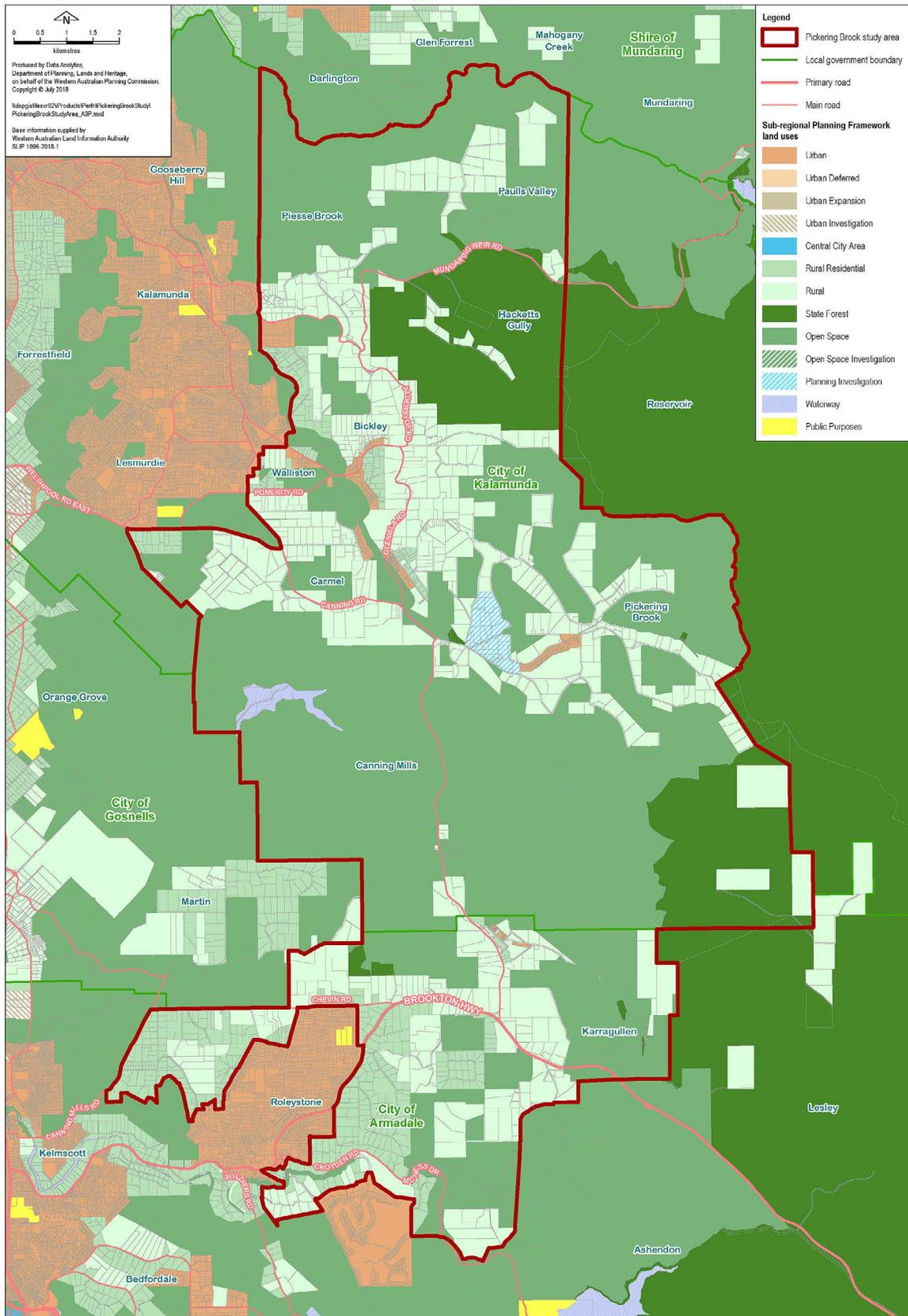
The *North-East Sub-regional Planning Framework 2018* (the Framework) forms part of the State Governments' Perth and Peel@3.5million planning strategy to accommodate a forecast population of 3.5 million people by 2050. The Framework classifies land immediately to the west of the Pickering Brook townsite as a Planning Investigation Area (PIA). Plan 2 shows the Pickering Brook PIA in the context of the Framework and outlines the strategy study area.

The PIA relates to approximately 80ha of privately-owned Rural land where the City of Kalamunda is pursuing planning approval for future urban development for housing and to potentially include a small commercial town centre. Although a significant portion of the PIA has productive horticulture uses, including fruit orchards, some properties have been cleared due to a declining local horticulture industry and a trend towards rural lifestyle living and equestrian uses. The PIA is shown in more detail in Plan 3.

The draft *North-East Sub-regional Planning Framework* was publicly advertised in 2015 and classified the land as Rural. The City's submission on the draft Framework requested the site be reclassified to Urban Expansion in the final Framework. The Western Australian Planning Commission (WAPC), when considering the City's submission, acknowledged the significantly increased area of the proposed Urban Expansion site compared to a related investigation area identified in the City's Local Planning Strategy. The WAPC also acknowledged outstanding issues including the identification and protection of high-quality agriculture land, potential impacts on the Middle Helena Public Drinking Water Resource, bushfire risk and management, and availability of services infrastructure.

The Pickering Brook townsite is located approximately 25 km east of the Perth Central Business District within the Perth Hills. The proposal to expand the townsite does not represent a consolidated urban form in the context of the Perth Metropolitan Region which is a key principle of the *Perth and Peel@3.5million* planning strategy. Accordingly, any justification for expansion of the townsite needs to consider the local and district strategic context and needs, in addition to broader regional planning issues and implications.

The WAPC classified the land as a PIA in the final *North-East Sub-regional Planning Framework 2018* on the basis that the State Government would be responsible for related investigations of these planning issues, to assist with determining if there is potential to achieve a sustainable expansion of the townsite. The investigations and related recommendation/s for future land use for this PIA will inform the first review of the Framework scheduled for 2021.



Plan 2 - Pickering Brook and Surrounds Study Area



**Plan 3 – Pickering Brook Planning Investigation Area**  
*North-East Sub-regional Planning Framework 2018*

## 2.2 City of Kalamunda Strategic Planning

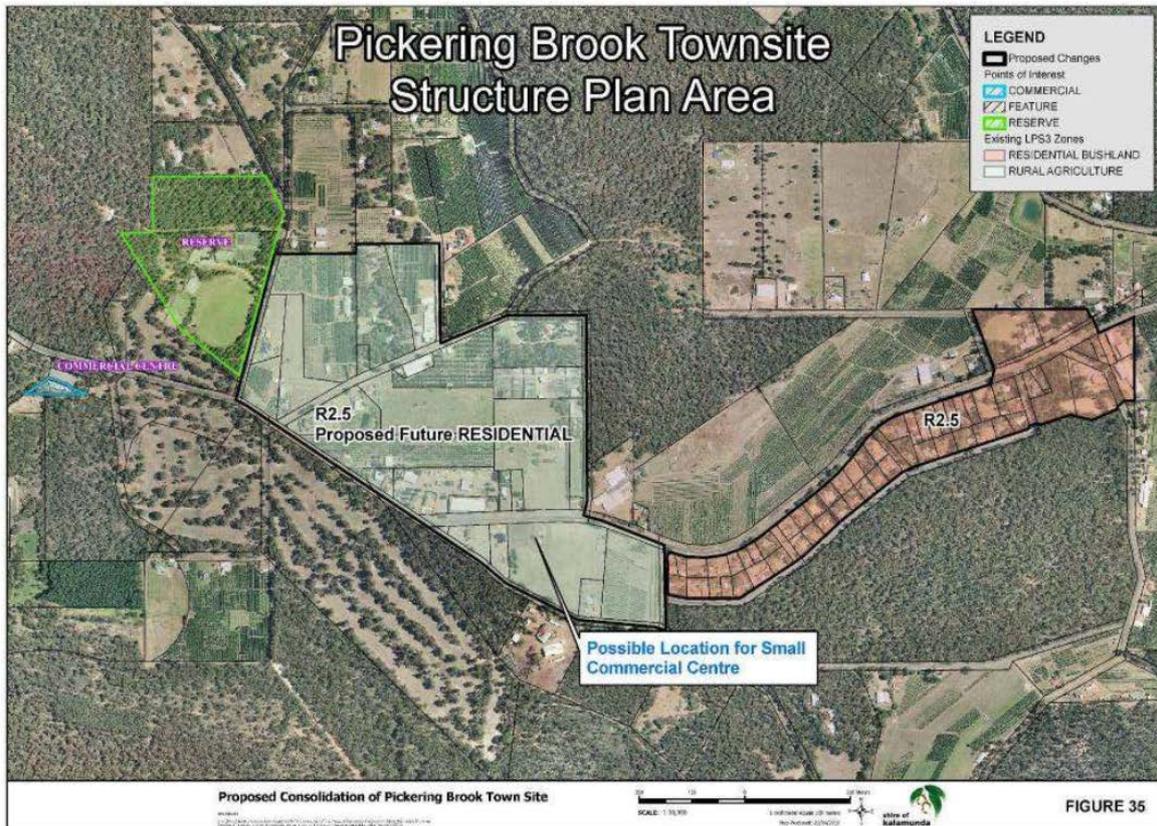
The City of Kalamunda has undertaken significant strategic planning relating to the proposed expansion of the Pickering Brook townsite including preparation of the following key planning documents.

### 2.2.1 Local Planning Strategy 2010

*The Local Planning Strategy 2010 (LPS)* outlines its vision and strategic planning direction for the local government area for a 20-year period. The LPS includes the potential future expansion of the Pickering Brook townsite, which has approximately 50 existing dwellings, to accommodate a portion of its targeted population growth. Key issues included its relative isolation from Kalamunda and its town centre uses and demand for a greater variety of housing within the townsite, particularly to accommodate an ageing demographic.

The LPS recognises an area of rural land of approximately 45ha immediately to the west of the townsite as an investigation area for approximately 114 residential lots, ranging from 2,000m<sup>2</sup> to 4,000m<sup>2</sup>, and 285 additional residents to consolidate the townsite and provide more diverse housing choice, with potential for a small local commercial centre to create a focus for the settlement. The City's proposed townsite expansion investigation area in the LPS is shown in Plan 4.

The LPS acknowledges the significant economic value of the horticulture land use activities, including operating orchards, within rural areas such as Pickering Brook as well as increasing popularity of associated tourism uses by horticulturalists to diversify and supplement their income in response to a steadily declining horticulture industry and changing social and family structures. The LPS identified a need to review the viability of horticulture activities and to investigate the potential for subdivision. The LPS was endorsed by WAPC in 2013.



**Plan 4 - City of Kalamunda Residential Investigation Area**

Source: City of Kalamunda - Local Planning Strategy 2010

## 2.2.2 Hills Rural Study 2014

The Hills Rural Study 2014 involved significant research to examine issues, challenges, and competing interests being experienced by landowners and businesses, including growers of fruit and vegetables.

It recognises that over previous decades agriculture production in the Hills rural area has diminished significantly due to a combination of factors including social, economic and climatic changes. More specific issues being experienced include non-competitive economies of scale, increasing production costs, diminishing water availability for irrigation, increasing unavailability of chemical sprays, low prices for produce, and labour shortages partly due to changing family structures.

A main aim of the study was to address the identified issues and trends by increasing the understanding of related constraints and identifying economic opportunities to inform future land use planning. The study included the preparation of a related economic development discussion paper, land capability assessment, and community consultation.

The *Economic Development Discussion Paper* (2013) examined the agriculture industry in the rural study area and identified varying levels of success of businesses in a highly volatile industry due to many factors that affect production and profitability including, varying quality of produce, changing climate, pests, regulatory changes and the Australian economy.

One conclusion of the discussion paper is that allowing subdivision of agriculture properties is not considered to be “the sole solution to the long-term viability of growers in the Hills”. It identified the potential risk to the broader agriculture industry in the longer term of creating smaller and less viable (for agriculture) rural life-style sized lots resulting in higher land values beyond agriculture land value placing pressure on the productive agriculture lots. Increased subdivision was also considered likely to result in exacerbating amenity issues, water and sewerage issues, poor land management practices increasing risk of pests, and increased bushfire risk.

The discussion paper suggested that the future of the Hills agriculture industry should consider greater collaboration and innovation practices, such as developing food hubs and community-supported agriculture, which would require a different approach from the community that has historically worked independently.

The study resulted in three key recommendations:

- A City of Kalamunda commitment to support landowners to develop and implement economic development initiatives to diversify and improve the viability of agriculture and horticulture activities.
- A review of the City’s Local Planning Scheme to rationalise Rural Zones, to introduce new permissible land uses within Rural Zones to increase land use flexibility, and to introduce a new Priority Agriculture Zone to protect high-quality and priority agriculture land.
- Request that the Department of Primary Industries and Regional Development undertake a study of agriculture production in the City’s Hills rural area to inform a future Priority Agriculture zone and future land use planning options for remaining rural land including considering introducing additional land uses, potential for subdivision, providing incentives for landowners to continue horticulture production, protecting rural character and landscape, and protecting the Middle Helena Catchment drinking water resource.

### ***2.2.3 Metropolitan Region Scheme Amendment Request - Pickering Brook (2016)***

The City of Kalamunda submitted a request to the WAPC in 2016 to amend the *Metropolitan Region Scheme* (MRS) to rezone the land relating to the Pickering Brook PIA from ‘Rural’ to ‘Urban’ Zone.

The proposed MRS amendment was supported by the following technical studies and reports.

- Community Consultation Report
- Environmental Impact Assessment
- Flora and Fauna Vegetation Assessment
- Transport Impact Assessment
- Infrastructure Servicing Report
- Bushfire Hazard Assessment and Bushfire Management Plan
- Draft District Water Management Strategy

At the time the proposed MRS amendment was considered by the WAPC, the advertised draft *North-East Sub-regional Planning Framework* classified the entire site as remaining ‘Rural’.

The WAPC declined to initiate the amendment in October 2017 for the following reasons:

- The proposed amendment area was not identified for urban expansion in the draft *North-East Sub-regional Planning Framework*.
- It did not comply with the requirements of *State Planning Policy 3.7 – Planning in Bushfire Prone Areas* as an extreme bushfire hazard made the location unsuitable and inappropriate for intensification.
- A District Water Management Strategy had not been approved by the Department of Water and Environmental Regulation.

## 3. Townsite expansion investigations

The Working Group was established in late 2018 and held its inaugural meeting in January 2019.

Over the course of 2019 and early 2020, the Working Group undertook several planning processes, technical studies and assessments to inform its consideration of relevant planning issues and the development of recommendations regarding a potential townsite expansion including:

- Pickering Brook profile analysis
- Preliminary community consultation
- Perth Hills tourism product gap analysis
- Soil survey of the Pickering Brook planning investigation area
- Pickering Brook townsite expansion traffic impact assessment
- Pickering Brook townsite expansion bushfire risk assessment and management plan
- Pickering Brook townsite expansion sustainability assessment.

### 3.1 Pickering Brook profile

A population and infrastructure profile for the Pickering Brook townsite, PIA and locality, with comparisons to Western Australia averages was prepared to provide context for the study area, including data from the most recent 2016 census. The following provides a summary of key relevant information.

#### 3.1.1 Demography

The Pickering Brook locality had a population of 4,266 persons in 2016. There was a significant under-representation of persons aged between 25–44 years, and a significant over-representation of almost all age cohorts over 45 years in the study area, when compared to the Western Australia (WA) average.

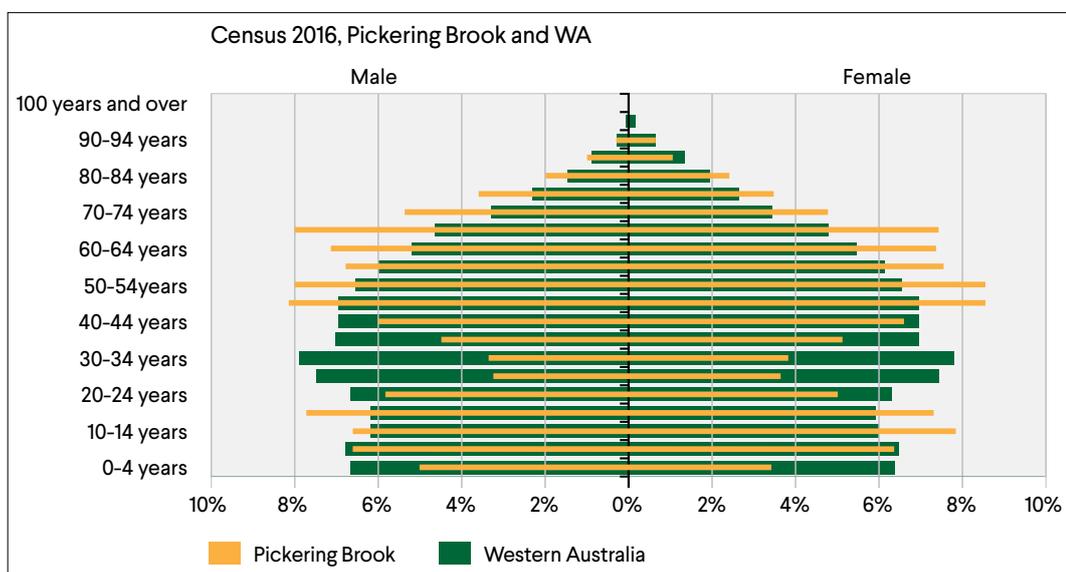


Figure 1 – Population profile

In 2016, the composition of families within the Pickering Brook locality was mainly characterised by couple families with children (48 per cent) and couple families with no children (41 per cent). As with WA, family composition is characterised mostly by couple families with children, many of whom are older (10-19 years). Pickering Brook also has a higher representation of couple families with no children when compared to WA.

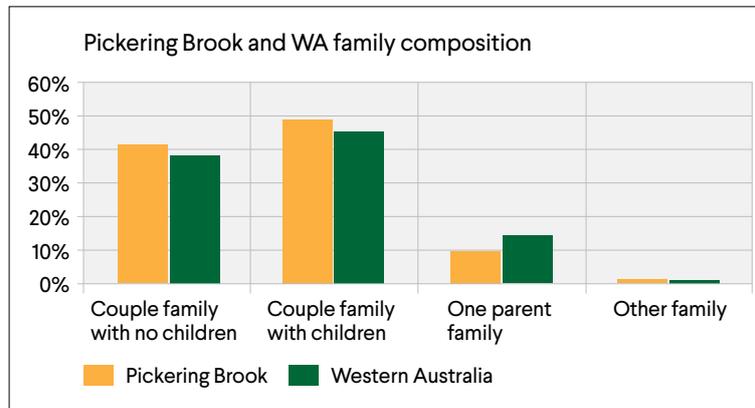


Figure 2 – Family composition

### 3.1.2 Population growth

The WAPC refers to *WA Tomorrow* (December 2018) for population forecast information to 2031. There is no population forecast data available specifically for Pickering Brook in *WA Tomorrow*, however data is available for the Lesmurdie-Bickley-Carmel statistical area which provides a comparable guide for population growth expectations in the Pickering Brook locality.

The *WA Tomorrow* population forecast for Lesmurdie-Bickley-Carmel between 2016 to 2031 (using a 'Band C' median growth scenario) projects an average annual growth rate of 0.27 per cent, significantly lower than the average annual population forecast for WA of 1.6 per cent. This is consistent with other peri-urban areas on the metropolitan fringe where services and transport infrastructure are limited, environmental values constrain development potential and local employment opportunities are limited.

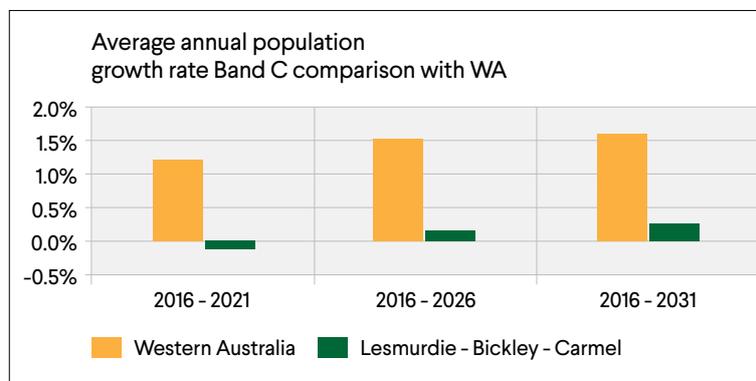


Figure 3 – Average annual population growth

### 3.1.3 Employment

The main employment and industry types in 2016 within the Pickering Brook locality were education and training (12 per cent), construction (11 per cent), health care and social assistance (10 per cent), and retail trade (10 per cent) and is similar to the WA average. This suggests that most workers leave Pickering Brook for their employment. Approximately 8 per cent of workers residing in Pickering Brook in 2016 worked in agriculture, forestry and fishing industries, significantly higher than the WA average of 2 per cent, and reflects the relative significance of the agriculture industry in Pickering Brook.

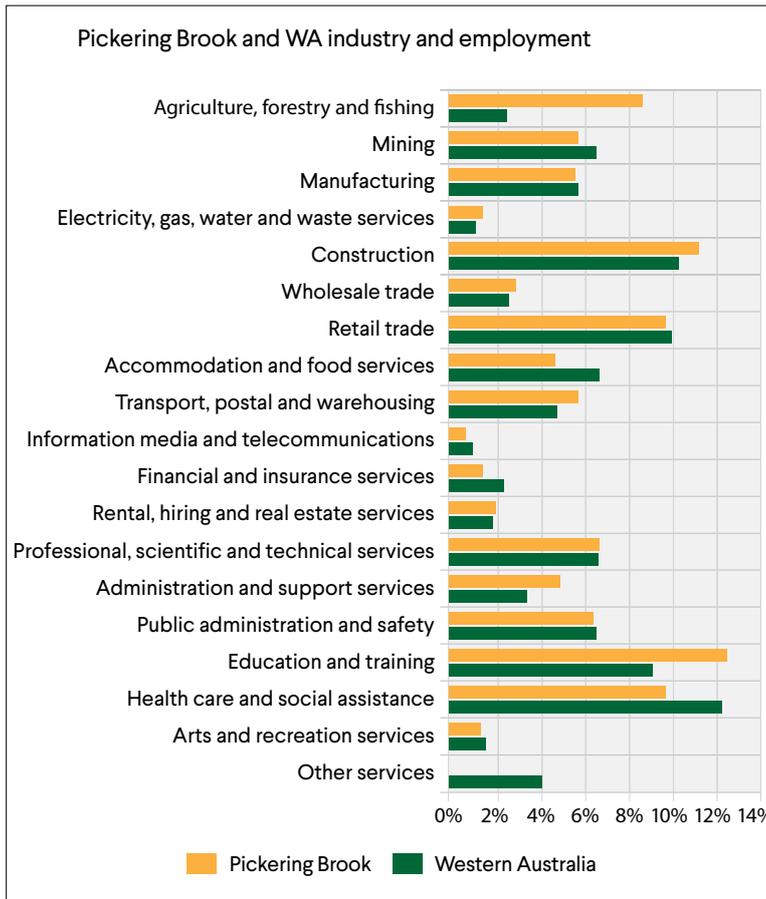


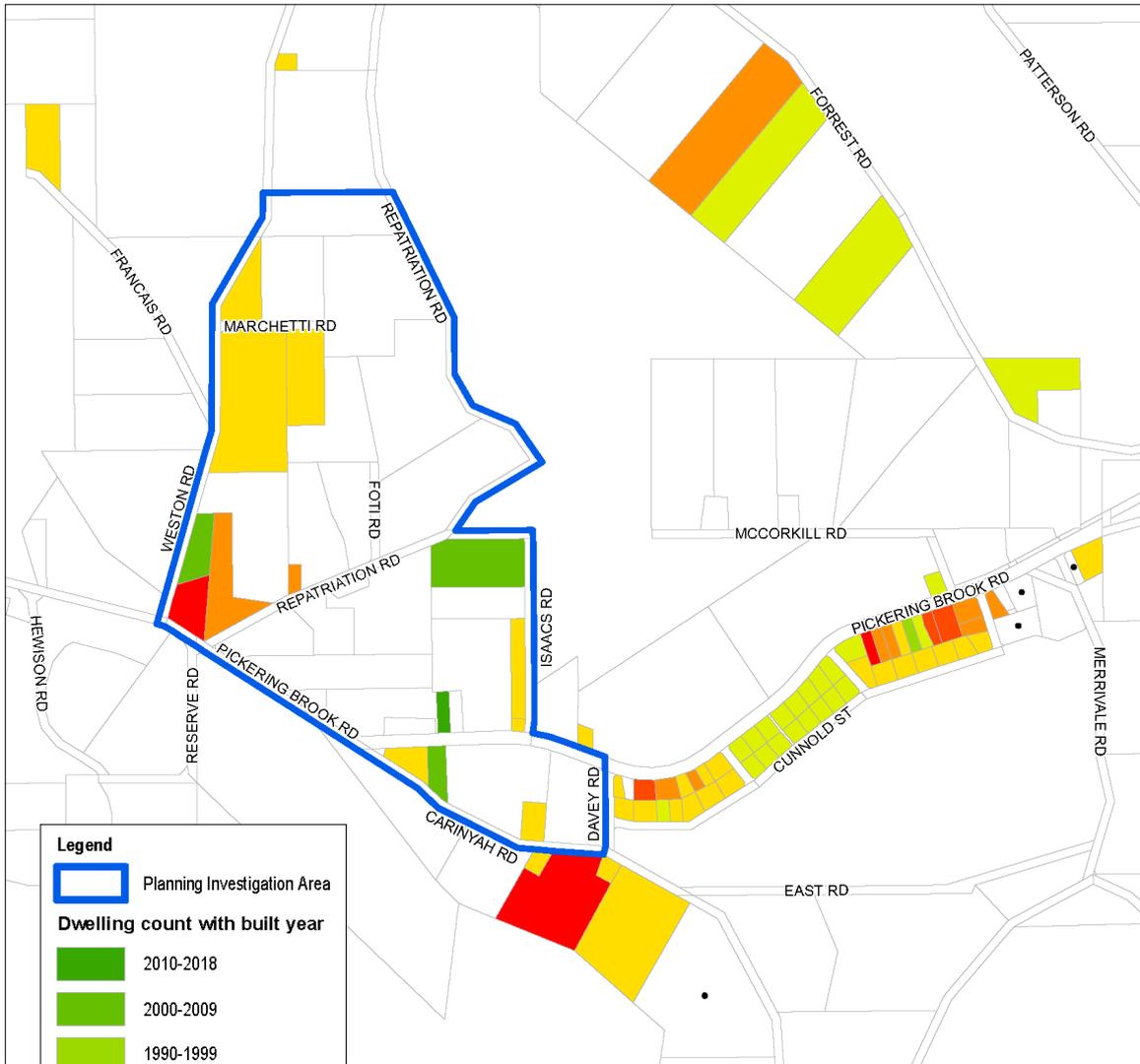
Figure 4 – Pickering Brook and WA Industry of Employment

### 3.1.4 Dwellings and land supply

Most dwellings in the Pickering Brook locality are single houses (97 per cent) which is higher than the average for WA (79 per cent). This reflects the peri-urban location of Pickering Brook and lack of reticulated sewer services to support higher-density development. Most dwellings (89 per cent) are privately owned and occupied, and very few (9 per cent) are rental properties, significantly lower than the average for WA (28 per cent).

There are approximately 55 existing residential lots within the Pickering Brook townsite with only three vacant lots in 2016.

The most recently-created residential lots within the existing townsite were 16 lots subdivided by the State Government from land abutting Pickering Brook Road in the 1980s. These residential lots were subdivided from a larger lot of Unallocated Crown Land that was originally created to form part of the original townsite (formerly named Carilla), with the remaining unsubdivided portion of the land identified as Town Lot 81 Cunnold Street. Construction of new dwellings within the Pickering Brook locality and the PIA has generally steadily declined since 1979. The construction history for dwellings is shown in Plan 5.



**Plan 5 – Dwelling construction by year**

## 3.2 Community consultation

A community consultation process for the broader strategy project was undertaken by the Working Group during August and September 2019. It involved 69 personal interviews with community members held in Pickering Brook and an online survey with 119 responses.

The consultation provided important information on how the community perceived the potential expansion of the Pickering Brook townsite and existing and future tourism, as well as assisting to identify other relevant local issues.

Most survey respondents (70 per cent) generally supported some increased tourism within the study area, including 60 per cent support from Pickering Brook residents. A key theme in the interviews was a preference towards smaller 'boutique' type tourism developments that collectively do not overwhelm the limited road infrastructure and respect the relatively 'low-key' character and environment of the Perth Hills. Many respondents also indicated support for a relatively small-scale expansion of the Pickering Brook townsite.

Perceived benefits from increased tourism included additional local employment opportunities, increased vibrancy and local business patronage, improved facilities including shops, retention of the younger population and attracting more young families, reactivating unused buildings (such as the Alan Fernie Pavilion), and increased recognition of the Perth Hills area.

Key issues raised relating to potential townsite expansion included a need for retirement/aged housing, additional short-stay accommodation, more housing choice, finding uses for unproductive rural land and infrastructure upgrades. Some concerns related to the potential loss of productive agriculture land and rural amenity, land use conflicts, potential impacts on the Middle Helena catchment drinking water resource and the need to manage bushfire risk. The potential for Town Lot 81 Cunnold Street to be considered for any townsite expansion was also raised on the basis that the site was historically intended for inclusion in a larger townsite and remains undeveloped.

## 3.3 Townsite expansion scenarios and yields

Six alternative locations were developed for a multi-criteria sustainability assessment to identify a preferred location for expansion. Scenario 1 related to Town Lot 81 Cunnold Street which is 40ha in area and, although the site is not located within the PIA, has historically been earmarked to form part of the townsite. The other five potential expansion locations (Scenarios 2-6) varied progressively in land area from 8ha to 80ha and were located within the PIA. The potential for a small commercial town centre of approximately 1,000m<sup>2</sup> within the Scenario 2 site was also included in the assessment (i.e. Scenarios 2a and 2b).

The five scenario areas within the PIA were defined having regard to progressive land areas/sizes (progressing in a westerly direction from the existing townsite), logical boundaries formed by existing lots and roads, and broad bushfire risk and management considerations.

The scenario areas are shown in Plan 6.

The estimated dwellings and population yield for the scenarios range from 27 dwellings and 77 population (Scenario 2) to 262 dwellings and 770 population (Scenario 6) and are detailed in Table 1.

The Pickering Brook Primary School is located in the townsite and is an important part of the local community. In 2019 the school employed 30 staff and had 139 students. The maximum capacity of the school is 226 students and enrolments have decreased over recent years. Forecast additional student enrolments from a potential townsite expansion resulting from the various expansion scenarios, based on current primary school student yields in Pickering Brook of 0.31 students per dwelling, are also detailed in Table 1. This research indicates that the existing primary school has capacity to accommodate students generated from all scenarios including if the entire PIA (Scenario 6) is developed.

Any additional high school students resulting from a potential townsite expansion can be accommodated at the Lesmurdie Senior High School.

**Table 1 - Townsite scenario dwelling and population yields**

Scenario	Area (ha)	Dwelling yield	Population yield	Primary school aged children yield
1	40.3	131	385	41
2a	8.4	27	80	8
2b	8.4	26	77	8
3	13.7	44	130	14
4	24.3	79	232	24
5	30.4	98	290	31
6	80.6	262	770	81

## 3.4 Perth Hills tourism

An analysis of existing tourism activities in the Perth Hills including identification of related gaps in tourism products and activities, opportunities and related issues, was undertaken to inform development of the Pickering Brook and Surrounds Sustainability and Tourism Strategy.

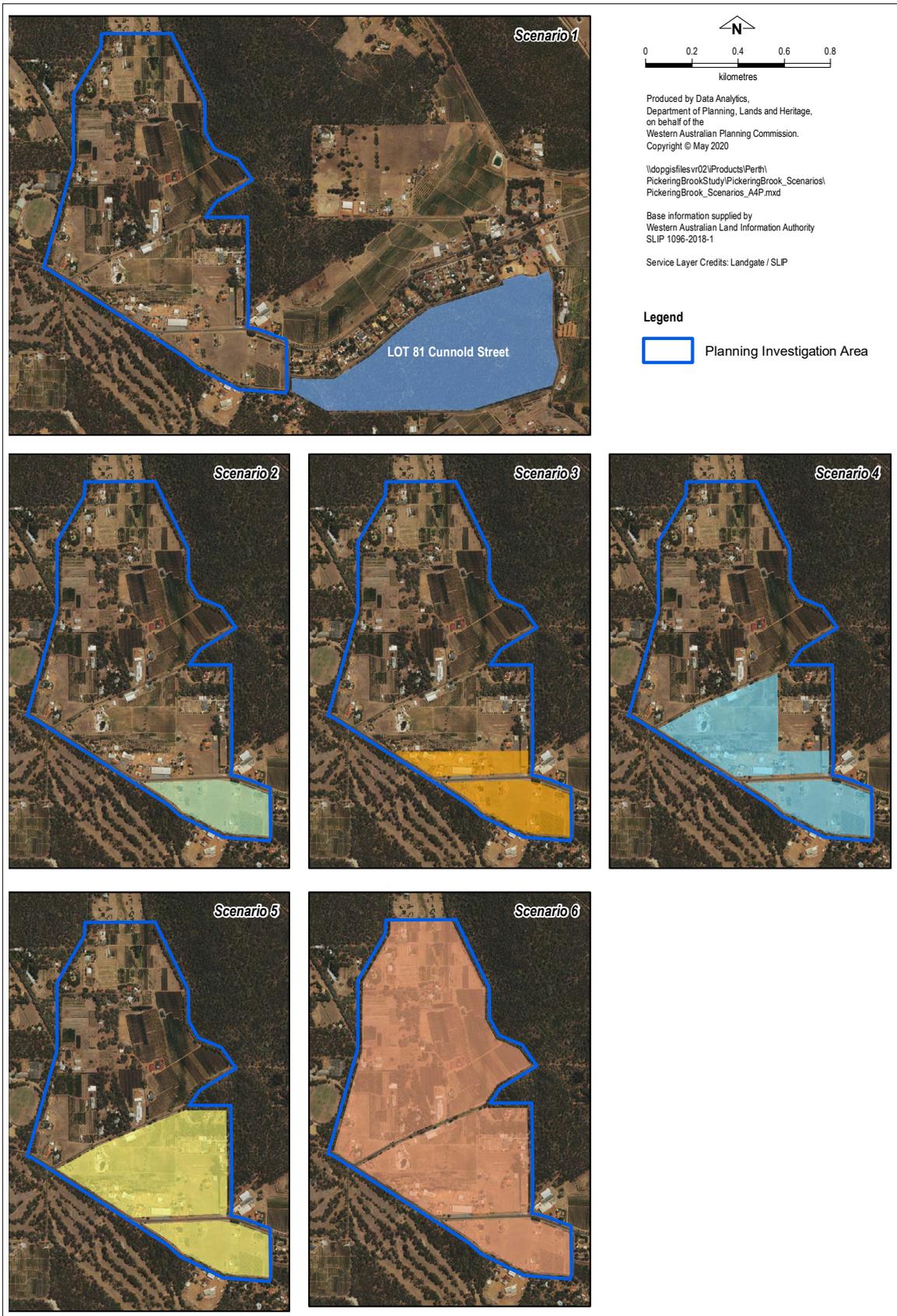
Key objectives of the tourism analysis were to gain an understanding of existing trends that influence tourism product development, identifying future tourism opportunities that will add value to existing activities, and identifying any existing barriers (regulatory, planning, infrastructure, economic) to facilitate future tourism growth.

The assessment also informed related recommendations to address identified issues and contribute to the economic and social revitalisation of the broader study area, including the Pickering Brook townsite. Popular existing tourism activities and attractions within the study area include those relating to trails (e.g. food, wine, on-road cycling, Mountain biking, horse riding), food and beverage (cideries, wineries, restaurants/cafes), other agri-tourism attractions (orchard tours and pick-your own fruit opportunities), accommodation (bed and breakfast and eco-lodge), and culture (heritage park).

Tourism growth in the Perth Hills benefits from its proximity to the Perth Central City area and surrounding metropolitan population, Perth Airport, and efficient road connections to these areas. This provides the Perth Hills with a competitive advantage for tourism growth compared to other more distant tourism areas within Western Australia, such as Margaret River.

# Part 1 – Pickering Brook Townsite

Working Group report and recommendations to the State Government Taskforce

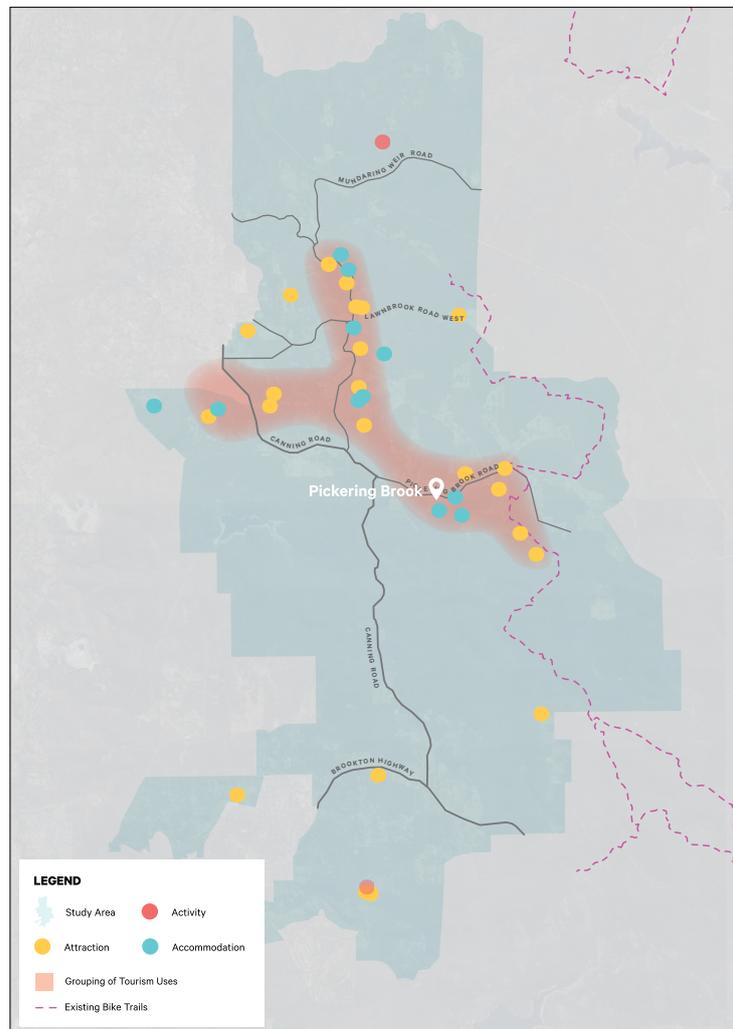


Plan 6 – Pickering Brook townsite expansion scenario areas

Historically, tourism in the study area has grown organically, mainly during the past 20 years, with increases resulting from general population growth for Perth as well as the introduction of new business and service sectors. A concentration of tourism developments has occurred within the past 10 years mainly focussed on the Kalamunda, Bickley Valley and Pickering Brook areas. Tourism developments in Pickering Brook are mainly a combination of attractions and short-stay accommodation which generally follows key roads, such as Pickering Brook Road, Welshpool Road East and Canning Road, as shown in Plan 7.

The tourism analysis informed various recommendations relating to potential opportunities to increase State and local government support for existing, and establishment of new, tourism development in the Perth Hills. It has also recommended that the City of Kalamunda promotes tourism growth in the area by improving way-finding signage for key attractions, activities, scenic drives and local destinations (including Pickering Brook townsite), and to increase promotion of existing and proposed new tourism activities, attractions and events within the study area. These recommendations will be presented to the Taskforce for its consideration as part of the development of the Pickering Brook and Surrounds Sustainability and Tourism Strategy – Part 2 and, if adopted and implemented with the cooperation of tourism operators, will assist with revitalising the study area, including the Pickering Brook townsite.

Additional residential population resulting from an expansion of the Pickering Brook townsite could add to the available local workforce for employment in future tourism and hospitality operations in the area. Inclusion of a small town centre may also potentially have value in providing a townsite-focused option for visitors to the area and help to support the local economy.



**Plan 7 – Tourism in Pickering Brook and Surrounds Study Area**

Source: *Pickering Brook and Surrounds Perth Hills Tourism Product Gap Analysis 2020 (Element)*

### 3.5 High-quality agriculture land

A significant amount of rural land in Pickering Brook, including the land within the PIA, has existing or former agriculture uses, particularly orchards and other intensive horticulture uses. This is reflected by the existing Rural Agriculture zoning of the land under the *City of Kalamunda Local Planning Scheme No.3* (LPS3). Town Lot 81 Cunnold Street however, is undeveloped, contains remnant vegetation and is zoned Rural Conservation in LPS3.

The Department of Primary Industries and Regional Development (DPIRD) has undertaken a detailed land capability survey involving a property level soil, land and water assessment within the PIA to assist with identifying high-quality agriculture land and assessing implications that would result from townsite expansion under the various scenarios. DPIRD is also assessing the remainder of the rural land within the broader strategy study area to inform the development of the overall *Pickering Brook and Surrounds Sustainability and Tourism Strategy* (Pt. 2) and future local planning scheme reviews by the City of Kalamunda and City of Armadale to introduce and apply a Priority Agriculture Zone where appropriate within their respective local government areas.

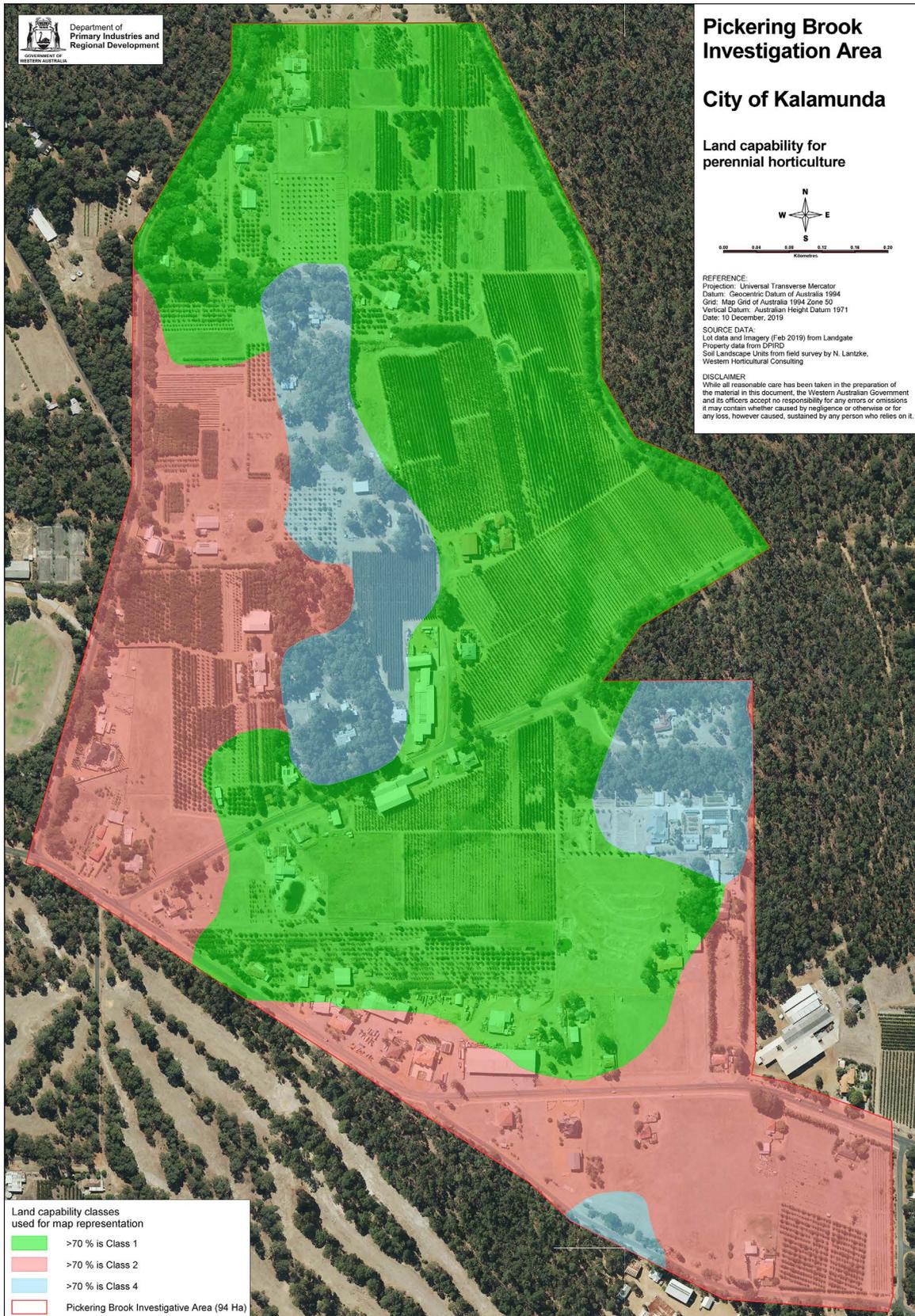
The assessment has concluded that over 85 per cent of the PIA land has either a 'very high' (Class 1 – with very few physical limitations) or 'high' (Class 2 – with minor physical limitations) capability for perennial horticulture such as orchards, and acknowledged that fruit trees have successfully been grown within the area for many years. Most of the PIA land was also identified as being suitable for vegetable and wine grape growing. A small percentage of the PIA land was assessed to have a 'low' (Class 4 - high degree of physical limitation) capability for horticulture mainly due to the presence of shallow rock. These land capability classifications for the PIA are shown spatially in Plan 8.

Accurate and detailed information regarding water availability for irrigation for each property within the PIA was not available for the assessment. Some landowners could not provide water information, and some appeared to have not explored all possible water supply options on their properties. It is possible that the decline in active orchards over recent past decades may indicate there is water available that is no longer being accessed, however a drying climate may also have affected availability of groundwater for irrigation. Large amounts of water for irrigation are not generally available within the Perth Hills with variable volumes of water mainly being sourced from shallow bores, seepages and farm dams. It is acknowledged that the Middle Helena Water Catchment is not proclaimed under the *Rights in Water and Irrigation Act 1914* and therefore the supply of water is not subject to licensing and the use of available water is not managed and regulated by the Government.

It was concluded that additional water could possibly be obtained from properties within the PIA to expand horticulture operations, however this may involve costly drilling and not all may be successful. Water availability is the major physical limitation to horticulture in the Perth Hills and that other fruit growing areas within WA such as Gingin and Donnybrook have significantly greater volumes of water available for irrigation.



Orchards within the PIA north of Pickering Brook Road



**Plan 8 – Land Capability Classes within Pickering Brook PIA**

Source: Soil Survey of the Pickering Brook Planning Investigation Area 2020 (Western Horticultural Consulting)

## 3.6 Service infrastructure

The peri-urban location of Pickering Brook in the Perth Hills increases the difficulty and associated cost of providing and upgrading some services infrastructure to facilitate urban development. The Water Corporation and Western Power have provided the following information regarding the availability of service infrastructure to supply any potential expansion of the Pickering Brook townsite.

### 3.6.1 Reticulated water infrastructure

The existing townsite is serviced by water tanks located approximately 2.5km west of the townsite. A 150mm water main along Pickering Brook Road with smaller lateral extensions along minor roads provides residences and businesses in Pickering Brook with metered potable water services. The existing water tanks and mains infrastructure has the capacity to service approximately 100 new dwellings/services before the associated 150mm outlet and distribution mains would need to be duplicated.

The smaller townsite expansion scenarios (Scenarios 2, 3 and 4) would be unlikely to require any headworks upgrades although the larger development scenarios (Scenarios 1, 5 and 6) would likely require such upgrades. Development of the entire PIA (Scenario 6) may also require the construction of an additional storage tank to maintain adequate emergency storage for the water scheme, which is not currently planned or funded by the Water Corporation.

### 3.6.2 Reticulated sewerage infrastructure

The existing dwellings in the townsite utilise on-site effluent disposal systems as there is no Water Corporation reticulated sewer system or treatment infrastructure in the area. The Water Corporation does not have any plans or capital to provide reticulated sewer services to service the Pickering Brook townsite.

It is considered that the provision of a private reticulated sewer scheme to service a townsite expansion under any of the potential development scenarios being considered would not be economically feasible.

### 3.6.3 Electricity infrastructure

Pickering Brook is supplied with electricity by the Kalamunda Zone Sub-station which is estimated to have 44 Mega Volt Amp (MVA) spare capacity for the next 10 years. The estimated electricity load from the largest townsite expansion scenario (Scenario 6) is estimated to be 9 MVA, so there is sufficient existing capacity to meet supply requirements for a townsite expansion.

## 3.7 Environment

The biodiversity values in the Pickering Brook locality primarily occur in remnant vegetation that surrounds the existing townsite and PIA and a significant portion of this land forms part of the Korung National Park. The PIA land is predominantly cleared of native vegetation due to its use for horticulture, mainly fruit orchards, whereas Lot 81 Cunnold Street (Scenario 1) contains remnant vegetation.

The City of Kalamunda has undertaken flora surveys and assessment for the PIA land in support of the previously proposed MRS amendment that did not identify any species of Threatened Priority Flora or Threatened Ecological Communities. A vegetation assessment was also undertaken for the PIA that identified vegetation to be in 'Good – Degraded' condition.

There is limited detailed environmental information available however, for Lot 81 Cunnold Street regarding any present specific types of significant or threatened species to inform the townsite expansion assessment. In the surrounding areas however, there are records of nine threatened and priority fauna, including Carnaby's Cockatoos, Quenda, Woylie, Chuditch and Quokka, and 19 threatened and priority flora species. It is likely that some of these species also occur in patches of remnant vegetation in proximity to the Pickering Brook townsite such as on Lot 81 Cunnold Street.

Comprehensive environmental survey information would likely be required to support more detailed planning for any proposed townsite expansion for Lot 81 Cunnold Street. More detailed planning needs to include identification of any significant trees that require protection and address interface issues and off-site impacts to significant natural areas, particularly for national parks and areas where rare flora is known to occur.

Any townsite expansion proposal, particularly for Lot 81 Cunnold Street, that may impact on significant flora or fauna and/or their habitats is likely to require referral to the Commonwealth Government for approval under the *Environment Protection and Biodiversity Conservation Act 1999* and to the State Government for approval under the *Environmental Protection Act 1986* and *Biodiversity Conservation Act 2016*.

The former Department of Conservation and Land Management (currently the Department Biodiversity, Conservation and Attractions) in 2000 confirmed its intention to add Lot 81 Cunnold Street to the Korung National Park and take over management responsibility for the land, particularly given its Crown ownership and location within the Middle Helena Catchment Drinking Water Source Protection Area. This proposed process was not finalised and implemented so the land remains as Unallocated Crown Land.

The Pickering Brook locality is also characterised by a series of water courses and associated waterlogging/damp areas, including a water course located within the PIA which is a tributary of Piesse Brook that flows to the Helena River. Some orchardists have captured water in dams located along the water courses for irrigation purposes and associated waterlogged areas represent some of the most productive horticulture land.

The areas of natural vegetation and water courses in proximity to the townsite and PIA are shown on Plan 9.



**Plan 9 – Key environmental characteristics**

### 3.8 Middle Helena catchment water resource

A significant portion of the Pickering Brook and Surrounds study area is located within the Middle Helena Catchment Area which drains to the Water Corporation's Helena Pump-back Dam. This surface water catchment and dam provides water for drinking and irrigation including for pumping back to the Mundaring Weir (C Y O'Connor Lake) source which supplies the Goldfields and Agriculture Water Supply Scheme, including over 33,000 households, and also contributes to the Perth Integrated Water Supply Scheme. The Middle Helena Public Drinking Water Source Area is an important strategic water source for the Water Corporation and it intends to continue to use it for the foreseeable future.

The Middle Helena Catchment Area was gazetted as the Lower Helena Pipehead Dam Catchment Area in 1984 (originally in 1972) under the *Country Areas Water Supply Act 1947* and is proposed to be gazetted under the *Metropolitan Water Supply, Sewerage and Drainage Act 1909* with a minor boundary change to more accurately reflect the dam catchment.

The WAPC *Middle Helena Catchment Area - Land Use and Water Management Strategy 2010* (MHLUWMS) assigns three levels of priority classification (Priority 1, 2 and 3 source protection areas) to land within the catchment to protect the quality of the water resource, in accordance with the WAPC's *State Planning Policy 2.7 – Public Drinking Water Source*.

Lot 81 Cunnold Street is classified as a Priority 1 area to ensure there is no degradation of the water source. Priority 1 areas are generally Crown or State-owned land that are managed in accordance with the principle of 'risk avoidance' by not permitting land development.

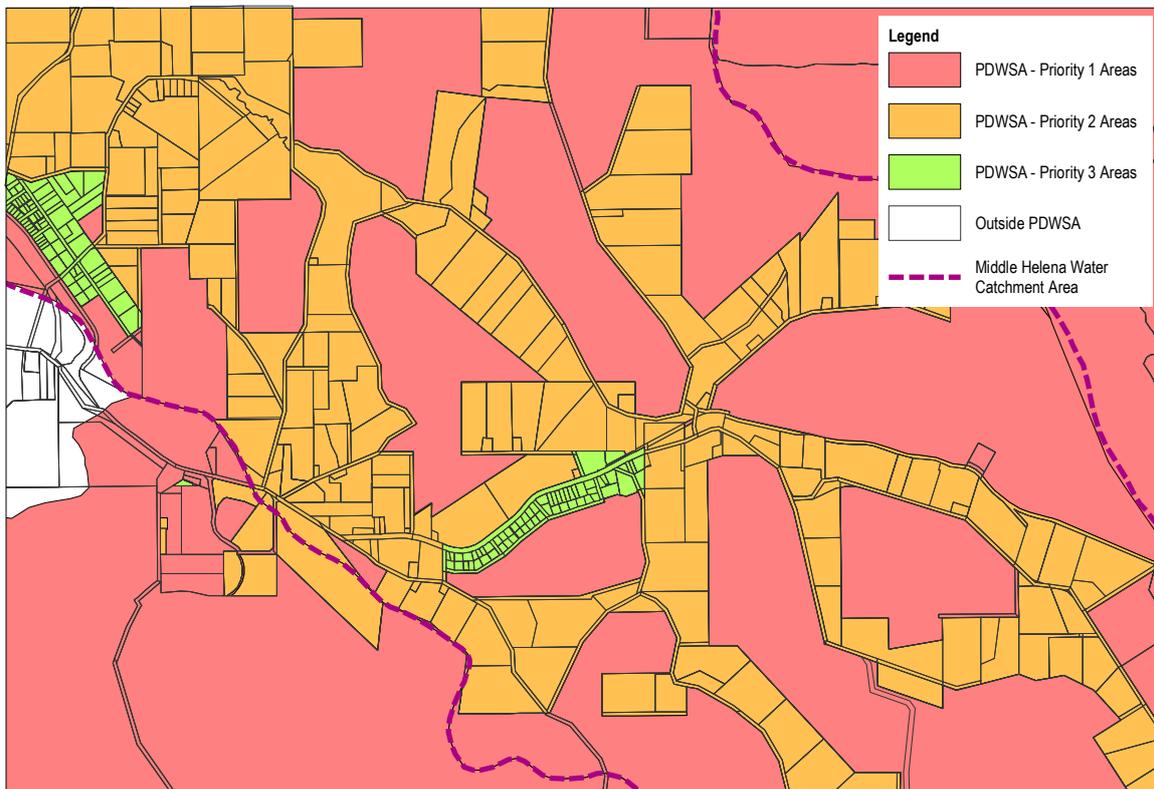
The PIA land is classified as a Priority 2 area to ensure there is no increased risk of pollution to the water source. Priority 2 areas generally have existing low intensity development, such as rural land uses, and are managed in accordance with the principle of 'risk minimisation' with some limited development permitted. There are approximately 36 existing dwellings within the PIA land.

The existing townsite, which is zoned Urban in MRS, is classified as a Priority 3 area where the risk of pollution to the water source is managed through application of DWER water quality protection policy notes and other policies, strategies and guidelines including the *Government Sewerage Policy 2019* and the MHLUWMS.

Although the existing residential dwellings in the townsite are serviced by individual on-site sewerage systems, current relevant Government policies, strategies and guidelines require any new urban areas and associated development within public drinking water source areas such as the Middle Helena Catchment to be classified Priority 3 and to be connected to a reticulated sewerage system.

Having regard to these policy requirements, any future urban development within the Priority 1 and 2 areas should meet related criteria including the urban proposal being considered by the Government to meet a strategic need, be reclassified under the relevant Government policies to Priority 3, and be connected to a reticulated sewerage system.

Connection to a reticulated sewer system is not considered to be feasible for any of the townsite expansion scenarios so any future urban development would require on-site effluent disposal systems. There have been considerable advances in on-site effluent disposal technologies in recent years, including some types of aerobic treatment units having secondary treatment systems that are approved by the Health Department in some circumstances. However, the long-term use of such systems that dispose treated effluent at or near the ground surface would represent an on-going risk to water quality and public health.



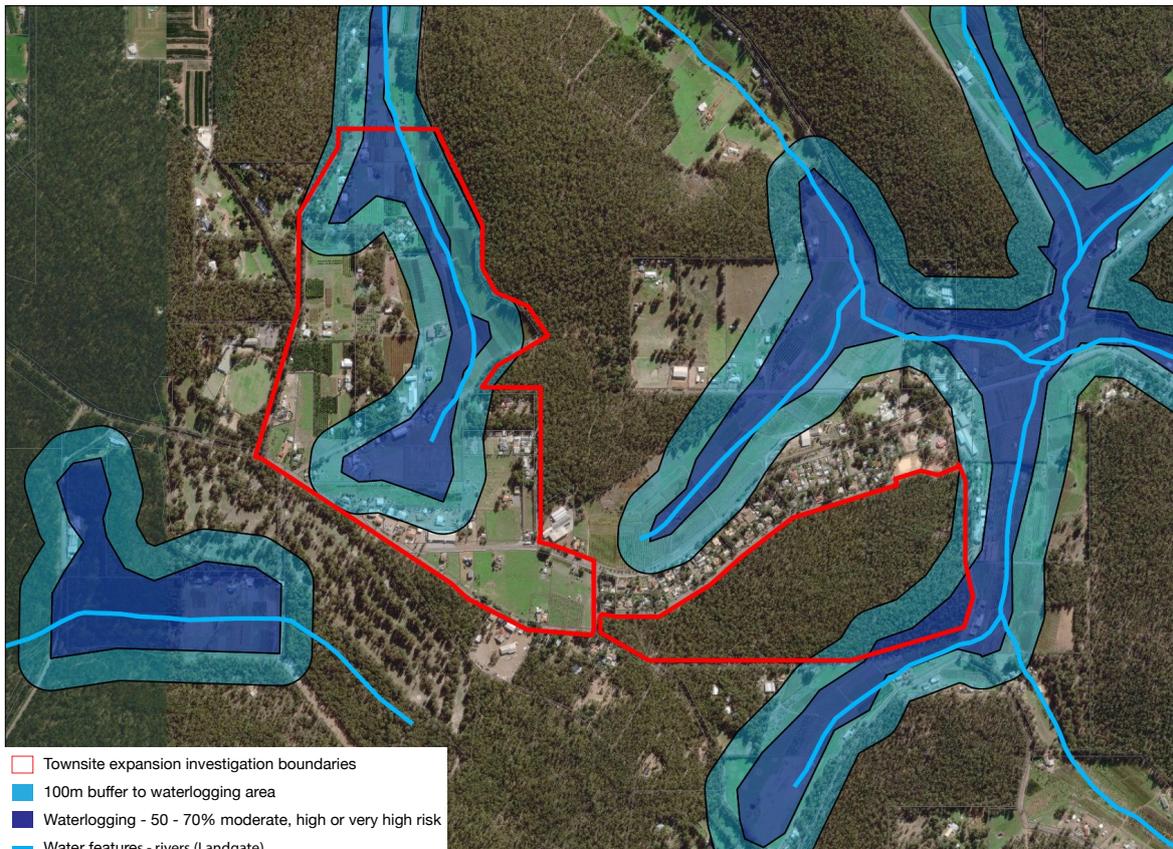
Plan 10 – Priority Public Drinking Water Source Areas

Potential additional implications include the Water Corporation being required to increase catchment surveillance and monitoring, as well as increased inspections of on-site effluent disposal systems and their management which would be an additional cost to the State Government. The Water Corporation may also need to consider reviewing and changing the drinking water treatment process at the Mundaring Weir Water Treatment Plant to address any increased microbiological health risk or replace this water source, which would also have additional cost implications.

Notwithstanding the absence of reticulated sewer, future urban subdivision and development that is limited to the Scenario 1, 2 and 3 areas could potentially achieve other key policy requirements such as 100m clearance between on-site effluent disposal systems and water courses and associated water-logged areas, and minimum 2m clearance to groundwater level as outlined in the *Government Sewerage Policy*. These other policy requirements would represent a greater constraint for potential urban development within the Scenario 4, 5 and 6 areas. The water courses, associated water-logged areas and 100m buffer clearances are shown in Plan 11.

The City of Kalamunda considers that the risk of contaminating the water resource from urban development can be minimised through the introduction of related local planning scheme provisions that require a construction management plan for effluent disposal that is applied at the subdivision or development stages.

An exemption from the Minister for Health under the *Public Health Act 2016* that future urban development is to connect to reticulated sewerage may also be required.



Plan 11 – Water courses/water logged areas and 100m buffers

## 3.9 Traffic and transport

Most residents in the Pickering Brook townsite travel outside of the area for employment, education and entertainment purposes using Canning Road and Welshpool Road East to access the broader transport network.

The townsite is not currently serviced by public transport and the Public Transport Authority has no plans to reinstate a bus route due to low patronage and limited passenger catchment. It is also unlikely that the proposed townsite expansion scenarios would warrant introduction of a bus service. There is an absence of active transport infrastructure such as cycle paths given the rural nature of the townsite and locality. Any future urban development associated with the scenarios would therefore be mainly reliant on private vehicle use.

A transport impact assessment of key roads, including sections of Canning Road, Welshpool Road East and Pomeroy Road, and intersections was undertaken for the townsite expansion scenarios for AM and PM peak traffic hour periods to identify the capacity of the road network and determine the relative impacts of expected increases in traffic from future urban development.

The assessment assumed that urban development would be completed by 2031 and combined the estimated traffic generated from the development scenarios to predicted natural traffic increases for 2031.

Scenario 1 (Lot 81 Cunnold Street) and Scenario 6 were identified to have the highest traffic impacts as the additional traffic would likely require upgrades of the adjacent road network including intersections. The addition of a local town commercial centre within the Scenario 2 area would also result in higher traffic volumes, although this was not considered to require substantial road and intersection upgrades. All other scenarios were considered to have relatively low traffic impacts.

The transport assessment generally concluded that the existing road network has capacity to accommodate the predicted additional traffic from urban development associated with the potential expansion scenarios and it is not expected that additional intersection upgrades would be necessary.

## 3.10 Bushfire risk and management

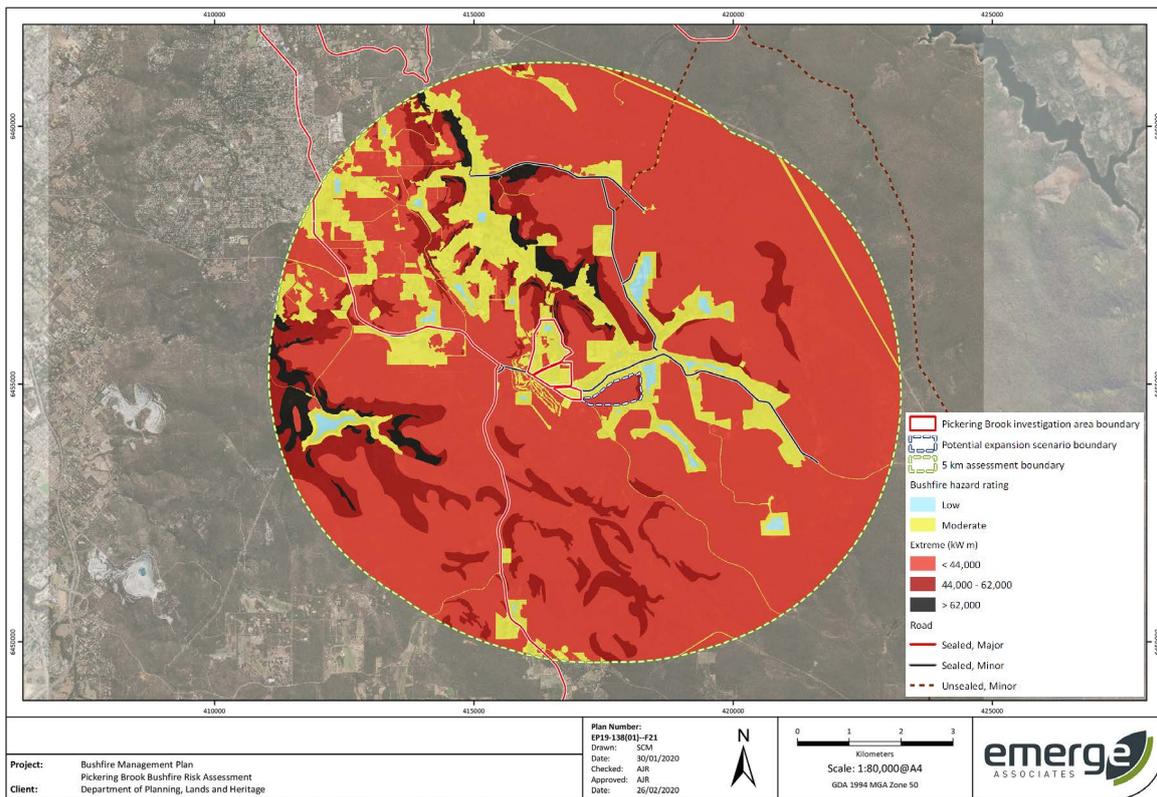
The Pickering Brook locality is within an area classified as bushfire prone by the Department of Fire and Emergency Services Commissioner and a comprehensive bushfire risk analysis was undertaken for the townsite expansion scenarios, in accordance with relevant national emergency risk guidelines and Australian standards, involving the following:

- identification of existing environmental characteristics which could constrain bushfire protection measures
- a bushfire front intensity assessment for a five kilometre radius of the townsite to establish likely intensity, potential approach and impact on dependant services and infrastructure, such as access and egress
- assessment of existing vegetation in proximity to the scenario areas and identification of relative bushfire attack levels for each scenario and the existing Pickering Brook townsite generally.

The assessment considered the likelihood and consequential impact of a potential bushfire that may threaten the townsite, and drew upon historical bushfire information for the area. The assessment identified that a bushfire was likely to occur on average every five years and that the consequence could be catastrophic with fatalities and loss of buildings to be expected unless exposure is managed successfully. Based on the assessment the current overall risk rating for the existing Pickering Brook townsite and expansion scenario areas is considered 'extreme'.

The assessment has identified multiple road access options that are available for early safe evacuation, namely Canning Road to the south, Canning Road-Welshpool Road East to the west, and Patterson Road-Walnut Road to the north. These roads are considered to meet the relevant bushfire guidelines and the bushfire management plan recommends careful management of these roads and associated verges, particularly Canning Road which has been identified as a key recovery road, to ensure they remain available and open in the event of a passing bushfire.

Tolerance of bushfire risk is a fundamental issue that needs to be considered when determining support for an expansion of the townsite. Despite implementing any detailed control measures that are identified and recommended in the bushfire management plan, the assessment concluded that a 'medium' level risk for the townsite would remain. (See Plan 12)



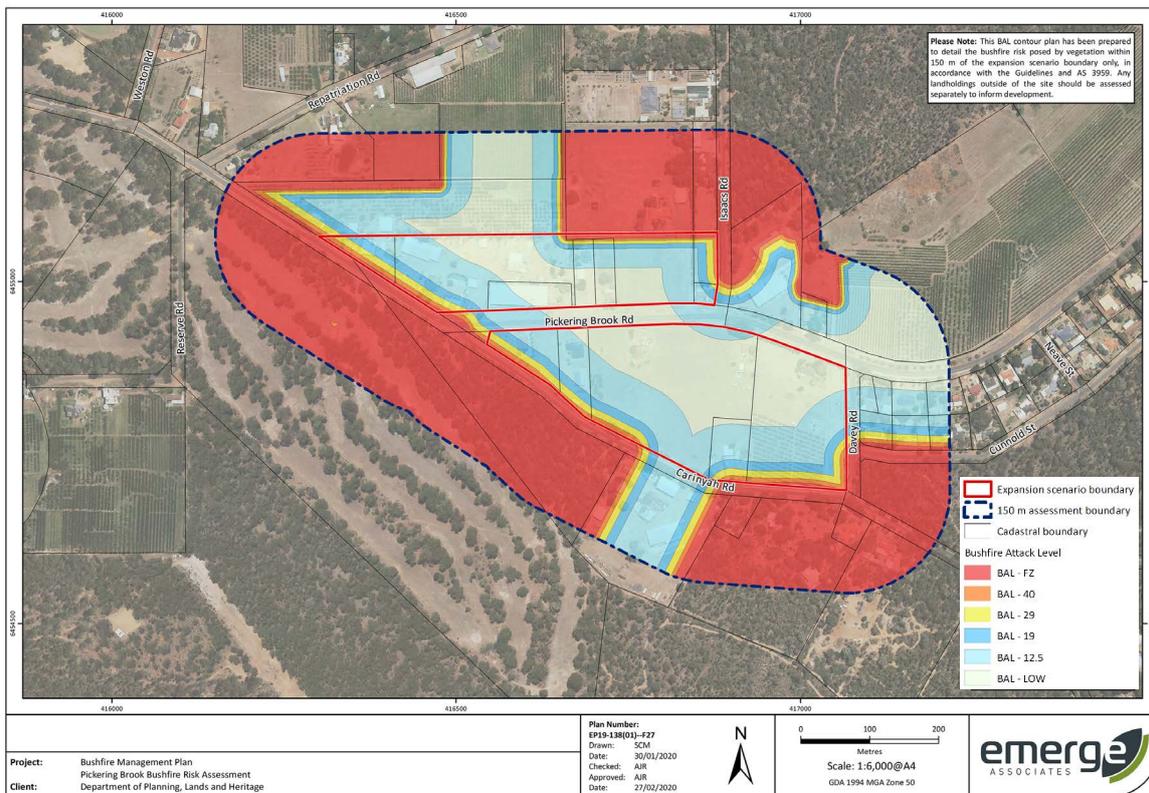
**Plan 12 – Landscape bushfire hazard level rating**

(Source: Pickering Brook Townsite Bushfire Risk Assessment – Bushfire Management Plan (Emerge 2020))

If the Government determines that a 'medium' level risk for the townsite is acceptable, all expansion scenarios were generally considered to be of sufficient land area to achieve a 'low' bushfire attack level (BAL) rating as required by the relevant bushfire policies. Notwithstanding this, the assessment identified the Scenario 2 and 3 areas as the preferred areas for townsite expansion as these areas are clear of native vegetation and are located along Pickering Brook Road providing a relatively low hazard and bushfire-resilient access for evacuation. Pickering Brook Road connects to other key access roads leading out of the townsite and provides direct access to the Pickering Brook Primary School oval which has been identified and recommended as a proposed safer place/refuge for the community should evacuation cease to be an option during a future bushfire. Plan 13 shows the bushfire attack level contours developed for the Scenario 2 and 3 areas.

New buildings would be required to be constructed to specific bushfire-resilient standards and with appropriate building setbacks and separations as required in the relevant bushfire policy and guidelines. The assessment concluded that lots of a minimum of 2000m<sup>2</sup> for Scenarios 2 and 3 can potentially accommodate buildings that meet the acceptable construction level of BAL 29.

A comprehensive bushfire management plan (BMP) has been prepared for a potential townsite expansion that recommends the implementation of a broad range of bushfire protection measures to reduce the overall bushfire risk to the community to as low as considered to be reasonably practicable. This aims to reduce ignition, minimise community exposure to bushfire, and managing bushfire risk which will require actions and responsibilities by State and local government, and landowners. A complete list of the BMP recommendations is in Appendix 1.



**Plan 13 – Preferred Scenario Areas 2 & 3 - Bushfire Attack Level Contour Plan**  
 (Source: Pickering Brook Townsite Bushfire Risk Assessment – Bushfire Management Plan (Emerge 2020))

The Department of Fire and Emergency Services (DFES), including the Office of Bushfire Risk Management, does not support a proposed expansion of the townsite due to concerns with the bushfire risk assessment and the recommendations of the bushfire management plan. DFES considers the bushfire risk level for the townsite will remain 'high' to 'extreme' even if all recommendations of the BMP are implemented.

The bushfire risk assessment and BMP acknowledged it is not possible to reduce bushfire risk in Pickering Brook to zero regardless of implementation of all recommended protection and management measures, and that implementation of the measures would have benefit to the existing Pickering Brook community. The State Government, as the decision-maker for approving an expansion of the townsite, needs to balance consideration of the remaining bushfire risk with potential benefits of any proposal to the local community.



Looking east from the townsite along Pickering Brook Road

### 3.11 Sustainability assessment

The Working Group has undertaken a sustainability assessment of all scenarios to identify a preferred location/s for potential townsite expansion. The assessment involved consideration of relevant data and information including from previous related studies and reports, Government policies and recent technical investigations.

Five broad sustainability criteria were developed for the assessment framework informed by the strategic directions defined in the WAPC *State Planning Strategy 2050*.

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

The sustainability assessment process included a combination of the following considerations.

- a ranking of relative importance of the sustainability criteria in the assessment framework as determined by the Working Group through professional judgement and discussion
- a spatial mapping analysis of relevant constraints and opportunities for area specific criteria such as impacts on high-quality agriculture land, areas considered to be of high environmental value, bushfire risk analysis and buffer distance requirements from water courses required by the Government Sewerage Policy
- professional analysis of the relative consequences and/or impacts of various specific criteria such as land use configuration (e.g. with/without commercial town centre), relative economic and community benefits, service infrastructure upgrades required, and population yield.

The sustainability assessment concluded that if an expansion of the townsite is agreed, then the preferred scenario is Scenario 3, with the inclusion of a small commercial town centre. The next ranked scenarios were Scenario 2 with a small commercial town centre, followed by Scenario 2 without a commercial centre.

The indicative yields for the preferred scenarios are as follows.

**Scenario 3**, being approximately 14ha in area, is estimated to yield a maximum of 44 dwellings, 131 additional residents, potentially including 14 additional primary school aged children.

**Scenario 2**, with or without a small commercial town centre, is approximately 8.5 ha in area and is estimated to yield a maximum of 27 dwellings and 80 additional residents, potentially including 8 additional primary school aged children.

The strengths and benefits of preferred Scenario 3 includes the following:

- does not encroach significantly on required clearance distances to water courses and waterlogging areas required under the Government Sewerage Policy and therefore the risk of contamination to the Middle Helena Catchment water resource from urban development is reduced
- has limited impact on high-quality and productive agriculture land by mostly avoiding land classified as Class 1 for perennial horticulture



Pickering Brook Primary School

- represents a logical extension and consolidation of the Pickering Brook townsite
- provides a reasonable potential dwelling yield to meet local demand for additional housing on smaller townsite lots
- can generally meet required buffers from agriculture activities/high-quality agriculture land if buffers are included in the urban footprint along the northern boundary
- Does not require upgrades to reticulated water infrastructure
- has potential to increase enrolments for the local primary school by approximately 10 per cent above existing enrolments utilising available existing school capacity
- the land is mainly cleared of vegetation and does not interface with the National Park therefore avoiding significant environmental issues relating to potential impacts on protected flora and fauna that inhabit the local area
- potentially provides some support for local businesses/economy including local shops and recreation centre
- potentially provides additional local workforce for businesses such as tourism-related

The remaining scenarios were not considered appropriate for urban development for various reasons including environmental implications associated with clearing of remnant vegetation and potential impacts on associated protected fauna, impacts on high-quality and productive agriculture land, presence of water courses and associated waterlogged areas potentially affecting the quality of the Middle Helena Catchment drinking water resource and public health, and need for significant reticulated water infrastructure upgrades.



Preferred townsite expansion area (South of Pickering Brook Road) looking west

## 4. Recommendations

The following Working Group recommendations relating to the potential sustainable expansion of the Pickering Brook townsite are presented for the Taskforce's consideration.

### **Townsite expansion**

1. Support an expansion of the Pickering Brook townsite for approximately 14ha of land located immediately west of the existing townsite in accordance with the preferred scenario shown in Plan 1.

### **Metropolitan Region Scheme (MRS)**

2. The City of Kalamunda to prepare a *Metropolitan Region Scheme (MRS) Amendment* report and plans proposing to rezone the land identified in Plan 1 from Rural to Urban and submit a request for the rezoning to the Western Australian Planning Commission (WAPC) for its consideration.
3. The Department of Planning Lands and Heritage to seek an independent peer review of the *Bushfire Management Plan – Pickering Brook Townsite Bushfire Risk Assessment 2020* to inform the WAPC's consideration of the proposed MRS amendment.

### **Local Planning Scheme (LPS)**

4. Subject to approval of a related MRS Amendment to rezone the land from Rural to Urban, the City of Kalamunda to prepare a detailed Local Planning Scheme Amendment report and plans proposing to rezone the land identified in Plan 1 from Rural Agriculture to Residential, with an appropriate density coding, for submission to the WAPC requesting its consideration.

### **Water resource protection**

5. Subject to the MRS Amendment being initiated through the WAPC and Environmental Protection Authority, the City of Kalamunda to review its draft *Pickering Brook District Water Management Strategy (PBDWMS)* in consultation with the Department of Water and Environmental Regulation to relate to a townsite expansion for land identified in Plan 1 and include requirements for future urban development to utilise high-performance on-site effluent disposal systems that have secondary treatment capability and are Health Department approved.
6. The Minister for Planning, on behalf of the Taskforce, to request an exemption from the Minister for Health from the reticulated sewer connection requirement of the *Government Sewerage Policy 2019* for urban development for land identified in Plan 1 which is within the Middle Helena Public Drinking Water Source Protection Area.
7. Subject to approval of a related MRS Amendment to rezone the subject land from Rural to Urban:
  - a. The WAPC to review the *Middle Helena Catchment Area – Land Use and Water Management Strategy* to change the priority classification for the subject land from Priority 2 to Priority 3.

*(Note: The Working Group suggests it would be timely and appropriate for the WAPC to undertake a full review of the Strategy to ensure it reflects current water protection policies and guidelines.)*
  - b. The City of Kalamunda to amend the relevant Special Control Area relating to the Middle Helena Water Catchment in its Local Planning Scheme to be consistent with the change of priority classification for the subject land from Priority 2 to Priority 3 in the *Middle Helena Catchment Area – Land Use and Water Management Strategy*.

### **Bushfire risk/management**

8. The relevant State Government agencies and City of Kalamunda to consider the recommendations outlined in the *Bushfire Management Plan – Pickering Brook Townsite Bushfire Risk Assessment 2020* when undertaking more detailed planning and decision making for any future subdivision and/or urban development proposals for the subject land. (See Appendix 1)

*(Note: It is acknowledged that the establishment of the Pickering Brook Primary School or an alternative site as a community bushfire refuge/safer place will be subject to further consideration by the Local Emergency Management Committee and/or State Emergency Management Committee and other relevant stakeholders.)*

### **Land tenure/management – Town Lot 81 Cunnold Street, Pickering Brook**

9. The Department of Biodiversity, Conservation and Attractions to investigate the inclusion of Town Lot 81 Cunnold Street, Pickering Brook, currently Unallocated Crown Land, into the Korung National Park.

The Working Group acknowledges that several further recommendations or positions were put forward by individual members, and these are outlined in the following Table 2 with accompanying responses from the Working Group Chairman.

The Working Group further acknowledges the recommended townsite expansion does not meet all requirements of the following Government policies and principles and that the Government will need to have specific regard to these policies when making any decision/s to approve the proposal.

- The *Government Sewerage Policy 2019* and *WAPC Middle Helena Catchment Area Land Use and Water Management Strategy 2010* advise the creation of lots below 1ha in the Middle Helena drinking water source protection area should be connected to a reticulated sewerage system to protect the water resource from potential contamination.
- The *WAPC State Planning Policy 3.7 – Planning in Bushfire Prone Areas 2015* outlines the principle of applying a precautionary approach to bushfire risk where there is a lack of certainty that the potential for significant adverse impacts can be adequately reduced or managed in the opinion of the decision-maker.

## Table 2: Further recommendations and/or positions of individual members of the Working Group.

This table summarises further recommendations and/or positions put forward by individual members of the Working Group and provides responses from the Working Group Chairman for the Taskforce's information and consideration.

Individual further positions/ recommendations	Chairman's response
<p><b>1. City of Kalamunda</b></p> <p>The City supports expansion of the townsite in accordance with the preferred Scenario 3 recommended by the Working Group but with the potential for the inclusion of approximately 4ha of additional rural land opposite the Pickering Brook Sports Club as shown in purple on the following plan.</p> <p>The estimated yield from the additional land is up to 12 dwellings and 35 people.</p> <p>This alternative scenario is recommended by the City for the following key reasons:</p> <ul style="list-style-type: none"> <li>• The City considers it represents a logical extension from the townsite entrance along the main road to connect with the Working Group's recommended Scenario 3.</li> <li>• The additional land is within walking distance of the General Store and is located close to the Pickering Brook Sports Club.</li> <li>• The land is primarily cleared and not used for agriculture.</li> <li>• The land will have access to infrastructure (water main, telecommunications, and power) and the local road network for multiple egress routes.</li> <li>• The area was contemplated by the City for expansion under its Local Planning Strategy.</li> <li>• It is a natural urban expansion along the main road as opposed to an arbitrary boundary north of Pickering Brook Road.</li> </ul>	<p>The proposal to include an additional 4ha of land adjacent to Scenario 3 is outside of the scope of the recommendations supported by the Working Group for land proposed for rezoning.</p> <p>The City of Kalamunda, in preparing its detailed MRS Amendment report and plans proposing to rezone land in Plan 1 from Rural to Urban for submission to the Western Australian Planning Commission (WAPC), would need to demonstrate that including the additional 4ha is justifiable on planning grounds.</p>

Individual further positions/  
recommendations

Chairman's response



City of Kalamunda - Recommended Alternative Expansion Scenario (include additional land with purple boundary)

Table 2 (Continued)

Individual further positions/ recommendations	Chairman's response
<p><b>2. Department of Fire and Emergency Services (DFES)</b></p> <p>Recommendation 1 is not supported. DFES does not support expansion of the townsite or intensification of land use in the Pickering Brook area, even if the control measures proposed in the Bushfire Management Plan (BMP) can be achieved, which it considers is unlikely.</p> <p>Recommendation 8 is not supported. Many of the 'Responsible Agencies' in Appendix 1 are incorrect, including the responsibilities assigned to DFES. Further, as acknowledged in the BMP, there has not been consultation with these agencies to verify if these measures can be supported and if they have the resources to implement them.</p> <p>DFES has other priority bushfire risk-related concerns with the proposed development including:</p> <ul style="list-style-type: none"> <li>• The bushfire risk to the proposed additional and existing residents of the Pickering Brook community will remain 'high' to 'extreme' and not 'medium' as proposed in the BMP.</li> <li>• The BMP's conclusion that the overall bushfire risk is 'medium' by reducing the consequence level from 'catastrophic' to 'minor' is not supported and was developed without appropriate supporting evidence.</li> <li>• DFES' view regarding the risk assessment in the BMP is supported by the Office of Bushfire Risk Management.</li> <li>• The townsite is isolated through its development footprint and access routes, being surrounded by significant areas of forest vegetation, with the topography and landscape presenting a risk of catastrophic-scale destruction from potential bushfire events.</li> <li>• Although the bushfire risk cannot be reduced to zero, the potential loss of life or serious injury from bushfire at this location is unacceptably high, even when considering the proposed actions in the BMP.</li> <li>• The 'Recommended Bushfire Protection Measure' in Appendix 1 of using the primary school as a pre-determined community 'safer place shelter' is not supported.</li> <li>• DFES is concerned that vulnerable land uses, such as aged care, could be permitted with the proposed development, adding to the already unacceptable level of risk.</li> </ul>	<p>From the outset, DFES has been clear that it opposes the expansion of the townsite or intensification of land use in the Pickering Brook area for the reasons listed.</p> <p>DFES is also critical of the detailed proposed control measures contained in the <i>Bushfire Management Plan</i> (BMP).</p> <p>The considered assessment of the Working Group is that modest but meaningful expansion of the townsite can be achieved, with due regard given to the purpose and intent of <i>State Planning Policy 3.7 Planning in Bushfire Prone Areas</i>.</p> <p>The Working Group was clear that substantial subdivision was not possible or desirable because of the need to avoid the significant loss of priority agricultural land and to balance the potential increased population against continuing protection of the water catchment.</p> <p>The bushfire assessment report gave due consideration to the proximity of the townsite to the forest and the ability to achieve a satisfactory separation from the forest vegetation to achieve Bal 29.</p> <p>The BMP notes the capacity to evacuate into Kalamunda or shelter at a proposed safer place within the townsite.</p> <p>The bushfire risk assessment noted the history of bushfires in the area and identified acceptable evacuation routes to the North via Patterson Road and West via Canning Road.</p> <p>The Pickering Brook Primary School has been identified as a safer place if evacuation is no longer a safe option during a bushfire event.</p> <p>The proposed BMP made clear the need to ensure that all new houses should be constructed to a minimum BAL of 12.5 to protect against ember attack, combined with on-going land management to restrict bushfire penetrating the residential area.</p> <p>Notwithstanding the DFES position, the City of Kalamunda representatives have provided in-principle support for the BMP and its recommendations. It is understood that the City's position on the BMP would form part of its request for a MRS amendment.</p>

Individual further positions/ recommendations	Chairman’s response
<ul style="list-style-type: none"> <li>• The traffic impact assessment has not assessed community and visitor evacuation simultaneous with emergency service assistance access in the event of a bushfire scenario, the current situation which is inadequate, nor the impact of an increase in tourism.</li> <li>• The current road access and egress is unsatisfactory, with road design and construction standards for access and egress to suitable evacuation destinations not meeting recognised road standards.</li> <li>• The events of this past bushfire season have shown that the amount of devastation and destruction that can be caused by bushfires can never be underestimated. It is important to remember, in mitigating through land use planning, that maximum effect is achieved by taking a precautionary approach to future development.</li> </ul>	<p>Clearly bushfire risk in the Perth Hills, including Pickering Brook, cannot be reduced to zero but the Working Group has adopted the approach that the modest but meaningful and sustainable expansion of Pickering Brook can be undertaken provided the necessary risk management practices are implemented.</p>

Table 2 (Continued)

Individual further positions/ recommendations	Chairman's response
<p><b>3. Department of Water and Environmental Regulations (DWER)</b></p> <p>DWER <u>conditionally supports the concept of the townsite expansion</u> and acknowledges the possible local strategic need for some additional housing within the townsite location. However, DWER is clear that conditions would need to be met adequately to satisfy concerns associated with contamination of the drinking water catchment, as the proposal does not meet current public drinking water source areas policy. Additionally, DWER would further take into consideration the need for the townsite expansion if it is recognised as a State Government priority.</p> <p>Without the prospect of connecting to a reticulated sewerage system, DWER further acknowledged additional development would not meet the related requirements of the <i>Government Sewerage Policy 2019 (GSP)</i> and <i>Middle Helena Catchment Area Land Use and Water Management Strategy 2010 (MHLUWMS)</i> which are intended to protect the drinking water resource from contamination and potential associated increased risk to public health.</p> <p>DWER has acknowledged that the Working Group's recommended expansion scenario can potentially meet other important requirements of the GSP and MHLUWMS including future on-site sewerage disposal systems achieving buffer distances from water courses and associated water-logging areas. There is however a considerable amount of work that will need to be carried out to identify acceptable alternatives to deep sewerage to eliminate the risk to the drinking water catchment. Alternatives have not been developed or considered at this time.</p> <p>DWER advised that should the Taskforce and Government decide to pursue and/or approve an expansion of the townsite then the Water Corporation would also need to be actively consulted with regards to the proposed methods to eliminate the risk to Middle Helena Catchment and associated pump-back dam.</p> <p>DWER further advised if required, it can provide advice to the City of Kalamunda for any proposal that includes consideration of the most appropriate available Health Department approved alternative effluent disposal systems to service future urban development associated with a townsite expansion.</p>	<p>It is noted that the land proposed for rezoning from Rural to Urban is on the very edge of the water catchment.</p> <p>The Working Group understands that there is still a need for a significant level of water planning work to be undertaken at a local level. To achieve the proposed expansion, options other than connection to reticulated sewerage need to be identified.</p> <p>The option of a single localised wastewater treatment plant for the townsite is not considered cost effective. Nevertheless, advantage can be taken of the latest developments with onsite aerobic treatment units (ATUs).</p> <p>Developments close to water catchments that take advantage of the tourism potential inherent in the district will continue to have the potential to conflict with existing policy.</p> <p>While problematic, waste water treatment can generally be safely managed without compromising the water catchment. The recent approval for a 480-person capacity ATU by the Health Department at the nearby Chalet Rigi Restaurant, Piesse Brook for onsite disposal of the treated wastewater is a case in point, noting that the local authority has imposed a patronage limit of 350 persons per day.</p> <p>DWER acknowledges the importance of the Pickering Brook expansion project to the local government and its community, and the Working Group appreciates its willingness to work with stakeholders to find a way forward, recognising that some critical factors will be problematic to address.</p>

Table 2 (Continued)

Individual further positions/ recommendations	Chairman’s response
<p><b>4. City of Kalamunda</b></p> <p>The City recommends that prior to a townsite expansion proposal progressing to a MRS amendment process, that this report be advertised for public comment to provide an update of work-to-date, introduce residents to the recommended scenario, and allow time for public deliberation during lodgement of the proposed MRS amendment which would likely result in higher-quality submissions.</p>	<p>This is a matter for the Taskforce to determine. However, the Working Group supports the proposal going straight to the MRS statutory process, which includes community consultation on the proposal as part of that process, because of consultation already undertaken with the local community, both by State and local government previously and as part of this project.</p>

# Appendix 1

## Recommendations - Pickering Brook Townsite Bushfire Risk Assessment – Bushfire Management Plan (Emerge 2020)

Recommended bushfire protection measures	Responsible agency
<b>Reduce ignition</b>	
Maintain the policing to reduce the rate of arson.	City of Kalamunda, Western Australian Police (WAPOL), and Department of Fire and Emergency Services (DFES).
Undertake post-burn inspection to ensure smouldering objects are identified and extinguished.	City of Kalamunda and DFES.
Manage road verges, separate the carriage from classified vegetation by keeping space free of flammable material, to avoid ignition from a damaged vehicle and disposal of cigarettes.	City of Kalamunda and DFES.
Maintain community awareness on high fire risk days, avoid using open flame and undertaking activities that generate sparks that may contact cured grass and flammable vegetation, store combustible materials undercover.	City of Kalamunda.
Restrict public access to high-risk bushfire ignition areas.	City of Kalamunda, WAPOL, and Department of Biodiversity, Conservation and Attractions (DBCA).
Audit electrical equipment, Western Power assets on private land.	Western Power.
Clear vegetation around power transmission lines.	City of Kalamunda.
<b>Minimise exposure</b>	
Identify and establish the evacuation road network	City of Kalamunda.
In conjunction with the community prepare Pickering Brook Emergency Evacuations Plan that addresses: <ul style="list-style-type: none"> <li>the means of reporting a fire</li> <li>the means of alarm</li> <li>preparation to leave and what to take</li> <li>the appropriate route (evacuation road network) for a given fire direction</li> <li>the available period for evacuation – ASET/RSET thresholds</li> <li>assembly area at safer place and entry procedure</li> <li>recommended bushfire resistance improvement measures</li> <li>preparation of survival guidelines if it is too late to leave.</li> </ul>	City of Kalamunda.

Recommended bushfire protection measures	Responsible agency
<p>Establish a local Bushfire Ready Group to promote procedures and refine the methods.</p> <p><i>It is important that the local community understand the risk and have ownership for minimising their exposure.</i></p>	<p>City of Kalamunda.</p>
<p>Manage traffic to ensure the orderly movement of vehicles along evacuation routes and to the safer place within the townsite. Close exits when it is considered too late to leave, the route is unsafe, suppression activity has commenced.</p>	<p>WAPOL and City of Kalamunda.</p>
<p>Establish permissions with the Primary School and the Department of Education to utilise the school oval as a safer place shelter. Perimeter vegetation around the School oval and in adjacent road reserves will require modification to low threat (it is not a wholesale clearance but a horizontal and vertical separation of vegetation).</p>	<p>Department of Education (DoE) and City of Kalamunda.</p>
<p>Determine responsibilities and access to the oval outside of school hours.</p>	<p>DoE and City of Kalamunda.</p>
<p>Ensure the telecommunications network is resistant to bushfire attack and can provide the community with guidance throughout the bushfire event.</p>	<p>DFES and communication carriers (i.e. Telstra).</p>
Manage the fire	
<p>Through a descending hierarchy, Structure Plan, local development plans, and subdivision apply to the expansion area and should specify:</p>	<p>City of Kalamunda and Western Australian Planning Commission (WAPC).</p>
<ul style="list-style-type: none"> <li>A minimum bushfire construction standard of BAL-12.5, or a higher level, as determined by AS3959:2018 and calculated with an FFDI 100;</li> </ul> <p><i>Reason: Ember attack can occur at a distance greater than 100m and cause a building to building fires and sequential loss.</i></p>	<p>Development control policy.</p>
<ul style="list-style-type: none"> <li>A restrictive covenant to maintain land in a low threat (from title creation through to building placement and the ongoing operation of the site), as described by AS 3959:2018 and by the Asset Protection Zone Standards described in Schedule 1 Appendix 4 of the <i>Guidelines for Planning in Bushfire Prone Areas V1.3</i>.</li> </ul> <p><i>Reason: The resilience of the new development is dependent upon a collective resistance, including from vacant lots through to established operation</i></p>	<p>Development control policy.</p>
<p>Reduce the threat of ignition and the spread of bushfire on private land by managing fuels by enforcing s33(1) of the <i>Bushfires Act 1954</i>.</p>	<p>City of Kalamunda and DFES.</p>

Recommended bushfire protection measures	Responsible agency
Reduce the threat of ignition and the spread of bushfire on public land by reliably managing fuels, a maximum of a three-year cycle for land adjoining Pickering Brook townsite.	Parks and Wildlife Service, DBCA.
Maintain community awareness of the importance of maintaining grounds around a building and being vigilant to flammable structures located close to the building, including the adjoining land.	City of Kalamunda and DFES community education programs.
Encourage owners to upgrade their existing buildings to improve bushfire resistance.	City of Kalamunda and DFES community education programs.
Reduce the threat of disruption to the function of Canning Road, and the townsite, by auditing vegetation and power infrastructure. Ensure vegetation is separated from power poles and powerlines separated from the potential of falling branches.	City of Kalamunda and Western Power.
Maintain aerial spotting services and watchtower, for early identification of bushfire development.	DBCA.
Provide for the safe undertaking of roadside fire suppression by managing community movement in a bushfire event – too late to leave, evacuate to the school, road closure to then enable fire brigade operations.	City of Kalamunda, WAPOL, and DFES.
Enable emergency service access and retreat from Pickering Brook Road through to Ashendon Road.	City of Kalamunda, DFES, and DBCA.
Ensure a water supply is available throughout a bushfire event for the replenishment of fire services and the conduct of fire suppression within the townsite.	Water Corporation and DFES.
Ensure that the townsite does not become isolated after the passing of the fire-front. Pickering Brook-Canning Road to be audited and measures identified to reduce the potential for road blockage from fallen trees or powerlines.	City of Kalamunda, Main Roads WA, Western Power, and DFES.

# Appendix 2

## Supporting Studies

*Pickering Brook and Surrounds – Perth Hills Tourism Product Gap Analysis – Element (March 2020)*

*Soil Survey of the Pickering Brook Planning Investigation Area - Phase 1 – Western Horticultural Consulting (February 2020)*

*Bushfire Management Plan - Pickering Brook Townsite Bushfire Risk Assessment – Emerge Associates (April 2020)*

*Transport Review - Pickering Brook Townsite Expansion – GTA Consultants (March 2020)*

*Pickering Brook Townsite Sustainability Assessment – Macroplan (April 2020)*