

# WITCHCLIFFE ECOVILLAGE STRUCTURE PLAN

SUSSEX LOCATION 2807 AND  
2812 BUSSELL HIGHWAY,  
WITCHCLIFFE

WITCHLIFFE ECOVILLAGE  
PERRON DEVELOPMENTS /  
SUSTAINABLE SETTLEMENTS

This Structure Plan is dedicated to the memory of Geoff Broad, in recognition of his wholehearted support and encouragement at the outset of the Witchcliffe Ecovillage project, and the pivotal role he played in developing the Augusta-Margaret River Shire's Rural Hamlet Design Guidelines.

### Endorsement Page

This structure plan is prepared under the provisions of the Shire of Augusta Margaret River Local Planning Scheme 1.

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIA PLANNING COMMISSION ON:

*10 January 2018*.....Date

Signed for and on behalf of the Western Australian Planning Commission:



an officer of the Commission duly authorised by the Commission pursuant to section 16 of the *Planning and Development Act 2005* for that purpose, in the presence of:



.....Witness

*10 January 2018*.....Date

*10 January 2028*.....Date of Expiry

**Table 1 Table of Amendments**

Amendment No.	Summary of the Amendment	Amendment type	Date approved by WAPC
Amendment 1	Increase residential density in two areas along Bussell Highway to R30-40; extend Aged and Depending Housing site to include additional public open space; nominate sites as acceptable holiday home locations; shift the boundary north on the Special Use Ecovillage Agricultural Lots area; and change the southern portion of Ecovillage Agricultural Lots to Special Use Ecovillage Common.	Standard	08 May 2023

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## EXECUTIVE SUMMARY

The Witchcliffe Ecovillage Structure Plan relates to Lots 2807 and 2812 Bussell Highway, Witchcliffe. It proposes the development of an approximately 373 lot strata titled Ecovillage subdivision on 119.11 hectares of land previously zoned Priority Agriculture.

The Witchcliffe Village Strategy 2012 identifies portions of Lot 2807 and 2812 immediately adjacent to the existing Witchcliffe townsite as Cells 7 and 8, comprising 60.41 hectares suitable for residential development as an Ecovillage. The land within Cells 7 & 8 will be developed as clusters of strata title lots surrounding productive community gardens, with a community centre and village square at the heart of the development.

The land outside of Cells 7 & 8, not identified for residential development in the Witchcliffe Village Strategy will be developed as non-residential strata agricultural lots, conservation zones, Ecovillage communal purposes and wastewater treatment and dispersal.

Amendment 1 to the Witchcliffe Ecovillage Structure Plan made some modifications to the Structure Plan from the original plan, specifically:

- Increasing residential density in two areas along Bussell Highway to R30-40 to create more affordable housing options within walking distance of the Witchcliffe townsite.
- Identifying locations acceptable for Holiday Homes.
- Expanding the Aged and Dependent Housing site to the west to enable the retention of two identified gum trees.
- Adjusting the boundaries between the two Special Use zones on the east side of the project to allow for community ownership of a future educational precinct in the Special Use Ecovillage Commons zone. The northern boundary of the remaining Special Use Ecovillage Agriculture site is extended further north incorporating a constructed dam.

**Table 2. Summary Table**

Item	Data		Structure Plan Reference
Total area covered by the structure plan	119.11 hectares		Part 1, 1
Total area WVS Cell 7 & 8	60.41 hectares		Part 2, 1.2
Area of each land use proposed:	Hectares	Lot yield	Part 2, 3.1; 3.2; 3.3; 3.6; 3.9; 3.10
- Residential (includes community gardens)	35.136	373	
- Village Centre	3.191	20	
- Agricultural lots	26.346	15	
- Community use (includes conservation areas, dams, wastewater treatment area, Ecovillage depot, community orchard, etc.)	37.639	1	
Total estimated lot yield	421		Part 1, 4.7
Total estimated lot yield Cell 7 & 8	405		Part 2, 3.3
Estimated number of dwellings	373		As above
Estimated residential site density	3.19 dwellings per site hectare		As above
Estimated residential site density within WVS Cells 7&8	6.2 dwellings per site hectare		
Estimated population	746 people		Part 2, 3.6
Number of high schools	0		
Number of primary schools	0		
Estimated commercial floor space	> 1 hectare net lettable area		Part 2, 3.6
Estimated area and percentage of public open space given over to:	Hectares	Percentage	Part 1, Table 1
-Village Square and oval	2.46	52.34%	Part 2, 3.2; 4.6
-Bussell Highway buffers	2.24	47.66%	
Total open space/percentage of total Structure Plan area	4.7ha	7.79%	As above
Estimated percentage of natural area included in POS	0%		As above
POS as percentage of gross subdividable area	7.79%		As above

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## **PART ONE: IMPLEMENTATION**

### **1. STRUCTURE PLAN AREA**

This Structure Plan applies to Lot 2807 and 2812 Bussell Highway, being the land contained within the inner edge of the line denoting the Structure Plan boundary on the Structure Plan Map (Fig. 1).

### **2. OPERATION**

Pursuant to Schedule 2, Part 4, clause 22 of the Planning and Development (Local Planning Schemes) Regulations 2015, (“Regulations”) this Structure Plan shall come into operation on the date that it is approved by the Western Australian Planning Commission (WAPC).

### **3. STAGING**

The development and subdivision of the Structure Plan area will require the prior amalgamation of Lots 2807 and 2812.

The development and subdivision of the Structure Plan Area will require the initial construction of access roads from Bussell Highway, subsequent supply and construction of all major infrastructure by the developer, and provision of telecommunications servicing by NBN and Telstra. As the land will be developed from a single land holding there will be reliance on staging to ensure infrastructure and development is integrated. In subsequent stages the proponent will be required to demonstrate that key outcomes for the Ecovillage have been achieved, as per Appendix 16, Sustainability Outcomes and Implementation Plan.

The implementation of the Structure Plan is not dependent on any other external triggers.

### **4. SUBDIVISION AND DEVELOPMENT REQUIREMENTS**

#### **4.1 Land use zones and reserves**

The land within the Structure Plan area is approved to be rezoned to “Future Development” and included within Structure Plan Area No. 34 of the Augusta Margaret River Local Planning Scheme 1 (AMR LPS 1.)

Scheme Amendment No. 28 to AMR LPS 1 to zone the land to ‘Future Development’ was approved by the Minister on 10 May 2017, subject to modifications.

The Structure Plan Map (Figure 1) outlines the land use, zones and reserves applicable within the Structure Plan area, and these shall be in accordance with the corresponding zone or reserve under the Scheme.

Land identified as “Special Use Zone - Ecovillage Agriculture” on the Structure Plan Map will provide for productive agricultural strata development lots which do not have a dwelling entitlement, as per provision 3.5 of AMR LPS 1 Scheme Amendment 28, and will have uses compatible with neighbouring land uses, ecovillage objectives and achieve suitable buffers.

Land identified as “Special Use Zone – Ecovillage Wastewater Treatment and Depot” shall not have a dwelling entitlement, and will provide for community wastewater treatment, approved dispersal of treated water in a managed wood lot or orchard, and Ecovillage depot community purposes.

Land identified as “Special Use Zone – Ecovillage Common” shall not have a dwelling entitlement, and will provide for Ecovillage communal purposes, including conservation management, water storage in dams, and water allocation to community gardens and agricultural lots, etc.

A basic amendment to incorporate the land use zones applied in the Structure Plan into the Scheme will be lodged following subdivision, as per Regulation 34(g) of Part 5, Division 1 of the Regulations.

## **4.2 Environmental and heritage protection**

There are no designated heritage areas or features of cultural or indigenous significance that require protection management.

Biodiversity assets identified for conservation on the indicative Witchcliffe Ecovillage Development Concept Map (Figure 12) are proposed to be zoned “Special Use – Ecovillage Common,” and shall be protected by detailed management plans pending approval by AMR, in consultation with the Department of Water and Department of Parks and Wildlife (or other responsible authorities) prior to subdivision.

## **4.3 Hazards and separation areas**

### **4.3.1 Bushfire hazard and separation zones**

The Structure Plan identifies hazard and separation areas as follows:

- Bushfire hazards;
- Waste management and recycling facility, Davis Road; and
- Department of Minerals mineralisation zone, Mill Road.

The Structure Plan, through the Bushfire Management Plan (BMP) contained in Appendix 9, responds to hazards in accordance with the requirements of State Planning Policy 3.7 – Planning in Bushfire Prone Areas and the associated Guidelines for Planning in Bushfire Prone Areas. Requirements of the BMP are to be implemented at the time of subdivision and development. Ongoing maintenance of bushfire measures will be required in accordance with the BMP applicable to the Structure Plan.

## **4.4 Major infrastructure**

Service infrastructure required for the development is to be supplied and constructed by the developer prior to subdivision and development, as follows:

- Effluent disposal will be via an onsite community scheme that will be operated by an operator licenced by the Economic Regulation Authority, and approved by the necessary authorities (e.g. Department of Health and/or Department of Environmental Regulation.) The wastewater treatment plant and treated water disposal area will be located on land zoned “Special Use - Ecovillage Wastewater Treatment and Depot” identified on the Structure Plan Map, Figure 1. Detailed plans are to be provided prior to subdivision outlining the proposed method of effluent disposal.

- Power to lots is to be supplied by 100% net neutral renewable energy generated by rooftop photovoltaic panels, stored in batteries, distributed by an internal microgrid/s, and connected to Western Power.
- On site water supply is to be provided to individual lots via rainwater tanks, and to strata cluster gardens, public open space (including oval) and agricultural lots via stormwater captured and stored in dams located in land zoned “Special Use - Ecovillage Common.”
- Vehicular access is to be provided by internal public roads, and two access roads connecting the development to Bussell Highway.

Detailed Wastewater Infrastructure Management, Urban Water Management and Energy Infrastructure Plans will be provided prior to subdivision, subject to the satisfaction of AMR Shire and relevant authorities, as per Table 4, Additional Information.

Telecommunication infrastructure will be supplied by NBN and Telstra at subdivision.

#### 4.5 Adjacent land interface

The Structure Plan area will interface with adjoining land in the following manner:

- 2 access roads to Bussell Highway;
- Public open space and community use abutting Shervington Avenue;
- 25m vegetation buffers between lot boundaries and Bussell Highway, excepting proposed Village Centre zoned lots and existing lifestyle lot with current access to Bussell Highway;
- Rural buffer to Mill Road;
- Rural buffer to adjoining eastern Priority Agriculture lots; and
- Rural buffer to Davis Road.

#### 4.6 Public open space

The provision of 4.7 hectares of public open space equates to 7.79% of the gross subdividable site area. This is less than the 10% required by Liveable Neighbourhoods policy but this reduction was required by AMR Shire and Department of Planning, Lands and Heritage (DPLH). Public and community open space is to be provided generally in accordance with Figure 1. Structure Plan Map; Figure 12. Witchcliffe Ecovillage Development Concept Plan; Table 3. Open Space, and Appendix 1. Public Open Space and Landscape Plan. An updated public open space schedule is to be provided at the time of subdivision for determination by WAPC, upon the advice of the AMR.

**Table 3. Open Space**

Open Space	
WVS Cell Area	60.41ha
Regional Roads (Bussell Highway Road widening)	0.09ha
Gross Subdividable Area	60.32ha
Regional Open Space	0
Public Open Space	4.7 ha
Percentage of total development footprint	7.79%

#### 4.6.1 Implementation of Landscaping

The proponents will construct all community open space landscaping, including productive community gardens during the construction phases of the relevant stages as per the Staging Plan, and will transfer ownership and management of community open space to the appropriate strata bodies at completion of subdivision.

The oval will be constructed and landscaped in Stage 1 of the subdivision. It will be ceded to AMR as a “Reserve for Recreation.” All public open space is to be landscaped and maintained for a period of two summers.

#### 4.7 Residential density targets

The Structure Plan area is subject to density restrictions: AMR LPS 1 sets an overall density upper limit of R60 in the Shire for residential development, and the WVS planning policy statements recommend the potential lot yield of Cell 7 & 8 to be approximately 300 lots, with residential density ranges of R30-2.5 on Cell 7 and R30-5 on Cell 8.

The Structure Plan provides for the achievement of approximately 3.19 dwellings per site hectare and identifies density ranges as per the Structure Plan Map (Figure 1.)

The allocation of residential densities shall be in accordance with the following locational criteria:

- R5-R10: A base density code of R5-10 shall be provided for all residential lots abutting Bussell Highway.
- R10-20: Medium densities of R10-20 shall be provided for all lots on an East-West axis in community garden strata clusters.
- R30: Medium density of R30 shall be provided for 1 lot in each community garden cluster (11) and 4 lots abutting the POS to be developed as Affordable and Aged and special purpose dwellings; and
- R30-40: A higher density code of R30-40 shall be provided for all lots on a North- South axis in the community garden strata clusters and those abutting the Village Square and Bussell Highway.

#### 4.8 Sustainability features

Sustainability infrastructure and design features based on those detailed in the Sustainability Features Plan (Appendix 16) will be implemented by the subdivider during construction of each stage following subdivision approval, in order to achieve the sustainability outcomes required by the provisions of Scheme Amendment 28.

#### 4.9 Affordable housing

Affordable housing outcomes will be implemented based on the affordable housing products and affordable living opportunities detailed in the Affordability Housing Strategy (Appendix 14).

#### **4.10 Land tenure and strata management summary**

The land tenure structure will be implemented based on either of two options proposed in the Land Tenure and Preliminary Strata Outline (Appendix 15), as follows:

- Option A: The Witchcliffe Ecovillage development will be comprised of 19 survey strata subdivisions and 5 green titled lots, which will jointly own an approximately 36.9 ha area of common public purpose land and community infrastructure via unit shares in an Ecovillage Common proprietary limited company. Covenants and strata bylaws will enshrine the Ecovillage sustainability principles across the development and ensure management, maintenance and depreciation of communally owned assets and infrastructure.
- Option B: Community Title Strata (should proposed legislative reform of the Strata Titles Act 1985 be completed prior to subdivision of lots.)

Preliminary Strata Management Statements and bylaws will be provided at subdivision application stage, as per Table 4. Additional Information.

### **5. LOCAL DEVELOPMENT PLANS**

A combination of Design Guidelines and Local Development Plans will be developed as a framework to guide built form with the specific outcomes of a sustainable ecovillage. These are to address the various elements of building, environmental response, materials, colours, scale, landscaping and streetscape, and the key requirements for onsite renewable energy, water and food production. Design Guidelines and Local Development Plans are to be developed for the entire ecovillage. These requirements will also be applied through the Strata by-laws.

### **6. OTHER REQUIREMENTS**

#### **6.1 Developer contributions**

Developer contributions will be required in accordance with AMR LPS1.

### **7. ADDITIONAL INFORMATION**

Additional reports and management plans shall be submitted to AMR prior to subdivision as per the following table:

**Table 4. Additional Information**

<b>Additional information</b>	<b>Approval stage</b>	<b>Consultation required</b>
Preliminary Strata management statements and bylaws or Community development Statement	Subdivision	AMR Shire
Draft building design guidelines and Local Development Plans	Subdivision	AMR Shire
Energy infrastructure provision and management plan	Subdivision	AMR Shire
Wastewater infrastructure management plan, including details on sites, securing long term public access, system design, and demonstration of likelihood of obtaining a licensed operator for the project	Subdivision	AMR Shire Dept. of Health DER (if required)
Urban water management plan	Subdivision	AMR Shire Dept. of Water
Water infrastructure management plan	Subdivision	AMR Shire
Village Centre Parking Strategy	N/A	AMR Shire

**Figure 1. Structure Plan Map (Amendment No.1)**

Figure 1. Structure Plan Map



**LEGEND**

	SPECIAL USE ZONE - ECOVILLAGE AGRICULTURAL LOTS
	SPECIAL USE ZONE - ECOVILLAGE WASTEWATER TREATMENT AND DEPOT
	SPECIAL USE ZONE - ECOVILLAGE COMMON
	RESIDENTIAL - ZONE AS SHOWN BY TAG
	VILLAGE CENTRE
	ACCEPTABLE HOLIDAY HOME LOCATION
	TOURISM
	POS
	PUBLIC ACCESS WAY
	PUBLIC ROAD
	PATH
	DAM
	500m MINERAL SETBACK
	DAVIS ROAD TIP BUFFER
	INDICATIVE LOT BOUNDARIES
	STRUCTURE PLAN BOUNDARY
	TREES TO BE RETAINED

**SPECIAL USE ZONE CONDITIONS**

Special Use Zone - Ecovillage Agriculture land shall not have dwelling entitlements and uses of the land shall be compatible with neighbouring land uses, ecovillage objectives and achieve suitable buffers as required by AMRSC.

Special Use Zone - Ecovillage Wastewater Treatment and Depot land shall not have a dwelling entitlement and will provide for community wastewater treatment, Ecovillage depot community purposes and agricultural lots.

Special Use Zone - Ecovillage Common land shall not have a dwelling entitlement, and will provide for Ecovillage communal purposes, including conservation management, water storage in dams, and water allocation to community gardens and agricultural lots, etc."

**STRUCTURE PLAN**

APRIL 2020



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## **PART TWO: EXPLANATORY SECTION**

### **1. PLANNING BACKGROUND**

#### **1.1 Introduction and purpose**

The Witchcliffe Ecovillage is a nationally significant project that aims to create a sustainable, community focused, and ecologically sensitive housing development, with a genuine commitment to affordability. It aims to achieve:

- 100% net renewable power generation on site;
- 100% self-sufficiency in water; and
- A high level of self-sufficiency in seasonal fresh food production.

This level of sustainability has never before been achieved in a developer led residential subdivision in Australia.

The objective of this Structure Plan is to clearly demonstrate the ability of the proposed Witchcliffe Ecovillage development to fulfil the statutory requirements of AMR LPS1 and Scheme Amendment 28 and satisfy all relevant State and local government planning policies and strategies.

#### **1.2 Land description**

##### **1.2.1 Location**

Witchcliffe is located approximately 9km south of Margaret River and 9km east of Redgate beach. It is one of a number of towns within the Shire of Augusta – Margaret River that have been identified for expansion as a village in the Leeuwin Naturaliste Ridge Statement of Planning Policy.

The Structure Plan area encompasses two freehold lots abutting the town of Witchcliffe, identified as Sussex Location 2807 and Sussex Location 2812 (Figure 2. Witchcliffe Ecovillage Location Map.) The land is bounded on west by Bussell Highway and Shervington Avenue, to the north by Mill Road, to the south by Davis Road, and to the east by four freehold rural properties.

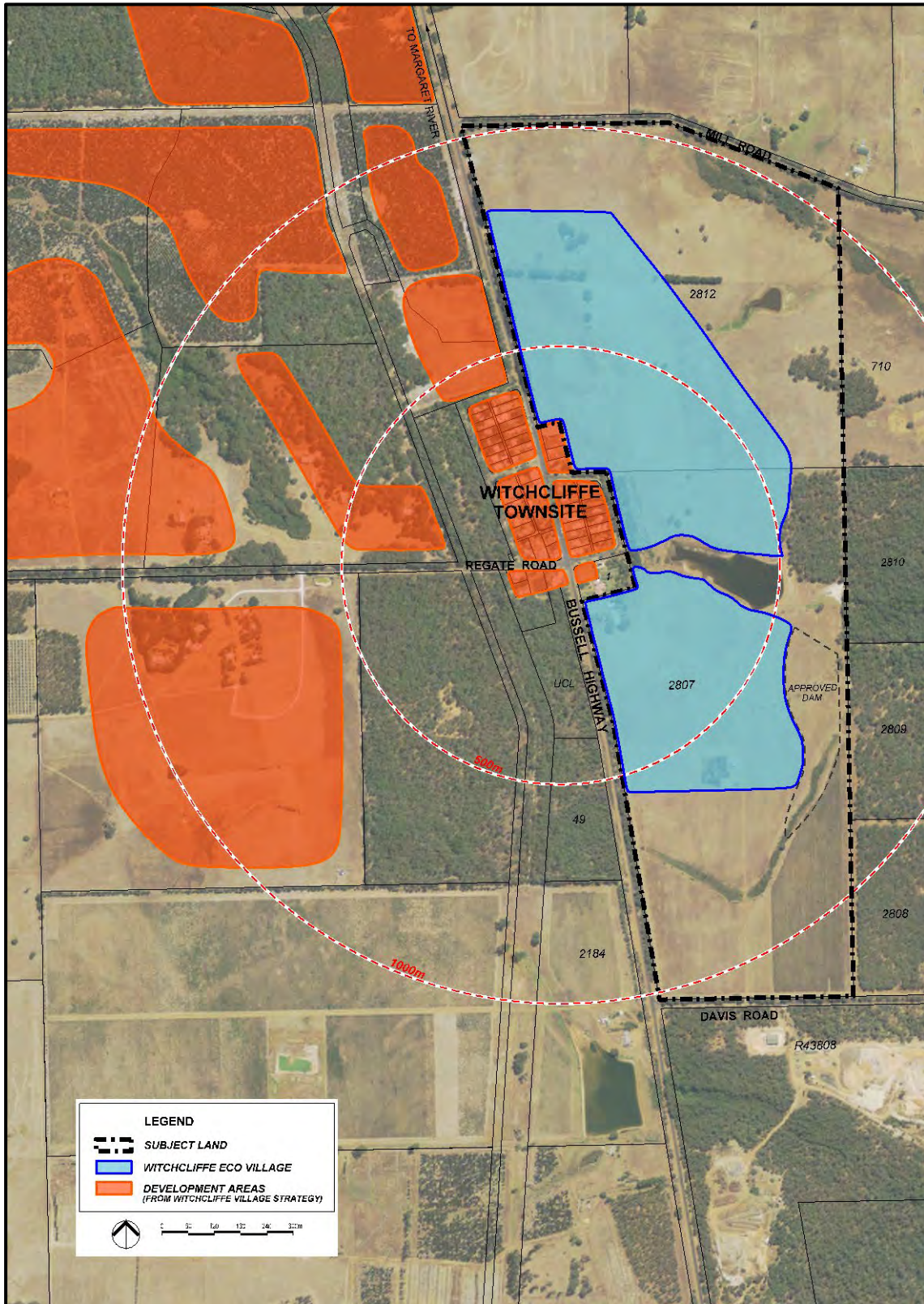
##### **1.2.2 Area and land use**

Location 2807 comprises 62.06 ha and Location 2812 comprises 57.05 ha, a total land holding of 119.11 ha. Both have been used historically for agricultural pursuits, most recently organic viticulture and conventional sheep agistment (Loc. 2807) and beef and organic vegetable production (Loc. 2812).

##### **1.2.3 Legal description and ownership**

Location 2807 was purchased by Hulme Developments Pty Ltd and Perron Developments Pty Ltd in 2010. Location 2812 was purchased by Sustainable Settlements Pty Ltd and Perron Developments Pty Ltd in June 2014. In March 2017, Sustainable Settlements Pty Ltd purchased Hulme Developments Pty Ltd's share of Lot 2807. The Sustainable Settlements and Perron Group joint ventures are held as tenants in common, and both properties are owned unencumbered (see Appendix 2, Certificates of Title). Michael J. Hulme is the sole director of both Hulme Developments Pty Ltd and Sustainable Settlements Pty Ltd. Lots 2807 and 2812 will be amalgamated prior to subdivision.

**Figure 2. Witchcliffe Ecovillage Location Map**



### 1.3 Planning framework

#### 1.3.1 Zoning and reservations

At the time of Structure Plan application in January 2016, Location 2807 and 2812 were zoned “Priority Agriculture,” however, the Witchcliffe Village Strategy designated the land as “Residential Cells 7 & 8,” (see Figure 3. Witchcliffe Village Strategy Residential Cells), and Scheme Amendment 28 to AMR LPS 1 (which was under consideration for approval by the AMR Shire) designated the two lots as “Future Development” (see Figure 4. Scheme Amendment 28 Map).

Scheme Amendment 28 has subsequently been approved by the Western Australian Planning Commission on 10th May 2017.

There are no existing reserves located within the Structure Plan Area.

**Figure 3. Witchcliffe Village Strategy Residential Cells**

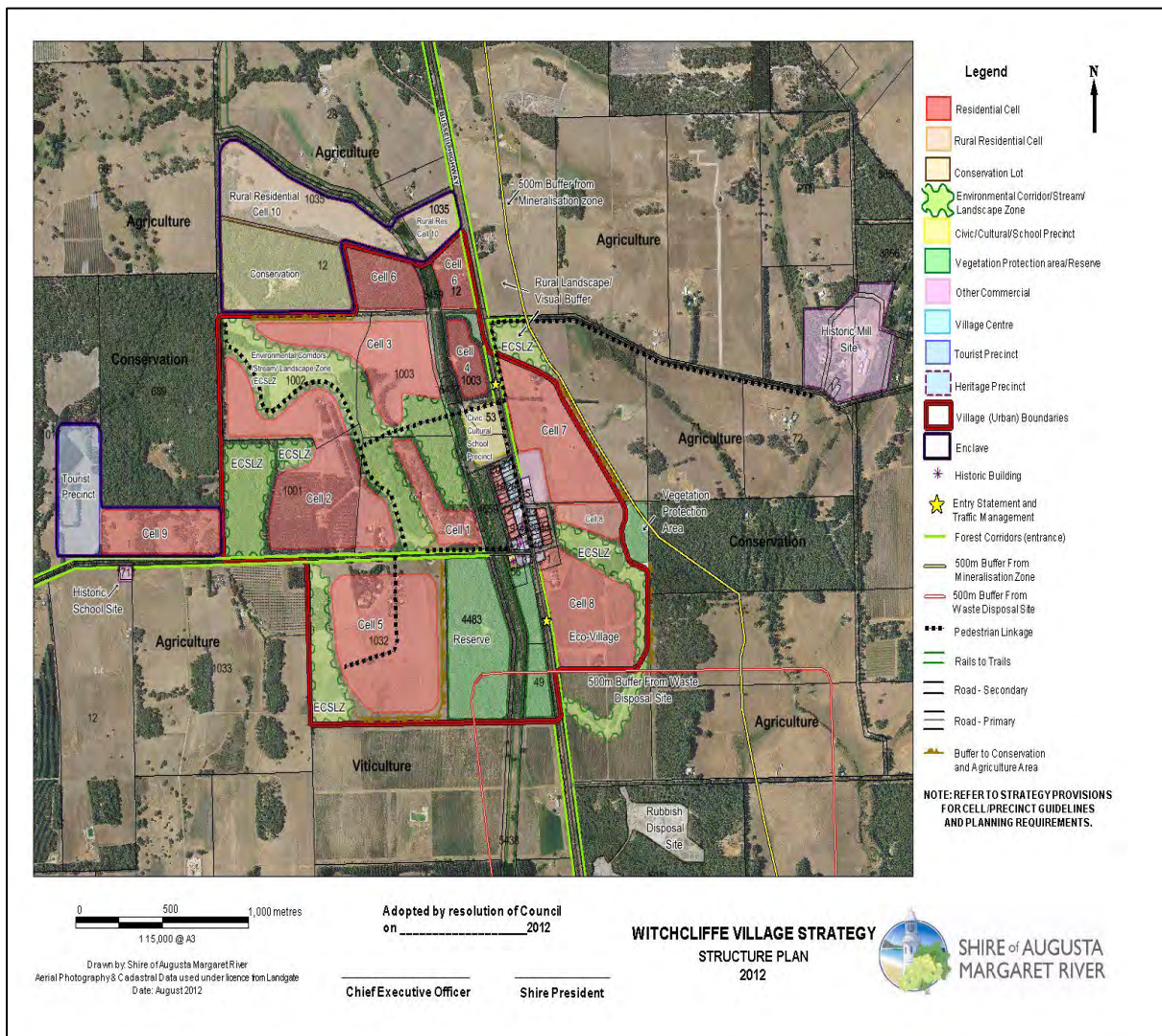
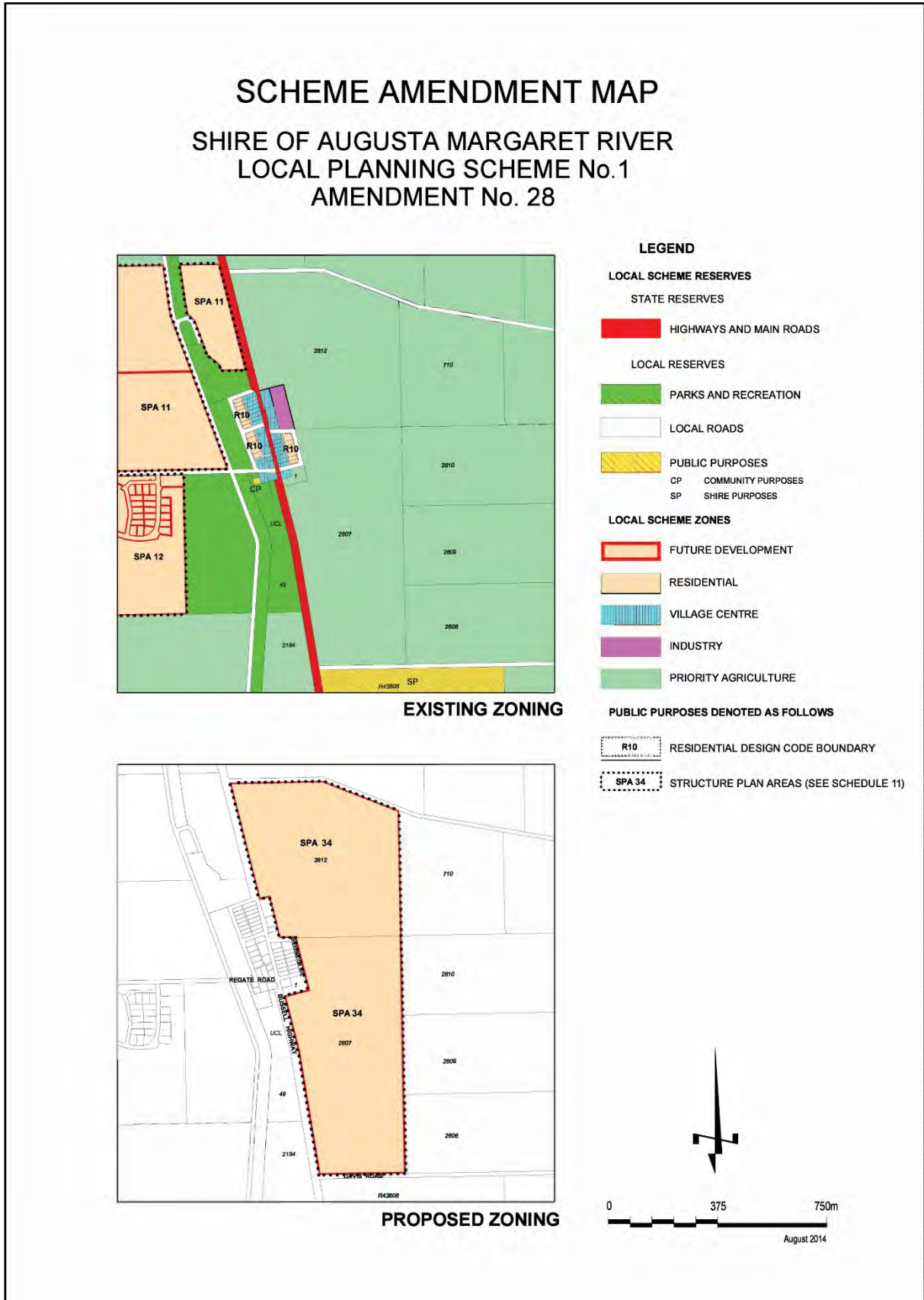


Figure 4. Scheme Amendment 28 Map



### 1.3.2 Regional and sub-regional Structure Plan

The Structure Plan Area is not subject to any higher level regional or sub-regional Structure Plans.

### 1.3.3 Planning strategies

#### 1.3.3.1 *State Planning Strategy 2050*

The Structure Plan is generally compliant with State Planning Strategy 2050. This is a broad framework to guide the direction of growth and development in WA, with the aim of creating sustained growth and prosperity through addressing the interrelated goals of “global competitiveness, strong and resilient regions, sustainable communities, infrastructure planning and coordination, and conservation” (2014). Specifically, the Structure Plan is in line with key strategic directions relevant to development in the south-west through:

- Protecting sensitive environmental areas;
- Providing infrastructure to supply sustainable water and energy;
- Reducing waste at a development and lifestyle level;
- Managing waste as a resource;
- Promoting agricultural production and avoiding land fragmentation by appropriately combining organic agriculture, productive community gardens and urban land use;
- Promoting the creation of a diverse and engaged community through designing the layout, lot diversity, community infrastructure and traffic management to prioritise people not cars;
- Including substantial sustainable local employment and economic growth opportunities within the development; and
- Planning for tourism development.

#### 1.3.3.2 *State Sustainability Strategy*

The Witchcliffe Ecovillage Structure Plan adheres in all senses to the principles of the State Sustainability Strategy (2003), which defines sustainability as “meeting the needs of current and future generations through an integration of environmental protection, social advancement, and economic prosperity” (p 24.) In particular, the Structure Plan:

- Addresses sustainable water management through the provision of all onsite domestic, commercial and agricultural needs through onsite capture and utilisation of rain and stormwater, onsite treatment and reuse of treated water for productive uses, mandatory use of water efficient appliances in all domestic and commercial buildings, water efficient landscaping throughout the ecovillage, and water efficient production of fresh food onsite in community gardens and organic agricultural enterprises;
- Provides an integrated energy efficient waste water management system to service all lots in the ecovillage;
- Encourages and prioritise alternative forms of transport including pedestrians, cyclists and electric cars and community carpooling;
- Provides 100% net renewable energy onsite, through a combination of photovoltaics and battery storage;
- Integrates solar passive lot layout and complementary building envelopes to ensure optimum solar orientation to all homes;
- Mandates a very a high standard of sustainable design and use of local sustainable materials in the built form;
- Protects and enhances existing bushland through covenants, regeneration, and ongoing

- community management (including restriction and control of domestic animals);
- Creating a “sense of place” and a strong sense of community through the provision of extensive productive community gardens, inclusive community infrastructure, and abundant natural and recreational open spaces;
- Has consulted and will collaborate with the local traditional owners, the Wardandi people, to provide artistic, educational, and cultural contributions to community facilities and landscaped areas;
- Provides for the creation of a dedicated affordable housing component; and
- Will provide multiple opportunities within the Ecovillage Village Centre and organic agricultural precinct for the development of sustainable goods, tourism-based businesses, and local employment opportunities.

The Witchcliffe Ecovillage aims to provide a model for sustainable development in Western Australia. As such, the Structure Plan has been created holistically to model best practice sustainability in all aspects of the development design. This means that all features of the development have been designed synergistically to meet multiple sustainability criteria—the waste water treatment system for example, had to be not just a sustainable water recycling solution, but also an energy efficient, environmentally sound, non-toxic, low input, affordable, and low carbon solution as well. This rigorous triple bottom line approach truly reflects the principles and objectives of the State Sustainability Strategy.

### 1.3.3.3 *Witchcliffe Village Strategy 2012*

The Structure Plan is generally compliant with the planning rationale, vision and objectives of the Witchcliffe Village Strategy (WVS), which aimed to “create a vibrant rural village within a forest and farm setting, with respect for the physical, environmental, and landscape character of the area, diversity in lifestyle choice and facilities, a strong sense of belonging, nurturing and celebrating local talent and industry, providing tourism experiences, and promoting human spirit”.

Specifically, the WVS requires Cell 8 to be developed as an ecovillage, and for Cell 7 to respond to AMR Hamlet Design guidelines, however, as the two cells are being developed in unison, these recommendations have been applied by the proponents to both cells. The Structure Plan is compliant in terms of housing; water and energy sustainability targets and innovation; approximate lot size and yield; buffer requirements; rehabilitation and conservation of all identified biodiversity assets; monitoring and maintenance of environmental stream flows; regard to health planning principles; and fire risk assessment and management.

Cells 7 and 8 were added to the WVS during the 2012 review; accordingly, some aspects of the original strategy are incompatible with the development of the Structure Plan area as a full-featured ecovillage, as follows:

- An area in the north-west of Lot 2812 is designated “Environmental Corridor/Stream Landscaping Zone” (ECSZ) in the WVS, however, as the area is not connected to adjacent remnant bushland or stream zones, and due to its location next to Bussell Highway, it will not provide significant habitat values to be considered a functional environmental corridor or stream landscaping zone. Its core function in the WVS appears to be to provide a visual buffer to the residential component of Lot 2812 from Bussell Highway and Mill Road.
- Therefore, the Structure Plan proposes that as there are other areas of higher conservation value on the site set aside for bush regeneration and conservation, this area should not be designated as an environmental corridor or conservation zone. In order to preserve the rural

outlook approaching Witchcliffe from Bussel Highway and Mill Road, the Structure Plan identifies this area for agricultural production and rural amenity in a “Special Use Zone - Ecovillage Agricultural” zone, enhanced by substantial shelter belts of productive and amenity tree plantings (as per Appendix 1, Public Open Space and Landscape Plan).

- The central dam area and related stream zone is designated an ECSZ in the WVS, however, there is no remnant vegetation in this stream zone, and the land is completely degraded. Due to its current state, and the fire hazard it would constitute to existing and future residents if it were revegetated to a natural state, it has been designated as community open space within a “Special Use Zone – Ecovillage Common” zone rather than a conservation area. It will be landscaped and managed as a landscaped corridor, with low fire risk indigenous plantings to encourage wildlife and maintain water quality, and to provide year round community amenity.
- The north-eastern creekline has been set aside as an additional conservation area. This is identified as “Conservation Area” in Figure 12. Witchcliffe Ecovillage Development Concept Plan, and included in the “Special Use Zone – Ecovillage Common” in the Structure Plan (Figure 1). Although this is not identified as an environmental corridor or stream zone in the WVS, it has been assessed in the ECSZ Management Plan (Appendix 5) as containing valuable remnant riparian vegetation, it does not pose an immediate fire risk to residential areas, and it is considered to have greater potential as an environmental corridor and stream zone than the north western ECSZ area.
- The WVS Planning Policy Statements recommend no expansion or creation of new dams on Cell 8, however, a dam on the southern creekline is already approved, has been assessed by Department of Water as a sustainable dam, and will be constructed prior to subdivision. No further unapproved dams will be constructed on Cell 8, consistent with the Planning Policy Statements of the WVS. The northern dam on Cell 7 will be enlarged to accommodate the greatly increased stormwater flows generated by the urban development, and will be equipped with best practice bypass infrastructure.
- This is consistent with the State Sustainability Strategy objective, quoted in WVS 7.1, of providing “long-term, innovative water supply options that have broad sustainability outcomes.” The additional water storage is required for the Ecovillage to function as a fully featured ecovillage, (providing 100% self-sufficiency of water and substantial fresh food production) as storm water created on site by urban runoff will be effectively stored on site for re-use in open space, community gardens, and agricultural ventures.
- The WVS identifies commercial expansion of approximately 5 ha to the north east of the existing town centre within the Structure Plan area. The Structure Plan is generally compliant with the strategy, with some modification to boundaries and commercial areas in order to better integrate the proposed Witchcliffe Ecovillage layout with the existing town centre. A small community village centre, including a village square, community centre, creative hub, food hub, tourist accommodation, oval, and sporting facilities is proposed in an area diagonally adjacent to Shervington Avenue. The Village Square is designed to provide community, recreation, economic and employment opportunities for Witchcliffe Ecovillage and Witchcliffe residents, as well as cater for the tourism that the Ecovillage will generate. The scale of the community village centre will complement the town centre development provided for in the WVS, and will ensure that community facilities required for the Ecovillage will not be reliant on the progression of other Witchcliffe developments.

- The WVS identifies a potential site for a public oval in Cell 2, west of Bussell Highway, however, development delays, a lack of water available for irrigating the oval, and better connection to the town centre, make the provision of the oval in the Ecovillage an improved community outcome.

#### *1.3.3.4 Augusta-Margaret River Shire Local Planning Scheme 1*

As per 1.3.3.3 above, the Witchcliffe Village Strategy requires Cell 8, and allows Cell 7, to be developed as an Ecovillage, however, the specific zoning to provide for the development of a full-featured ecovillage does not exist within AMR LPS1. The proponent is therefore utilising the existing Future Development Zone as the most fitting zoning to provide for the planning and development of the Ecovillage. This rezoning was applied for in Scheme Amendment 28, which was approved by the Minister on 10th May, 2017. A basic amendment to the Scheme will be submitted after subdivision, in order to incorporate the zones designated by the Structure Plan, consistent with advice from planning officers at DPI and AMR.

Otherwise, the proposed Structure Plan is consistent where appropriate with the aims at 1.6 of the Scheme, in particular the protection and provision of:

- Biodiversity and environmental values;
- Landscape and visual qualities;
- Lifestyle and community identity;
- Cultural heritage values;
- Integration of sustainable food production;
- Tourism and economic opportunities;
- Effective sustainability features;
- Community infrastructure and amenity; and
- Alternative transport strategies.

### 1.3.4 Policies

#### *1.3.4.1 South West Framework*

The South West Framework (SWF) is a regional strategy that provides a broad planning blueprint that seeks to guide the future development of the South West region until 2029. The Witchcliffe Ecovillage complies with all of the broad objectives of the SWF, namely by:

- Addressing the needs of an ageing population through creating a whole of life cycle development, with lot size and housing product diversity, dedicated affordable over 55's housing products, and the promotion of active and engaged community through pedestrian friendly site design, accessible community gardens and inclusive community infrastructure;
- Promoting sustainable communities through a design which promotes a vibrant mix of urban densities and uses that is sensitive to and enhances the identity and character of Witchcliffe;
- Incorporating site sensitive climate design principles including orientation, siting and passive climate control;
- Encouraging diversity of housing product through lot sizes, built form and affordable housing products;



- Minimising the development footprint through the sustainable use and re-use of water, energy and other resources within the project;
- Identifying and protecting remnant vegetation;
- Revegetating cleared areas with productive and indigenous landscaping;
- Providing renewable energy sources;
- Encouraging alternative transport modes to reduce emissions; and
- Achieving best practice water sensitive urban design.

#### *1.3.4.2 Leeuwin-Naturaliste Ridge Statement of Planning Policy*

The Leeuwin Naturaliste Ridge Statement of Planning Policy (LNRSP) provides a strategic planning framework for the Cape to Cape region promoting sustainable development and land resource management with a vision to achieve “creative, vital and sustainable communities living in balance with economic development and the unique landscape and environmental values of the Leeuwin-Naturaliste Ridge policy area”.

The Witchcliffe Ecovillage goes further in meeting the policies and objectives of the LNRSP than any other development in the LNR region through:

- The provision of an innovative sustainable nodal settlement design that will accommodate population growth in Witchcliffe and create vital tourism and sustainable agricultural employment opportunities, whilst enhancing and reinforcing the character, function and focus of the existing Witchcliffe town centre;
- The creation of a unique clustered subdivision layout that retains a high proportion of land for agriculture, horticulture, recreation and conservation;
- The mandating of comprehensive design guidelines to ensure a high level of sustainability is achieved at household level, as well as to ensure that the Ecovillage consolidates and enhances the existing character of Witchcliffe;
- The provision of a state of the art microgrid and renewable technology infrastructure, as well as solar orientation, to ensure 100% self-sufficiency energy produced onsite;
- The design of best practice water capture and reuse to ensure 100% self-sufficiency in water; and
- The conservation and rehabilitation of remnant bushland and degraded streamzones.

In addition, the Witchcliffe Ecovillage Structure Plan meets all LNRSP urban design criteria and policies regarding land use diversity, water sensitive design, landscape elements, innovative and efficient servicing solutions, prioritising of walking and cycling, safety, privacy, and waste management.

#### *1.3.4.3 AMR Development Investigation Areas Design and Development Policy and Rural Hamlet Design Handbook*

In 2011, AMR adopted a Margaret River Development Investigation Areas Design and Development Policy (DIADPP) to implement the essential elements of the Rural Hamlet Design Handbook (RHDH) (2009). The WVS requires that Cell 7 respond to the provisions of the RHDH, however, as Cell 7 & 8 are being developed simultaneously, the proponent will apply those provisions across the development as a whole.

The Witchcliffe Ecovillage project complies with the principles of the policy and the RHDH by providing for an alternative sustainable community orientated hamlet with:

- A greatly reduced development footprint and extensive areas for open space and food production;
- A commitment to ecological restoration and protection;
- Innovative, 100 percent sustainable approaches to the provision of energy, water and waste water services, to ensure low environmental impacts and long term, monitored reductions in the Ecovillage’s carbon footprint;
- A community orientated village that complements the strong sense of place and character of Witchcliffe through the quality of design of built form and landscaping;
- A focus on incubating appropriately scaled business and local employment opportunities through sustainable agriculture, technology and tourism; and
- A commitment to the concept of sustainable rural land use and land management practices through the organic certification of the agricultural components of the Ecovillage, and organic management of the community gardens mandated in the strata by-laws.

The Witchcliffe Ecovillage is an outstanding opportunity to create a “showcase for the future” and alternative to suburban sprawl, and will be one of the first proposals since the adoption of the DIADPP to fully comply with the vision and principles of the RDHD.

#### *1.3.4.4 Liveable Neighbourhoods*

Liveable Neighbourhoods (LN) provides a benchmark for best practice urban design and land use planning for townsite development. The Witchcliffe Ecovillage proposal demonstrates a high level of compliance with the principle aims of LN through the following:

- The provision of a robust innovative path network which prioritises pedestrian and cycle movement throughout the village to encourage safe, efficient and pleasant walking and cycling, while providing a robust and legible street network for vehicles.;
- The siting of the majority of lots within the 400m walkable radius of the town centre, and all lots within 600m;
- The provision of ample opportunities for local employment, retail and community activities through the creation of a vibrant Community Village Centre, mixed use lots, community gardens, food and digital hubs, and strata agricultural lots, encouraging the development of a truly “walkable, liveable neighbourhood” in Witchcliffe, with a reduced reliance on car travel to and from Margaret River;
- The inclusion of aged and dependent person dwellings, as well as sensitive landscaping design of community buildings, gardens and open spaces, will ensure accessibility and inclusivity for all residents and visitors;
- The Ecovillage focus on sustainable living, technology and agriculture will foster a strong sense of community, local identity and sense of place;
- The provision of a diversity of lot sizes as well as a commitment to providing a dedicated affordable housing component will cater for the diverse housing needs of the wider community;
- The statutory protection of conservation areas in special use zones, provision of environmentally sensitive landscape design and agricultural practices, and management of domestic animals through strata by-laws, will protect and enhance existing biodiversity assets; and

- Through the design and provision of innovative wastewater management treatment systems, water capture and storage, renewable energy production and off grid battery storage, and organic productive community gardens and agricultural lots, the project meets the LN focus on sustainable development, urban water management and high quality landscaping and open space provision.

### 1.3.5 Pre lodgement consultation

Consultations with all relevant stakeholders have been held over an extended period prior to and during the preparation of the Structure Plan as per the following table:

**Table 5. Pre-lodgement Consultation**

Agency	Consultation Date	Method of consultation	Summary of outcome
<b>Landowners adjacent to the structure plan area:</b>  Witchcliffe ratepayers  Adjacent neighbours  Shervington Road residents	19-20.02.2011  Various  09.02.2015	Ratepayers invited to 2 workshops  Private conversations  Conv. with Steve Harrison rep. Shervington residents' concerns re outlook from their houses	115 attended, strong support for Ecovillage concept  Generally supportive  Major change to Development Concept Plan resolved residents concerns (Oval relocated and row of lots on Shervington Rd removed)
<b>Traditional land owners:</b>  Members of Webb and Harris families(Wardandi): Vern Webb Dorothy Blurton (nee Harris) Jack Hill Keith Harris Gloria Hill Wayne Webb	21.10.15	Informal meeting at Witchcliffe facilitated by Brad Goode to discuss project and potential collaboration	Supportive of project Due diligence report prepared by Brad Goode and Associates
<b>Relevant community groups in the area:</b>  Witchcliffe Progress Association  Margaret River Affordable Housing community group		M. Hulme attended several meetings.  M. Hulme and M. Sheridan meeting at community resource	General support for project though WPA resolved to not make any group endorsements  Supportive of Witchcliffe Ecovillage Affordability strategies. Established that project s unable to provide opportunities for

Agency	Consultation Date	Method of consultation	Summary of outcome
		centre	crisis care or mental health housing needed in AMR
<b>Augusta Margaret River Shire:</b>			
John McKinney	28.08.15	Litoria Ecoservice meeting	Provision of Shire's Revegetation Guidelines
Alison Edmunds, David Nicholson	03.09.15	Meeting with W. Prangnell	Waste management service and rubbish truck access
Alison Edmunds	02.10.15	Litoria meeting	Provided input into current groundwater monitoring arrangements relating to Davis Road landfill site.
David Nicholson	16.09.15	Meeting with MRWA	
Ilya Hastings, Matt Cuthbert, Nick Logan	6.10.15	Meeting W. Prangnell	Discussed traffic access and management POS strategy.
Matt Cuthbert	24.11.15	Meeting	
	02.12.15		
Alison Edmunds, Kim	07.12.15	Email re resolving zoning discrepancies between SA28 and SP	Presented draft SP. Confirmed preparation of SP to comply with new DoP format. Either submit changes as "Additional Uses" in SA28 to Council or follow up with SP with basic amendment post subdivision
Nolan Nathan Hall, AMR Fire Officer	01.12.15	Meeting to discuss prelim water and wastewater management	Nathan Hall unavailable to review BMP in Dec prior to SP submission
		Email	
<b>Department of Planning:</b>	20.11.15	Phone conversation with DoP Bunbury	Re. DoP new structure plan format. WEV SP to be submitted under new format, SA 28 already lodged and advertised, leave as is.
<b>Department of Water:</b>	15.07.13	Application to DoW, meeting onsite with Chris Mulcahy to evaluate dam	Confirmed that the proposed dam is not on a controlled watercourse and does not require DoW authorisation, however, on request, DoW assessed both existing and proposed dams on Lot 2812 as having low risk to downstream users or environment. All DoW recommendations re flow bypass systems will be followed.
	05.09.13	Letter confirming DoW support for dam	Confirming the water licensing requirements for strata developments.
	07.09.15	Phone call and email with Chanelle Dumas	Clarified DoW's and DPI's approach and response to the concept of retaining Foreshore/streamzone areas within community/strata ownership
	17.11.15	Litoria Ecoservice meeting with Daniel Wong	
<b>Department of Environmental Regulation:</b>	10/09/15—16/12/15	Email & phone communications with Caron Goodbourn	Confirming DER licencing requirements for WWTP
<b>Department of Education:</b>	N/a		

Agency	Consultation Date	Method of consultation	Summary of outcome
<b>Department of Indigenous Affairs:</b>	October 2015	Search of IHIAA	No indigenous or cultural sites located within SP area
<b>Main Roads WA:</b>	16.09.15	Meeting with Lou Palandri & Paul Davies & AMR	Redesign plan to maximise separation of intersections on Bussell Hwy
<b>Heritage Council:</b>	N/a		
<b>Department of Transport:</b>	N/a		
<b>Department of Health:</b>	27.10.15	WP meeting with Richard Theobold, Clemencia Rodriguez & Allen Tan	Local Water Management Strategy revised to reflect better understanding of regulatory framework gained through consultation
<b>Environmental Protection Agency:</b>	N/a		
<b>Western Power:</b> David Martin, Cameron Parotte	27.08.15 15.09.15	Meetings	Discussed project's energy objectives.
Andy Kondola, Shervin Fani	01.10.15 27.11.15	Emails	Determining indicative costs of various grid connection options
	06.01.15	Email	Confirmation of grid capacity to supply whole ecovillage
<b>Alinta Gas:</b>	N/a		
<b>Water Corporation:</b>	N/a		
<b>National Broadband Network:</b>	11-28.08.15	Multiple emails	Applied to connect each home and business to the NBN
Alex Zimmerman	29.08.15		Confirmation of approval for connection to NBN.
	07.12.15		NBN contract signed by MH.
<b>Strata Title information:</b>			
Landgate: Glenda Kirby, Senior Business Analyst, Strata Title Reform Project	8/01/15- 27/01/15	Emails	Initial contact for information regarding proposed Community Title reform
Shaun Masfarlane, Senior Lawyer, Strata Titles Act Reform	18/01/16	Phone, email	Advice regarding timing of reform— information to be released in February 16
Ron Acott, Strata Title Consultancy Services	04/15 12/15	Phone, email	Consultations contributing to strata management outline.

## 2. SITE CONDITIONS AND RESTRAINTS

### 2.1 Biodiversity and natural area assets

#### 2.1.1 Natural vegetation

The site vegetation is predominantly cleared and significantly altered by agricultural production: on Location 2807, by cattle grazing and dairy farming since the 1930s, and on Location 2812, by organic viticulture since the 1990s. The native vegetation is characterised by:

- A distinct 3ha area of remnant vegetation centrally located along the Eastern boundary of the site;
- A strong band of remnant native vegetation along the northern tributary;
- A band of riparian regrowth along the downstream portion of the southern tributary;
- A range of paddock trees predominantly Peppermints (*Agonis flexuosa*) Marri (*Corymbia callophylla*) and Karri (*Eucalyptus diversicolor*);
- A degraded stand of Marri along the eastern boundary just south of the northern tributary; and
- A mix of riparian species planted as part of a plantation style, predominantly eastern states vineyard buffer immediately east of the Witchcliffe townsite.

There are four identified vegetation complexes, as shown in Figure 5, Vegetation Map:

- Wilyabrup (W1): Tall open forest of *Eucalyptus diversicolor*-*Corymbia callophylla*-*Allocasuarina decussata*-*Agonis flexuosa* on deeply incised valleys in the hyperhumid zone;
- Wilyabrup (Ww1): Tall open forest of *Eucalyptus diversicolor* (karri) - *Agonis flexuosa* (WA peppermint) – *Callistachys lanceolata* (native willow/wonnich) with some *Corymbia callophylla* (marri) on flats and valleys in the hyperhumid zone;
- Cowaramup Uplands (C1): Open to tall forest of *Corymbia callophylla* (marri) –*Eucalyptus marginata* (jarrah) – *Banksia grandis* (bull banksia) on lateritic uplands;
- Cowaramup Valleys (Cw1): Mixture of open forest to woodland of *Eucalyptus diversicolor* (karri) - *Corymbia callophylla* (marri) and woodlands of *Eucalyptus marginata* (jarrah) – *Corymbia callophylla* (marri) on slopes and low woodland of *Melaleuca preissiana* (moonah) – *Banksia littoralis* (Swamp banksia) on depressions.

Of these, both Ww1 and Cw1 are identified as vulnerable vegetation complexes (with extents below 30% of their pre European coverage or less than 1500 ha total extent remaining) in line with the State Government's commitment to the National Objectives Targets for Biodiversity Conservation.

No declared or priority flora species were identified during the vegetation assessment.

A number of environmental weed species considered as high priorities for control were identified and mapped as part of the assessment (see Appendix 3, Flora and Vegetation Assessment.)

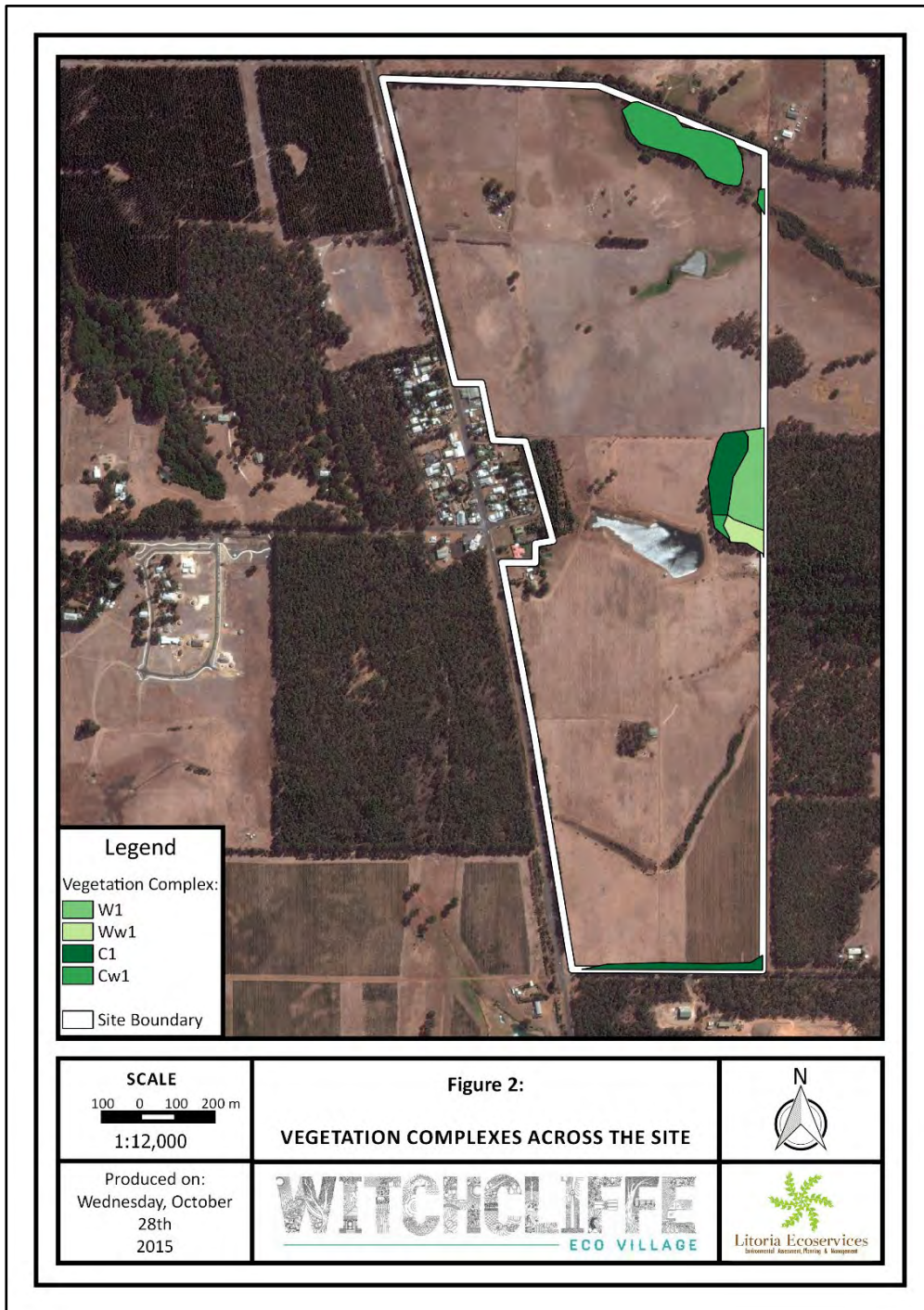
The vegetation on the site has been assessed using a condition assessment based on the Vegetation Condition Scale of Keighery (1994). Based on this system, condition ratings for the remnant and regrowth native vegetation found on site are described as follows:

- The central eastern remnant was assessed as good to very good condition;
- The central, southern remnant was assessed to be completely degraded;

- The north eastern remnant was assessed as completely degraded;
- The northern tributary was assessed as predominantly good or very good condition; and
- The vegetated portion of the southern tributary was assessed as degraded.

The remaining areas of the property were considered to be completely degraded, dominated by non-local landscaping, plantation style buffer plantings, pasture, agricultural or windbreak species with only scattered, isolated local natives. For a more detailed assessment of site vegetation, refer to Appendix 3, Flora and Vegetation Assessment.

**Figure 5. Vegetation Map**



### 2.1.2 Natural area and biodiversity assets

The Structure Plan area is located within the Southwest Botanical Province of the Southwest Australia Eco-region, globally recognised as one of the world's 34 (and Australia's only) biodiversity hotspots. Home to 43 threatened fauna species, the Margaret River region generally is an area of great conservation significance, and development within the region needs to proceed responsibly, with care taken to minimise the impact of development on existing biodiversity features, and, where possible, to enhance and improve conservation outcomes.

The site's key biodiversity assets are concentrated in 3 separate areas and will be protected as identified in Figure 1. Structure Plan Map, and Figure 12. Witchcliffe Ecovillage Development Concept Plan, as Conservation areas within a "Special Use Zone – Ecovillage Common" zone:

- The Northern creek conservation zone (NCCZ), which typifies a relatively healthy riparian vegetation complex, with a large section identified in very good condition. This creekline vegetation extends unbroken through several adjacent properties and forms a valuable environmental corridor to remnant bush to the south-east.
- The Eastern remnant bush conservation zone (EBCZ). This site is directly adjacent to a large area of privately owned bush to the east which is known to provide habitat to at least two threatened species; and contains a small area of vulnerable Cw1 vegetation complex.
- The Southern creek conservation zone (SCCZ), which, whilst not currently of high conservation value, has been part of a successful revegetation and monitoring programme for several years. In time, and with further revegetation to the east of the approved dam, this area will provide important riparian habitat and linkages to remnant bushland to the east of the Structure Plan area.

### 2.1.3 Flora and fauna

#### 2.1.3.1 *Flora*

A total of 110 plant species were recorded during the Flora and Vegetation Assessment (FVA) survey. Of these, 77 native species from 50 genera were recorded. These species are listed in the FVA, Appendix 1.

No declared rare or priority flora species were identified.

#### 2.1.3.2 *Fauna*

The Fauna and Habitat Assessment survey recorded a total of 35 vertebrate fauna including frogs, birds and 5 mammal species. Of the threatened or priority species identified through a DPaW Threatened and Priority Fauna database search, the following were either directly observed on site, evidence of the species was observed on site, or they were predicted as having potential to regularly utilise the site:

- *Pseudocheirus occidentalis* (Western Ringtail Possum)—not observed on-site but recorded nearby;
- *Isoodon obesulus* subsp. *fusciventer* (Quenda)—diggings observed in NCCZ;
- *Calyptorhynchus baudinii* (Baudin's Cockatoo)—frequently observed feeding on Common Storksbill (*Erodium cicutarium*), up to 70 birds;



- *Calyptorhynchus banksii* subsp. *Naso* (Forest Red-tailed Black-Cockatoo)—not observed;
- *Calyptorhynchus latirostris* (Carnaby's Cockatoo)—not observed;
- *Phascogale tapoatafa* ssp. (WAM M434) (Brush-tailed Phascogale)—not observed but recorded nearby; and
- *Tyto novaehollandiae* subsp. *novaehollandiae* (Masked Owl)—not observed.

In order to improve habitat conservation for these target species, all identified valuable habitat vegetation is to be protected and managed in Conservation zones and community open space, mature paddock trees will be retained wherever possible, and landscape and revegetation plans will prioritise forage and habitat plantings to promote specific threatened species. Domestic and feral animal management will be included in strata by-laws (in particular, domestic cats will not be allowed in the Ecovillage, and domestic dogs will be tightly controlled to protect nocturnal species) and community education and citizen science programs will be facilitated and encouraged. It is anticipated that these measures will significantly improve conservation outcomes for these target and other fauna species to a level which would not have been achieved if the land had remained as farmland and vineyard.

Due to observation during the survey of Common brushtail possums on-site, and Western ringtail possums nearby, fauna spotters will be employed during any removal of vegetation located in the non-indigenous plantation buffer plantings adjacent to Shervington Avenue, and replacement landscape plantings in this area and in parkland surrounding the central dam will feature possum habitat trees, specifically *Agonis flexuosa*.

Due to the significant number of Baudin's Cockatoo's recorded feeding on the weed species *Erodium cicutarium*, which is likely to be impacted upon by construction, landscaping, and revegetation in some areas, landscape plantings will also include fast growing cockatoo forage species. If considered appropriate following consultation with experts, the proponent will undertake to provide artificial nesting hollows in suitable trees.

#### 2.1.4 Biodiversity assets land tenure

The existing remnant bushland and stream zones are currently located on freehold land and have no protection measures or management strategies in place. AMR does not require the conservation areas to be ceded as Reserves. The Structure Plan proposes to protect and enhance these assets through binding Conservation Area Management Plans embedded in the Witchcliffe Ecovillage Common Company's memorandum and articles of association, to the satisfaction of AMR, at subdivision.

#### 2.1.5 Existing and proposed constraints

##### 2.1.5.1 *Tree pathogens and decline*

The AMR State of Environment Report (2009) recognises that the Shire is affected by a range of plant pathogens and associated tree declines that have the potential to significantly impact upon the Shire's biodiversity values and cause serious economic impacts in the region. The proponent has attended several workshops conducted in the region by the Centre of Excellence for Climate Change and Woodland and Forest Health and has financially supported their research into Marri canker.

There is evidence that a significant proportion of trees in the remnant bush areas within the Structure Plan area and adjacent private bush properties are infected with Marri cankers (*Quambalaria* sp) and dieback (*Phytophthora cinnamoni*). It will be important, therefore, that the Conservation Area Management Plan administered by the Ecovillage Common Company includes an Environmental Hygiene Plan to guide any management works, revegetation or public access within the Conservation

Areas. The proponent will continue to liaise with the Centre of Excellence for Climate Change and Woodland and Forest Health in order to remain updated with research and potential treatments.

#### *2.1.5.2 Climate change/decreasing rainfall*

The CSIRO's report, Climate change in the Southern and South-western flatlands, contains a range of climate change projections for south-west WA, dependant on scenarios which assume either globally reduced, stabilised or increasing CO<sub>2</sub> emissions. Across each scenario, the report predicts a high chance of increased average temperatures (between 0.8 –3.4 degrees by 2090;) decreases in winter, spring, and annual rainfall; increased solar radiation; decreased winter wind speeds; increased evaporation rates; and increased intensity of heavy rainfall, bushfires and drought events. Whilst the Structure Plan area will not be directly effected by sea level rise, even at best case scenario projections it is likely that the remnant bush habitat and resident fauna within the Structure Plan area will be adversely affected by changes to temperature and rainfall.

While the Witchcliffe Ecovillage is intrinsically designed to significantly reduce the carbon footprint of its residents compared to conventional subdivisions, and the strata body will retain ownership, manage and protect the conservation zones, it is unlikely that the localised efforts of individuals will have any mitigating effects on the long-term impacts of climate change on the remnant bushland.

#### *2.1.5.3 Weeds*

The location of priority environmental weeds is identified in the Flora and Vegetation Assessment, (Appendix 3.) Recommended control methods and timelines for these species and other weed control to support revegetation is provided within the Environmental Corridor and Steam Zone Management Plan (Appendix 5).

#### *2.1.5.4 Feral and domestic animals*

The site is frequented and inhabited by feral foxes, cats, rabbits, rats and house mice. Cats and foxes predate upon vulnerable fauna species, in particular, Western ringtail possums, Bush rats and Southern brown bandicoots, as well as reptiles, birds and introduced rabbits and rodents.

Lot 2812 is currently utilised as grazing for a small herd of organic dairy cows that are excluded from the Northern creekline by electric fencing. Lot 2807 is currently seasonally grazed by a small flock of Merino sheep, which are excluded from the Southern creekline and central remnant bush.

The subdivision of land near remnant bushland always brings increased risk of predation to native fauna species through the introduction of domestic cats and dogs, a problem that is rarely dealt with during the planning stages of a subdivision. Native mammals, reptiles, amphibians and birds are all vulnerable to predation by domestic cats and dogs.

Management of feral, farmed and domestic animals will be required in order to protect indigenous fauna within the Witchcliffe Ecovillage.

## 2.1.6 Biodiversity and natural area management

### 2.1.6.1 *Conservation zones*

The AMR has indicated that it does not intend to undertake the management of the three identified biodiversity assets as vested Reserves, therefore it is proposed that the zones be designated as conservation areas included within land zoned Special Use Zone: Ecovillage Common, which will be managed by the Witchcliffe Ecovillage Commons Company.

The central dam area, which is identified as an Environmental Corridor/Stream Zone in the WVS, whilst considered too degraded and unsuitably located due to fire risk to be re-established as native bushland, will be landscaped to provide habitat for water birds, amphibians and quenda, and will be owned and managed by the Ecovillage Commons Company. A portion of wetlands to the west of the central dam is included in the AMR Shire managed public open space, as per the Public Open Space Schedule, Appendix 1.

All revegetation and management within the conservation areas will be carried out with reference to the Bushfire Management Plan: Residential Development, Appendix 9.

### 2.1.6.2 *Revegetation*

The Environmental Corridors and Stream Zone Management Plan (Appendix 5) provides a comprehensive plan for implementing significant revegetation across all of the streamzone areas. This revegetation will contribute significantly to the connectivity, ecological health, foreshore and waterway health, and the overall amenity of the development. Species have been identified from the reference list of locally native species occurring within the site or the local sub catchment. Please refer to the ECSZMP for full details of site preparation, ongoing maintenance, weed control and completion criteria.

In addition to natural streamzones, the Local Water Management Strategy (Appendix 8) identifies the provision of bioretention and wetland areas for stormwater treatment and reconstructed streams for water conveyance, vegetated with indigenous riparian plant species, which will also contribute to habitat values within the urban development area.

All revegetation within the conservation areas, public open space and Ecovillage common land will be carried out with reference to the Bushfire Management Plan: Residential Development, Appendix 9.

### 2.1.6.3 *Feral and domestic animal management*

Cats and foxes are the key feral predators of vulnerable native fauna in the Witchcliffe area, and control of these animals will be required if the protected conservation areas are to provide adequate habitat to sustain viable populations. In addition, control of predated feral animals, such as rabbits, in the Ecovillage Agricultural lots must be undertaken in conjunction with feral predator control in order to prevent rapid changes in the predation cycle which might impact on vulnerable native species. A feral predator management plan will be included in the Strata Management documents.

As the Ecovillage will be using landscape plantings and conservation areas to provide and protect habitat for native fauna throughout the Structure Plan area, it will be necessary to impose strict controls on the ownership of domestic animals. It is anticipated that the Witchcliffe Ecovillage will be a subdivision where nocturnal marsupials, such as quenda, wambenger, koomal, and ngwayir, will be welcomed into community gardens and backyards, encouraged and sustained by native plantings,

observed during regular citizen science surveys, and appreciated and protected by environmentally aware residents.

The Strata Management Statement will encourage this vision by strictly regulating domestic animal ownership and management; in particular, by mandating that:

- No domestic cats will be permitted within the Witchcliffe Ecovillage; and.
- In addition to complying with all AMR dog ownership requirements, all domestic dogs within the Ecovillage must be contained within lot boundaries; restrained on a leash whilst in public and common areas; and must be kept contained inside dwellings or garages at night.
- Animal husbandry within areas zoned “Special Use Zone – Ecovillage Agriculture” will require adequate fencing and management plans in order to prevent damage to conservation zones through browsing or nitrification.

#### 2.1.6.4 *Community education*

All future residents will take part in an Ecovillage Induction upon purchase of blocks in order to familiarise them with the environmental objectives of the project. This will include information regarding management of pets, restrictions regarding invasive plant species, bush area access hygiene measures, and recommendations for fauna friendly landscaping choices.

It is proposed that a “Friends of ...” group be established during the development of Stage 1 to take part in the revegetation, monitoring and management of the eastern bush remnant conservation area. It is envisaged that this community building exercise could be facilitated by Nature Conservation Margaret River Region (NCMRR) or other experienced community project coordinator.

In addition, it is hoped that the current Southern creek stream-monitoring program, conducted by NCMRR and involving local primary schools, will continue and expand to encompass the northern creek conservation area.

## 2.2 Landform and soils

### 2.2.1 Topographical features

The site is flat to gently undulating ranging from elevation between 73m and 86m AHD. The site generally falls from the Bussell Highway in the west toward agricultural land uses in the east.

Gradients within the residential part of the site range from:

- 1.2% east facing at the northern end of the site;
- 0% (flat) at the northern end of the existing townsite;
- 1.5% east facing typical over the southern portion of the site; and
- 6% maximum grade facing east in the south east corner of the site.

The Karridale-Tooker 1:50,000 Regolith Landform Resources sheet indicates that the shallow soils beneath the site were likely to comprise gravely silty sands of alluvial origin and ferruginous duricrust overlying mottled soils. Duricrust is a rock like layer of cemented material that occurs in unconsolidated sediments, often close to the ground surface and is often referred to locally as ‘ironstone’. Such layers are usually formed by cementation as a result of groundwater movement and once formed, limit the downward percolation of rainwater.

The northern portion is silty sand overlying sandy clay commonly associated with Cowaramup flats (CO). The upper sand layer is typically 0.5m to 1m thick and the underlying sandy clay is firm to very firm, unreactive and only isolated occurrences of strongly cemented duricrust were encountered. The central portion east of the town site are Cowaramup wet flat (COw) and Cowaramup wet vales (CVw) land units which are characterised by drainage depressions and swampy floors having constraints to development. The southern portion of the site comprises Cowaramup Flats (and Gentle slopes C) and Wilyabrup low slopes (W) land units. This land unit is well drained and has minor limitations to development with soils comprising gravely sands and loams. Shallow duricrust has been previously broken up and removed during development of the previous vineyard development with some of the material removed remaining stockpiled onsite.

A Geotechnical site investigation report, including a more detailed description of the site, results of site testing including test pits excavations and soil sampling and geotechnical advice regarding site classification is included as a technical report attached at Appendix 7.

The acid sulphate soil risk map published by WAPC in 2005 identifies the majority of the site as no risk, with class 2 moderate to low soils along wetter soils associated with wet valley floors.

Class 2 categorises a moderate to low risk of acid sulphate soils occurring within 3m of the natural soil surface but high to moderate risk below 3m. It is very unlikely that acid sulphate soils will occur on this location based on excavation of existing dams on the site in these areas and no history of acid sulphate soils being encountered on other sites in the Witchcliffe townsite area. Site testing of soil parameters—pH (field) and pH (field, oxidised)—has been carried out at higher risk locations as part of the geotechnical investigation.

### 2.2.2 Land capability

Geotechnical investigation of the site has identified that the land is capable of use for residential development and that all of the development lots should achieve a class S site in accordance with AS2870 - Residential Slabs and Footings with minimal modification. Areas of the site with more significant development constraints are retained in open space areas including the existing and approved dams, riparian vegetation, and areas identified for stormwater management and open space.

## 2.3 Groundwater and surface water

### 2.3.1 Conditions

The site lies at the north-western extreme of the Chapman Brook catchment with no surface water inflow onto the site other than stormwater runoff from Shervington Avenue within the Witchcliffe townsite. Drainage from the site moves in an easterly direction onto adjoining farmland. Runoff is also collected on the site in three water storage dams (two existing, one approved) and bypass structures provide streamflows downstream in line with Department of Water guidelines.

The existing small dam on the northern streamline is to be expanded as a storage dam to collect stormwater runoff for use within the development and to maintain peak flows downstream inline with predevelopment. The existing and approved dams also provide attenuation of stormwater flows and enable capture and reuse of urban stormwater runoff within the development. A diagram showing water balance for the Witchcliffe Ecovillage is included below in Figure 6, Witchcliffe Ecovillage Water Cycle.

The properties support three main and one minor watercourse. The watersheds of each of the watercourses originate on site and flow into the Chapman Brook through properties to the east as shown in Figure 8, Witchcliffe Ecovillage Site Features. The middle creek line supports an existing 50ML dam with a first flow bypass. The northern creek line has been fenced and is in good overall condition. The northern minor creek is dominated by weed species and its natural stream form has been highly modified.

The southern creek line contains a mix of vegetated and cleared areas that have undergone significant revegetation by the proponent. The property has AMR approval for a second dam, approximately 80ML in size that is yet to be constructed. This dam has recently been endorsed by the Department of Water (DoW) after a request from Sustainable Settlements Pty Ltd to undergo a full sustainability assessment of the dam by DoW. Dam bypasses will be incorporated to ensure that there are no associated negative downstream impacts from either of the dams on the property.

Northern and central portions of the site are generally flat with soils of the site of medium to low permeability with reasonable depth to groundwater (greater than 1m) in the northern part of the site and localised standing surface water after larger rainfall events around the central western part of the site. The southern part of the site is well drained with sandy and gravelly soils, greater surface grades and depth to groundwater of 0.8m and greater. Observed water tables are localised perched water tables, with the relatively stable levels observed during the wetter winter months followed by fairly rapid reduction in the observed water table is consistent with a superficial aquifer in the upper catchment reaches.

### 2.3.2 Management

Water collected from stormwater runoff in the Witchcliffe Ecovillage will be collected, treated, detained and conveyed primarily in vegetated surface features. Three water storages within the development area capture the majority of the development's catchment area ensuring peak flows greater than the recommended 5 year ARI event are maintained in line with pre development flows. The capture and storage of treated stormwater also allows the additional stormwater generated from the urban footprint to be used for irrigation on landscaping, active recreation and food production areas within the development.

The use of rehabilitated surface water features to collect and convey stormwater has the following outcomes consistent with WA Stormwater Management Objectives and the "Stormwater Delivery Approach for Western Australia":

- Minimises use of concrete pipes and pits;
- Reduces water velocities within the system;
- Increases water storage in the conveyance and treatment system;
- Contributes to the landscape amenity of the community;
- Promotes re-establishment of populations of native wetland dependent wildlife; and
- Increases soil water recharge promoting healthy plant growth.

Further details of the ground and surface water management initiatives are included in the Local Water Management Strategy, Appendix 8.

2.3.2.1 Household

The collection and on site storage of rainwater in tanks is required to cater for water consumption for household use of 100L/person/day to 150 L/person/day. A more detailed residential water plan for dwellings in the Witchcliffe Ecovillage will be prepared to guide the provision of water supply infrastructure on lots. The plan will provide further information detailing minimum water collection and storage requirements.

Modelling for water tank size requirements has been carried out based on daily historical rainfall records from the Bureau of Meteorology weather station located on the site, with additional allowance for losses and reduced rainfall years. A chart showing recommended minimum tank sizes for different household sizes and minimum roof areas required to fill tanks is shown in Figure 7.

Figure 6. Witchcliffe Ecovillage Water Cycle

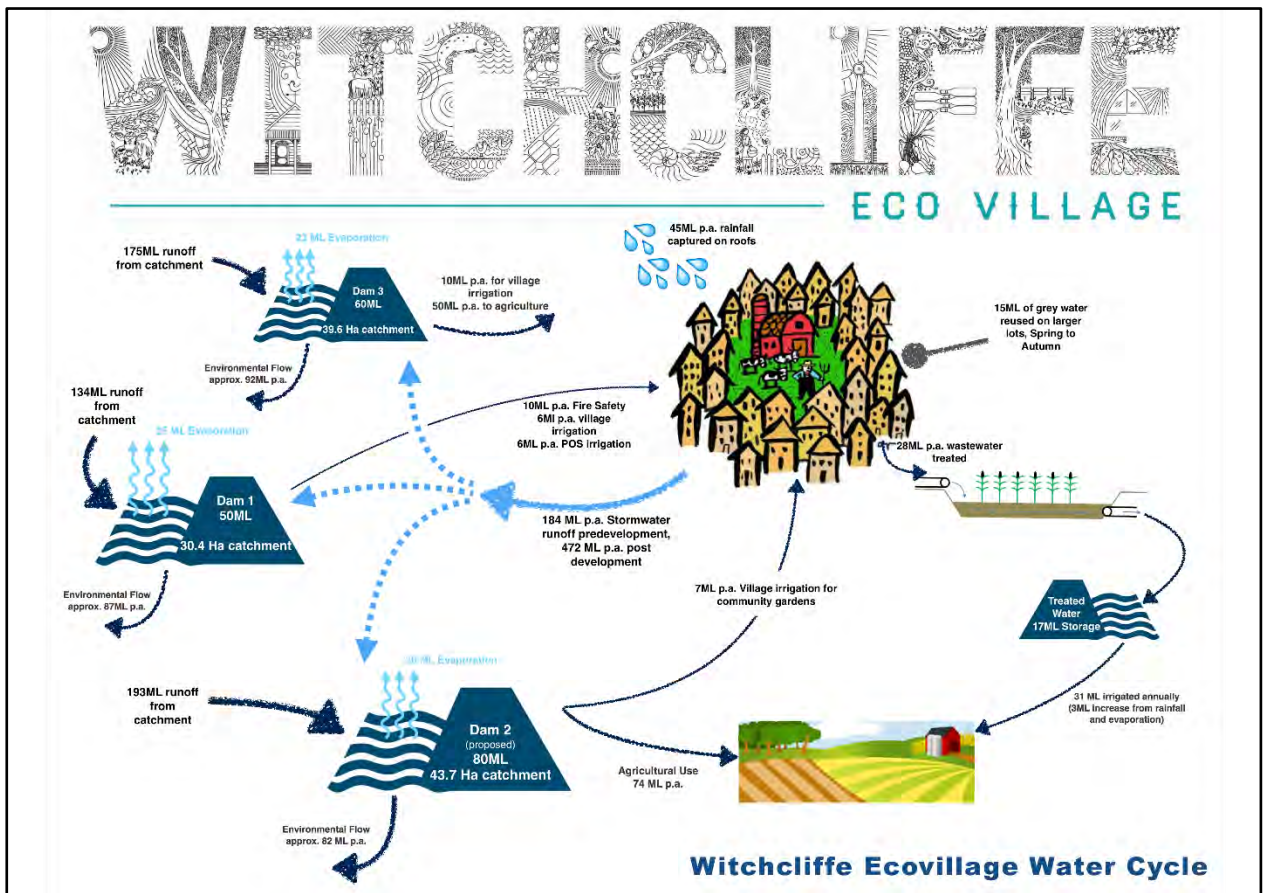
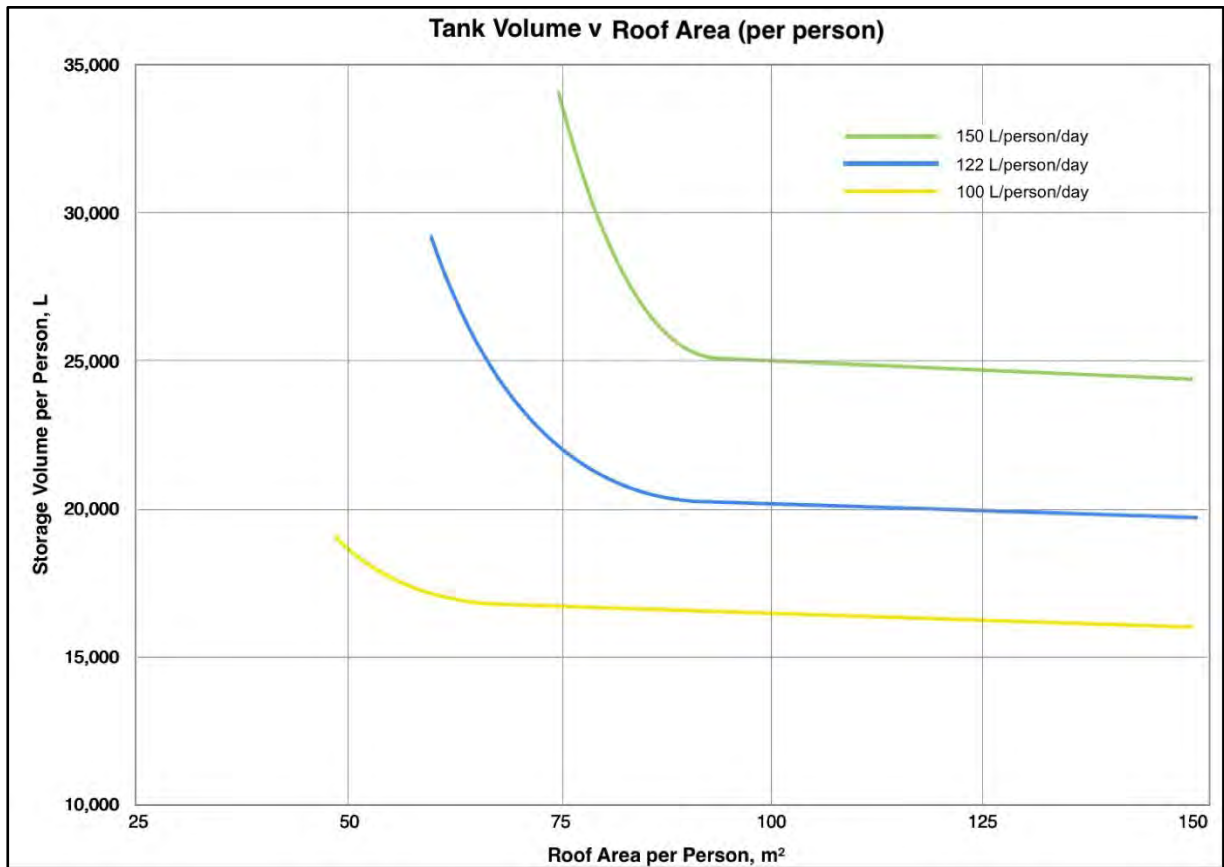


Figure 7. Rainwater Tank Sizing Chart



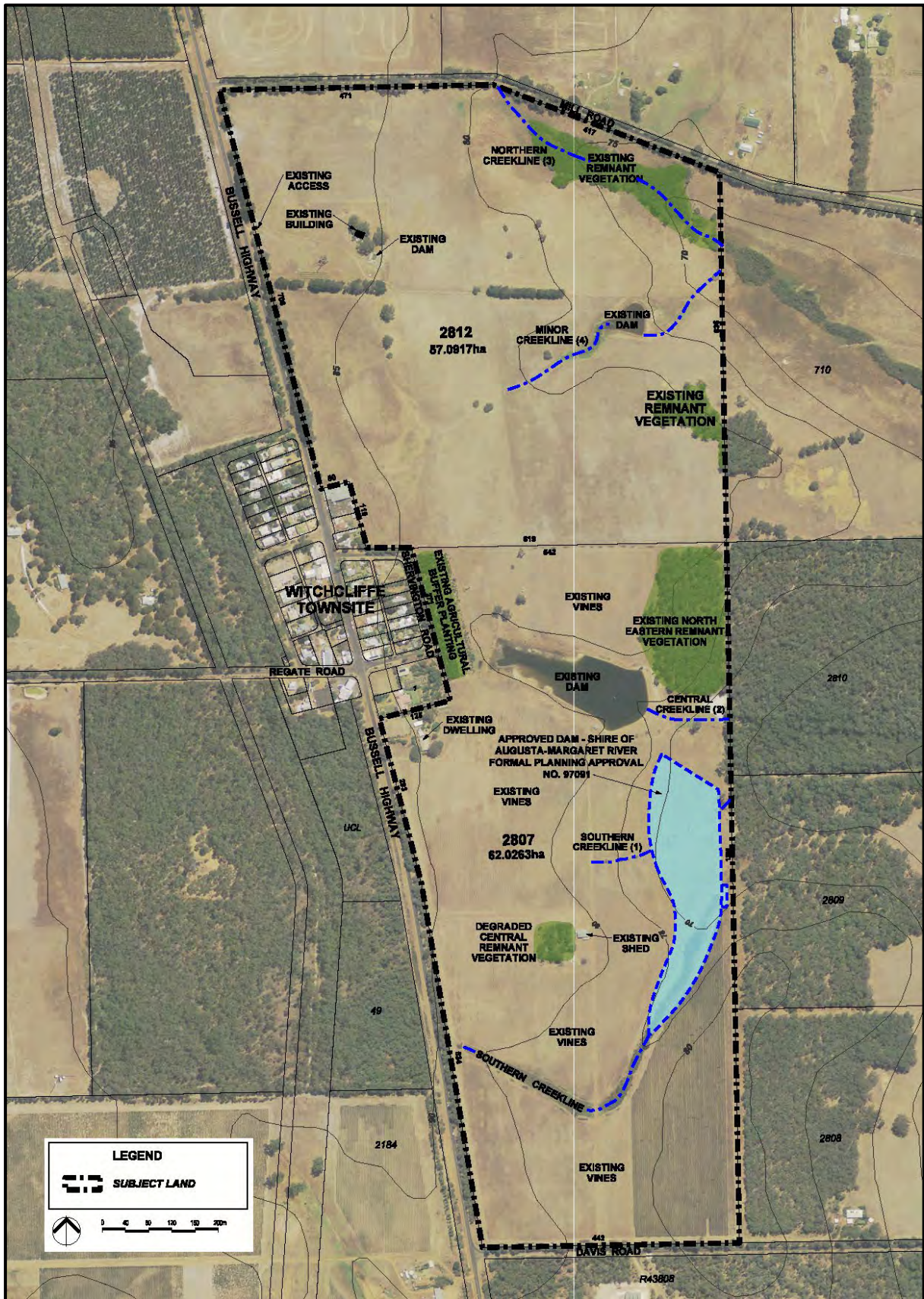
### 2.3.2.2 Wastewater

A reticulated sewerage system managed by a licensed water service provider will be provided in line with Shire, Department of Health and Economic Regulation Authority requirements. The wastewater system comprises:

- Collection of sewerage from lots by gravity sewers draining to sewerage pump stations on the eastern side of the development.
- Sewerage pumped to a treatment plant site in the south of the site.
- Sewerage treated in a package treatment plant with biological nutrient removal to provide a minimum class C effluent.
- Storage of treated water in a storage dam during wetter months and irrigation on low risk crops including vineyard for wine production, woodlots and tree fruit and tree nut crops.



Figure 8. Witchcliffe Ecovillage Site Features



### 2.3.3.3 Irrigation

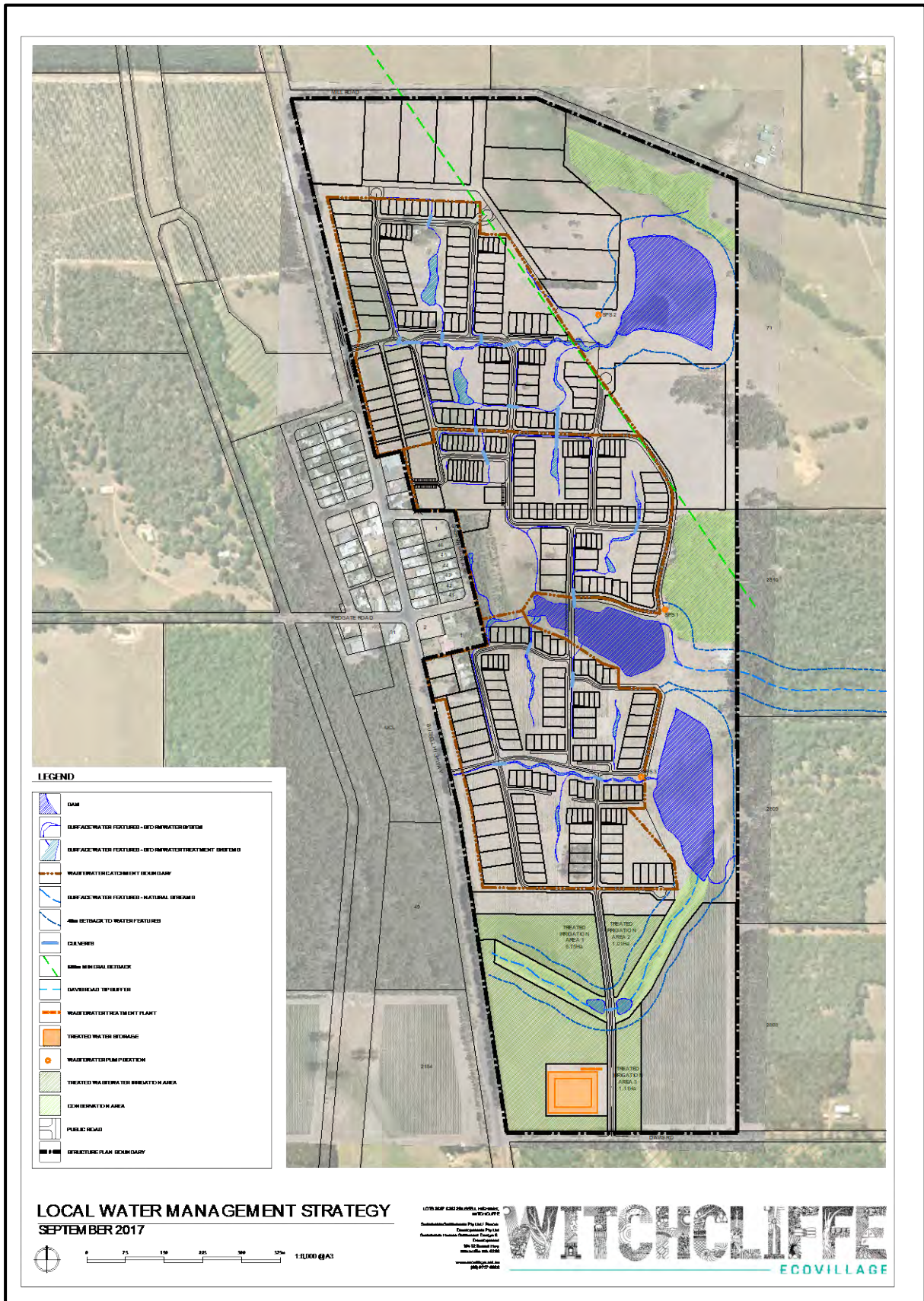
Water for irrigation of landscaping and community gardens including vegetable gardens and other food crops within the urban area is sourced from dams storages and sufficient volume is available from the increased stormwater runoff that will occur with urban development to provide all of the water required for irrigation of public open space and community open space. The estimated increase in runoff arising from development within the catchment compared to predevelopment flows is 165 ML per annum with 29ML per annum required for irrigation within the urban area, 124 ML for irrigation of agricultural areas and 88ML allowance for fire management and water losses. A diagram showing the water balance for the site including urban and agricultural areas is included at Table 6.

**Table 6. Witchcliffe Ecovillage Water Balance**

	Area ha	Pre development run off coefficient	Pre development run off, kL	Post development run off coefficient	Post development run off, kL	Difference, kL	%
Total site	119.11	0.296	356, 091				
WVS cell	60.41	0.296	180, 602				
Development area							
Community open Space	30.42	0.296	90, 944	0.35	107, 535	16, 591	
Community garden	11.88	0.296	35, 516	0.4	47, 995	12, 479	
Dams	8.9	0.296	26, 607	1	89, 890	63, 283	
POS	1.82	0.296	5, 441	0.4	7, 353	1, 912	
Conservation	8.84	0.296	26, 428	0.296	26, 428	0	
Residential lots	24.85	0.296	74, 292	0.5	125, 493	51, 201	
Light industry	1	0.296	2, 990	0.7	7, 070	4, 080	
Road verges	4.09	0.296	12, 227	0.5	20, 655	8, 427	
Road pavement	3.9	0.296	11, 659	1	39, 390	27, 731	
Agriculture	23.41	0.296	69, 987	0.40	94,576	24, 590	
SUBTOTAL Development site	119.1		356, 091	0.471	566, 384	210, 293	
Potable water collected from roofs					45, 000		
NET runoff from Development Site				0.438	521, 384	165, 293	
Runoff from existing townsite onto development site	26	0	77, 730	0.471	123, 634	45, 904	

	Area ha	Pre development run off coefficient	Pre development run off, kL	Post development run off coefficient	Post development runoff, kL	Difference, kL	%
Irrigation within village (POS and community gardens)					29,000		
Irrigation of agriculture					124,000		
Treated water irrigation on site					31,000		
Grey water irrigation on site					15,000		
Evaporation					78,000		
Other (fire management)					10,000		
SUBTOTAL, water use and losses on site					277,000		
Water use and losses from dams (excludes treated water)					241,000		
Net streamflow from development site			433,821		404,018	-29,803	-7%

figure 9. Local Water Management Strategy



## 2.4 Bushfire hazard

The Structure Plan area is designated a Bushfire Prone Area by AMR. A Bushfire Management Plan (BMP) (Appendix 9) consistent with SPP 3.7 Planning for Bushfire Risk Management was therefore prepared for the proponents by RUIC Fire (Rural Fire Risk Consultancy Pty Ltd) in December 2015 and has been updated as required during the Structure Plan consultation process. The BMP concluded that “the Bushfire Hazard rating, bushfire related risk level and BAL rating applicable to the proposed lots are not prohibitive of development. The current design of the proposed development satisfies all Performance Requirements of PfBPG and all Elements and Principles of SPP 3.7.”

Ongoing bushfire risk management will involve:

- The construction of all public roads, access ways and cul-de-sacs to comply with the BMP Element 2, “Vehicular Access”;
- The provision and maintenance of required firebreaks as per the BMP, Element 2 Vehicular Access, A2.9 “Firebreak widths”;
- The selection of fire resistant plant species in landscaping plans as per BMP, 3.3, “Bushfire landscaping guidelines”;
- The compliance of all buildings with Australian Standard AS3959 “Construction of Buildings in Bushfire Prone Areas”; and
- The provision and maintenance of water points as per the Bushfire Management Strategies Map (Figure 10).

As it will be the responsibility of the Ecovillage Common proprietary limited company board to administer and manage the communal purposes land and conservation areas, the company’s articles of association must be prepared in accordance with the BMP policy requirements and comply with any directions from DFES.

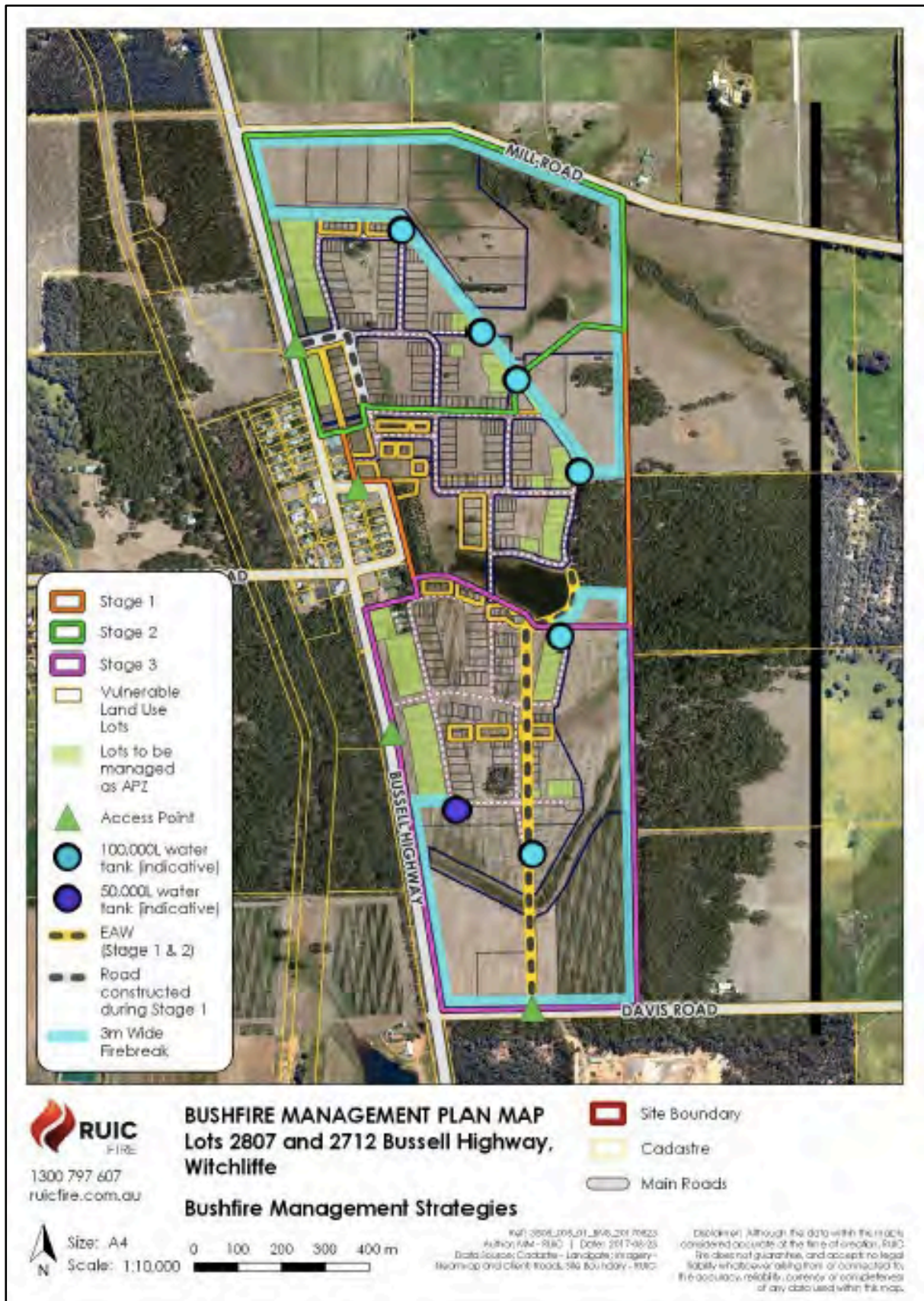
## 2.5 Heritage

### 2.5.1 Aboriginal heritage

A search of the Department of Aboriginal Affairs Aboriginal Heritage Enquiry System (AHIS) determined that there are no known Registered Aboriginal Sites within the Structure Plan Area. However, the proponents considered it important to undertake a documented consultation with representatives of the South West Boojarah (WC2006/004) and the Harris family (WC1996/041) Native Title Claim groups, in order to ascertain the importance and significance of the proposed development area to local Nyungar people (see Appendix 10, Aboriginal Heritage Consultation Report). The outcome of this meeting was to recommend that:

The Witchcliffe Ecovillage proceed to development without risk of breaching section 17 of the AHA in relation to ethnographic Aboriginal heritage sites, as defined by section 5 of the AHA;  
That the proponents should where possible provide employment opportunities, consultation, interpretative signage and native re-vegetation in the development of the Ecovillage; and  
That the development should make every effort to avoid polluting or affecting the riparian zones of the brooks.

Figure 10. Bushfire Management Strategies



## 2.6 Context and other land use constraints and opportunities

### 2.6.1 Transport noise

The only significant source of transport noise that affects the development is Bussell Highway. Noise impacts are minimised by:

Moderate speeds in proximity to the development (60km/h zone adjoining the urban cell);  
Highway setbacks of greater than 50m between carriageway and building envelopes; and  
Moderate traffic volumes under 5000 vehicles per day at the northern entry to town inclusive of ultimate development traffic and projected 2030 Bussell Highway volumes.

### 2.6.2 Utilities

In line with the sustainability objectives for the Witchcliffe Ecovillage, the development will be self sufficient for the majority of services, with the only major external service to be brought into the development being communications infrastructure. Land requirements for these services are outlined below:

- Communications - the existing optic fibre network will be utilised to provide NBN high speed internet services;
- Water supply - lot sizes have been designed to accommodate rainwater tanks within each lot, and LDPs and the Urban Water Management Plan submitted at subdivision application will ensure that sufficient capacity is provided to meet household needs;
- Sewerage treatment - land requirements for sewerage collection, treatment, storage and reuse have been identified in the Local Water Management Strategy;
- Land requirements include areas a sewerage treatment plant site, treated water storage site and agricultural land for treated water irrigation;
- Energy - will be collected using roof mounted solar photovoltaic cells on each household. If storage batteries are required (see Appendix 13, Energy Infrastructure Plan) they will require a small enclosure typically located in a rack within the garage area of individual dwellings and buildings. Microgrid infrastructure, if required, will be accommodated in strata scheme common space; and
- Stormwater collection, treatment conveyance, and storage is to be undertaken above ground within reconstructed streamlines, wetland treatment areas, and bio retention areas, and stored within surface water storages located within community gardens, road reserves and community open space.

### 2.6.3 Existing/planned activity centres

The Structure Plan area abuts the small existing town centre and eastern residential area of Witchcliffe, as indicated in Figure 11. Context and Constraints Map. The position of the town centre and eastern residential area has been taken into consideration when planning the zones and uses that will be developed immediately adjacent to these areas. The commercial, mixed use and tourism zones have been positioned adjacent to existing town centre zoned lots, and the existing residential area will maintain its open space outlook through the existing Marri trees that line Shervington Avenue over the new public oval and park landscaping.

#### 2.6.4 Priority basic raw materials and key extraction areas

An identified Department of Industry and Resources (DOIR) mineral sands deposits exists to the east of the Witchcliffe townsite. Assessment of the most recent DOIR Mineral Sands Resource Buffer Mapping (see Figure 11. Context and Constraints Map) confirms mineral deposits and buffer only touch the north eastern corner of lot 2807, at which point the property is further buffered by remnant vegetation that is to be conserved. The resource buffer defines the eastern boundary of the development zone on lot 2812.

Accordingly, the residential development within the Structure Plan area is outside the DOIR Mineral Deposits Residential Buffer, as per the requirements of WVS.

#### 2.6.5 Priority Agricultural areas and buffers

The Structure Plan area is directly abutted to the north-east by four properties zoned Priority Agriculture, three of which are buffered from the Structure Plan area by significant remnant bush. The Structure Plan provides a large agricultural buffer area to the residential areas of the Ecovillage to be used for the production of food by small-scale organic agricultural enterprises, as well as shelter-belt buffers to the agricultural lots. The development of the Ecovillage will therefore have no direct impact on the functionality of these adjacent Priority Agriculture lots.

#### 2.6.6 Land use buffers

As per 2.6.4, all residential uses have been excluded from land affected by the mineralisation buffer to the north-east of the Structure Plan area. Likewise, all residential uses have been excluded from the Davis Road Waste facility buffer zone to the south of the Structure Plan area.





### 3. SUPPLEMENTAL LAND USE AND SUBDIVISION REQUIREMENTS

#### 3.1 Land use

As depicted on the Structure Plan Map (Figure 1) and the Witchcliffe Ecovillage Development Concept Plan (Figure 15), the layout of the Witchcliffe Ecovillage proposes an innovative alternative to traditional subdivision layout, with all residential lots fronting extensive productive gardens, land set aside for organic agricultural food production, and priority in the provision of infrastructure given at every level to environmental and social features.

The site is proposed to be subdivided into approximately 320 lots, as summarised in the Executive Summary Table (Table A), including:

- Residential strata lots consisting of cottage, family, lifestyle, and affordable housing;
- Tourism strata lots;
- Village centre strata lots;
- Non-residential Ecovillage Agricultural strata lots; and
- 37.639 ha land set aside for conservation and communal purposes.

These intended land uses are fully described on the Development Concept Plan (Figure 15.) In addition, there will be 5.34 ha of public open space zoned Local Reserve.

The agricultural land and conservation areas will provide visual buffers to the north, east and south of the development, in order to preserve the rural character and amenity of the adjoining rural landscape. Lower density Lifestyle lots abutting Bussell Highway to the north and south of Witchcliffe, as well as a vegetation buffer between the lots and the highway, will enhance the visual approach to Witchcliffe via Bussell Highway, and preserve its existing small town character. Village centre lots will enhance the existing town centre, and a Village Square to the east of Shervington Avenue, including a public oval, will provide community activities and infrastructure for the whole Witchcliffe area.

#### 3.2 Public Open Space and landscaping

The Witchcliffe Ecovillage encompasses an area of 119.11 Ha, of which a large proportion is allocated to landscaped and natural open space, including productive, recreational and conservation areas. A total of 5.34 ha Public Open Space, 37.639 ha of communal purposes land (including 8.84 ha of conservation areas) and 13.64 ha of Community Gardens is proposed within the Witchcliffe Ecovillage, as per Figure 12. Witchcliffe Ecovillage Development Concept Plan; Table 3. Open Space; and Table 2. Summary Table. For comprehensive detail, please refer to the Open Space and Landscape Plan, (Appendix 1).

The provision of usable, sustainable, attractive community open space has played a central role in the planning of the Witchcliffe Ecovillage. From the design of the Village Square, comprising residential, tourism and commercial lots surrounding a large landscaped piazza that features productive indigenous gardens and a model community garden, to the arrangement of the residential clusters around productive community gardens with vegetable beds, orchards and chicken coops, the promotion of healthy, active lifestyles through interaction with the natural world is a key feature of the Ecovillage. Landscaping has been designed wherever possible to fulfil multiple functions—verges will host a selection of productive and indigenous plants, playgrounds will feature accessibility and active learning, community gardens will provide food and bring people together, buffers to roads will be filled with nut and oil tree crops, and all open spaces will be joined with active pedestrian and cyclist only pathways.



At the centre of the village, beside the Village Square is a full sized junior oval, and community recreational facilities (e.g. bocce, skate park). Community open space areas around the main water bodies and central drainage lines will be landscaped to provide amenity and control access, improve water quality and restore riparian habitat. Conservation areas for the management of biodiversity assets and protection of habitat are also provided for remnant riparian vegetation in the north of the site, remnant bushland in the east of the site, and a revegetated streamline being rehabilitated by the proponent in the south of the site. Village open space will link to regional open space via the Wadandi Trail.

The total open space provision for the Witchcliffe Ecovillage is 5.34 ha, which equates to 4.48% of the total site area, and 8.85% of the gross subdividable area, as per Liveable Neighbourhoods calculations. Calculation of the gross subdividable area and open space provision is included below in Table 7. Open Space Provision Schedule.

The POS provision is less than the 10% required by Liveable Neighbourhoods at the request of AMR Shire and Department of Planning, Lands, and Heritage.

A combination of strata and green titled land tenure is proposed for the Witchcliffe Ecovillage to ensure a satisfactory legal framework is established to enable the communal ownership and management of common land and infrastructure (see 3.10, and Appendix 16, Land Tenure and Preliminary Strata Outline). Strata title legislation provides powers for levying the strata rates that will be required by the individual strata clusters to fund the ongoing operation and maintenance of any communal land and infrastructure, including the community gardens. The remaining open spaces not ceded to AMR Shire as Public Open Space, will be managed and owned by the Ecovillage Common Pty Ltd company, which in turn will be owned via unit share entitlements to the strata bodies corporate.

**Table 7. Open Space Provision Schedule**

<b>WVS Cell area</b>			<b>60.41 ha</b>
<b>less:</b>			
Regional Roads (Bussell Highway road widening)	0.09 ha		
Net Site Area			60.32 ha
Gross Subdividable Area			60.32 ha
Public Open Space @10%			6.032 ha
<b>Public Open Space Contribution</b>			
Minimum 80% unrestricted public open space		4.82 ha	
Maximum 20% restricted use public open space		1.21 ha	
Total POS contribution required			6.03 ha
<b>Unrestricted POS sites</b>			
Village Square and oval		2.94 ha	
Bussell Highway buffers		2.42 ha	
Total unrestricted POS contribution			5.34 ha
<b>Restricted POS sites:</b>			
Total restricted POS contribution			0
<b>Total POS</b>		<b>5.34 ha</b>	
Public Open Space provision (8.9%)			ha

### 3.3 Residential

The WVS planning report recommends a range of R-codes for Cells 7 (R30-R2.5) and 8 (R30-R5), with the relatively low densities considered necessary to preserve the rural character of town. Due to the Witchcliffe Ecovillage's innovative cluster garden design, generous Community Gardens and Open Space provisions, Village Square community facilities, agricultural and rural outlook buffers, and proximity to the town centre, the densities provided have moved away from the lower density 2000m<sup>2</sup> to 1ha size lots that are being developed to the west of Witchcliffe, instead providing a range of medium lot sizes more commensurate with creating an active village lifestyle in a rural setting.

Residential lot densities range from R10 to R40, and density values have been assigned to:

- Influence lot sizes and orientation in order to maximise solar aspect to all homes (e.g. medium density on east-west axis, higher density on north-south axis in Cluster Strata blocks); or
- Preserve the rural character and amenity of the existing townsite (e.g. low density lifestyle lots fronting Bussell Highway); and
- Ensure all lots are positioned with direct access to either community gardens or open space, as well as to a dedicated pedestrian and cyclist only path network through the village.

As per 3.10, the Witchcliffe Ecovillage will be developed as multiple strata titled subdivisions, either under the current Strata Act as 19 separate survey stratas, or under the proposed Community Titles Scheme. As the Strata Act does not currently allow group dwelling strata lots to exist as a second tier within an overall strata plan, group dwelling lots cannot be created within the Ecovillage to provide affordable housing opportunities. The proponents will therefore create one >1500m<sup>2</sup> R30 Affordable Housing lot within each cluster and four adjacent to the POS (15 in total) which can be further subdivided into up to 75 (300 m<sup>2</sup>) affordable special purpose dwelling lots, as per Appendix 14, Affordable Housing Strategy. This will provide 5 affordable small (max. 100m<sup>2</sup>) dwellings in each residential cluster, and one group of 20 aged and dependent care dwellings near the Village Square (approximately 20% of overall dwellings).

Residential lots will be developed to promote diversity and inclusivity, with the expected range of product to encompass:

- Cottage (300-500m<sup>2</sup>)
- Family (600-1100m<sup>2</sup>)
- Lifestyle (1500-2700m<sup>2</sup>); and
- Affordable Housing (>1500m<sup>2</sup>.)

Due to the innovative cluster design and sustainability features of the Ecovillage, any variations to R-codes required will be detailed in local development plans prepared for each cluster and the Village Square, including all building typologies, street interfaces and sustainability features. Comprehensive Building Design Guidelines will be prepared prior to subdivision and enforced by the developer through strata by laws to ensure that all homes meet extremely high standards of sustainability and conform to a palette of materials that is sympathetic to the character, rural amenity and architectural sense of place of Witchcliffe.

#### 3.3.1 Indicative Lot Yields

The Witchcliffe Ecovillage Development Concept Plan (Figure 12) provides an indicative layout of 314 lots in total, as per Table 8. Indicative Residential Lot Yields. A total of 47 lots are non-residential lots, and 15 of these non-residential lots are situated outside the WVS cells.

The Development Concept Plan indicates the provision of approximately 267 residential lots, including 15 large (>1500m<sup>2</sup>) lots that are to be further subdivided by the developer into 76 special purpose Affordable Housing and Aged/Dependent Care lots, restricted to dwelling footprints of less than 100m<sup>2</sup>. This will provide for 328 dwellings with a projected population of 656 occupants, (using the average AMR household size of 2 occupants per dwelling, as per ABS Census 2011) consistent with the maximum 750 occupants proposed by Scheme Amendment 28.

**Table 8. Indicative Residential Lot Yields**

Lot Type	Lots	Dwellings
Affordable Housing	11	56
Aged/Dependent care	4	20
Cottage	68	68
Family	112	112
Lifestyle	24	24
Cottage/Short stay	40	40
Studio cottages	8	8
<b>Total</b>	<b>267</b>	<b>328</b>

### 3.4 Movement networks

#### 3.4.1 The Witchcliffe Ecovillage regional transport context

The Witchcliffe Ecovillage is located to the north-east, east and southeast of the Witchcliffe town-site with the majority of lots within 400m, and all lots within 600m, of the town centre. Access to the site is provided directly from Bussell Highway, which is the main regional transport corridor between Busselton, Margaret River and Augusta.

The site is bounded by Mill Road to the north and Davis Road to the south, both of which are rural roads providing access to rural properties east of Witchcliffe. Access to the west of Witchcliffe is provided by Redgate Road, connecting to Caves Road, and coastal and tourist attractions.

An off-road walking and cycling trail, the Wadandi track, following a historical railway corridor ultimately linking Vasse to Augusta, is in place between Cowaramup, Margaret River and Witchcliffe.

#### 3.4.2 Witchcliffe Ecovillage movement network

The movement network for the Witchcliffe Ecovillage envisages a shift in the focus from vehicles to cycling and pedestrian transport modes as the community's primary transport network. Fulfilment of this goal is dependent on provision of an integrated and well-connected path network with high levels of amenity.

##### 3.4.2.1 *Path network*

Every house in the community is designed to front a community garden and to connect directly to the village path network within the community garden at their front gate. The path network provides a high level of amenity by connecting homes to the community centre and Witchcliffe Village centre via landscaped community gardens and POS rather than along roads and link all houses to the village centre and the community, commercial and sporting facilities within the village centre. To cater for the high level of cycling trips, end of trip facilities including high quality bike parking will be provided

within the village core at all major attractions. In addition, further incentives to maximise bicycle use will be investigated such as shared cargo bikes for shopping transport and promotion of electric bikes to increase access of cycling to less physically active and to increase the effective range of cycling trips.

In addition to the path network within the Village, a recreational trail is to be developed around the urban area through remnant vegetation, agricultural areas and past the various water features. In addition to serving a recreational function and contributing to the health and fitness of the community, the trail will provide linkages with the Wadandi Track to the east of Witchcliffe to the north and south of the townsite in a similar fashion to the Darch Road trail in Margaret River. A conceptual layout of the path network that will be further refined in at subdivision is included as part of the Traffic Management Plan attached at Appendix 11.

Lower order paths through community garden areas will be constructed from stabilised gravel similar to those used within the Old Settlement, Margaret River, while higher order paths linking the community facilities and the development with the Witchcliffe village centre will be wider sealed or paved paths, Figure 13. Example of Stabilised Gravel.

**Figure 13. Example of Stabilised Gravel**



### 3.4.2.2 Road Network

The Witchcliffe Ecovillage is adjacent to Bussell Highway (MRWA Regional Distributor) along the east side of Witchcliffe. Two new intersections providing vehicle access to the development will be constructed by the developer, one to the north and one to the south of the existing Witchcliffe urban area. The provision of tee intersections and their location has been determined in consultation with Main Roads.

The northern entrance to the subdivision has been located to the north of the existing town site and north of the proposed intersection south of the polo fields on Bussell Highway, to comply with Main Roads requirements, and in response to public submissions during the advertising period. The location of this intersection will avoid the potential impacts of headlight shine into existing residences to the west of Bussell Highway but will require clearing of a section of roadside vegetation on Bussell Highway.

The internal road network for the development takes a different approach than that used in conventional suburban development within the State, providing separate off street movement networks for pedestrians and cyclists. This approach allows the development of more direct pedestrian and cycle linkages to the village centre; a higher standard of amenity through providing paths through landscaped community gardens rather than along roads; and contributes to improved safety by reducing vehicle conflicts, particularly with reversing vehicles. This approach is central to the design of the village and the sustainability objectives, promoting cycling and walking modes of transport within the village. Subsequently, lower traffic generation rates are anticipated than an equivalent vehicle focused development, and roads without footpaths along road verges are provided.

The road network is also split into distinct northern and southern areas, with the only interconnection between these cells via an access road over the central dam, which was required by AMR Shire. This limited connectivity is due partly to the hydrographic features of the site, with a large waterway separating the northern and southern areas, but also further encourages cycling and walking to the village centre and minimises the impact on existing residents of Shervington Avenue.

The first block of the northern and southern entry road fulfils a Neighbourhood Connector function however the traffic volumes are significantly lower, 1460vpd and 677vpd respectively, compared to Liveable Neighbourhoods indicative volume of 3000vpd.

The remainder of roads within the development are primarily either:

- Access Street B, wider access streets. These are provided around the village square, commercial property and the extension of the entry roads; and
- Access Street D, narrow yield street.

Despite the recommended cross sections for these roads in Liveable Neighbourhoods, these streets are required to be constructed 6m wide to comply with fire management requirements.

A laneway is also provided at the rear of commercial and tourism lots. This follows the same format and extends from the existing rear laneway for existing lots within the town centre.

A diagram showing estimated traffic volumes for the development at full development is included with the Traffic Management Plan, Appendix 11.

#### 3.4.2.3 *Parking*

Within residential areas of the village, parking for residents will be predominantly provided within private lots, with additional on street/verge parking bays provided for visitors opposite cottage lots and affordable housing lots. Within the village centre, three off street parking areas have been identified around the fringe of the village square. These parking areas will provide shared parking for tourism, commercial and cultural facilities in the village centre including a parking area to service the oval for sporting and community events.



Additional parking for commercial lots to the north of the village centre will be provided within these lots and on street parking. It is anticipated that these parking areas will be used more for visitors than the residents of the village as residents should predominantly use pedestrian and cycling to access the village centre.

#### 3.4.2.4 *Public transport*

A regional public transport service linking regional centres along Bussell Highway is in operation providing a public transport option for access to Perth and other regional centres. An extensive regional school bus service operates within the region providing free services for school children to travel to and from school. The Witchcliffe Ecovillage project will work with school bus services, Main Roads and AMR to plan for school bus pickup and drop-off points and will provide infrastructure including paths and bike parking to contribute to the safe and efficient utilisation of this service. Maximising pedestrian and cycling access to school bus services will play a significant role in reducing peak hour vehicle trips within the village.

### 3.5 Water management

#### 3.5.1 Regional water planning framework

AMR LPS 1, Scheme Amendment 28 requires that development within the Structure Plan area be 100% self sufficient in on-site water capture and use. A Local Water Management Strategy has been prepared for the Witchcliffe Ecovillage that demonstrates the ability of the Structure Plan to achieve this requirement, and it is included as Appendix 8.

A district level water strategy is usually prepared by the local authority, however, a District Water Management Strategy has not been prepared for the Witchcliffe urban area. The Margaret River District Water Management Strategy was recently prepared by the Shire of Augusta Margaret River as part of the Margaret River Supertowns Planning Process and in preparing the LWMS for the Witchcliffe Ecovillage, reference has been made to relevant aspects of the Margaret River District Water Management Strategy, such as soil and groundwater conditions where similarities occur, and with regard to stormwater quality objectives.

#### 3.5.2 Water Conservation

The Witchcliffe Ecovillage will deliver sustainable management of all aspects of the water cycle including:

- Ensuring that all houses will be self sufficient in water, supplying their own potable water needs through rainwater collection and storage as per the current practice within Witchcliffe and rural and semi rural areas of the Shire;
- Improving efficiency of potable water use. This will not only reduce the size of storage tanks, but will also reduce the costs of energy use for the future residents associated with water pumping and water heating.
- Providing no imported water. Connection to the Margaret River Water Supply is not required and would conflict with sustainability objectives for the Witchcliffe Ecovillage and the Witchcliffe Village Strategy.
- Using a water consumption target for potable water of minimum 36.6 kL/person/year (100L/p/d) which is slightly more ambitious than the Western Australian State Water Plan (Government of Western Australia, 2007) target of 40 - 60kL/person/year of potable scheme water use.

- Provision of onsite storage and capture of increased stormwater runoff from urban development resulting in no downstream reductions in water flow or increases in peak flows.
- Reuse of stormwater within the village for landscape, open space and communal garden irrigation; and
- Reducing offsite use of water for food production by growing food onsite.

### 3.5.3 Water Reuse

The State Water Strategy (2003) sets a target of 20% reuse by 2012. This development aims to reduce the use of potable water and achieve 100% reuse of wastewater and 100% capture and use of increased urban stormwater runoff. This is achieved by providing an alternative fit for purpose water supply for agriculture irrigation including reuse of reclaimed wastewater for low risk agricultural uses, and use of stormwater runoff captured and stored for use in irrigating active open space, community garden areas and higher risk agricultural irrigation. Please see Figure 6. Witchcliffe Ecovillage Water Cycle for a representation of annual water production, use and reuse within the Witchcliffe Ecovillage.

### 3.5.4 Potable Water Requirements

Potable water for use in dwellings and businesses will be collected from roofs and stored in rainwater tanks within each lot. Water collection and storage based on household use of 100L/person/day to 150 L/person/day will be required. A more detailed residential water plan for dwellings in the Witchcliffe Ecovillage will be prepared to guide the provision of water supply infrastructure on lots. The plan will provide further information detailing minimum water collection and storage requirements.

Water storage requirements have been modelled based on historical rainfall records from the Bureau of Meteorology weather station for Witchcliffe (which is located on the development site) with tank sizing requirement affected by household size and roof area. A chart illustrating rainwater tank size requirements is provided at Figure 7, with further details regarding modelling and sizing of rainwater tanks provided in the Local Water Management Strategy, (Appendix 8).

### 3.5.5 Sewerage Treatment

#### *3.5.5.1 Witchcliffe Town Sewerage Treatment Plant*

Provision of a sewerage treatment plant for the Witchcliffe townsite to cater for the existing residents and future development as well as the Witchcliffe Ecovillage has been investigated and the Shire's Davis Road Waste Management facility was been identified as the preferred site for the townsite however lack of a suitable service provider, lack of funding to establish a town wide scheme and lack of on site options for treated water disposal in the medium term means the Davis Road site is not currently a viable option for the Witchcliffe Ecovillage.

#### *3.5.5.2 Witchcliffe Ecovillage Sewerage Treatment*

The Witchcliffe Ecovillage will establish sewerage treatment and treated water recycling operated by an ERA licensed water service provider within the Witchcliffe Ecovillage site. A sewer connection will be provided to every lot within the Witchcliffe and the water service provider licensing process will provide long-term security of service for the community.

The establishment of a sewerage system to service the Witchcliffe Ecovillage does not compromise the long term objective to establish a town wide scheme for Witchcliffe as the Witchcliffe Ecovillage sewerage treatment site is directly adjacent to the potential long term treatment plant site at the Shire's Davis Road waste management facility and can easily be incorporated into a system servicing the broader town-site. In addition an existing licensed water service provider operating in Witchcliffe is likely to be interested in expanding their service area in the future.

### 3.5.5.3 *Proposed Sewerage Treatment Model*

Gravity sewers for collection of wastewater, pumpstations to transfer sewerage to a treatment plant site at the southern end of the development site, treatment in a package wastewater treatment plant and onsite reuse is proposed. Elements of the system comprise:

- Collection of sewerage from lots by gravity sewers draining to sewerage pump stations on the eastern side of the development.
- Sewerage pumped to a treatment plant site in the south of the site.
- Sewerage treated in a package treatment plant with biological nutrient removal to provide a minimum class C effluent.
- Storage of treated water in a storage dam during wetter months and irrigation on low risk crops including vineyard for wine production, woodlots and tree fruit and tree nut crops during drier months.

Further details of the proposed wastewater treatment model are included in the Local Water Management Strategy (Appendix 8).

### 3.5.6 Ownership and Management of Water Infrastructure

Water supply infrastructure will be provided by individual lot owners at the time of dwelling construction. Stormwater, irrigation and sewerage infrastructure will be provided by the developer at subdivision stage.

Stormwater infrastructure will be owned and managed by the community on community open space and community gardens and by the shire on road reserves.

Irrigation infrastructure will be owned and managed by the community on community open space. Sewerage infrastructure will be managed by an independent licensed water service provider. A summary of the various components of the water infrastructure, detailing who provides the infrastructure, when it is provided and who owns and manages that infrastructure, is summarised in the following table.

**Table 9. Water Infrastructure Ownership**

Infrastructure	Provided by	Timing	Ownership of Infrastructure	Management Responsibility
Rain water collection and storage tank	Lot owner	At dwelling construction	Lot owner	Lot owner
Wastewater plumbing within lots	Lot owner	At dwelling construction	Lot owner	Lot owner
Wastewater connection point and wastewater plumbing in common area	Developer	At Subdivision construction	Licensed wastewater service provider	Licensed wastewater service provider
Sewerage treatment system	Developer	At Subdivision construction	Licensed wastewater service provider	Licensed waste water service provider
Treated water storage and irrigation	Developer	At Subdivision construction	Licensed wastewater service provider	Licensed waste water service provider

### 3.6 Activity Centres and Employment

With a town population estimated at just 64 in 2012 and only nine businesses currently operating in the town centre, Witchcliffe has a village atmosphere, characterised by distinctive building forms, history and a rural amenity to residential development provided by farm and bushland outlooks. It is identified as a village to accommodate population growth in the LNRSP, and the WVS provides planning for a resident population of 2600. The projected increase in the population of Witchcliffe will bring a significant increase in the number of people that will seek local products and services such as restaurants, local services and retail goods. In addition, ecovillage developments around the world have attracted significant tourism interest, and resulted in greater general interest in environmental products and services, with the Witchcliffe Ecovillage having the potential to bringing this type of eco-tourism to Witchcliffe. The Ecovillage itself is expected to provide accommodation for approximately 668 people when complete.

There are currently 29 lots with an area of 4.5 ha within Witchcliffe Town Centre zoned Village Centre that could accommodate commercial mixed use development. Over half of these lots (16) are currently used for residential premises and availability for commercial use is a longer-term prospect for these lots.

The projected size of the labour force in Witchcliffe based on population projections provided by the WVS is 1740 people; and in the Witchcliffe Ecovillage, 466 people.

As required by the Witchcliffe Village Strategy, an Economic, Retail and Employment Strategy has been prepared and is attached as Appendix 12. The objectives of this Strategy are to:

- Provide for commercial development to support the future prosperity of residents of Witchcliffe.
- Maintain and enhance the distinct village character and amenity.
- Incorporate commercial activity core at the centre of the village to ensure its sustainable development.
- Provide variety and interest in commercial uses and to maintain the agricultural background and support provided by the town.
- Facilitate commercial activity node supporting and complimenting the sustainable development vision for Witchcliffe.
- Promote the development of all activity that has the potential to deliver customers to traders within close visual and accessible proximity to the village centre.
- Foster and promote the development of the village centre as a vibrant hub providing for the commercial, cultural and tourism requirements of the village, its hinterland and visitors.
- Provide adequate land appropriately located and serviced for commercial needs of the village; and
- Provide affordable opportunities for niche organic horticultural/agricultural business enterprises, providing additional local employment and contributing to the overall productivity of Witchcliffe.

The Witchcliffe Ecovillage Structure Plan proposes a Village Square adjoining the existing Witchcliffe town centre, providing a small-scale focal point for social, cultural, tourism and commercial activity within the Ecovillage. Commercial elements of the Village Square include mixed use lots with potential for professional offices and arts and crafts to the north, a creative hub that acts as a business incubator and office space to the east, a community centre to the south which incorporates a café, childcare and function centre, and a tourist accommodation development to the west.

A food hub is located between the Village Square and existing industrial land use within the Witchcliffe Town Centre. A further row of village centre zoned lots are proposed to the north to create a commercial area, abutting Bussell Highway, with vehicle access and parking via internal roads. The commercial area is identified in Figure 15, Witchcliffe Ecovillage Development Concept Plan. Due to the small scale of the commercial area and its proximity to the existing town centre, it was not considered necessary to prepare an activity centre plan. However, Local Development Plans will be prepared to provide guidelines on built form and street/community open space interfaces.

Fifteen 1 - 6 ha agricultural lots are included within the “Special Use Zone – Ecovillage Agriculture” zones, creating employment in food growing within the Witchcliffe Ecovillage and providing an important source of production for the Food Hub adjacent to the Village Square.

While the land area proposed for village centre and tourism use in the Witchcliffe Ecovillage (4 ha including shared parking) is considerably less than the area recommended by Liveable Neighbourhoods (10-14 ha to provide 300 jobs), it is significantly higher than that proposed by the WVS (1400m<sup>2</sup> commercial floor space) and is close to the area of 5 ha identified in the 2012 WVS Plan. The WVS assessment of commercial needs in Witchcliffe did not consider the potential increased population arising from additional areas included within the 2012 WVS review and it gave little consideration to strategies to maximise the economic sustainability of the future Witchcliffe Village, instead assuming that Witchcliffe would be almost entirely reliant on external employment, goods and services, remaining in Margaret River’s “trade shadow”.

The Witchcliffe Ecovillage instead seeks to maximise opportunities for its residents to create local employment within the village as part of enhancing their quality of life, reducing transport impacts and costs, and as a fundamental element of a truly sustainable community. It is also designed to capitalise on the tourism opportunities offered by international interest in ecovillages and sustainable lifestyles.

A small (<1 ha) area is included within the “Special Use Zone – Ecovillage Waste Water Treatment” area at the south of the site adjacent to Davis Road. This area is intended to support activities within the Ecovillage including a depot for gardening and agricultural activities, compost production, storage of residents’ caravans, trailers and boats, and set down, maintenance and storage yard for equipment.

### **3.7 Infrastructure Coordination, Servicing and Staging**

While the timeframes for each stage of subdivision will be subject to sales of lots, the preliminary program is to complete one stage per one to two years, with construction work completed between spring and summer annually. The stages will proceed generally as described numerically in Figure 14. Staging Plan.

#### **3.7.1 Communication**

Internet and telephone services to each lot will be provided via the NBN fibre to the home, the highest level of service speed available. This will provide opportunities for high-speed Internet reliant businesses to operate within the commercial area, and enable home owners to access fast and reliable connections for communication, research, and entertainment. Services will be installed in stages as part of the subdivision construction process in line with the Staging Plan (Figure 14).

#### **3.7.2 Energy**

The Witchcliffe Ecovillage vision is to create a highly sustainable, self-sufficient community in a rural, small village setting. In order to realise this, modern technology will be employed to allow the Ecovillage to be, at the least, powered entirely by net neutral renewable energy, with energy generation and storage performed on site. Therefore, every aspect of the Witchcliffe Ecovillage, from houses to community facilities to transportation, has been designed to achieve a high level of energy efficiency (see 3.11.2, Energy Sustainability Features).

The proponent has explored several options to achieve the ‘Net neutral renewable energy’ requirements identified for the project in AMR LPS1. “Net neutral” means that the project will produce as much energy from renewable sources, namely solar/wind, as it consumes. While this would be nationally significant in a residential development of this scale, it is not difficult to achieve with a combination of Western Power’s grid and rooftop solar PV’s. However, it is a long way short of being self sufficient in renewable energy, as considerable non renewable energy is still required at peak demand periods in early morning and evenings, and the non renewable energy supply for the Margaret River region is generated from coal power stations, producing significant CO2 emissions.

The proponent intends to go considerably further than this by making the Witchcliffe Ecovillage Australia’s first community of this scale that is self-sufficient in renewable energy, with 100% of all energy used within the homes and businesses coming from renewable energy.

Therefore it is proposed that there are three distinct energy infrastructure options available for the Ecovillage:

- Net Neutral Renewable Energy Supply.
- Self-Sufficient Micro Grid Supply; or
- Self-Sufficient Household Supply.

The Witchcliffe Ecovillage's energy systems have the potential to set the standard for the future, not only in terms of clean energy but also when it comes to steady, predictable energy costs and reliable supply. The knowledge gained through the Witchcliffe project will be invaluable in securing energy efficiency in future residential developments internationally.

The proponent will confirm which of the proposed options will be implemented at subdivision application, to enable WAPC to set the appropriate subdivision conditions. For comprehensive information on all three options, see Appendix 13, Energy Infrastructure Plan.

### *3.7.2.1 Net Neutral Renewable Energy Supply*

Western Power has confirmed that it is able to provide the requirements of supply to achieve the net neutral renewable energy option within the Ecovillage. Strata by-laws and building design guidelines will mandate the minimum rooftop PV's required for each home to achieve net neutral supply. See Appendix 14, Energy Infrastructure Plan for anticipated household energy use and site-specific solar radiation parameters.

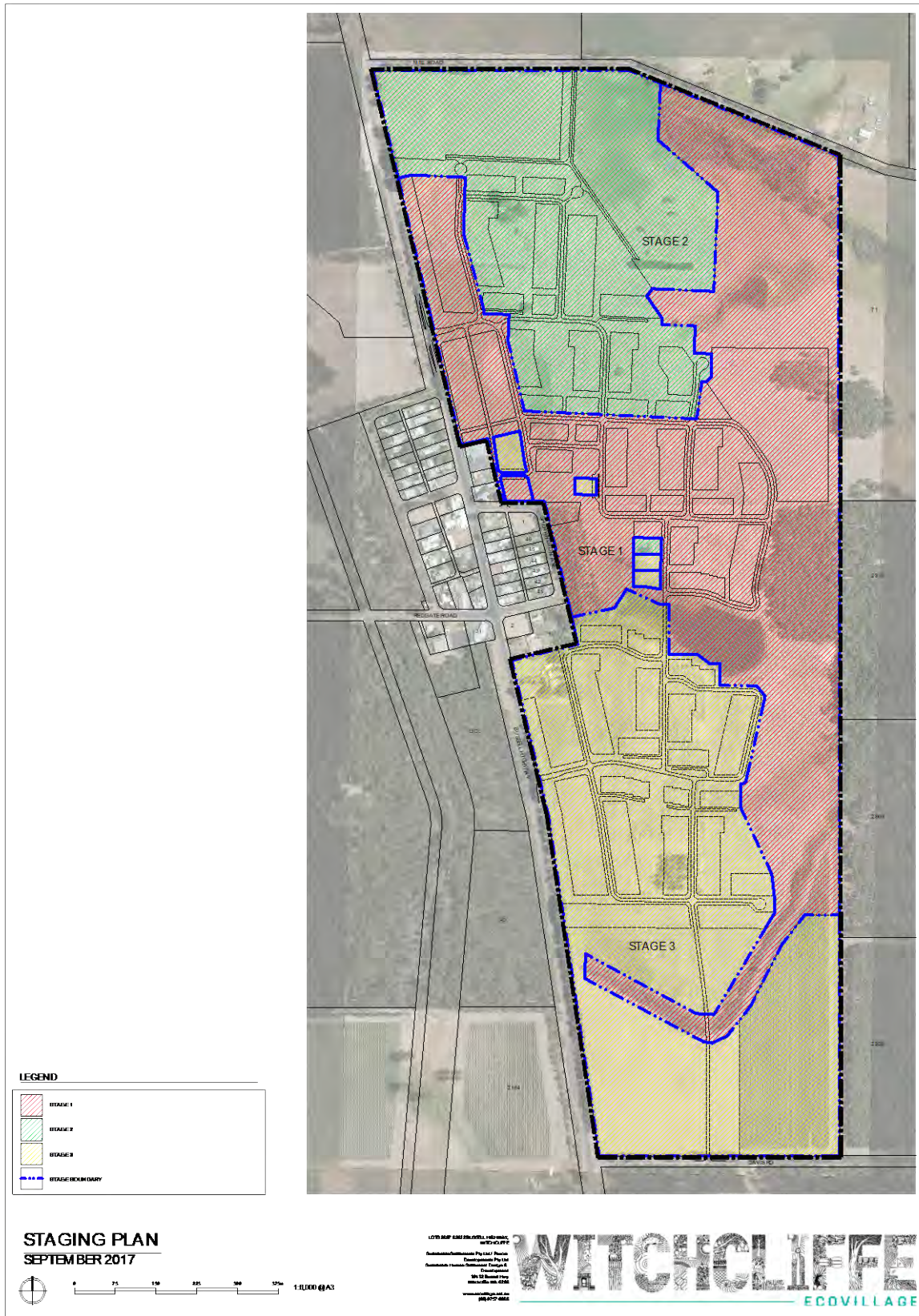
### *3.7.2.2 Self Sufficient Micro Grid Supply*

In this option, each cluster/stage, or alternatively, the entire ecovillage, will be provided with its own microgrid to share clean, renewable energy between homes and businesses. The microgrid/s would ideally be fitted with extensive monitoring equipment, enabling data to be gathered for use in research and other projects. This level of self-sufficiency in renewable energy in a project of this scale will set an international precedence.

There are two potential models for the Self Sufficient Micro-grid Supply option:

- Each Strata Cluster and Green Titled lot will have a single metered connection to the Western Power grid, which will run under the road reserves. This will enable trading of energy between residents in each strata and the purchase and sale of renewable energy through the Western Power grid. The common infrastructure, including microgrids, will be owned by the strata company. Maintenance, management and depreciation costs of the microgrids will be factored into strata fees.
- A single micro-grid for the whole ecovillage with a single connection to the Western Power grid. This will require an ERA approved Transmission License (for land tenure option A only, see Appendix 15, Land Tenure and Preliminary Strata Outline,) which would be initiated by the developer and transferred to the Ecovillage Common Pty Ltd once all lots are sold and the transmission company is profitable. The common infrastructure, including microgrid, transformers, and metering/smart technology will be owned by the licensee. Maintenance, management and depreciation costs of the microgrid will be factored into transmission fees.

Figure 14. Staging Plan





The Witchcliffe Ecovillage Self Sufficient Microgrid Supply option utilises many technologies important to Australia's future, with strong national and international energy industry interest growing in the project, and provides the perfect model with which to demonstrate what a wholly sustainable and environmentally conscious future in Australia looks like. The monitoring of the implementation of this knowledge will be a valuable resource for furthering the design of micro energy systems as well as improving education plans for the future. Energy efficient design and development of the whole village will demonstrate what can be achieved when such consideration is put into a residential community of this scale. This will provide invaluable data when coupled with monitoring equipment, which may be used to set an example for how efficient our communities can be.

The project will share knowledge through:

- Analysis of high level details surrounding the technology implanted and the challenges faced;
- An impact study focusing on community education and stakeholder management during the deployment of each stage; and
- Analysis of the performance of the energy systems, including the engagement of residents.

While developing models to determine the infrastructure requirements for the energy systems of Witchcliffe Ecovillage, it was found that there is very limited information available, both locally and internationally, to aid in the accurate design of energy systems such as the microgrids proposed for the Ecovillage. Additionally, average energy usage figures predominantly feature inefficient housing design and management, an unfortunate trend in Australia today.

In order to provide long-term, sustainable energy solutions for efficiently designed off-grid communities into the future, data needs to be collected and a better understanding of the following is required:

- The energy requirements of efficiently designed solar passive homes on a residence and community scale.
- The effect education programs on efficient living and building management has on energy usage patterns; and
- The operation of microgrid management systems in real-world settings

### 3.7.2.3 *Self Sufficient Household Supply*

This option requires that each home is self sufficient in renewable energy supply, most likely from PV and battery storage. This option isn't presently economically viable due to the cost of the extra batteries that would be required being greater than or equal to the cost of a micro-grid and connection to Western Power's grid, without the great benefit of being able to share and sell excess renewable energy through the micro-grid and WP grid. However, new technology may make this option viable in the future.

### 3.7.3 Water

Rainwater tank infrastructure for water supply will be provided by lot owners at dwelling construction stage. This timing is required for access to roof catchments for rain water collection and enables decisions to be made regarding sizing and siting of tanks to suit dwelling designs. The developer will assist homeowners in sourcing rainwater tanks through bulk purchasing arrangements. This will ensure minimum quality standards are achieved, lead to greater consistency of materials and designs of tanks across the development and utilise greater scale to reduce costs. More comprehensive details regarding water infrastructure are included in the Local Water Management Strategy (Appendix 8.)

#### 3.7.4 Wastewater

Wastewater collection, treatment, storage and irrigation infrastructure will be provided by the developer on a staged basis at subdivision, with staging as per Figure 14. Staging Plan. The developer will establish agreements with a licensed water service provider that will be responsible for providing the system design, obtaining necessary approvals and licenses, commissioning the system and the ongoing operation and maintenance. Additional details regarding the wastewater treatment and reuse infrastructure is included in the Local Water Management Strategy (Appendix 8.)

#### 3.7.5 Stormwater

Stormwater infrastructure will be provided on a staged basis at subdivision by the developer in line with the development stages shown in Figure 18, Staging Plan.

The approved dam in the southern catchment is planned to be constructed under the existing approvals prior to the development process. Expansion of the northern stormwater storage is required prior to completion of stage 2.

A plan showing the layout and a more detailed description of stormwater treatment, conveyance, storage and reuse infrastructure is included as part of the Local Water Management Strategy, (Appendix 8).

#### 3.7.6 Transport

Construction of roads and infrastructure required for access to and functionality of each stage will be staged accordingly, as follows:

The northern Bussell Highway intersection will be constructed in stage 1 of the project as the access point for the northern portion of the development. Works will be completed along with internal roads required to provide access to stage 1 at subdivision.

Internal roads required to provide access to stage 2 will be completed at subdivision.

The southern Bussell Highway intersection will be constructed prior to subdivision of stage 3 with internal roads for this stage being constructed concurrently at the time of subdivision; and Access for construction traffic for the project will be provided via existing farm accesses on Mill Road to the north and Davis Road to the south and from the new Bussell Highway intersections to minimise any impacts to existing residents and businesses from construction traffic.

#### 3.7.7 Community facilities

Development of community facilities, including the oval and community centre, is to be completed in the short term in conjunction with subdivision of stage 1. Community gardens will be constructed as each strata cluster is subdivided.

### 3.8 Developer contribution arrangements

The developer contributions for the project will proceed in line with AMR LPS1 Scheme Amendment 35, “Development Contribution Plan”, DCA1: District, and DCA5: Witchcliffe. The items to be funded from DCA5 are those identified in the Witchcliffe: Evolving Towards Tomorrow Community Infrastructure Plan. Contributions will be calculated on a “by lot” basis, excluding any lots developed as Affordable Housing, as per the recommendations of the AMR Affordable Housing Strategy 2015.

### 3.9 Affordable housing strategy

#### 3.9.1 Planning context

The Witchcliffe Ecovillage Structure Plan is required by the WVS and AMR LPS 1 to contain a housing affordability strategy, however, there are no State or local planning requirements to include a mandatory affordable housing component. As the WVS has set an approximate lot maximum for the project, and the construction and sustainability infrastructure costs per lot are similar regardless of size, there is little room for increased density or “lot size diversity” to stand in as a proxy for affordability as is usual in conventional developments.

The AMR Affordable Housing Strategy (2015) recommends that negotiations to establish voluntary agreements with land developers should ideally occur prior to initiation of Scheme Amendments to rezone the land (where necessary) and agreements secured through Scheme provisions.” As this did not occur prior to the submission in 2014 of draft Scheme Amendment 28, no voluntary agreement, or negotiations to increase lot or dwelling numbers in order to facilitate provision of affordable housing, have been formalised.

#### 3.9.2 Affordability Parameters

As a sought after premium holiday destination, with a higher than usual demand for tourist accommodation and holiday homes, the Margaret River real estate market has historically maintained relatively high property and rental values, resulting in housing affordability indicators more on a par with Melbourne than neighbouring south west towns. Housing affordability is therefore a key issue affecting lower income earners in the Augusta-Margaret River region, and AMR has released an Affordable Housing Strategy in response to this issue. It sets a guideline for housing affordability in the Margaret River region as:

- Rent 20% below median market rate.
- Land price of approximately \$100,000.
- Per sq. m build cost of approximately \$1000; or
- House and land price 40% below the median market rate (currently \$280, 000).

The Department of Housing identifies three bands of low-income groups and their expected primary housing needs (see Table 7). The affordable products proposed by the Witchcliffe Ecovillage Affordable Housing Strategy (Appendix 14) are targeted at those households which fall into the Department of Housing’s band C target group and are seeking to transition to affordable home ownership. Band A and B income brackets are beyond the scope of this private development, and are generally provided for by Department of Housing, non-profit housing providers or NRAS subsidised rental providers. The low income purchaser eligibility criteria and application process will be confirmed prior to subdivision of the special purpose lots, but will need to comply with the legal requirements of private sale contracts.

Larger house and land products, whilst not meeting the AMR AHS guidelines, will be less expensive than standard housing products, with the bonus of all of the sustainability features, affordable living opportunities and community infrastructure provided by the ecovillage.

**Table 10. Dept. Housing Target Low Income Groups**  
(Affordable Housing Strategy 2010-2020, Dept. of Housing.)

<b>Broad Target Groups Under the Strategy</b>		
<b>Group</b>	<b>Characteristics</b>	<b>Primary Need</b>
<b>Band A</b>	People with very low incomes (less than \$36,000 p.a. as at August 2010*) and other physical or social disadvantages (e.g. disability, homelessness) that impede their ability to secure private housing	Suitable Social Housing (rents below 30% of income)
<b>Band B</b>	People with low incomes (\$36,000– \$57,000 p.a. as at August 2010*) but who are not otherwise disadvantaged	Affordable Private Rentals (rents 20% below market levels)
<b>Band C</b>	People on moderate incomes (\$57,000–\$86,000 p.a. as at August 2010*) who are unable to access affordable housing in the standard housing market	Affordable Private Rentals and/or Home Ownership

### 3.9.3 Witchcliffe Ecovillage Affordable Housing

The Witchcliffe Ecovillage AHS proposes a number of innovative measures that will provide:

1. Affordable Housing Products:
  - 300m<sup>2</sup> special purpose dwelling lots < \$100, 000
  - Single bedroom special purpose dwelling (70m<sup>2</sup>) house and land package <\$250, 000
  - Aged/dependent care special purpose dwelling (100m<sup>2</sup>) house and land package <\$280, 000
  - Sustainable 2/3 bed Cottage house and land packages from \$350, 000
  - Sustainable Family house and land packages from \$400, 000.
2. Affordable Living Opportunities
  - Nil water consumption costs.
  - Nil water service rates.
  - Reduced energy costs.
  - Community garden infrastructure to provide very low cost fruit, vegetables, eggs, honey, nuts, olives, olive oil, etc.

### 3. Affordable Housing Support

- Free sustainable/affordable building advisory service for owner/builder purchasers.
- Ecovillage building design guidelines to promote reduced house sizes, affordable building design, and alternative materials.
- Potential building material recycling depot.
- Promotion of Keystart loan opportunities to eligible purchasers.

### 4. Affordable Rental Opportunities

- The developer will negotiate with Department of Housing, local council and interested local residents to encourage the participation of an affordable housing collective within the Witchcliffe Ecovillage.
- Family sized lots have been proportioned to ensure that ancillary accommodation can be built without compromising solar access and amenity, with the potential for households to provide low costs rentals and supplement their income.
- A low cost ancillary dwelling product will be offered as an option on Family house and land packages.

As these measures are varied and their success will depend on market response and economic viability, the AHS does not set an affordability quota, but rather proposes “that each stage of the development will include a dedicated affordable housing product component, as well as providing affordable living initiatives throughout the whole Ecovillage.” However, if the outcomes of the AHS can be fully realized over the course of the project, dedicated affordable housing will account for approximately 20% of all dwellings in the Ecovillage.

### 3.10 Land Tenure & Preliminary Strata Outline

The provisions of Scheme Amendment 28 require that this Structure Plan be accompanied by a Proposed Land Tenure and Preliminary Strata Outline (Appendix 15.). This will provide a broad overview to inform the Structure Plan, however, the detailed documentation of the strata development, including Management Statements and by-laws, will be provided at subdivision.

The community ownership of the energy, water, wastewater treatment, and food production infrastructure required to fulfill the sustainability objectives of the Witchcliffe Ecovillage requires a different land tenure approach to standard residential subdivisions. This specialized approach to land tenure will particularly be required:

- For the servicing of infrastructure to achieve a high level of self sufficiency and efficiency and reduce costs.
- To manage the maintenance of community open space for both recreation, conservation, and food production; and
- To bring future residents together as a whole to achieve these goals and create a cohesive community.

Therefore, the land tenure needs to provide residents with both security of tenure over their own housing lot and give them the means and confidence to invest in their own homes and gardens, while also providing a share in the ownership of their community gardens and greater common, including areas for recreation, community agricultural/silvicultural activities, waste water management and disposal, and conservation.

The most effective tenure option to achieve this is a survey strata scheme development (SSD) under the Strata Title Act WA 1985 (“the Act.”). In particular, the creation of strata management statements and by-laws will provide a robust means to ensure that the vision and objectives of the Ecovillage are preserved in the long-term.

At present, the Strata Title Act is undergoing a process of reform, with proposed Community Title Scheme (CTS) legislation currently being prepared for Cabinet and Parliament by the West Australian Department of Land. CTS development may offer another very viable alternative model for the strata management of the Witchcliffe Ecovillage. However, due to the uncertainty of the parliamentary process, this Structure Plan outlines how the land tenure would be organised under either an existing Survey Strata Development (SDS) or the proposed CTS.

The land tenure management format is therefore proposed to be structured as either multiple integrated SSDs, united through shares in an Ecovillage Common company (Option A), or the proposed CTS (Option B) as described below.

### 3.10.1 Option A: Existing Strata Title Act

Due to the many issues associated with one large survey strata development over the whole project (e.g., problems with deviating from the original plan in future stages without unanimous resolution from owners and financiers of lots sold in earlier stages) the only secure and legible way to proceed under the existing SSD would be to create a combination of green title and survey strata lots, as per Figure 14, Staging Plan, as follows:

- Four large Village Centre lots surrounding the village square (identified as “Community Centre,” “Boutique Hotel,” “Creative Hub” and “Food Hub” in Figure 12. Witchcliffe Ecovillage Development Concept Plan), and the large triangular shaped Tourist lot (north eastern corner of Stage 1) will be green title lots, with covenants/memorials on each title that mandate compliance with the Ecovillage Design Guidelines, Local Development Plans, and sustainability outcomes.
- Eleven residential clusters with central community gardens will be large freehold lots to enable survey strata developments on each one, where the residential lots within each cluster will be survey strata lots that own the central community garden in common. While each cluster will be managed as individual stratas, they will all be united by the same strata bylaws that will ensure that the Ecovillage’s sustainability objectives are met.
- Two Lifestyle survey strata companies adjacent to Bussell Highway (northern and southern) without common land, but linked to the Ecovillage sustainability objectives and Design Guidelines through their by-laws.
- One Village Centre survey strata company of Village Centre zoned lots adjacent to Bussell Highway, and the lots directly behind these, with a central laneway that will be ceded to the Shire at subdivision.
- One Eco Tourism cluster, comprising 12 survey strata lots surrounded by a shared garden.

- Three separate survey strata companies (northern, central and southern) containing the land zoned “Special Use – Ecovillage Agriculture Lots.” This zoning will restrict their land use to organic agriculture only and prohibit dwellings being built on them. The lots will be staged by the subdivider to ensure that central lots will be offered to Stage 1 purchasers, the northern Lots to Stage 2 purchasers, and the southern lots to Stage 3 purchasers. A water allocation will be provided from the Ecovillage dams, as per Appendix 8, Local Water Management Strategy.
- The area identified in Figure 1, Structure Plan map, as “Special Use Zone – Ecovillage Common” will be owned by Ecovillage Common Pty Ltd (EC P/L). This land will be transferred to EC P/L prior to subdivision of Stage 1 and it will have as many shares as there are total lots in the whole ecovillage project. Shares in EC P/L will be transferred to the various strata companies and each of the green title lots upon the sale of each lot. The wastewater treatment will be operated by a licensed wastewater treatment provider, who will provide the wastewater treatment services to each residential and commercial lot.
- Land zoned “Special Use Zone – Wastewater treatment and Depot” will be owned as a green titled lot by either the EC P/L, or the company licensed by the ERA to provide the wastewater services.

The EC P/L will be responsible for managing the dams, conservation land, shared path network, and public open space (where agreed with AMR). All associated costs will be borne from the sale of water to each of the strata companies, income from events, and contributions from each of the strata and green titled lots. The board of EC P/L will be made up of one representative of each lot type, as follows: Family, Cottage, Affordable/Aged Care, Lifestyle, Village Centre, Commercial, Tourist/Cottage Short Stay, and Agricultural.

The board will therefore have 8 members plus the appointed CEO/Manager. A licensed wastewater service provider will be required to manage and maintain the wastewater service, which will reduce management and maintenance risk for all lot owners. The developer will enter into an agreement with the proposed water service provider to establish a licensed sewerage system, with licensing of the system dependent on approvals from Department of Health, Department of Environment and Economic Regulation Authority required as part of the subdivision process.

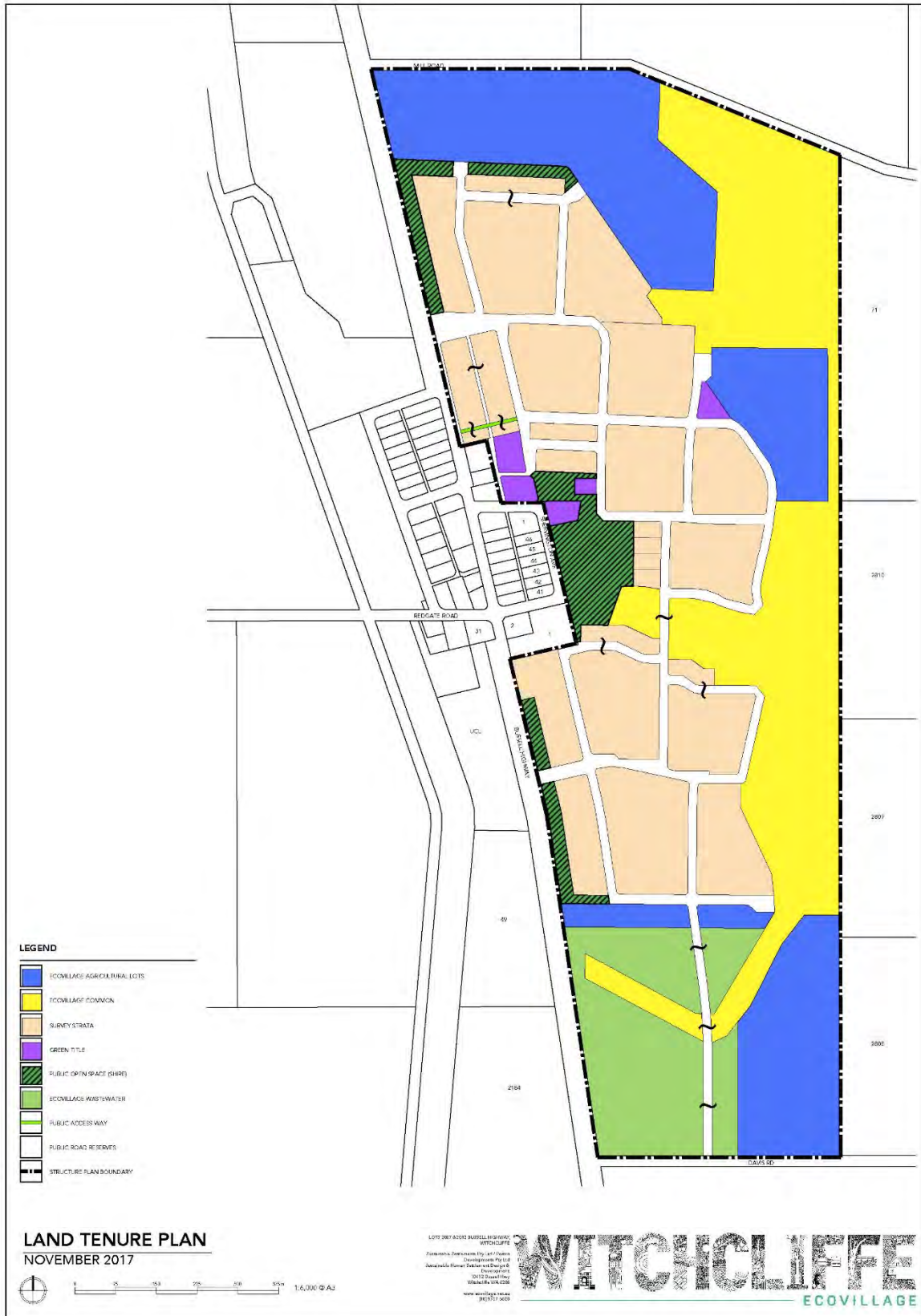
The Strata Title Act enables each of the stratas to be tied together through an Ecovillage “theme” statement, which will exist as a clause within all of the individual stratas’ Management Statements, outlining the ecovillage vision, values, management and structure.

The Strata by-laws will include:

- Schedule 1, Strata Company protocols; and
- Schedule 2, all land, building (including building design and sustainability guidelines) and common infrastructure management requirements.

Ecovillage strata by-laws and management statements will be lodged prior to subdivision, and will be prepared in accordance with the Act and the Strata Titles General Regulations 1996.

Figure 15. Proposed Land Tenure Option A





### 3.10.2 Option B: Proposed Community Title Scheme (CTS)

The proposed CTS is a new form of strata scheme where:

- Multiple sub-schemes exist under an umbrella community scheme.
- Each sub-scheme has its own strata company; and
- The strata companies all operate under an overarching community corporation, as per Figure 19, Community Scheme.

**Figure 16. Community Scheme Structure**



(Landgate, 2016)

Community Titles Schemes have existed in other Australian states for many years, and have been used for ecovillage type developments with success. Under the Western Australian reforms, CTS will be able to have up to three levels or layers of management, and multiple member schemes, of both built and survey strata. The new CTS will be incorporated into the Act.

The proposed CTS is anticipated to enable:

- Better control and management of the development that allows the lot/home owners more input into the overall management of common land and infrastructure.
- More flexible development options with a mix of built form and survey-strata,
- A functional mixed use development.
- Layered ownership and management schemes with greater clarity of rights and obligations.
- Each cluster to be their own mini-strata, owning and wholly responsible for their own survey strata lots with joint ownership of their community garden, whilst also owning a share of the greater common land and infrastructure.
- The use of a Community Development Statement (CDS) to put the completed development on public record, including the controls and requirements of government agencies, so that purchasers will be fully informed of the intent of the completed development.
- The by-laws contained in the management statement to complement the CDS and will contain regulations which govern how the theme and objectives of the development will be achieved and managed; and
- The proposed subdivision pattern for the whole development to be available at the outset, with a clear plan identifying the staged creation of community lots.

One of the clear benefits of the proposed CTS is the ability to stage the project with:

- Specified ‘development’ and ‘future development lots’ with an expanded range of ‘minor variations’ to the Development Statement allowing some variation in lot yield/diversity and building locations should the marketing of earlier stages warrant such minor amendments, without requiring unanimous resolution by all existing strata lot owners and their financiers.
- Discretionary proposals may not require strata corporation consent
- Changes to Development Statement by ‘special’ resolution not ‘unanimous’ resolution.
- Specified ‘approved/binding’ development and ‘discretionary proposals’ to enable future development decisions that are based on both commercial and community requirements.
- The proposed CTS may provide an alternative hierarchical structure to organise up to three potential levels of management within the Witchcliffe Ecovillage (see Figure 20, Community Title Strata Management Diagram). For detailed explanation of the potential management structures, please see Appendix 15.

The CTS will require the preparation of the following:

- A Community Plan (plan of subdivision);
- A Community Development Statement (developers’ intentions, requires WAPC approval);
- Community Corporation (to administer and manage the Community Scheme & Plan);
- Community Lots (survey strata lots for current development);
- Community Development Lots (future stages with separate titles); and
- Community Property Lots (common property).

The overarching principles of the eco village will be controlled through a Community Development Statement. A Community Development Statement (CDS) will be a compulsory document lodged with the survey- strata plan, this document will set out the likely construction and facilities to be provided and the sequence and timing of the staging and the infrastructure and facilities to correspond to the respective stages and will also include all:

- Project themes/objectives;
- All relevant information;
- Warnings;
- Notices;
- Requirements of WAPC;
- Conditions of approval from all relevant Govt. departments;
- Guaranteed developer deliverables; and
- Discretionary proposals – potential and permissible development.

The CDS will provide a level of clarity for the decision makers and certainty for consumers and will need to be submitted and approved by WAPC prior to subdivision.

An indicative three tiered Witchcliffe Ecovillage Community Title structure is provided at Figure 17.

**Figure 17. Proposed Witchcliffe Ecovillage Community Title Structure**

### 3.11 Ecovillage Sustainability Features and Outcomes

The Witchcliffe Ecovillage Structure Plan aims to create a groundbreaking model of environmentally responsible residential development, setting benchmarks for energy, water, and food sustainability that have never been achieved before in an Australian subdivision on this scale. For comprehensive details, please refer to the Sustainability Features and Outcomes Plan (Appendix 16).

#### 3.11.1 Water sustainability outcomes

Water sustainability initiatives incorporated in the development in order to achieve 100% onsite water self-sufficiency include:

- All household water supplied by onsite collection and storage in rainwater tanks;
- Potential reduction in household water demands and wastewater generation through encouraging use of composting toilets, with information about water and energy savings and reuse of nutrients by composting toilets provided to purchasers and construction of demonstration composting toilet technologies;
- Reduction in irrigation water required for landscaping within private lots through landscape design and use of grey water for irrigation. Note that this criteria will be self regulating as lots will not be provided with an external scheme water supply;
- Collection of surplus water (after meeting potable requirements) in rainwater tanks for garden irrigation on larger (lifestyle) lots;
- Reduction in wastewater volumes for treatment through encouraging use of grey water irrigation within private lots;

- Reduction in offsite agricultural water use through provision of onsite food production including edible fruit and nut tree and dedicated vegetable gardens. As the average Australian family uses 100kL of water every ten days embodied in the food purchased from supermarkets, this is one of the most important water sustainability features utilized in this development;
- Reduction in offsite water use for coal fired power generation by onsite solar PV power generation. Approximately 3.7ML of water will be saved per year compared to a conventional subdivision with average power consumption;
- Establishing an information and education centre that demonstrates sustainable technologies within the Witchcliffe Ecovillage including composting toilets, rainwater management, grey water systems and sustainable gardening practices such as mulching and efficient irrigation techniques;
- Use of landscaping that requires minimum water use including Mediterranean and native plants, e.g. olive production from landscape buffer strip;
- Collection and storage of excess stormwater runoff in storage dams for use in onsite irrigation;
- Onsite wastewater treatment and use of treated water for low risk irrigation, primarily agricultural use on adjoining vineyard and farmland;
- Use of low energy wastewater conveyance (gravity flow) where possible and low energy wastewater treatment technologies; and
- Establishing aquaculture and hydroponic (aquaponics) systems within each cluster as a low water use protein food production technology.

### 3.11.2 *Energy sustainability outcomes*

Energy sustainability initiatives incorporated into the development in order to achieve 100% net on-site energy production include:

- All lots oriented for optimum passive solar house orientation. Larger lots with a east west axis and road access and garage on the southern side to maximise the northern exposure, and smaller lots on a north south axis with the front of the house facing north to avoid shading of northern sun in winter;
- Building envelopes have been designed to guarantee solar access into the future;
- Reduction in household energy use through building design guidelines requiring passive solar, energy efficient house design exceeding the requirements of the National Building Code;
- Guidelines for energy efficient appliances to minimise size and cost of solar PV and battery storage;
- Guidelines for roof geometry to maximise efficiency of solar energy generation;
- All households generating energy onsite using renewable energy generate by rooftop solar voltaic cells, with the project achieving at least net neutral renewable energy supply, i.e. net energy produced by renewable means on site exceeds net non renewable energy supplied by Western Power grid;
- Renewable energy stored using battery storage systems to enable households to be fully serviced by locally generated renewable energy, with the possibility (Option B) of the provision of microgrids within clusters to enable use of surplus energy during periods of higher solar exposure to be used for other uses such as recharging electric vehicles and pumping water for irrigation;
- Provision of sufficient surplus energy will be produced by the cluster microgrids (in Option B) to enable the powering of an electric vehicle for 20,000km per annum, per household. The proponent is exploring low interest funding opportunities through Clean Energy Finance Corporation and community banks for Ecovillage residents to purchase electric vehicles to utilise this excess energy;

- Provision of a wastewater treatment system that is powered by renewable energy produced within the ecovillage;
- Provision of a comprehensive pedestrian and cycling strategy centred around a path network through community garden areas linking every household to the village centre and existing town centre to minimise transport energy use; and
- Food grown in the community gardens and surrounding agricultural holdings will significantly aid in reducing the community's energy footprint. A study done by CERES found that in the average Australian's weekly food shop, the sum of the distance travelled by the food was over 70,000km. This highlights the importance of buying local food or growing it at home when living a sustainable lifestyle.

Building design guidelines will ensure buildings utilise solar passive design as well as other energy efficiency features, exceeding the standard BCA requirements, creating comfortable homes and workplaces. The majority of energy used in the average home is for heating and cooling. By ensuring only energy efficient, solar passive buildings are constructed, an immediate impact is had on the size and capacity of the energy infrastructure. This is further increased by the use of energy efficient appliances in homes and the planned education programs for residents, teaching them efficient building management strategies and energy saving measures.

### *3.11.3 Food sustainability outcomes*

Community gardens have the potential to produce large amounts of fresh food for participating households, and community cooperation creates opportunities to share and barter surplus amongst households. Each household will have access to approximately 20 m<sup>2</sup> per person of dedicated community vegetable plot, (sufficient to intensively grow a large proportion of the fresh vegetable requirements for one person) as well as shared space for communal orchards and chicken pens. Residents will have the ability to greatly reduce their fresh food budget, whilst also reducing their supermarket food miles and agricultural water consumption. Households can potentially produce around 4 kgs (per person) of vegetables each week from their vegetable plots. In addition, honey, eggs, chickens, olive oil, fruit, marron and fish will all be able to be produced in the community gardens, orchards and communal spaces of the Ecovillage, and the surrounding organic agricultural precinct may provide opportunities for households to take part in Community Supported Agriculture.

All family, cottage, mixed use and affordable lots will have direct access to community garden areas irrigated from water collected onsite. See Appendix 17, Community Garden Design, for indicative landscape designs for both a typical strata cluster, and the studio cottage strata cluster adjoining the Village Square. Lifestyle blocks adjoining Bussell Highway have been proportioned to provide ample space internally for private food production.

The Ecovillage will include 1 x 5.9ha and 16 x 1ha strata lots within the agricultural zones for semi intensive organic food production (primarily horticultural uses) all provided with sustainable water allocations. These will have the capacity to support the establishment of niche organic horticultural smallholdings and provide a substantial proportion of the fresh food requirements for the Ecovillage. Potential ventures include market gardens, orchards, berries, apiculture, viticulture and winemaking, truffles, tree nut production (chestnuts, pecans, walnuts, macadamias), small-scale dairy and meat production, legumes, aquaponics, etc.

A large commercial site in the village centre has been earmarked for development as a Local Food Hub, a centralised collective facility for the packing, processing and sale of food produced within the Ecovillage and surrounding areas, loosely based on the alternative food distribution system concept of multi-farmer models for community shared agriculture, presented at the AMR in 2015 by Dr. Nick Rose, Project Coordinator at the Food Alliance (Deakin University).

#### 3.11.4 Transport sustainability outcomes

Low density development and regional areas present significant challenges in providing economically viable public transport alternatives, however, the following public transport opportunities will contribute to reducing dependence on the private car. Furthermore, disruptive technological innovations currently taking place will change public transport strategies in regional areas in the medium term.

##### 3.11.4.1 *Vehicles*

School bus services present the single greatest public transport initiative that will reduce private vehicle dependence and peak hour vehicle trips to and from the development. A high quality school bus service already exists within the region and the transportation network for the Witchcliffe Ecovillage includes off road pedestrian and cycle paths providing linkages to school bus services. Pick up and drop off locations will be determined in consultation with school bus service representatives and facilities such as shade, shelter from rain and bicycle parking will be provided to support walking and cycling to congregation areas.

Regional public transport services are already in place along Bussell Highway between Perth and urban centres. While this represents an insignificant number of trips, it may assist people within the village to adopt more sustainable forms of vehicles, e.g. electric vehicles, by providing alternative means for transport for occasional longer distance trips that currently represent additional challenges with electric vehicles due to range limitations.

Autonomous Vehicle Technology presents new opportunities for vehicle ownership models, potentially blurring the boundaries between private vehicle ownership, car share schemes and public transport. Transport futurists indicate that all vehicles sold will have some degree of autonomous technology by 2030 and while it is too early to provide details of how they will impact transport options for the Witchcliffe Ecovillage in the medium to longer term, it is likely that they will reduce the level of private vehicle ownership for future generations and reduce the need for large parking lots, but will be less likely to reduce vehicle trips.

**Figure 18. Cyclists on the Wadandi Trail to Witchcliffe**

#### 3.11.4.2 *Bicycles & Pedestrians*

The most sustainable form of transport is pedestrian and bicycle trips, minimising energy consumption, maximising use of space, eliminating (non biological) emissions and contributing to a healthy lifestyle. Mode share for bicycles and pedestrians versus other forms of transport is achieved in the Witchcliffe Ecovillage through provision of a high quality off street path network linking every household within the village to the village centre and the existing town centre. In addition, mirroring the successful recreational paths around Margaret River with linkages to the rails to trails or Wadandi Track, a recreational trail loop has been included in the path and trails network for the Witchcliffe Ecovillage.

The Wadandi Track also has potential to displace vehicle trips to Margaret River. With gentle grades, high standard of landscape amenity, shade and separation from vehicle traffic, the 20 minute cycle journey time between Witchcliffe and Margaret River will provide an attractive alternative including for school trips and commuters.

Cargo Cycles—shopping trips often result in multiple short distance vehicle trips placing additional demand on road and parking infrastructure. Provision of a cargo bicycle within each cluster that can be shared by the residents will be investigated with a trial cluster and could be extended through the village if successful.

Electric bicycles have shown promise as an accessible alternative form of transport for several years, and they are now starting to gain market share as the technology improves with lighter weight, greater range and lower cost products and wider availability in Western Australia. Innovative design solutions such as the Copenhagen Wheel are also providing a simple way to add electric assistance to existing bikes. Adoption of electric bikes on a broader scale will increase attractiveness of cycling to a wider proportion of the population and increase the effective range of bicycle trips for the average cyclist, further increasing the viability of the Wardandi track for transport to and from Margaret River.

## 4. STRUCTURE PLAN AMENDMENTS

### 4.1 Amendment 1

Amendment 1 to the Witchcliffe Ecovillage Structure Plan is premised on achieving several beneficial outcomes, which have emerged as the Ecovillage has developed. The areas of the Structure Plan affected by Amendment 1 are indicated in Figure 19.

At the time of Amendment 1, civil construction works were well advanced for Stages 1-3. The fundamentals of the Structure Plan are working well, and the key principles of sustainability, social responsibility and community development remain inherent. The changes in Amendment 1 have not impacted the overall residential cell layout and servicing arrangements of the overall development just execution detail at delivery stages follows:

- Modification 1 - Amendment 1 aims to create increased affordable housing within walking distance of the Witchcliffe townsite along Bussell Highway by changing the original low density R5-10 along this stretch to micro-clusters of small dwellings at R30-40. These built-strata developments will be small versions of the residential clusters dotted throughout the ecovillage but will feature compact terrace dwellings, clustered parking, and central veggie gardens. These sites are visually and acoustically buffered from the Highway by 2.5m high planted bunds.
- Modification 2 - six Cottage Lot clusters originally intended for short-stay accommodation (called 'Cottage /Short Stay' in the original Structure Plan) are specifically identified as locations suitable for Holiday Homes. This ensures that despite the Shire's more recent policy (which would not necessarily support holiday homes in these locations), there is certainty of these developments being available for short term, holiday accommodation alongside permanent residential occupation.
- Modification 3 - the amendment expands the Aged and Dependent site to the west by 9.5m to incorporate public open space on the eastern side of a large swale. This additional east-west lot width, which does reduce the overall POS contribution here, allows retention of two 20-30m tall gum trees as significant natural site features and habitat for local animals.
- Modification 4 - the boundaries between the two Special Use zones on the east side of the project, are adjusted to allow for community ownership of a future educational precinct by placing it in the Special Use Ecovillage Common area. The northern boundary of the remaining Special Use Ecovillage Agricultural Lots area extends further north now that the dam is fully constructed.
- Modification 5 - arising from consultation with the AMR Shire, establishing authority to prepare a Village Centre Parking Strategy.





#### 4.1.1 Micro-clusters

The two parcels for increased density in Amendment 1 are deep enough (east-west) to allow for a variety of cluster-based living configurations. The proponent has tested the northern precinct to understand the opportunity for 'micro-clusters' – arrangements of small dwellings around centralised community gardens, a miniature version of the residential clusters already approved for much of the project. Artist impressions are provided at Figures 20 and 21.

This clustered arrangement of dwellings allows for excellent solar access and solar panel placement, plentiful external area for food growing via centralised vegetable plots, individual roof catchments and rainwater tanks for potable water storage, and shared areas for carparking and community gatherings. The simple terrace design (attached side walls) and small size 60-70m<sup>2</sup> is intended to keep these units affordable, creating a communal, well-located housing option for those who otherwise would be forced into renting.

Clusters of 9-11 units will work well on parcels of 2600-3000m<sup>2</sup>, with an average site area per dwelling of between 260-280m<sup>2</sup>. This density fits comfortably within the R30-40 coding (average lot size 260m<sup>2</sup>). This configuration will be subdivided as built strata however other acceptable configurations may be possible via the Development Approval process. It is envisaged that these lots will be attractive to groups with interest in cluster-based housing aligned with a co-housing model.

**Figure 20. Artists Impression of Micro-Cluster Housing**



**Figure 21. Aerial View of Micro-Cluster Housing Pattern**

#### 4.1.1.1 Noise Attenuation

The sites proposed for increased density and the micro-clusters are flat and mostly sit east of a 25m strip of public open space that runs along Bussell Highway. Within this POS land, the proponent has constructed a 2.5m high earth bund for visual screening and acoustic dampening (refer Figure 22).

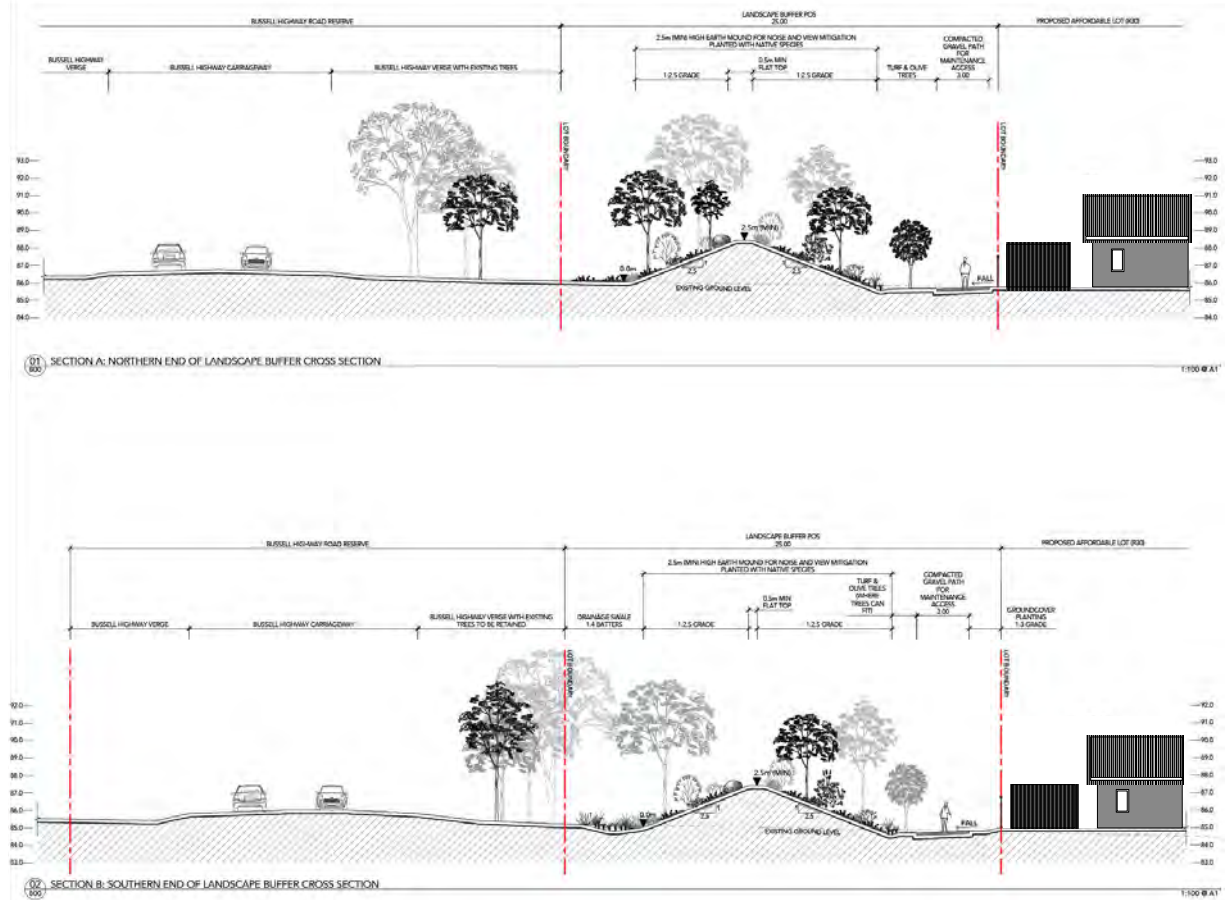
Noise modelling was undertaken to ensure that the highway noise adjacent to these parcels could be brought down to reasonable levels through a combination of distance from the highway, earth bund, and solid fencing (see Appendix 18).

#### 4.1.1.2 Aesthetics

The visual impact of the micro-clusters when viewed from the Highway will be minimal. This is due to the earth bund and associated vegetation, plus the existing line of mature gum trees along the Highway verge. From the cross section in Figure 22, glimpses of the tops of some roofs may be visible to drivers, but because of the proposed courtyard configuration only the western end buildings will be visible and there will be large gaps between them. Figure 23 shows how a similar vegetated bund along Bussell Highway in Cowaramup screens nearly all views of the housing behind.

In addition, a rural development pattern at the entrances to the Witchcliffe Village remain with the large 2000m<sup>2</sup>+ Lifestyle Lots on the north and south extremities of the project along the Highway. Thus, the oblique views of drivers as they approach the Village will focus on these larger properties, which will effectively screen the R30-40 micro-clusters from the north and south.

**Figure 22. Highway and Bund Cross-Section**



**Figure 23. Bund and housing adjacent to Bussell Highway, Cowaramup**



#### 4.1.1.3 *Traffic*

Given the robust design of the street network and the overall modest population numbers, the additional traffic from the increase in density will be accommodated by the streets and intersections as currently designed.

In context of the Traffic Management Plan at Appendix 11, Amendment 1 overall is anticipated to increase the daily traffic volumes by 142 movements (northern parcel) and 135 movements (southern parcel).

For the northern site, this pushes the total to slightly over the 1500 vpd target capacity but given a variety of mitigating factors as outlined in the Traffic Statement addendum at Appendix 18, it is demonstrated that this will not cause any issues.

For the southern site, the increased volumes are still well within the nominated 1500 vpd target capacity. The increases in peak trips through the two Bussell Highway intersections are minor, resulting in an additional 15 peak trips in each location. This additional traffic does not change the requirements for layout and design of either intersection at Bussell Highway.

#### 4.1.2 Tourism zone

In September 2018, after the Structure Plan was originally approved, the Shire of Augusta-Margaret River introduced a new LPP7 – Short Stay Accommodation policy. This aims to significantly limit the opportunity for short-stay accommodation in residential areas.

Under the policy, most types of short-stay accommodation (aside from bed and breakfast) are discouraged unless the site is located within 50m of a Village Centre zone. The subject sites cannot meet this criterion. Identifying these location as acceptable Holiday Home locations on the Structure Plan overcomes this matter and will ensure the intended short stay uses as planned can continue to be achieved.

It is very important for the ecovillage to ensure a sufficient short-stay accommodation supply to cater for anticipated, and significant demand in this regard. Given the location of the Witchcliffe Ecovillage within the world-renowned Margaret River region (named Top Destination in Asia Pacific in 2019 by Lonely Planet), providing sustainable tourism accommodation has always been a crucial factor in the overall Ecovillage strategy. It allows people living in other locations to get a taste of ecovillage life, perhaps influencing them to eventually decide to live here permanently. For others, the relaxed, natural environment provides a respite from busy city-based life and perhaps inspires them to live more sustainably where they usually live.

Significant international demand for tourism accommodation is also anticipated from those who wish to study the Ecovillage given that the project is likely to be one of the best built examples of a truly sustainable community in the world. It will be fertile ground for social researchers and sustainability advocates who wish to track and quantify village life and resource use. There will likely be associated sustainable living conferences and workshops, as well as food related events that draw hundreds to the area.

These sites have attractive outlooks over agricultural land, the central dam, the sporting field, or lushly landscaped entry road with planted swale. They are all separate to the residential strata clusters, which will reduce any conflicts between permanent residents and holidaymakers. This separation will also ensure that the residential clusters are mostly filled with permanent residents, which is key to developing social bonds within the community.

The subject sites will be developed as separate dwellings (rather than a large complex), with individual vehicle access from the south which allows for north-facing glazing, courtyards and balconies. As such they should achieve strong passive solar outcomes and need little artificial heating or cooling. They will be subject to the WEV Building Design Guidelines and will be required to undertake a Lifecycle Assessment.

#### 4.1.3 Shifting Boundary between Aged and Depending Housing and Public Open Space

After preliminary site investigations and creation of initial development concepts, it has become apparent that the existing gum trees on and near the Aged and Depending Housing site create a considerable constraint for development. Further, these large trees are a significant natural feature on the site and there is desire to retain them (see Figure 24).

To ensure the intended dwelling yield, the Aged and Dependent site is expanded 9.5m to the west (see Figure 25). This land is currently reserved for public open space, but because of its location west of a large swale, it is physically separated from the adjacent sporting field. As such, it is of limited use for active recreational purposes and may add to the Shire's maintenance burden.

While additional dwellings would not be able to be placed in this expanded section (also due to a sewer line running along the current western boundary), the additional land could be used for rainwater tanks, community vegetable gardens, and community meeting space. Shifting these elements away from the primary site will free up area to accommodate the intended Aged and Dependent dwellings and retain two of the trees.

##### 4.1.3.1 *Tree Retention*

It is anticipated that two of the three trees (#1 and #3 in Figure 25) can feasibly be retained, however this does require verification by a qualified arborist.

The current concept in Figure 26 shows how 21 dwellings could be accommodated on an expanded site, each with vehicle access, north facing courtyards, passive solar internal layouts, and attractive aspect to the street, central green space, or to the central dam. This concept is to retain Tree #1 in POS and Tree #3 in the common open space of the development, with appropriate buffers around them for safety.

The three trees in question appear to be mature Karri trees approximately 20-30m tall, with canopies between 15-20m in diameter. Tree 1 in the POS appears healthy; Tree 2 appears to be in poor health (to be verified by an arborist); Tree 3 appears in reasonable health although structure needs to be verified for safety.

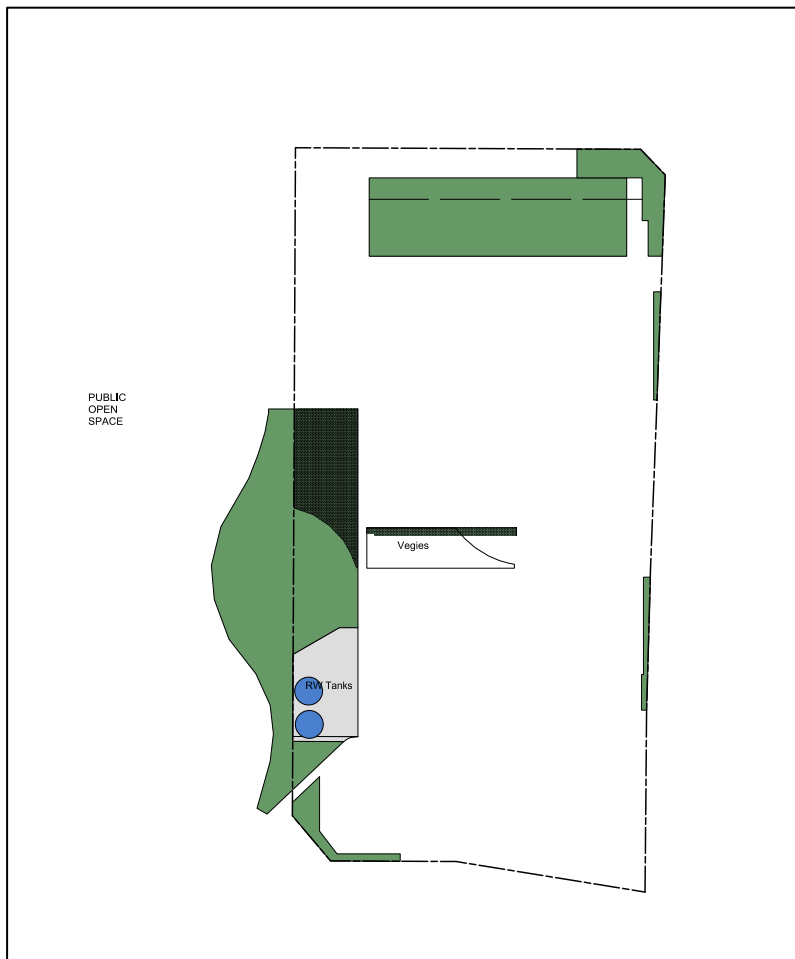
For planning purposes, a safety buffer of 5m from the dripline of the two trees to be retained has been assumed. This is to reduce risk of limb drop damaging buildings. In addition, pedestrian paths have been routed outside of this zone to minimise potential injury risk to residents.

**Figure 24. Existing gum trees on Aged and Dependent site**



**Figure 25. Aged and Dependent site expansion**



**Figure 26. Concept for Aged and Dependent Housing**

#### 4.1.4 Modifying Boundaries between Special Use Zones

The north boundary of this area will shift further north to correspond more closely with the constructed dam bank. This southern section is envisioned as a future private education precinct, to be owned and operated by the Ecovillage residents within the Special Use: Ecovillage Commons.

Now that the dam is constructed, the allocated area is excessive and as a result, a further 0.4ha portion can be reallocated. The benefit of shifting the south boundary of the Special Use: Ecovillage Agriculture parcel to the north and reducing it by about half is that it creates the opportunity for the ecovillage residents to own a share of the intended (future) educational precinct that is envisioned to be located there. This education precinct is still undefined, but early ideas include a private high school based on the Bali Green School, an adult education precinct, or a communal wood workshop.

##### 4.1.4.1 Bushfire Risk

Most of the Witchcliffe Ecovillage site is cleared and thus poses a low risk of bushfire.

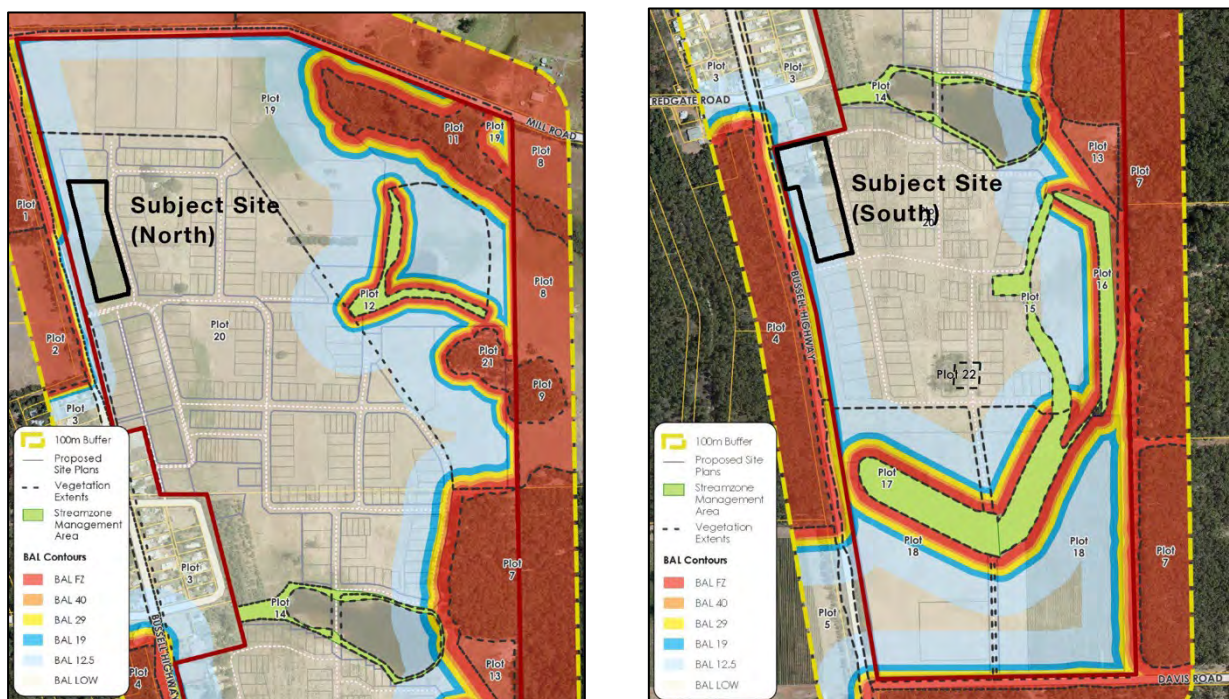
The expanded Aged / Dependent R30 site and the Tourism area are both low bushfire risk (BAL-Low). Given their number and spacing, the retained trees within the expanded Aged / Dependent R30 site do not themselves constitute a bushfire risk.



Vegetation however along the external edges of the project has some impact on a small proportion of the development sites. The increased micro-cluster density are two such locations, with a portion of each subject to the R12.5 bushfire restrictions (see Figure 27).

There is an existing stand of trees located on the Special Use: Ecovillage Agricultural Lot, which will remain on this land after the boundary adjustment. These trees create a high bushfire risk to the immediate surrounds, which is partly why this area was reserved for agriculture. The southern half of the current parcel – the area we are considering as an education precinct – is subject to much lower bushfire risk, ranging from BAL-LOW to BAL-12.5 over most of the site. The edges of the precinct are subject to higher bushfire contours, and this would need to be assessed and addressed in the concept design stage of any future proposal seeking development approval.

**Figure 27. BAL Ratings for Proposed R30-40 Sites**



#### 4.1.5 Village Centre Parking Strategy

From discussions with AMR Shire, the Ecovillage concurs that in order to more effectively manage and coordinate the provision of parking, that a Parking Strategy should be developed for the precinct.

Key considerations in this strategy would be providing for sufficient parking for commercial and public uses but not overproviding carparking. This assumes that many people will access the precinct by car, but that they will generally circulate by foot between commercial establishments.

Building on the recent experience of the Margaret River townsite, the Village Centre Parking Strategy will broadly address:

- Quantify proposed on-street and public carparking to be provided;
- Estimate parking demand based on currently planned commercial establishments and generic assumptions for the balance of the commercial land in the precinct;

- Allow a parking credit for private developments based on the public parking available on-street and in public open space (develop fair allocation method);
- Establish a consistent parking rate for all commercial development to facilitate future changes in land use;
- Set parking provision at 85<sup>th</sup> percentile of demand (same as what the Margaret River townsite), which has worked well;
- Account for the project high rate of walking and cycling that will occur in the ecovillage as a function of the careful design of streets and footpath network, and the close proximity to daily services;
- Allow for reciprocal parking between sites or uses where it can be justified;
- Allow for cash-in-lieu of up to 25% for larger developments;
- Investigate time limiting parking to ensure that key parking areas are retained for high-turnover businesses;
- Provision of wayfinding signage; and
- Allow for motorcycle parking.

Part 1 of the Structure Plan is amended to add in the obligation for the Parking Strategy in Table 4 Additional Information.

#### 4.1.6 Planning Framework

Amendment 1 is consistent with the planning framework that applies. This includes:

##### 4.1.6.1 *Draft Augusta – Margaret River Local Planning Strategy 2036*

Similar to the ecovillage, the draft LPS identifies core principles of sustainability, access and equity, climate change, social justice and technology / innovation. In general, these themes are very much aligned to the objectives and outcomes sought by the Witchcliffe Ecovillage.

With regard to future development in and around the Witchcliffe townsite, the LPS states that future development west of Bussell Highway is constrained by the lack of available reticulated sewerage. It suggests that the structure plans over these development sites near the townsite should be modified to allow development of larger ‘rural residential’ sized blocks that can handle wastewater disposal on site.

This change in strategic direction will significantly reduce the mix of lot sizes available in Witchcliffe, which limits the housing opportunities for those on lower incomes. This exacerbates the local affordability challenge identified in the LPS where the Shire recognises that Shire housing is classified as ‘severely unaffordable’ at 7.3 times the median income. The LPS identifies some strategies to address this, including increasing the diversity of housing types available by reducing regulations on Tiny Homes and promoting small secondary dwellings as ‘backyard infill.’

The proposed micro-clusters of compact, passive solar terrace housing around communal vegetable gardens offer another affordable housing option that is aligned with this objective.

##### 4.1.6.2 *Local Tourism Planning Strategy (April 2015)*

Incorporation of tourism sites in the right locations is encouraged in new developments:

*“In areas identified for settlement, adequate provision for tourism development should be factored into strategic planning for these areas early in the process.” (p.24)*

Sustainable tourism is encouraged in the Shire of Augusta-Margaret River:

*“The approach to tourism development should give due consideration to the principles of sustainability.” (p.20)*

In this regard, ensuring permissibility of the holiday homes is supported and consistent.

#### 4.1.6.3 *Witchcliffe Village Strategy 2012*

The WVS aimed to

*“create a vibrant rural village within a forest and farm setting, with respect for the physical, environmental and landscape character of the area, diversity in lifestyle choices and facilities, a strong sense of belonging, nurturing and celebrating local talent and industry, providing tourism experiences and promoting human spirit,”* as well as

*“... a vibrant rural village centre together with residential outcomes providing a balance between enclave-style development and consolidated urban form”*

The proposed modifications to the Structure Plan in Amendment 1 are consistent with this. The changes to adjust boundaries to retain existing trees and modifying boundaries reflect evolution of the project and a finetuning of detail.

Ensuring accommodation for tourists is a key tenant of the WVS. The WVS states:

*“Provision has been made for tourist facilities and experiences related to local interest. The key objective is to promote local identity through appropriately scaled tourism rather than introduce major tourist development.”*

This amendment preserves this independent of the Shire’s now adjusted aspirations for managing holiday home accommodation elsewhere in the Shire.

The proposed modification of the two residential cells from R5-10 to R30-40 to provide additional affordable housing within walking distance of Ecovillage community amenities, Witchcliffe town centre, and opposite the WVS identified “Civic, cultural and school precinct,” will contribute positively to the expression of consolidated urban form in the wider Witchcliffe village and provide increased social diversity and inclusivity in the growing Witchcliffe community.

This modification is compliant with all WVS Structure plan/development requirements for Cell 7 and 8, with the exception of the Cell 7 requirement to provide larger lots adjacent to Bussell Highway to “maintain rural village amenity.” This requirement, however, is no longer necessary, due to the inclusion of a noise attenuation buffer within the landscaped POS 25 m buffer that will visually obscure this area from the highway. In addition, the R30-40 lots will not have direct vehicle or pedestrian access to the highway, as per the requirements of WVS 2.10.

The WVS also requires Cell 7 to respond to the AMR Rural Hamlet Design Guidelines (2009.) The proposed increase in density is consistent with the urban design objectives of this document, including:

- Encourage variety of household types, groups, ages and ethnicities within communities by

- allowing for a variety of densities, lot sizes and housing typologies;
- Creation of compact community which avoids unnecessary urban sprawl;
- Higher densities should be associated with a range of uses/activities and amenity areas within walking distances;
- A clustered development with the relevant intensity in order to release the remaining land for productive use; and
- Buildings which are appropriate in scale to their surrounding landscape and Rural function (p.149.)

#### 4.1.6.4 *Augusta-Margaret River Shire Local Planning Scheme 1*

The proposed modifications are consistent with the requirements of LPS1.

The Scheme specifically seeks to protect certain significant trees in the region, suggesting a strong intention to retain vegetation on sites where possible. The Shire also has a policy relating to how to assess, manage and potentially remove trees that may be dangerous for various reasons (Infrastructure Policy 31 – Dangerous Trees).

For the changes for the micro-clusters, all development, built form, fencing and landscaping in the proposed R30-40 cells will comply with the requirements of the Scheme, including Clause 4.21.3 (b) which states:

*“(b) Notwithstanding clause 4.21.3(a), the local government may permit grouped and multiple dwelling developments up to a maximum of the R40 Code where a development addresses the following additional performance criteria to a standard acceptable to the local government:*

- (i) Buildings, in terms of the design of the building and the use of external building treatments and colours, are considered to be compatible with existing new development in the same area, or adopted Local Planning Policy;*
- (ii) Buildings elevations facing the street or other public places shall contain windows or other major or minor openings so as to present attractively to those streets or public places;*
- (iii) Development is to be designed to avoid the need for high screen walls along the street frontage or within the front setback area;*
- (iv) Where Screen fencing and retaining walls or any combination thereof are to be provided along boundaries with streets, rights-of-way or pedestrian access ways, and do not comply with the acceptable development criteria of the Residential Design Codes, they shall not exceed a height of 2.4 metres above natural ground level;*
- (v) Development is to involve the implementation of a plan of landscaping for areas between the buildings and any street or other public place;*
- (vi) Security gates and/or walls, if incorporated into any development shall be so sited as to ensure the use of visitor parking spaces are available at any time;*
- (vii) Developments are to incorporate sustainable building design, including solar passive and water sensitive design and the use of vegetation to soften the impact of development and to provide shade; and*
- (viii) Developments are to be connected to a reticulated sewerage system or an appropriate effluent disposal system for the treatment of effluent and provision of reuse of treated waste water.”*

#### 4.1.6.5 *Liveable Neighbourhoods*

The proposed modification is consistent with Liveable Neighbourhoods 2015 (LN.)

The proposed R30-40 lots are located within walking and cycling distance of the Witchcliffe town centre, school bus and TransWA bus stops, Witchcliffe Ecovillage commercial lots, Village Square, Community Centre and oval. The northern parcel is located directly opposite the land set aside as a “Civic, cultural and school precinct” in the WVS.

The proposed modification specifically enhances the Structure Plan’s consistency with the following LN principles and objectives:

- To develop a coherent urban system of compact walkable neighbourhoods which cluster around activity centres capable of facilitating a broad range of land uses, employment and social opportunities; and
- Facilitate housing diversity, responsive built form, local employment and amenity within a coherent and efficient urban structure of compact walkable neighbourhoods; and
- Provide housing density and diversity to meet the changing community needs.

In terms of public open space, and particularly in regional areas, LN enables variations to the 10 per cent POS requirement to be considered, taking into consideration local climatic conditions and community needs specific to the region.

The current approved Structure Plan has an allocation of 8.85% POS within the project area. This is in recognition of the extensive provision of communal open space throughout the project, the small town setting, and the proximity to beaches, agricultural areas, and National Forest.

Amendment 1 reduces the POS in the in front of the site by 1100m<sup>2</sup> however, this is counter-balanced by an increase in POS in the new bund along the Highway, resulting in an overall POS percentage increase to 8.98%.

**Table 11. Technical Appendices**

No.	Document	Author	Approval agency	Approval status
1	Public Open Space and Landscape Plan	Sustainable Settlements	AMR Shire	
2	Certificates of Title			
3	Flora and Vegetation Assessment	Litoria Ecoservices	AMR Shire	
4	Fauna and Habitat Assessment	Litoria Ecoservices	AMR Shire	
5	Environmental Corridor and Stream Zone Management Plan	Litoria Ecoservices	AMR Shire DPAW	
6	Environmental Assessment Report	Litoria Ecoservices	AMR Shire	
7	Geotechnical Report	Sustainable Settlements	AMR Shire	
8	Local Water Management Strategy	Sustainable Settlements	AMR Shire	
9	Bushfire Management Plan: Residential Development (PfBPG & SPP3.7)	RUIC Fire	FESA AMR Shire	
10	Aboriginal Heritage Consultation Report	Brad Goode & Associates	AMR Shire	
11	Traffic Management Plan	Sustainable Settlements	AMR Shire	
12	Economic and Retail Strategy	Sustainable Settlements	AMR Shire	
13	Energy Infrastructure Plan	Sustainable Settlements	AMR Shire	
14	Affordable Housing Strategy	Sustainable Settlements	AMR Shire	
15	Land Tenure and Preliminary Strata Outline	Sustainable Settlements	AMR Shire	
16	Sustainability Outcomes and Implementation Plan	Sustainable Settlements	AMR Shire	
17	Community Garden Designs	Sustainable Settlements	AMR Shire	
18	Amendment 1 Acoustic Modelling	Eco Acoustics	AMR Shire	
19	Amendment 1 Traffic Statement	Sustainable Settlements	AMR Shire	