GOVERNMENT OF WESTERN AUSTRALIA

Western Australian Planning Commission

lower Great Southern Strategy 2016

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Chairperson's foreword

The Lower Great Southern region is renowned for its spectacular coastal and agricultural landscapes, rich natural resources, pristine natural environment and quality lifestyle opportunities.

The Lower Great Southern has potential for considerable population growth, economic development and infrastructure investment in the medium term.

The key population centre of the City of Albany; and the Shires of Cranbrook, Denmark and Plantagenet, have economic, infrastructure and natural resource synergies to support future growth.

The region has grown and new challenges have emerged since the Lower Great Southern Strategy was first developed in 2007. The 2016 Strategy provides guidance and actions to help meet these challenges and balance economic, social and environmental considerations.

The Lower Great Southern Strategy 2016 should be read in conjunction with the Western Australian Planning Commission's *Great Southern Regional Planning and Infrastructure Framework* and the Great Southern Development Commission's *Great Southern Regional Investment Blueprint*. The three documents are complementary and provide strategic direction for growth of the region over the next 20 years.

I commend the collaborative approach taken by State Government agencies, Local Government and key stakeholders in preparing the Strategy.

Eric Lumsden PSM
Chairman
Western Australian Planning Commission

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Part 1 – Executive summary

1.1 Lower Great Southern Region

The Lower Great Southern is situated within the Great Southern region, incorporating the City of Albany and the Shires of Denmark, Plantagenet and Cranbrook (Figure 1). The Lower Great Southern is about 360km south of Perth and covers an area of 14828km^2 with 330km of coastline. It comprises some of the most productive agricultural land in the State. The region is recognised as a major residential and tourist destination. Its natural features and climate are attracting a growing number of new residents seeking a 'sea-change' or 'tree change' lifestyle. Responding to the growth potential of the Lower Great Southern requires sensitive planning and management of its land use, infrastructure and natural resource assets.

1.2 Purpose and Scope

The purpose of this strategy is to guide land use planning and provide strategic direction for the Lower Great Southern over the next 20 years. Specifically, the strategy aims to:

- provide guidance at a sub-regional level in the use of land to balance economic, social and environmental considerations;
- assist local government in preparing, reviewing and implementing local planning strategies and schemes, and other local planning and development matters;
- identify additional land of regional significance that may be required for regional open space purposes; and
- ensure land required for important regional infrastructure, priority agricultural land, economic growth opportunities, water sources and basic raw materials is identified and retained for those purposes.

Actions to achieve these aims are provided and have been assigned short (3-5 years), medium (5-10 years) or long (10+ years) implementation timeframes. This strategy recognises that some of the identified implementation actions are reflective of the ongoing core business of State agencies, local government and other groups. Whilst the WAPC often will not have a direct decision making or implementation role in such actions, they have been included in this strategy as they are important in achieving the vision for the Lower Great Southern and their ongoing implementation is supported. The strategy also does not duplicate the comprehensive set of statements of planning policy prepared by the WAPC; however, the strategy has been prepared in the context of these policies and in accordance with their principles and objectives.

A summary of the objectives and actions of the Lower Great Southern Strategy is contained in Table 1 (see Page 3). Part Two of the strategy contains a vision and discussion of strategic directions for the region. Part Three describes how implementation of the strategy is to occur.

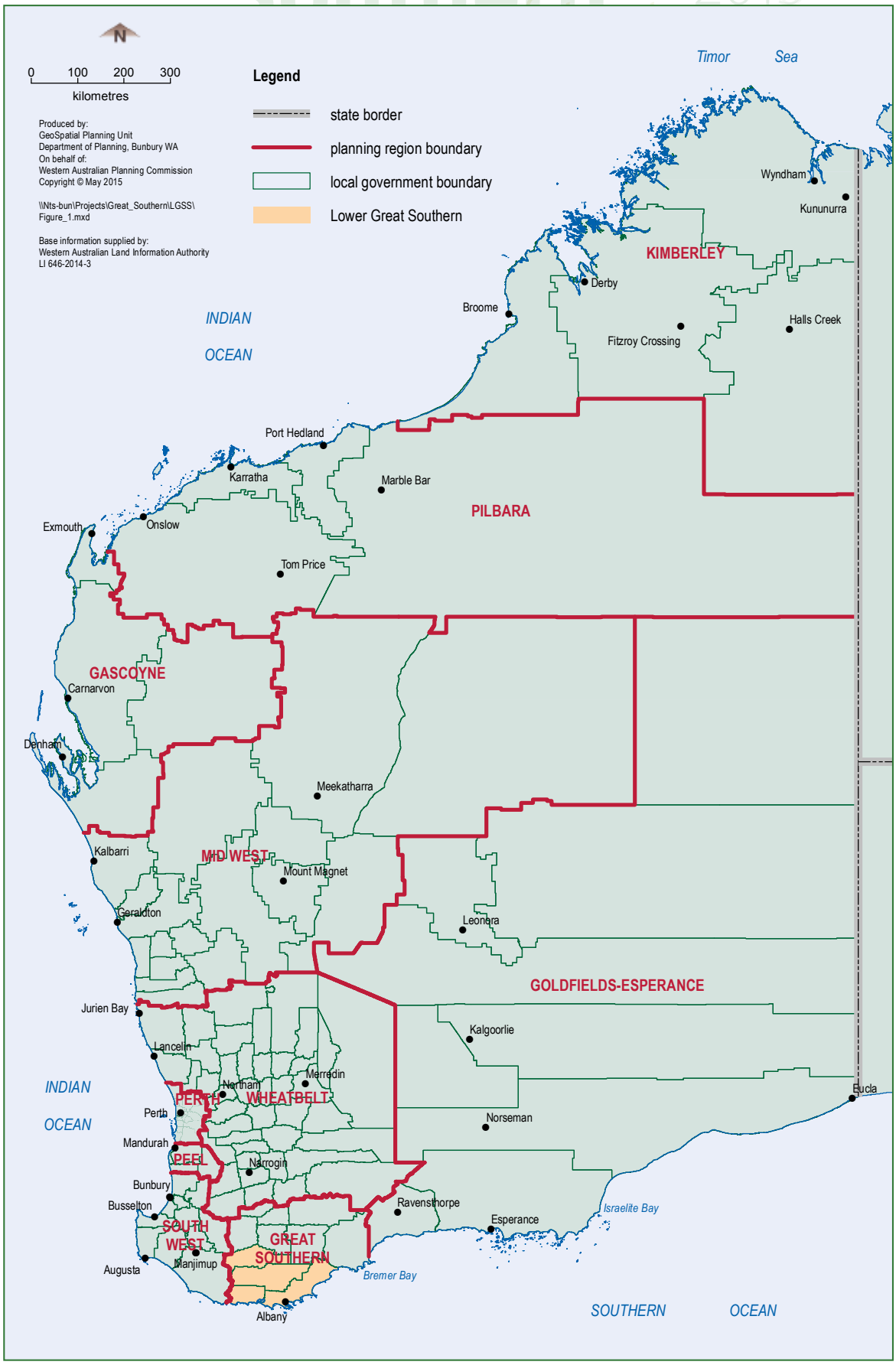


Figure 1: Lower Great Southern region

Table 1: Objectives and Actions of the Lower Great Southern Strategy 2016

2.3 Economic Growth			
Objective	**Actions**	**Timeframe**	**Responsibility**
Secure long term economic prosperity for the Lower Great Southern region	Capitalise on regional economic advantages in agriculture and primary production, tourism, natural resources and clean energy production	Ongoing	State government Local government Community/ private sector
	Secure the necessary regional infrastructure to stimulate investment, growth and development in the Lower Great Southern	Ongoing	DSD RDA GSDC LG DRD
	Work towards a diversified economic base in the Lower Great Southern in order to maximise advantages from long term regional, national and global economic trends	Ongoing	GSDC LG Community/ private sector
	Focus on growing secondary and downstream processing industries, particularly within the agricultural and primary production sectors	Short term	GSDC LG DAFWA Community/ private sector

2.4 Climate Change			
Objective	**Actions**	**Timeframe**	**Responsibility**
Support the Lower Great Southern community in being adaptive and resilient to climate change	Provide efficiency in development form and servicing in settlements	Ongoing	DoP/WAPC LG Utility agencies
	Provide for alternative and supplementary water and energy supplies to be utilised, including self-supply where suitable	Ongoing	LG DoP/WAPC Community
	Develop emergency and risk management plans that are cognizant of increased risks that may result from climate change	Ongoing	DFES LG
	Carefully manage essential natural resources, particularly water supplies (DoW) and agricultural land (DAFWA)	Ongoing	DAFWA DoW LG DoP/WAPC
	Develop and adopt strategies to mitigate identified impacts of climate change	Ongoing	DoP/WAPC LG

2.5 Settlements			
Objective	**Actions**	**Timeframe**	**Responsibility**
Provide a comprehensive framework for the planning and development of identified settlements	Ensure that Albany is promoted as a regional centre; Mount Barker and Denmark are promoted as sub-regional centres; and Frankland River and Cranbrook are promoted as towns	Ongoing	State government Local government Community
	In regional and sub-regional centres and towns, zone sufficient land for urban development and a variety of housing types, in accordance with endorsed local planning strategies	Ongoing	LG
	For villages identified for expansion that do not currently have endorsed plans, prepare and have endorsed by the WAPC a townsite strategy and/or conceptual structure plan	Short term	LG
	Where constraints to townsite development have been identified in endorsed local planning strategies, seek inclusion in the townsite development program	Ongoing	LG LandCorp
	Utilise innovative zonings in local planning schemes to stimulate commercial and economic growth in villages identified for expansion	Ongoing	LG DoP/WAPC
	Zone sufficient land for light, general and service industry in accordance with endorsed local planning strategies	Ongoing	LG DoP/WAPC

2.6 Infrastructure			
Port of Albany			
Objective	**Actions**	**Timeframe**	**Responsibility**
Maintain and enhance function of the Port of Albany in light of envisaged long term growth and productivity within the wider Great Southern region	Maintain the special control area around the port to facilitate its ongoing protection	Ongoing	LG
	Investigate options for a future inland port facility	Short term	PoA DoP/WAPC LG
	Secure road, rail and other necessary infrastructure corridors to the port	Ongoing	MRWA PTA DoP/WAPC LG
	Give primacy to maintenance of port function and operations when considering land uses that may impact on these	Ongoing	LG DoP/WAPC

Roads			
Objective	**Actions**	**Timeframe**	**Responsibility**
Provide a strategic road network in Albany that facilitates the safe and efficient movement of freight to the Port of Albany; and protect access to the port along the principal freight routes of Chester Pass Road, Albany Highway, Hanrahan Road, Princess Royal Drive and the proposed Ring Road	Preserve Chester Pass Road and Hanrahan Road in Albany as a major freight route, until such time as the Albany Ring Road provides the more expedient and safer route for freight transport between the east and the port	Ongoing	MRWA
	Secure land requirements for the remainder of the Ring Road	Long term	MRWA
	Utilise the Albany Traffic Model to develop and evaluate options for provision of a legible distributor road network within Albany; and to manage cross-traffic movements on Chester Pass Road and the Ring Road	Ongoing	MRWA DoP/WAPC LG
	Undertake design refinements for the Albany Highway to Port Link of the Ring Road with consideration of: • optimising road and rail alignment along Lower Denmark Road and intersection with Hanrahan Road; • grade separation between Princess Royal Drive and the railway line at the eastern end of Princess Royal Drive; • future upgrade to Princess Royal Drive, with the potential for upgrading to a four-lane dual carriageway, while protecting the artificial wetland to the north, public and commercial amenity values of the foreshore and potential visual impact; and • catering for increased traffic using Frenchman Bay Road and Princess Royal Drive to access York Street	Short term	MRWA DoP/WAPC LG PTA
	Progress construction of the remainder of the Albany Ring Road	Long term	MRWA
	Introduce and maintain measures to minimise potential conflicts between the Ring Road and other heavy freight routes and adjacent land uses, including: • structure planning; • land use and development controls for adjacent properties, based on the recommendations of the Albany Heavy Freight Access Study; and • road planning standards to minimise potential road user conflict and the negative noise and visual impact of the road on adjacent properties	Ongoing	MRWA DoP/WAPC LG

Roads (cont.)			
Objective	**Actions**	**Timeframe**	**Responsibility**
	Implement the noise mitigation measures recommended by the Albany Heavy Freight Access Study including: • acceptable uses adjacent to the major freight access roads in local planning schemes to prevent conflicts between incompatible uses; • investigating the use of special control areas to implement development and building standards to reduce the impact of noise on adjacent residential buildings; and • incorporating design guidelines for redevelopment areas backing on to major freight routes	Short term	LG DoP/WAPC
Develop an effective regional road network, including catering for the needs of freight, local and tourist traffic	Manage the interaction between operational requirements of Main Roads WA for freight and regional traffic purposes, and the needs of local traffic in established settlements	Ongoing	MRWA LG
	Investigate access options to Down Road to facilitate truck movements from the south-west and west to the woodchip mill in the vicinity of Marbellup North Road	Short term	DoP/WAPC GSDC LandCorp
	Undertake road improvement and maintenance projects to enable safe and expedient transport of freight and agricultural commodities	Ongoing	MRWA LG
	Provide ongoing funding for the Wingebellup Road and Woogenellup Road upgrade projects	Ongoing	MRWA LG
	Provide additional passing lanes and rest stops, where necessary, on major regional freight roads	Ongoing	MRWA
	Seal Salt River Road linking Cranbrook to Chester Pass Road along the northern boundary of the Stirling Range National Park	Medium term	LG MRWA
	Secure funding for the upgrade of Nornalup-Tindale Road	Short term	LG GSDC
	Investigate options and feasibility of providing an alternative means of access/egress to Denmark townsite across the Denmark River	Short term	LG
Provide, coordinate and protect road and service infrastructure in road reserves (service corridors)	Provide all infrastructure in road reserves in a manner which is in accordance with the WA Utility Providers Code of Practice	Ongoing	Utility Agencies

Rail			
Objective	**Actions**	**Timeframe**	**Responsibility**
Maximise the use of rail for freight haulage into the Port of Albany	Plan for additional rail infrastructure to improve rail capacity, including: • passing loops, where required, to maintain freight access to the port; • extensions into strategic industrial areas; • rail realignments and a rail loop at the port and Mirambeena strategic industrial area to meet future growth in the freight task; • a rail spur extension at Yerriminup strategic industrial area; and • grade separation between Princess Royal Drive and the railway at the eastern end of Princess Royal Drive	Short term	DoP/WAPC GSDC PTA LandCorp PoA
	Investigate alternative options to encourage the transfer of road freight to rail and evaluate their costs and benefits	Short term	DoP/WAPC GSDC
Protect the railway corridor between the Port of Albany and South Coast Highway	Consider the effects of noise, including the outcomes from the Albany Heavy Freight Access Study, when planning for future land uses adjacent to the railway line to secure its efficient operation	Ongoing	LG DoP/WAPC
Airports			
Objective	**Actions**	**Timeframe**	**Responsibility**
Ensure the continued efficient operation of the Albany airport	Maintain airport noise and safety buffers and obstacle limitation surface in the local planning scheme	Ongoing	LG
Preserve opportunities for potential future expansion of the Albany airport	Maintain suitable zonings and manage land uses in and around Albany airport	Ongoing	LG DoP/WAPC
Develop opportunities for complementary commercial activities to locate at Albany airport	Undertake conceptual design and planning to guide consideration and establishment of complementary commercial uses	Short term	LG
	Investigate the potential for co-location of land uses that may be able to utilise existing airport noise buffers	Medium term	LG
Develop and maintain the regional airstrip network to provide emergency access	Monitor, evaluate and upgrade as necessary the regional airstrip network for RFDS emergency access	Ongoing	LG

Service Infrastructure and Utilities			
Objective	**Actions**	**Timeframe**	**Responsibility**
Provide and protect water and wastewater infrastructure and treatment and recycling facilities	Provide reticulated sewerage to the priority areas of Weedon Hill, Minsterly Road, Inlet Drive, Beveridge Road (Denmark); Milpara (Albany); and Kendenup (Plantagenet) if and when funding becomes available under the Infill Sewerage Program or through other means	Short term/ Ongoing	Water Corporation Other sewerage service providers
	Where applicable, zone buffer distances around water treatment plants and other water-related assets as special control areas in local planning schemes	Short term (completed in some schemes)	LG
	Through local planning strategies and schemes, identify and plan for compatible land uses to be contemplated within established buffer areas	Medium term	Water Corporation DoP/WAPC LG DoW
	Establish an ongoing dialogue between Water Corporation and relevant agencies to better understand demand for services and develop solutions for provision of water services in priority areas	Ongoing	Water Corporation DoP/WAPC LG
Provide adequate, affordable and reliable power supplies	Determine the capacity of current and potential power supply options and identify power supply requirements	Ongoing	Western Power
Build on existing renewable energy sources and investigate potential new sources to supplement conventional supplies	Support and encourage development of alternative sources of power to supplement and/or replace traditional electricity supply, particularly wind and solar	Ongoing	LG GSDC DoP/WAPC Electricity service providers
Provide suitable alternative servicing options in settlements where normal servicing methods are restricted and/or unavailable	Investigate alternative methods for wastewater disposal, including grey water re-use and alternative non-potable systems in residential and industrial subdivisions	Short term	LG DoH
	Investigate and develop innovative approaches to supplying country towns with water and sewerage services that enhance environmental, social and economic outcomes and performance of current traditional methods	Medium term	LG DoP/WAPC

Service Infrastructure and Utilities (cont.)			
Objective	**Actions**	**Timeframe**	**Responsibility**
Maximise the opportunities presented by the provision of a natural gas pipeline	Identify and secure a gas pipeline that services towns and industry along the Government's selected route to maximise economic benefits to the State and Lower Great Southern	Short term	DSD/DRD DoL
	Collaborate with the private sector to identify and secure a suitable end user of the gas resource, in order to increase viability of the construction phase of the project	Medium term	DSD/DRD GSDC
Provide high-quality telecommunications infrastructure and services	Improve and/or upgrade telecommunications infrastructure where necessary, in particular services to rural and coastal communities and principal highways; and improve mobile phone coverage and high-speed broadband data transmission	Ongoing	Service providers
	Upgrade VHF capability and repeater stations in coastal areas	Ongoing	DoT

Public Transport, Walking and Cycling			
Objective	**Actions**	**Timeframe**	**Responsibility**
Improve public transport, walking and cycling opportunities in the Lower Great Southern and connectivity with the wider region	Investigate the demand and feasibility for inter-town public transport services in the Lower Great Southern	Short term	DoT GSDC DoP/WAPC LG
	Investigate opportunities for the provision of passenger rail services from Perth to Albany	Long term	DoT PTA
	Investigate improved regional linkages with the national coach network	Medium term	PTA
	Expand the network of cycle and pedestrian ways	Ongoing	LG DSR
	Include the investigation and design of cyclist facilities on the Albany Highway to Port Link of the Albany Ring Road that will facilitate the connection of Frenchman Bay Road and the Albany Waterfront for cyclists	Short term	MRWA DoP/WAPC LG
	Identify public and community based transport opportunities, where necessary, when preparing planning strategies and structure plans	Ongoing	LG DoP/WAPC

Photo courtesy: Colin Richardson

Community Services and Facilities			
Objective	**Actions**	**Timeframe**	**Responsibility**
Provide new or expand existing community services and facilities in accordance with settlement function	Provide community, health and social services according to established needs and to cater for the region's ageing demographic	Ongoing	DoH LG
	Identify shortfalls in the provision of community services and infrastructure in settlements and coordinate integrated programs for service provision, including development contribution plans in local planning schemes	Ongoing	LG DoP/WAPC GSDC
	Identify in local planning strategies and zone in local planning schemes, adequate and suitable land for: • health facilities, particularly for the elderly; • education, particularly additional secondary and tertiary facilities that provide region-specific specialist training; • recreation and open space, including a suitable range of passive and active facilities; and • law and order facilities and other government services	Ongoing	LG DoP/WAPC DoH DET
	Implement strategies and projects that focus on provision of suitably located tertiary education and specialist facilities offering training in fields beneficial to growth and development of the region	Short term	DTWD DET LG
	Develop new and/or upgrade existing recreational boating facilities along the coast, as necessary	Medium term	DoT LG

2.7 Strategic Industry			
Objective	**Actions**	**Timeframe**	**Responsibility**
Provide adequate, environmentally acceptable and suitably located strategic industrial areas to cater for future industrial development	Secure infrastructure provision to existing strategic industrial areas (Yerriminup and Mirambeena) to maximise the potential for use of these sites	Ongoing	LandCorp DSD GSDC
	Undertake studies to determine infrastructure and servicing requirements for the industrial investigation area at Cranbrook	Short term	LG GSDC
	Investigate mechanisms to address constraints related to electricity headworks and infrastructure provision in strategic industrial areas	Short term	Western Power
	Undertake comprehensive feasibility studies and structure planning of Mirambeena and surrounding investigation area (including the area to the existing railway line) to take into account: • preserving suitable land for strategic industry; • identifying infrastructure requirements and alignments, in particular power, water and the extension of the rail spur; and • identifying a suitable location for an intermodal transfer facility/inland port	Short term	LandCorp DoP/WAPC GSDC LG
	Investigate opportunities for the equitable provision of common user infrastructure to strategic industrial areas	Medium term	LandCorp GSDC
	Undertake studies to determine the feasibility of investigation areas at Albany (Figure 2) for future intermodal facilities and/or other industrial land uses	Medium term	LG GSDC DoP/WAPC

2.8 Agriculture, Forestry, Fisheries and Aquaculture			
Objective	**Actions**	**Timeframe**	**Responsibility**
Facilitate sustainable development of the agricultural sector and maximise opportunities for diversification of agriculture and downstream processing	Zone land identified as being of State, regional or local agricultural significance in endorsed local planning strategies as priority agriculture in local planning schemes	Short term (completed in some schemes)	LG
	Complete high quality agricultural land (HQAL) mapping for the region to identify priority agricultural areas	Short term	DAFWA DoW
	In local planning schemes, provide suitable permissibility of land uses to encourage agricultural activity and carefully manage potential conflicting uses within rural zones	Ongoing	LG DoP/WAPC
	Investigate potential for a future intensive agriculture/horticultural precinct(s) within the Lower Great Southern taking into account land capability, water supply, service and infrastructure availability, and potential impacts on the environment and existing land use	Long term	DAFWA DoW DoP/WAPC LG
	Foster and support establishment of intensive livestock enterprises in suitable locations within agricultural areas	Short term	DAFWA LG
	Maintain scope within planning strategies and schemes for the forestry and plantation industries to be supported in acceptable areas	Ongoing	LG DoP/WAPC
Manage the impact of salinity on agricultural land	Prepare guidelines for development of saline-affected land in areas subject to land use change in local planning strategies	Short term	DAFWA DoP/WAPC
	When preparing local planning schemes or amendments, local government to have regard to the extent of saline land when determining the best use of the land	Ongoing	LG DoP/WAPC
	Promote relevant sustainable agriculture initiatives to rehabilitate degraded agricultural land	Ongoing	DAFWA
Manage conflict between fishing operations and other land uses	Prepare and distribute informative and educational material regarding identified environmental impacts to all leaseholders	Ongoing	LG DoF
Provide for the expansion of aquaculture in suitable areas	Assess the suitability of the sites determined in the Department of Fisheries study for aquaculture	Ongoing	DER
	Use the South Coast Management Group's draft guidelines for land-based aquaculture development in the South coast region of WA when assessing aquaculture proposals	Ongoing	LG DoF

2.9 Mineral Resources and Basic Raw Materials			
Objective	**Actions**	**Timeframe**	**Responsibility**
Maximise opportunities to enable mineral exploration and extraction in accordance with acceptable environmental and amenity standards	Review and update the Albany Regional Basic Raw Materials Study (1996)	Medium term	DMP DoP/WAPC
	Ascertain the implications of the Walpole Wilderness Area for the future mining and extraction of gravel, under the auspices of the State gravel supply strategy	Medium term	DMP DPaW
	Fund a strategic assessment of the prospect for limestone in the Lower Great Southern, under the auspices of the State lime strategy	Medium term	DMP
	Identify existing and potential sites for basic raw material and agricultural mineral extraction in local planning strategies and protect them in local planning schemes, including consideration of neighbouring land uses, visual impact issues and buffer areas where necessary	Short term (completed or partially completed in some LGA's)	LG DMP DoP/WAPC
	Retain areas of high prospective geology as general rural zoning to allow for exploration or extraction	Ongoing	LG DoP/WAPC

2.10 Long Term Water Supplies			
Objective	**Actions**	**Timeframe**	**Responsibility**
Provide existing and future populations with adequate and sustainable water supplies	Ensure a whole-of-catchment approach to the integration of natural water resource use and land management	Ongoing	DoW LG DoP/WAPC
	Secure future potable water source areas	Ongoing	Water Corporation DoW
	Promote water conservation initiatives and reduced consumption in settlements	Ongoing	Water Corporation DoW LG
	Recognise public drinking water source areas in local planning strategies and protect them in local planning schemes	Ongoing (completed for existing PDWSA's in Lower Great Southern)	DoW LG DoP/WAPC
	Investigate opportunities for recycling and reuse of water from treatment plants and similar facilities	Medium term	Water Corporation DoW

2.11 Bushfire Risk			
DoP/WAPC	**Actions**	**Timeframe**	**Responsibility**
Through planning and management processes, build resilience to bushfire risk in the Lower Great Southern region	Ensure settlement and land use planning in strategies and schemes is in accordance with the principles, objectives and provisions of the WAPC's planning framework for bushfire risk management	Ongoing	LG DoP/WAPC
	Planning proposals including rezoning, structure planning, subdivision and development to incorporate bushfire assessment and management measures as required by WAPC's policy framework	Ongoing	LG DoP/WAPC Development industry
	Develop sufficient bushfire response plans and procedures in the context of likely increased occurrence of bushfires in the region	Ongoing	DFES LG DPaW
	Foster awareness of bushfire risk and the need for property owners to take responsibility for individual preparedness measures in at-risk areas of the region	Ongoing	DFES LG
	Implement fuel-load reduction programs in conservation estate and Unallocated Crown Land outside townsites (DPaW), and on UCL within gazetted townsites (DFES), particularly where in proximity to established settlements	Ongoing	DPaW DFES LG

2.12 Coastal Planning and Management			
Objective	**Actions**	**Timeframe**	**Responsibility**
Minimise potential environmental impacts from coastal development proposals through effective management and recognition of coastal processes including sea level rise, and sufficient setbacks	Carry out studies to broadly identify vulnerable coastal areas and provide guidance for more detailed risk assessments and management responses	Short term	DoP/WAPC LG DoT
	Prepare coastal and foreshore management plans in parks and reserves where there are likely to be conflicts between different user groups	Ongoing	LG DPaW
	Include requirements for the preparation of foreshore management plans as a condition of subdivision and development likely to have impacts on coastal and estuarine foreshore areas	Ongoing	DoP/WAPC LG DoW
	Provide an enhanced development and compliance framework for seasonal commercial fishing leases on coastal sites	Medium term	DoF DoL DPaW LG
Provide and maintain public access to coastal and estuarine foreshores	Identify land suitable for protection and enhancement of the coastal vegetation corridor, in order to protect biodiversity and cater for public access, and for possible regional open space	Ongoing	DoP/WAPC LG
	Identify priority sites around the coast and estuaries required for public access in local planning strategies and protect them through relevant mechanisms in local planning schemes	Ongoing	LG DoP/WAPC DoW DPaW

2.13 Tourism			
Objective	**Actions**	**Timeframe**	**Responsibility**
Maximise opportunities for the development and growth of a sustainable tourism industry	Update tourism components of local planning strategies as necessary to respond to changing needs of the tourism sector and take advantage of emerging markets	Ongoing	LG TWA DoP/WAPC
	Zone identified strategic tourism sites in endorsed local planning strategies solely for tourism development in local planning schemes, to protect them for that purpose	Short term (partially completed in some schemes)	LG TWA DoP/WAPC
	Maintain and improve, where necessary, existing linkages to major tourism attractions and develop additional tourism routes in the Lower Great Southern	Ongoing	LG MRWA
	Provide adequate and consistent signage to tourism destinations	Ongoing	LG MRWA

2.14 Environment			
Vegetation and Biodiversity Conservation			
Objective	**Actions**	**Timeframe**	**Responsibility**
Protect threatened flora, fauna and ecological communities	Identify and acquire land to add to the formal conservation reserve system	Ongoing	DPaW
	Develop conservation strategies to encourage the management and protection of highly valued remnant vegetation on both public and private land	Ongoing	DPaW LG
	Develop additional incentives for the protection of remnant vegetation on private land	Ongoing	DPaW DoP/WAPC LG
	Develop and implement recovery plans for all critically endangered, endangered and vulnerable flora, fauna and ecological communities	Ongoing	DPaW
	Finalise Albany regional vegetation survey (ARVS) phase 2	Short term	DoP/WAPC
	Carry out vegetation surveys based on ARVS methodology in other suitable areas of the region	Medium term	DPaW DoP/WAPC LG
Maintain and improve coverage of native vegetation from existing levels	Protect and manage remnant native vegetation or revegetate using various local native species in remnant vegetation linkages and river and wetland catchments	Ongoing	DPaW NRM Groups
	Support initiatives that aim to increase native vegetation and/or perennial cover throughout the landscape, to reduce salinity and improve land and water quality	Ongoing	DPaW NRM Groups

Vegetation and Biodiversity Conservation (cont.)			
Objective	**Actions**	**Timeframe**	**Responsibility**
Utilise land use planning processes to assist in establishing and protecting identified macro corridors	Identify remnant vegetation linkages (macro corridors) at a localised scale, in local planning strategies	Ongoing	LG DPaW
	In local planning strategies ensure urban growth takes into account the need to identify and protect remnant vegetation and other high conservation value vegetation	Ongoing	DoP/WAPC LG DPaW
	Promote opportunities for conservation lots in suitable locations that provide a net benefit to biodiversity and meet planning and environmental objectives	Ongoing	DPaW DoP/WAPC LG
	Investigate use of region-specific planning guidelines to facilitate creation and protection of macro corridors	Short term	DoP/WAPC
	Incorporate recommendations of ARVS phase 2 and any further vegetation surveys into local planning strategies, schemes and structure plans	Short term	DoP/WAPC LG

Rivers, Estuaries and Wetlands			
Objective	**Actions**	**Timeframe**	**Responsibility**
Identify and map the extent of important riparian, estuarine and wetland areas	Undertake estuarine and river floodplain mapping for high risk flooding areas	Medium term (some mapping completed)	DoW
	Identify regionally important river and estuarine foreshores and fringing habitats with high conservation value; and other priority sites requiring public ownership and protect them using suitable mechanisms	Ongoing	LG DoP/WAPC DoW
Maintain the environmental and water quality of rivers and wetlands through effective catchment management practices	Maintain revegetation in the upper Denmark catchment in order to maintain reduced stream salinity	Ongoing	DoW DER LG Plantation companies
	Consider downstream impacts when assessing clearing applications in the upper catchments of river systems	Ongoing	DER
	Support established programs that aim to increase the level of perennial vegetation cover, including native vegetation and perennial crops	Ongoing	DPaW LG NRM Groups DoW
Conserve and maintain the conservation and biodiversity values of riparian, estuarine and wetland environments	Encourage fencing and revegetation of rivers, floodplains and estuaries to reduce sediment and nutrient transportation	Ongoing	DoW DPaW LG NRM Groups
	Ensure potential nutrient point sources are developed only where compatible with codes of practice, and particularly outside estuarine and river floodplains	Ongoing	DER DAFWA LG
	Ensure no direct discharge occurs to rivers and estuaries from stormwater and industrial wastewater	Ongoing	LG DoW DER

Landscape			
Objective	**Actions**	**Timeframe**	**Responsibility**
Identify and protect valued landscape features and viewsheds	Incorporate suitable provisions in local planning schemes to guide development in landscape priority areas that have been identified in endorsed local planning strategies	Short term	LG DoP/WAPC
	Ensure that new development takes into consideration the visual quality and character of landscapes, in particular natural, rural and urban landscape values	Ongoing	LG
	Identify degraded landscapes in local planning strategies and develop measures to rehabilitate them	Ongoing	LG

2.15 Cultural Heritage			
Objective	**Actions**	**Timeframe**	**Responsibility**
Ensure consideration of cultural heritage takes place in planning for the Lower Great Southern	Incorporate consideration of important cultural heritage places and related matters into strategic and statutory planning	Ongoing	DAA LG DoP/WAPC
	Promote cultural tourism through the use of informative interpretive material at cultural heritage places	Ongoing	TWA GSDC

2.16 Regionally Significant Natural Areas			
Objective	**Actions**	**Timeframe**	**Responsibility**
Establish a network of regional open space in the Lower Great Southern	Undertake detailed investigation of the extent of the areas in Table 3 to be secured for regional open space	Long term	DoP/WAPC DPaW DoW LG
	Investigate protection mechanisms for regionally significant areas	Medium term	DoP/WAPC LG DPaW

Part 2 – Strategic directions

The Lower Great Southern Strategy (LGSS) focuses on the area's regional land use and infrastructure needs for the next 20 years. This section discusses the key challenges facing the Lower Great Southern and the strategic approach taken to address them.

A vision, objectives and actions which address the key issues and identified challenges provide the foundation for the strategy. The vision, objectives and actions have been determined taking into account previous planning and sustainability strategies, the original 2007 LGSS, and with input from stakeholders and the community.

Lead agencies have been nominated for specific actions; however, it is expected that a cross-agency collaborative approach will be necessary in order to achieve maximum benefit to the region.

2.1 Vision

The following vision for the Lower Great Southern strategy has been developed with input from stakeholders and the community:

In the year 2035, the Lower Great Southern is a productive, innovative and successful area for intensive primary production and downstream processing. It is an attractive business, lifestyle and tourism destination with quality cultural, built and natural landscapes. It is recognised as a centre of excellence in natural resource management and provides a diverse range of health and wellbeing, higher education, training and employment opportunities. It is equipped to respond to local and global challenges and has supportive, vibrant, accessible and safe communities that embrace their Indigenous and historic heritage.

2.2 Planning Objectives and Key Issues

The following objectives and issues guide the formation of the strategy.

2.2.1 Economic development

To enable the economic potential and growth of the Lower Great Southern to be planned, utilised, encouraged and achieved.

2.2.2 Infrastructure development

To ensure that well planned and adequate infrastructure is provided in accordance with community and economic development needs of the Lower Great Southern.

2.2.3 Community development

To enhance the Lower Great Southern as a place to live, promote orderly urban growth while recognising environmental and other constraints, and encourage the provision of a range of residential living environments. To ensure that the community is supported by adequate community services and facilities.

2.2.4 Environment

To conserve and enhance the natural environment, biodiversity, resources and distinctive landscapes of the Lower Great Southern.

2.2.5 Key planning issues in the Lower Great Southern

The key planning issues to be addressed in the strategy are:

- planning for economic growth and development;
- planning for adaptation to climate change;
- providing sustainable settlements and community development with sufficient services, infrastructure and economic opportunities;
- ensuring sufficient port access and protection of major road corridors is maintained;
- identifying and fostering development of strategic industrial areas;
- protecting agricultural land and promoting agricultural diversification, farm forestry and secondary processing of products within the region;
- sustainable development of fisheries and aquaculture;
- securing sustainable access to mineral resources and basic raw materials;
- securing long-term water supplies;
- managing risk of bushfires;
- promoting tourism and protecting significant tourism sites;
- sustainable use, management and conservation of the terrestrial, coastal and marine environments and important cultural heritage areas;
- managing visual quality and landscape amenity; and
- determining suitable mechanisms for securing regional open space.

2.3 Economic Growth

Sustainable economic growth is a key component of ensuring the ongoing prosperity of the Lower Great Southern region. As the Lower Great Southern contains the primary population, industrial and commercial service centres for the wider Great Southern region, its economic performance will have wider impacts and influences on the Great Southern region as a whole.

Economic growth in the Lower Great Southern is currently steady. Primary production is the key driver whilst retail trade, construction and tourism make substantial contributions. Key themes for economic growth into the future will be maximising value from existing opportunities, diversification of the economic base, and fostering growth in secondary and downstream processing. It is expected that achieving these key outcomes will provide flow-on effects to other market sectors such as small business and trades.

Stronger economic growth will help address current challenges across the region such as seasonal employment fluctuations, proportionally lower incomes than the State average, housing affordability and achieving sustainable population growth.

Great Southern Regional Investment Blueprint

The Great Southern Regional Investment Blueprint 2015 has been prepared by the Great Southern Development Commission (GSDC). It establishes priorities for economic development and growth of the Great Southern region, which incorporates the Lower Great Southern, and provides an analysis of local, regional, national and global factors influencing the region. A strategic economic growth plan and proposed transformational projects responding to these influences are set out in the Blueprint, incorporating use of the comparative advantages present in the region to maximise benefits over the long term.

Photo courtesy: Colin Richardson

Whilst the Blueprint will provide key guidance for the direction of economic growth and development within the Lower Great Southern, the regional planning framework including the Lower Great Southern Strategy will play an important role in strategic planning and decision making to assist in achieving the economic aims that the Blueprint sets out for the region.

An over-arching objective and set of actions related to economic growth are provided below. More specific actions related to particular issues are included in the following sections.

2.4 Climate Change

Climate change, and capacity to adapt to it, is a key factor affecting all aspects of growth and development in the Lower Great Southern. Climate change will present both challenges and opportunities for the region.

Climate projections point to drier conditions across the South West of WA in the future. Current global climate models all agree on the direction of change in winter (June to August) across the South West with a mean reduction in winter rainfall of approximately 20%. This will place increasing pressure on agriculture in drier, inland areas. The reduction in run-off in the South West has also been substantial, affecting water storage for human use.

Objectives and Actions for Economic Growth

Objective	Actions	Timeframe	Responsibility
Secure long term economic prosperity for the Lower Great Southern region	Capitalise on regional economic advantages in agriculture and primary production, tourism, natural resources and clean energy production	Ongoing	State government Local government Community/ private sector
	Secure the necessary regional infrastructure to stimulate investment, growth and development in the Lower Great Southern	Ongoing	DSD RDA GSDC LG DRD
	Work towards a diversified economic base in the Lower Great Southern in order to maximise advantages from long term regional, national and global economic trends	Ongoing	GSDC LG Community/ private sector
	Focus on growing secondary and downstream processing industries, particularly within the agricultural and primary production sectors	Short term	GSDC LG DAFWA Community/ private sector

Results from Indian Ocean Climate Initiative (IOCI) research for South West WA projects that relative to 1960-1990:

- By 2030, rainfall will decrease by between 2-20%, summer temperatures will increase by between 0.5-2.1°C, winter temperatures will increase by between 0.5-2.0°C; and
- By 2070, rainfall will decrease by between 5-60%, summer temperatures will increase by between 1.0-6.5°C, and winter temperatures will increase by between 1.0-5.5°C.

Average global sea level is projected to increase by a further 0.5m to 1.0m this century. A sea level rise of 0.5m will lead to increases in the frequency of coastal flooding. For example flooding that is currently considered a 1-in-100 year event would occur every year in most parts of WA.

Expected implications, trends and opportunities resulting from climate change include:

- existing threats to the function and diversity of marine and terrestrial ecosystems (and therefore the benefits on which human activity depends) are exacerbated, resulting in adverse changes to hydrology, fire risk and fire regimes, spread of dieback, weed invasion, soil salinity and feral animals;
- coastal changes resulting from sea level rise, storm surge and changes to storm frequency and intensity, potentially affecting coastal urban settlements and vulnerable and valuable coastal habitats. For example, increased salinity of inlets and erosion of the soft coast;
- changes in marine ecosystems affecting biodiversity and viability of fisheries;
- changes in the nature and geographic range of agricultural and forestry activities, and indirect responses such as bushfire risk, pests and diseases. Changes include new crops, diversification enterprises, demands for bio-energy sources and carbon storage, and revegetation/plantation incentives to meet water, soil and biodiversity objectives;
- demands for alternative land uses and industries in agricultural regions;
- diminished run off for recharging water resources, effects on waterways and wetlands, pressure for water recycling and protection of soil and water quality;
- opportunities for mitigation responses such as carbon sequestration, revegetation with native species, and expansion of renewable energy infrastructure such as wind farms and solar energy. The South West has some of the best wind resources in Australia. Mallee eucalypts, which have been established in the Wheatbelt to help manage dryland salinity, could also provide biomass for electricity generation;
- coastal management that plans for coastal change, including development setbacks, shoreline stabilisation techniques and managed re-alignment in response to sea level rise, storm events and changes in wind and wave regimes;
- settlement patterns influenced by fuel costs, changes in land use and new environmental constraints such as flooding – an important issue for remote settlements; and
- land use planning and risk management to plan for and respond to coastal erosion, extreme weather events (floods, storms), bushfires and mosquito-borne diseases.

The effects of climate change could, cumulatively and over time, significantly alter the environmental systems and assets on which the region's well-being relies. However, the realised impacts of climate change do not only come from changes in the climate system, but are also dependent on management changes and adaptive measures that may be taken directly in response to climate change.

Strategic planning for the Lower Great Southern therefore presents an important opportunity to minimise the negative effects of climate change, by planning to adapt to change, and for the region to contribute to climate change mitigation. The complexity of potential effects and responses makes direct management of climate effects very challenging, raising the need for a prudent, adaptive and integrated approach to planning; and for risk assessment and management to be incorporated into decision making processes. A number of over-arching actions related to climate change are provided below. More specific actions related to particular issues are included in the following sections.

Objectives and Actions for Climate Change			
Objective	**Actions**	**Timeframe**	**Responsibility**
Support the Lower Great Southern community in being adaptive and resilient to climate change	Provide efficiency in development form and servicing in settlements	Ongoing	DoP/WAPC LG Utility agencies
	Provide for alternative and supplementary water and energy supplies to be utilised, including self-supply where suitable	Ongoing	LG DoP/WAPC Community
	Develop emergency and risk management plans that are cognizant of increased risks that may result from climate change	Ongoing	DFES LG
	Carefully manage essential natural resources, particularly water supplies (DoW) and agricultural land (DAFWA)	Ongoing	DAFWA DoW LG DoP/WAPC
	Develop and adopt strategies to mitigate identified impacts of climate change	Ongoing	DoP/WAPC LG

2.5 Settlements

This strategy places each existing settlement into a hierarchy taking into account population; the range and diversity of goods and services offered, such as community facilities, health, education, shopping, finance and manufacturing; and housing needs over the period of the strategy. It designates a range of settlements within the Lower Great Southern from the highest to lowest order of service.

The objectives of the settlement hierarchy are to:

- identify the role that each settlement plays in the regional settlement pattern;
- direct population growth to those areas where expansion is planned in order to support an increased range and level of service provision and economic activity in association with existing settlements;
- ensure that settlement planning takes into account population growth, geographic location, size (both in population and land use activities) and economic drivers in establishing the likely demand for housing, services and infrastructure; and
- ensure efficient and equitable provision of infrastructure and services.

2.5.1 Settlement Hierarchy

Regional Centre

A regional centre contains services and facilities which reflect the needs of the local community and that of the regional population. It has a larger population base than any other centre in its region. It offers a high level of services such as senior high schools, tertiary education, regional hospital, cultural and entertainment facilities, regional community facilities, department stores and specialist retail shops. It is a major employment centre in a region with local and State government and private sector offices. It is located at the convergence of main road access, rail and/or port infrastructure.

Sub-Regional Centre

A sub-regional centre contains services and facilities which reflect the needs of the local community and that of the agricultural population in its hinterland. It has a smaller population base than a regional centre and provides services to, and is a goods transfer base for, smaller settlements such as towns and villages. Sub-regional centres usually offer services such as a high school, district hospital, commercial centre with multiple retail outlets, supermarkets, specialty and convenience stores and community and entertainment facilities including district sporting facilities.

Town

A town contains services and facilities that reflect the needs of the local community and that of the agricultural population in its district. It provides services to, and is a goods transfer base for, smaller settlements such as villages. It has a smaller population base than that of a sub-regional centre. It is a centre for weekly retail and offers limited services and community facilities.

Village

A village is a small settlement where a general store and/or fuel depot serves the daily needs of the local and agricultural community. The general store usually is the focal point of the village and may include a community hall.

The settlement hierarchy identifies existing villages and assessment of their growth potential is required in the context of each local government's local planning strategy or a separate settlement strategy. Social, environmental, economic and infrastructure issues must be addressed before expansion can be contemplated. Where villages have been identified for expansion, townsite strategies and/or conceptual structure plans need to be prepared by local government and endorsed by the WAPC. This strategy recognises that local governments may also seek to limit growth of some villages, or designate them for a particular kind of development, depending on individual circumstances.

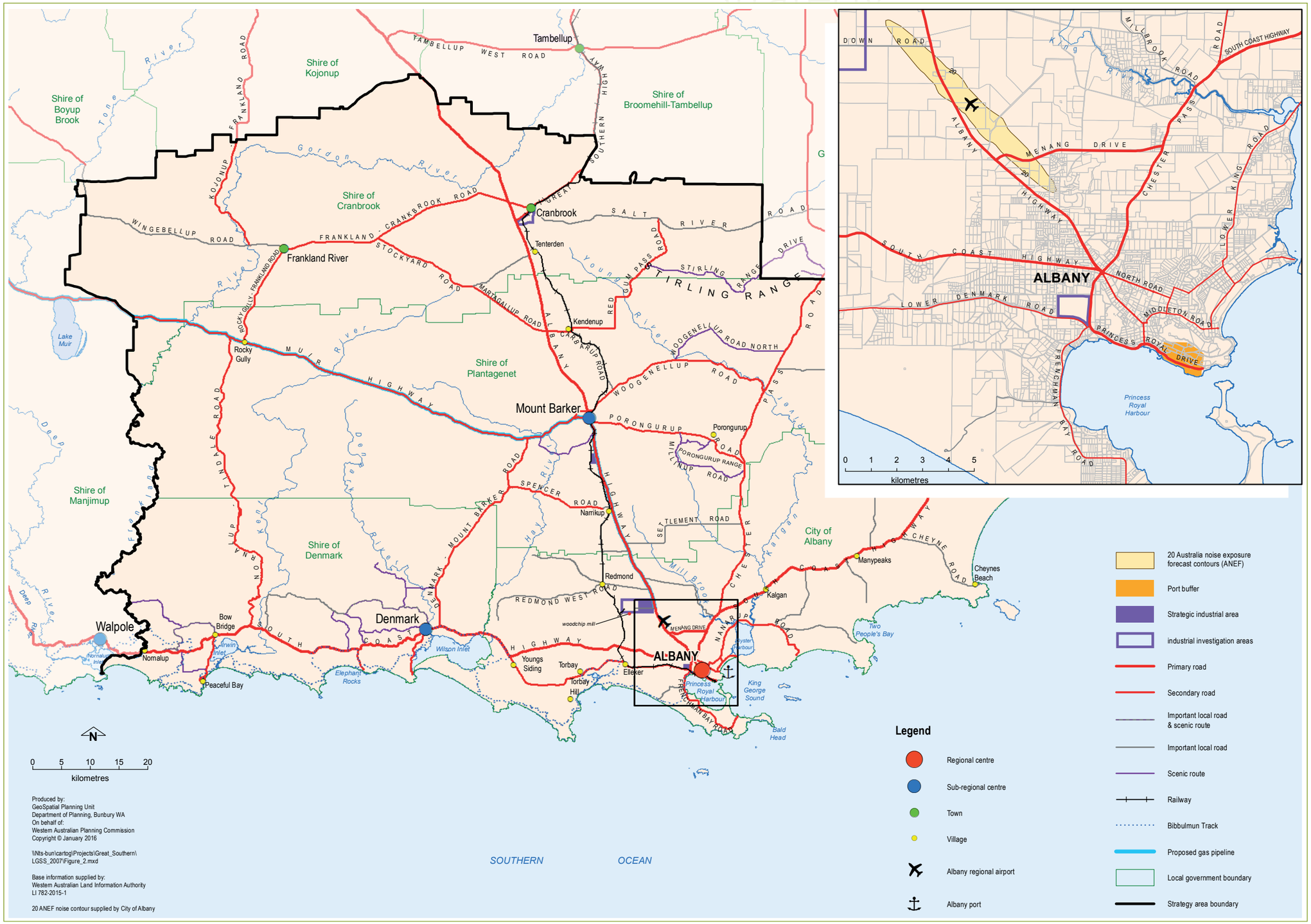


Figure 2: Settlements, key regional infrastructure and strategic industry sites

Table 2: Settlement Hierarchy of the Lower Great Southern

	City of Albany	Shire of Cranbrook	Shire of Denmark	Shire of Plantagenet
Regional Centre	Albany			
Sub-Regional Centre			Denmark	Mount Barker
Town		Cranbrook Frankland River		
Village	Wellstead Elleker Cheynes Beach Torbay Hill Kalgan Manypeaks South Stirling Redmond Torbay Youngs Siding	Tenterden	Peaceful Bay Nornalup Bow Bridge	Kendenup Rocky Gully Narrikup Porongurup

The settlement hierarchy is depicted in Figures 2 and 6; and Table 2.

2.5.2 Consolidation of Settlements

The State Planning Strategy 2050 promotes the consolidation of existing settlements to make regional communities sustainable in the long term. The aim of this strategy is to build on existing communities in order to support local and regional economies; concentrate investment in the improvement of services and infrastructure; enhance the quality of life in these communities; and deliver sustainable outcomes for settlements in the Lower Great Southern. For these reasons the majority of settlement growth in the region is to be in the existing urban areas of Albany, Denmark, Mount Barker, Cranbrook and Frankland River.

2.5.3 Industry and Commercial Growth

Each of the major settlements of Albany, Denmark, Mount Barker and Cranbrook has local industrial sites. It is important that local governments determine the demand for industrial land and identify suitable locations for local industries in local planning strategies and schemes. Infrastructure requirements, setbacks and separation distances from existing and proposed residential and rural residential areas should be considered with the view to consolidating townsites and ensuring sufficient land is available for existing local businesses wishing to relocate or for new industry. Integration of transport and land use planning should ensure that industrial sites are located near major transport routes.

Prospects for commercial activity will be tied closely to the future population, which in turn will depend on the future employment structure and ability to sustain a working population. Commercial development and redevelopment should be addressed in a coordinated and structured manner, with emphasis placed on improving the depth and quality of existing retail centres, in particular historical town centres, to broaden the range of facilities and services whilst maintaining their character.

Efforts should be made to confine new shopping areas and office developments, including government agencies and offices, to existing town centres. Locating bulky goods and showroom development adjacent to designated centres is the preferred option for these land uses. In the smaller townsites and villages, utilisation of 'enterprise' zones such as those currently established in Rocky Gully and Kendenup will be considered as a mechanism to stimulate commercial and economic growth and support their ongoing sustainability.

Guidance for the consolidation of existing commercial centres and establishment of a hierarchy of well-located centres should be incorporated into local planning strategies. The concentration of retail and commercial activities in geographically confined, yet highly accessible areas is encouraged.

2.5.4 Infrastructure Provision

Cost and availability of services in regional settlements, particularly power, water and reticulated sewerage, can affect the release of residential and industrial lots. This can lead to developers looking toward rural land as an alternative, resulting in fragmentation of rural land and creation of small rural lots that will no longer be available for agricultural production. Other impacts affecting regional development can also arise including unsustainable patterns of urban land development; and increased pressure on local government to bear the costs for extension of services.

Alternative infrastructure provision and innovative approaches to the supply of water and sewerage services, such as new technologies across the spectrum of centralised and diffuse systems, is an option that could be explored by communities and government agencies in areas that are environmentally and socially acceptable and

Photo courtesy: Colin Richardson

where the cost of extending traditional services is a constraint to growth. These approaches should deliver water and sewerage solutions that at least match, and preferably enhance the environmental, social and economic outcomes and performance of current traditional methods. Development of alternative technologies for townsite water and wastewater services should also take into account predicted population and industrial growth and community expectations.

2.5.5 Sea change

Coastal locations nationally are experiencing population growth due to an increasing desirability to live by the coast for lifestyle reasons. Denmark and Albany have had significant population increases based on this trend and will continue to experience growth in the future. There are many challenges associated with this growth ranging over the spectrum of environmental, social, economic and infrastructure pressures. Coastal locations also attract many of Australia's local, national and international tourists which increase the complexity of managing growth and development in these areas.

2.5.6 Rural Living

The location and amount of land for rural living purposes is to be determined through the local planning strategy process and in accordance with WAPC rural planning policy (SPP 2.5). Other relevant matters such as environmental and fire hazard considerations are also to be taken into account in this process.

2.5.7 Key Planning Issues for the Region's Settlements

Key planning issues for settlements are outlined below. Actions to address these issues are contained both in this section and within sections of the strategy relating to specific matters.

Albany

- preserving efficient heavy freight access corridors to the port;
- resolving constraints on the development of the Mirambeena strategic industrial area;
- examining demand, availability and infrastructure requirements to ensure a suitable amount and variety of industrial land is provided;
- investigating potential for western expansion of Pendeen industrial estate;
- creating an integrated urban road network, based on outputs from the Albany Traffic Model;
- protecting the city centre from fringe commercial development and resolving traffic issues;
- identifying opportunities for infill urban development and providing strategies to consolidate growth of the City and prevent sprawl;
- fostering tourism development in key tourist areas;
- guiding development of the Albany waterfront;
- accommodating predicted increases in the proportion of aged people in the community and meeting their associated care and health needs;
- developing cultural and recreation facilities to cater for future growth;
- identifying sites for future regional private recreation facilities (e.g. motor sport);
- providing more opportunities for tertiary study;
- identifying and protecting future water resources for the city;
- protecting agricultural areas against fragmentation, particularly rural living subdivision and development;
- retaining priority agricultural land within Albany's development front for primary production;

- protecting basic raw materials and mineral resources from encroachment by incompatible land uses;
- achieving a balance between conservation and urban development and protecting Albany's natural assets;
- maintaining and enhancing visual quality in the City centre, including protecting visually sensitive areas such as ridgelines;
- considering ways of protecting remaining urban native vegetation by implementing recommendations of the Albany Regional Vegetation Survey (2010 and 2014) through land use planning processes; and
- managing risks associated with sea level rise and climate change on existing and proposed infrastructure and coastal development areas.

Denmark

- developing the new industrial site identified in the Local Planning Strategy;
- managing heavy freight through-traffic along South Coast Highway;
- consolidating the existing urban settlement;
- rapid population growth and associated development pressures;
- increased pressure on utility services during holiday periods;
- extending the reticulated sewerage system to existing residential areas;
- managing growth in the town centre to ensure adequate parking, accessibility and the attractive townscapes and rural character of the town are maintained;
- loss of agricultural land through fragmentation for rural living purposes;
- managing bushfire risk to the townsite; and
- managing the environmental qualities of Wilson Inlet and other waterways.

Mount Barker

- resolving development constraints (infrastructure) to Mount Barker and the Yerriminup strategic industrial area;
- identifying additional industrial and service industrial land in reasonable proximity to Mount Barker and with good access and exposure to Albany or Muir Highway;
- managing impacts of Albany Highway on the town centre;
- improving the Mount Barker townscape and consolidating the existing townsite;
- retaining the existing level of services, encouraging economic development and minimising economic leakage to Albany;
- continued expansion of infill sewerage whilst overcoming constraints due to the presence of hard rock;
- costs associated with infrastructure provision for residential expansion;
- managing bushfire risk to the townsite;
- managing land use conflicts between rural-residential and intensive agriculture land uses;
- minimising fragmentation of rural land; and
- managing impacts on local road networks from heavy vehicles.

Cranbrook

- progressing establishment of a proposed industrial transport hub near the townsite;
- cost of development and subsequent effect on viability;
- extending reticulated sewerage to unserviced areas of the townsite;
- ensuring the proposed Water Corporation pipeline extension in 2018 occurs to provide security of water supply; and
- monitoring potential salinity impacts on the townsite.

Frankland River

- provision of an upgraded and secure water supply;
- provision of an upgraded power supply;
- provision of suitable services to residential land to accommodate future growth;
- provision of a sufficient amount of suitably serviced industrial land;
- supporting and enhancing Frankland River's function as a key tourist stop between Bunbury and Albany; and
- fostering growth of viticulture and niche agricultural products.

Villages

There are many common issues facing villages in the Lower Great Southern. The following provides a summary of these issues. Where growth of villages is proposed in local planning strategies, issues relevant to that particular village should be addressed in townsite development plans and/or conceptual structure plans.

- ageing and/or inadequate infrastructure and the cost of upgrades;
- cost of providing and/or extending infrastructure and services to support development;
- issues relating to the tenure of land in and adjacent to villages, in particular limited availability of freehold land and conservation reserves, national parks and native title claims adjacent to town sites;
- maintenance of existing community assets;
- loss of community services and facilities such as health and education;
- coastal and foreshore management issues;
- groundwater pollution and impacts of on-site effluent disposal;
- consideration of innovative planning, developmental and servicing approaches to support ongoing sustainability of villages;
- size and location of existing lots;
- addressing land use, subdivision and settlement patterns in Kendenup and the existing fragmented rural surrounds;
- incorporation of land for tourist accommodation;
- impacts of historical subdivision and current development trends;
- impacts of development on village character and amenity, and that of surrounding areas;
- access to reliable communications services; and
- impact of natural hazards such as bushfires.

Objectives and Actions for Settlements			
Objective	**Actions**	**Timeframe**	**Responsibility**
Provide a comprehensive framework for the planning and development of identified settlements	Ensure that Albany is promoted as a regional centre; Mount Barker and Denmark are promoted as sub-regional centres; and Frankland River and Cranbrook are promoted as towns	Ongoing	State government Local government Community
	In regional and sub-regional centres and towns, zone sufficient land for urban development and a variety of housing types, in accordance with endorsed local planning strategies	Ongoing	LG
	For villages identified for expansion that do not currently have endorsed plans, prepare and have endorsed by the WAPC a townsite strategy and/or conceptual structure plan	Short term	LG
	Where servicing and/or other constraints to townsite development have been identified in endorsed local planning strategies, seek inclusion in the townsite development program	Ongoing	LG LandCorp Utility agencies
	Utilise innovative zonings in local planning schemes to stimulate commercial and economic growth in villages identified for expansion	Ongoing	LG DoP/WAPC
	Zone sufficient land for light, general and service industry in accordance with endorsed local planning strategies	Ongoing	LG DoP/WAPC

2.6 Infrastructure

Planning for, providing and maintaining essential infrastructure is a fundamental requirement for the prosperity and growth of the Lower Great Southern. This section describes existing infrastructure supporting and connecting the region; and provides actions to effectively plan for upgrading and/or providing new infrastructure in the region as necessary. Key regional infrastructure is shown in Figure 2.

2.6.1 Port of Albany

The Port of Albany is a State and regional asset that is fundamental to economic development in the Great Southern region. The port's infrastructure needs to be developed to accommodate growth in trade and ensure its continued viability as a key State asset.

Anticipated growth in export product will result in increased road and rail freight to the port. A key challenge will be to ensure that freight can access the port in an economically, environmentally and socially acceptable manner. The port is the main export hub for commodities in the Great Southern

Objectives and Actions for Port of Albany			
Objective	**Actions**	**Timeframe**	**Responsibility**
Maintain and enhance function of the Port of Albany in light of envisaged long term growth and productivity within the wider Great Southern region	Maintain the special control area around the port to facilitate its ongoing protection	Ongoing	LG
	Investigate options for a future inland port facility	Short term	PoA DoP/WAPC LG
	Secure road, rail and other necessary infrastructure corridors to the port	Ongoing	MRWA PTA DoP/WAPC LG
	Give primacy to maintenance of port function and operations when considering land uses that may impact on these	Ongoing	LG DoP/WAPC

region. Therefore, any changes to its operation or inefficiencies in gaining access will also affect areas outside the Lower Great Southern.

The function of the Port of Albany has the potential to be compromised if freight activity associated with growth in port operations is perceived as having an adverse impact on adjacent land uses. Careful planning is required to ensure long-term operation of the port (with particular attention to the need to protect Port Freight Routes) whilst providing for development in surrounding areas. Where possible, impacts from port activities on adjacent land uses should also be minimised through careful consideration of layout and use of improved technologies and processes. The National and State planning commitments to protect Port Freight Routes along with the Port of Albany noise modelling project provides the basis for determining suitable measures under the City of Albany's local planning scheme.

The planning and provision of additional road and rail infrastructure outlined in the following sections is a high priority, given the Port of Albany's peak freight task for all commodities, particularly grain and woodchips. The port receives commodities from a much larger catchment than the Lower Great Southern, and it is important to take account of the impact of the growth of farm forestry and increased grain harvest from areas to the north when planning for additional transport infrastructure. The potential also remains for development of the Southdown magnetite deposits at Wellstead in the longer term, which would further increase the port's freight task.

2.6.2 Roads

Ring Road

In accordance with the Albany Ring Road Planning Study (MRWA, 2001) the alignment of a heavy haulage ring road around Albany has been determined and the first stage (Menang Drive, which connects Chester Pass Road and Albany Highway) has been constructed. The Albany Highway to Port Link has been identified for construction in the longer term, subject to funding being secured. Completion of the ring road will provide more efficient heavy vehicle access to the Port of Albany and improve traffic safety within the town centre by reducing road use conflicts.

In the short term, further planning and preliminary designs for the remainder of the ring road need to be developed to resolve land requirements, design and planning issues.

Regional roads

Transport demands in the Lower Great Southern will require a number of strategic road and transport improvements. The demands that will drive the need for these improvements include growth in agriculture, forestry and related industries; growth in viticulture and winery development; continued population growth; and increasing tourist numbers.

The impact of heavy freight movements on communities and tourism is significant for all local governments in the Lower Great Southern. A balance needs to be struck between key issues such as protecting road and rail freight access to the port; minimising the impact of increasing heavy road freight on local communities; and providing a road network to meet the needs of freight, tourists and local users.

The regional road network is an important infrastructure asset for tourism in the Lower Great Southern, given the high self-drive nature of visitors and the often dispersed nature of tourism experiences available in the region. Many roads accessing tourism sites are gravel surfaced, which can raise safety issues for tourists. Conversely tourism traffic can increase pressure on certain parts of the road network, particularly in rural areas. Tourism signage and facilities along the road network are also an important factor in promotion and accessibility.

Objectives and Actions for Roads			
Objective	**Actions**	**Timeframe**	**Responsibility**
Provide a strategic road network in Albany that facilitates the safe and efficient movement of freight to the Port of Albany; and protect access to the port along the principal freight routes of Chester Pass Road, Albany Highway, Hanrahan Road, Princess Royal Drive and the proposed Ring Road	Preserve Chester Pass Road and Hanrahan Road in Albany as a major freight route, until such time as the Albany Ring Road provides the more expedient and safer route for freight transport between the east and the port	Ongoing	MRWA
	Secure land requirements for the remainder of the Ring Road	Long term	MRWA
	Utilise the Albany Traffic Model to develop and evaluate options for provision of a legible distributor road network within Albany; and to manage cross-traffic movements on Chester Pass Road and the Ring Road	Ongoing	MRWA DoP/WAPC LG
	Undertake design refinements for the Albany Highway to Port Link of the Ring Road with consideration of: • optimising road and rail alignment along Lower Denmark Road and intersection with Hanrahan Road; • grade separation between Princess Royal Drive and the railway line at the eastern end of Princess Royal Drive; • future upgrade to Princess Royal Drive, with the potential for upgrading to a four-lane dual carriageway, while protecting the artificial wetland to the north, public and commercial amenity values of the foreshore and potential visual impact; and • catering for increased traffic using Frenchman Bay Road and Princess Royal Drive to access York Street	Short term	MRWA DoP/WAPC LG PTA
	Progress construction of the remainder of the Albany Ring Road	Long term	MRWA

Objectives and Actions for Roads (cont.)			
Objective	**Actions**	**Timeframe**	**Responsibility**
Provide a strategic road network in Albany that facilitates the safe and efficient movement of freight to the Port of Albany; and protect access to the port along the principal freight routes of Chester Pass Road, Albany Highway, Hanrahan Road, Princess Royal Drive and the proposed Ring Road	Introduce and maintain measures to minimise potential conflicts between the Ring Road and other heavy freight routes and adjacent land uses, including: • structure planning; • land use and development controls for adjacent properties, based on the recommendations of the Albany Heavy Freight Access Study; • providing for adequate separation of sensitive land uses from the Ring Road (particularly urban residential) in local planning strategies and schemes; and • road planning standards to minimise potential road user conflict and the negative noise and visual impact of the road on adjacent properties	Ongoing	MRWA DoP/WAPC LG
	Implement the noise mitigation measures recommended by the Albany Heavy Freight Access Study including: • acceptable uses adjacent to the major freight access roads in local planning schemes to prevent conflicts between incompatible uses; • investigating the use of special control areas to implement development and building standards to reduce the impact of noise on adjacent residential buildings; and • incorporating design guidelines for redevelopment areas backing on to major freight routes	Short term	LG DoP/WAPC
Develop an effective regional road network, including catering for the needs of freight, local and tourist traffic	Manage the interaction between operational requirements of Main Roads WA for freight and regional traffic purposes, and the needs of local traffic in established settlements	Ongoing	MRWA LG
	Investigate access options to Down Road to facilitate truck movements from the south-west and west to the woodchip mill in the vicinity of Marbellup North Road	Short term	DoP/WAPC GSDC LandCorp
	Undertake road improvement and maintenance projects to enable safe and expedient transport of freight and agricultural commodities	Ongoing	MRWA LG
	Provide ongoing funding for the Wingebellup Road and Woogenellup Road upgrade projects	Ongoing	MRWA LG

Objectives and Actions for Roads (cont.)			
Objective	**Actions**	**Timeframe**	**Responsibility**
Develop an effective regional road network, including catering for the needs of freight, local and tourist traffic	Provide additional passing lanes and rest stops, where necessary, on major regional freight roads	Ongoing	MRWA
	Seal Salt River Road linking Cranbrook to Chester Pass Road along the northern boundary of the Stirling Range National Park	Medium term	LG MRWA
	Secure funding for the upgrade of Nornalup-Tindale Road	Short term	LG GSDC
	Investigate options and feasibility of providing an alternative means of access/egress to Denmark townsite across the Denmark River	Short term	LG
Provide, coordinate and protect road and service infrastructure in road reserves (service corridors)	Provide all infrastructure in road reserves in a manner which is in accordance with the WA Utility Providers Code of Practice	Ongoing	Utility Agencies

2.6.3 Rail

As with road, the growth in port trade is a key driver for rail transport. Shifting the transfer of freight, particularly grain and woodchips, from truck to rail has environmental and social benefits and plays a key role in improving the sustainability of the Lower Great Southern, particularly in the Albany urban area where conflict with heavy vehicles and general traffic is an issue.

Capacity of the Great Southern line

The potential transfer of road freight to rail will place greater pressure on the rail network in the vicinity of Albany. The rail line to the port has the capacity to handle the freight task for grain and woodchips in the short term; however, its capacity will need to be sufficient to cater for potential increases in demand in the future. Further rail infrastructure may be required, including a loop line within the port and grade separation between Princess Royal Drive and the rail line at the eastern end of Princess Royal Drive.

Transfer of general freight to rail

Opportunities for transfer of general freight to rail via an intermodal transfer facility, and locating future industrial land near the existing railway line to increase the potential use of rail should be explored. To facilitate the transfer of freight from road to rail it will be necessary to provide additional rail infrastructure. An extension of the existing rail spur to the Albany Plantation Export Company woodchip mill into Mirambeena would allow other industries, including the timber processing precinct at Down Road West, to use rail instead of road to transport product. It also would provide additional opportunities for an intermodal transfer facility to be established. As the commercial viability of these alternatives will be a key issue, Government will need to work with the relevant industry bodies.

Protection of the railway corridor

Rail access needs to be protected to support the long-term viability of the port. The potential noise impacts on sensitive land uses adjacent to the railway line could have an adverse impact on the economic viability and operation of the railway.

Impact of strategic receival points

The creation of strategic receival points can have significant impacts on road infrastructure, including increased traffic dust and noise, due to changing transport patterns. These impacts may be heightened where there are extraordinary grain road freight movements from on-rail strategic receival points, such as in Cranbrook. Where possible, these impacts should be minimised and are an issue for further investigation. Encouraging location of any new strategic receival points next to existing rail infrastructure is recommended.

Objectives and Actions for Rail

Objective	Actions	Timeframe	Responsibility
Maximise the use of rail for freight haulage into the Port of Albany	Plan for additional rail infrastructure to improve rail capacity, including: • passing loops, where required, to maintain freight access to the port; • extensions into strategic industrial areas; • rail realignments and a rail loop at the port and Mirambeena strategic industrial area to meet future growth in the freight task; • a rail spur extension at Yerriminup strategic industrial area; and • grade separation between Princess Royal Drive and the railway at the eastern end of Princess Royal Drive	Short term	DoP/WAPC GSDC PTA LandCorp PoA
	Investigate alternative options to encourage the transfer of road freight to rail and evaluate their costs and benefits	Short term	DoP/WAPC GSDC LG
Protect the railway corridor between the Port of Albany and South Coast Highway	Consider the effects of noise, including the outcomes from the Albany Heavy Freight Access Study, when planning for future land uses adjacent to the railway line to secure its efficient operation	Ongoing	LG DoP/WAPC

2.6.4 Airports

Operation of the Albany airport (including potential runway extensions and other development) needs to be acknowledged and protected through planning processes from encroaching land use, including residential and special rural development. The Australian noise exposure forecast contours should be recognised in the local planning scheme to prevent incompatible development near the airport that could affect its long-term viability.

A special control area exists in Albany's local planning scheme to specify land use and development, including maximum building heights. The special control area affects land outside the airport boundary, including the Mirambeena strategic industrial area.

There are opportunities for the development of complementary commercial enterprises to locate near the airport, including flight training schools. It may be necessary to zone land for commercial uses.

Local governments should consider protecting smaller regional airstrips under local planning strategies and schemes in order to provide certainty for the emergency access needs of the Royal Flying Doctor and other services.

Objectives and Actions for Airports			
Objective	**Actions**	**Timeframe**	**Responsibility**
Ensure the continued efficient operation of the Albany airport	Maintain airport noise and safety buffers and obstacle limitation surface in the local planning scheme	Ongoing	LG
Preserve opportunities for potential future expansion of the Albany airport	Maintain suitable zonings and manage land uses in and around Albany airport	Ongoing	LG DoP/WAPC
	Undertake conceptual design and planning to guide consideration and establishment of complementary commercial uses	Short term	LG
Develop opportunities for complementary commercial activities to locate at Albany airport	Investigate the potential for co-location of land uses that may be able to utilise existing airport noise buffers	Medium term	LG
Develop and maintain the regional airstrip network to provide emergency access	Monitor, evaluate and upgrade as necessary the regional airstrip network for RFDS emergency access	Ongoing	LG

2.6.5 Service Infrastructure and Utilities

Electricity

Historically, the two primary issues with electricity supply in the Lower Great Southern have been unreliability and lack of capacity to meet growing industrial demand. The upgrading of electricity supply infrastructure also is an important issue, given that faulty power lines can cause bushfires. Identification of the existing shortfalls in power supply and where upgrades and new infrastructure are necessary (in particular upgrading the capacity of the power mains from Muja) to accommodate future power requirements for domestic and industrial use are required.

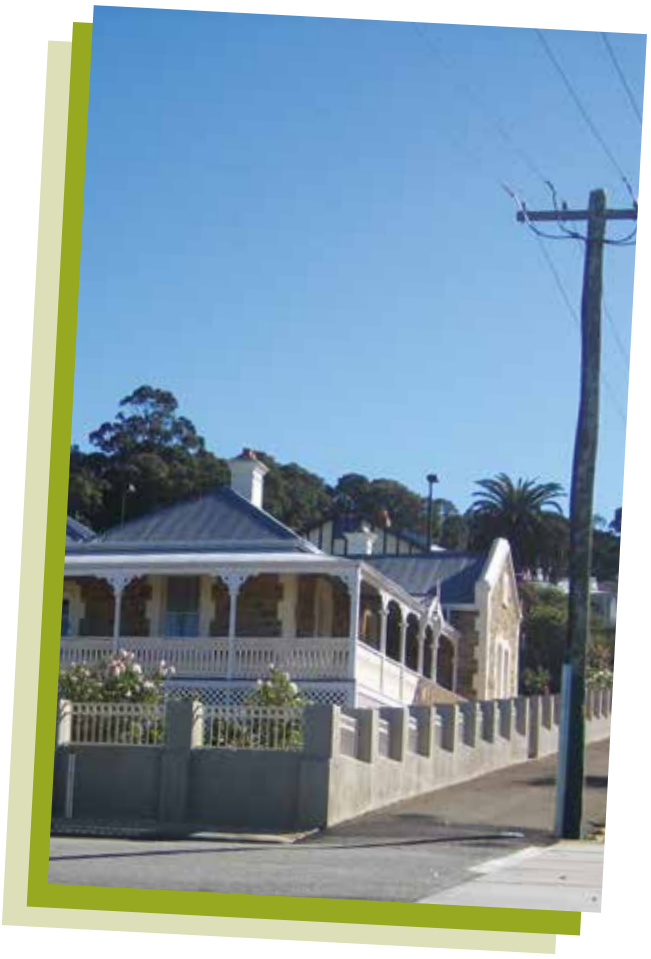
The development of strategic industry is limited due to the unreliability of power and the cost of infrastructure requirements (including headworks charges) to upgrade existing feeder lines to Mirambeena and Yerriminup. For development of new industries away from Albany, electricity extensions are likely to be a constraint. The proposed extension of the natural gas pipeline from Bunbury would improve the capacity and reliability of energy supply for new and existing industries.

To improve the reliability of energy supply in the Lower Great Southern, alternative sources of power should be investigated. Building on existing renewable sources such as wind farms and biomass power stations has the potential to improve energy supply reliability in the region. The south coast also has excellent wave energy resources.

Gas

It is expected that gas will become increasingly important in meeting primary energy requirements. Mining and large industrial processing projects typically have provided the impetus for establishment of natural gas to previously unserviced areas. The Lower Great Southern has the potential for industry growth through downstream processing of its agricultural commodities, timber and mineral deposits.

The delivery of a gas pipeline to Albany may enable industry development in the region. This project is in the planning stage, with Government having selected a route alignment that will improve servicing to towns and industry.



Water and wastewater infrastructure

The level to which the Water Corporation's water and wastewater infrastructure and facilities, such as water treatment plants, storage facilities and pump stations, are protected in local planning strategies and local planning schemes varies. Where necessary, particularly for wastewater treatment facilities, buffers should be identified and incorporated into local planning schemes. The importance of this is increased as wastewater treatment plants are expanded to support urban development and demand increases for recycled water for urban uses such as ovals and artificial wetlands.

Historically, Western Australia has relied much more heavily on septic tanks than other States, leading to a considerably high proportion of country towns without sewerage. Low-lying properties near rivers and other wetlands are most susceptible to septic tank flooding and overflowing, particularly in winter. The provision of reticulated sewerage enables intensification of urban development and will assist in preserving water quality and preventing pollution and eutrophication to rivers, wetlands and estuaries in areas of high risk.

The Sewerage Infill Program is funded by the State government and currently administered by the Water Corporation. Funding for the Program has been curtailed and deferred in recent years due to State budget constraints. Consideration will be given to new infill projects on a case-by-case basis subject to funding availability and priority. In this context it is also important that other means of providing infill sewerage to priority areas are pursued, including via alternative service providers.

This strategy recognises the areas of Weedon Hill, Minsterly Road, Beveridge Road and Inlet Drive in Denmark (next to Wilson Inlet); Milpara, Gledhow, Robinson industrial area and Yakamia in Albany; and Kendenup north of Mount Barker as high priorities for reticulated sewerage connection, if and when funding becomes available under the Sewerage Infill Program or through other means.

Telecommunications

It is important that the existing telecommunications disadvantage experienced by rural and remote areas is addressed, especially considering that the rural, broadacre cropping and forestry sectors account for the majority of the region's total exports. If the Lower Great Southern's communities and economy are to grow and prosper, effective access to telecommunications services is very important. Improvement of access and speeds to any communication network will provide opportunities for residents and businesses to communicate more effectively, improve service levels and streamline their operations. The greatest opportunities will be in the smaller centres where e-health, e-education and e-commerce will become achievable objectives.

Given the extent of recreational and commercial boating activity in the Lower Great Southern and the dangerous coastline of the south coast, it is essential that radio services are provided efficiently for marine and safety purposes. The VHF radio communications network along the south coast needs to be maintained and more repeater stations provided to ensure more complete VHF communications coverage.

While accessibility to public internet access terminals and internet service providers has improved in the Lower Great Southern in recent years, the reliability and quality of such services needs to be improved to meet consumer demand and expectations. Limited geographic coverage for mobile phone telecommunications also remains an issue for households and businesses, particularly to the east and in some scattered pockets of the Lower Great Southern.

Apart from the existing gaps in telecommunications services, the combination of increased direct and indirect economic activity in farm forestry, industrial processing, population expansion, increasing travel and tourism through the area, and the worldwide trend toward greater reliance on convenient and cheap communications, will increase demand for telecommunications over the next 20 years.

Objectives and Actions for Service Infrastructure and Utilities			
Objective	**Actions**	**Timeframe**	**Responsibility**
Provide and protect water and wastewater infrastructure and treatment and recycling facilities	Provide reticulated sewerage to the priority areas of Weedon Hill, Minsterly Road, Inlet Drive, Beveridge Road (Denmark); Milpara (Albany); and Kendenup (Plantagenet) if and when funding becomes available under the Infill Sewerage Program or through other means	Short term/ Ongoing	Water Corporation Other sewerage service providers
	Zone buffer distances around water treatment plants and other water-related assets as special control areas in local planning schemes	Short term (completed in some schemes)	LG
	Through local planning strategies and schemes, identify and plan for compatible land uses to be contemplated within established buffer areas	Medium term	Water Corporation DoP/WAPC LG DoW
	Establish an ongoing dialogue between Water Corporation and relevant agencies to better understand demand for services and develop solutions for provision of water services in priority areas	Ongoing	Water Corporation DoP/WAPC LG
Provide adequate, affordable and reliable power supplies	Determine the capacity of current and potential power supply options and identify power supply requirements	Ongoing	Western Power
Build on existing renewable energy sources and investigate potential new sources to supplement conventional supplies	Support and encourage development of alternative sources of power to supplement and/or replace traditional electricity supply, particularly wind and solar	Ongoing	LG GSDC DoP/WAPC Electricity service providers
Provide suitable alternative servicing options in settlements where normal servicing methods are restricted and/or unavailable	Investigate alternative methods for wastewater disposal, including grey water re-use and alternative non-potable systems in residential and industrial subdivisions	Short term	LG DoH
	Investigate and develop innovative approaches to supplying country towns with water and sewerage services that enhance environmental, social and economic outcomes and performance of current traditional methods	Medium term	LG DoP/WAPC

Objectives and Actions for Service Infrastructure and Utilities (cont.)			
Objective	**Actions**	**Timeframe**	**Responsibility**
Maximise the opportunities presented by the provision of a natural gas pipeline	Identify and secure a gas pipeline that services towns and industry along the Government's selected route to maximise economic benefits to the State and Lower Great Southern	Short term	DSD/DRD DoL
	Collaborate with the private sector to identify and secure a suitable end user of the gas resource, in order to increase viability of the construction phase of the project	Medium term	DSD/DRD GSDC
Provide high-quality telecommunications infrastructure and services	Improve and/or upgrade telecommunications infrastructure where necessary, in particular services to rural and coastal communities and principal highways; and improve mobile phone coverage and high-speed broadband data transmission	Ongoing	Service providers
	Upgrade VHF capability and repeater stations in coastal areas	Ongoing	DoT

Photo courtesy: Colin Richardson

2.6.6 Public Transport, Walking and Cycling

Reducing car use and increasing the use of public transport, walking and cycling is a key component of sustainable development. This strategy supports the provision of town bus services and additional walking and cycling infrastructure in settlements of the Lower Great Southern, particularly the main population centre of Albany. While it is acknowledged that the population base of most settlements is too small to support a comprehensive public transport service, existing community based transport services for youth, schools and the elderly are encouraged. New residential, school and commercial development should be designed to allow efficient access to these services in the future.

Regional bus services should be supported and expanded where necessary. Opportunities to provide a passenger rail service from Perth to Albany that utilises the existing railway line and historic stations should be investigated.

Regional recreational trails, such as the Bibbulmun Track, Denmark-Nornalup Trail and the Munda Biddi trail to Albany, should be identified in local planning strategies and protected, given their importance for regional tourism and recreation. Implementation of the City of Albany's Trail Hub Strategy is also supported.

The street network of new residential areas also should be designed to be conducive to walking and cycling, in accordance with the WAPC's Liveable Neighbourhoods policy, with an adequate provision of footpaths and cycle paths.

Objectives and Actions for Public Transport, Walking and Cycling

Objective	Actions	Timeframe	Responsibility
Improve public transport, walking and cycling opportunities in the Lower Great Southern and connectivity with the wider region	Investigate the demand and feasibility for inter-town public transport services in the Lower Great Southern	Short term	DoT GSDC DoP/WAPC LG
	Investigate opportunities for the provision of passenger rail services from Perth to Albany	Long term	DoT PTA
	Investigate improved regional linkages with the national coach network	Medium term	PTA
	Expand the network of cycle and pedestrian ways	Ongoing	LG
	Include the investigation and design of cyclist facilities on the Albany Highway to Port Link of the Albany Ring Road that will facilitate the connection of Frenchman Bay Road and the Albany Waterfront for cyclists	Short term	MRWA DoP/WAPC LG
	Identify public and community based transport opportunities, where necessary, when preparing planning strategies and structure plans	Ongoing	LG DoP/WAPC

2.6.7 Community Services and Facilities

Adequate provision of community services in the settlements of the Lower Great Southern is required. Higher-order services should be concentrated in Albany, Mt Barker and Denmark. This strategy supports the improved coordination of planning and the provision and expansion of these services where needed; and ensuring that existing services in the smaller settlements are retained and, where possible, enhanced. A coordinated approach to planning for community services, including responsibility for capital expenditure, maintenance, and coordination of program delivery, is required. Relevant service providers should ensure consultation with local government authorities when planning for and providing community services.

Health care services

The regional demand that will arise from increasing numbers of elderly residents and retirees will require improved aged care facilities, medical services and specialists. Incentive schemes are required for the recruitment and retention of health care professionals and specialists. More specialists and special medical units should be encouraged to locate in Albany, Mt Barker and Denmark; and programs established to enhance provision of these services to small and/or remote settlements in the region. Land availability for government services may not be an issue since many services are mobile and can be accommodated in existing community buildings.

Education facilities

Existing primary and secondary school provision is adequate and includes private and public facilities, which cater for a wide student age range. There are also a relatively high level of tertiary education facilities available including the University of WA Albany Centre, Great Southern Institute of Technology (GSIT) and Denmark Agricultural College.

However it remains common for many families, particularly in rural or remote areas, to move out of the Lower Great Southern to pursue higher education. This 'tertiary drain' of whole families or students for further education can have numerous impacts on regional communities such as skills shortages, loss of youth, and reduced capacity for innovation.

There is significant potential within the region for these matters to be addressed through focused strategies that build on the existing educational opportunities on offer. Introduction of more specialist tertiary campuses and annexes relevant to local major industries is supported and encouraged. This type of education would help build a better-skilled region, improve industry and innovation, increase retention of the knowledge base and local youth, and stimulate the economy.

Recreation

High-quality, well-planned and sustainable recreational facilities are paramount to the health of a region. They encourage physical activity, support community wellbeing and cohesion and have the potential to attract State or national events that have a positive social and economic impact. It is important to ensure a range of recreation options are available to communities including active and passive; indoor and outdoor; and facility and nature based experiences.

The provision of sporting and recreation facilities in the Lower Great Southern is considered generally to be sufficient: however, an additional regional facility may be required in the long term. It is important that existing facilities are protected and that land is identified and set aside for future regional recreational facilities. The location of each site should take into consideration its use and the impact it would have on existing adjacent land uses. Opportunities for efficient provision of facilities should be explored in initial planning stages, in accordance with the Department of Sport and Recreation's joint provision and shared use guidelines.

Recreational boating facilities

Coastal and estuarine areas around Albany and Denmark are popular for recreational boating and this will continue to grow in proportion to population growth. The option of providing improved and/or additional boat launching facilities should be investigated in suitable locations. Such facilities should be adequate for the weather conditions and depth of the water body, and be located so as to prevent conflict with other users as well as being sensitive to the existing marine environment. Additional access for recreational boat users should however not include permanent opening of non-naturally occurring estuary or inlet openings.

Objectives and Actions for Community Services and Facilities

Objective	Actions	Timeframe	Responsibility
Provide new or expand existing community services and facilities in accordance with settlement function	Provide community, health and social services according to established needs and to cater for the region's ageing demographic	Ongoing	DoH LG
	Identify shortfalls in the provision of community services and infrastructure in settlements and coordinate integrated programs for service provision, including development contribution plans in local planning schemes	Ongoing	LG DoP/WAPC GSDC
	Identify in local planning strategies and zone in local planning schemes, adequate and suitable land for: • health facilities, particularly for the elderly; • education, particularly additional secondary and tertiary facilities that provide region-specific specialist training; • recreation and open space, including a suitable range of passive and active facilities; and • law and order facilities and other government services	Ongoing	LG DoP/WAPC DoH DET
	Implement strategies and projects that focus on provision of suitably located tertiary education and specialist facilities offering training in fields beneficial to growth and development of the region	Short term	DTWD DET LG
	Develop new and/or upgrade existing recreational boating facilities along the coast, as necessary	Medium term	DoT LG

2.7 Strategic Industry

This strategy identifies existing and potential future strategic industry areas within the Lower Great Southern (Figure 2). Development of existing sites is encouraged whilst potential future sites will require suitable demand analysis and feasibility studies prior to their consideration for inclusion into local planning strategies and/or schemes.

The Mirambeena and Yerriminup strategic industrial areas provide opportunities for the establishment of industries which can process local resources such as timber, agriculture, viticulture and fishing products. Both are well situated with access to the main rail link to the Port of Albany and to Albany Highway. New major industrial developments with a high transport requirement are encouraged to locate near the existing transport infrastructure at either site.

The ability of the port to cater for the needs of large-scale industrial activity is of prime importance to the development of these sites. The capacity of existing power infrastructure and the cost of upgrading existing feeder lines to Mirambeena and Yerriminup are also limiting major industrial development. As such a coordinated approach to the provision of service infrastructure is required between infrastructure providers and future industrial lessees.

2.7.1 Mirambeena

Mirambeena strategic industrial area is located on the corner of Albany Highway and Down Road, north of Albany. The estate is zoned general industry to cater for industries that may have specific environmental requirements, and a buffer has been identified and incorporated into the City of Albany's local planning scheme.

The site has good road access from Albany Highway and an opportunity exists to provide a rail connection to the port via an extension of the woodchip mill rail spur. Given the relative ease of access to the rail network at Mirambeena, provision should be made to accommodate the potential for an intermodal transfer facility for the transfer of general freight or other commodities. This could significantly reduce the use of Albany

Highway for freight to and from Perth. Mirambeena may also be a candidate for inland storage and/or operations associated with the Port of Albany, due to availability of road and rail services and relatively close proximity to Albany.

Development issues for the establishment of strategic industries at Mirambeena include:

- Capacity of existing service infrastructure: As new industries come on stream, upgrades to power and water will be needed to meet industry requirements. Alternative energy sources, in particular gas, should also be investigated in order to provide the impetus for the establishment of major industries, in particular downstream processing.
- Environment: Any future industrial development further west along Down Road of the existing industries will be affected by the need to protect the Marbellup catchment. Only industry with no waste discharges and minimum risk to the environment would be acceptable in the Marbellup catchment.
- Height limitations: The location of Mirambeena near the Albany airport means industrial development needs to take into consideration height and heat constraints due to the airport's obstacle limitation surface. Development of industries likely to affect local atmospheric conditions (e.g. heat plumes) or requiring structures greater than 110 metres in height should not be developed beneath the northern approach to the airport. The obstacle limitation surface requires development that may affect the airport to be referred to the Civil Aviation Safety Authority. The potential impact of this on strategic industrial development at Mirambeena needs further examination.

In light of these issues a land use compatibility study and structure planning of Mirambeena to determine land uses, re-examine area and buffer boundaries, and provide rail access to the site should be undertaken.

2.7.2 Yerriminup

Yerriminup strategic industrial area is located six kilometres south of Mt Barker. The site is owned by LandCorp and the Forest Products Commission and has been subject to an environmental and engineering analysis and some subdivision approvals. Buffer areas around the site have been identified so that industries with significant buffer requirements may be accommodated.

The estate is adjacent to Albany Highway and is easily accessible by road; however, access upgrades are required as part of developing the site. A rail service can be provided as the Great Southern rail line forms the western boundary of the estate. A rail spur would need to be built to allow industries to access the rail network.

Infrastructure cost including headworks charges, availability and capacity, and road upgrading requirements are major development issues for the establishment of industries at Yerriminup. Options are available to supply power and water to the estate: however, costs of supply are currently prohibitive and there is uncertainty regarding the ability to provide guaranteed long-term supply required for industrial development.

2.7.3 Other Potential Sites

The Shire of Cranbrook's Strategic Community Plan 2013-2015 and draft Local Planning Strategy review (commenced 2014) identify the Shire's intention to investigate establishment of an intermodal transport facility and industrial hub to the south west of Cranbrook townsite. The purpose of the facility would be to stimulate economic activity in the Shire and capitalise on location and existing availability of regional transport linkages. This strategy supports designation of the site as an investigation area for the proposed intermodal facility.

The CSBP fertiliser site on Hanrahan Road and Lower Denmark Road in Albany is zoned light industry (restricted use for fertiliser manufacture and storage). This site may be suitable for other industrial land uses, including a broader range of

light industry and/or a potential inland storage area for the port. Investigations are required relating to land use suitability, zoning, potential environmental impacts, amenity impacts on urban areas to the north, buffers, access and impacts on the future Albany Ring Road. This strategy supports designation of the site as an investigation area in order for these matters to be addressed.

Objectives and Actions for Strategic Industry			
Objective	**Actions**	**Timeframe**	**Responsibility**
Provide adequate, environmentally acceptable and suitably located strategic industrial areas to cater for future industrial development	Secure infrastructure provision to existing strategic industrial areas (Yerriminup and Mirambeena) to maximise the potential for use of these sites	Ongoing	LandCorp DSD GSDC
	Undertake studies to determine infrastructure and servicing requirements for the industrial investigation area at Cranbrook	Short term	LG GSDC
	Investigate mechanisms to address constraints related to electricity headworks and infrastructure provision in strategic industrial areas	Short term	Western Power
	Undertake comprehensive feasibility studies and structure planning of Mirambeena and surrounds (including the area to the existing railway line) to take into account: • preserving suitable land for strategic industry; • identifying infrastructure requirements and alignments, in particular power, water and the extension of the rail spur; and • identifying a suitable location for an intermodal transfer facility/inland port	Short term	LandCorp DoP/WAPC GSDC LG
	Investigate opportunities for the equitable provision of common user infrastructure to strategic industrial areas	Medium term	LandCorp GSDC
	Undertake studies to determine the feasibility of investigation areas at Cranbrook and Albany (Figure 2) for future intermodal facilities and/or other industrial land uses	Medium term	LG GSDC DoP/WAPC

2.8 Agriculture, Forestry, Fisheries and Aquaculture

2.8.1 Agriculture

Over the past 20 years, the rate of conversion of agricultural land from primary production to other land uses has intensified in the Lower Great Southern. Demand for rural living lots has, in some cases, led to the ad hoc subdivision and development of regionally important agricultural land.

Agricultural land is a finite resource that is often sought for a variety of competing purposes, and must be managed sustainably for the long term. Given that agriculture is the cornerstone of the economy in the Lower Great Southern, planning should ensure that its agricultural base is protected from loss of agricultural land due to unplanned subdivision and permanent land use changes. Fragmentation of rural land should only be contemplated where provided for by the WAPC's relevant policies.

In order to protect agricultural land and guide future land use, zoning, subdivision and development in these areas, WAPC rural planning policy (SPP 2.5) requires priority agricultural land to be zoned priority agriculture in local planning schemes. Figure 3 identifies priority agricultural land in areas which, combined with adequate rainfall (greater than 700mm annually), provide the best and most flexible opportunities for agricultural production. This land was identified using broad-scale mapping, which is suitable for regional planning purposes. Each area has been rounded off and some smaller or isolated lots may not be included at the scale used.

As a component of the local planning strategy assessment process, each local government should consider its priority agricultural areas and take into account local topographic, infrastructure, social, economic and other factors to refine the broad regional zoning to local cadastral detail.

A key difference between priority agriculture and general agriculture zones is the way land uses are treated through local planning schemes. In general, land uses that provide for food production should be given greater permissibility than other land uses in priority agricultural areas.

Intensive agriculture

There has been considerable diversification of agricultural production in recent years, with viticulture being the most prominent, but crops such as cut flowers and berries also are being produced in greater volumes.

The Lower Great Southern is also increasingly being recognised as having favourable climate, locational and land characteristics for intensive livestock industries and this has resulted in recent establishment of free range pork and poultry farms.

It is therefore important that when preparing local planning strategies and schemes, local governments consider opportunities for diversification of agricultural land use in specific areas where the land is suitable for more intensive agricultural pursuits and adequate water supplies are available.

Farm forestry

From 1988 to the mid-2000s, there was rapid growth in the plantation timber industry in the higher rainfall belt of the Great Southern region. This growth resulted in changes to the landscape, transport usage and rural populations in the Lower Great Southern. More recently farm forestry production has declined following issues with investment schemes: however, there are signs that the industry is stabilising in the region. In addition carbon sequestration plantations may increase into the future. This land use can have impacts from a visual landscape perspective, can result in long term land use change and can compete with food production land uses on priority agricultural land. As such there remains a need for State and local planning to manage tree plantations through policies, strategies and schemes.

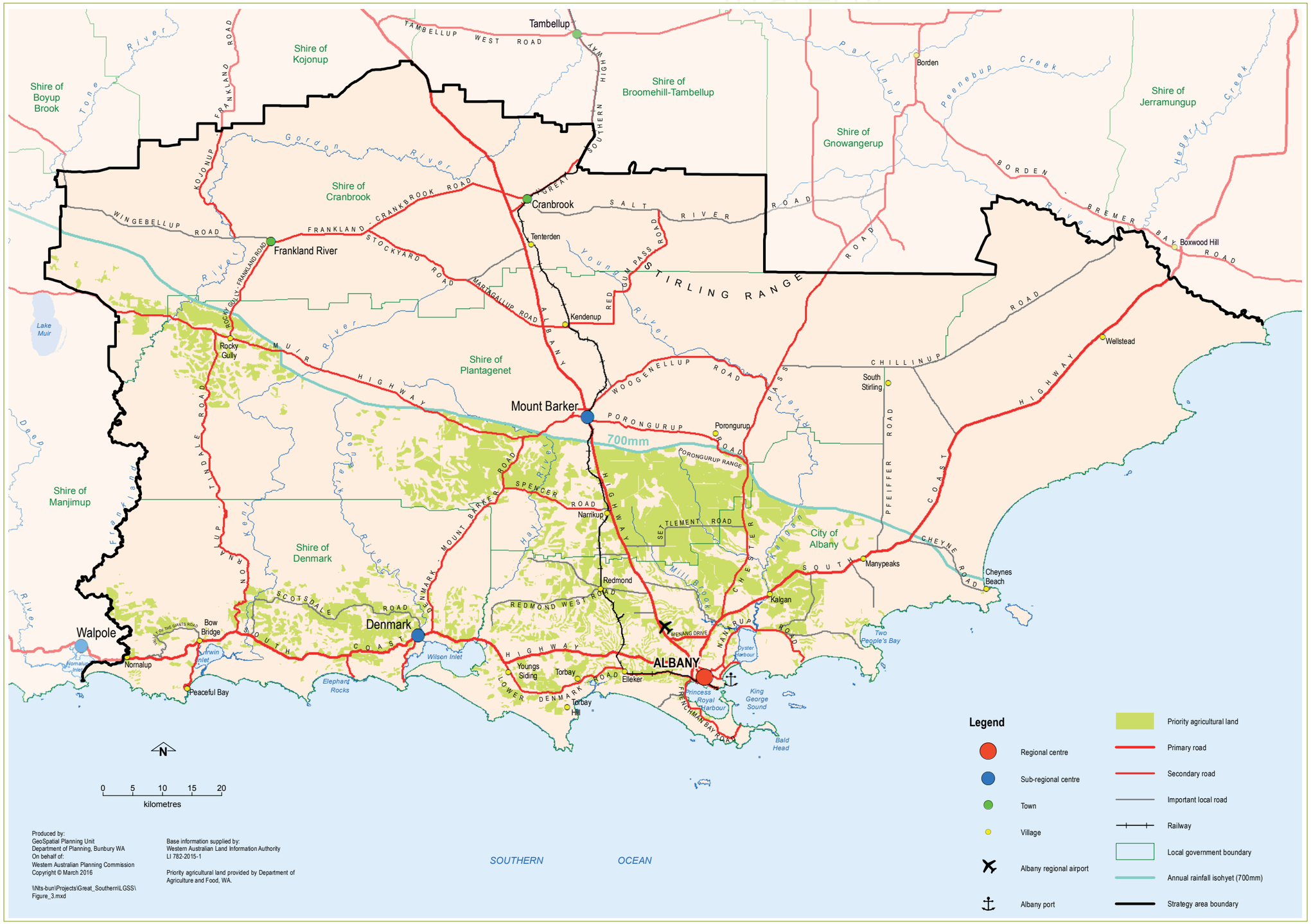


Figure 3: Priority agricultural land

Potential downstream processing industry opportunities

In the Lower Great Southern unique opportunities exist for value adding, branding, niche marketing and further diversification of agricultural products and the establishment of industries that can process local resources. For example Albany has been a centre for secondary processing of fish, wool and meat, and a timber processing precinct on Down Road has been established. In Plantagenet there is an existing sheep abattoir and regional saleyards have recently been established.

New secondary processing opportunities are likely to arise in the region, particularly if growth in intensive enterprises such as pork and poultry farms occurs. The provision of a future gas pipeline to Albany may improve the prospects for industry development in the Lower Great Southern.

In order to maximise economic and social development, the further processing and value-adding of agricultural products is encouraged. However, all new industrial projects should be assessed on the basis of their net economic, social and environmental benefit to the region and its population, with high priority given to waste treatment, disposal and the provision of pollution-control mechanisms.

Salinity

One of the threats to the productivity of agricultural land is a changed hydrology as a result of clearing and replacement of deep-rooted species with annual shallow-rooted crops and pasture. This is associated with a significant salinity risk. Infrastructure such as roads, rail, water and wastewater facilities and buildings can be affected by salinity. It is important that affected areas are identified to prevent unsuitable land uses.

The Shire of Cranbrook has the highest risk of salinity, although north eastern parts of the Shire of Plantagenet are affected to a degree. There are other small pockets of salinity risk in the rural areas of the City of Albany. The Shire of Denmark does not appear to be affected by soil salinity. This strategy supports land use decision making that is cognizant of the need to avoid increasing salinity risk; and ongoing measures to manage this risk and restore affected areas.

2.8.2 Fisheries and Aquaculture

Provided that growth in fishing can be managed sustainably and that land use conflicts can be managed, the fishing industry has an opportunity to grow. Implications for planning include:

- minimising conflicts between fishing operations and other beach users; and
- ensuring land for aquaculture projects is sited so as to minimise social and environmental impacts.

The major issues associated with commercial fishing leases revolve around the level of development and the environmental management of each site. It also is an area of potential conflict since fishing seasons often coincide with peak holiday seasons.

There is great potential for development of the aquaculture industry throughout the Lower Great Southern, particularly land-based aquaculture using inland saline waters, which could provide significant economic benefits. Both marine and land-based aquaculture comes with a range of environmental and social issues. Accordingly, the siting of aquaculture developments requires careful consideration of visual impact, access, and waste disposal issues.

Objectives and Actions for Agriculture, Forestry, Fisheries and Aquaculture			
Objective	**Actions**	**Timeframe**	**Responsibility**
Facilitate sustainable development of the agricultural sector and maximise opportunities for diversification of agriculture and downstream processing	Zone land identified as being of State, regional or local agricultural significance in endorsed local planning strategies as priority agriculture in local planning schemes	Short term (completed in some schemes)	LG
	Complete high quality agricultural land (HQAL) mapping for the region to identify priority agricultural areas	Short term	DAFWA DoW
	In local planning schemes, provide suitable permissibility of land uses to encourage agricultural activity and carefully manage potential conflicting uses within rural zones	Ongoing	LG DoP/WAPC
	Investigate potential for a future intensive agriculture/horticultural precinct(s) within the Lower Great Southern taking into account land capability, water supply, service and infrastructure availability, and potential impacts on the environment and existing land use	Long term	DAFWA DoW DoP/WAPC LG
	Foster and support establishment of intensive livestock enterprises in suitable locations within agricultural areas	Short term	DAFWA LG
	Maintain scope within planning strategies and schemes for the forestry and plantation industries to be supported in acceptable areas	Ongoing	LG DoP/WAPC
Manage the impact of salinity on agricultural land	Prepare guidelines for development of saline-affected land in areas subject to land use change in local planning strategies	Short term	DAFWA DoP/WAPC
	When preparing local planning schemes or amendments, local government to have regard to the extent of saline land when determining the best use of the land	Ongoing	LG DoP/WAPC
	Promote relevant sustainable agriculture initiatives to rehabilitate degraded agricultural land	Ongoing	DAFWA
Manage conflict between fishing operations and other land uses	Prepare and distribute informative and educational material regarding identified environmental impacts to all leaseholders	Ongoing	LG DoF
Provide for the expansion of aquaculture in suitable areas	Assess the suitability of the sites determined in the Department of Fisheries study for aquaculture	Ongoing	DER
	Use the South Coast Management Group's draft guidelines for land-based aquaculture development in the South Coast region of WA when assessing aquaculture proposals	Ongoing	LG DoF

2.9 Mineral Resources and Basic Raw Materials

Sustainable extraction of mineral resources and basic raw materials for agricultural, construction and mining industries will contribute to the continued economic development of the Lower Great Southern. Limestone access is particularly important since agricultural limestone and lime sand are required to neutralise environmental impacts by minimising farm soil acidity.

Many mineral deposits in the region are small and occur in restricted areas. In addition to natural restrictions on their distribution, access to deposits and continued extraction can be constrained by other land uses, including:

- urban development which can prevent access to the extraction of rock or minerals from known deposits and influence the operation of existing quarries;
- environmental protection where environmental or conservation considerations may have a higher priority than resource extraction; and
- social issues such as perceived impacts of extraction leading to community concern in regard to resource development.

2.9.1 Identification and protection of areas of high prospective geology and existing operations

The Albany Regional Basic Raw Materials Study (1996) identified occurrences of basic raw materials in the region based on soil assessment. While the data in the study was adequate for use at a regional scale, there have been some deficiencies in its application at a local scale. An update of the study is recommended and should include the integration of available local geological data to allow for a more thorough assessment.

Land use planning plays an important role in protecting areas of high prospective geology and existing mining operations. Local planning strategies should identify known deposits and retain an agriculture zone in local planning schemes to allow consideration of opportunities for exploration or extraction. In particular, these should include:

- the Southdown magnetite deposits at Wellstead;
- diatomite and/or spongolite deposits, which are extensive, but development scope for major expansion is uncertain; and
- silica sand deposits.

These areas are depicted in Figure 4. Existing hard rock quarries in the Lower Great Southern include the Hanson quarry (north of Mt Barker) and Ready-Mix quarry (north of Albany). Other deposits are shown, but many currently are uneconomic. Future exploration or changes in global market value may lead to mining near these sites or elsewhere in the Lower Great Southern.

2.9.2 Securing access to prospective mineral and basic raw material deposits

Limestone and lime sand are located along the coastal dunes, predominantly to the west of Albany, but access to extract from those areas is increasingly becoming constrained by other land uses. For example, extensions to the Ocean Beach limestone quarry at Denmark could provide long-term supplies of agricultural lime, but this is impeded by its location adjacent to a local government conservation reserve. Although there are other known deposits to the west, these are on private land and scope for mining is regarded as low by the Department of Mines and Petroleum.

Geological interpretation and exploration may locate further sites for agricultural lime extraction similar in geological setting to the Ocean Beach deposit. Given the need for agricultural lime in the agricultural industry, funding of a strategic assessment of the prospect under the auspices of the State lime supply strategy is warranted.

Access to gravel in western parts of the Lower Great Southern also may be affected by national parks and other Crown reserves. There is interest by Main Roads WA and local government to access gravel resources for roads both in park enclaves (e.g. South Coast Highway and Denmark-Mt Barker Road) and outside the parks. In addition, much of the gravel resource is beneath remnant vegetation or becomes unavailable though the establishment of plantations. It is recommended that a coordinated study be carried out (under the auspices of the State gravel supply strategy) to identify future gravel needs and potential strategic gravel resource areas primarily from private property and Crown land. The need for ongoing access to gravel resources is required and strategic resource areas should be identified and protected.

Extraction of basic raw materials is important economically; however, this needs to be balanced by the potential impact of these activities on other land uses. It is recommended that existing and potential sites be identified in local planning strategies and protected in town planning schemes, including where necessary, the identification of an adequate buffer.

Objectives and Actions for Mineral Resources and Basic Raw Materials

Objective	Actions	Timeframe	Responsibility
Maximise opportunities to enable mineral exploration and extraction in accordance with acceptable environmental and amenity standards	Review and update the Albany Regional Basic Raw Materials Study (1996)	Medium term	DMP DoP/WAPC
	Ascertain the implications of the Walpole Wilderness Area for the future mining and extraction of gravel, under the auspices of the State gravel supply strategy	Medium term	DMP DPaW
	Fund a strategic assessment of the prospect for limestone in the Lower Great Southern, under the auspices of the State lime strategy	Medium term	DMP
	Identify existing and potential sites for basic raw material and agricultural mineral extraction in local planning strategies and protect them in local planning schemes, including consideration of neighbouring land uses, visual impact issues and buffer areas where necessary	Short term (completed or partially completed in some LGA's)	LG DMP DoP/WAPC
	Retain areas of high prospective geology as general rural zoning to allow for exploration or extraction	Ongoing	LG DoP/WAPC

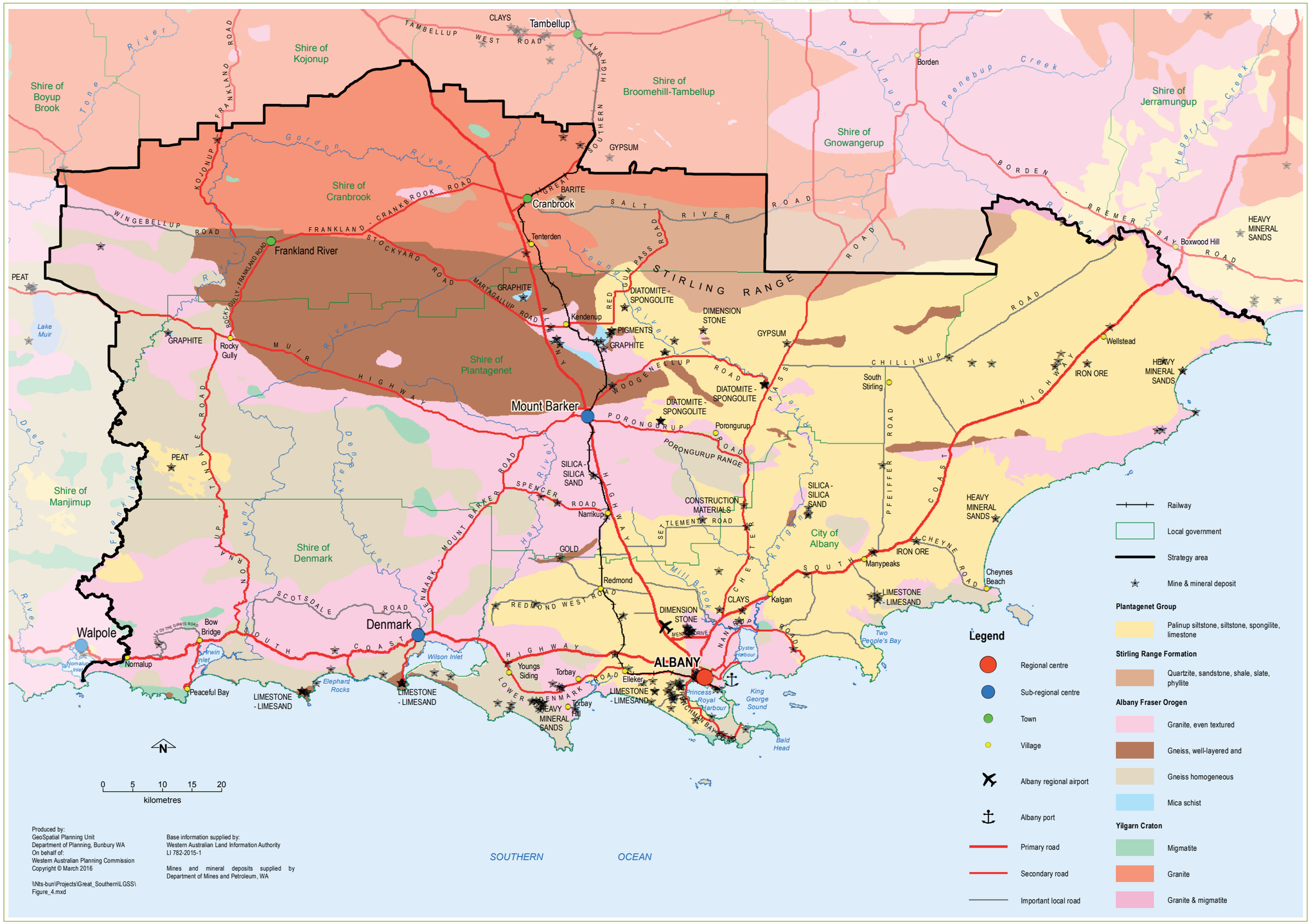


Figure 4: Generalised geology & mineral occurrences

2.10 Water Supplies

In the Lower Great Southern, demand for water is expected to increase due to population growth and the development and diversification of industry (including agriculture). A drying climate is also increasing pressure on water resources. Identifying, securing access to and protecting future potable water resources, using recycled and alternative water for urban land uses and implementing water conservation strategies are priorities. Future water sources for the region may include groundwater, surface water, and seawater desalination.

2.10.1 Existing and future supplies

The largest water supply scheme in the Great Southern region is the Lower Great Southern Towns Water Supply scheme (LGSTWS), operated by the Water Corporation. Many smaller towns have independent schemes, the majority of which are also operated by the Water Corporation.

The LGSTWS scheme supplies water to Albany, Mount Barker, Narrikup and Kendenup and may be extended to Cranbrook in the future. Recent improvements in water efficiency, combined with an increase in the Water Corporation's licensed allocation from the Albany Groundwater Area will satisfy growth in these towns until approximately 2025. Identification of the next source must occur prior to 2025; however, this may be delayed if the additional groundwater identified during recent investigations in the Albany Groundwater Area is confirmed.

Denmark's water supply is provided by tributaries of the Denmark River. The Quickup Dam supplies the vast majority of this water. The Water Corporation supplements this source from the nearby Denmark pipe head dam. Connection between the Denmark River and Quickup Dam is complete and improvements to the operation and treatment of the Denmark pipe head dam are planned to occur. This will improve supply reliability and delay the need for investment in a new fresh water source.

Smaller towns and villages such as Rocky Gully, Frankland River, Cranbrook, Manypeaks and Wellstead are not serviced by an integrated scheme and in some instances have experienced water shortages and quality issues. Expansion of other settlements (such as Peaceful Bay, Bow Bridge and Nornalup as identified in Denmark's local planning strategy) will also require new sources of potable water to be identified. In the long term, the Water Corporation may consider a regional water supply scheme based around extending the existing LGSTWS to improve water provision security and create greater flexibility of supply across the region.

Given the scarcity of water in the Lower Great Southern, alternative methods for preserving this valuable resource should be explored. Water conservation measures such as sustainable water management, reduced consumption, water self-reliance (roof catchment and rain water tanks) and grey water re-use, are supported where suitable.

2.10.2 Protecting water resource areas

A major factor in the quality of potable water is land use in water supply catchments. Several of the present water supply areas for the LGSTWS scheme are contained in national parks or Crown land, and are unlikely to be subject to land use changes. The South Coast water reserve (from which groundwater is extracted), Limeburner's Creek, Angove River, Denmark River, Marbellup Brook and Quickup River Dam catchment areas are proclaimed under the Country Areas Water Supply Act (1947). Protection plans have been developed for the South Coast water reserve and Limeburner's Creek, Marbellup Brook, Quickup Dam and Angove Creek.

Stream salinity in some rivers is an issue in the Lower Great Southern; however, ongoing work to address this matter has been successful. For example, catchment restoration measures under the State's salinity action plan have reversed salinity in the Denmark River to the point where this water resource is now suitable for potable use.

Objectives and Actions for Water Supplies

Objective	Actions	Timeframe	Responsibility
Provide existing and future populations with adequate and sustainable water supplies	Ensure a whole-of-catchment approach to the integration of natural water resource use and land management	Ongoing	DoW LG DoP/WAPC
	Secure future potable water source areas	Ongoing	Water Corporation DoW
	Promote water conservation initiatives and reduced consumption in settlements	Ongoing	Water Corporation DoW LG
	Recognise public drinking water source areas in local planning strategies and protect them in local planning schemes	Ongoing (completed for existing PDWSA's in Lower Great Southern)	DoW LG DoP/WAPC
	Investigate opportunities for recycling and reuse of water from treatment plants and similar facilities	Medium term	Water Corporation DoW

2.11 Bushfire Risk

The Lower Great Southern region is at risk from bushfires due to a combination of factors including:

- presence of remnant vegetation in the region, often close to population centres, that is naturally susceptible to fire;
- a growing population, with a proportion of this population seeking lifestyle opportunities that involve living in or near areas of remnant vegetation;
- increasing fuel loads; and
- a drying and warming climate, with resulting increase in duration and intensity of the annual 'fire season'.

Historically the region has been bushfire prone. Bushfires have occurred relatively recently in areas of Albany, Cranbrook, Denmark and Plantagenet, and during the summer months extreme fire weather warnings are regularly issued. It is likely that the potential for bushfire occurrence in the region will increase in the future and as such, an increased focus on managing this risk will be necessary.

Planning has a role at both strategic and statutory levels in mitigating bushfire risk. In this regard the WAPC has released a new State Planning Policy 3.7 'Planning in Bushfire Prone Areas' and associated Guidelines to inform Statewide planning on this issue. Complementary to these are the *Planning and Development (Local Planning Schemes) Amendment Regulations 2015* which introduce provisions into local planning schemes to ensure bushfire risk is addressed in local planning and development decisions; and where development is able to be supported, for suitable construction of structures in bushfire prone areas.

Whilst these new planning measures will provide a greater level of guidance and clarity in planning decision making, there will be a similar need for the community and individuals to recognise risks and carry out suitable management measures. Managing bushfire risk is a collective responsibility and will need to become increasingly cross-sectoral in order to build the necessary resilience to bushfires in the region.

Objectives and Actions for Bushfire Risk			
Objective	**Actions**	**Timeframe**	**Responsibility**
Through planning and management processes, build resilience to bushfire risk in the Lower Great Southern region	Ensure settlement and land use planning in strategies and schemes is in accordance with the principles, objectives and provisions of the WAPC's planning framework for bushfire risk management	Ongoing	LG DoP/WAPC
	Planning proposals including rezoning, structure planning, subdivision and development to incorporate bushfire assessment and management measures as required by WAPC's policy framework	Ongoing	LG DoP/WAPC Development industry
	Develop sufficient bushfire response plans and procedures in the context of likely increased occurrence of bushfires in the region	Ongoing	DFES LG DPaW
	Foster awareness of bushfire risk and the need for property owners to take responsibility for individual preparedness measures in at-risk areas of the region	Ongoing	DFES LG
	Implement fuel load reduction programs in conservation estate and Unallocated Crown Land outside townsites (DPaW), and on UCL within gazetted townsites (DFES), particularly where in proximity to established settlements	Ongoing	DPaW DFES LG

2.12 Coastal Planning and Management

The south coast is significant for its environmental, visual landscape, heritage, tourism and recreational values. There is growing pressure on and demand for the attractions of the south coast particularly through tourism and population growth. There is a need to balance development, access and usage of the coast with retention of its natural beauty and values.

2.12.1 Coastal planning and development

There is a limited number of developed coastal sites in the Lower Great Southern, with much of the coast and associated marine environment not affected heavily by human usage. Some existing settlements (including the regional centre of Albany) are situated on the coast and/or estuaries. Associated with this are potential impacts on private and public infrastructure from coastal processes; and potential impacts on the coastal environment from human use and development. Coastal development needs to be planned carefully and strategically to ensure beaches, dunes, estuaries and coastal wetlands are protected; and the impact of storm damage, sea level rise, inundation and shoreline erosion on private and public development and infrastructure are minimised.

Strategic and statutory planning proposals in the region's coastal areas are to be consistent with WAPC's State Coastal Planning Policy 2.6 (2013)

(SPP 2.6). SPP 2.6 and its associated guidelines advocate a risk management approach to deal with potential adverse impacts of coastal hazards. In accordance with SPP 2.6, the requisite level of coastal hazard risk management and adaptation planning (CHRMAP) should also be carried out at all relevant stages of the planning process where development in coastal or estuarine areas is proposed.

2.12.2 Management of foreshores and land use conflicts

In the Lower Great Southern a large proportion of land abutting the ocean is accessible to the public. There is conflict along some sections of the coast between different user groups who often visit and use the same areas.

There is inherent tension between the need to protect coastal areas from uncontrolled access (motorised and pedestrian) and the desire of people to access secluded and unspoilt areas. Uncontrolled access to the coast, particularly by four-wheel-drives and all-terrain vehicles, pedestrians and horse riders can lead to significant erosion in sensitive coastal environments. Left unmanaged, this can reduce the amenity value of these areas.

Public expectation of access around coastal embayments and estuaries is high and supported by SPP 2.6 through the objective to provide for public foreshore areas and access to these on the coast. To enable public access, it is recommended that foreshore reserves continue to be established around estuaries, particularly around the Albany harbours where private ownership currently extends down to the high water mark in some instances. Continued private ownership of these foreshore areas prevents strategic public access and the development of recreation areas for the wider public.

Use of coastal sites by commercial fishers who have seasonal fishing leases raises issues regarding the level of development and environmental management of each site. Issues regarding the impact of seasonal commercial fishing on surrounding dunes, blowouts, trampling and the maintenance of tracks and conflicts with other beach users also need to be addressed. Providing sufficient setback distances from the foredune and provision of public access should be considered when assessing applications for commercial fishing leases. A joint approach to the development and policing of more stringent lease conditions on land leases, and policing to ensure compliance with the conditions when up for renewal, should be pursued by the relevant agencies.

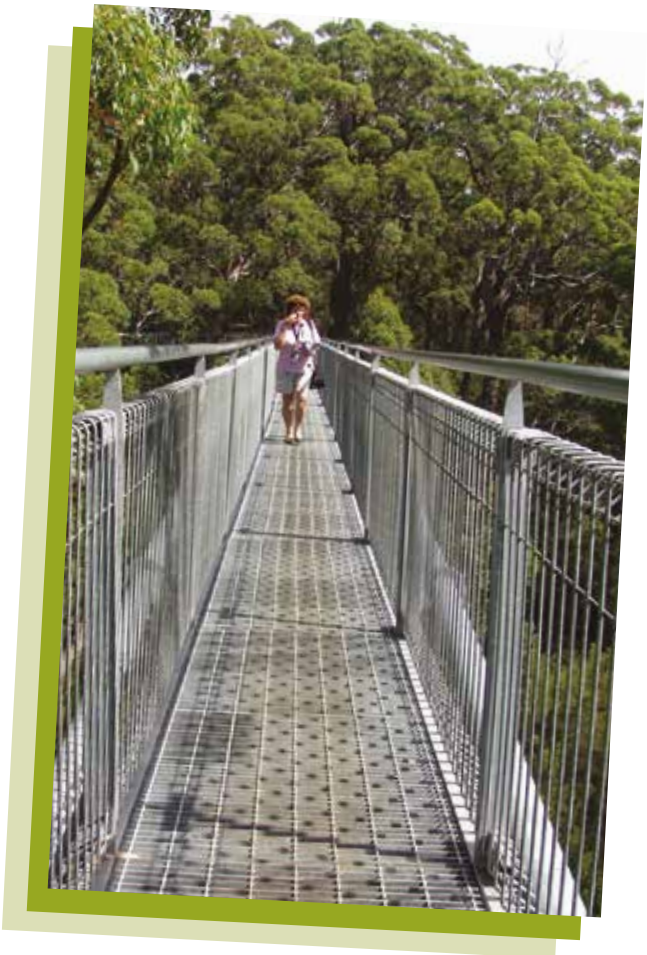


Photo courtesy: Colin Richardson

Commercial and recreational pressures and user conflicts should be addressed through the preparation of foreshore management plans to guide the provision and management of facilities on the coast and suitable vesting of foreshore areas. Plans should identify coastal recreation nodes and these should be located to reduce the likelihood of facilities being damaged by coastal processes. Vesting of foreshore reserves needs to be consistent with ecological and amenity values. Presently, vesting of reserves is mixed and there is often uncertainty over agency responsibility with regard to the management of inter-tidal areas, estuaries and their sandbars. Unless a foreshore area has significant conservation value, vesting should generally be with the relevant local government.

Objectives and Actions for Coastal Planning and Management

Objective	Actions	Timeframe	Responsibility
Minimise potential environmental impacts from coastal development proposals through effective management and recognition of coastal processes including sea level rise, and sufficient setbacks	Carry out studies to broadly identify vulnerable coastal areas and provide guidance for more detailed risk assessments and management responses	Short term	DoP/WAPC LG DoT
	Prepare coastal and foreshore management plans in parks and reserves where there are likely to be conflicts between different user groups	Ongoing	LG DPaW
	Include requirements for the preparation of foreshore management plans as a condition of subdivision and development likely to have impacts on coastal and estuarine foreshore areas	Ongoing	DoP/WAPC LG DoW
	Provide an enhanced development and compliance framework for seasonal commercial fishing leases on coastal sites	Medium term	DoF DoL DPaW LG
Provide and maintain public access to coastal and estuarine foreshores	Identify land suitable for protection and enhancement of the coastal vegetation corridor, in order to protect biodiversity and cater for public access, and for possible regional open space	Ongoing	DoP/WAPC LG
	Identify priority sites around the coast and estuaries required for public access in local planning strategies and protect them through relevant mechanisms in local planning schemes	Ongoing	LG DoP/WAPC DoW DPaW

2.13 Tourism

The future of tourism in the region relies on sustainable development and promotion of iconic experiences, development of tourism infrastructure and product that meets visitors' needs and the management of competing land uses to ensure that the tourism appeal of the region is safeguarded.

The Lower Great Southern is likely to see continuing development along the coast as well as specific nodes inland in areas that can offer experiences with nature, wine and food, art and craft and culture. Existing small scale tourism enterprises in towns, villages and regional areas are important collectively from an economic and community perspective.

Many of the natural attractions in the Lower Great Southern are also located in national parks. Whilst this provides a strong opportunity to grow and capitalise on adventure tourism in the region, the ongoing management and development of national parks depends on proper resourcing to meet these growing demands.

Incremental subdivision of high value tourism sites for residential development, particularly along the coast, has historically occurred to the detriment of tourism values and is not generally supported. Local planning strategies should identify strategic tourism sites that are linked to iconic experiences and attractions and zone them solely for tourism development to ensure the continued use of that site for tourism pursuits. A limited amount of residential land use may be acceptable at some tourism sites. This should be assessed through local planning strategies and be in accordance with guidance provided by WAPC policy, in particular SPP 3 Urban Growth and Settlement and Planning Bulletin 83 Planning for Tourism.

Objectives and Actions for Tourism

Objective	Actions	Timeframe	Responsibility
Maximise opportunities for the development and growth of a sustainable tourism industry	Update tourism components of local planning strategies as necessary to respond to changing needs of the tourism sector and take advantage of emerging markets	Ongoing	LG TWA DoP/WAPC
	Zone identified strategic tourism sites in endorsed local planning strategies solely for tourism development in local planning schemes, to protect them for that purpose	Short term (partially completed in some schemes)	LG TWA DoP/WAPC
	Maintain and improve, where necessary, existing linkages to major tourism attractions and develop additional tourism routes in the Lower Great Southern	Ongoing	LG MRWA
	Provide adequate and consistent signage to tourism destinations	Ongoing	LG MRWA

2.14 Environment

The Lower Great Southern has many unique and valuable natural environmental features with aesthetic, conservation and recreation value. They also are an important contributor to the growing nature-based tourism industry and the appeal of the area to visitors and tourists.

Protecting biodiversity is a priority at a national, State and local level. The role of land use planning in protecting biodiversity values in the region is to identify areas before degradation occurs and recommend or identify methods to establish effective protection mechanisms. Identifying areas and mechanisms early will enable government agencies to coordinate efforts to protect these significant areas. Land use planning also can assist in the creation of functional landscapes through remnant vegetation linkages.

2.14.1 Vegetation and biodiversity conservation

Conservation of biodiversity requires the protection and management of species, their habitats and the ecological processes that support them. There are a number of threats to biodiversity, including:

- habitat reduction and fragmentation from clearing of remnant vegetation for development;
- salinity and altered hydrological regimes leading to destruction of plant communities;
- plant diseases;
- introduced species;
- invasive species/weeds;
- fire regimes; and
- climate change and sea level rise.

Conservation reserve system

In Western Australia the Department of Parks and Wildlife (DPaW) is responsible for the management of a Statewide conservation reserve system. It is also responsible for nature conservation management of unvested and unallocated Crown lands outside townsites across Western Australia. Many areas of unvested and unallocated Crown land proposed as additions to the conservation estate, where possible, are being managed as 'de facto' conservation reserves.

National parks are an important asset to the region, performing not only a biodiversity conservation role but also having cultural, heritage, tourism and landscape character values. The Stirling Range, Porongurup and numerous coastal national parks within the Lower Great Southern are recognised nationally and globally, and significant opportunities exist for these values to be enhanced and capitalised on for the benefit of the region.

There are, however, ongoing management issues with national parks that need to be recognised and addressed in a coordinated manner. These include fire, access, pest and weed species, and dieback; and managing the interface between parks and surrounding sensitive land uses, particularly those on private land.

The existing and proposed conservation reserve system, including Crown land managed for conservation outside the conservation estate, is shown in Figure 5. It is anticipated that DPaW, in association with other State agencies and local government will continue to identify and add land to the reserve system as opportunities arise, in order to maintain the area's biodiversity.

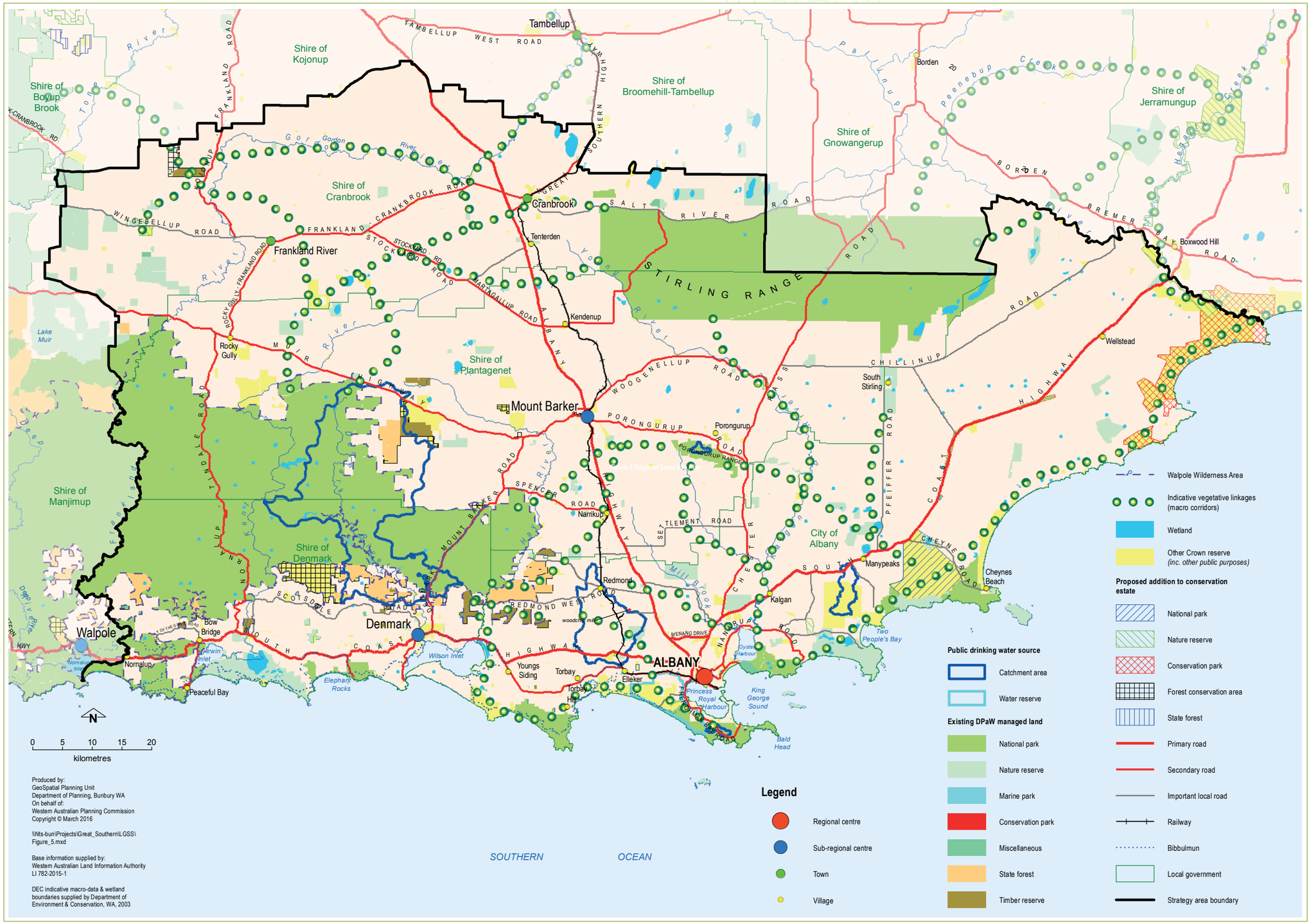


Figure 5: Existing and proposed conservation reserves

Threatened ecological communities

An ecological community is a naturally occurring group of plants, animals and other organisms interacting in a unique habitat. The complex interactions between species provide an important level of biological diversity in addition to genetics and species. An ecological community may be recognised as threatened if the community is presumed to be totally destroyed or at risk of becoming totally destroyed. A number of threatened ecological communities are present in the Lower Great Southern.

No State legislation currently covers the conservation of threatened ecological communities; however, some Western Australian threatened ecological communities are protected under the Environment Protection and Biodiversity Conservation Act 1999. To protect these communities the development and implementation of recovery plans for all critically endangered, endangered and vulnerable flora, fauna and priority ecological communities is recommended.

Remnant vegetation and linkages

Some of the Lower Great Southern's vegetation systems have been identified as having less than 10 to 30 per cent of their original (pre-European) extent remaining. In general, these remaining areas are conservation priorities.

The Albany regional vegetation survey (2010) (ARVS) is a more detailed study carried out in Albany and surrounds, which identifies at a detailed scale the type, extent and status of vegetation present; and priority areas for protection. EPA Bulletin 13 requires that the findings of ARVS are taken into account in land use planning decision making within the survey area. The second phase of the ARVS project is underway and involves closer examination of the findings to identify priority areas for conservation of vegetation; inform priority areas for fauna conservation; and identify critical areas requiring restoration. Once finalised, the information will be utilised to inform strategic and statutory planning decisions in the survey area.

Remnant vegetation is of particular conservation importance given its limited availability and environmental and social value. This strategy generally does not support further designation of land for residential forms of development that would result in clearing of vegetation. In addition a more flexible approach to planning where environmental benefits such as enhancement and revegetation are obtained should be encouraged through positive planning measures and incentives at rezoning, subdivision and development stages. Conservation strategies to encourage the management and protection of remnant vegetation on private land should also be developed.

Fragmentation and isolation of habitat are regarded widely as key factors contributing to biodiversity decline. In the Lower Great Southern, large areas of native vegetation have been historically removed for agriculture. The remaining habitat for wildlife is contained mainly in national parks and nature reserves. As reserves are less able to retain their values as isolated 'islands' in a cleared or urbanised landscape, a vegetation linkage or macro corridor approach, which links conservation reserves with other remnant native vegetation on private land is an important initiative in abating the loss of biodiversity. Keys to maintaining and enhancing macro corridors include:

- conservation of remnant vegetation (either on private land or in government reserves);
- revegetation using a diversity of local native species from all strata of the natural vegetation community for that site (groundcovers, understorey plants and mid and upper-storey plants); and
- if direct vegetation connectivity is not achievable, maintaining existing remnant vegetation areas in proximity to other remnants to provide for some level of native species migration to occur.

This strategy supports the creation of remnant vegetation linkages identified in the then Department of Conservation and Land Management's South Coast Macro Corridor Network strategy (2006).

Conservation of remnant vegetation on private land

Off-reserve mechanisms increasingly are becoming recognised as valuable ways of protecting biodiversity values outside conservation estates or as an alternative to conservation reserves. Such mechanisms involve attributing responsibility to private landowners or users, government agencies, and community and agency conservation groups. Initiatives include:

- conservation covenants on private land;
- Land for Wildlife voluntary agreements;
- trade options; and
- raising public awareness about biodiversity values.

Relevant agencies, including DPaW and local government, can assist in the consolidation of remnant vegetation linkages (macro corridors) and the protection of highly valued remnant vegetation outside the conservation estate by facilitating some of these mechanisms. Measures are needed to provide positive encouragement for landowners to pursue conservation measures on identified private land.

Objectives and Actions for Vegetation and Biodiversity Conservation			
Objective	**Actions**	**Timeframe**	**Responsibility**
Protect threatened flora, fauna and ecological communities	Identify and acquire land to add to the formal conservation reserve system	Ongoing	DPaW
	Develop conservation strategies to encourage the management and protection of highly valued remnant vegetation on both public and private land	Ongoing	DPaW LG
	Develop additional incentives for the protection of remnant vegetation on private land	Ongoing	DPaW DoP/WAPC LG
	Develop and implement recovery plans for all critically endangered, endangered and vulnerable flora, fauna and ecological communities	Ongoing	DPaW
	Finalise Albany regional vegetation survey (ARVS) phase 2	Short term	DoP/WAPC
	Carry out vegetation surveys based on ARVS methodology in other suitable areas of the region	Medium term	DPaW DoP/WAPC LG
Maintain and improve coverage of native vegetation from existing levels	Protect and manage remnant native vegetation or revegetate using various local native species in remnant vegetation linkages and river and wetland catchments	Ongoing	DPaW NRM Groups
	Support initiatives that aim to increase native vegetation and/or perennial cover throughout the landscape, to reduce salinity and improve land and water quality	Ongoing	DPaW NRM Groups
Utilise land use planning processes to assist in establishing and protecting identified macro corridors	Identify remnant vegetation linkages (macro corridors) at a localised scale, in local planning strategies	Ongoing	LG DPaW
	In local planning strategies ensure urban growth takes into account the need to identify and protect remnant vegetation and other high conservation value vegetation	Ongoing	DoP/WAPC LG DPaW
	Promote opportunities for conservation lots in suitable locations that provide a net benefit to biodiversity and meet planning and environmental objectives	Ongoing	DPaW DoP/WAPC LG

Objectives and Actions for Vegetation and Biodiversity Conservation (cont.)			
Objective	**Actions**	**Timeframe**	**Responsibility**
	Investigate use of region-specific planning guidelines to facilitate creation and protection of macro corridors	Short term	DoP/WAPC
	Incorporate recommendations of ARVS phase 2 and any further vegetation surveys into local planning strategies, schemes and structure plans	Short term	DoP/WAPC LG

2.14.2 Rivers, estuaries and wetlands

The rivers and estuaries of the Lower Great Southern have a range of economic, social and environmental values that are held by the community, including:

- commercial and recreational fishing;
- port and boating facilities;
- tourism and recreation use;
- biodiversity;
- drinking water supply;
- scenic beauty and ecological and conservation values;
- cultural importance and heritage; and
- drainage.

There are a number of threats to rivers, estuaries and wetlands in the Lower Great Southern due largely to land use changes in catchments, which result in increases in salinity, changes in river hydrology and sedimentation. Other threats are the loss of riparian vegetation, eutrophication, pollution, abstraction for water supply and agriculture, impacts of climate change (reduced rainfall and runoff) and physical development. Integrated management of both land and water resources will be required to effectively maintain and/or enhance the function and quality of catchments, rivers, estuaries and wetlands in the Lower Great Southern.

Maintaining remnant vegetation in catchments can assist in the protection of rivers and wetlands. This can be achieved by providing incentives and assistance to landowners to maintain remnant vegetation or where necessary zoning significant areas of vegetation for protection. Promoting revegetation or forestry in the cleared catchments of rivers and wetlands suffering from increased salinity and water levels can also assist in reducing these impacts.

Changed hydrology and salinity

Changed river hydrology due to clearing of native vegetation in catchments has led to increased stream salinity in most of the rivers in the Lower Great Southern. The upper reaches of the Kent, Frankland, Denmark, Kalgan and Pallinup Rivers have experienced increased salinity levels due to land clearing.

Catchment clearing for agriculture or urban development and drainage into wetlands can result in excess surface and groundwater that may inundate and drown wetland vegetation or cause increased salinity or pollution. Problems also can arise from wetlands drying due to water abstraction. Consideration must be given to any possible downstream impacts of projects aimed at addressing salinity at a farm level.

Elevated nutrient levels, pollution and eutrophication

In their natural state, Australian rivers have low nutrient levels, a result of ancient landforms and nutrient-poor soils. The application of fertilisers, modern agricultural practices, increased run-off, loss of riparian vegetation and resulting increased transportation of sediment and organic matter have increased nutrient levels in rivers and wetlands.

Siltation and nutrient enrichment cause decline in water quality, loss of diversity and increased risk of algal blooms and nuisance insects. Toxic blue-green algal blooms have occurred in Lake Powell, Torbay, upper Kalgan River, the Albany drainage district, Taylor Inlet and Wilson Inlet. New land uses likely to export significant nutrients should be assessed based on their potential impact on rivers and wetlands, and should be subject to setbacks and requirements for nutrient management plans. DAFWA plays a key role in this area by providing advice on land use proposals that may have potential to increase nutrient levels.

Pollution of the Lower Great Southern's rivers may occur from agricultural practices, industry, sewage and urban stormwater. Studies indicate some hydrocarbon contamination in Yakamia Creek in Albany.

Direct discharge of wastewater into a river system from new development is not supported. Similarly, direct discharge of stormwater into rivers is to be avoided, and stormwater management plans should be developed at applicable development stages as set out in Better Urban Water Management.

The causes of eutrophication are varied; while clearing of land and application of fertilisers are key causes, other significant causes include man-made drainage practices to reduce the level of flooding, agricultural point sources of nutrients, urban stormwater, cultivation of estuarine fringes, and sewage disposal.

Substantial planning and resulting work on the Albany harbours have helped to reduce eutrophication and pollution. The following can assist with managing the causes of eutrophication, including pollution from industry discharge and improving the water quality of estuaries and rivers:

- locating industry where sewerage systems are available;
- ensuring potentially polluting uses are not located close to water bodies or inlet tributaries;
- extending reticulated sewerage to high-priority areas adjacent to waterways and estuaries;
- locating wastewater treatment facilities to avoid impacts on waterways;
- developing water management strategies and plans at structure plan, rezoning, subdivision and development stages; and
- nutrient and irrigation management plans, nutrient stripping basins or other techniques also can be implemented.

Managing stormwater discharge through infiltration devices, the licensing of industry, land use controls and policies, and fencing and rehabilitation of riparian vegetation have been very effective in reducing pollution and eutrophication of the region's rivers and estuaries.

Acid sulphate soils

Acid sulphate soils (ASS) are present in the Lower Great Southern, particularly in some low-lying coastal, estuarine and wetland areas of Albany and Denmark. Whilst the Department of Environment Regulation (DER) currently has an established and robust framework to assist in managing impacts from ASS, ongoing recognition of the need to manage ASS is required in order to minimise potential for environmental harm.

Development on floodplains

Development on estuarine and river floodplains may influence downstream flood levels and water quality. Presently there is a lack of information available on flood levels in the Lower Great Southern, with mapping undertaken only for the Cranbrook townsite, lower Denmark River, Willyung Creek and the main channel of Yakamia Creek. The land use planning system can play a role in the protection of floodplain areas.

Developments in floodplains should have regard to their impacts on the ecological and hydrological functions of the river, including exacerbating the effects of flooding, and avoid the risk of nutrient or other pollutant release. Stormwater detention basins, effluent disposal systems and residential areas are examples of developments that are not suited for location in floodplains. The use of development setbacks from creeks and rivers is essential to protect waterways.

Clearing of remnant vegetation in river catchments causes changes to river hydrology. Increased river volumes and quicker rates of discharge lead to erosion through gullying, as river channels try to accommodate higher flows and depositions of this material in the lower reaches of rivers. Rivers such as the Kalgan and Hay are experiencing erosion in the upper catchment and sedimentation in the lower catchment.

Removal of riparian vegetation results in the destabilisation of river banks and erosion in times of flooding. Most of the river foreshores in the Lower Great Southern are heavily disturbed through clearing of vegetation, livestock intrusion, weeds and development.

Public ownership is one means of protecting river foreshores in targeted areas, particularly where public access and use are desirable. These areas need to be identified in local planning strategies, structure plans and local planning schemes.

Rivers

Rivers and their foreshores provide a range of habitats. For example, coastal freshwater creeks have populations of endangered native fish and vegetation along rivers can provide a valuable function as a wildlife corridor through the landscape. It is therefore important to protect and manage these areas. The lower reaches of the Hay and Sleeman rivers provide examples of substantial vegetated corridors.

Photo courtesy: Colin Richardson

Estuaries

The social and economic value of estuaries is evident in the concentration of residential, tourism and other commercial activities adjacent to them. However, development needs to be planned carefully to ensure it does not impact on the environmental values of estuarine areas.

Adjacent development, roads and other infrastructure have altered estuaries. Other modifications include cultivation on the fringes of estuaries that were at one time part of the floodplain. Land clearing, drainage practices and the loss of riparian vegetation also have rapidly accelerated the process of sedimentation in estuaries. Future development and/or subdivision should be undertaken where demonstrated that it is unlikely to impact upon estuaries and opportunities to address existing problems should be pursued.

Fringing vegetation, particularly the salt marsh and sedges and rushes around estuaries, provide valuable habitats of regional importance. Many inter-tidal areas and wetland habitats are not protected through public ownership or land use planning controls and are in danger of physical modification, including infilling or clearing. The extensive wetland areas on the Lower King River, the floodplain of Wilson Inlet, Oyster Harbour on its north and east side, and along the southern fringes of Princess Royal Harbour are examples of unprotected areas having a high conservation value. Protection of these areas is required through suitable mechanisms, which may include public ownership, development restrictions and creation of foreshore reserves.

Wetlands

Wetlands are among the most diverse and complex ecosystems in the world. They also are among the most threatened, with increasing pressure from urban and agricultural areas to develop and use the wetland and the important fringe areas that provide a buffer. Wetland vegetation may be lost or degraded through grazing of fringing vegetation by livestock. Impacts of feral animals, weeds and frequent burning may also lead to loss or degradation of vegetation.

Wetlands in the region with nationally recognised values are:

- Lake Pleasant View system near Manypeaks;
- Oyster Harbour;
- Balicup Lake System (Cranbrook);
- Mount Soho Swamps (Denmark);
- Moates Lake system near Two Peoples Bay; and
- Owingup Swamp near Bow Bridge.

The Department of Water has carried out studies to determine the conservation status of wetlands in some areas of the Lower Great Southern. The Albany regional vegetation survey also identified wetland vegetation assemblages within its study area that are a target for conservation. Where land use proposals have the potential to impact wetland areas the findings of these studies should be used to inform decision making.

Objectives and Actions for Rivers, Estuaries and Wetlands			
Objective	**Actions**	**Timeframe**	**Responsibility**
Identify and map the extent of important riparian, estuarine and wetland areas	Undertake estuarine and river floodplain mapping for high risk flooding areas	Medium term (some mapping completed)	DoW
	Identify regionally important river and estuarine foreshores and fringing habitats with high conservation value; and other priority sites requiring public ownership and protect them using suitable mechanisms in local planning schemes	Ongoing	LG DoP/WAPC DoW
Maintain the environmental and water quality of rivers and wetlands through effective catchment management practices	Maintain revegetation in the upper Denmark catchment in order to maintain reduced stream salinity	Ongoing	DoW DER LG Plantation companies
	Consider downstream impacts when assessing clearing applications in the upper catchments of river systems	Ongoing	DER
	Support established programs that aim to increase the level of perennial vegetation cover, including native vegetation and perennial crops	Ongoing	DPaW LG NRM Groups DoW
Conserve and maintain the conservation and biodiversity values of riparian, estuarine and wetland environments	Encourage fencing and revegetation of rivers, floodplains and estuaries to reduce sediment and nutrient transportation	Ongoing	DoW DPaW LG NRM Groups
	Ensure potential nutrient point sources are developed only where compatible with codes of practice, and particularly outside estuarine and river floodplains	Ongoing	DER DAFWA LG
	Ensure no direct discharge occurs to rivers and estuaries from stormwater and industrial wastewater	Ongoing	LG DoW DER

2.14.3 Landscape

As the Lower Great Southern develops, it will be increasingly important to ensure that landscapes valued by the community are protected. To do this, it is necessary to identify the landscape types and geological features requiring special attention; and to develop management and planning policies that can contribute positively to their maintenance and enhancement.

It is recognised that landscapes change in response to demands for primary products, recreation and tourism as well as for rural living. The values communities attach to landscapes also change over time and strategies devised to manage the impact of development on landscapes should be robust to deal with change in community perception.

Land uses and characteristics that may impact the landscape character of the Lower Great Southern include:

- plantations and other agricultural practices;
- infrastructure such as roads, power lines and communications installations;
- redevelopment of existing residential areas and/or town centres;
- rural-residential subdivision;
- wind turbines;
- soil salinity;
- urbanisation and industrialisation of town fringes;
- poorly designed and sited signage and advertising on tourist routes; and
- mining and extractive industries.

Protection of important landscape features from the impacts of potentially detrimental land uses is encouraged. This can be achieved through the identification of landscape management objectives and areas in local planning strategies, or using statutory provisions in local planning schemes.

Objectives and Actions for Landscape			
Objective	**Actions**	**Timeframe**	**Responsibility**
Identify and protect valued landscape features and viewsheds	Incorporate suitable provisions in local planning schemes to guide development in landscape priority areas that have been identified in endorsed local planning strategies	Short term	LG DoP/WAPC
	Ensure that new development takes into consideration the visual quality and character of landscapes, in particular natural, rural and urban landscape values	Ongoing	LG
	Identify degraded landscapes in local planning strategies and develop measures to rehabilitate them	Ongoing	LG

2.15 Cultural Heritage

Indigenous and historic heritage is an intrinsic element of the Lower Great Southern at both the regional and local scales. Aboriginal heritage in the region dates back at least 45,000 years and Albany was the first permanent European settlement in the State in 1826.

Estuaries and embayments have long served as major meeting places and sources of food for Aboriginal and European people. Remnants and artefacts of camps and other significant places exist around each of the main estuaries, and the Stirling Range is also an area of great cultural significance to Noongar people. The quarantine and hospital quarters on Point Possession, and Limeburner's buildings at Big Grove, both adjacent to Princess Royal Harbour, are examples of historic buildings in need of protection. Remains of sealers' ovens exist at Waychinicup Inlet. Numerous shipwrecks are also present, particularly in the Albany harbours.

The Department of Aboriginal Affairs has legislative responsibility for the administration of the Aboriginal Heritage Act 1972, which details specific responsibilities related to the management and protection of heritage places. The rights and interests of Aboriginal people in their heritage arise from their spirituality, customary law, languages, original ownership, custodianship, developing traditions and recent history. The effective protection and conservation of this heritage is important in maintaining their identity, health and wellbeing.

With respect to historic heritage, the Heritage Council of Western Australia has procedures for the protection of places of heritage and cultural significance. Most towns have significant heritage places. Places of State significance are listed on the register of heritage places. These places are afforded the protection of the Heritage of Western Australia Act 1990, which has implications for planning and development. Urban heritage values, as outlined in municipal heritage inventories, are to be protected through local planning strategies and schemes and government policies.

Heritage places, significant landforms and landscapes, historical places and Aboriginal culture are an attraction in the region and there is significant potential for tourism in the future. To realise the potential of cultural tourism and ecotourism, informative, attractive, site-specific interpretive material needs to be developed and the value of both region scale and local scale heritage aspects need to be recognised.

Objectives and Actions for Cultural Heritage

Objective	Actions	Timeframe	Responsibility
Ensure consideration of cultural heritage takes place in planning for the Lower Great Southern	Incorporate consideration of important cultural heritage places and related matters into strategic and statutory planning	Ongoing	DAA LG DoP/WAPC
	Promote cultural tourism through the use of informative interpretive material at cultural heritage places	Ongoing	TWA GSDC

2.16 Regionally Significant Natural Areas

The geography of the Lower Great Southern, its history of development, location of urban growth areas, features of natural importance and coastal attractiveness give rise to the need for natural areas to be set aside for public use. In addition to the existing national parks within the region, there is a need to examine options to identify, protect and manage a reserve network that caters for the protection of the coast, estuaries, rivers and wetlands, important native vegetation in urban expansion areas, and provision of public access.

Areas of regional significance such as the coast, estuary and river foreshores, wetlands, important landscape features, remnant vegetation linkages, recreational areas and trails require identification, protection, acquisition, reservation and management for the following reasons:

- conservation, recreation and landscape values;
- public access and enjoyment;
- cultural significance;
- under-represented vegetation complexes/ habitats;
- risk of degradation or loss due to pressure for use of areas for other purposes;
- resource protection; and
- community values.

Preliminary areas considered a priority to be secured in accordance with these criteria are listed in Table 3. Thorough consultation with the community, landowners and other stakeholders and a consideration of other options are necessary to confirm whether public ownership is required in each instance.

Photo courtesy: Colin Richardson

Table 3: Priority areas of regional significance

Existing & proposed conservation reserves including coastal unallocated Crown land & unvested reserves	Estuaries	Rivers	Wetlands
Two Peoples Bay Cape Riche Coastal macro corridor	Irwin Inlet Wilson Inlet Torbay Inlet (Manarup and Lake Powell) Princess Royal Harbour Oyster Harbour Cheynes Inlet Parry Inlet	Denmark River Hay River Yakamia Creek Willyung River/ Parker Brook King River Kalgan River Pallinup River Frankland River	Mirambeen Lake (Wellstead) Two Peoples Bay Moates Lake System (Albany) Lake Seppings (City of Albany) Owingup Swamp (Denmark) Lake Matilda (Plantagenet) Lake Kalmerndyip (north Porongurup) Stirling Range south lakes (Plantagenet) Balicup west, Poorrarecup Lake (Cranbrook) Byenup Lagoon System (Cranbrook)

Objectives and Actions for Regionally Significant Natural Areas			
Objective	**Actions**	**Timeframe**	**Responsibility**
Establish a network of regional open space in the Lower Great Southern	Undertake detailed investigation of the extent of the areas in Table 3 to be secured for regional open space	Long term	DoP/WAPC DPaW DoW LG
	Investigate protection mechanisms for regionally significant areas	Medium term	DoP/WAPC LG DPaW

2.17 Regional Land Use Plan

The regional land use plan (Figure 6) builds on the strategic policy framework of the strategy by identifying the preferred land uses for specific locations in the Lower Great Southern. The strategy recognises that land uses will, in reality, be more complex than these categories suggest. The aim is to guide broad land use over the life of this strategy.

The regional land use plan is divided broadly into the following land use categories:

- settlement hierarchy: regional centre, sub-regional centres, towns and villages;
- existing and proposed conservation reserves;
- macro corridors;
- priority agricultural land;
- general agricultural land;
- existing and potential water supply areas;
- existing and potential strategic industrial areas;
- regional infrastructure;
- regionally significant natural areas; and
- mineral or construction material occurrences or extraction sites.

Photo courtesy: Roy Mercer

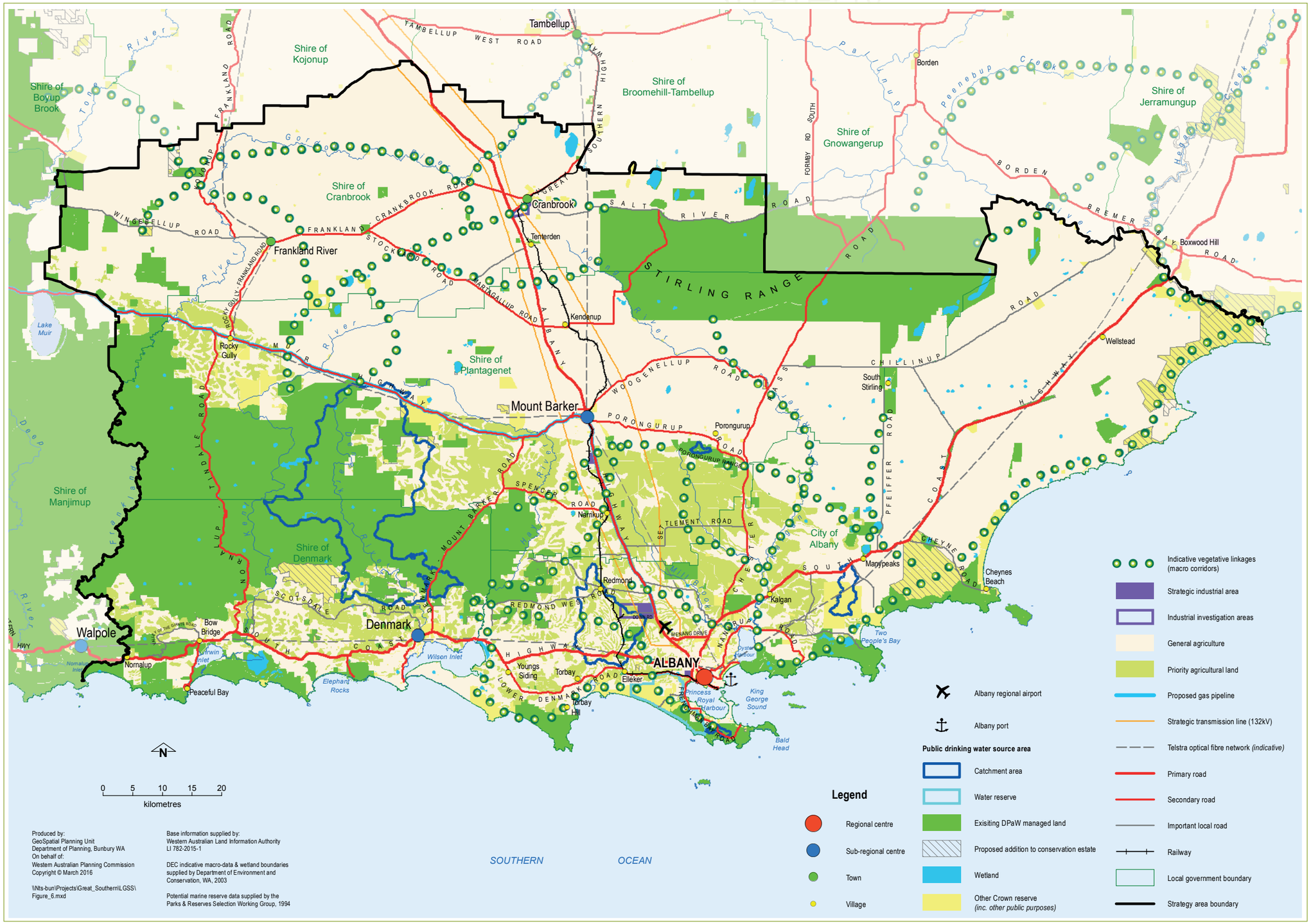


Figure 6: Regional land use plan

Part 3 – Implementation

Implementation of the Lower Great Southern strategy is proposed to be achieved predominantly through existing WAPC and local government planning frameworks and processes: namely strategic and statutory planning and decision making; and preparation and/or review of planning documents including local strategies and schemes. A monitoring process will also be implemented to track progress of the actions.

3.1 Role of the WAPC and Department of Planning

The WAPC and Department of Planning will facilitate achieving the aims and objectives of this strategy through:

- ensuring that implementation aligns with relevant State and regional planning policies and strategies, including the State Planning Strategy 2050, Great Southern Regional Planning and Infrastructure Framework and State Planning Policies;
- progressing strategic planning projects within the Lower Great Southern that are consistent with the objectives and actions of the strategy, subject to normal budgetary processes;
- implementing region-specific planning guidelines, where relevant and necessary to provide finer guidance to particular regional planning matters;
- having regard to the aims, objectives and actions of the strategy in decision making on local strategic and statutory planning matters, where relevant; and
- working collaboratively with other State agencies and local governments to deliver outcomes, particularly where these are of a cross-agency nature.

3.2 Local Planning Strategies and Schemes

Local planning strategies provide the strategic direction for local planning schemes and enable clear expression of the strategic vision, policies and proposals of the local government. Actions and recommendations in this strategy where local government has responsibility should be implemented where possible through local planning strategies and schemes.

Given the 20-year time frame of the strategy, it is acknowledged that in the short term not all recommendations can be practically implemented through existing local planning strategies and schemes. The process of reviewing strategies and schemes can be used to achieve implementation over the longer term.

3.3 Monitoring and Review

The WAPC will be responsible for monitoring the implementation of this strategy and determining the scope and nature of any reviews. The strategy was most recently reviewed in 2014-2016 and will be subject to further reviews as required. Audits of the strategy actions will be conducted on a biennial basis using suitable indicators to gauge progress.

Acronyms

ARVS	Albany Regional Vegetation Survey
CBD	Central Business District
CENRM	Centre of Excellence in Natural Resource Management
CHRMAP	Coastal Hazard Risk Management and Adaptation Planning
DAA	Department of Aboriginal Affairs
DAFWA	Department of Agriculture and Food WA
DEEWR	Department of Education, Employment and Workplace Relations
DER	Department of Environment Regulation
DET	Department of Education and Training
DFES	Department of Fire and Emergency Services
DMP	Department of Mines and Petroleum
DoF	Department of Fisheries
DoH	Department of Health
DoP	Department of Planning
DoT	Department of Transport
DoW	Department of Water
DPaW	Department of Parks and Wildlife
DRD	Department of Regional Development
DSD	Department of State Development
DSR	Department of Sport and Recreation
DTWD	Department of Training and Workforce Development
EPA	Environmental Protection Authority
GSDC	Great Southern Development Commission
GSIT	Great Southern Institute of Technology
GSRPIF	Great Southern Regional Planning and Infrastructure Framework
IOCI	Indian Ocean Climate Initiative
LG	Local Government

LGA	Local Government Area
LGSS	Lower Great Southern Strategy
LGSTWS	Lower Great Southern Towns Water Supply
LPG	Liquefied Petroleum Gas
MRWA	Main Roads WA
PDWSA	Public Drinking Water Source Area
PoA	Port of Albany
PTA	Public Transport Authority
R4R	Royalties For Regions
RFA	Regional Forestry Agreement
RFDS	Royal Flying Doctors Service
SPP	State Planning Policy
SPS	State Planning Strategy 2050
TIRES	Timber Industry Road Evaluation Strategy
TWA	Tourism Western Australia
UWA	University of Western Australia
WA	Western Australia
WAPC	Western Australian Planning Commission
WWTP	Wastewater Treatment Plant

References

Agriculture Western Australia, 1996. Western Australia Salinity Action Plan, South Perth, WA.

Albany Port Authority, 2014. 2013-2014 Annual Report.

Australian Nature Conservation Agency, 1996. A Directory of Important Wetlands in Australia, Second Edition. Australian Nature Conservation Agency, Canberra.

Austroads, 2003. Forecasting inter-regional freight transport from regional development, Austroads Incorporated, Sydney, NSW.

City of Albany, 2002. Albany Greenways, ATA Environmental in association with The Planning Group and Landinfo, Albany, WA.

Clifton Coney Stevens, Wood & Grieve, Ray Bird & Associates and The Planning Group, 2000. Vancouver Waterways, Clifton Coney Stevens (WA) Pty Ltd, Perth, WA.

Connell Wagner, 2001. Albany Airport 2001 Master Plan, Plan for the City of Albany.

Denmark Environment Centre, 2003. The Denmark Greening Plan, Report to the Shire of Denmark, Denmark, WA.

Department of Local Government and Regional Development, 2003. Regional Western Australia: A Better Place to Live: Regional Development Policy, Perth, WA.

Department of Commerce and Trade, 1999. Living in the Regions – The Views of Western Australians, Department of Commerce and Trade, Perth, WA.

Department of Conservation and Land Management, 1991. South Coast region Regional Management Plan, Department of Conservation and Land Management, Albany, WA.

Department of Education, Employment and Workplace Relations, June Quarter 2011. Small area labour markets Australia. June Quarter 2011.

Department of Industry and Resources, 2003. Telecommunications Needs Assessment - Review of the Great Southern region, Perth, WA.

Department of Planning and Infrastructure (2006) Lower Great Southern Regional Strategy Background Paper: Landscape (Unpublished).

Department of Regional Development & Great Southern Development Commission, 2014. Great Southern: A Region in Profile 2014.

Department of Training and Workforce Development. Unemployment rate 2004-2011 – Great Southern.

Department of Water, 2011. Great Southern Region Water Reference Group: Background Papers 1-13, September 2011 (unpublished). Albany, Western Australia.

Department of Water, December 2014. Great Southern Regional Water Supply Strategy: A Long-Term Outlook of Water Demand and Supply.

Government of Western Australia, 2003. Hope for the Future: The Western Australian State Sustainability Strategy, Department of the Premier and Cabinet, Perth, WA.

Government of Western Australia, 2000. Natural Resource Management in Western Australia - The Salinity Strategy, State Salinity Council in association with community groups and government agencies, Perth, WA.

Government of Western Australia, 2007. Roads 2025, Regional Road Development Strategy (Great Southern).

Great Southern Area Consultative Committee, April 1999, Inquiry into Infrastructure and the Development of Australia's Regional Areas a submission to the House of Representatives Standing Committee on Primary Industries and Regional Services.

Great Southern Development Commission, 2014. Strategic Directions 2014-2020.

Great Southern Development Commission, 2015. Great Southern Regional Investment Blueprint.

Halpern Glick Maunsell, 2001. Albany Ring Road Planning Study: Final Route Definition Report, Main Roads WA, East Perth.

Hassell Pty Ltd and Tutte, A., 2000. Albany commercial strategy review, for the City of Albany, Albany, WA.

Islam N et al, August 2010. Multipliers: Western Australian Agriculture and Food Industries. Department of Agriculture and Food.

Landvision, 1996, Basic Raw Materials, Albany Regional Study, Study for the Great Southern Development Commission and Ministry for Planning.

Main Roads WA, 1998. State Gravel Supply Strategy: Final Report, March 1998.

Main Roads WA, 2001. Albany Ring Road Planning Study, Main Roads WA, East Perth.

Main Roads WA, 2003. Albany port access corridor review, Main Roads WA, East Perth.

Regional Development Australia, 2010. Great Southern WA Regional Plan 2010-2020.

Sandiford, EM and Barrett, S, 2010. Albany Regional Vegetation Survey: Extent, Type and Status. Department of Environment and Conservation. Albany, Western Australia.

Shire of Cranbrook, 1995, North Stirlings Bush Corridor Plan.

Shire of Cranbrook, 2013. Community Strategic Plan 2013-2015.

South Coast Management Group, 2001. Southern Shores 2001-2021: A Strategy To Guide Coastal and Marine Planning and Management in the South Coast region of Western Australia.

South Coast Natural Resource Management, 2011. Southern Prospects 2011-1016 – the South Coast Regional Strategy for Natural Resource Management. South Coast NRM. Albany, Western Australia.

State Salinity Council, 2000. Salinity Action Plan, Perth, WA.

Tourism Western Australia, 2004. A Nature Based Tourism Strategy for Western Australia.

Tourism Western Australia, 2004. Western Australian Australia's South West Destination Development Strategy 2004 - 2014, Perth, WA.

Tourism Western Australia, March 2010. Tourism Development Priorities 2010-2015 Australia's South-West.

Water and Rivers Commission, 2001. South Coast Water Reserve and Limeburners Creek Catchment Area Water Source Protection Plan.

Western Australian Planning Commission, 2015. Western Australia Tomorrow, Population Report No. 10, Medium Term Forecasts for Western Australia 2014-2026 and Sub-regions 2016-2026.

Western Australian Planning Commission, 2014. State Planning Strategy 2050.

Western Australian Planning Commission, 2015. Great Southern Regional Planning and Infrastructure Framework.

Wilkins P, Gilfillan S, Watson J and Sanders A (ed.). 2006. The Western Australian South Coast Macro Corridor Network – a bioregional strategy for nature conservation. Department of Conservation and Land Management (CALM) and South Coast Regional Initiative Planning Team (SCRIPT). Albany, Western Australia.

WML Consultants, 2001. Timber Industry Road Evaluation Strategy Great Southern - Stage 2, Study for the Great Southern Development Commission and Main Roads WA.