SHIRE OF KENT

Local Planning Strategy

GOVERNMENT OF WESTERN AUSTRALIA

Western Australian Planning Commission

Endorsed by the Western Australian Planning Commission

22 JUNE 2023

Disclaimer

This is a copy of the Local Planning Strategy at the date of endorsement produced from an electronic version of the Strategy held by the Department of Planning Lands & Heritage. Whilst all care has been taken to accurately portray the current Strategy provisions, no responsibility shall be taken for any omissions or errors in this documentation.

Consultation with the respective Local Government Authority should be made to view a current legal version of the Strategy.

Please advise the Department of Planning Lands & Heritage of any errors or omissions in this document.

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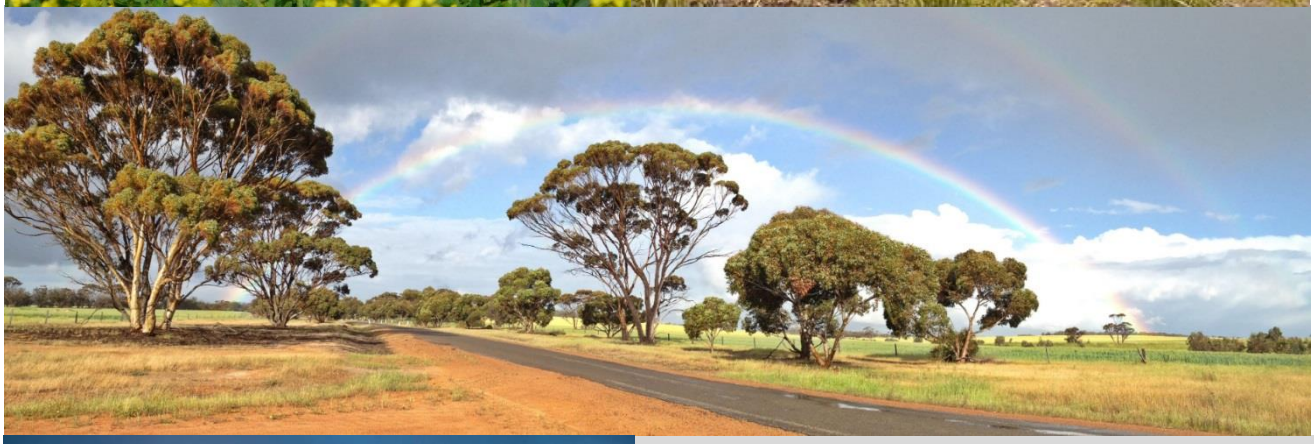
SHIRE OF KENT
NYABING ■ PINGRUP



SHIRE OF KENT

LOCAL PLANNING STRATEGY

October 2022

Shire of Kent

LOCAL PLANNING STRATEGY

CERTIFICATION FOR ADVERTISING

Certified for advertising by the Western Australian Planning Commission on 16.02.2021

C. Gotawsson

An officer of the Commission duly authorised by the Commission

(pursuant to the *Planning and Development Act 2005)*

COUNCIL RECOMMENDED / SUBMITTED FOR APPROVAL

Supported for submission to the Western Australian Planning Commission for endorsement by resolution of Shire of Kent at the Ordinary Meeting of Council held on the 18 August 2021.

SHIRE PRESIDENT
Scott Crosby

A/CHIEF EXECUTIVE OFFICER
Peter Clarke

ENDORSEMENT OF LOCAL PLANNING STRATEGY

Endorsed by the Western Australian Planning Commission on

C. Gotawsson

an officer of the Commission duly authorised by the Commission

(pursuant to the Planning and Development Act 2005)

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PART 1 – STRATEGY

1. Introduction

The Local Planning Strategy (the strategy) is the principal guiding framework for land use and development in the Shire of Kent.

The role of the strategy is to provide a strategic vision and set out the objectives to guide future development across the Shire. The strategy balances the needs of the natural environment, economic development and community expectations to ensure the long-term sustainable development of the Shire.

The strategy acts as a guiding tool in the decision-making process, as well as informing zoning of land, future rezoning proposals and infrastructure projects. The strategy provides the basis for the development and maintenance of a local planning scheme for the Shire.

It is a requirement of the *Planning and Development (Local Planning Schemes) Regulations 2015* that a local planning strategy must:

- *set out the long-term planning directions for the local government;*
- *apply any State or regional planning policy that is relevant to the strategy; and*
- *provide the rationale for any zoning or classification of land under the local planning scheme.*

The Strategy applies to the Shire of Kent local government area as shown in the Strategy Maps and is made up of two parts:

Part 1: The Strategy
Part 1 sets out the vision and objectives for planning and development in the Shire of Kent, and provides the basis for zoning of land, detailed policies and planning provisions in the local planning scheme. Part 1 includes strategic plans, strategies and actions to guide land use planning for the Shire.

Part 2: **Background Information**
Part 2 provides the relevant background to the strategy, including analysis of the information and the rationale for the strategy. Part 2 outlines the State, regional and local planning context within which the Local Planning Strategy has been prepared, relevant Shire policies, community, economic and environmental profiles and analysis of key issues that form the basis for the recommended strategies and actions in Part 1.

1.1 PREAMBLE

The Shire of Kent is located within the Great Southern Region of Western Australia, approximately 320km south east of Perth and 200km north east of Albany. The local government is bound by the Shire's of Dumbleyung to the north west, Lake Grace to the north east, Katanning to the west, Gnowangerup to the south and Jerramungup to the south east.

Covering an area of 6,552 square kilometres, the Shire's economy is primarily driven by agricultural activities and supporting sub-economies, together with tourism and government services. There are two developed townsites; Nyabing and Pingrup containing residential, commercial, industry and community services to support the Shire's population of 559 persons (2016 census)

Key features of environmental significance within the Shire includes Lake Bryde a fresh water wetland system, Lake Magenta Nature Reserve, covering 1,080 square kilometres, is one of the largest nature reserves in the Avon Wheatbelt region and the natural salt lake chains of the Lake Grace System/Chinocup Nature Reserve.

1.2 PURPOSE OF THE LOCAL PLANNING STRATEGY & LOCAL PLANNING SCHEME

The local planning strategy sets the framework for local planning and the strategic basis for local planning schemes. The strategy sets out the local government's objectives for future planning and development and includes a broad framework by which to pursue those objectives. The strategy will need to address the social, environmental, resource management and economic factors that affect, and are in turn affected by, land use and development.

1.3 APPLICATION OF THE STRATEGY

This local planning strategy applies to the whole of the Shire of Kent as identified in the Strategy maps. Until now, the Shire of Kent local planning scheme has only applied to the Nyabing and Pingrup townsites. This strategy is the first that has been prepared for the Shire and provides the rationale for the extension of the local planning scheme to cover the entire Shire of Kent local government area.

2. Vision

The Shire of Kent's vision outlined in its Strategic Community Plan 2017-2027 is:

> *"A community that places a high value on essential services, communications and technology infrastructure, improved social connectedness, community involvement and participation, a need to retain and grow the population, and to strengthen economic prosperity through the diversification of the local economy. The Shire in the future is described as:*

- *A place with a sense of community, one that is thriving, vibrant, engaging and connected.*
- *A place that nurtures its youth and aging population.*
- *A place that has a range of services and facilities meeting our needs.*
- *A place that is growing and has employment opportunities, through local industry, which is based on the Shires local comparative advantages."*

The Local Planning Strategy will, through land use planning, provide strategies and actions to facilitate achievement of the Shire's vision.

3. Objectives

To achieve the vision of the Shire, the following planning objectives have been developed to guide the Strategy:

(a) To provide a framework for decision making by the local government which will minimise of land use conflicts.

(b) To provide strategic guidance on the use and development of all land within the Shire which will address issues of competing land uses and economic, social and environmental objectives.

(c) To formulate a strategy that provides for a co-ordinated approach to land use planning throughout the Shire within a framework that has regard to the environmental, social and economic values.

(d) Protect and enhance the environmental values and natural resources of the Shire and to promote ecologically sustainable land use and development.

(e) Safeguard and enhance the character and amenity of the Shire's natural and built environment.

(f) Set aside or designate land required for public and community purposes and provide for land uses that will facilitate the health and well-being of residents.

(g) Ensure a sufficient supply of serviced land for housing, commercial and industry, agriculture and other rural pursuits, community facilities, open space and recreation and tourist infrastructure.

(h) Assist employment and economic growth by providing opportunities and encouraging diversification.

(i) Encourage increased tourism activity.

(j) Promote the sustainable use, management and protection of rural land.

(k) Provide for a diversity of lifestyle/living to attract and retain population such as provision of adequate rural residential land that can be development and managed in a sustainable way.

(l) Recognise and protect places of natural beauty and of historic and scientific interest which are considered important to the heritage of the Shire.

4. Key Issues and Strategic Responses

Arising out of a consideration of the vision, objectives and State and regional policies and the Shire context in Part 2, the key planning issues that need to be addressed through the local planning strategy are:

- There are constant changes and rural communities and businesses face ongoing financial, social, environmental and climatic challenges.
- A potential decline in population due to farm amalgamations and improvement in efficiencies requiring less employers and families, which reduces demand for basic services and threatens their provisions.
- Trends for basic services to be rationalised and centralised in larger regional centres.
- Changing demographics including a loss of population aged between 14-24 and persons aged 70 years or over.
- Poor servicing from State Government.
- Extensive historical clearing of the Shire resulting in some areas experiencing environmental degradation and salinity.
- Supporting a more robust economy, including more diverse economic and employment options to retain current residents and attract future residents.
- Water availability for potable, non-potable and agricultural supplies.
- The potential threat of climate change, impact on the viability of the traditional broadacre agriculture, including a drying climate, and more frequent storm occurrences.
- Protection of agricultural land and avoidance of land use conflicts.
- Loss of biodiversity values.
- Conserving remnant vegetation.
- The need to sustainably manage water resources.
- Ensuring development suitably addresses hazards including bush fire.
- Desire to diversify the economic base.
- Protecting Agricultural land.
- Ensuring an adequate land supply for community needs.
- Being development ready and having flexibility to capitalise on opportunities that will provide for economic development and population attraction and retention.
- Need to provide for a diversity of lifestyle/living options to assist in retention and attraction of population.

5. Strategies and Actions

Strategies and actions to further the above planning vision, objectives, and principles are set out below. Part 2 contains a detailed rationale and explanation for the strategies and actions.

The following broad opportunities have been identified to be addressed in the Scheme responding to key issues:

- Encourage a variety of land uses to facilitate diversifying the economy, subject to consideration under the Scheme.
- Ensuring townsites are 'development ready', to capitalise on economic opportunities.
- Facilitate alternative forms of industrial development such as 'rural enterprise' to provide opportunities for economic development.
- Provide a diversity of lifestyle choices and housing to attract and retain population within the Shire. Rural Residential developments can offer alternate lifestyle choice for residents within the Shire and assist in retention of population.
- Investigate and implement drainage strategies for private properties to reduce run-off and impact on salinity and/or direct to shire stormwater infrastructure to improve run-off into storage facilities for re-use.
- Facilitate diversification and alternative land uses in rural areas such as tourism, recreation and extractive industries to provide an alternate source of income where ancillary to agriculture uses.
- Protection of productive agricultural land and minimisation of land use conflict through land use planning.
- Technological advances providing diversity in employment, education and health care opportunities.
- Promote and provide opportunities for tourism within the Shire where this will not conflict with agricultural practices.
- Encourage revegetation through biodiversity incentive programs.
- Conserving areas of environmental value, including supporting revegetation and other forms of rehabilitation.
- Providing opportunities to retain population and changing demographics.

The abovementioned issues will be further explored under this section and section 6. The Local Planning Strategy Maps 1, 2 and 3 depict the land uses described in this section and section 6.

5.1. CULTURE AND HERITAGE

It is important to protect and manage places of Aboriginal significance and places of cultural heritage significance that are important to the community and worthy of built heritage conservation.

Figure 1, Figure 2 and Figure 3 shows sites within the Shire of Kent registered on the Department of Planning, Lands and Heritage Register of Places and Objects and the Heritage Council of WA. Local Heritage Listings are shown, although it should be noted that these may be altered by the Local Government pending a review of the Local Heritage Survey, and adoption of a new heritage list.

The strategy and expansion of the Scheme area will require a review of the Heritage List to be undertaken to identify any areas worthy of inclusion that were previously outside of the Scheme boundaries.

Once the South West Native Title Settlement and land transfer to the Noongar Boodja trust is finalised, a review of transferred land may be required to ensure its zoning is appropriate to reflect its potential and intended uses as part of the Settlement.

Objectives

- To identify and protect places of cultural heritage significance and Aboriginal heritage value.
- Ensure future development proposals consider cultural heritage significance of places and Aboriginal heritage value.

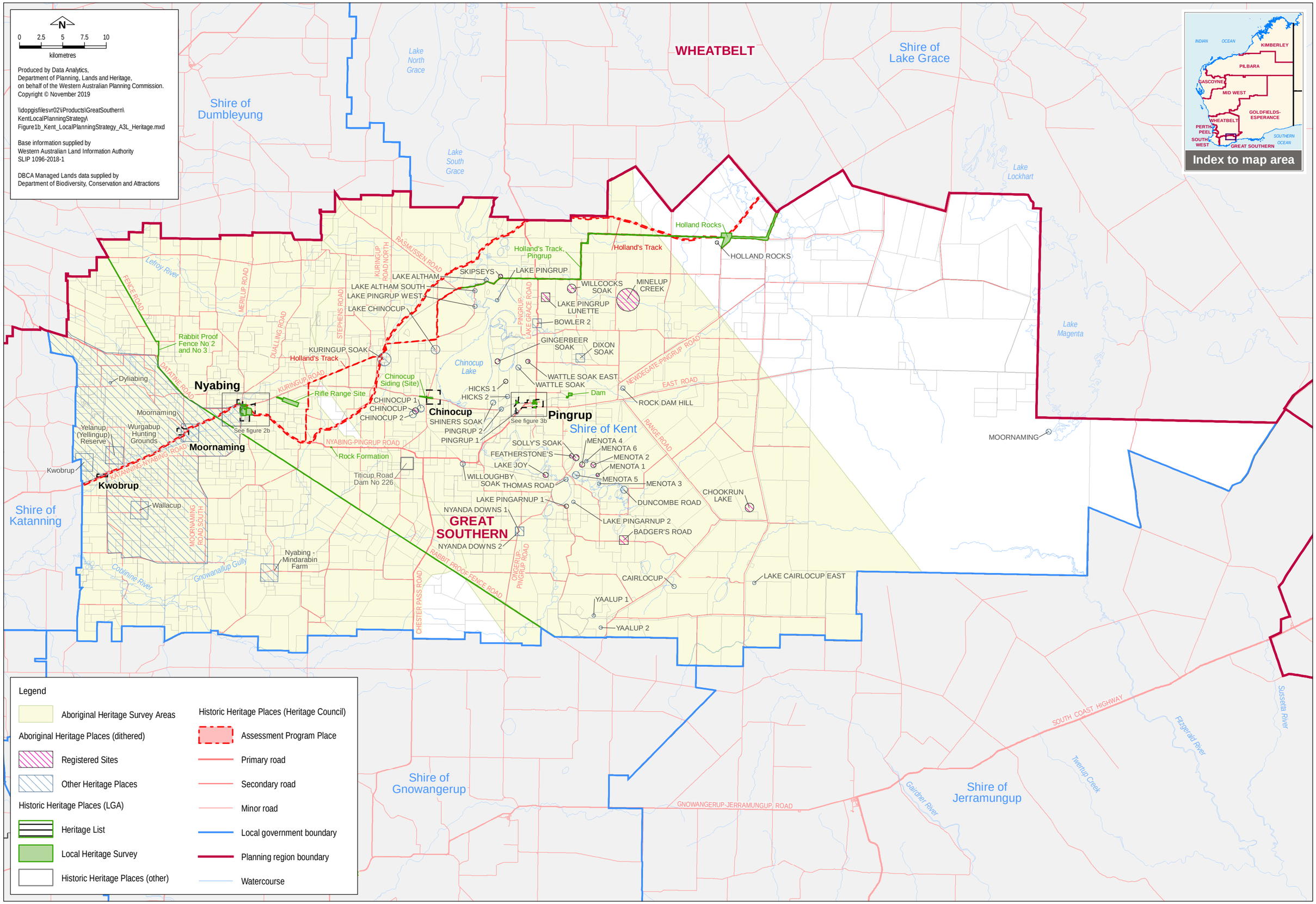
Strategies:

- Recognise sites of Aboriginal Heritage significance.
- Support the protection of important heritage places and sites.
- Support actions to implement the South West Native Title Settlement.

Actions:

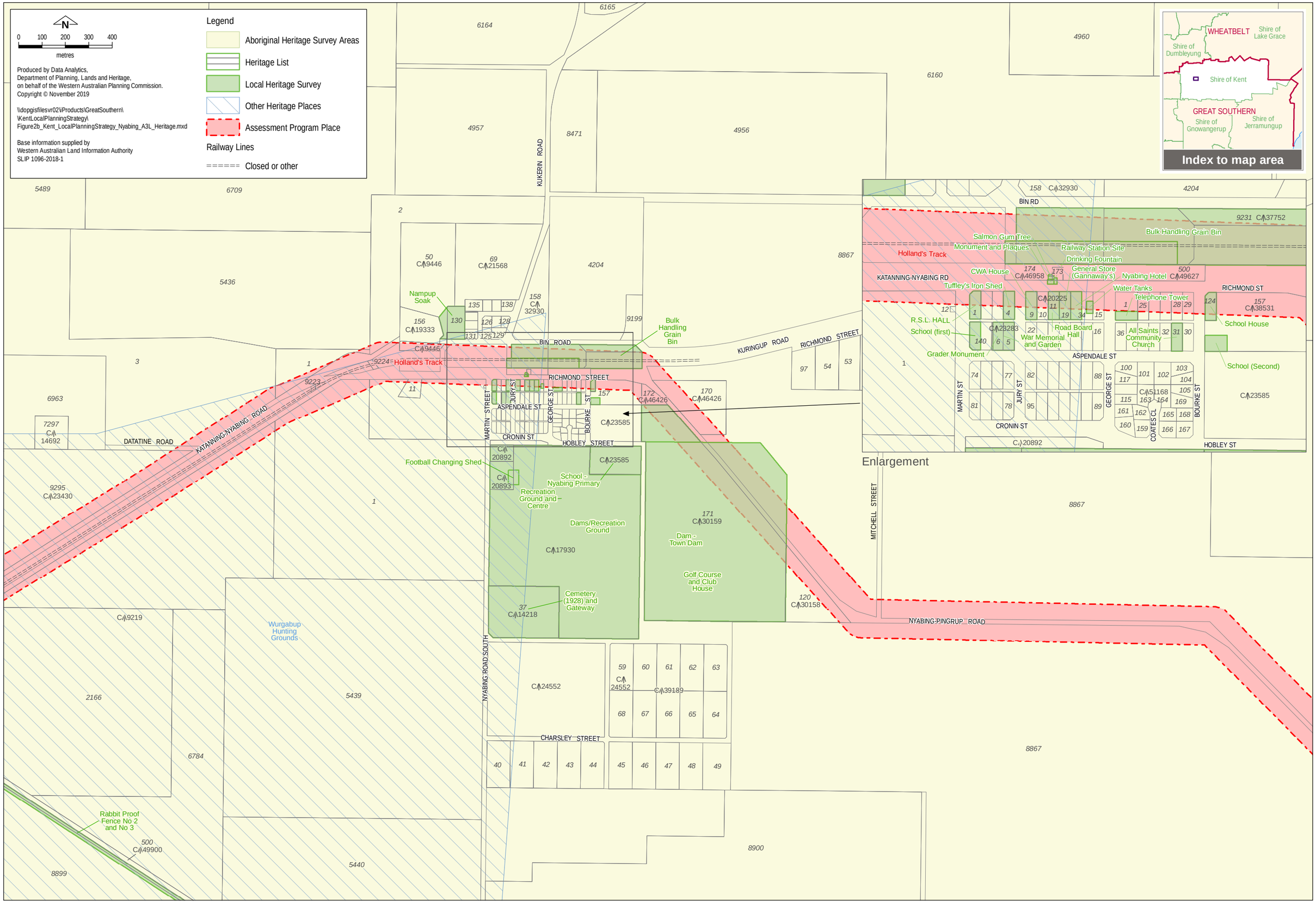
- Review and update the Local Heritage Survey.
- Adopt a Heritage List in accordance with the *Planning and Development (Local Planning Schemes) Regulations 2015*.
- Work with the Department of Planning, Lands and Heritage on initiatives to reflect outcomes of the South West Settlement and realise economic opportunities for identified sites.

Figure 1: Heritage and Cultural Constraints - Local Government Area



Shire of Kent - Heritage and Cultural contraints

Figure 2: Heritage and Cultural Constraints - Nyabing Townsite



Nyabing townsite - Heritage and Cultural contraints

Figure 3: Heritage and Cultural Constraints - Pingrup Townsite

Pingrup townsite - Heritage and Cultural contraints

5.2. NATURAL ENVIRONMENT

Due to historical clearing within the Shire to support agricultural production, much of the native vegetation outside of Reserve land is highly fragmented. Conservation of native vegetation within the Shire is important for its biodiversity values, providing habitat for flora and fauna, and it also has a function in retaining the productivity of land for agricultural purposes (e.g. trees keep groundwater lower reducing salinity, provide barriers for wind erosion).

Areas of environmental significance, remnant vegetation and wetlands/lakes should be conserved and protected, and where not protected through location in a reserve, conservation and protection is encouraged through land use planning.

There are a large number of Reserves within the Shire of Kent that are currently not vested to an authority to manage and Unallocated Crown Land with no designated purpose. The management or responsibility of Reserves is likely to result in better outcomes and protection for conservation. Land tenure within the Shire and Environmental features of significance are shown in Figure 4, Figure 5, Figure 6 and Figure 7.

Measures to reduce land degradation from agricultural uses and revegetation and rehabilitation should be encouraged. The Shire can consult with government agencies to identify external resources to prepare a Local Biodiversity Strategy to facilitate the protection and management of native vegetation and encourage the replanting of native vegetation in private land. The request should consider pursuing a regional approach to the preparation of a biodiversity strategy given the large scale of clearing of native vegetation that has occurred in the past, and the need for an integrated approach to address rising groundwater and spread of salinity which is not an issue specific to the Shire of Kent. The preparation of a biodiversity strategy can investigate the provision of incentives to revegetate or protect areas of high conservation value through subdivision and rate rebates.

Objectives

- Protect, conserve and enhance the environmental characteristics of the Shire.

Strategies

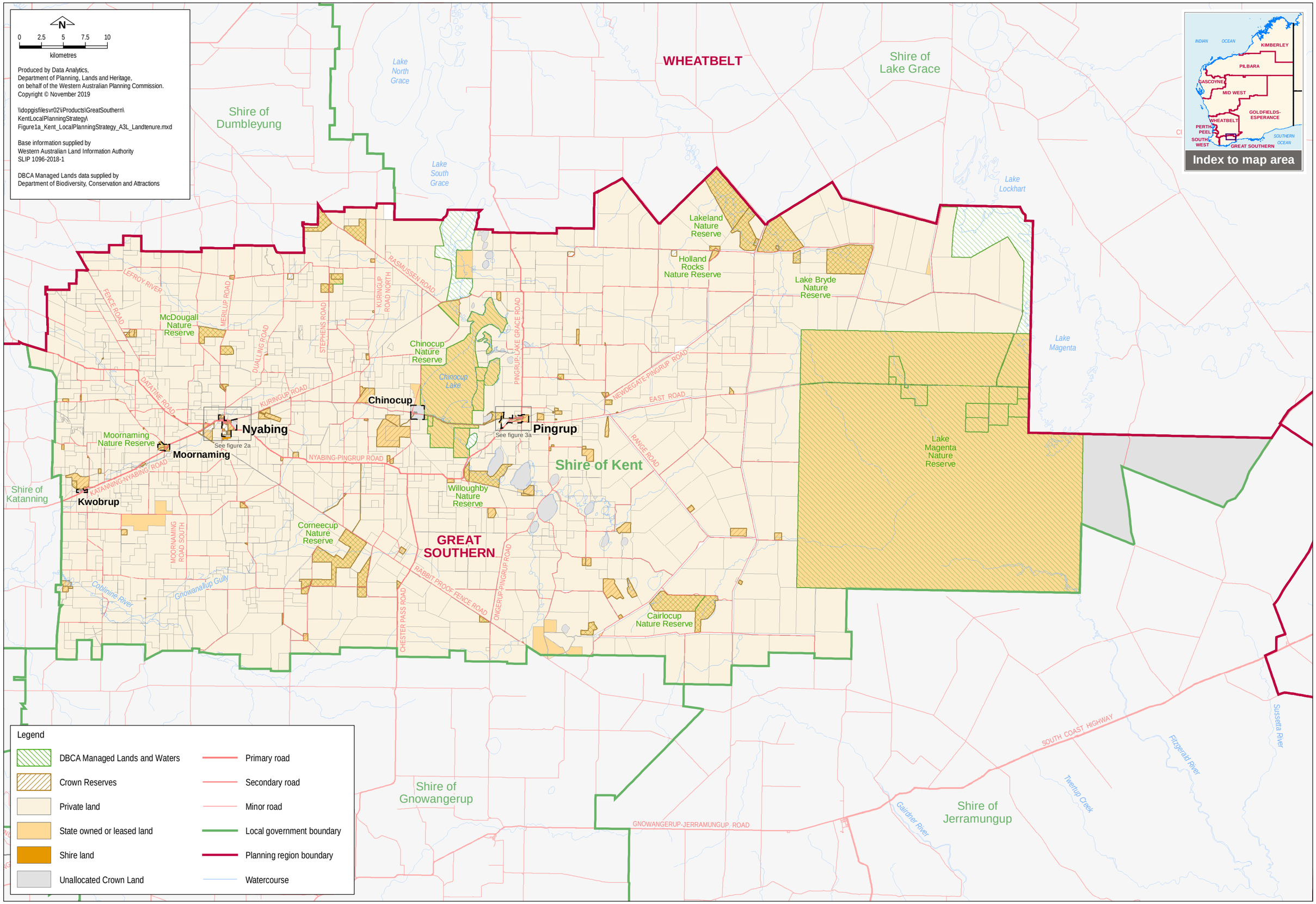
- Protect areas of environmental significance from inappropriate development.
- Encourage effective sustainable management of sites of natural significance.
- Encourage protection and enhancement of wetlands, watercourses, roadside, riparian and native vegetation.
- Encourage and support measures and actions that will improve the natural environment.

Actions:

- Avoid further clearing of native vegetation of significance to the Shire by accommodating land use and development within existing cleared areas where feasible to do so.
- Investigate and liaise with external government and environmental agencies to identify the feasibility of undertaking local biodiversity planning (at either local or regional level) to identify, retain, protect and manage significant remnant vegetation on public and private land and identify priority areas and incentives for environmental rehabilitation.
- Apply the ‘Environmental Conservation’ reserve to land in scheme maps where it is desirable to retain native vegetation.

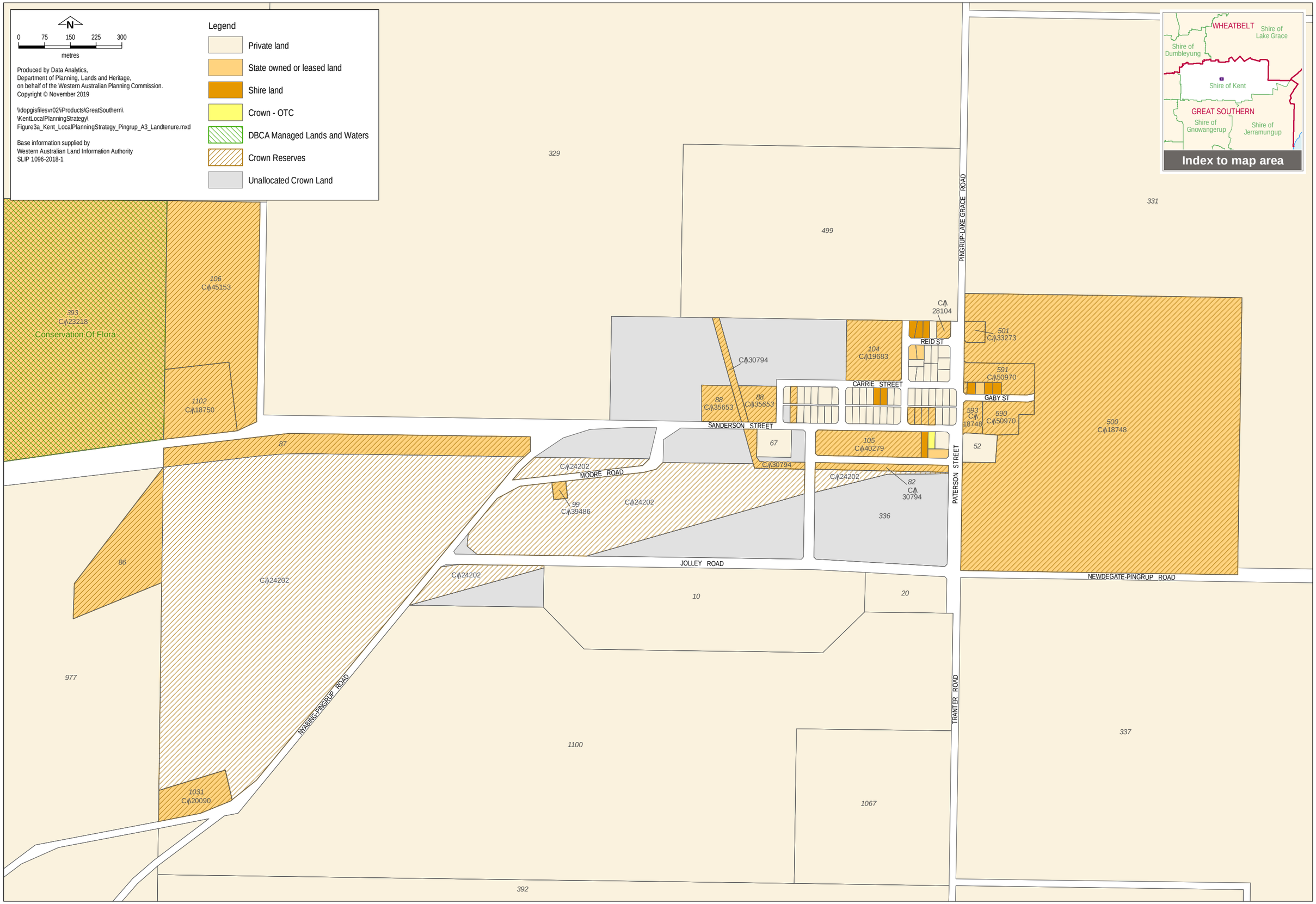
- Support subdivision and development where it results in beneficial outcomes for the natural environment (i.e conservation lots).
- Work with the Department of Planning, Lands and Heritage and appropriate government agencies to ensure appropriate management of reserves.

Figure 4: Land Tenure - Shire of Kent



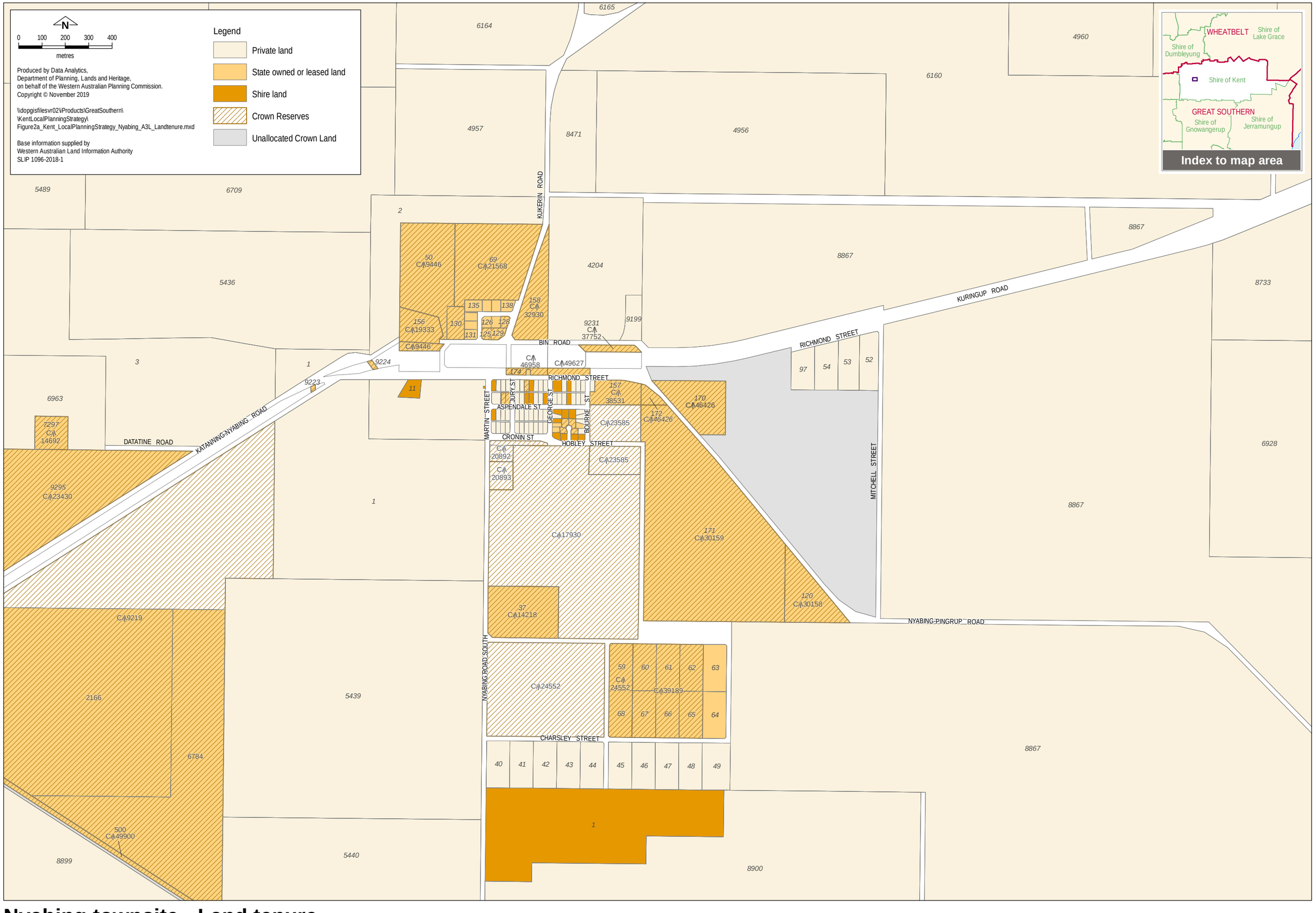
Shire of Kent - Land tenure

Figure 5: Land Tenure - Nyabing Townsite



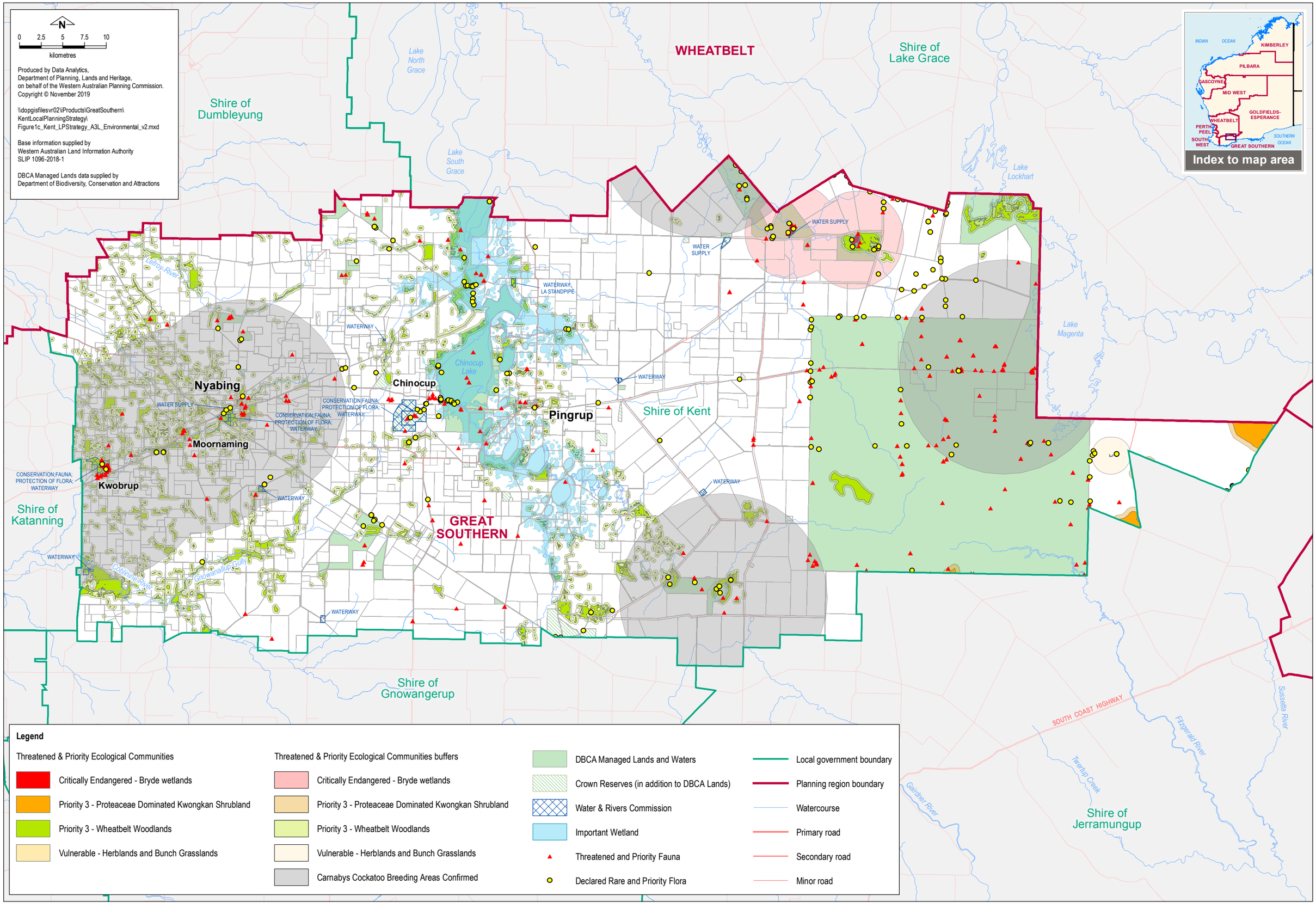
Pingrup townsite - Land tenure

Figure 6: Land Tenure - Pingrup Townsite



Nyabing townsite - Land tenure

Figure 7: Environmental Constraints - Shire of Kent



Shire of Kent - Environmental contraints

5.3. INFRASTRUCTURE

Infrastructure for community, transport and service utilities, including identification of suitable land, is essential to support the existing and future populations of the Shire and to attract and retain residents.

Community Infrastructure

The Shire of Kent and both townsites is well serviced by community infrastructure, public open space, civic and community and public purpose reserves to service the existing and projected population.

Flexibility is important for the Shire to be able to capitalise on development opportunities which improve services to the Shire or provide opportunities for tourism which can provide economic benefits to the community and assist in population retention.

Larger recreational, open space and civic and community sites as shown on the strategy maps have been identified as having potential to support small-scale additional tourist activities (such as caravan and camping), or as space to provide for development where these uses would have a clear benefit to the community and land use conflict can be managed.

Transport Infrastructure

Railways will be identified as a reserve for Railways in the Local Planning Scheme. Roads will be identified as road reserve and categorised in the Local Planning Scheme as either Primary, Local Distributor or Local Roads in accordance with Main Roads Road Classifications which set a hierarchy for function and management. Future development applications will be required to give consideration to the function and capacity of road classifications.

Heavy vehicle traffic during harvesting, transfer of grain or delivery of fertilisers and lime during the year has the potential to damage the local road infrastructure and should be directed onto state, regional and local distributor roads where possible through land use planning.

Both the Nyabing and Pingrup town sites are located on Primary Distributor Roads and have adequate access, facilities and parking for heavy vehicles. Access Roads within the town-site are separated from heavy vehicle routes and are generally relatively safe for shared use by pedestrians, cyclists and motor vehicles due to low traffic volumes

Telecommunications & Electricity

The Shire has access to mobile services and Satellite National Broadband Network and also receives television and radio services. The level of telecommunications is not likely to be a constraint to development or growth within the Shire, although the strength of signal and speeds can be poor at times. Telecommunications can provide an alternate source of employment such as home businesses and poor servicing can impede growth of business and economies within the Shire.

The Cairlocup site near the Lake Magenta Nature Reserve has been identified as a priority site for improved telecommunications due to the bushfire risk of this area.

Electricity is available throughout both town sites and is available to most rural properties within the Shire. Electricity supply is via overhead power lines, the Shire will support the provision of underground electricity supply to new development and/or subdivisions.

Water Supply

The provision and availability of potable water is a key servicing requirement to support development and growth.

The Water Corporation is the licenced service provider for the reticulated potable water supply servicing the townsites of Nyabing and Pingrup and limited rural land. Water Corporation's long term planning for water supply in this region assumes a growth of 1.5-2% each year for Nyabing and Pingrup. Long term supply is anticipated to be sufficient for future projected populations and development. The capacity to provide services to new development investigation areas will be investigated on a case by case basis, although sites on the periphery of townsites or on elevated land will require extension of a water main and may be too high or far from the water supply tank to receive a complying water service (i.e sufficient pressure and flow). Proposals to develop Development Investigation Areas will be required to demonstrate access to an adequate water supply can be provided prior to rezoning of land.

Areas not serviced by a reticulated service are reliant on either rainwater tanks or bores. A drying climate increases demand on the water supply system which is likely to continue in the foreseeable future. The Scheme should include provision to ensure that adequate provision is made for potable water supply at the time of development. Mechanisms to improve both potable and non-potable water supply should continue to be implemented and the use of private rainwater tanks should be encouraged through land use planning to provide an additional source of potable water.

Management of drainage is important within the townsites, given the low-lying nature of the land, and risk of salinity from rising groundwater. It is noted that a drying climate may provide a natural solution to this, although climate change also has potential to result in more erratic weather patterns. The Shire also could improve its supply on non-potable water supply through investigating the following:

- Upgrade sports dam to increase run-off reliability by improving the catchment.
- Improve town site stormwater drainage, capture and storage.
- Investigate the use of run-off improvement techniques, including polymers as part of the improvements to roaded catchments.
- Consider introducing a Stormwater Management Policy for development within the town sites, to ensure adequate onsite retention (and re-use where appropriate) or to be adequately directed to Shire infrastructure.

Water management should be undertaken in accordance with State Planning Policy 2.9 Water Resources and the Better Urban Water Management Guidelines

Wastewater Management

The existing wastewater management system operated by the Shire of Kent is sufficient to cater for future development identified in the Strategy. Areas for effluent disposal managed by the Shire are to be zoned appropriately for this purpose (Public Purpose).

The provision of odour buffers to wastewater treatment plants and other wastewater facilities in the town should also be provided in accordance with Environmental Protection Authority Guidance for the Assessment of Environmental Factors: Separation Distances between Industrial and Sensitive Land Uses No. 5, buffers which are to be determined based on case by case basis for site specific areas.

The wastewater ponds accept wastewater from the reticulated infrastructure in both Nyabing and Pingrup, which operates via a 'limited effluent' system where onsite septic tanks are installed on individual properties, with overflow wastewater (no solids) directed to ponds for evaporation. The nature of the ponds is that they are effectively receiving naturally treated effluent via the septic tank arrangement with limited or no odour. The operation of the wastewater ponds has occurred without complaint from adjoining existing sensitive land uses. A buffer area of 200m is recommended by the Shire. It is important that the facilities be able to operate into the future providing facilities for the townsite. Land use planning will aim to minimise conflict by including a buffer to prevent the encroachment of further development of sensitive uses to the waste water ponds, although include boundaries to recognise the existence of existing zoned land capable of development.

Solid Waste Management

The Pingrup Waste Disposal site contains a landfill, accepting green waste and inert objects only. The site functions as a Waste Transfer Station for other solid wastes.

The Nyabing Waste Disposal site contains a landfill, accepting putrescible wastes.

The Pingrup landfill site is very close to reaching capacity and is anticipated to be closed within the next five years, with the transfer station to carry waste to the Nyabing facility remaining. Once the Nyabing facility has reached capacity (approximately 30 – 60 year lifetime) a transfer station will be constructed, with waste from both Pingrup and Nyabing. The Shire, subject to receiving of grant funding, intends to undertake strategic planning for both sites to better identify long-term direction and management.

There is no need to identify additional land for rubbish disposal for the lifetime of this strategy.

Objectives:

- Support population growth and retention through provision of community infrastructure and public open space.
- To ensure provision of appropriate servicing and infrastructure to meet the needs of the community.
- Ensure the functioning of essential infrastructure such as waste water treatment ponds are not compromised by encroachment of sensitive land uses.
- Transport infrastructure to be managed and maintained within and around the Shire to support the economy and population needs.

Strategies:

- Ensure adequate land supply and facilities for community facilities and infrastructure are available and maintained for existing and future populations.
- Encourage reliable telecommunication services across the Shire.
- Improve non-potable water supply within the townsites.
- Support integrated water management in accordance with State Planning Policy 2.9 – Water Resources.
- Support the design of transport infrastructure and access routes for new developments and subdivision that are safe and direct heavy traffic to primary and district distributor roads.
- Appropriate buffers need to be observed for infrastructure such as wastewater treatment plants to minimise potential land use conflicts.

Actions:

- New development must demonstrate adequate provision of access, power, telecommunications, water supply and waste water disposal.
- Promote better management, re-use and recycling of water to improve non-potable water supplies within the townsite in accordance with the Better Urban Water Management Guidelines which could include:
    - Upgrading sports dam to increase run-off reliability by improving the catchment, improvement to townsite site stormwater drainage, capture and storage.
    - The use of run-off improvement techniques, including polymers as part of the improvements to roaded catchments.
- Consider introducing a Stormwater Management Policy which is consistent with the Better Urban Water Management Guidelines, to ensure adequate onsite retention of stormwater (and re-use where appropriate) or to be adequately directed to Shire infrastructure for re-use.
- Advocate for improved telecommunications services including the Cairlocup site near Lake Magenta Reserve as a priority to address bushfire risk of this area.
- Identify buffers for waste water ponds areas on strategy maps.
- Identify buffers for waste water ponds on scheme maps and include provisions in the Scheme to manage the type of development permitted within buffer areas to minimise land use conflicts.
- Consider capacity of transport infrastructure in any new development proposals submitted.
- Identify land for recreation and community uses as either Public Open Space or Civic and Community Use and include additional uses to provide for development to meet community needs or benefit the community on larger reserve sites.

5.4. RESIDENTIAL

Population within the townsites is forecast to remain static or decline. Attraction and retention of population within townsites is a key issue to support the ongoing provision of basic facilities and services to the wider community. Whilst substantial growth is not anticipated, it is important for the Shire to be 'development ready' and provide for a variety of lifestyle and housing options which assist in the attraction and retention of population to townsites.

There is sufficient undeveloped land identified for residential development within both the Nyabing and Pingrup town sites to cater for future growth needs should there be demand. Should there be constraints associated with developing this land, flexibility is needed to ensure an adequate supply of residential land into the future. There is opportunity to identify areas on main thoroughfares and in areas with an existing mixture of commercial/residential uses as 'Mixed Use' to provide flexibility for a variety of uses and include further opportunity for an alternative form of residential development.

A residential zone is suitable for residential uses within the townsite within the Nyabing and Pingrup town sites and zoned R20, which currently provides for a minimum lot size of 450sqm (notwithstanding size limitations with space required for onsite effluent). Due to the absence of reticulated sewer, it would not be appropriate to increase residential densities, and a coding of R20 can provide for a diverse range of lot sizes to suit the needs of the community.

In the mixed-use zone, where development is combined with a retail or commercial land use density should be discretionary to allow for flexibility in development, whilst recognising sufficient land is required for onsite effluent systems. The provision of aged care facilities within both town sites should be encouraged through land use planning.

Should there be demand, or issues associated with development land identified for future residential, additional land has been identified as a Development Investigation Area (DIA1) in the Nyabing townsite on Reserve 17930 to be investigated for its potential for residential land uses (including bushfire assessment). DIA1 includes two areas identified for investigation. One area is directly south of the townsite adjoining the existing public purpose of education (primary school) and Hobley Street. This area is located in reasonable proximity to the townsite, services and access routes, and is a logical extension of the Residential zone.

A second DIA1 area is identified south of the recreation facilities on Reserve 17930. This has been identified in the event that there are constraints which make developing other parcels identified to meet residential needs unviable and has been identified recognising:

- Extension of residential land uses to the east is constrained by the presence of water supply infrastructure;
- Extension of residential land uses to the north is constrained by the presence of railway infrastructure and industrial uses;
- Extension of residential land uses to the west is constrained by the low lying nature of the land, concerns with salinity and water tables, and high costs of connection to a water supply which was raised as an issue during a previous scheme amendment.
- The land is relatively cleared of vegetation, slightly elevated which is preferable for onsite effluent and salinity, has a sufficient separation from the cemetery, is located adjoining recreation and public open space facilities, and is located within an area which WaterCorp has indicated can potentially be serviced by reticulated water with a complying water service (subject to further investigation).

Objectives:

- Provide for residential development in appropriate locations that allows for variety and choice in size, type and affordability of housing to support a range of household sizes, designs, ages and incomes.

Strategies

- Ensure there is an appropriate supply of residential land and housing stock to meet the needs of the community.
- Identify development investigation areas for future residential development.

Actions:

- Identify land on main thoroughfares as mixed-use zone to provide flexibility and provide alternate forms and supply of residential development within townsites.
- Apply the Residential zone to predominantly residential areas within the townsite and maintain a density code of R20 for residential only development to provide for a variety of lot sizes and dwelling types.

- Identify land as Development Investigation Area in the Strategy indicating that this land may be suitable for future Residential development to meet community needs, subject to further investigation being undertaken.
- Identify aged care facility land uses as a discretionary use in the Residential zone.

5.5. RURAL LIVING

Rural living provides an alternative form of lifestyle within the Shire. There is a lack of rural living options available in proximity to the Pingrup townsite, and whilst there is undeveloped rural living lots in proximity to the Nyabing townsite, most are within ownership of adjoining lots indicating that there may be a desire for larger lifestyle lots, and that these lots may not be available for development.

Diversity of lifestyle choices can assist with attraction and retention of population which is important for the Shire. The Strategy has a role in setting the strategic direction for land use needs in the future, and a key need of the Shire is to provide flexibility for the development of Rural Living if there is demand for its development.

Objectives:

- To provide alternate lifestyle opportunities (rural living) based on community needs.

Strategies:

- Provide for a range of Rural Living zones.
- To set criteria for when rural living proposals will be supported, ensuring that the development responds to land use needs, is appropriately located, serviced and is sustainable.

Actions

- Insert a new Rural Smallholding zone into the Scheme that provides for larger rural living lots (4ha to 40ha) in accordance with State Planning Policy 2.5 Rural Land.
- Include a Rural Residential zone within the Scheme which includes appropriate development provisions to ensure visual amenity and minimise land use conflict from small hobby farm uses.
- Proposals for Rural Living will only be considered where the following criteria can be satisfied:
  (a) Any scheme amendment proposal will need to adequately justify how the provision of rural living will meet needs of the community.
  (b) Development shall be located within close proximity (5km unless otherwise agreed) to the Nyabing or Pingrup town sites as depicted on the Local Planning Strategy map and be located:
    - To avoid areas required for future logical expansion of townsites.
    - To minimise conflict with the primary production of nearby land or reduce its productive potential.
    - To avoid natural primary resources including prospective areas for mineralisation and basic raw materials, water catchments and areas of environmental significance.
    - Where the scenic landscape and conservation values of an area will not be compromised.

- Where the land is predominantly cleared of remnant vegetation, or the loss of remnant vegetation through clearing for building envelopes, bushfire protection and fencing is minimal and environmental values are not compromised.
- Where the lots can be serviced by constructed road/s capable of providing access during all weather conditions, including access and egress for emergency purposes.
- Where land it is not located within a floodplain and development will not lead to environmental or land degradation.

(c) The scheme amendment shall be supported by:

- a Land Capability assessment, or similar information to demonstrate the land is capable of development for Rural Living purposes, in accordance with the Government Sewerage Policy.
- Information to satisfy State Planning Policy 3.7 Planning in Bushfire Prone Areas, where the development area is in an identified as bushfire prone.

(d) Where lots are proposed to be 4ha or less, a reticulated water supply of sufficient capacity is to be available in the location. Should an alternative to reticulated water supply be proposed, it must be demonstrated that a reticulated water supply is not available.

(e) It has been demonstrated the land can be supplied with reticulated electricity.

(f) The land within the development area is not subject to a buffer from an adjoining land use or the impact(s) from the buffer can be managed.

(g) The development area is predominantly cleared of remnant vegetation or the loss of remnant vegetation through clearing for building envelopes, bushfire protection, access and fencing is minimised and environmental assets are not compromised.

(h) Development is to be supported by an adopted structure plan, setting minimum and average lot sizes of the estate and building envelope locations (if required).

- Ensure new development is located and planned for in accordance with State Planning Policy 2.9 Water Resources to identify, protect, manage and where possible enhance waterways.

5.6. RURAL LAND AND AGRICULTURE

The Shires economy is predominantly based on agriculture and this is likely to remain the dominant industry in the medium to long term. It is important to protect agricultural land in the Shire of Kent given its importance to the local economy. It is also important to support the agricultural industry, ensuring that growth and investment in agricultural production and new innovations in food production are not unnecessarily regulated or discouraged by onerous planning requirements.

The primary objective of SPP2.5 is to protect rural land and prevent the introduction of incompatible land uses which could affect agricultural production. This will occur through identification and zoning of rural and agricultural land as 'Rural' in the Local Planning Scheme and including development provisions to recognise the primacy of agricultural production.

Diversification should be supported, where it can provide an ancillary source of income to support continued agricultural uses, such as tourism and eco development.

The zoning of all rural land in the Shire will be accompanied by the control of land uses which will permit and encourage agricultural land uses and require planning consent for those which have potential to

conflict with or affect productivity of surrounding agricultural land uses. Diversification of economic activities within the Shire will be supported provided that it does not reduce the productive potential of high quality agricultural land and does not conflict with surrounding agricultural land uses. Uses will also be required to have a complementary function to the rural and agricultural use of the land.

Objectives:

- Protect and support the use of land for agricultural production.

Strategies

- Recognise the primacy of rural land within the Shire of Kent for agricultural production.
- Protect agricultural land from inappropriate development.
- Facilitate diversification on rural land including tourism where it does not impede agricultural production.
- Facilitate the protection and use of basic raw materials in accordance with State Planning Policy 2.5 Rural Planning.

Actions:

- Facilitate agricultural activities on Rural land through appropriate zoning and land use designations in the Scheme.
- Identify undesirable land uses as not permitted in the rural zone, to protect agricultural land from inappropriate development.
- Identify tourism and industry primary production land uses as incidental, permitted or discretionary land uses within the rural zone.
- Identify appropriate land use permissibility for extractive industries to facilitate social and environmentally responsible extractive industries within the Shire.
- Subdivision to be as per State Planning Policy 2.5 Rural Planning and WAPC Development Control Policy 3.4 Rural Subdivision.

5.7. INDUSTRIAL AND COMMERCIAL

Ensuring townsites are ‘development ready’ is important to capitalise on economic opportunities and provide spaces for employment to retain and attract population. There is sufficient undeveloped commercial and industrial land identified within the Nyabing and Pingrup town sites which can meet the expected demand for the lifetime of this strategy, however rationalisation of existing zoning in TPS 2 is required to ensure consistency with the model provisions and appropriate location of land uses.

In both townsites, land on main thoroughfares where there is an existing mixture of commercial/residential land uses are designated ‘Mixed Use’ to provide flexibility for a variety of uses and include further opportunity for alternative forms of residential development. Subsequently, additional land has been designated Light Industry to ensure these land uses are provided for.

State Planning Policy 2.5 Rural Planning makes provision for a Rural Enterprise zone to be utilised for small rural communities, provided they are properly planned, close to settlements, serviced and address any buffer/amenity issues. Rural Enterprise development typically consists light industry land uses with ancillary residential accommodation, with lot sizes of 1-4ha. Provision of a Rural Enterprise zone within

the Shire provides an opportunity to diversify the local economy and provide employment opportunities as well as meeting the industrial needs of the Shire which is consistent with the objectives of the Strategy and addresses issues identified in section 5. Further investigation is needed before designating or zoning land Rural Enterprise.

Development Investigation Areas will be subject to further investigation to justify the land is capable of development prior to rezoning, subdivision and development.

Nyabing

- A 12ha portion Lot 1 (26) Nyabing Road South, Nyabing has been designated Light Industry to meet an identified need. The land is in proximity to the Nyabing townsite, can be connected to the reticulated sewer service, appropriate water supply and has appropriate access to major roads of a sealed standard. Whilst the land will likely be affected by a 200m Special Control Area due to the wastewater ponds, industrial development is not considered a sensitive land use and can be located within the buffer area.
- DIA2 (north of Richmond St) is in proximity to servicing and has potential as a logical extension retail/commercial land uses. Scheme provisions may need to restrict development of sensitive land uses given the proximity of the site to Industrial land uses to the north (CBH).
- DIA3 is existing subdivided UCL and a logical extension of existing zoned industrial land to the east.

Pingrup

- Lot 67 on Deposited Plan 172932 and adjoining unallocated crown land on Sanderson Rd, as well as a portion of Reserve 24202 and Lot 226 on DP 211378 (UCL) Pingrup has been identified as 'Light Industry', providing a transition to existing industrial land (CBH) to the south and flexibility for existing and future development in proximity to the townsite
- Reserve 40279, on Sanderson Street, within the Pingrup Townsite, contains undeveloped land which is in reasonable proximity to services, and has potential for civic and community development, should there be demand.

Objectives:

- Ensure land is available for a range of industrial, retail and commercial uses to support the community and support any economic or population growth.
- To provide for industrial, retail and commercial services within townsites.

Strategies:

- Facilitate provision of land for industrial, retail and commercial uses.

Actions:

- Identify land on townsite main thoroughfares as 'mixed use' to allow for flexibility of existing land to meet community needs.
- Identify Reserve 40279 as Civic and Community, recognising potential to accommodate development as needed.
- Identify Development Investigation Areas to facilitate further investigation to justify the land is capable of development prior to rezoning, subdivision and development.
- Identify a 12ha portion Lot 1 (26) Nyabing Road South, Nyabing as Light Industry.

- Identify a Lot 67 and adjoining UCL on Sanderson Rd, as well as a portion of Reserve 24202 and Lot 226 on DP 211378 (UCL) Pingrup as 'Light Industry'.
- Make provision for land suitable to be zoned for Rural Enterprise in the Scheme via a Scheme Amendment. Proposals to rezone land to Rural Enterprise will be required to satisfy the following criteria:
    - Located within close proximity to the Nyabing or Pingrup town sites.
    - Natural primary resources including prospective areas for mineralisation and basic raw materials, water catchments and areas of environmental significance are avoided.
    - Located where the scenic landscape and conservation values of an area will not be compromised.
    - Located where the land is predominantly cleared of remnant vegetation, or the loss of remnant vegetation through clearing for building envelopes, bushfire protection and fencing is minimal and environmental values are not compromised.
    - In proximity to and/or serviced by a Primary or Regional Distributor Road.
    - Provided with appropriate servicing including reticulated power supply and effluent disposal. For land which is not serviced by a reticulated sewerage connection, the Shire may require a land capability study be provided to demonstrate the land is capable of accommodate onsite effluent units.
    - If the land is within a bushfire prone area, information to satisfy State Planning Policy 3.7 Planning in Bushfire Prone Areas.
    - Where lots are proposed to be 4ha or less, a reticulated water supply of sufficient capacity is to be available in the location. Should an alternative to reticulated water supply be proposed, it must be demonstrated that a reticulated water supply is not available.
    - Scheme provisions will be required to address specific development provisions regarding minimum lot sizes taking into account vehicle access, fire management, visual buffers, wastewater management, and amenity.

5.8. BUSHFIRE

With a changing climate, the risk of bushfire as a result of hotter and drier conditions will increase. State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP3.7) and the Guidelines for Planning in Bushfire Prone Areas Guidelines (WAPC, 2017) provide a strong planning framework to integrate an understanding of bushfire hazard into planning decisions within the bushfire prone area. The key focus of the policy is to ensure habitable, vulnerable and high-risk land uses are located away from areas of extreme bushfire risk.

When preparing or reviewing a local planning strategy, local government should refer to the Map of Bushfire Prone Areas to help determine any areas of land use conflict. Areas within and adjacent to remnant vegetation across the Shire of Kent are identified as Bushfire Prone.

In response to bushfire, no intensification of land use has been proposed within bushfire prone areas, except within Development Investigation Areas, where there is specific requirement for further investigation to take place (Development Investigation Area). The Shire currently manages most land surrounding townsites to reduce risk excessive fuel loads. On land already zoned for development

within the Scheme, but not developed, consideration of bushfire will be undertaken on a development by development basis in accordance with the provisions of SPP 3.7.

Objectives:

- To enhance the efficient and effective management and reduction of bushfire risk in the Shire in order to protect people, assets, the environment and other things valuable to the community.

Strategies:

- Manage current bushfire risk affecting land and assets with bushfire prone areas.
- Integrate bushfire risk into local planning decisions.

Actions:

- Prepare a bushfire risk mitigation plan in consultation with the Department of Fire and Emergency Services.
- List State Planning Policy 3.7 Planning in Bushfire Prone Areas in the local planning scheme to ensure future planning decisions reflect appropriate bushfire management requirements.

5.9. TOURISM

Encouraging tourism can provide an additional source of income and economy to the Shire. The Shire has opportunities to capitalise on existing tourism with Pingrup forming part of the 'Silo Art Trail' and the Hidden Treasures Drive Trail. A Great Southern Regional Trails Master Plan is currently being developed to encourage and identify tourism within the region. Shire partnerships with local industries provides a means to provide sustainable affordable accommodation for both seasonal workers during peak grain seasons and tourists in off seasons. Overnight stays increase expenditure within the townsites supporting the local economy which should be encouraged.

Objectives:

- Support and encourage the growth of tourism in appropriate locations.

Strategies

- Facilitate development that provides tourism experiences and accommodation in appropriate locations through the local planning framework.

Actions:

- Identify tourist land uses in the local planning scheme and identify these as incidental, permitted or discretionary in all relevant zones.
- Identify tourist land uses as incidental, permitted or discretionary on Shire land or reserves as identified on the Strategy maps and identify potential for workers accommodation to be developed on land where it provides a demonstrated benefit to the community.

6. Strategic Plan

6.1. STRATEGY MAPS

The Local Planning Strategy Maps (Maps 1, 2, 3) depict the land uses and actions (where applicable) described in sections 5 and 6.2.

6.2. LAND USE

The Local Planning Strategy provides for the long-term use, development and conservation of land through zones, reserves and other designations depicted on the Local Planning Strategy Maps (Figures 8, 9 and 10.

Some of the zones, reservations and other designations in the Local Planning Strategy are reflected in the accompanying Scheme. Others will need to be addressed by either future Scheme amendments. The following designations set out (in alphabetical order) the long-term intended uses or functions of each of the designations on the Local Planning Strategy Maps.

6.2.1. Civic and Community

Identifies land where there are or may be a diverse range of community and public facilities.

6.2.2. Development Investigation Areas (DIA)

The identification of land for 'development investigation' does not mean that the land is zoned, or will be rezoned for the future identified use, but rather the subject land will require detailed investigation and assessment to determine its suitability for that use. A scheme amendment will therefore be required which includes, inter alia, detailed site-specific assessment and structure planning incorporating sustainable design and servicing solutions.

6.2.3. Environmental Conservation

Identifies existing nature reserves where no changes are proposed.

6.2.4. General Industry

Areas designated as General Industry provide for industrial and other land uses where emissions and impacts may not be managed fully within the site boundary. Most of the general industry land identified is to provide an appropriate zoning for bulk grains storage facilities (Co-operative Bulk Handling).

6.2.5. Light Industry

Light Industry is designated for smaller light industry activities. It allows factory units to be developed. Caretaker housing could be provided for where it is ancillary to a light industry use.

6.2.6. Mixed Use

This designation provides for a mixed land use area for showroom, service trade centres, commercial (excluding a shop) some residential and some light and service industries.

6.2.7. Public Open Space

Public open space areas are essentially areas for formal recreation, playgrounds, health and wellbeing and serving the local community. In line with Liveable Neighbourhoods Policy, these areas incorporate drainage functions into the open space network to allow better connectivity of formalised active open space and permeability in the urban form.

6.2.8. Public Purpose

Public Purpose areas provides for a range of land uses which may be government land, Commonwealth, State and/or Local Government land uses, including public infrastructure, recreation activities, public services and facilities.

6.2.9. Residential

The Residential designation provides for a variety of dwelling densities across the Scheme Area. Densities of R20 are recommended to be retained, which provides development standards suited to the average lot size in the townsite. The area of new residential lots will be constrained by the minimum size required to accommodate an onsite effluent system on a property.

6.2.10. Rural Enterprise

A predominantly light industrial zone, generally suitable in rural areas, that provides for light industrial land uses, and an ancillary residential dwelling on one lot, with lot sizes in the order of one to four hectares.

6.2.11. Rural Residential

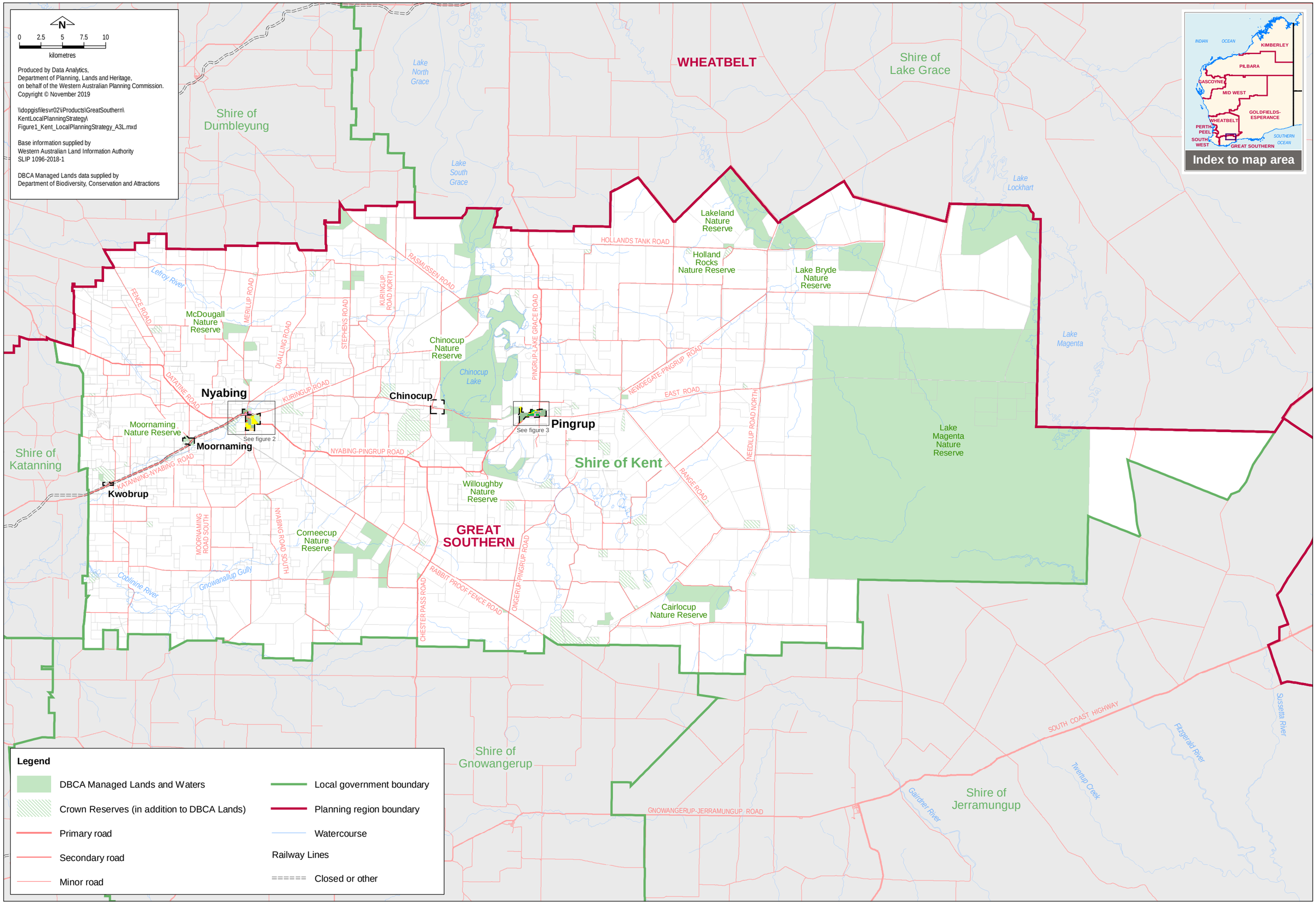
This designation provides for a spacious ‘lifestyle’ lot permitting one house per lot in a non-urban environment. Lots range in size from 1 hectare to 4 hectare depending upon the location of the particular Rural Residential area, and availability of water and other services. Limited rural pursuits may be permitted depending upon water availability and the possible effect on the amenity of the area. Small scale tourist related activities, such as Bed and Breakfast accommodation and Art and Craft Centres may also be considered suitable in these areas.

6.2.12. Rural Small Holdings

This designation provides for future horticultural activities with lots between 4 and 40 hectares.

Figure 8: Shire of Kent Local Planning Strategy Map 1

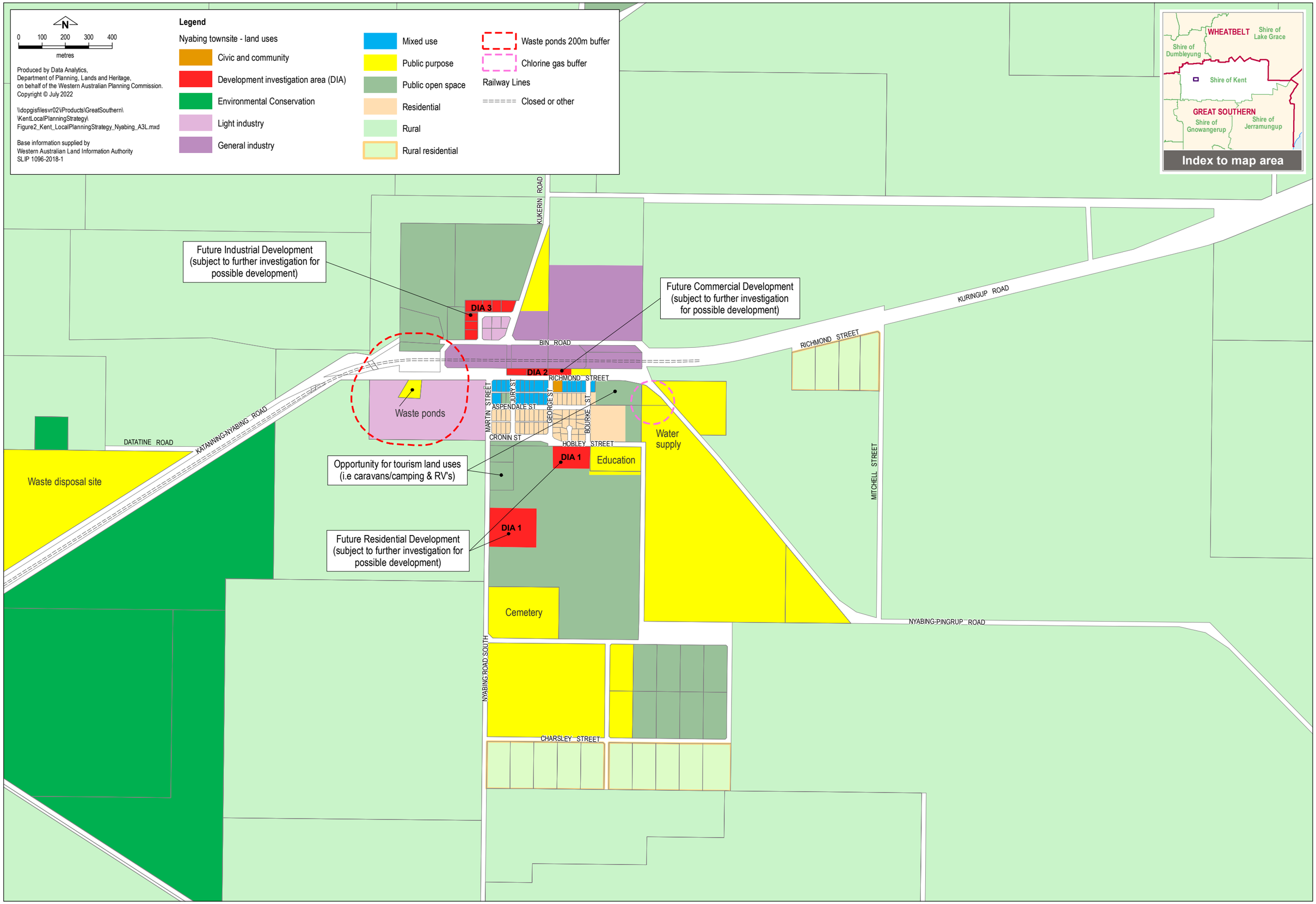
Shire of Kent Local Planning Strategy Map 1



Shire of Kent

Figure 9: Shire of Kent Local Planning Strategy Map 2 – Nyabing Townsite

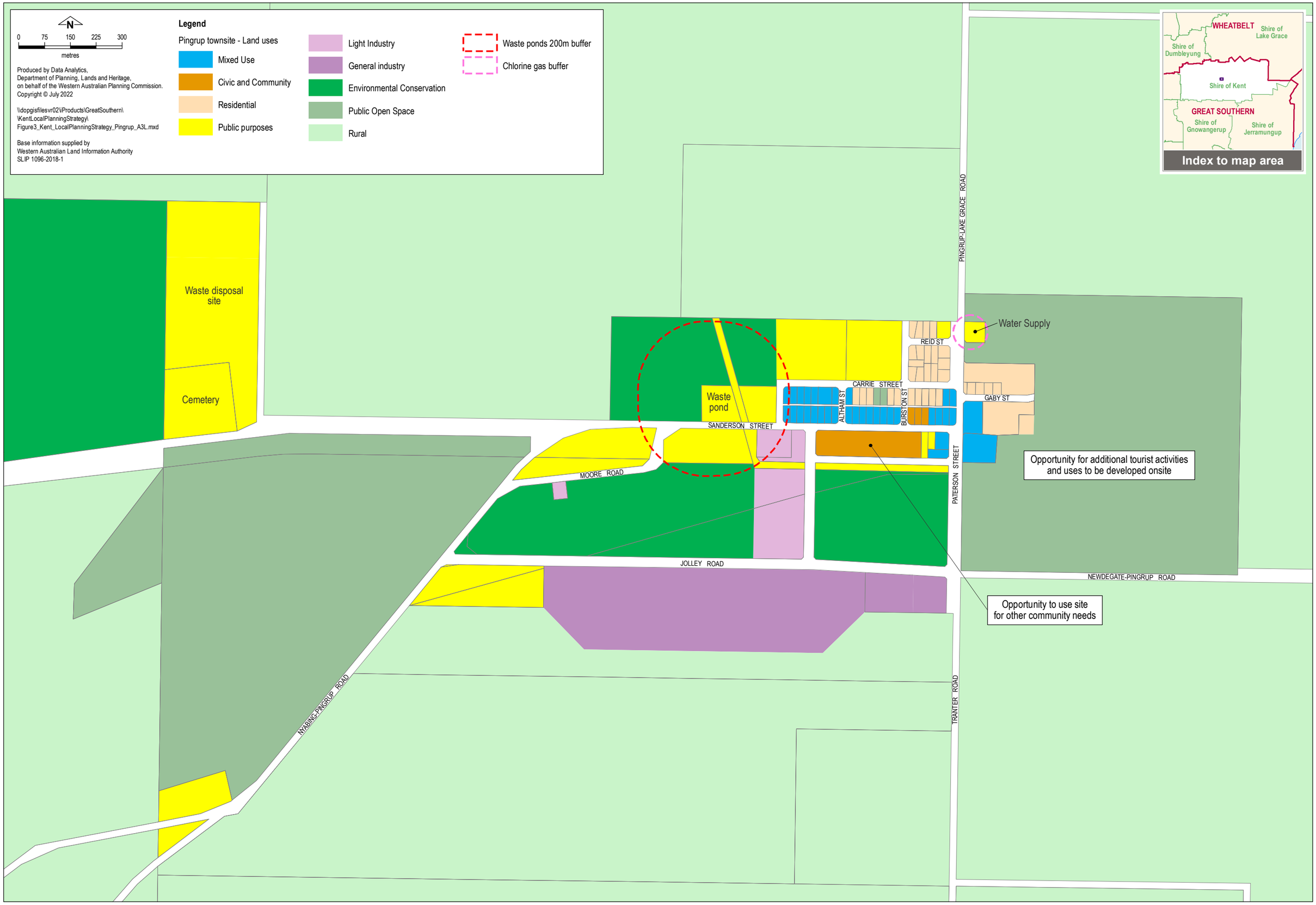
Shire of Kent Local Planning Strategy Map 2



Nyabing townsite

Figure 10: Shire of Kent Local Planning Strategy Map 3 – Pingrup Townsite

Shire of Kent Local Planning Strategy Map 3



Pingrup townsite

PART 2 – BACKGROUND INFORMATION AND ANALYSIS

1. Shire Context

The Shire of Kent is located in the Great Southern Region of Western Australia. It covers an area of approximately 6,552 square kilometres. The local government is bound by the Shire's of Dumbleyung to the north west, Lake Grace to the north east, Katanning to the west, Gnowangerup to the south and Jerramungup to the south east.

The Shire of Kent local government area is located approximately 320km south east of Perth and 200km north east of Albany. The Shire has two developed townsites, Nyabing and Pingrup and three gazetted undeveloped townsites, Kwobrup, Chinocup and Moornaming, all in crown ownership. The townsites of Nyabing and Pingrup are located 40km apart.

This Local Planning Strategy sets out the long-term planning directions for the Shire of Kent over the next 10 – 15 years. A local planning strategy is the framework for local planning and the strategic basis for the local planning scheme. It provides the interface between State and regional policies, strategies, and strategic development initiatives, and local planning. It may also be used by other agencies as a means by which economic, resource management, environmental and social issues may be strategically addressed.

1.1. STRATEGY AREA

The Local Planning Strategy applies to the whole of the Shire of Kent Local Government Area, as depicted in map 1. Until now, the Shire of Kent local planning scheme has only applied to the Nyabing and Pingrup townsites. This strategy is the first that has been prepared for the Shire and provides the rationale for the extension of the local planning scheme to cover the entire Shire of Kent local government area.

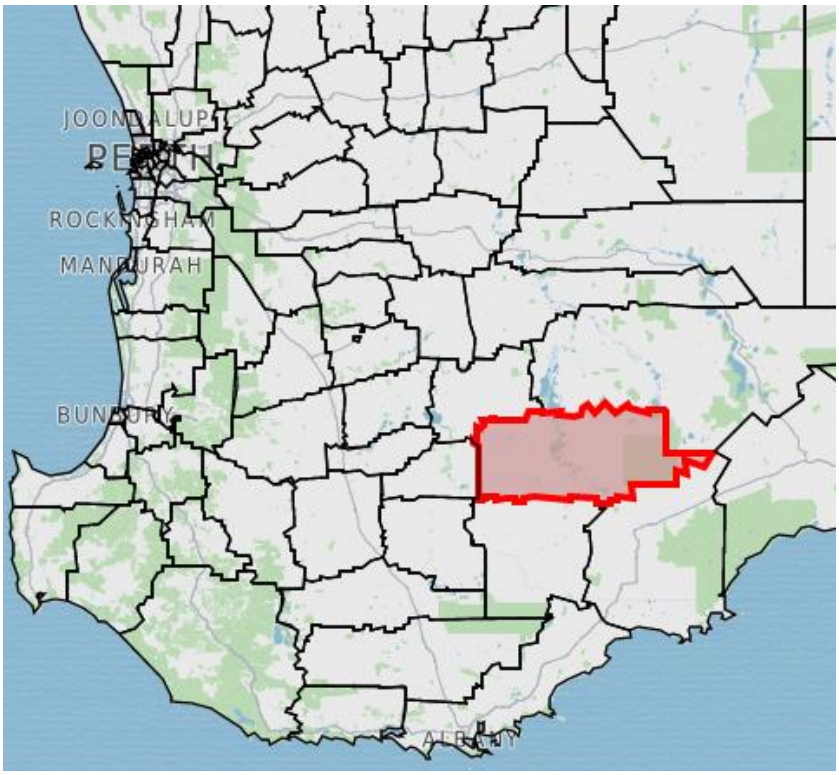


Figure 11: Shire of Kent Location Plan

Figure 12: Shire of Kent location within Great Southern Region

1.2. PURPOSE OF THE LOCAL PLANNING STRATEGY AND LOCAL PLANNING SCHEME

The local planning strategy is the framework for local planning and the strategic basis for local planning schemes. It provides the interface between regional and local planning and is increasingly being seen by other agencies as the means by which to address economic, resource management, environmental and social issues at a strategic level.

The strategy sets out the local government's objectives for future planning and development and includes a broad framework by which to pursue those objectives. The strategy will need to address the social, environmental, resource management and economic factors that affect, and are in turn affected by, land use and development. All Western Australian local governments are required by Regulation 11 of the *Planning and Development (Local Planning Schemes) Regulations 2015* to prepare a Local Planning Strategy that must:

a) Set out the long-term planning directions for the local government; and

b) Apply any State or regional planning policy that is relevant to the strategy; and

c) Provide the rationale for any zoning or classification of land under the local planning scheme'.

The operative Scheme for the Shire of Kent is currently Town Planning Scheme No.2 that was gazetted on the 5 November 1993. The existing Scheme No. 2 covers the gazetted town-sites of Nyabing and Pingrup only and excludes the rest of the Local Government area. This is unusual, with most local government boundaries within WA now being covered by a scheme which applies to the whole local government area.

It is an objective of the DPLH and a requirement of the Regulations that a new Local Planning Scheme be prepared within 3 years of the gazettal date (19 October 2015) of the Regulations to bring the Scheme up to date with the new 'model scheme' and 'deemed provisions' of the Regulations, a standard which all Schemes are to conform with.

The need for a Strategy and a new Scheme is also as a result of the following factors:

- The Local Government has limited ability to control development (including un-desirable development) on land outside the Scheme boundaries;
- There is uncertainty to landowners and the Shire as to what can be developed legally on land outside the scheme boundaries; and
- It is an objective of the Shire to identify potential land for 'Rural Living' around the town sites which is not currently possible for land outside of the Scheme boundary.

Therefore, it was identified, in consultation with the DPLH, that a Strategy be prepared to support the inclusion of the whole of the Shire of Kent local government area within a new Local Planning Scheme that complies with Schedule 1: Model Provisions for Local Planning Schemes, Schedule 2: Deemed provisions for Local Planning Schemes and Schedule 3: Legends used in Scheme.

The Local Planning Strategy has been formatted to comply with the WAPC's Local Planning Manual and is to interpret State and Regional land use and development policies and apply them to local circumstances.

1.3. RELATIONSHIP TO LOCAL PLANNING SCHEME

The Local Planning Strategy is the guiding document for review and preparation of the Local Planning Scheme No. 3. For development that falls within an approved and gazetted scheme map area, the Scheme is the primary means by which the Shire can ensure new development contributes towards fulfilling the aims of the Local Planning Strategy.

In situations where decision-making authorities exercise their discretion in considering a planning application, the Local Planning Strategy will be an important reference to inform deliberations

2. State and Regional Planning Context

An important role of this Local Planning Strategy (LPS) is to interpret and incorporate State and regional planning policies. Figure 13 provides an overview of the Western Australian planning framework and hierarchy

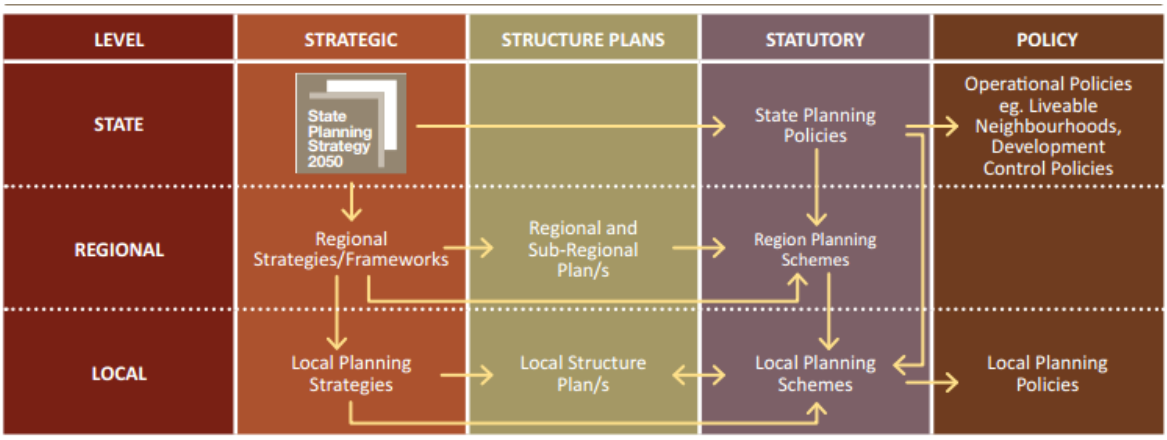


Figure 13: Overview of the Western Australian Planning System

The following section discusses the relevant State and regional planning policies applicable to the Shire of Kent.

2.1. STATE PLANNING STRATEGY 2050

The State Planning Strategy provides the strategic context for planning and development decisions throughout the State. Prepared by the Department of Planning on behalf of the Western Australian Planning Commission, the Strategy seeks to build strategic planning capacity and capability around a State planning vision for the State to achieve by 2050, which is 'sustained growth and prosperity'. This vision is underpinned by strategic principles, strategic goals and strategic directions that are important to the guide land use planning in accordance with the state vision.

It is based on a framework of planning principles, strategic goals and State strategic directions that respond to the challenges and opportunities that are drivers of change for the present and for the future land-use planning and development of Western Australia.

Figure 14 outlines the state planning strategy's references, principles, strategic goals and directions to achieving the vision.

VISION	REFERENCES	PRINCIPLES	STATE STRATEGIC GOALS	STATE STRATEGIC DIRECTIONS
SUSTAINED GROWTH and PROSPERITY	☐ **Liveability:** the place of choice for the brightest and best ☐ **Diversity:** offering a diversity of ecosystems; landscapes; enterprises; people and cultures ☐ **Connectivity:** connected to the rest of world as any other place ☐ **Collaborative:** enabling alignments that progress the State's sustained growth and prosperity	☐ **Community:** enable diverse; affordable; accessible; and safe communities ☐ **Economy:** facilitate trade; investment; innovation; employment; and community betterment ☐ **Environment:** conserve natural assets through sustainable development ☐ **Infrastructure:** ensure infrastructure supports development ☐ **Regional development:** building competitive and collaborative advantages ☐ **Governance:** building community confidence in development processes and practices	☐ **Global competiveness:** ☐ diversifying the economic base ☐ attraction and retention of capital ☐ global trade movements ☐ generating innovative ideas and enterprises ☐ **Strong and resilient regions:** ☐ embracing diverse opportunities ☐ creating liveable places ☐ building strong networks ☐ enabling collaborative advantages across and within regions ☐ **Infrastructure planning:** ☐ supporting economic diversity, ☐ resource-efficient services ☐ linking regional economic opportunities ☐ creating opportunities ☐ **Sustainable communities:** ☐ responsive to diverse needs ☐ attractive liveable environments ☐ connections between and within communities ☐ integrated and outcome-based planning ☐ **Conservation:** ☐ conserving biodiversity ☐ securing natural environments ☐ connecting ecosystems ☐ sustainable resource use	☐ **Economic development:** To facilitate coordinated and sustainable economic development ☐ **Resource economy:** To maintain and grow Western Australia as the destination of choice for responsible exploration and resource development ☐ **Education, training and knowledge transfer:** Western Australia becomes globally competitive as a creative, innovative, knowledge-based economy and workforce ☐ **Tourism:** To access and enhance a range of unique experiences ☐ **Agriculture and food:** To enable the State's food supply chain to meet the projected demands of its domestic and global food and fisheries markets ☐ **Remote settlements:** To maintain economic and community development through improved connectivity and cultural support ☐ **Land availability:** To ensure the sustainable supply, use and development of land ☐ **Physical infrastructure:** To coordinate physical infrastructure with development for community betterment ☐ **Movement:** To manage the movement of people, goods and services through an integrated network connected locally, regionally, nationally and globally ☐ **Water:** To support population growth and development by sustainably managing the availability and quality of water ☐ **Energy:** To enable secure, reliable, competitive and clean energy that meets the State's growing demand ☐ **Waste:** To ensure waste streams are managed as a resource ☐ **Telecommunications:** To enable access to affordable services and the digital economy on an equal basis ☐ **Social infrastructure:** To enable liveable, inclusive and diverse communities ☐ **Spaces and places:** Creating places and spaces that foster culture, liveability, enterprise and identity ☐ **Affordable living:** Affordable living through housing diversity and compact settlements ☐ **Health and wellbeing:** To encourage active lifestyles, community interaction and betterment ☐ **Environment:** To conserve biodiversity, achieve resilient ecosystems and sustainably manage the state's natural resources ☐ **Security:** To secure strategic economic, ecological and social assets

Figure 14: State Planning Strategy Summary

The WAPC uses the strategy to guide, shape and inform a hierarchy of state, regional and local planning tools and instruments within the Western Australian Planning system. Local development control is to be aligned to the states strategic goals and directions in the public interest.

The Shire of Kent Local Planning Strategy has been prepared to align with the vision, principles, strategic goals and directions of the State Planning Strategy. The Shire of Kent is identified as within the South West Sector of the State, identified as an area with intensive cropping and livestock with Katanning as the nearest regional sub-centre.

2.2. STATE SALINITY STRATEGY

The State Salinity Strategy (State Salinity Council 2000) sets out a strategy to manage salinity and outlines the management options and tools that are available to landowners in agricultural regions. It highlights the need for urgent, integrated and large-scale intervention on hydrological systems are required if the Strategy is to be successful.

The objective of the strategy is to implement government initiatives and encourage private landowners to implement initiatives which will slow or prevent the process of salinity.

The Strategy primarily encourages diversifying of farming practices to include perennial and/or summer crops and outlines an importance on the retention of native vegetation and large-scale revegetation with deep roots.

2.3. STATE PLANNING POLICIES

State Planning Policies are prepared and adopted by the WAPC under statutory procedures set out in the Planning and Development Act 2005. The WAPC and local governments must have 'due regard' to the provisions of State Planning Policies when preparing or amending local planning schemes and when making decisions on planning matters. The State Administrative Tribunal is also required to take account of State Planning Policies when determining appeals. State Planning Policies by specific reference in the text of a scheme can form part of that document.

The State Planning Policies are set out in a hierarchy as defined in State Planning Policy No. 1: State Planning Framework Policy (SPP 1). Collectively, they provide the framework for planning policy in Western Australia. The WAPC assesses local government planning schemes against the SPP 1 to ensure consistency with State and regional policies. Therefore it is essential that the local planning strategy and planning scheme have regard to the following key elements of particular relevance to the Shire of Kent.

This section identifies those State Planning Policies most directly relevant to planning within the Shire of Kent and highlights the key areas of each policy that will require implementation at the local planning level. The most directly relevant policies are:

2.3.1. SPP1 State Planning Framework Policy

The 'State Planning Framework' is a Statement of Planning Policy made by the WAPC under the Planning and Development Act 2005. It is an overarching state planning policy which includes general principles for land use planning and development in relation to environment, community, economy, infrastructure and regional development. In addition the Framework Policy gives statutory effect to regional strategies, regional and sub-regional structure plans as well as strategic and operational policies. It applies the objectives of the State Planning Strategy into smaller documents termed 'State Planning Policies' which provide greater guidance for development to achieve the strategy objectives. These apply throughout Western Australia. The State Planning Framework is the overarching Statement of Planning Policy and is therefore, numbered SPP1.

Statements of Planning Policy dealing with key sectors of the framework (environment and natural resources, urban growth and settlement, the economy and employment, transport and infrastructure, and regional development) follow and are numbered SPP2-SPP6. Supplementary policies are numbered as subsets of the sector policy.

The State Planning Framework is a central framework providing a context for decision making on land use and development. It informs the WAPC, local government and others involved in the land use planning process on those aspects of State level planning policy which are to be taken into account to ensure integrated decision making across all spheres of land use planning.

The WAPC and local governments must have due regard to the provisions of the framework in preparing local planning schemes and making decisions on planning matters.

The framework is divided into two parts:

- Part A – General Principles for Land Use and Development
  This part comprises 5 principles derived from the State Planning Strategy that form the basis for all other provisions of the framework. As well, they act as the underlying principles for all State and regional plans, policies and strategies.

  The 5 principles are:

  - Environment - To protect and enhance the key natural and cultural assets of the State and deliver to all West Australians a high quality of life which is based on environmentally sustainable principles.
  - Community - To respond to social changes and facilitate the creation of vibrant, safe and reliant communities.
  - Economy - To assist in the creation of regional wealth, support the development of new industries and encourage economic activity in accordance with sustainable development.
  - Infrastructure - To facilitate strategic development by providing for efficient and equitable transport and public utilities.
  - Regional Development - To assist the development of regional Western Australia by taking account of the special assets and accommodating the individual requirements of region.

- Part B – State and Regional Provisions
  This part lists plans, policies, and strategies that have been endorsed by the WAPC which form part of the framework.

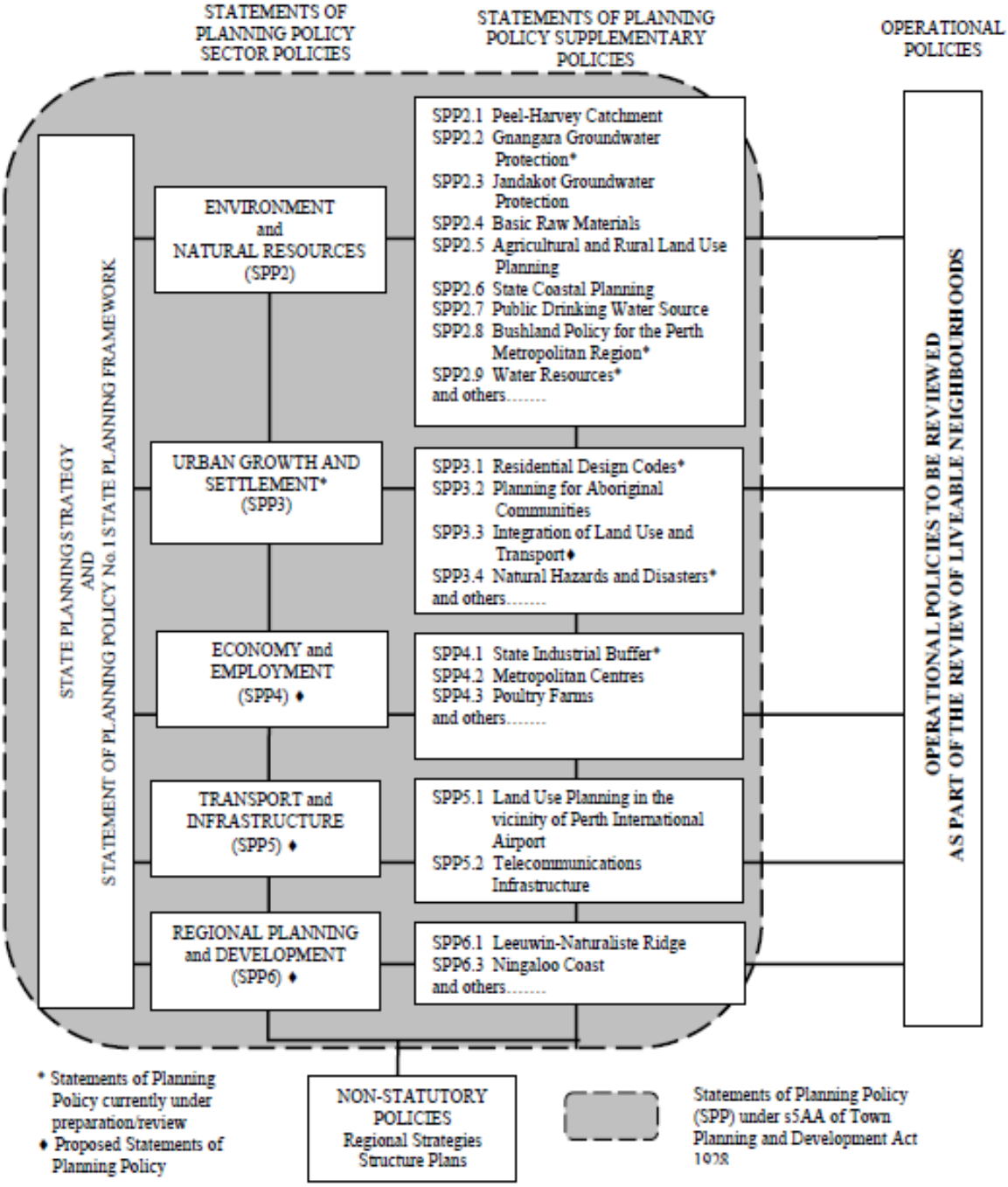


Figure 15: State Planning Policy Framework

2.3.2. SPP2 Environment and Natural Resources Policy

This policy sets out the principles and considerations that will be applied by the Shire of Kent to integrate environment and natural resource management within broader land use planning and

decision making, to protect, conserve and enhance the Shire's natural environment, and promote and assist in the sustainable use and management of the Shire's natural resources.

2.3.3. SPP2.5 Rural Planning

SPP 2.5 applies to rural land and rural land uses, where the intent of the policy is to protect and preserve rural land assets due to the importance of their economic, natural resource, food production, environmental and landscape values. Ensuring broad compatibility between land uses is essential to delivering this outcome. The intent of this policy is therefore to protect rural land and encourage a diversity of compatible rural land uses.

The objectives of the policy are to:

(a) Support existing, expanded and future primary production through the protection of rural land, particularly priority agricultural land and land required for animal premises and/or the production of food.
(b) Provide investment security for existing, expanded and future primary production and promote economic growth and regional development on rural land for rural land uses.
(c) Outside of the Perth and Peel planning regions, secure significant basic raw material resources and provide for their extraction.
(d) Provide a planning framework that comprehensively considers rural land and land uses and facilitates consistent and timely decision-making.
(e) Avoid and minimise land use conflicts.
(f) Promote sustainable settlement in, and adjacent to, existing urban areas.
(g) Protect and sustainably manage environmental, landscape and water resource assets

To meet the objectives, SPP2.5 provides that strategies and schemes should:

- Make provision for change of use from rural to other uses such as rural living which is consistent with SPP2.5.
- Identify areas of known significant geological supplies and important mineral and petroleum resources.
- continue to promote rural zones in schemes as flexible zones that cater for a wide range of land uses that may support primary production, regional facilities, environmental protection and cultural pursuits.
- support small scale tourism opportunities, such as bed and breakfast, holiday house, chalet, art gallery, micro-brewery and land uses associated with primary production, within the rural zone
- Support the establishment of environmental corridors.
- Beyond its principle function for primary production, identify land for public purposes, natural resource management, biodiversity conservation and protection of landscape and views.
- Identify key regional transport routes for transporting agricultural products, basic raw materials, mineral products and other resources.
- in rural zones, limit the introduction of land uses that may constrain existing or potential future rural land uses.
- only categorise land uses as permissible in rural zones if they are consistent with the objectives of this policy and a local planning strategy.

SPP2.5 makes provision for small rural communities to have rural enterprise zones, which combine light industry and housing, provided they are carefully planned, in general proximity to urban areas, serviced and have design features that address buffers and amenity. Rural Enterprise zones are predominantly a light industrial zone, generally suitable in rural areas, that provides for light industrial land uses, and an ancillary residential dwelling on one lot, with lot sizes in the order of one to four hectares.

2.3.4. SPP2.9 Water Resources

This policy aims to protect, conserve and enhance water resources that have significant economic, social, cultural and/or environmental values. It also aims to assist in ensuring the availability of suitable water resources to maintain living environments, while maintaining or improving water resource quality and quantity.

The Better Urban Water Management Guidelines (October 2008) document produced by the WAPC was designed to facilitate better management of urban water resources by ensuring an appropriate level of consideration is given to the total water cycle at each stage of the planning process. It clarifies the process for better urban water management as to when various plans should be prepared and submitted to mitigate risks in subdivisions. It also provides guidance on the implementation of the State Planning Policy 2.9.

Draft State Planning Policy 2.9 and Guidelines (advertised 2021) once gazetted, will streamline and simplify the current water-related policy framework, consistent with the State Government's current planning reform agenda, and will supersede a number of existing policies, including the Government Sewerage Policy and the Better Urban Water Management Guidelines. Proposals should consider the draft SPP and Guidelines to ensure appropriate management measures to achieve optimal water resource and development outcomes.

2.3.5. SPP 3 Urban Growth and Settlement

This policy sets out the principles and considerations which apply to planning for urban growth and settlement in Western Australia. The objectives of the policy are to manage sustainable growth and promote well planned centres.

SPP 3 outlines that Local Strategies should seek to identify sufficient land to meet population and housing demand for at least a 10-year period and should assess housing demand and the type of additional housing for which they should plan. In particular the policy outlines that Rural Residential land should not conflict with future urban expansion.

Future urban and Rural Residential land will be assessed in accordance with the principles of this policy.

2.3.6. SPP3.4 Natural Hazards and Disasters

This policy is based on the premise that the most effective strategy for reducing the long-term impact of natural hazards is to integrate hazard mitigation into the land use planning process. Natural hazards include flood, severe storms and cyclones, storm surge, tsunami, bush fires, landslides and earthquakes.

The policy's objectives are to; include planning for natural disasters as a fundamental element in the preparation of all statutory and non-statutory planning documents; and through use of these planning instruments, to minimise the adverse impacts of natural disasters on communities, the economy and the environment.

2.3.7. SPP3.7 Planning in Bushfire Prone Areas

SPP3.7 seeks to guide the implementation of effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure. It applies in areas designated as 'bushfire prone'.

The Shire has areas designated as 'bush fire prone', although given the relatively cleared nature of land for agricultural purposes is mostly limited to reserves or areas or remnant vegetation in agricultural areas. SPP3.7 recommends that a Bushfire Hazard Level assessment be prepared for strategic planning proposals, identifying land with extreme or moderate hazard levels to assist in informing the suitability of land contained within strategic planning proposals for future subdivision and development.

Given that Local Planning Strategy does not identify new locations for development it is considered that a Bushfire Hazard Level Assessment is not required to support the Local Planning Strategy or Scheme. Development Investigation Areas are subject to further investigation prior to rezoning being considered which allows for consideration of bushfire at a strategic level at such time. Any new Rural Living areas or development which proposes intensification will be required to give consideration to the provisions of SPP3.7 at the scheme amendment, subdivision and development stage.

2.3.8. SPP3.5 Historic heritage Conservation

This policy sets out principles of planning for conservation and protection of the places of historic heritage. The policy does not apply to Aboriginal heritage (except where Aboriginal heritage places or areas are of cultural heritage significance or to natural heritage (except where natural heritage forms part of a place of historic cultural heritage significance), as these are protected by other legislation. Aboriginal heritage is subject to its own legislation.

The policy provides that regard to heritage places and areas should be given in formulating planning schemes and strategies with care given to minimise the extent to which land use, zoning and other planning controls, conflict with, or undermine heritage conservation objectives.

2.3.9. SPP5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning

This policy aims to promote a system in which sustainable land use and transport are mutually compatible.

The objectives of this policy are to: protect people from unreasonable levels of transport noise by establishing a standardised set of criteria to be used in the assessment of proposals; protect major transport corridors and freight operations from incompatible urban encroachment; encourage best-practice design and construction standards for new development proposals and new or redeveloped transport infrastructure proposals; facilitate the development and operation of an efficient freight network; and facilitate the strategic co-location of freight handling facilities.

It should be noted that the policy and these guidelines apply to proposals for new noise-sensitive developments, new railways or major roads, major redevelopments of existing railways or major roads, and new freight handling facilities. The policy and guidelines do not apply to noise from existing railways or major roads in the vicinity of an existing noise-sensitive land use, or an increase in traffic along an existing railway or major road in the absence of a major redevelopment

2.3.10. SPP 7 Design of the Built Environment

This policy is the foundation of the Design WA suite of policies, and the lead policy that elevates the importance of design quality across the whole built environment. This State Planning Policy includes 10 principles for good design and establishes the framework for integrating design review as a part of the evaluation process.

2.3.11. SPP 7.3 Residential Design Codes

The Residential Design Codes detailed in this policy assist with planning for residential development. This policy is incorporated in all Western Australian local planning schemes; requiring councils to take into account its content when considering approvals for residential development.

The R-Codes allow for a local government to adopt local planning policies addressing any of the design elements in recognition of a regional circumstance.

2.3.12. Development Control Policies and Operational Policies

The WAPC's operational or development control policies sit within the structure established under the State Planning Strategy and State Planning Policy No.1 State Planning Framework. Examples of development control policies that are relevant to planning within the Shire include:

- DC1.1 Subdivision of land – General principles
- DC1.2 Development control – General principles
- DC 1.3 Strata titles
- DC 2.2 Residential subdivision
- DC 2.3 Public Open Space in Residential Areas
- DC 3.4 Subdivision of rural land
- Liveable Neighbourhoods.
- Rural Planning Guidelines

A complete list and the full texts of State Planning Policy, development control policies and associated planning bulletins can be found online at www.dplh.wa.gov.au.

3. Other Relevant Strategies, Plans and Policies

Given the limited land uses pressures within the northern part of the Great Southern no regional planning schemes or structure plans have been prepared which affect the Shire of Kent. Notwithstanding this there are a number of published documents which the local government will have regard to in the preparation, amendment and administration of the Local Planning Strategy and Scheme including:

- Government Sewerage Policy 2019
- Great Southern Workforce Development Plan 2013-2016
- Great Southern Regional Investment Blueprint
- EPA Guidance Statement No.33 – Environmental Guidance for Planning and Development (2008)
- Wheatbelt Region parks and reserves management plan (2021)

4. Local Planning Context

The Local Planning Strategy is to reflect the way in which all land within the Shire will be used and developed or protected, leading to the achievement of the vision and fulfilment of community aspirations and needs as expressed in the Shires strategic plan.

It also provides the Shire with an opportunity and a clear direction to interpret and apply State and regional planning policies to local circumstances.

4.3. SHIRE OF KENT COMMUNITY STRATEGIC PLAN 2017-2027

The Strategic plan outlines the community's visions and aspirations to 2017 and reflected these in desired outcomes the Shire will strive to deliver.

The vision of the Shire is:

> "A community that places a high value on essential services; communications and technology infrastructure, improved social connectedness; community involvement and participation, a need to retain and grow the population, and to strengthen economic prosperity through the diversification of the local economy.
>
> The Shire in the future is described as:
>
> - A place with a sense of community, one that is thriving, vibrant, engaging and connected.
> - A place that nurtures its youth and aging population.
> - A place that has a range of services and facilities meeting our needs.
> - A place that is growing and has employment opportunities, through local industry, which is based on the Shires local comparative advantages."

The Mission is to “provide leadership, direction and opportunities for the community”.

A strategic objective has been developed for each of the four key themes of the community interest. Desired outcomes for each objective have been determined and strategies to meet the objectives established. This occurred after considering future demographics and the Shire’s current and future resources and capacity.

	Objectives	Outcomes
ECONOMIC	*Support growth and progress, locally and regionally*	• Growth in business and/or employment opportunities • Increased tourism activity • An effective well maintained transport network • Agriculture opportunities maintained and developed
SOCIAL	*To provide community facilities and promote social interaction*	• Expansion of youth services and facilities • Maintaining a healthy and safe community • Existing strong community spirit and pride to be fostered, promoted and encouraged • Cultural and heritage diversity is recognised • A broad range of quality education services and facilities servicing the region
ENVIRONMENT	*Conserve, protect and enhance our natural and built environment*	• A preserved natural environment • Effective waste services • Efficient use of resources • A well maintained built environment
CIVIC LEADERSHIP	*Continually enhance the Shire’s organisational capacity to service the needs of our community*	• An efficient and effective organisation • An employer of choice

Figure 16: Key Themes, Objectives and Outcomes (Shire of Kent Community Strategic Plan 2017:2027)

The following strategies are identified which are most relevant to this local planning strategy:

- Attract new industry, business, investment and encourage diversity whilst encouraging growth of local business.
- Continue to lobby for improved telecommunications infrastructure.
- Investigate the provision of short term seasonal worker and longer-term accommodation.
- Promote and develop tourism and maintain local attractions.
- Upgrade Caravan Parks and Camping Grounds.
- An effective well-maintained transport network
- Maintain and improve road network in line with resource capacity.
- Support development of agricultural services.
- Develop and implement a youth services and facilities strategy.
- Promote and advocate for age appropriate and community housing.
- Support the continuing provision of community services and facilities.
- Provide community facilities (eg library/recreation).

- Maintain and enhance heritage assets.
- Encourage cultural activities.
- Advocate for increased education facilities for the region.
- Advocate for and support maintaining our local education services.
- Conserve, enhance, promote and rehabilitate the natural environment.
- Support the provision of waste services.
- Increase resource usage efficiency.
- Improve and maintain built environment
- Seek opportunities for rural residential and industrial land release.
- Plan for Cemetery upgrades.
- Plan for entry statement upgrades.
- Plan for the upgrade of town footpaths.

The LPS can assist with achieving strategies by ensuring adequate land supply and planning provisions support development align with the Community Strategic Plan 2017-2027.

4.2. LOCAL HERITAGE SURVEY

The Shire adopted a Municipal Heritage Inventory (MHI) on 12 July 1997 to comply with Section 45 of the then *Heritage of Western Australia Act 1990* (replaced by the *Heritage Act 2018*, where an MHI is now called a Local Heritage Survey). A total of 62 places and structures identified as being of cultural heritage significance by the local government and community. A heritage list adopted pursuant to the scheme has three listed sites.

The Shire of Kent does not currently have any sites listed on the State Heritage Register.

5. Shire of Kent Local Profile

5.1. BUILT ENVIRONMENT AND SETTLEMENT

5.1.1. Settlement Hierarchy Pattern

There are two established townsites within the Shire; Nyabing and Pingrup. There are three gazetted undeveloped townsites at Kwobrup Chinocup and Moornaming mostly contained within State ownership and created during settlement as points of water and food supply.

5.1.2. Population and Housing

Population

The population for the Shire of Kent, at the 2016 census was 559 persons. The changes in population for the Shire of Kent Local Government Area from 2001 to 2016 are shown in *Table 1* below.

Table 1: Population Shire of Kent 2001 - 2016 (ABS 2019)

	Population	**% change p.a.**
2001	625	
		-1.632
2006	574	
		-0.4878
2009	560	
		-1.1071
2011	529	
		-.0378
2013	528	
		5.87
2016	559	

The towns of Nyabing and Pingrup are the centres of population within the Shire, although statistics are only available at the State Suburbs Level (Nyabing and Pingrup). At the time of the 2016 census Pingrup had a population of 264 persons, and Nyabing of 296 persons. The Shire of Kent Strategic Community Plan 2017-2027 indicates the townsites have a population of approximately 120 in Nyabing and 80 in Pingrup.

The Shire of Kent is predicted by the Department of Planning's WA Tomorrow Population Report, in Bands A to D to experience a decline in population, although statistics in census over the past 10 years indicate the population has remained relatively static within the Shire. WA Tomorrow includes a forecast range (A to E), indicating five probable futures. A and B contain the lower forecasts, C is the median forecast and D and E represent the higher forecasts. A positive growth is forecast in band E of 0.37%. Based on a 0.37% forecast growth in Band E minimal growth is anticipated.

Persons	Band				
Year	A	B	C	D	E
2011	530	530	530	530	530
2016	470	490	510	520	550
2021	420	450	470	490	530
2026	370	430	460	500	560

Average Annual Growth Rate[1]

Year	Band				
	A	B	C	D	E
2016	-2.37%	-1.56%	-0.77%	-0.38%	0.74%
2021	-2.30%	-1.62%	-1.19%	-0.78%	0.00%
2026	-2.37%	-1.38%	-0.94%	-0.39%	0.37%

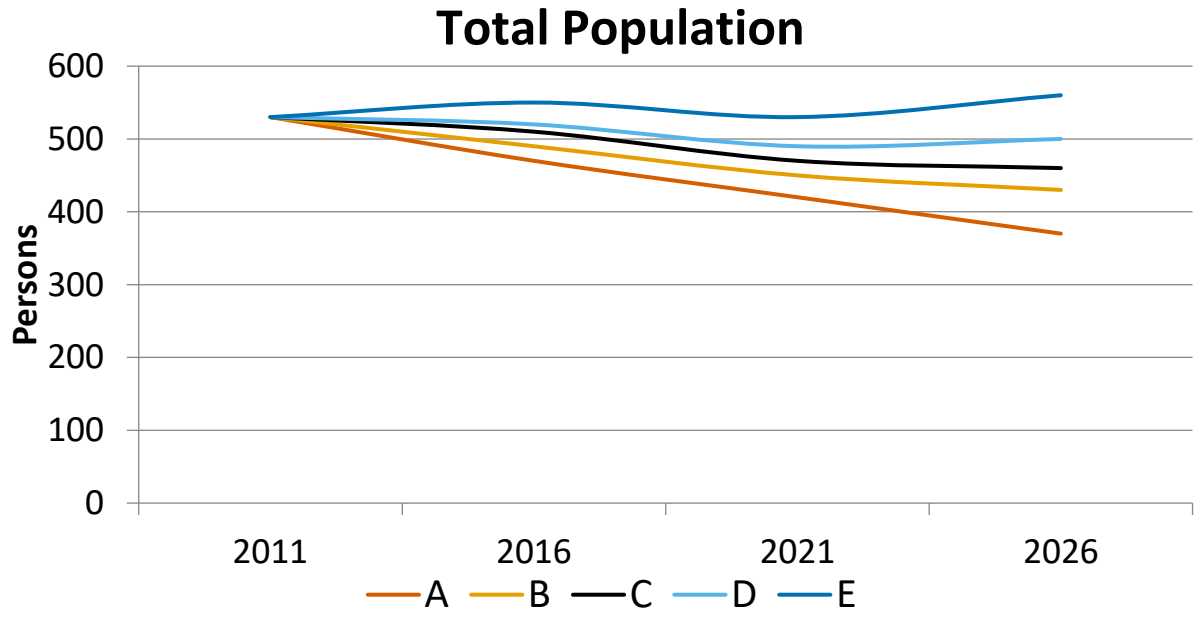


Figure 17: WA Tomorrow Population Band Forecasts

A projected decrease in rural population for Kent and surrounding local government areas of Gnowangerup, Jerramungup, Kent and Kojonup is representative of the trend towards consolidation of agricultural landholdings into larger lots through rationalisation leading to a lower and more isolated

rural population. The ABS Population Projections report states there will be *"further concentration of Australia's population within the capital cities*", it is envisaged that regional centres will also grow to the detriment of rural areas. Where the population contracts in these local government areas it is likely to lead to the loss of services and infrastructure (both soft and hard) through both Government and private interests rationalising services.

A decline in population could have significant local impacts in terms of a lower labour supply, vacant dwellings, reduction in social capital and result in services such as schools and other community services not being fully utilised threating their viability. A reduction in services further threatens retaining population when basic services are not available.

Expansion and value adding to the Shire's traditional farming industry together with diversification into other industries should be encouraged as a way to encourage employment, population growth and retention. Retaining community and basic facilities within the Shire, and provision of a variety of lifestyle options and housing will be essential to attracting and retaining population.

Age Structure

The 2016 census showed that the median age was 39 compared with 36 years for the whole of the state. The age structure of the population for the Shire is shown in Figure 18.

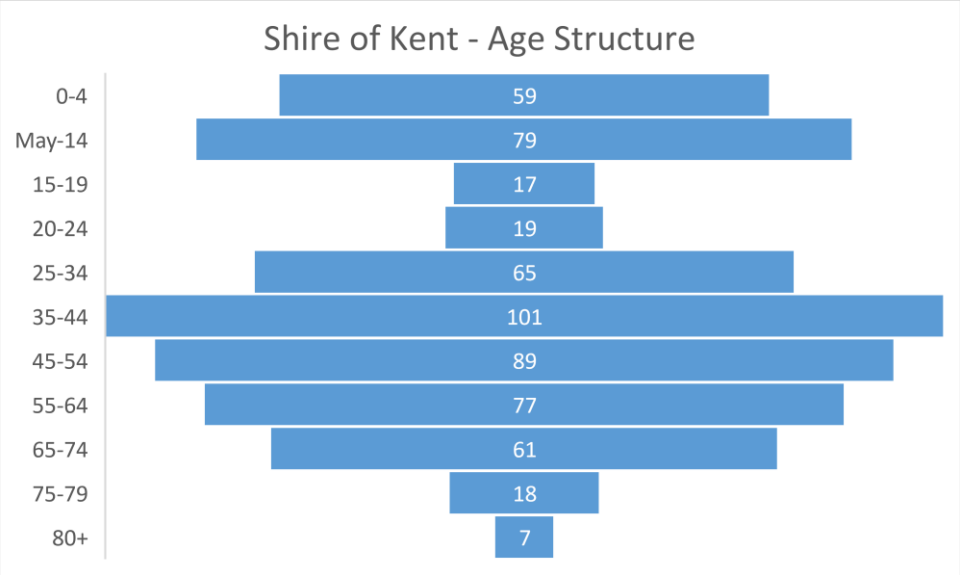


Figure 18: Age Structure Shire of Kent (ABS 2016)

There statistics show a decline in the 15-24 years aged groups of youth and young adults. This is representative of the lack of secondary schooling available in the Shire and represents population leaving the Shire for either educational or alternative employment opportunities in centres which can offer these services. There are also limited facilities for aged care within the Shire and can attribute to the reduction of population over 65 within the Shire.

The provision of facilities, improved telecommunications and provision of a variety of services and lifestyle options to cater for different lifestyles and ages could encourage the retention of youth and aged care population within the Shire and should be encouraged through land use planning.

Household size and composition

At the 2016 census the average household size in Kent was 2.5 persons per household of 295 occupied dwellings within the Shire, which is consistent with the state average. A total of 71 private dwellings were counted as unoccupied and are likely to be older farmhouses which are no longer required due farm amalgamations.

In 2016, most households were 'family households', with or without children (73%), 27% were single or lone person households. The dominant housing type was separate detached housing (93.2%). Household composition is important in consideration of residential densities and encouraging provision of dwelling types to suit the population.

Existing residential zoned land within the Pingrup and Nyabing town sites is identified as an 'R20 density'. Future demand for housing is likely to be for single detached dwellings and an R20 coding is adequate for the continued provision of single detached housing and/or grouped housing should there be demand for single/aged housing within the town sites. Furthermore, dwellings in the town-site are serviced by onsite effluent with overflow water directed to septic ponds for re-use and smaller lot sizes permitted by a higher density would not be appropriate.

Pingrup townsite

Within the Pingrup town-site all existing residential lots are developed. Whilst population growth is forecast to be minimal or in decline, ensuring that the town is development ready should there be demand for additional dwellings and/or aged care land uses is essential in capitalising on opportunities for population growth and retention and meeting the objectives and vision of the Strategy.

There is undeveloped land to the east of Patterson Road in proximity to servicing which can cater for any future residential demand. Demonstrating that the site is capable of development will be a key factor for residential development, although is factor for development anywhere within the townsite given the flat nature of land. Land to the north of Gaby Street in proximity to this site was recently subdivided giving indication that the site can be developed.

Provision for additional residential development could also be provided by zoning properties 'Mixed Use', providing flexibility of land uses to meet needs of the town whilst allowing additional opportunity for residential development.

Nyabing townsite

The Nyabing town site contains approximately 10 vacant lots in residential areas. Whilst population growth is forecast to be minimal or in decline, ensuring that the town is development ready should there be demand for additional dwellings and/or aged care land uses is essential in capitalising on opportunities for population growth and retention and meeting the objectives and vision of the Strategy.

There is additional land to the east of Bourke Street in proximity to servicing and facilities (schools and open space etc) which has potential to cater for any future residential land use demand within the town-site. This site has Aboriginal heritage value, which requires further investigation at development stage. Should development not be consistent with the Aboriginal heritage values of the site, alternate sites on higher ground (to ameliorate any potential salinity issues) in Reserve 17930 (sports ground) could be investigated as suitable location for further residential development.

Provision for additional residential development could also be provided by zoning properties 'Mixed Use', providing flexibility of land uses to meet needs of the town whilst allowing additional opportunity for residential development.

5.2. RURAL LIVING

Rural living development encompasses Rural Residential and Rural Smallholding. SPP2.5 defines Rural Residential as lots of generally one to four hectares in size generally with scheme water and power supply and rural smallholding as lots 4 to 40ha.

There are approximately 20 Rural Residential zoned lots located within 1 km east and south of the town of Nyabing. Approximately 30% of lots zoned in Town Planning Scheme No. 2 have been developed with dwellings. Although some of these lots are located on land which is Reserve land adjoining the go-kart track and may not be suitable for development, and there are landowners with multiple lots (i.e house on one lot and own adjoining vacant lot) indicating that there may be a desire for larger rural living landholdings and that vacant land is not readily available for development.

There are no Rural Residential lots in proximity to the town of Pingrup.

Whilst there is not a substantial growth in population expected within the Shire or townsites, the retention of population is an issue, and a diversity of housing and lifestyle options can facilitate the retention of population. It is important that the Shire is development ready and able to take provide opportunities for alternate lifestyles if there is demand.

The Strategy shall make provision for Rural Living by setting out the circumstances for when it may be supported.

5.3. CULTURE AND HERITAGE

5.3.1. Aboriginal Heritage

The *Aboriginal Heritage Act 1972* (AHA) provides for the identification and protection of significant Aboriginal objects and sites throughout Western Australia. There are 18 sites registered under the AHA within the Shire. All sites of aboriginal significance, whether recorded or not, are protected under the AHA. The AHA has recently been reviewed and will be replaced by the *Aboriginal Cultural Heritage Act 2021*, and new regulations, statutory guidelines and operational policies will be developed during the transitional period.

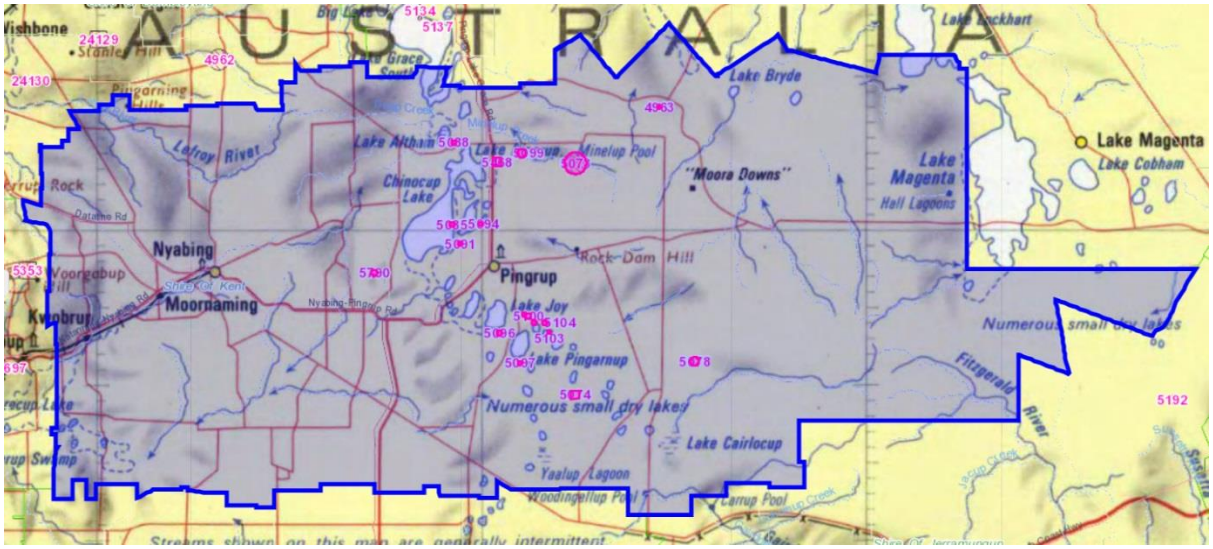


Figure 19: Registered Aboriginal Sites (pink circles) (Department Planning, Lands and Heritage 2019)

5.3.2. Native Title

The *Native Title Act 1993* recognises in Australian law that some Aboriginal people have rights in relation to lands and waters because they had those rights before European settlement. For native title to be recognised, Aboriginal groups must among other things, show that they have maintained their traditional connection to the land and water.

The Western Australian Government has recently reached agreement with the Noongar People to settle native title claims across the South West of the State, which includes the transfer of lands comprising a mix of Crown Land, unmanaged reserves and Aboriginal Lands Trust properties to the Noongar Boodja Trust to be held on behalf of the Noongar People. First land transfers have been made to the Noongar Boodja Trust, and the agreement is was finalised by consent on 1 December 2021. Land will continue to be transferred to the Trust over the five years of implementation, and it is anticipated the Noongar Regional Corporations will be appointed in mid 2022.

5.3.3. European Settlement

The Shire was first established in 1923 as the Kent Road Board, with a name change to the Nyabing-Pingrup Road Board in 1955. This name was retained until 1961 when it became the Shire of Nyabing - Pingrup, with a further name change in 1973 the current name of Shire of Kent. The name 'Kent' apparently comes from the commissariat officer of Dr. T Wilson's expedition of 1829. The Shire incorporates the two towns of Nyabing and Pingrup, with Nyabing being officially gazetted on 24 December 1912, and Pingrup on 9 May 1924. The first white men to visit the area were sandalwood cutters with the first lease of 2000 acres being taken around Cairlocup lagoon by Jon Hassell in 1873.

The Shire of Kent Municipal Heritage Inventory (MHI) (Local Heritage Survey), a list of places that have cultural heritage significance to the locality or may have in the future was prepared on 12 July 1997 to comply with Section 45 of the *Heritage of Western Australia Act 1990 (*now *Heritage Act 2018)*. 62 places and structures identified as being of cultural heritage significance by the local government and

community are listed in the MHI. There are no sites within the Shire of Kent that are listed on the State Heritage Register.

It is a requirement of the *Heritage Act 2018* that a Local Heritage Survey be maintained by the local government and a Heritage List adopted under clause 8, Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015.*

The inclusion of a place on a heritage list requires provides a statutory requirement for the consideration of development and it's impacts on the cultural heritage significance of a place.

An action of the Strategy to ensure conservation of places of cultural heritage significance to the Shire is to undertake a review of the MHI and Heritage List.

5.4. ECONOMY AND EMPLOYMENT

5.4.1. Economy

The towns of Nyabing and Pingrup are centres of a farming community that produces grains, livestock and limited extractive industries such as gypsum, dolomite and clay. The economy is dominated by agricultural production and services which support this economy (i.e rural industry such as Co-operative Bulk Handling, local industry, local retail conveniences, government and community services to support the support the population).

Agriculture is the largest economy sector in the Great Southern region with the gross value of production estimated at $743 million (2009-10) representing about 13% of the gross value of agricultural production in WA. While the trend in the dollar value of agricultural production has been rising over time, employment in the agricultural sector has fallen (DLGRD, 2003). Between 1996 and 2001, the number of farmers and farm managers in the region fell by 12.2%. This may reflect improved efficiency and a range of other economic pressures leading to an increase in farm sizes.

The economy of the Shire is consistent with and contributes to the largest economic sector in the Great Southern. Services and Industry supporting agricultural are expected to grow in regional centres to support agricultural production occurring in Shires such as Kent. The nearest Regional centres are located in Katanning (60km), Narrogin (140.5km) and Albany (197.5km).

At a regional level no direct investment is proposed within the Shire, although improvement of services in surrounding regional centres can reduce transport costs and improve efficiencies improving the agricultural economy within the Shire. A potential AusGold mine, located directly outside the Shire boundaries (34km from the Katanning town site and 23km from the Nyabing town site), is expected to generate 200 jobs in operational stage and may have some flow on effects of population and servicing for the Shire of Kent and Nyabing.

A reliance on a dominant sector of the economy means that the Shire is very vulnerable to any impacts on that one economic sector (for example climate change or drought). Diversification of agricultural production and alternative economies that has the potential to expand both the economic base and the population of the district will be supported and encouraged through Land Use Planning. Council will, through land use planning be mindful of the need for buffer separation for some uses to avoid land use conflicts from dust, spray drift, odour or noise, which will be reflected in the zoning table, whereby uses which have the potential to create land uses will be at the discretion of council.

The Shire has also been working with adjoining Shires to advertise tourist attractions such as the 'hidden treasures' driving routes to increase visitors to the region providing a further economic source. There is opportunity to encourage tourism within the Shire through land use planning and allowing small scale tourist developments, where it will not detract from productive agricultural land or create conflicts with agricultural practice.

5.4.2. Employment

The predominant land use in the Shire is for Agricultural Production. At the time of the 2016 census, the unemployment rate was 1% (comparable to the state average of 7.8%) and 63% of the labour force was employed in Agriculture related activities. Figure 20 shows the breakdown of Industries of Employment within the Shire.

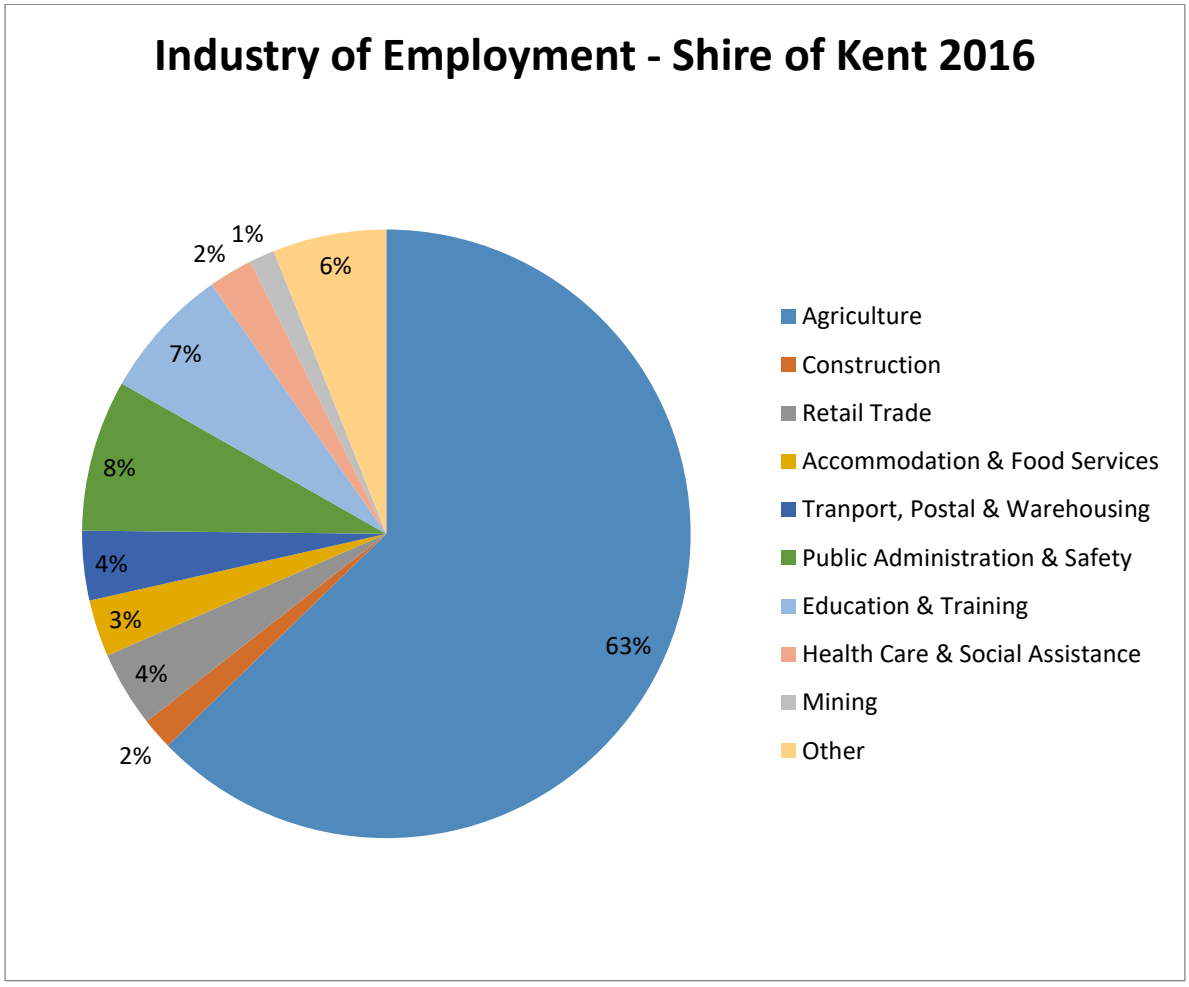


Figure 20: Industry of Employment (ABS 2016)

Employment within the Shire is predicted to remain relatively stable or decline due to further farm amalgamations and improvement of technology which reduces the need for employees. Future alternative economies within the Shire is likely to be linked to diversification of agricultural which may create additional employment. Improved telecommunications and servicing could provide opportunity for additional employment/economy that is currently limited and is encouraged.

In itself, the strategy is not able to drive economic development, although it can facilitate the location of development opportunities within the Shire through planning to minimise conflict between land uses.

5.4.3. Commercial and Industrial land

Commercial and Industrial uses within the town centre is limited to local conveniences and ancillary services to agricultural uses. Outside of the town centre, Rural Industry (such as CBH) can be located on Rural Land subject to planning consent being granted, and demonstration that the use is servicing the rural locality.

Pingrup town site

Within the Pingrup town-site less than 50% of the 12 currently zoned Industrial allotments and less than 35% of the 34 commercial allotments have been developed. Some of the larger commercial and Industrial zoned allotments south of Sanderson Street are yet to be developed and could have potential to create a number of smaller allotments depending on demand. Given the slow demand and development rates for the existing industrial and commercial zoned land and no real increase in demand for additional land/services within the Pingrup townsite, the existing Industrial and Commercial zoned land is considered sufficient for the length of this strategy and to meet expected demand.

However there is a need to rationalise existing industrial and commercial zonings, in line with the model zones in the LPS Regulations, to ensure each is appropriately located with suitable land use permissibilities, provide a transition between land uses and provide flexibility required to incentivise development. Land south of Sanderson Street is potentially suitable for residential, light industry, recreational or commercial development, however requires further investigation prior to designation in the Strategy or rezoning.

Furthermore, State Planning Policy 2.5 Rural Planning makes provision for a Rural Enterprise zone to be utilised for small rural communities, provided they are properly planned, close to settlements, serviced and address any buffer/amenity issues. Rural Enterprise development typically consists of light industry land uses with ancillary residential accommodation, with lot sizes of 1-4ha. This would provide for an alternate form of industrial development, employment opportunity and economic development within the Shire. The provision for Rural Enterprise land in proximity to the Pingrup townsite (and subject to meeting considerations discussed further below) may assist in meeting Strategy objectives.

Nyabing townsite

Within and adjoining the Nyabing town-site less than 50% of the existing 13 Industrial zoned allotments have been developed, with five vacant sites designated as either UCL or Reserve for Shire of Kent purposes, which can be made available for development. Almost all of the 12 Commercial zoned allotments have been developed, and only one remains vacant. Some of these have been historically developed with dwellings and are used solely for residential purposes.

Additional commercial land is required to satisfy future needs of the Shire and capitalise on economic opportunities.

Land south of Richmond Street, zoned Commercial in TPS 2, needs additional flexibility to provide for existing residential land uses. Given the limited land availability for Commercial uses within the Nyabing townsite available, additional land has been identified north of Richmond Street on Reserve 49627 as

having potential for expansion of commercial uses, although land is in closer proximity to the railway and CBH and may not be suitable for residential land uses.

Additional land is also required to meet industrial needs of the Nyabing townsite and surrounds if existing Commercial zonings in TPS 2 are rezoned Mixed Use.

5.5. UTILITIES AND INFRASTRUCTURE

5.5.1. Water Supply

Potable

Potable water supply within the Shire of Kent is provided by scheme water managed by WaterCorp and services the town sites of Nyabing and Pingrup as well as some farms and standpipes. Rural properties without access to scheme water are reliant solely on rainwater for potable purposes, or carting scheme water from town.

Water is supplied from the Harris dam near Collie through the Great Southern Towns Water Supply Scheme (GSTWSS) and relies on surface water run-off into the dams.

Local Water Sources at Nyabing and Pingrup have previously augmented the GSTWSS, although the Harris dam is to be the sole supply of potable water in the future principally because of water quality reasons.

In Nyabing, water undergoes rechlorination at the Nyabing Chlorinator and is then fed to the service tank located about 1.2km to the south of the town. Water is then gravity fed back to the towns reticulation mains. The town's service tank has a maximum top water level of 348m AHD and has a capacity of 225m^3. The townsite water network currently has around 85 water services.

Pingrup is supplied with water via the extension coming from Nyabing. Water is stored in two 60KL storage tanks at the Water Corporation site on Paterson St. Water is disinfected/chlorinated and pumped up to the elevated tank at the tank site. The Elevated tank has a top water level of 307m AHD. The elevated tank feeds water under gravity through the town's reticulation mains that run along the road reserves. The Pingrup townsite currently has around 60 water services.

The Water Corporation's long-term planning for the GSTWS takes account of land uses, strategies and forecast population growth across the entire scheme. The assumed long term growth of Nyabing and Pingrup is 1.5-2% per year which is sufficient to meet the needs of the townsite and places with access to scheme water into the future based on population forecasts. In recent years there has been a static growth in terms of demand on the water supply system which is likely to continue in the foreseeable futures. Mechanisms to improve potable water supply should continue to be encouraged such as use of rainwater tanks to reduce pressure on the GSTWSS.

The Water Corporation has supplied buffers required around both tanks for chemical storage for chlorine gas that is stored and used at water tank sites. The buffers do not affect sensitive development and affect only reserve land not identified for development or road reserves and as such do not require further protection.

The capacity to provide additional services to new development areas will be dependent on the expected water demands from those areas, and elevation and distance require assessment to identify whether a complying water service is able to be achieved (i.e. sufficient pressure and flow).

Properties outside of the townsite without access to a reticulated connection are reliant on rainwater or bores as a potable water supply. A drying climate requires that adequate storage for potable water be provided. Provision of suitable potable water storage and encouragement of mechanisms to improve potable water supply will be required and encouraged through land use planning.

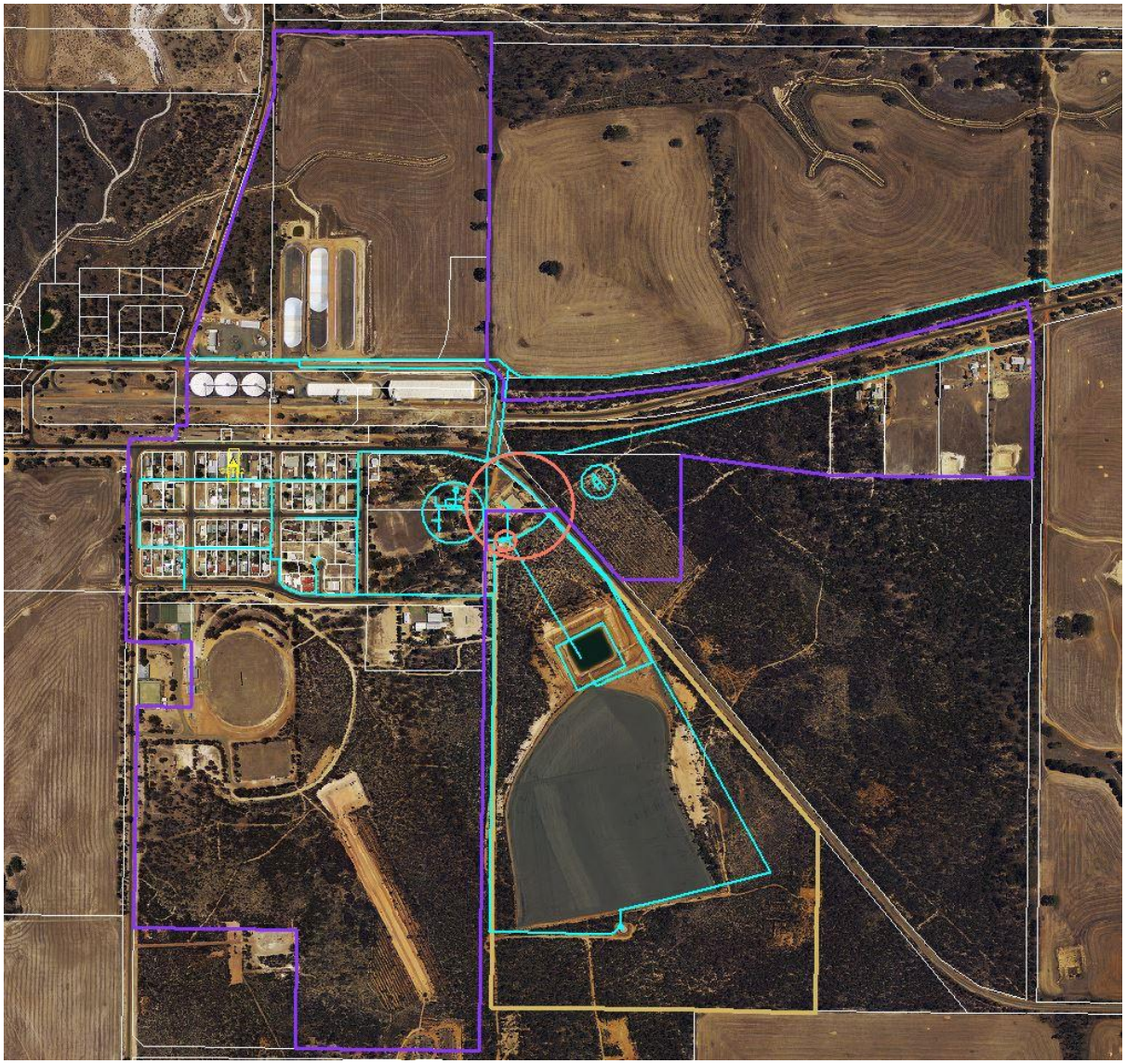


Figure 21: Nyabing Water Zone (Water Corporation 2019) (orange circles – buffer areas, blue lines – reticulated service, Purple – current townsite water service area)

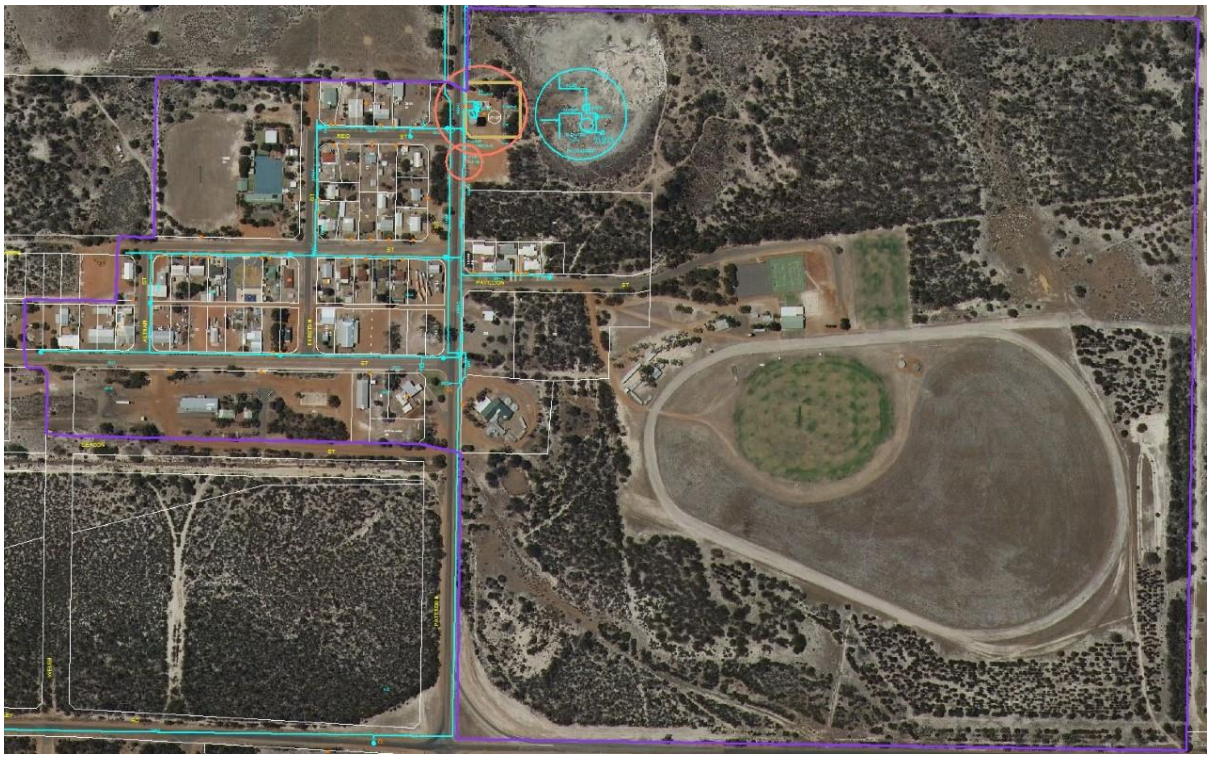


Figure 22: Pingrup Water Zone (Water Corporation 2019) (orange circles - buffer areas, blue lines - reticulated service, Purple - current townsite service area)

Non-Potable

The Shire of Kent has a Water Services Operating Licence, issued by the Economic Regulation Authority, under the *Water Services Act 2012*, for the provision of sewerage and non-potable water supplies in the operating area that are centred on the town sites of Nyabing and Pingrup. Water Supplies in the town are sourced from locally harvested water from dams and when the dam runs dry is supplemented by scheme water.

The Pingrup dam is located 4km east of town which is used for non-potable water supply only.

The Nyabing Dam is mainly used as a non-potable, low cost fit for purpose water source. It consists of a 28.6 ML open reservoir and 11 ha bitumen catchment. During winter months overflows from the town dam is being diverted through Nyabing's storm water harvesting system into the nearby Shire Dam, providing an additional water source. This initiative has addressed water shortage issues and reduced town water consumption by an estimated 15 percent. Within Nyabing approximately 25 ML/year is used for the irrigation of community ovals and parks and up to 10 ML/year from scheme water. Should more water be available it could be used for town beautification.

A Water Management Plan was prepared for the Nyabing town site in 2010, as part of the Department of Agriculture and Foods Rural Towns Program which identified three priority objectives to manage salinity and water supply within the town including:

- Upgrade sports dam to increase run-off reliability by improving the catchment;
- Improve town site stormwater drainage, capture and storage; and

- Investigate the use of run-off improvement techniques, including polymers as part of the improvements to roaded catchments.

These options are currently being investigated and implemented by the Shire. A similar project to utilise the Pingrup dam as a non-potable, fit for purpose water source is being finalised.

The limitations to water supply are not likely to constrain residential development within the town sites, or additional rural residential development, which may be serviced by rainwater and roof catchments, but may limit potential nearby development such as types of industrial development that require higher water supply.

The Shire should consider introducing a Stormwater Management Policy for development within the town sites, to require onsite retention or to be adequately directed to City infrastructure. A stormwater management policy can also require commercial and industrial development to treat stormwater before it any water systems or discharges to the ground to remove pollutants.

5.5.2. Wastewater Treatment

Both townsites are serviced by a sewerage scheme constructed in 1974 and expanded very slightly over the past 10 years. The Scheme is operated by the Shire of Kent and includes a gravity reticulation system, two pumping stations and two wastewater ponds, one in Nyabing and one in Pingrup. Each Scheme was designed for a population of about 300-400 and can accommodate the current town populations of about 150 and residential development in the future.

The system is for limited effluent, where solids remain in the onsite effluent tanks and disposal is at the responsibility of the owner to local rubbish disposal sites. Overflow wastewater is directed to the waste water ponds for evaporation. The nature of the scheme collecting overflow waste water only, with no solids has limited or no odour. The Scheme collects and treats approximately 112m^3 of residential and commercial liquid wastes.

The Shire is proposing to re-use approximately 70% of this water for spray irrigation of Nyabing's oval and parks, subject to negotiations with Water Corp.

The existing sewerage scheme is suitable for existing and future population within the Nyabing and Pingrup town sites.

For land without reticulated sewerage the Government Sewerage Policy allows existing land already zoned for urban use to be developed or subdivided on a case by case basis where the proposal can demonstrate that it meets the minimum site requirements and the responsible authority, in consultation with relevant agencies is satisfied that the proposal is consistent with the objectives of the policy. The policy also identifies land as 'sewerage sensitive' where additional provisions apply to proposals for onsite effluent in these locations, as they have greater risk of adverse impact on the surrounding environment.

The Pingrup townsite is identified as partly located within a 'sewerage sensitive area' due to its location within 1km of a significant wetland (Lake Grace System Salt Lake Chain).

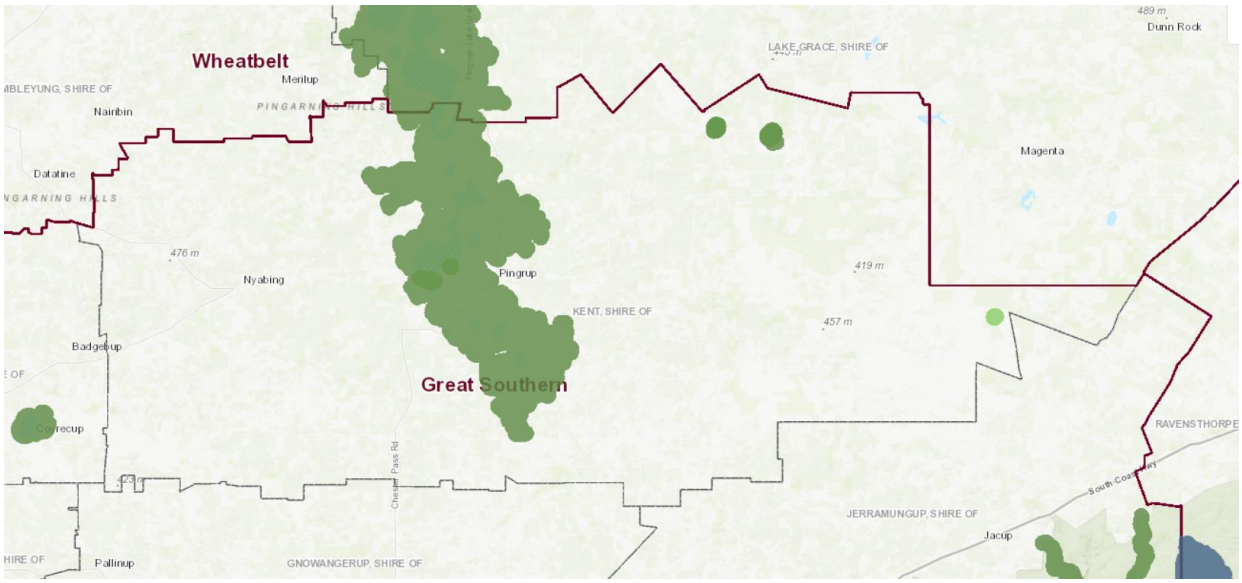


Figure 23: Sewerage Sensitive Areas (DPLH 2019)

This policy is based on traditional septic systems or aerobic treatment units and does not consider the alternate gravity reticulation system for sewerage within the townsites of Kent. On this basis, retaining an R20 zoning is appropriate, and development above a single house or subdivision will be limited in scale, by the requirement for each development to accommodate onsite effluent in accordance with the sewerage scheme.

Areas for sewerage treatment shall be identified on the Strategy maps and zoned appropriately for this purpose. The provision of odour buffers to wastewater treatment plants and other wastewater facilities in the town should also be provided in accordance with EPA GS No.3 which identifies that odour buffers are to be determined based on case by case basis for site specific areas. The Shire recommends a buffer of 200m for existing wastewater facilities.

New development, such as Rural Living which may require onsite effluent systems without connection to the local government sewerage scheme will be required to demonstrate land capability for development, which will need to consider the requirements of the Government Sewerage Policy 2019.

5.5.3. Rubbish Disposal

The Shire contains two waste disposal sites for rubbish. One located on Datatine Road servicing Nyabing and the other located on Moore Street servicing Pingrup. The amount of waste generated from the population is anticipated to remain relatively static for the Shire.

The Pingrup landfill accepts only green and inert waste, which is close to reaching capacity and is anticipated to be closed within five years, with a transfer station remaining on the land only to transfer waste to the Nyabing facility.

The Nyabing landfill accepts putrescible wastes and is anticipated to have a lifetime of 30-60 years. Once this reaches capacity a transfer station will be constructed, with waste from both Pingrup and Nyabing potentially being directed to the Katanning Regional Waste facility. Both sites will be remediated following closure. There is no need to identify additional land for rubbish disposal for the lifetime of this strategy.

The Shire is currently seeking funding with a view to undertaking better strategic planning for the sites and confirm identify the long-term direction.

5.5.4. Electricity

Electricity is available throughout both town sites and is available to most rural properties within the Shire. Electricity supply is via overhead power lines, the Shire will support the provision of underground electricity supply to new development and/or subdivisions.

5.5.5. Telecommunications

Telecommunication services are provided to the Shire, which also receives television and radio services.

Nyabing was identified as a mobile blackspot and has recently had a new mobile tower constructed through the WA Government's Regional Telecommunications Program. Investment by the Shire to the upgrade of telecommunications has resulted in the local exchange at Nyabing being upgraded.

The Cairlocup site near the Lake Magenta Nature Reserve has been identified as a priority site for improved telecommunications due to the bushfire risk of the this area.

The Shire has access to the National Broadband Network via satellite.

The level of telecommunications is not likely to be a constraint to development or growth within the Shire; however, the quality of signal of telecommunications at time can be poor. Improved telecommunications can provide an alternate source of employment such as home businesses.

5.5.6. Community Facilities & Open Space

The availability and access to community infrastructure plays a critical role in the communities. There are a range of community facilities and services in the district. These provide residents with local services including community halls, meeting places, cemeteries, churches, civic functions and youth and senior's, recreational, education and health facilities. Some of the facilities are controlled and managed by local government and others by community organisations.

The town sites are well endowed with formal public open space which provide a range of sporting and recreation facilities.

There is sufficient community facilities and public open space to service the existing and projected populations with the Shire and both Nyabing and Pingrup town sites

5.6. MOVEMENT

The movement of people, goods and services to and from, and within the Shire is by road.

5.6.1. Rail

The railway within the Shire is contained within a Railway Corridor and partly within Road Reserves. It began construction in 1910 and in 1912 the Katanning-Nampup (Nyabing) rail officially opened. The rail was constructed at the time where all considerable areas of agricultural land were to have a rail service. In 1923 this line was extended to Pingrup.

The railway service from Pingrup to Nyabing was suspended by the government and closed in 1960. The rail service from Nyabing to Katanning was closed in 2007, with the State Government placing a focus on keeping primary rail linkages open and upgrading roads to accommodate for heavy vehicles and grain transfer.

The existing rail network within the Shire shall be identified and protected as a Rail Reserve within the Local Planning Scheme.

5.6.2. State and Regional Road Network

Road classifications are determined by Main Roads and designated into a hierarchy for function and management.

Roads classified as ‘State Roads’ or ‘Primary Distributors’ carry high traffic volumes of fast moving traffic to meet primary road transport needs of the State and are managed by Main Roads WA. There are four ‘Primary Distributor’ roads within the Shire including; Katanning-Nyabing Road, Nyabing-Pingrup Road, Chester Pass Road and Pingrup Lake Grace Roads.

Regional Distributors are not Primary Distributors but link significant destinations and are designed for efficient movement of people and goods within and beyond regional areas and are managed by Local Government. The Dumbleyung – Nyabing Road and Newdegate Road are classified as Regional Distributor Roads.

5.6.3. Local Roads

All other roads within the Shire are classed as Local Distributor and Local Access Roads that provides access to farming properties and between Shires for the movement of people and produce. Local Distributors have higher traffic volumes than local access roads and traffic management requirements differ from local access roads. Local Distributors within the Shire include; Warren Road, North Fence Road, Nyabing South Road, Kukerin Road, Gnowangerup road, North Kuringup oad, Rasmussen Road, Tieline Road, South Fence Road, East Road and Needilup North Road.

Heavy vehicle traffic during harvesting, transfer of grain or delivery of fertilisers and lime during the year has the potential to damage the local road infrastructure. Both the Nyabing and Pingrup town sites are located on Primary Distributor Roads and have adequate access, facilities and parking for heavy vehicles.

Access Roads within the town-site are separated from heavy vehicle routes and are generally relatively safe for shared use by pedestrians, cyclists and motor vehicles due to low traffic volumes.

5.7. CLIMATE

The Shire of Kent has a typical temperate climate with hot summers, cool winters, and a moderate annual rainfall occurring predominantly in winter. The average maximum temperatures range from 31.1°C in January to 14.8°C in July. The average minimum temperatures range from 13.7°C in January to 6.3°C in July.

The Shire is sufficiently inland to experience little modulating effects from the ocean, resulting in often very hot conditions in summer and very cold conditions in winter, with frost prevalent. Mean maximum and minimum temperature, mean monthly rainfall and average annual rainfall is presented in Figure 24, Figure 25, Figure 26 and Figure 27.

Longer term trends indicate and predict a moderate increase in average temperatures and a decrease in winter rainfall.

Rainfall in the Shire is relatively low ranging from 300mm to 400mm on average annually and varying over the Shire. Over 80% of rainfall occurs between the months of May to October, usually associated with the passing of cold fronts. Rainfall is frequently associated with occasional summer thunderstorms. The climate and rainfall supports annual cropping and grazing, although is not suitable for horticulture/perennial crops which are dependent on higher rainfall.

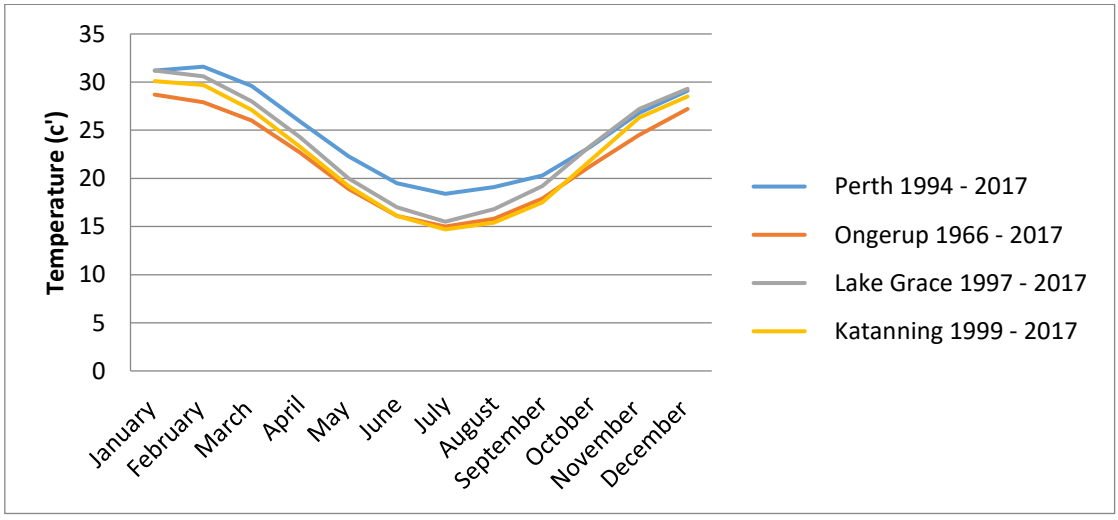


Figure 24: Mean Maximum Monthly Temperature (Bureau of Meteorology)

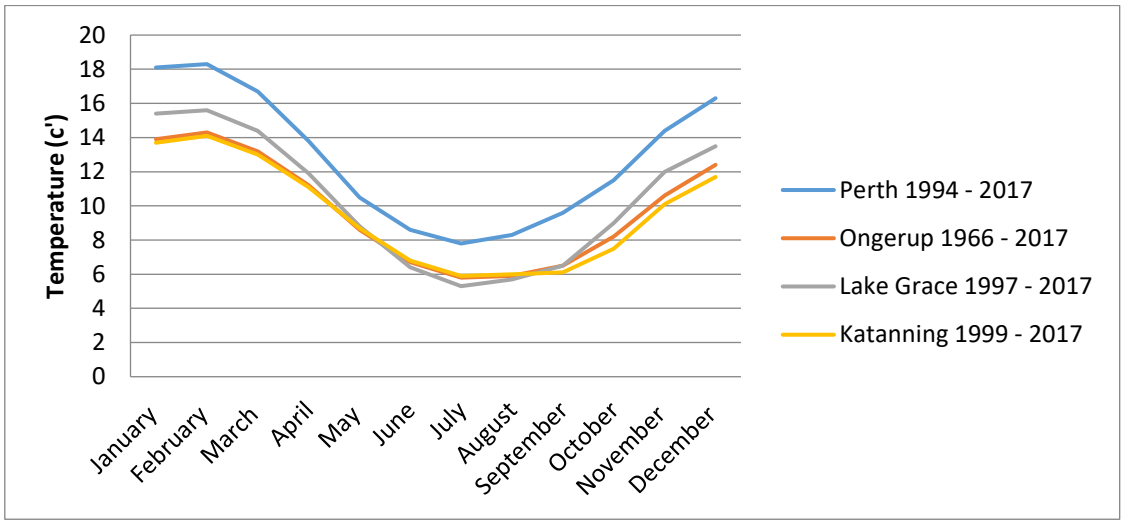


Figure 25: Mean Minimum Monthly Temperature (Bureau of Meteorology)

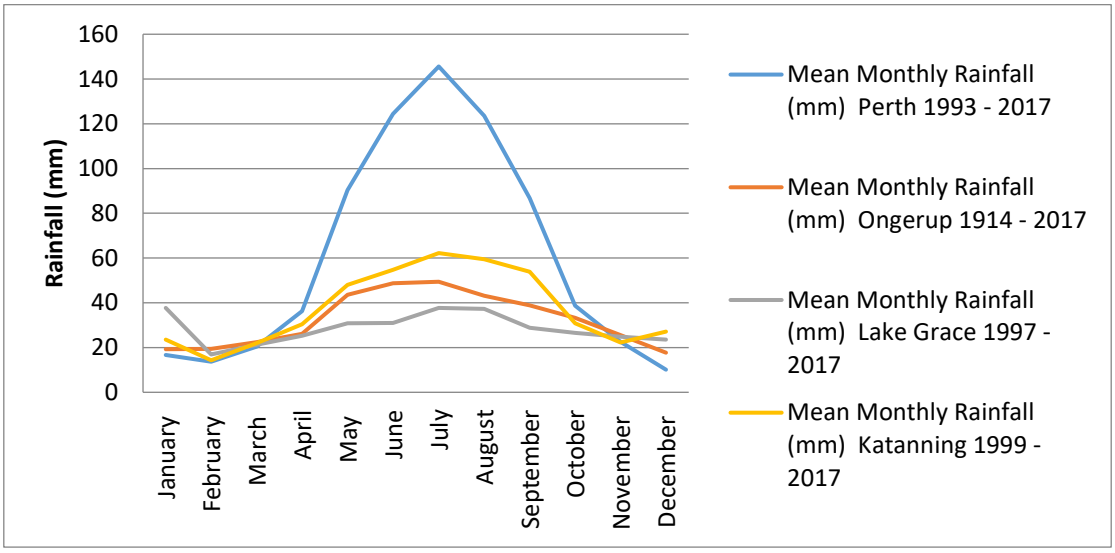


Figure 26: Mean Monthly Rainfall (Bureau of Meteorology)

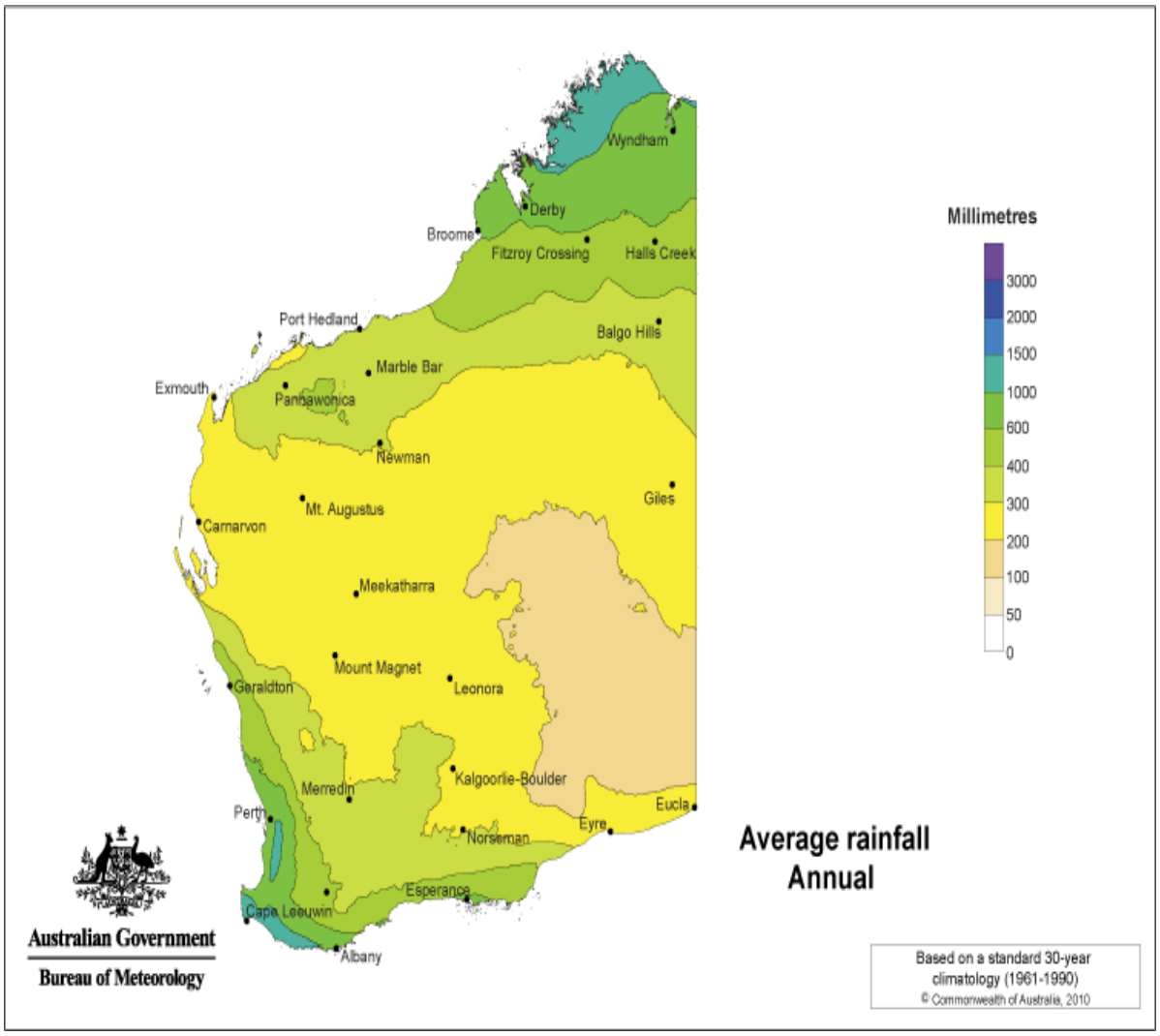


Figure 27: Average Annual Rainfall (Bureau of Meterology)

5.8. GEOLOGY

The Shire is located on the Darling Plateau and within the Avon Province, a laterised plateau (dissected at fringes and with saline drainage lines inland) on deeply weathered mantle and alluvium over granitic rocks of the Yilgarn Craton (and Albany-Fraser Orogen). This is composed of Archaean granitic rocks, predominantly monzogranite with significant areas of gneiss, granulite and migmatite. These rocks contain numerous faults, shear zones and dolerite dykes.

Landform and Soils

Soil Landscape Mapping is based on a survey of land resources which delineates repeating patterns of landscapes and associated soils. Repeating patterns of landscape can determine expected vegetation complexes and vice versa for predicting soil type and landscape position.

The mapping hierarchy of Western Australia has six levels, with each level containing more detail. The first two levels, regions and provinces are based on the descriptions and framework introduced by the CSIRO Division of Soils for the whole of Australia. The remaining four levels includes zones, systems,

subsystems and phases are based on mapping conducted by the Department of Agriculture mostly as part of a National Landcare Program funded initiative between 1988 and 2000.

Province

The Shire is within the Avon Province which is characterised by sandy duplex soils and ironstone gravelly soils with loamy earths, loamy duplexes, sandy earths, deep sands and wet soils.

The landscape is dominated by an undulating plateau rising from the Southern Ocean coastline in the southwest to 450m above sea level in the north east. The north east has broad lateritic uplands (typically with extensive sand plain) which give way to long gentle slopes formed on the truncated weathering profile. The valley floors are broad with very low gradients and only carry flows in very wet years and contain chains of salt lakes.

Zone

The Shire is located partly within the South Western Zone of Ancient Drainage (259), the South Eastern Zone of Ancient Drainage (250) and the Jerramungup Zone (243).

The South Western Zone of Ancient Drainage is characteristic of ancient gently undulating landscape with sluggish drainage systems. The uplands are dominated by grey sandy gravels and by woodlands and heath, rich in Proteaceouse species such as Dryandra. The soils are mostly shallow sandy or loamy duplex soils and their clayey subsoils are sodic, ranging from neutral to alkaline and are often calcareous. Reddish brown to red loamy duplex soils, loams and clays are common on weathered gneissic rocks. Sandy gravels with small areas of pale deep sands cap the rises and low hills, and the soils on the broad alluvial and lacustrine plains of the Coblinine River and its tributaries are mainly salt affected sandy and loamy duplex soils.

The South Eastern Zone of Ancient Drainage zone contains undulating terrain (with some salt lake chains and areas of prominent granitic outcrops) on deeply weathered mantle and alluvium over granitic rocks of the Yilgarn Craton. Soils are characterised by Sandy duplexes (often alkaline) with ironstone gravelly soils and loamy earths (often calcareous), sandy duplexes, loamy duplexes, deep sands and ironstone gravelly soils. Valley floors are broad and ill-defined with prominent chains of salt lakes. Soils of the valley floors have loamy duplex soils that are usually alkaline and typically sodic, calcareous loamy earths, saline wet soils and salt lake soils. Reddish brown to red loamy duplex soils, loams and clays occur on the rises on dolerite.

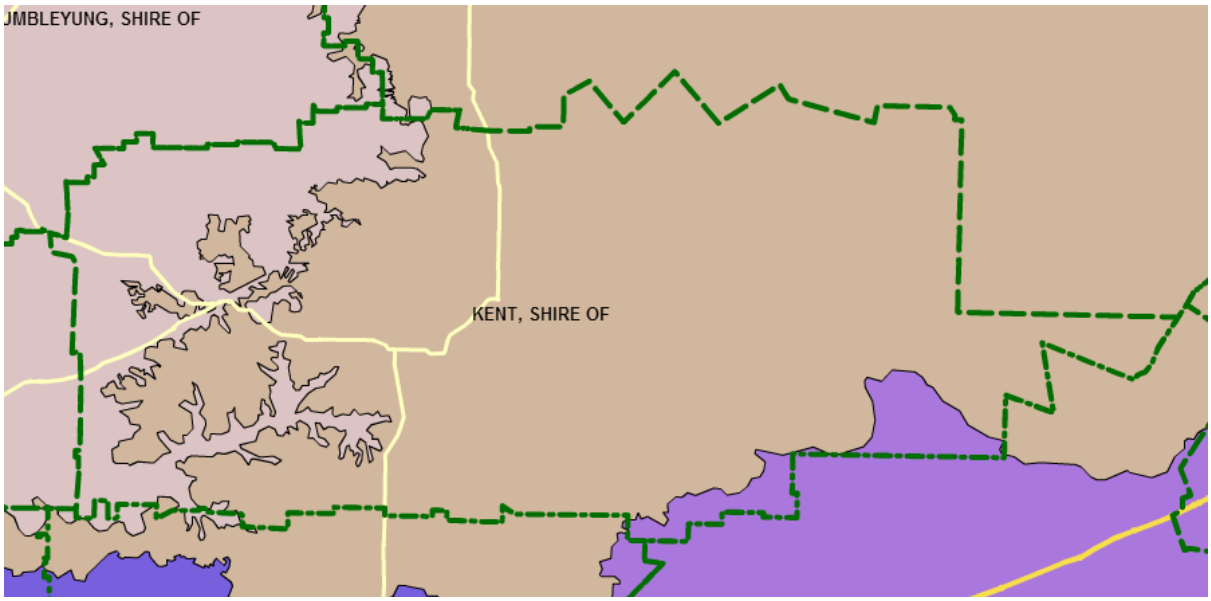


Figure 28: Soil Landscape Zones. Pink - South Western Zone of Ancient Drainage, Brown - South Eastern Zone of Ancient Drainage and Purple - Jerramungup Zone

Soil Landscape Systems

Zones are made of systems which further define landscape characteristics at a more detailed level. The Shire has the lowest level of mapping completed as part of the Percy Nyabing – Kukerin land resources survey and the draft Jerramungup Land Resource Survey. The Jerramungup Land Resource Survey was never completed to a standard able to be published, although the Department of Primary Industries and Regional Development have provided that the mapping was completed and have made this available.

The soil landscape systems and subsystems as shown in the attached surveys at Appendix 1 which shows a distribution of soils across the Shire, landscape description and major soil types. Soil landscape qualities are important in indicating capability of land for a number of land uses.

Geology and Prospectivity

The Shire has potential for gold, silver, base metals, bauxite, clay and gypsum. Although much of the are is underlain with Archean granites of the Yilgarn Craton that have a low prospectivity, there are also more prospective lenses of greenstone units consisting of gneiss and amphibolite and younger granitic intrusive rocks. Figure 29 provides an overview of prospects within the Shire.

Figure 29: Map of prospects within Shire of Kent

575000 600000 625000 650000 675000 700000 725000

6325000 6300000 6275000 6250000

33°20'0"S 33°40'0"S

McDougall South Au, Ag prospect
Stanley / Cygnus Gold

Badgebup Au, Ag Processing plant
Katanning Gold

Industrial Minerals - Gypsum
Operation currently shut
Lake Chinocup

HR3 Project - Au, Ag
Lake Grace JV

Pingrup dolomite
Care and maintenance

Ongerup - Clay Prospect

Bullock Pool Au, Ag prospect

Nanicup Bridge Au, Ag prospect

CLEGGS MINE
JINKAS HILL MINE
DINGO HILL MINE
NETTY MINING CENTRE
CALYERUP

Lake deposits
Unconsolidated, yellowish brown, saline clays and eolian sands; lacustrine, broad, shallow, poorly drained, cirucular depressions

118°0'0"E 118°20'0"E 118°40'0"E 119°0'0"E 119°20'0"E

A0362/202101 — Shire of Kent
Exploration tenements — pending
Exploration tenements — live

Mines
Precious metal
Steel alloy metal
Base metal
Iron
Industrial mineral
Construction material

Shire of Kent - Draft Local Planning Scheme No 3 - Local Planning Strategy

File No : CR2760
DMIRS File No : A0362/202101

0 7,500 15,000
Metres
1:400,000 @ A3

Coordinate System: GDA 1994 MGA Zone 50

Government of Western Australia
Department of Mines and Petroleum

Date: 18/03/2021
Author: Steven Batty

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5.9. LAND DEGRADATION

Land degradation describes the decline in the quality of natural resources caused through poor management practices. The above landform and soil analysis is particularly important in determining areas that are susceptible to certain factors that may affect the lands capability.

Land Systems (Appendix 1) within which significant areas are susceptible to various forms of degradation are shown in Table 2.

Table 2: Soil Landscape System and Susceptibility to Land Degradation

Land System	**Form of Degradation**					
	Salinity	**Surface & subsurface acidification**	**Subsurface Compaction**	**Water Erosion (associated with infrequent flood events**	**Wind Erosion**	**Water Repellence**
South Eastern Ancient Drainage						
Lagan	X		X	X		
Pingrup	X	X	X		X	X
Magenta	X	X	X		X	X
Nyabing		X	X		X	X
Newdegate		X	X		X	X
Sharpe	X		X	X		X
Tieline	X	X	X	X		
South Western Ancient Drainage						
Coblinine	X	X	X	X		X
Datatine	X	X	X			
East Katanning	X	X	X		X	X
Kukerin	X	X	X		X	X
Jerramungup						
Jerramungup						

Upper Fitzgerald	The Jerramungup Land Resources Survey was never completed and this data is not available. The Jerramungup zone within the Shire of Kent is contained mainly within the Magenta Reserve not subject to land degradation and represents a very small portion of the Shire.
Upper Gairdner	

5.9.1. Salinity

Salinity can be classified into primary and secondary types. Primary soil salinity is not induced by land clearing and includes existing salt lakes. Secondary soil salinity occurs due to changes in land use and management and is mainly due to the clearing of perennial vegetation. It develops when saline groundwater rises and evaporates from the surface leaving salts behind and salts accumulate to toxic where only the most tolerant plants will survive. Clearing of the Shire of remnant vegetation has resulted in areas at risk of secondary salinity, particularly as agricultural species use less water which results in groundwater levels rising. The salt tolerance of agriculture plants varies considerably between species and stage of growth, and in general crops tolerate salinity to a threshold level, but above this yields decrease approximately linearly with increasing salt concentrations.

Saline wet soils and seasonally wet soils subject to secondary salinity are most common along the alluvial plans and flats within the Lagan, Coblinine and Pingrup systems and may also occur along drainage depressions and low-lying areas.

While almost any soil can develop secondary salinity, those most at risk are found on drainage lines, valley flats and alluvial plans where the saline groundwater shallowest. These areas include the Sharpe and Coblinine systems and low-lying valley floors and drainage depressions within the East Katanning, Datatine and Kukerin systems. Soils of Ironstone gravelly soils and Deep sands located on crests and mid to upper slopes have nil or very low salinity hazard as they usually well to rapidly drained and have the greatest depth to saline water tables.

Surface Salinity refers to the excess of soluble salts (primarily sodium chloride) in the soil solution which adversely affects plant growth and assesses the current salinity status of the soil. Salinity risk refers to the likelihood of the soil becoming saline given current land use patterns and management practices.

According to the Land Resources South West, prepared in 2008 on surface salinity, approximately 6% of the Shire was affected by high and extreme salinity, 8% was affected by moderate salinity and 87% was nil and slight surface salinity.

In terms of areas at risk of being affected by salinity, approximately 70% of available agriculture land and 54% of the Shire has a nil to slight risk salinity risk, 11% of agricultural land and 8% of the Shire has a partial salinity risk, 1% of the agricultural land and Shire has a moderate salinity risk and 5% of agricultural land and 4% of the Shire has a high salinity risk. 13% of Agricultural land and 10% of the Shire is already mapped as Saline.

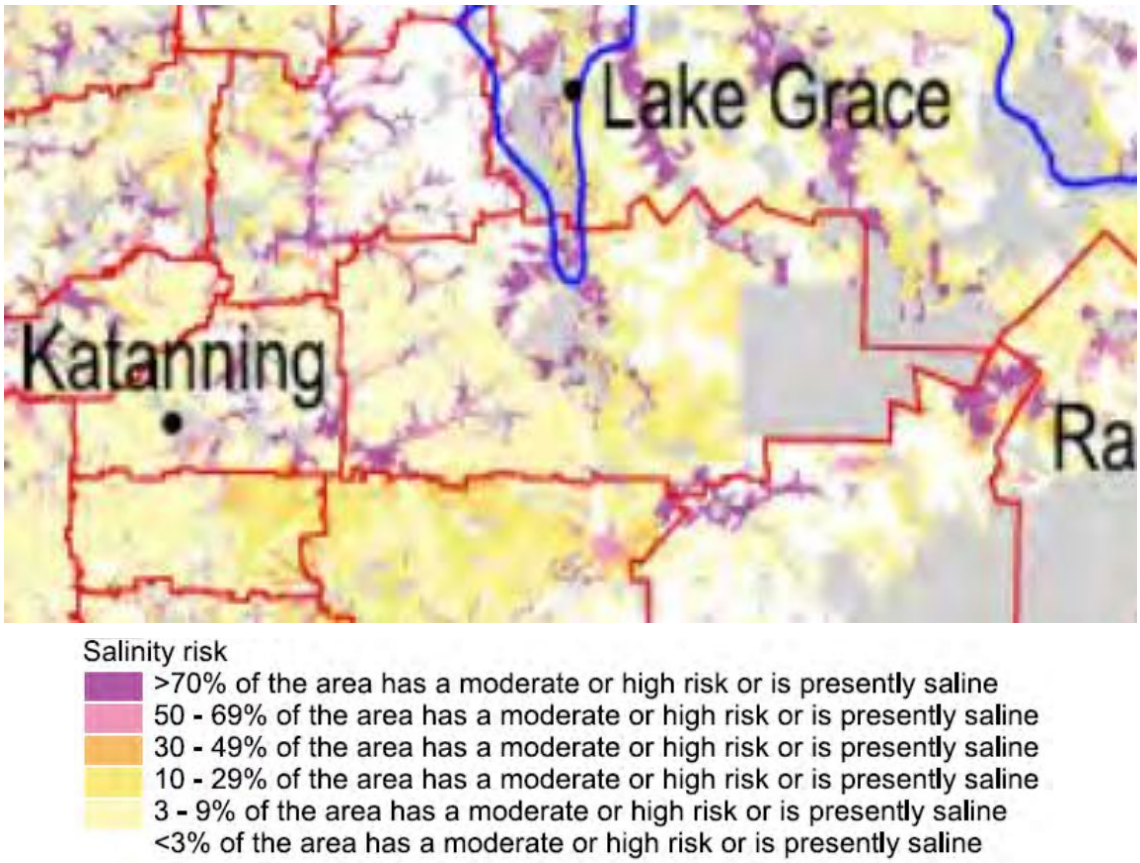

Figure 30: Risk of Salinity (Land Resources South West (2008))

Longer term trends over the next 20-50 years indicate a high to moderate risk of increase in saline affected areas, particularly in areas of valley hazard, although the Department of Primary Industries and Regional Development recognise that a reduction in rainfall and dryer seasons may slow the increase.

5.9.2. Surface and Subsurface Acidification

Agricultural practices such as the use of ammonium-based fertilisers and legume pastures, are resulting is soils becoming more acid. Sandy surfaced soils usually have acid or strongly acid topsoils. Most commonly these include Grey shallow sandy duplex soils, pale deep and shallow sands, gravelly pale deep sands, duplex sandy gravels, deep sandy gravels and shallow gravels. Yellow brown sandy duplex soils also often have acid subsurface layers. Acid surface and subsurface soils are most common within the Kukerin, Datatine and Nyabing systems and area also present in shallow depths of the nautral or alkaline clay subsoils in the Coblinine, Newdegate, Pingrup and Sharpe systems.

The development of low soil PH depends on a number of factors including susceptibility, the length of time since clearing and the type of crops and pastures grown. The DoA suggests investigation into several management techniques including liming, feeding hay back onto paddocks, limiting the rate of nitrogen leaching, minimising the use of elemental suphulas fertiliser and adopting a less damaging crop regime, planting more acid-tolerant crop species, do nothing and accept decreasing yields, or adding extra nutrients such as N, P and K.

5.9.3. Subsurface Compaction

Subsurface compaction of soils can result in plough and traffic pans. Plough pans develop in response to repeated tillage and are found in medium and fine textured soils just below the tilled layer and traffic pans occur deeper in the soil due to compression from traffic. Susceptible soils include acid shallow, duplex, alkaline grey deep and shallow sandy duplex soils, brown deep loamy duplex soils, red deep loamy and sandy duplex soils and yellow deep sands in the Coblinine, Kukerin, Lagan, Nyabing, Pingrup and Sharpe systems.

5.9.4. Wind and Water Erosion

All soils are susceptible to wind and water erosion which contributes to decline in soil fertility through the loss of soil nutrients. It can also result in the loss of topsoil which can contribute to eutrophication. Management factors that expose soil surface to rainfall and water erosion include cultivation, overgrazing and burning plant residues. High water erosion hazard in the Shire is associated with infrequent flood events in the Coblinine, Lagan and Sharpe systems.

Protection and reinstatement of vegetation is the most effective method of managing erosion. When located appropriately vegetation contributes to water use, can bind soil, and can act as a windbreak. Maintaining ground cover in agricultural areas provides another opportunity to control erosion.

5.9.5. Water Repellence

Water repellence affects the wetting pattern of soils and results in an uneven wetting pattern causing water droplets to bead on dry surface rather than penetrate the soil. The issue is most notable in Autumn, during heavy rainfalls immediately following the dry summer period. In the paddock, patches of wet soil alternate with dry soil, which results in poor germination of crops and pasture. Water repellence may also contribute to increased water erosion due to reduced infiltration and increased run-off.

5.10. LAND EVALUATION

Land evaluation has been used as an indication of land capability. Each evaluation has been determined in accordance with the *Land Evaluation Standards for Land Resource Mapping* prepared by the Department of Primary Industries and Regional Development, based on a desktop analysis of land systems within the Shire and potential for land degradation. Due to the broad nature of this information, the analysis should be considered as an overview only. Where appropriate more specific and localised land capability assessments should precede proposed development.

Three main land uses have been considered – Broad acre Cropping, Horticulture, Grazing and Rural Residential (Septic Capability). Factors affecting the suitability of land for each land use are as follows:

- Grazing – Salinity, water erosion, wind erosion, soil water storage, waterlogging, water repellence, soil structure decline, subsurface compaction and subsurface acidification.
- Broad-acre cropping – Waterlogging, soil workability, wind erosion, water erosion, soil water storage, subsurface acidification, water repellence, soil structure decline and subsurface compaction.
- Horticulture & other perennial – Salinity, waterlogging, soil workability, water repellence and soil water storage.

- Rural Residential – Waterlogging, land instability, microbial purification (capability of soils for onsite effluent), ease of excavation and flood risk.

Land capability maps are available online by the Department of Agriculture and Food. The Land Capability Class is provided in Table 3. Soils within the Shire are generally predicted to have fair to low capability for most land uses including grazing and broad acre cropping.

Table 3: Land Capability Classes for Given Land Use Types (adapted from Wells and King 1989)

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

**Experience has shown that very few land use developments have no negative effect on land degradation, hence capability class 1 will not occur for many land uses employing broadly accepted management and development techniques*

*** Conservation of planning requirements likely to involve ongoing management.*

5.11. WATER RESOURCES

5.11.1. Surface Water

The Shire is divided into three surface water catchments including the Blackwood River Basin, the Avon River Basin and the Albany Coast basin. Three rivers cross through the periphery of the Shire boundaries and include the:

- Fitzgerald River (Albany Coast basin)
- Gairdner River (Albany Coast basin); and
- Coblinine River (Blackwood River Basin).

The Coblinine River drains to the West to the Shire of Katanning contributing to Coyreup and Ewlyamartup Lakes which then flow onto Lake Dumbleyung and Lake Towerinning. The Coblinine River is not defined in parts, characterised by broad (1-7km) flats with gently inclined alluvial plains and lacustrine plains with small areas of lunettes and sandplain. The flats are mainly saline wet soils with alkaline grey shallow sandy and loamy duplex soils and grey deep sandy soils. The flats are subject to inundation with significant areas of salt affected land. The Rivers are mostly located within private land, although cross through Reserves for Conservation and Waterways in parts.

The Fitzgerald River is located in the south east corner of the Lake Magenta nature reserve and drains to the south. River flows are very little under normal rainfall conditions and in dry years can be negligible. Flows are generally saline due to the flow of water from and through salt lakes.

The Gairdner River drains to the south east, is saline and flows parallel with the Fitzgerald River to the coast in Bremer Bay. As a result of clearing of the catchment to the river for sheep and grain farming the water quality has become saline. Salinity levels vary from 3% after rains when the river is flowing to 50% during the summer time.

There are a number of creek lines within the Shire which are generally poorly defined and contain limited fringing remnant vegetation. Degradation threats to Rivers within the Shire are:

- Salinity – increase in water salinity within rivers due to waterlogging from run-off from cleared land; and
- Loss of riparian vegetation, due to lack of fencing of rivers/creek lines within private land and decline in vegetation from salinity which can result in decreasing stability of banks and higher nutrient loads entering waterways and loss of habitat for fauna.

5.11.2. Lakes and Wetlands

The Shire does not contain any Ramsar listed sites. There are two wetlands listed under the Department of Environment's Directory of Important Wetlands including:

- Lake Bryde – East Lake Bryde WA112 – important as a fresh water refuge for fauna and is one of the only wetlands with beds dominated by shrubs, which are identified as a Threatened Ecological Community. The lake bed is dominated by Tecticornia verrucosa and Muehlenbeckia horrida subsp. abdita (the latter is only known from these 2 wetlands and is Declared Rare Flora (Endangered) at the State level). Lake Bryde is located in a Reserve for the purposes of emergency water supply, recreation and the conservation of flora and fauna, vested in the Minister for Water Resources and Managed by the Water Corporation. East Lake Bryde is located in a reserve for the conservation of flora and fauna, vested in the Conservation Commission of Western Australia and managed by the Department of Conservation and Land Management. Threats to the wetland are identified as the risk of salinity and increase nutrients from run-off of surrounding agricultural land uses, waterlogging and inundation and weed invasion.
- Lake Grace System - a saline drainage system (including Chinocup Lake, 2 km south, and numerous small lakes immediately north and east) that extends more than 200 km (the Shire of Kent is the most southern point of the chain), to connect with Salt River and ultimately Avon River. Tenure is mostly vested in various Reserves with DBCA and parts are in private ownership. Threats to the system include mining of gypsum and recreational vehicles damaging fringing vegetation. Areas within 1km of the Lake Grace System are also considered a

Sewerage Sensitive Area under the Government Sewerage Policy, and a Sensitive Water Resource Area under draft SPP 2.9.

There are no wetlands listed under the Department of Parks and Wildlife Geomorphic Wetlands Database. A number of other seasonal salt lakes associated with the valleys and salt lake chains exist within the Shire. Many of these are surrounded by low lying shrubs and are in very close proximity to agricultural land.

Lake Bryde (98ha in area, depths of 0-2m) a seasonal fresh water lake and Lake Cairlocup (284ha, depths of 0-0.8m) a hypersaline seasonal lake were recently assessed as part of a Department of Regional Development and Lands – Living Lakes Program to assess their suitability for development into a recreational lake. 20 Lakes were assessed against a set of criteria, of which Lake Bryde and Lake Cairlocup were ranked 18th and 20th respectively.

Figure 31: Lake Bryde and East Lake Bryde - Lake Bryde Road

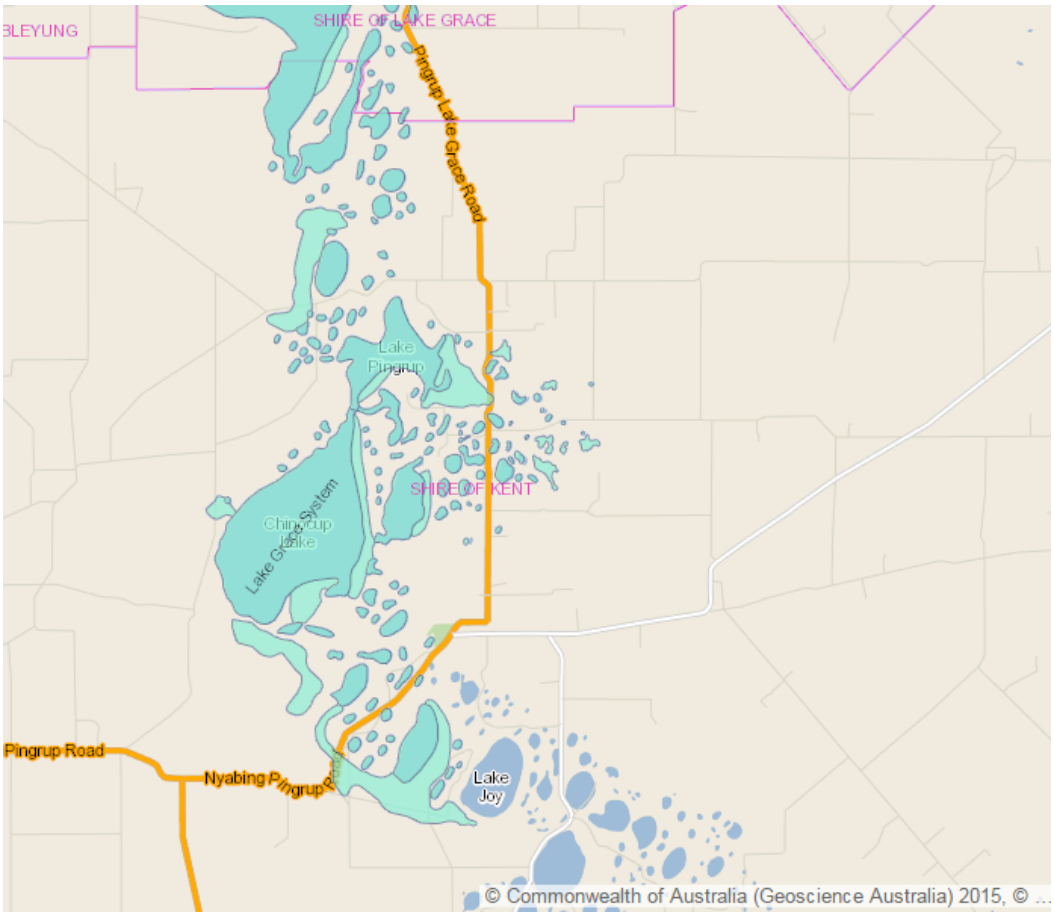

Figure 32: Lake Grace System within the Shire of Kent (Department of Environment 2015)

5.11.3. Groundwater

Limited data is available on groundwater resources within the Shire and any groundwater is likely to be saline and unsuitable for commercial use. In areas where groundwater is available, its reliability in terms of quantity and quality would need to be fully investigated prior to commencement of any development that would rely on the water source.

A detailed hydrological study has been undertaken for the Nyabing townsite as part of the Rural Towns Program, which resulted in the Nyabing Water Management Plan being produced, assessed salinity and water supply issues and suggested management solutions with life cycle costing analysis.

The Nyabing Water Management Plan identified that the water table was less than 2m below the townsite and that shallow groundwater has salinity levels between 10,200 and 34,000mg/L (1,500-5,000 mS/m) and more saline at depth. This indicates that waterlogging is an issue in the town site which contributes to increasing the impact of salinity.

Salinity

Both the Nyabing and Pingrup town sites are at risk of salinity. High water tables, combined with waterlogging and poor management of surface water and clearing are contributors to salinity. Salinity has the potential to impact on the quality of potable water supplies, and also involves cost related to

infrastructure damage. The Nyabing Water Management Plan estimated that the cost of salinity damage to infrastructure (including private and public lands) within the Nyabing town site was $22,553 at Net Present Value in Year 1, and estimated to increase to $238,927 at Net Present Value over 20 years if salinity control measures are not implemented. A number of measures have recently been implemented within the Nyabing town site as part of the Nyabing Water Management Plan recommendations which included direction of run-off into town water supplies, reduced drainage and waterlogging reducing the risk of further salinity.

Drains are constructed and maintained by the Shire around the Pingrup townsite, which assists in water evaporation to reduce groundwater levels.

Development on land affecting by salinity is possible, although may increase the cost of maintenance and requires additional fill to meet building code requirements.

5.12. VEGETATION SYSTEMS

The Shire is located within the South West Botanical Province and is predominantly located within the Roe District (also known as the Mallee district) and a small portion of the Shire in the west is located within the Avon Botanical District as defined by Beard (1980). Beard combined vegetation types into vegetation systems which he defined as a particular series of plant communities recurring in a sequence or mosaic patter linked to topographic, pedological and or/geological features. In this area, Beard recognised three vegetation systems:

Hyden, Chidnup and Pallinup. The Shire is mostly covered by the Hyden system. Vegetation communities corresponding to landscape positions is described in Table 4. The dominant vegetation within the Shire consists of malleee and shrubland and the understory are commonly tea-tree shrubs.

Table 4: Vegetation Communities corresponding to Landscape Positions (Department of Agriculture and Food Western Australia)

	Landscape Position		
Vegetation System	**Gravel on hillcrests**	**Hillslopes**	**Drainage Lines & Valleys**
Hyden	Scrub-heath or thickets	Mallee *E. eromophila, E. foecunda, E.redunca, E. transcontinentalis, E. calycogona, E. celastroides* and *E. incrassate* with Melaleuca shrubs Woodland of *E. salmonophloia* and *E. salubris* on lower slops.	Mallee (*E. redunca*) and woodlands of *E. loxophleba, E. longicornis, E. salmonophloia, E. salubris* and *E. kondininensis* near salt lakes.
Chidnup (described as Ongerup, Beard 1980)	Scrub-heath with scattered mallee (*E. tetragona* on sandy	Mallee on upland plains, including associations of *E. eremophila – E. oleosa* and *E. redunca-E. unicainata.* On hillslopes	*E. occidentalis* in depressions and along valley floors

	soils *E. falcate* often in mallee from on gravels	of valleys woodlands of E. loxophleba, E. longicornis, on clays *E. occidentalis* with occasional *E. salmonophloia* or *E. platypus* low forest.	
Pallinup (included in Hyden in Beard 1980)	Low forest of *E. flocktoniae* and *E. gardneri* on gravels	Mallee on upland plains, including *E. redunca* and *E. uncinata*. On hillslopes of valleys woodlands of *E. loxophleba* and *E. Occidentalis* with some, *E. longicornis, E. wandoo* and E. calophylla *E. platypus* and *E. Occidentalise* on clays	*E. rudis* and *E. occidentalis* on levees and banks with *C. obesa* along stream channel. *E. loxophleba* and *A. huegeliana* on sandy deposits.

5.12.1. Remnant Vegetation

26.8% of the original native vegetation remains in the Shire and this is located in variety of tenures from nature reserves to privately owned land.

The amount of uncleared native vegetation within the Shire of Kent reflects the history of settlement and land clearing in the area. The Shire of Kent has 151,890ha of remaining remnant vegetation (Figure 33), which represents the 26.8% of the Shire and includes native vegetation on private and crown land. The Shire has much a much higher percentage of remnant vegetation remaining when compared to adjoining Shires (9-22%), due to the large area which are protected in public reserves including Lake Magenta and Lake Chinocup, which form the largest areas of native vegetation remaining in the survey area. Higher proportions of remnant vegetation are located near reserves and on the broad valley floors and large salt lake chains. This is often fringing vegetation or degraded vegetation on saline soils.

Under the *Environmental Protection Act 1986*, the clearing of native vegetation requires a permit from the Department of Environment Regulation, unless it is for an exempt purpose. There is an opportunity to promote conservation of vegetation in perpetuity through biodiversity incentive programs.

Figure 33: Remnant Vegetation (DPaW Nature Map 2015)

5.13. AREAS OF ENVIRONMENTAL SIGNIFICANCE

The Shire has numerous reserves mostly vested with the CALM and DoW for conservation. There are a substantial number of reserves not vested with any Department for management, and lots identified as 'Unallocated Crown Land (UCL)'.

Areas of environmental significance within the Shire include Lake Bryde, Lake Magenta Nature Reserve the Lake Grace Salt Lake Systems.

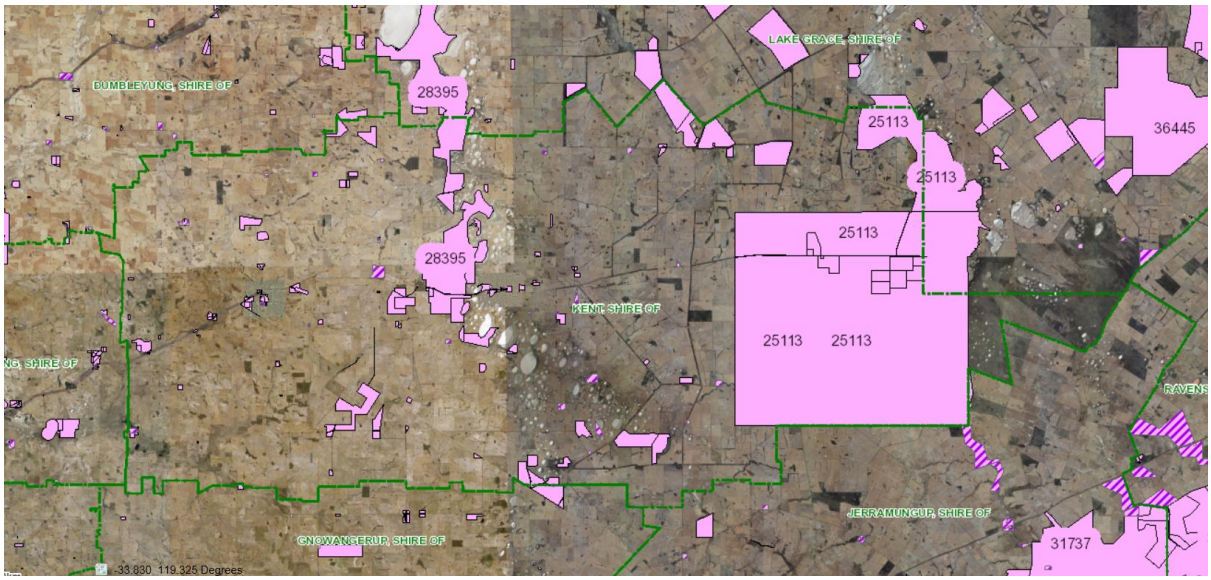

Figure 34: Reserve Locations (purple)

Lake Bryde/East Lake Bryde System

Lake Bryde/East Lake Bryde is a freshwater wetland system listed on the Directory of Important Wetlands which are part of a chain of lakes that extend to Lake Magenta. The Reserve contains the only shrub dominated lake bed vegetation community which has been declared a critically

endangered threatened ecological community. The lakes are at risk of secondary salinity and water erosion affecting the extent, density and condition of the shrub beds. However flooding associated with the water erosion is important for the health of the wetland.

The system is important for waterbird and biodiversity within the Shire and for the broader region. DPaW establish and manage the Lake Bryde Recovery Catchment project. The Recovery Catchment area covers approximately 140,000ha, of which 36% is located in reserve or remnant vegetation on farms. A number of studies have been undertaken and management strategies including groundwater and surface water management have been prepared in an effort to reduce secondary salinity risk to the system.

Lake Magenta Nature Reserve

Lake Magenta Nature Reserve is one of the largest reserves in the Avon Wheatbelt region and is 1,080 km2. The Nature Reserve contains Lake Magenta, a large salt pan lake, other ephermeral fresh and saline depressions and the headwaters of Fitzgerald River. It is an 'A' Class Reserve which was reserved in 1958 and primarily for the purpose of conservation of the mallee fowl and other rare fauna uniquely adapted to the mallee-woodland vegetation. The reserve is vested with the Executive Director of the Department of Conservation and Land Management and managed by National Parks and Nature Conservation Authority. The size and isolation of the area means that it is in pristine condition. The reserve is an important bird habitat area and identified as an Important Bird Area by Birdlife International. Lake Magenta Reserve is habitat of 5 threatened fauna species.

An additional 247km^2 of Unallocated Crown Land with similar conservation values to the Reserve is located immediately to the east.

Lake Grace System/Chinocup Nature Reserve

The southern portion of the lake grace system ends within the Shire of Kent and partly contains the Chinocup Nature Reserve which is vested with the National Parks and Nature Conservation Authority as an 'A' Class Reserve. The lakes are of major importance to waterfowl for feeding, loafing and breeding.

Threatened and Priority Flora and Threatened and Priority Fauna

Under the *Biodiversity Conservation Act 2016*, native plants and fauna can be listed as Threatened (critically engendered, endangered or vulnerable) identifying they are at risk. Those that are rare, but not threatened can be identified as Priority.

The Shire has a number of priority and threatened flora and fauna identified within its local government boundaries. New development should be located to avoid areas of Threatened and Priority flora where possible, or if not avoidable undertake the necessary investigations and applications to assess the potential impacts.

Threatened and Priority Ecological Communities

Ecological communities refers to species which are dependent on ecosystems which should be managed as a whole. The *Biodiversity Conservation Act 2016* provides for the statutory listing of Threatened Ecological Communities by the Minister, for communities that are rare and threatened. Those that are rare, but not threatened may be identified as a Priority Ecological Communities.

The Shire has numerous areas identified as TEC's mostly covering areas of remaining remnant vegetation around townsites and agricultural land and two PEC's located over and adjoining a salt

lake west of the Pingrup townsite. New development should be located to avoid areas of TEC's and PEC's where possible, or if not avoidable undertake the necessary investigations and applications for modification.

Management Implications

Areas of environmental significance, remnant vegetation and wetlands/lakes should be conserved and protected, and where not protected through location in a reserve, conservation and protection encouraged through land use planning. Land use planning can address these issues through:

- Appropriately zoning and identifying areas of environmental significance as Reserves for protection.
- Encouraging revegetation to aid in the reduction of salinity and waterlogging through the implementation of biodiversity incentive programs.
- Ensuring development proposals comply with the Government Sewerage Policy / SPP 2.9 once gazetted, particularly where onsite effluent disposal is proposed in Sewerage Sensitive / Sensitive Water Resource Areas.

5.14. BUSHFIRE

Fires represent a hazard in the district, particularly with a drying climate and decrease in water availability. Fire Management Strategies and Planning for Bush Fire are essential to protecting both the built and natural environment from uncontrolled fires and can be assisted by land use planning.

Existing town-sites are well equipped with alternate access points, emergency evacuation points and water access. The majority of residential and mixed use zoned land capable of accommodating habitable development within townsites are also not within areas which have been designated as 'bushfire prone'.

New development, where located within a designated bushfire prone area will be subject to compliance with bush fire prone provisions of State Planning Policy 3.7 Planning in Bushfire Prone Areas and AS3959. Where new land is to be rezoned to create development potential the amendment will have to demonstrate that a moderate bush fire risk can be achieved (as opposed to high/extreme). Land use planning shall carefully assess bushfire risk of new development locations to ensure that there are no adverse impacts on the environment to achieve an adequate bushfire risk level.

The Shire is currently in the early processes of progressing a 'Bushfire Risk Mitigation Plan' which will assess the risk of bushfire to the Shire and identify appropriate actions to mitigate the risk.

5.15. RURAL LAND

5.15.1. Protection of Agriculture Areas

Agriculture is the most significant land use within the Shire in terms of both land area and economic value. State Planning Policy 2.5 – Agricultural and Rural Land Use Planning key objective is to protect agricultural land from incompatible development. This occurs through the identifying of land as 'Priority Agriculture' (land with high capabilities for a range of agricultural land uses) and 'General Agriculture'. Priority Agricultural land is defined by SPP2.5 as being land which:

a) Has been identified by State agencies and the local government in consultation with the community as an agricultural area of State and regional significance; and
b) Has been identified in a local planning strategy as being an area of local agricultural significance.

The Department of Primary Industries and Regional Development advised that the Shire is unlikely to contain any 'Priority Agricultural' land and the land resource surveys conducted within the Shire do not indicate that there are soils likely to have high capabilities and be identified as having State, Regional significance. It should be noted however, that the land capability assessment in this local planning strategy has used broad scale mapping, and that detailed land capability assessment should be undertaken on a case by case basis to support proposed developments.

The capability of soils within the Shire is largely dependent on the underlying geology. From a broad analysis it can be concluded that the agricultural areas of the Shire are generally capable of broad acre agriculture and grazing. Protection of Agricultural areas can occur by identifying appropriate zoning of land and regulating land use to protect agriculture uses from incompatible land uses within a Local Planning Scheme. Given that the Shire is likely to only contain 'General Agriculture' land, agricultural land within the Shire shall be appropriately zoned as 'Rural', within the Local Planning Scheme.

Subdivision of rural land is currently controlled by SPP2.5, which identifies rural land without a zoning as 'rural'. DC 3.4 provides criteria for subdivision of Rural Land which appropriately controls land division and discourages further land fragmentation of rural land. Given that there is limited potential for priority agricultural land and 'intensive agriculture' land uses such as horticulture or viticulture within the Shire there is no need to identify further subdivisional criteria for intensive agricultural land uses within the Local Planning Strategy.

The Strategy identifies that the Shire has a high risk of Salinity due to the history of clearing, increased run-off and generally rising water tables which have the potential to affect agricultural productivity. Landowners are encouraged to undertake replanting within these areas to introduce species with deep roots to control ground water levels. The Shire should investigate the potential to adopt and implement a Biodiversity Subdivision programme and adopting criteria for further subdivision potential or rate rebates, subject to areas of high risk of salinity being replanted with deep rooted species.

5.15.2. Diversification of Agriculture

Farmers are increasingly encouraged by the DoA to investigate the diversified use of land, both to reduce degradation from continued use of the same agricultural practices and forestry is also promoted

as a tool to contain increasing salinity. Land use planning for the Shire shall encourage and allow for diversification of agricultural land uses.

Forestry, Carbon Sequestration and abatement are a potential source of additional income from agricultural land, and a land care tool to reduce the risk of salinity.

The expansion of any processing industries subsidiary to agricultural land uses shall be encouraged, subject to environmental and amenity values being maintained.

5.15.3. Mining

In total, there are 25 granted mining tenements, eight pending mining tenements wholly or partly within the Shire. Most of the mining companies are targeting gold, silver, base metals, bauxite, clay, gypsum and dolomite. There are no active petroleum titles. Basic raw materials (BRM) are defined as a mineral when on Crown land, and hence the need for mining leases under the Mining Act 1978 for basic raw material extraction in Crown reserves. On private property, basic raw material extraction and sale is authorised by the Shire through grant of Extractive Industry Licenses. Extraction of basic raw materials is required for all new infrastructure (roads, telecommunications etc) to be built in the Shire. Gypsum is used for improving the productivity of certain types of agricultural land where the soil structure is limiting plant growth. Gypsum is a low value commodity and transport costs are the major factor in its potential use when compared with different sources. Dolomite contains calcium and magnesium and can be used to lower the PH of soils and is also used in large quantities for the construction of float glass and similar products.

There is little risk from significant extraction areas being limited by the expansion of urban growth or other land uses and no need to protect future extraction areas from incompatible land uses. Currently there is no management of extractive industries within the Shire. The new Scheme will incorporate a requirement for planning consent for any new extractive industry applications, and the Shire is also preparing a Local Law to regulate their operation.

There are no large mining projects operating within the Shire. The Aus Gold Mine is a potential project 50km north east of Katanning, of which the southern portion directly abuts the Shire of Kent boundaries and has potential to host a multi-million-ounce gold deposit which is expected to create about 200 new jobs should it reach operational stage. It is expected that the economic benefits from this will mostly be contained in the Katanning Shire; however, the operation can provide an additional source of employment to existing and future residents with the Shire.

5.15.4. Land Degradation

Salinity

One of the greatest risks to the Shire is the spread of salinity due to increased run-off from historical clearing and a rising groundwater table. The main focus of strategies prepared to address salinity focus on the revegetation of clear areas with deep rooted species to reduce groundwater levels and the rehabilitation of salt affected land. As part of a state-wide strategy to combat and manage salinity, the state government has produced the Salinity Action Plan. The aim of the plan is to:

- Reduce the rate of degradation of agricultural land, and where practicable, recover, rehabilitate, or manage salt affected land.

- Protect and restore key water resources to ensure salinity levels are kept to a level that permits safe, potable water supplies.
- Protect and restore high value wetlands and natural vegetation and maintain natural diversity within agricultural areas.

In terms of management of ground and surface water, the Salinity Action Plan contains several water management strategies:

- Increasing water use by introducing deep rooted species;
- Increasing water use by annual crops and pastures;
- Draining, pumping and disposing of groundwater;
- Improving protection and management of remnant vegetation.

Land Use Planning shall encourage revegetation in saline areas and areas at high risk of developing salinity. The Shire should consider introducing a Biodiversity program to provide additional criteria to the state which will introduce subdivision and or rate rebate incentives for revegetation of areas at risk.

Wind and Water Erosion

Protection and reinstatement of vegetation is the most effective method of managing erosion. When located appropriately vegetation contributes to water use, can bind soil and can act as a windbreak. Maintaining ground cover in agricultural areas provides another opportunity to control erosion.

Soil Acidification

The use of less acidic fertilisers and the application of lime, and increased use of perennial grasses can assist in managing soil acidification. Extractive industries within the Shire which extract products with the potential to lower PH and improve soil structure will be encouraged through land use planning.

Environment and Conservation

The protection of existing remnant vegetation is a priority for the Shire given that only 27% of the pre-clearing vegetation exists and to ensure the ongoing success of the established agricultural base. The clearing of vegetation has contributed to many of the environmental degradation issues present in the Shire.

Broad principles to be encouraged to protect environmental and conservation values and assist in the management of agricultural lane within the Shire include:

- Restrict further clearing of riparian vegetation.
- Ensure adequate setbacks are achieved between nutrient sources (fertilisers, effluent disposal systems) and watercourses.
- Protect existing remnant vegetation.
- Adequately manage new development location, so that unnecessary clearing to reduce bushfire risk is not undertaken.
- Consider the impacts of climate change on the environment and implement appropriate measures to limit the impact of those changes on an ongoing basis.

The further clearing of remnant vegetation should not be supported. Revegetation of cleared land should be encouraged, particularly along creek lines, drainage lines, and areas at risk of salinity or developing salinity and catchments which drain to freshwater systems.

The Shire should consider investigating and adopting initiatives to encourage revegetation in areas such as a biodiversity revegetation program which uses incentives such as subdivision and/or rate rebates to encourage revegetation. Areas of existing remnant vegetation should be fenced to restrict stock access and weed control.

The clearing of remnant vegetation is controlled by the Department of Environment Regulation which requires the issuing of clearing permits for the clearing of vegetation which is not an exempt works.

It is also recommended that the Shire conduct a Strategic Land Review to identify land parcels in the Shire's ownership and Unallocated Crown Land into management.

6. References

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Appendix 1 – Land Systems

JERRAMUNGUP AREA
LAND RESOURCE MAP No

DRAFT
COPY ONLY

SOIL-LANDSCAPE MAP OF THE JERRAMUNGUP AREA

T.D. Overheu
Natural Resources Assessment Group
Agriculture Western Australia

To accompany Land Resources Series No.

Legend of soil-landscape mapping units arranged in alphabetical order

Bb **Bremer System:** Poorly drained coastal plain, on south-eastern edge of the Albany Sandplain, with grey sandy duplex (mostly shallow), pale deep sand and sandy gravel. Mallee scrub and coastal heath.

Bu **Buniche System:**

Ch **Chillinup System:** Level to gently undulating sandplain with dunes and lakes, in the Albany Sandplain Zone, with grey deep sandy duplex, grey shallow sandy duplex and pale deep sand. Mallee-heath and yate and banksia woodlands.

Cp **Cairlocup System:**

Cs **Cascades System:**

Du **Dunns System:** Undualting rises, in the south-eastern Zone of Ancient Drainage, with shallow gravel, deep sand (pale and yellow), grey shallow sandy duplex and bare rock. Mallee-heath and salmon gum-york gum woodland.

Fz **Fitzgerald System:** Valleys and breakaways, in the Jerramangup Sandplain Zone, with alkaline grey shallow duplex (loamy and sandy) and grey shallow duplex (loamy and sandy). Woodland, mallee scrub and heath.

Ha **Halbert System:** Level plains of paleo valleys with numerous salt lakes between larger playa lakes. Soils are grey shallow alkaline duplex soils, calcareous loams and salt lake soils. Pale deep sands occur on lunettes on the eastern sides of lakes.

Ho **Hope System:** Broad valley floors on greenstone in the eastern Zone of Ancient Drainage. Grey sandy duplex (often alkaline) and loamy earths (usually calcareous).

Hp **Hillup System:** System Level to very gently inclined plain, minor river valley and headwaters. Dominant soils are shallow alkaline duplex soils and deep sandy duplex soils. Associated soils are calcareous loams.

Ja **Jarramongup System:** Gently undulating plateau, in the Jerramangup Sandplain Zone, with grey sandy duplex (shallow and deep), alkaline grey shallow loamy duplex and saline wet soil. Mallee scrub.

Jo **Jonacoonack System:** Valleys and breakaways on Tertiary sediments, in the eastern Albany Sandplain Zone, with bare rock, stony soil, pale shallow sand and pale deep sand. Mallee-heath.

Kg **King System:** Dissected siltstone and sandstone terrain, on the southern edge of the Albany Sandplain Zone, with shallow gravel, sandy gravel, grey sandy duplex and pale deep sand. Jarrah-marri-sheoak woodland and mallee-heath.

Ky **Kybulup System:** Low hills and rises draining south along ephemeral coordinated tributary streams. Remnant sandplains have a small occurrence. Soil are shallow duplex soils. Associated soils are gravelly deep duplex soils and pale deep sands.

La **Lagan System:** Salt lake chains, in the southern Zone of Ancient Drainage, with salt lake soil and calcareous loamy earth. Mallee, morrel woodland and saltbush-bluebush-samphire flats.

Lg **Lower Gairdner System:** Level to gently undulating terrain on granite, in the Jerramanugup Sandplain Zone, with grey sandy duplex (shallow and deep) and shallow loamy duplex. Mallee-heath and yate woodland.

Ln **Lillian System:** Plain with occasional hills, in the south-eastern Zone of Ancient Drainage, with grey sandy duplex (mostly shallow), alkaline grey shallow duplex (sandy and loamy) and shallow gravel. Mallee scrub and heath.

Lp **Lower Pallinup System:** Valleys and breakaways, in the eastern Albany Sandplain Zone, with grey deep sandy duplex (mostly alkaline), sandy gravel and shallow sand. Yate woodland, mallee scrub and heath.

Mm **Mount Manypeaks System:** Granitic hills and headlands, on the southern edge of the Albany Sandplain Zone, with shallow gravel, bare rock grey shallow sandy duplex and sandy gravel. Low woodland, scrub heath and mosses and lichens on rocks.

Mp **Middle Pallinup System:** Gently undulating rises, in the Jerramanugup Sandplain Zone, with alkaline grey shallow duplex (sandy and loamy), grey sandy duplex (shallow and deep) and red shallow loamy duplex. Mallee scrub and yate woodland.

Mu **Munglinup System:** Gently undulating sandplains and rises with some level plains. Bounded to the south by a shallow rocky escarpment. Bedrock depth is variable and occasionally outcrops. Soils dominantly gravelly deep and shallow duplex soils and pale deep sands.

Nn **Nuanenup System:**

Np **Needillup System:**

Ns **Nesheeb System:** Very gently inclined footslopes and lower slopes in the eastern Zone of Ancient Drainage. Grey sandy duplex and sandy earths.

Nw **Newdegate System:** Undulating rises, in the south-eastern Zone of Ancient Drainage, with grey sandy duplex (shallow and deep), alkaline grey shallow duplex (sandy and loamy), pale deep sand and shallow gravel. Mallee-heath.

Od **Oldfield System:** Gently undulating plains to undulating rises of dissected granitic profiles and lateritic remnants. Shallow rock and rock outcrops are common. Dominant soils are shallow sandy duplex soils on plains and hillslopes. Gravelly soils occur on deep weathering remnants.

On **Ongerup System:**

Pg **Pingrup System:** Valley floor and salt lakes, in the south-eastern Zone of Ancient Drainage, with alkaline grey shallow duplex (sandy and loamy), calcareous loamy earth, pale deep sand and saline wet soil. Mallee and salmon gum-flat topped yate woodland.

Ra **Ravensthorpe System:** Greenstone range and adjoining hillsslopes. Soil are dominantly red clays and calcareous loams. Associated soils are gravels present on crests and upper slopes. A series of hills to the southwest has more duplex soils and calcareous loams reflecting variations in geology.

Sh **Sharpe System:** Saline playa lakes. Large saline playas with areas of level plains with salt lake clusters.

Sg **Stirling System:**

Sz **Suzetta System:** Bench and escarpment, on the southern edge of the Jerramanugup Sandplain Zone, with grey shallow duplex (shallow and deep), grey non-cracking clay and pale shallow sand. Mallee-heath.

To **Tooregullup System:** Coastal sand dunes. Two main soil types are deep calcareous sands and shallow calcareous sands on soft limestone. Swales have similar soils with higher organic matter contents in the top 20cm.

Ug **Upper Gairdner System:** Gently undulating rises, in the Jerramanugup Sandplain Zone, with alkaline grey shallow duplex (mostly sandy), grey sandy duplex (shallow and deep) and saline wet soil. Mallee scrub and yate-moort woodland.

Wh **Whoogarup System:** Prominent quartzite mountains of East Mount Barren and some associated smaller hills. The soils are mainly shallow and stony with some associated duplex soils and deep sands on the lower slopes.

Wr **Warramurrup System:**

Yr **Yarmarlup System:** Undulating rises and low hills, in the Jerramanugup Sandplain Zone, with ared loamy duplex (shallow and deep) and pale shallow sand. Yate woodland.

Soil landscape boundary
Cadastral road boundary
Surveyed cadastral boundary
Boundary of agricultural area
Breakaway
Dolerite dyke

N

Scale 1:250 000

5 0 5 10 15 20 25 kilometres

Areal scale

8000 ha in units of 1000 ha

Bibliographic reference

Overheu, T.D. 1998. "Soil-landscape map of the Jerramungup Area"
(Scale 1:250 000). Agriculture Western Australia Land Resource Map No.
To accompany "Jerramungup Area Land Resources Survey", Land Resources Series No.

Acknowledgements

Soil Survey by T.D. Overheu, R. Swan and R. Marold, Agriculture Western Australia.
Digital cadastral base supplied by the Department of Land Administration. Map prepared by P.M. Goulding and I. Pfaff-Mitic, Agriculture Western Australia.

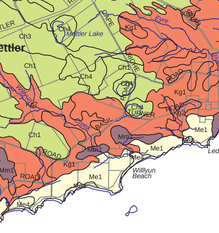
Reference

Projection:	Universal Transverse Mercator
Grid:	AMG zone 50
Source data:	Field survey and interpretation of aerial photography and satellite imagery.
Aerial photography:	WA3068, 1:50 000, Jan., Feb., May, Jun. 1993, black and white.
Satellite imagery:	Landsat TM 109-83E bands 7, 5, 3, 15/2/88

Use of map

This map is designed for use at the published scale. Technical queries should be directed to the Natural Resources Assessment Group, Agriculture Western Australia.

Location diagram



Index to adjoining surveys

Sampling sites

Local Government Authorities, CALM Estate and Rainfall Isohyets

NYABING-KUKERIN
LAND RESOURCE MAP No. 34

SOIL-LANDSCAPE MAP OF THE NYABING-KUKERIN AREA

H.M. Percy and M.J. Roberts
Department of Agriculture Western Australia

Legend of soil-landscape mapping units arranged in alphabetical order

Coblinine System: Broad (1-7 km), level to gently inclined alluvial plains and lacustrine plains. Saline wet soils and alkaline grey shallow sandy duplex soils with minor areas of grey sandy duplex soils and alkaline grey shallow loamy duplex soils.

- Cb1 Plains with stream channels and dunes. Grey shallow sandy and loamy duplex soils, usually with alkaline subsoils, and yellow/brown shallow sandy duplex soils.
- Cb2 Plains with stream channels and dunes. Saline wet soils and alkaline grey shallow sandy duplex soils with minor grey deep sandy duplex soils.
- Cb3 Plains with stream channels and dunes. Saline wet soils with minor areas of alkaline grey shallow sandy duplex soils and grey hard cracking clays.
- Cb4 Lakes and swamps (saline and fresh) and associated lunettes, swales and dunes. Salt lake soils and saline wet soils with minor areas of grey hard cracking clays and alkaline grey shallow loamy duplex soils.

Datatine System: Gently undulating to undulating rises associated with rock outcrops and narrow alluvial plains. Red calcareous loamy earths, alkaline red shallow loamy duplex soils, alkaline grey shallow sandy duplex soils and minor ironstone gravelly soils.

- Dt1 Middle to upper slopes, hillcrests and breakaways. Shallow gravels, loamy gravels, deep sandy gravels and duplex sandy gravels.
- Dt2 Lower to upper slopes and hillcrests. Red calcareous loamy earths, alkaline red and grey shallow loamy duplex soils and grey sandy duplex soils, frequently with alkaline subsoils.
- Dt3 Footslopes, lower to middle slopes. Red calcareous loamy earths, alkaline grey shallow loamy duplex soils and loamy gravels.
- Dt4 Valley flats and plains (800-1500 m wide). Alkaline grey shallow duplex soils, saline wet soils, alkaline red shallow loamy duplex soils, red/brown non-cracking clays and calcareous loamy earths.

East Katanning System: Gently undulating to undulating rises. Sandy gravels with grey shallow and deep sandy duplex soils, including soils with alkaline subsoils.

- Ek1 Middle to upper slopes and hillcrests. Deep sandy gravels and shallow gravels with minor areas of duplex sandy gravels, loamy gravels and gravelly pale deep sands.
- Ek1s Middle and upper slopes. Pale deep and shallow sands and gravelly pale deep sands.
- Ek2 Lower to upper slopes and hillcrests. Grey shallow and deep sandy duplex soils, alkaline grey shallow sandy duplex soils and duplex sandy gravels.
- Ek3 Lower and middle slopes, rarely upper slopes and crests. Grey shallow loamy duplex soils, often with alkaline subsoils, grey loamy earths, alkaline grey shallow sandy duplex soils and calcareous loamy earths.
- Ek4 Valley flats (200-500m wide). Saline wet soils and grey sandy duplex soils.

Kukerin System: Gently undulating rises and narrow alluvial plains. Alkaline grey shallow sandy duplex soils, grey deep sandy duplex soils, shallow gravels, deep and duplex sandy gravels and loamy gravels.

- Kk1 Lower to upper slopes, summit surfaces and hillcrests. Shallow gravels, deep sandy gravels and loamy gravels with duplex sandy gravels and reticulite sandy gravels common.
- Kk1dg Middle and upper slopes and hillcrests. Deep sandy gravels with significant areas of loamy gravels and shallow gravels.
- Kk1s Lower to upper slopes. Pale shallow and deep sands with minor areas of gravelly pale deep sands and yellow deep sands.
- Kk2 Lower to upper slopes below breakaways. Alkaline grey shallow sandy and loamy duplex soils, grey deep sandy duplex soils and duplex sandy gravels.
- Kk3dd Lower to upper slopes. Grey deep sandy duplex soils and alkaline grey shallow sandy duplex soils with minor areas of alkaline grey deep sandy duplex soils.
- Kk3sd Lower to upper slopes and hillcrests. Alkaline grey shallow sandy duplex soils and grey deep sandy duplex with minor areas of grey calcareous loamy earths and brown loamy earths.
- Kk3u Lower to upper slopes. Alkaline grey shallow sandy duplex soils and grey deep sandy duplex soils with minor areas of alkaline grey deep sandy duplex soils.
- Kk4 Valley flats and narrow alluvial plains (200-1000 m wide). Alkaline grey shallow sandy and loamy duplex soils with saline wet soils and grey calcareous loamy earths.

Lagan System: Chains of salt lakes on saline broad valley floors and associated lunettes. Salt lake soils with saline wet soils and calcareous loamy earths.

- La1lf Lunettes, swales and salt channels with small salt lakes. Calcareous loamy earths, salt lake soils and very minor areas of alkaline grey shallow sandy duplex soils.
- La1sal Recently salinised alluvial plains, adjacent to playa lakes. Saline wet soils with minor areas of alkaline grey shallow sandy duplex soils.
- La1sl Seasonally dry playa lakes. Saline and gypsiferous clays and silts within salt lakes (salt lake soils).
- La2 Large lunettes and dunes. Grey calcareous loamy earths with minor areas of brown loamy earths and alkaline grey duplex soils.

Newdegate System: Gently undulating rises and plains. Grey and yellow/brown sandy duplex soils, often alkaline, with alkaline grey shallow loamy duplex soils, shallow gravels and duplex sandy gravels.

- Nw1 Flats and lower to middle slopes. Grey and yellow/brown shallow duplex soils, usually alkaline, with grey calcareous loamy earths and minor ironstone gravels.
- Nw1a Lower slopes on low rises or dunes. Calcareous loamy earths and alkaline grey shallow sandy duplex soils.
- Nw2 Lower to upper slopes and hillcrests. Grey and yellow/brown sandy duplex soils, often alkaline and duplex sandy gravels.
- Nw3 Sand sheets and linear dunes. Grey sandy duplex soils, pale deep sands and alkaline grey shallow sandy duplex soils.
- Nw4 Middle and upper slopes and breakaways. Yellow/brown duplex soils, duplex sandy gravels and shallow gravels with minor areas of grey duplex soils, often shallow and alkaline.
- Nw6 Lower to upper slopes and hillcrests with rock outcrops. Bare rock, stony soils, brown deep sands, yellow/brown deep sandy duplex soils with red duplex soils, loamy earths and red/brown non-cracking clays.

Nyabing System: Gently undulating rises. Alkaline grey shallow duplex soils, grey shallow and deep sandy duplex soils, duplex sandy gravels and shallow gravels.

- Ny1 Middle and upper slopes and hillcrests. Duplex sandy gravels, shallow gravels, deep sandy gravels and loamy gravels with grey deep sandy duplex, yellow/brown sandy duplex and pale deep sands.
- Ny1s Middle and upper slopes. Pale deep sands and gravelly pale deep sands with minor pale shallow sands and duplex sandy gravels.
- Ny2 Lower to upper slopes and hillcrests. Alkaline grey shallow sandy and loamy duplex soils, grey deep and shallow sandy duplex soils with minor duplex sandy gravels and acid shallow duplex soils.
- Ny3 Lower to upper slopes. Alkaline grey shallow loamy duplex with significant rock outcrop, alkaline red shallow loamy duplex soils and grey hard cracking clays.

Pingrup System: Level to gently undulating plains with swamps and lakes (fresh and saline) and low dunes. Alkaline grey shallow loamy duplex soils, alkaline grey shallow sandy duplex soils, calcareous loamy earths, pale deep sands, saline wet soils and salt lakes.

- Pg1 Lakes and swamps with lunettes, dunes and flats. Salt lake soils, grey calcareous loamy earths and grey sandy and loamy duplex soils, usually with alkaline sodic subsoils.
- Pg1s Recently salinised flats and stream channels. Saline wet soils, alkaline grey shallow sandy and loamy duplex soils and non-cracking clays.
- Pg2 Plains with occasional lunettes and dunes. Alkaline grey shallow sandy and loamy duplex soils, grey shallow sandy duplex soils and alkaline grey deep sandy duplex soils.
- Pg3 Linear dunes, lunettes and sandplain. Pale deep sands, grey deep sandy duplex soils, alkaline grey deep sandy duplex soils and wet soils.
- Pg5 Lakes, swamps (fresh) and lunettes. Wet soils with pale deep sands and deep sandy duplex soils on lunettes.
- Pg6 Stream channels, valley flats and alluvial plains (400 to 3000 m wide). Alkaline grey shallow sandy and loamy duplex soils and saline wet soils with grey and red/brown non-cracking clays and grey shallow sandy duplex soils.

Sharpe System: Broad level to gently undulating plains with salt lakes. Alkaline grey shallow loamy and sandy duplex soils, calcareous loamy earths, saline wet soils, pale deep sands and salt lake soils.

- Sh2 Level plain with many small playa lakes, lunettes and dunes. Alkaline grey shallow sandy duplex soils, salt lake soils, calcareous loamy earths, pale deep sands and yellow/brown shallow sandy duplex soils.
- Sh2f Broad (750 to 6000 m), level alluvial plains draining into playa lakes. Alkaline grey shallow, and less commonly deep, sandy duplex soils and alkaline grey shallow loamy duplex soils.

Toompup System: Gently undulating rises and dissected upland plains. Grey deep and shallow sandy duplex soils, duplex sandy gravels with minor areas of shallow gravels, yellow/brown and alkaline grey sandy duplex soils.

- Tm2 Middle and upper slopes, summit surfaces and upland plains. Grey deep and, less commonly, shallow sandy duplex soils, duplex sandy gravels and yellow/brown sandy duplex soils.
- Tm3 Lower to upper slopes and flats. Alkaline grey sandy duplex soils, grey deep sandy duplex soils and alkaline grey shallow loamy duplex soils.

Tieline System: Level to gently undulating plains and gently undulating rises. Grey sandy duplex soils, alkaline grey shallow duplex soils, saline wet soils, grey shallow loamy duplex soils and loamy earths.

- Tn1 Valley flats and alluvial plains (500-4000 m wide). Alkaline grey shallow loamy and sandy duplex soils and grey sandy duplex soils with saline wet soils common along stream channels.
- Tn2 Lower to upper slopes and broad hillcrests. Grey sandy duplex soils and alkaline grey shallow sandy and loamy duplex soils with minor areas of grey loamy earths, often calcareous.
- Tn3 Small isolated areas of upper slopes and hillcrests. Duplex sandy gravels and shallow gravels with minor areas of alkaline grey shallow loamy duplex soils.

Upper Pallinup System: Gently undulating and undulating rises with upland plains. Grey shallow and deep sandy duplex soils, alkaline grey shallow sandy and loamy duplex soils with minor rock loamy duplex soils and gravels.

- Up1 Upper slopes and hillcrests. Duplex sandy gravels, shallow gravels and deep sandy gravels with alkaline grey shallow sandy duplex soils and grey deep sandy duplex soils.
- Up1s Middle and upper slopes. Gravelly pale deep sands with pale deep and shallow sands.
- Up2 Lower to upper slopes, broad hillcrests and upland plains. Grey shallow sandy and loamy duplex soils, including soils with alkaline subsoils and grey deep sandy duplex soils.
- Up3 Lower to upper slopes and hillcrests. Grey sandy duplex soils, generally shallow, outcrops of granite and dolerite and minor areas of red duplex soils.
- Up4 Footslopes, lower slopes and narrow valley flats (<100 m wide). Grey shallow sandy and loamy duplex soils, mainly with alkaline subsoils, and minor areas of duplex sandy gravels and saline wet soils.
- Up5 Valley flats (100-300 m wide) with steam channels and some lower slopes. Saline wet soils and minor areas of alkaline grey shallow sandy duplex soils, brown and pale deep sands.
- Up6 Valley flats and narrow alluvial plains (300-1500 m wide). Alkaline grey shallow duplex soils, grey deep and shallow sandy duplex soils with minor areas of saline wet soils and alluvial brown deep sands.

Lakes which occur in La1 and Pg5 subsystems.

Colour legend

Province	Zone	Landform pattern	Soil-landscape system
Avon	South-western Ancient Drainage	Alluvial plains	Cb
		Rises	Dt Ek Kk
	South-eastern Ancient Drainage	Salt lakes and alluvial plains	La Pg Sh
		Rises	Nw Ny Tn
Stirling	Pallinup	Rises	Tm Up

Reference

Datum:	Geocentric Datum of Australia 1994
Projection:	Universal Transverse Mercator Zone 50
Grid:	Map Grid of Australia 1994
Source data:	Field survey and interpretation of aerial photography
Aerial photography:	Job No. 900483 1:25,000 June 1990 and Job No. 920408 Nov. 1992

Use of map

This map is designed for use at the published scale. Technical queries should be directed to Natural Resources Assessment Group, Department of Agriculture, Western Australia.

Zone boundary
Soil landscape boundary
Cadastral road boundary
Surveyed cadastral boundary
River or stream

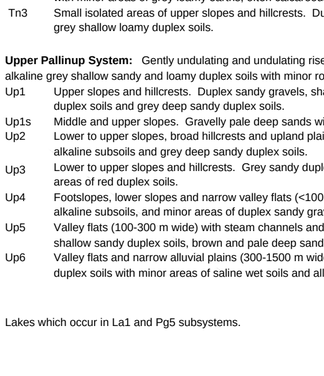
Areal scale

2,000 ha in units of 250 ha

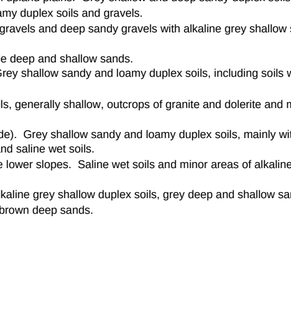
Scale 1:150,000

5 0 5 10 15 kilometres

Location diagram



Index to adjoining surveys



Bibliographic reference

Percy, H.M. and Roberts, M.J., (2003). "Soil-landscape map of the Nyabing-Kukerin Area" (Scale 1:150,000, 1 map sheet). Department of Agriculture Land Resource Map No. 34. To accompany "Nyabing-Kukerin area land resources survey".

Acknowledgements

Soil survey by H.M. Percy and M.J. Roberts, Department of Agriculture, Western Australia. Digital cadastre base supplied by the Department of Land Administration, Western Australia. Map prepared by A. Stuart-Street, K. Kuswardiyanto, J. Wagnon and P.M. Goulding, Department of Agriculture, Western Australia. Funded by the National Landcare Program.

Reference to technical terms

McDonald, R.C., Isbell, R.F., Speight, J.G., Walker, J. and Hopkins, M.S. (1990). "Australian soil and land survey field handbook". Inkata Press, Melbourne.
Soils described in the legend comply with "Soil groups of Western Australia
A simple guide to the main soils of Western Australia" (Schoknecht 2002).
Department of Agriculture Resource Management Technical Report No. 246.