WAROONA NORTH STRUCTURE PLAN

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Executive summary

The Shire of Waroona is located within the fast-growing Peel Region. The Shire itself is experiencing a slow transformation with a changing pattern of land use, and it is expected there will be further pressure for growth within the Shire over the next 10 to 20 years.

The anticipated growth in the Shire is expected to be centred around both the existing town of Waroona, and also along the Shire's coastal areas. Unfortunately, planning to date to the north of the Waroona townsite has been somewhat limited, mainly due to uncertainty regarding the various mining tenements and proposed mining operations within this area. While preliminary investigations into land use opportunities within this area have indicated that the soils and topography may be suitable for several land uses, including diverse agricultural pursuits, tourism ventures, rural living and possible townsite expansion, no detailed plans have been prepared for the area to date.

The mining and subsequent rehabilitation proposed north of the townsite will remove one of this area's major land use constraints and provides an opportunity for the Shire to commence long-term planning for the area via the preparation of a Structure Plan.

The Structure Plan will provide two main purposes:

- Guide land use and development within the Study Area during mineral sand mining (up until 2011-2012)
- Provide a longer-term plan for the Study Area post-mining.

What are the issues?

A number of issues that have the potential to affect land use within the Waroona North area have been identified. These fall within four main categories as follows:

- **Legislation and policy**. Town planning and environmental legislation establish a framework for development and guide the process. Legislation and statutory documents related to town planning, including the Peel Region Scheme and the Shire of Waroona Town Planning Scheme, are the main considerations when proposing development. Supporting the statutory documents is a range of strategic plans and policies that guide decision-making authorities such as the Shire of Waroona Council, Western Australian Planning Commission and Department of Environment. These policies have usually been prepared based on significant background research and guide decision making in relation to development proposals.

- **Environmental and physical features.** The Study Area contains several unique environmental and physical features, namely a large seasonal wetland area, ridgelines, the potential for acid sulphate soils, and varying land capability. The importance and constraints of these features needs to be considered.

- **Cultural and social characteristics.** The majority of the Study Area is in private ownership and any future development would be at the discretion of the relevant landowner. The existing and past land uses over the Study Area would not significantly restrict future development.

- **Servicing and infrastructure.** Basic infrastructure is available in parts of the Study Area. Away from the townsite, infrastructure planning needs to be an integral part of any proposals. Water allocation licenses from the Department of Environment may also be required.

What consultation has occurred?

Several Government agencies and service providers have been contacted. The responses received have assisted in determining opportunities and constraints for the Study Area.

A community workshop was also held in February 2005 to obtain feedback on issues and values associated with the Study Area and to provide a *Vision* for the Study Area to assist in guiding the preparation of the Structure Plan. A follow-up *Information Evening* was held to provide the community with the opportunity to discuss advertised land use options for the Study Area.

Opportunities and constraints

A range of opportunities and constraints to future development have been identified across the Study Area. The opportunities and constraints vary depending on which portion of the Study Area is being considered. As such, each opportunity and constraint identified as been assigned a value within three distinct sub-areas – the area immediately north of the Waroona townsite, the western portion of the Study Area delineated by the Pinjarra land system, and the eastern portion of the Study Area delineated by the Darling Scarp and Plateau.

Opportunities and Constraints matrix

		North of townsite	**Study Area – West**	**Study Area - East**
Opportunities	Availability of water	Moderate	Moderate	Minor
	Agriculture	Moderate	Moderate	Moderate
	Tourism and recreation	Major-Moderate	Minor	Major-Moderate
	Residential	Major-Moderate	Minor	Minor
	Rural Living	Moderate	Minor	Minor
Constraints	Seasonal waterlogging	Major	Major	Minor
	Mining tenements	Minor	Moderate	Moderate
	Acid Sulphate Soil potential	Moderate	Moderate	Minor
	Existing development	Moderate	Minor	Minor
	Land capability – agriculture	Minor	Major-Moderate	Minor
	Mining activities	Moderate	Moderate	Moderate
	Ground stability after mining	Moderate	Moderate	Moderate
	Basic Raw Materials Policy	Moderate	Moderate	Moderate

Notes:
Constraints
Major: Affects the majority of the area and can severely restrict land use.
Moderate: Affects a significant portion of the area and can moderately restrict land use.
Minor: Affects only a small proportion the area and does not significant restrict any land use.

Opportunities
Major: affects majority of area and high potential for land use.
Moderate: Affects a significant portion of the area and moderate potential for land use.
Minor: Affects only a small proportion the area and minor implications for land use.

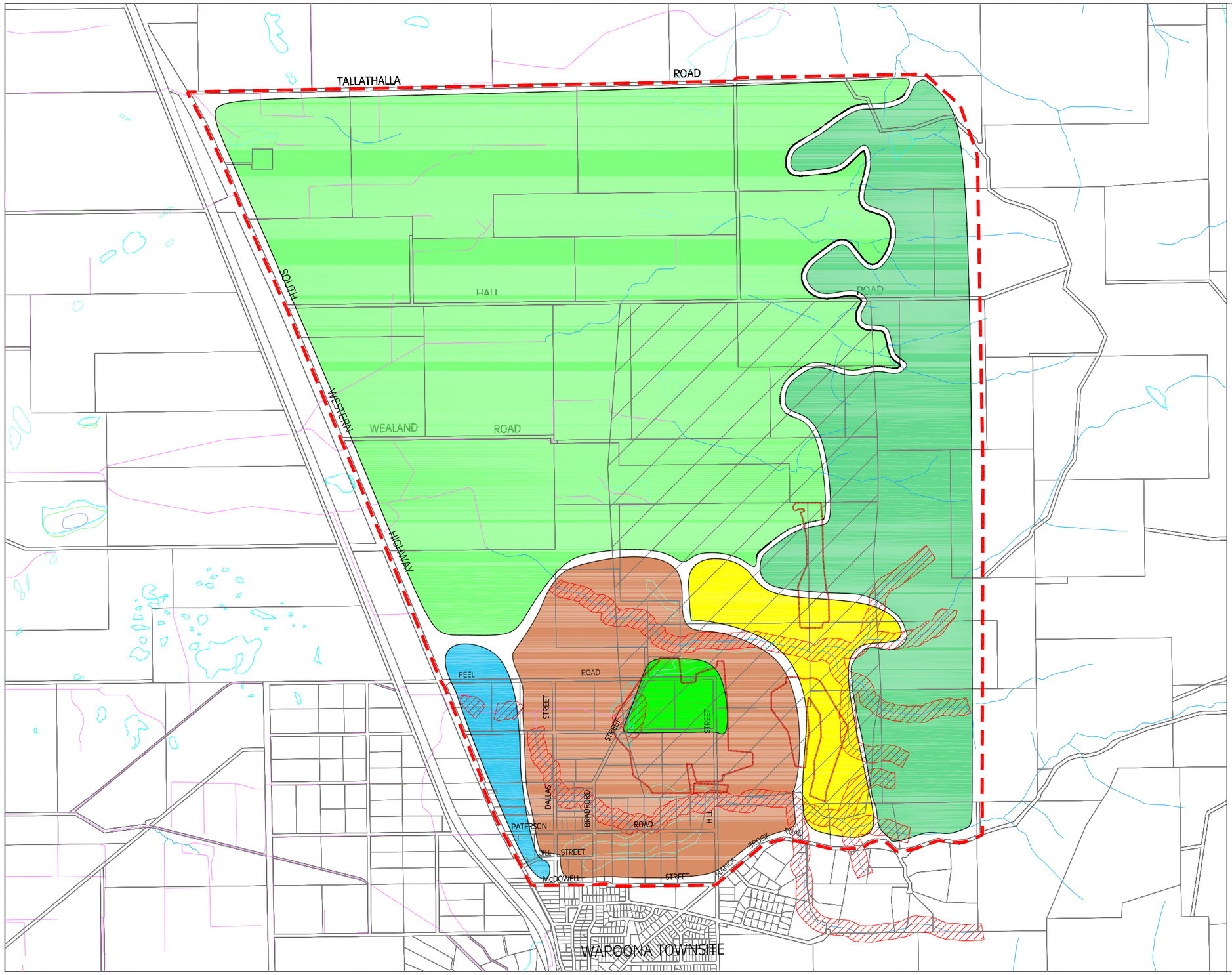
Land Use Options

A series of land use options have been prepared based on the outcomes of the opportunities and constraints and initial consultation with the community. Two options were circulated within the community showing a range of possible future land uses.

Following consideration of responses received the Working Group subsequently adopted a *Final Land Use Plan*. This plan identified seven broad land use categories over the Study Area that would form the basis of the Structure Plan.

Structure Plan

A Structure Plan has been prepared based on the final land use option. It comprises both a plan and explanation of future land uses within the Study Area. The Structure Plan will be used to guide future land use within the Waroona North area over the next 10-15 years. A copy of the Structure Plan is provided at the end of this Executive Summary.



LEGEND

Study Area

Cadastral Boundaries

Major road network
(Constructed roads and road reserves)

Major road nextwork - proposed
(Roads to be constructed over long-term as land is developed/subdivided)

Intensive Agriculture
Subject to land capability assessment, water availability, environmental management and landscape protection.
Minimum lot size:
30ha productive per lot;
Area shown: 1105.16ha

Landscape Protection
Low scale development considered.
Possible tourism/recreation areas.
Area shown: 354.27ha

Highway Area 1
Re-subdivision potential, subject to development being set-back from highway and appropriately screened.
Average lot size: 1ha.
Area shown: 32.29ha

Long term: Townsite Expansion Area
Average Lot size: 1000sqm.
Area shown: 274.25ha

Recreation
Area shown: 26.50ha

Rural Residential Area
Minimum lot size: 4ha
Area shown: 89.99ha

Peel Region Scheme - Basic Raw Materials Area
Non-permanent development only, until such time as raw materials have been extracted.

Implementation of the WNSP in respect to the future townsite expansion area will require amendment(s) to the Peel Region Scheme.

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Note: This plan forms should be read in conjunction with the accompanying *Waroona North Structure Plan* report for further explanation of land uses identified.

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SHIRE OF WAROONA
WAROONA NORTH STRUCTURE PLAN
STRUCTURE PLAN
EXECUTIVE SUMMARY

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1 Introduction

1.1 Background

The Shire of Waroona is located within the fast-growing Peel Region. The Shire itself is experiencing a slow transformation with a changing pattern of land use, and it is expected there will be further pressure for growth within the Shire over the next 10 to 20 years.

The anticipated growth in the Shire is expected to be centred around both the existing town of Waroona, and also along the Shire's coastal areas. Unfortunately, planning to date to the north of the Waroona townsite has been somewhat limited, mainly due to uncertainty regarding the various mining tenements and proposed mining operations within this area. While preliminary investigations into land use opportunities within this area have indicated that the soils and topography may be suitable for several land uses, including diverse agricultural pursuits, tourism ventures, rural living and possible townsite expansion, no detailed plans have been prepared for the area.

Iluka Resources Ltd currently holds mining leases in addition to about 400 hectares in freehold land to the immediate north of the Waroona townsite. The company has indicated that mineral sand mining will commence in these areas in 2006 and last for between five and six years, after which rehabilitation will occur.

The mining and subsequent rehabilitation proposed north of the townsite will remove one of the area's major land use constraints and provides an opportunity for the Shire to commence long-term planning for the area via the preparation of a Structure Plan.

The Structure Plan will provide two main purposes:

- Guide land use and development within the Study Area during mineral sand mining (up until 2011-2012)
- Provide a longer-term plan for the Study Area post-mining.

1.2 Study area

The Study Area is located to the immediate north of the existing Waroona townsite, generally bounded by McDowell Street/Nanga Brook Road, South West Highway, Tallathalla Road and the Darling Scarp. No eastern boundary of the Study Area has been defined, however, for the purposes of this report the scarp has been included. As a guide it can be assumed that the eastern boundary of the Study Area corresponds with the north-south (unconstructed) Tallathalla Road reserve.

Some consideration of surrounding land uses and linkages to these areas has also occurred to ensure that surrounding land uses will not constrain, or be constrained, by future land use within the Study Area.

The Study Area is shown in Figure 1.1.

1.3 Report structure

This report is structured into four parts:

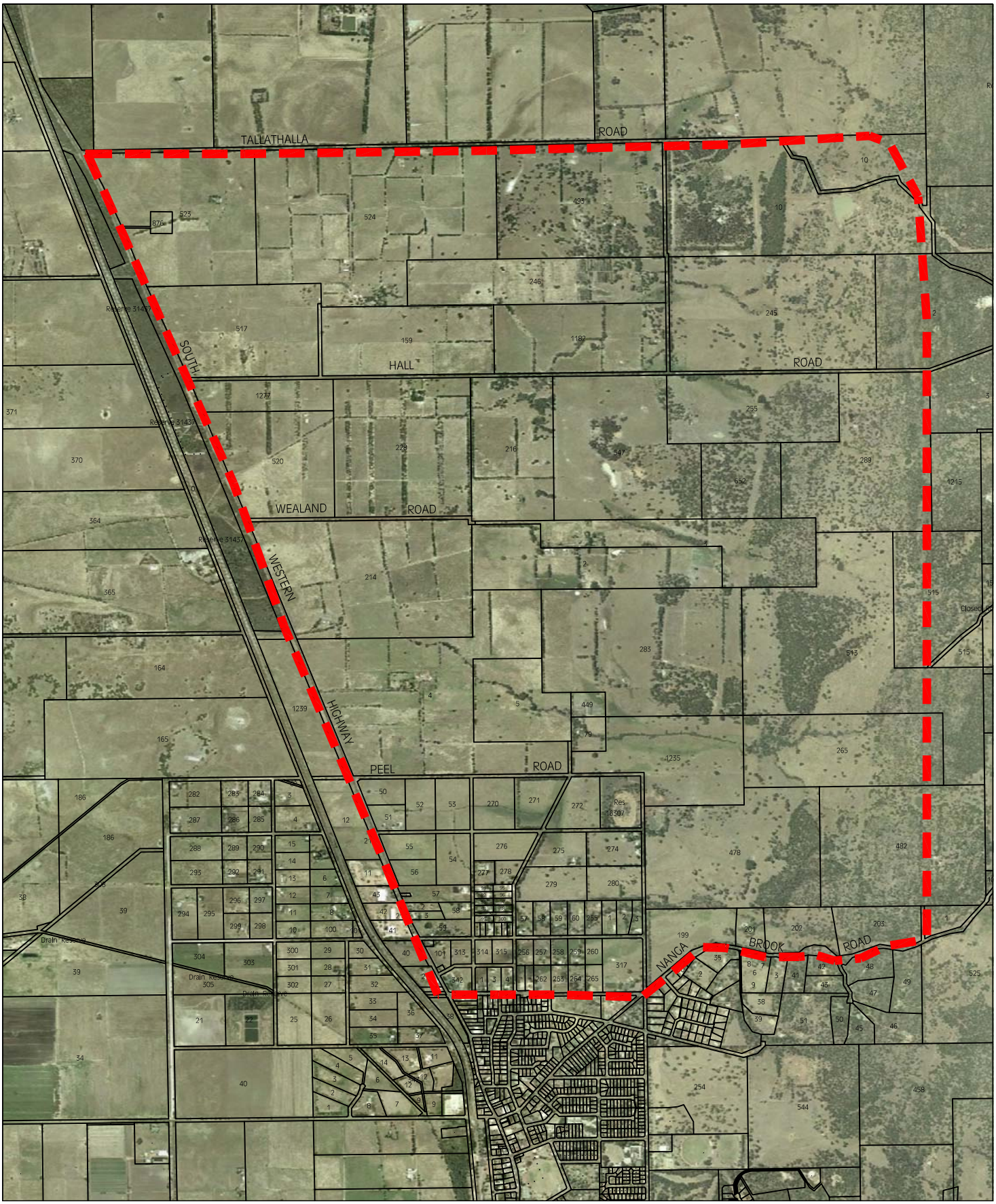
- Part 1 – Opportunities and Constraints
- Part 2 – Community Vision
- Part 3 – Land Use Options
- Part 4 – Structure Plan

Part 1 involved obtaining and analysing relevant background information to 'set the scene' for the consideration of various land use options for the Study Area.

Part 2 involved consulting with the community to begin the development of a *Community Vision*. The main community input in this stage was via a community workshop held towards the beginning of the Structure Planning process.

Part 3 involves consideration of several different land use options for the Study Area, based on the opportunities and constraints identified in Part 1 of this report.

Part 4 describes the components of the Structure Plan as well as specific requirements associated with each identified land use. A guide to implementation is also provided.



LEGEND

Study Area

Cadastre

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SHIRE OF WAROONA
WAROONA NORTH STRUCTURE PLAN

STUDY AREA

FIGURE 1.1

Part 1

Opportunities & Constraints

2 Preamble

There are a number of issues associated with the potential future use and development of the Study Area that need to be addressed. These can broadly be classified into policy issues, site and environmental issues, servicing issues and community desires. This first part of the Structure Plan considers the issues in the form of an Opportunities and Constraints Assessment.

Table 1.1 – Key issues

Classification	Potential issue
Policy	• What are the implications for established policies regarding land use within the Study Area? • Are established policies still relevant? • How can the relationship between planning and mining legislation be appropriately handled to ensure the most effective planning outcome for the Study Area is realized?
Site and environmental	• Are the physical characteristics of the Study Area suitable for future development? ...and if so what type of development would be most suitable? • How will mining activities potentially impact on land capability and the area's physical characteristics? • What are the environmental features of the site? Are they worth protecting? If so, how can they be protected or incorporated into future use and/or development of the site? • Is existing land tenure conducive to the future use and development of the site?
Infrastructure and servicing	• Are services able to be readily extended to cover the Study Area? • Will the site and environmental characteristics of the Study Area have implications for service and infrastructure provision? • Will cost be an issue for servicing?
Community desires	• What are the desires of the landowners within the Study Area? • What are the views and vision of the community in relation to the future use and development of the Study Area? • Is there a demand for any particular type of development within the Study Area?

The Shire has indicated the following objectives need to be met by the Structure Plan:

To deliver a land use structure plan for the Study Area that:

1. *Is a shared vision for the future development of the Waroona North area.*
2. *Responds to the opportunities and constraints presented by mining of the area and provides Iluka Resources Ltd guidance on the rehabilitation of the area post mining.*
3. *Provides the 'optimal' blend of land uses to balance the economic, environmental and social considerations and to provide for the long term expansion of Waroona.*

3 Legislative and policy framework

3.1 Peel Region Scheme

The Peel Region Scheme (PRS) sets out the broad pattern of land use for the Peel Region. The principles and functions of the scheme are to:

- reserve land required for all kinds of public purposes and acquire it as necessary
- identify non-reserved land and classify it into zones such as urban, industrial or rural
- control development on reserved and zones land, particularly the issuing of decisions on development applications.

Local government usually has delegated authority to deal with applications for development on zoned land under the local Town Planning Scheme. The Western Australian Planning Commission usually retains authority to consider development applications for land that is reserved under the PRS, except in special circumstances.

The broad land use zoning classifications for the PRS include Urban (residential and related land uses), Industrial, Rural and Regional Centre. Reservations are areas identified for public purposes. Examples include high school sites, railways, regional roads and regional open space.

Land within the Study Area is zoned *Rural* or *Urban* under the Peel Region Scheme.

3.2 Peel Region Scheme – Strategic Minerals and Basic Raw Materials Resource Policy

This policy has been adopted by the WAPC and recognises the importance of protection areas of Strategic Minerals and Basic Raw Materials. Amendments to the Peel Region Scheme, Shire of Waroona Town Planning Scheme and any development or subdivision application within the Peel Region will be subject to the policy.

In a broad sense, the purpose of the policy is to identify mineral deposits and basic raw materials, protect these areas from incompatible development, encourage the mining or extraction of these materials and to ensure appropriate rehabilitation occurs.

There is a significant portion of the Study Area that is affected by the policy (the area affected is shown on Figure 7.1). Development within this area needs to reflect the requirements of the policy, namely to ensure that development proposed will not prevent the future mining or extraction of these resources.

3.3 Shire of Waroona Town Planning Scheme No. 7.

The Shire of Waroona is responsible for local planning and development control in all areas apart from Peel Region Scheme reserves. Development is controlled using a local town planning scheme that zones and reserves local land. The town planning scheme must be consistent with the zoning or reservation of land under the Peel Region Scheme.

The Shire of Waroona Town Planning Scheme No. 7 (TPS) was gazetted on the 17 December 1996. There are three zones within the Study Area. The southern portion of the Study Area is zoned *Rural 1 – General Farming*, while a portion centred around Patterson Road is zoned *Urban 6 – Rural Living*. The eastern portion of the Study Area is included within the *Rural 4 – Hills Face* zone.

The TPS text provides minimum development standards for uses within each zone that will need to be addressed as the Structure Plan is progressed.

3.4 Shire of Waroona Local Planning Strategy (DRAFT)

The Shire of Waroona has prepared a draft Local Planning Strategy. While the strategy has not been formally adopted to date, it provides guidance on the future planning within the Shire.

The Study Area is within the *Rural – Coastal Plain* and *Rural – Hills and Scarp* precincts for the main part, with the area around Peel Road and Hill Street being identified as *Possible/Future Urban*. The Strategy recommends a Structure Plan be prepared for the Study Area.

3.5 State Planning Strategy

The State Planning Strategy (WAPC, 1997) provides a strategic framework for the coordination and management of regional planning and development across the state. It promotes five principles to guide future planning and decision making throughout the State that are relevant to the development of the LPS. The principles are:

- **Environmental principle** – to protect and enhance the key natural and cultural assets of the State and deliver to all Western Australians a high quality of life which is based on environmentally sustainable principles.
- **Community principle** – to respond to social changes and facilitate the creation of vibrant, accessible, safe and self-reliant communities.
- **Economic principle** – to actively assist in the creation of regional wealth, support the development of new industries and encourage economic activity in accordance with sustainable development principles.
- **Infrastructure principle** – to facilitate strategic development by ensuring land use, transport and public utilities are mutually supportive.
- **Regional development principle** – to assist the development of regional Western Australia by taking account of the region's special assets and accommodating the individual requirements of each region.

The strategy's vision for the Peel Region is

> *In the next three decades the Peel Region will continue to grow, with Mandurah being the major residential and commercial area. A series of lifestyle-based rural villages and development areas will be established. Emphasis will be placed on containing urbanisation, protecting estuarine and coastal areas and preserving the rural backdrop and environmental attributes to cater for lifestyle choices. The local economy will provide a range of employment opportunities for the expanded population, with significant areas of resource processing, mining, tourism, sustainable agriculture and other service industries. Peel will have strong and efficient inter-regional transport links, especially to the Perth and South-West regions.*

Specific strategies and actions for the Peel Region that have implications for the Shire of Waroona are identified in Table 2.1.

Table 3.1 – State Planning Strategy

Principles	Strategies	Actions
Environment & resources	Manage the Peel-Harvey catchment to reduce nutrient levels.	Ensure that structure plans, statutory region schemes and town planning schemes consider the effects of nutrient flows and drainage of the whole catchment to prevent further eutrophication of the Peel-Harvey Estuary.
		Integrate catchment management principles into town planning schemes.
		Ensure areas outside the Peel planning region reduce nutrient flows into the Peel-Harvey Estuary, especially those waterways flowing from the Wheatbelt.
	Protect the environmental resource areas.	Protect groundwater areas and surface catchment areas by catchment gazettal and town planning schemes if required.
		Identify and protect basic raw materials in regional and local plans.
		Recognise tourism as a legitimate land use compatible with a range of existing land uses and incorporate into future regional planning strategies and town planning schemes.
	Protect prime agricultural land and intensive agriculture infrastructure from incompatible development.	Identify and protect prime agricultural land, of State and regional significance, suitable for intensive and/or irrigated uses.
		Protect prime agricultural areas from Rural-Residential uses
	Protect sensitive environmental areas and cultural heritage.	Investigate alternative methods of protecting valuable natural environments.
		Protect culturally significant places through town planning schemes.
Community	Address the provision of social facilities.	Coordinate the provision of services such as schools, hospitals, community centres, recreation facilities, child care facilities and aged care. Investigate alternative ways to provide community infrastructure in rural areas.
	Provide a sense of community.	Promote nodal settlement patterns in rural areas separated by agricultural/green belts.
Economy	Provide adequate land for employment opportunities.	Encourage alternative agricultural pursuits.
		Maximise benefits to the region from mining.
Infrastructure	Provide a strategic transport network within and to the Peel Region.	Implement transport initiatives such as the Southern Province Transport Strategy, Roads 2020 Strategies and the Additional Funding for Roads.

Source: State Planning Strategy.

3.6 Statement of Planning Policy 2.1 – Peel-Harvey Coastal Plain Catchment

Statement of Planning Policy No 2.1 (SPP 2.1) was adopted by the State Planning Commission and gazetted on 21st February 1992. The SPP was drafted to ensure that:

- land use changes within the Peel-Harvey Estuarine System likely to cause environmental damage to the Estuary are brought under planning control and prevented
- landowners seek development approval prior to committing their investments
- all town planning schemes operating within the Catchment shall require development to be subject to the provisions of the SPP.

The majority of the Study Area is within the Peel-Harvey catchment as defined for the purposes of the policy. Development proposed within the Study Area will therefore need to be cognisant of the specific requirements of the policy addressing a range of issues relevant to reducing the nutrient load to the Peel-Harvey Estuary, including effluent disposal (requiring lots of less then 4000m^2 be connected to reticulated sewer), nutrient application and drainage.

The measures contained within the policy are implemented via the Shire's Town Planning Scheme. The Shire therefore has an obligation to ensure the requirements of SPP 2.1 are addressed as each application for development is assessed by Council.

3.7 Statement of Planning Policy 2.5 – Agricultural and Rural Land Use Policy

Statement of Planning Policy No. 2.5 (SPP 2.5) applies to rural and agricultural land in the State. The Policy is guided by the fundamental principles that:

- the State's priority agricultural land resource should be protected
- rural settlement opportunities should be provided if sustainable and of benefit to the community
- the potential for land use conflict should be minimised
- the State's natural resources should be carefully managed.

Under SPP 2.5 local government is to:

- identify and appropriately zone agricultural areas of State or regional significance and other agricultural areas
- where necessary, identify and appropriately zone areas for rural-residential and rural smallholdings
- identify and zone appropriately, areas of natural resources which require protection from incompatible development
- wherever possible, provide planning direction for agriculturally-associated rural activities or land uses
- in the absence of a local planning strategy make recommendations to the Commission in respect to rural land subdivision having due regard to the objectives of this policy.

There are no areas identified as *Potential/Developing Agricultural Priority Management Areas* within the Study Area. Specific clauses within the policy relating to intensive agriculture, rural-living development and broadacre farming will still need to be considered and addressed.

3.8 Swan Coastal Plain Lakes Environmental Protection Policy

The Swan Coastal Plain Wetlands EPP provides a statutory framework for the protection of identified wetlands. The purpose of the policy is to *protect the environmental values of lakes on the Swan Coastal Plain*. The policy identifies beneficial uses associated with lakes and wetlands, protects lakes and wetlands by prohibiting certain activities causing degradation (as outlined in the policy) and requiring persons causing degradation to rehabilitate.

There are no wetlands within the Study Area affected by the policy, however there is a wetland located immediately west of South Western Highway opposite Tallathalla, Hall and Wealand roads that has been identified. Future land use within the Study Area will need to ensure the environmental integrity of this wetland is maintained.

3.9 Peel Inlet-Harvey Estuary EPP

The Environmental Protection (Peel Inlet-Harvey Estuary) Policy was prepared by the Environmental Protection Authority in 1992. The purpose of the EPP is to:

- provide a set of guiding principles for planning and management of land use and development within the Swan Coastal Plain Catchment of the Peel Inlet and Harvey Estuary
- ensure that the Peel-Harvey Estuarine System becomes clean, healthy and resilient and its beneficial uses are maintained or improved.

To meet the purpose of the EPP the Authority has set targets for annual total phosphorus loads to the Estuarine System and established principles to achieve its objectives. One of the key objectives is to ensure that SPP 2.1 incorporates the principles and purposes of the EPP, and therefore places the onus on local government to ensure compliance.

3.10 Country Sewerage Policy

The policy sets out the requirements for effluent disposal in country areas of the State to protect public health. The policy applies to all subdivision (except subdivision of rural zoned land for rural purposes), and all residential or residential-equivalent (in terms of wastewater generation) development.

The policy contains both mandatory and discretionary provisions relating to the provision of reticulated sewer or other types of effluent disposal mechanism. Of particular note within the policy is the requirement for development to connect to reticulated sewer where it is available. Where it is not available, development can only proceed where it meets one of the identified discretionary provisions – relating to small infill, larger lots (greater than 2000m^2), remote or isolated development (maximum density of 25 lots and no more than 25 lots), or towns without sewerage.

3.11 Planning Bulletin 64 – Acid Sulphate Soils

The bulletin provides advice and guidance on matters that should be taken into account when developing, rezoning and subdividing land that contains acid sulphate soils. Acid sulphate soils are largely a naturally occurring phenomenon and are usually not harmful until disturbed and exposed to air.

Acid sulphate soils are frequently associated with damp or waterlogged soil not exposed to air. A western portion of the Study Area has been identified as having *low risk of shallow acid sulphate soils at less than 3 metres depth, however has moderate to high risk of acid sulphate soils occurring at a depth of greater than 3 metres from the soil surface.*

The eastern half of the Study Area is identified as having *no known risk of shallow or deeper acid sulphate soils.*

The bulletin identifies measures that need to be taken to support an application for subdivision or development in areas where a risk occurs. An extract from the bulletin map is provided at Appendix B.

3.12 Local policies

The Council has adopted several policies regarding planning and development in the Shire addressing a range of issues to be considered by Council when considering development proposed within the Shire. Future land use options and the eventual structure plan for the Study Area will need to be in accordance with these policies.

4 Physical & biological features

4.1 Landform

Regional landform characteristics

The Study Area contains three distinct landforms that characterise the majority of the South-West of the State – the Darling Plateau, the Darling Scarp and the Swan Coastal Plain.

The Darling Plateau extends eastwards from the Darling Scarp near the eastern boundary of the Study Area. In general terms, the area consists of ancient crystalline granite rock, covered by lateritic hardcap and associated clays. Soils include shallow sand over sheet laterite, gravely duplex soils and gray sands.

The Darling Scarp is the most prominent physiographic feature of the South-West of the State, being an ancient erosional feature separating the Yilgarn Craton from the sedimentary deposits that underlie the Swan Coastal Plain to the west.

The Swan Coastal Plain lies west of the Darling Scarp and is predominantly low-lying, with a gently undulating to flat surface.

Localised landform characteristics

There are two distinct landform features within the Study Area. These features are associated with the Darling Scarp and the commencement of the Darling Plateau, and the relatively flat land at the base of the scarp that forms part of the Swan Coastal Plain.

A series of four ridgelines extend from the scarp in a westerly direction. The ridgelines are important from a landscape perspective. When viewed from the west (including from within the Study Area), the ridgelines and scarp are the dominant landscape features being highly visible from most viewing angles.

The scarp and associated ridgelines also provide an opportunity for significant views over both the immediate Study Area and the greater coastal plain.

The two topographic elements of the Study Area will need to be taken into account when considering future land use options. The four ridgelines extending from the scarp west into the Study Area are one of the most defining features. The topography in these area has limited development to date, and although cleared and developed in parts, still gives an impression of being largely undeveloped.

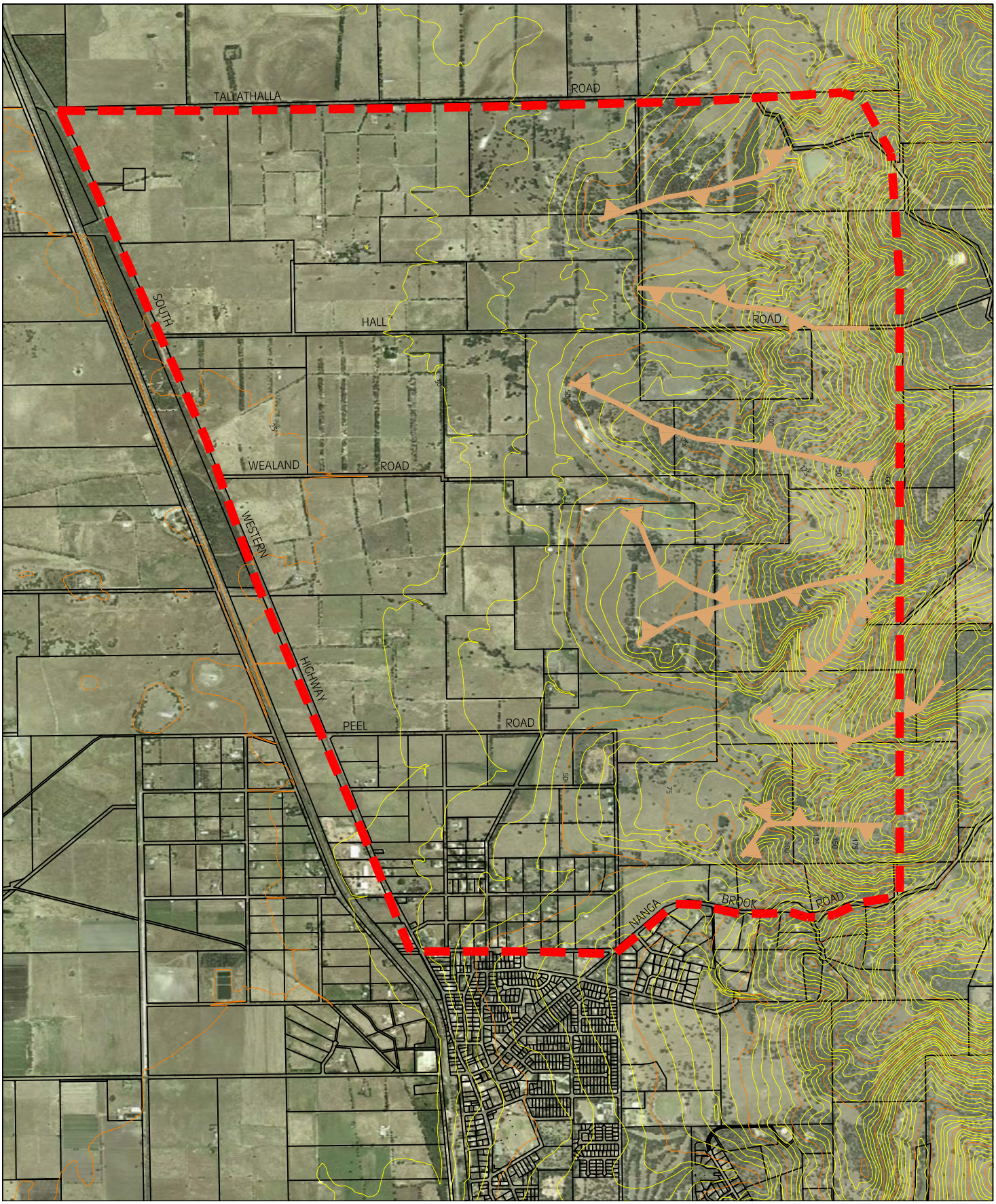
The topography and major ridgelines associated with the Study Area are shown on Figure 4.1.

View to west from ridgeline

Implications

Landscape changes within the Swan Coastal Plain portion of the Study Area will be generally less intrusive from most viewing angles than development on the Darling Scarp. Even so, the views of the Study Area from the dominant scarp and ridgelines within the Study Area should not be compromised. As such, development on the Swan Coastal Plain portion of the Study Area could be *visually apparent* but development should generally be *subordinate to the established, predominantly rural, landscape pattern*.

Due to the visual dominance of the scarp and ridgelines from the Study Area and other part of the plain, it is considered imperative that the ridgeline features, and generally non-intrusive development thereon, remain intact. This will preserve the largely natural backdrop to the Study Area.



LEGEND

Study Area

Cadastre

5-metre Contour

1-metre Contour

Ridgeline

Base data provided by Department for Planning & Infrastructure.

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SHIRE OF WAROONA
WAROONA NORTH STRUCTURE PLAN

LANDFORM

FIGURE 4.1

4.2 Land resources

The land resources of the Study Area have been previously documented by the Department of Agriculture. The land resource information referred to in this report encompasses land systems and phases as identified by the Department of Agriculture. The land systems delineate areas of similar soil, vegetation and topographical characteristics, while the more detailed phases are unmapped subsets of map units that comprise areas of common landform and similar soils that occur repeatedly at similar points in the landscape (AGMAPS, 2003).

The Study Area falls within three distinct landform units. Each soil-landform unit contains areas of similar soil, vegetation and topography characteristics as described in Table 4.1.

Table 4.1 – Soil-landform units

Pinjarra	*Location:*	Swan Coastal Plain from Perth to Capel
	Landform:	Poorly drained coastal plain
	Geology:	Alluvium over sedimentary rocks
	Soils:	Semi-wet soils, grey deep sandy duplexes, brown loamy earths, clays and wet soils
	Vegetation:	Jarrah-marri-wandoo-paperbark forest and woodland
Forrestfield	*Location:*	Eastern margin of the Swan Coastal Plain from Perth to Capel
	Landform:	Footslopes of the Darling and Whicher Scarps
	Geology:	Colluvium over granitic and sedimentary rocks
	Soils:	Duplex sandy gravels, yellow deep sands and grey deep sandy duplexes
	Vegetation:	Jarrah-marri forest and woodland
Murray Valleys	*Location:*	Western Darling Range from the Avon Valley to Harvey
	Landform:	Deeply incised valleys
	Geology:	Colluvium over granitic rocks
	Soils:	Friable red/brown loamy earths, brown loamy earths, loamy gravels, brown deep loamy duplexes, duplex sandy gravels and stony soils
	Vegetation:	Jarrah-marri-wandoo forest and woodland with mixed shrubland

Source: Department of Agriculture/Agmaps

Swan Coastal Plain (Pinjarra unit)

Each unit is further characterised into specific *phases*. A description of the phases within each soil-landform unit is provided in Table 4.2 below. The extent of phases within each soil-landform unit is shown on Figure 4.2.

Table 4.2 – Phases

Soil-Landscape unit	Phase	Description	Land use considerations for dominant soil type[1]
Pinjarra	P1d	Flat to very gently undulating plain with deep acidic mottled yellow duplex (or 'effective duplex') soils. Shallow pale sand to sandy loam over clay; imperfect to poorly drained and moderately susceptible to salinity.	Waterlogging and seasonal inundation moderately limit land use options Artificial drainage may sometimes be an option Often have good summer moisture for perennial pastures, summer cropping
	P1b	Flat to very gently undulating plain with deep acidic mottled yellow duplex (or 'effective duplex') soils. Moderately deep pale sand to loamy sand over clay: imperfectly drained and moderately susceptible to salinity in limited areas.	Seasonal waterlogging over the clay may occur Prone to wind erosion in exposed situations if left bare of surface cover

[1] There are generally several soil types within each phase. The information provided in this table lists *land use considerations* for the dominant soil type only (at least 45%).

Soil-Landscape unit	Phase	Description	Land use considerations for dominant soil type[1]
	P7	Seasonally inundated swamps and depressions with very poorly drained variable acidic mottled yellow and gray duplex soils.	Waterlogging and seasonal inundation severely limit land use options Artificial drainage may sometimes be an option
	P9	Shallowly incised stream channels of minor creeks and rivers with deep acidic mottled yellow duplex soils.	Waterlogging and seasonal inundation moderately limit land use options Artificial drainage may sometimes be an option Often have good summer moisture for perennial pastures, summer cropping
	B2	Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.	Poor fertility and water-holding characteristics Nutrient leaching and groundwater recharge are significant issues Prone to wind erosion in exposed positions Prone to water repellence, especially after legume cropping
	B4	Broad poorly drained sandplain with deep grey siliceous sands or bleached sands, underlain at depths generally greater than 1.5 m by clay or less frequently a strong iron-organic hardpan.	Waterlogging and seasonal inundation moderately limit land use options Artificial drainage may sometimes be an option Often have good summer moisture for perennial pastures, summer cropping
	B6	Sandplain and broad extremely low rises with imperfectly drained deep or very deep grey siliceous sands.	Poor fertility and water-holding characteristics Nutrient leaching and groundwater recharge are significant issues Prone to wind erosion in exposed positions Prone to water repellence, especially after legume cropping
Forrestfield	F1b	1-15% lower slopes with well drained moderately deep to deep, gravelly acidic yellow duplex soils and rare laterite.	A seasonal perched watertable may overlie the clay in cleared areas High gravel contents may limit water holding capacity of the soil and workability

Soil-Landscape unit	Phase	Description	Land use considerations for dominant soil type[1]
	F1c	1-15% lower slopes with well drained deep uniform yellowish brown sands which are generally free of laterite or gravel.	Prone to wind erosion in exposed positions Some have poor fertility and water holding characteristics Moderate recharge hazard under annual agriculture
	F4	Incised stream channels within gentle slopes with deep acidic yellow duplex soils and sandy alluvial gradational brown earths.	Waterlogging and seasonal inundation moderately limit land use options Artificial drainage may sometimes be an option Often have good summer moisture for perennial pastures, summer cropping A seasonal perched watertable may overlie the clay in cleared areas High gravel contents may limit water holding capacity of the soil and workability
	F5	Poorly defined stream channels on lowest slopes with deep acidic yellow duplex soils and sandy alluvial gradational brown earths.	Waterlogging and seasonal inundation moderately limit land use options Artificial drainage may sometimes be an option Often have good summer moisture for perennial pastures, summer cropping
Murray Valleys	D1	Gentle to moderate slopes of scarp face (5-25%) with red and yellow gradational earths and duplex soils with variable depth and common rock outcrop.	A seasonal perched watertable may overlie the clay in cleared areas High gravel contents may limit water holding capacity of the soil and workability
	D2	Gentle to moderately inclined slopes (3-20%) with red and yellow gradational earths and duplex soils with variable depth and common rock outcrop.	No data available
	D3	Deeply incised tributary valleys with slopes (<30%). Red and yellow gradational earths and duplex soils with variable depth and common rock outcrop.	No data available

Source: Department of Agriculture/Agmaps

Land capability

Land capability assessment considers the specific requirements of the land use (e.g. unrestricted rooting depth or soil water availability) plus the risks of degradation associated with the land use (e.g. susceptibility to phosphorus export or wind erosion).

The Department of Agriculture has investigated the capability of the Study Area for a range of agricultural land uses. Generalised maps have been prepared for annual horticulture, perennial horticulture and grazing, and these are presented in Figures 4.3, 4.4, and 4.5 respectively.

Certain assumptions and definitions have been made by Department of Agriculture in preparing these maps:

1. **Land capability for annual horticulture**

   Areas used for annual horticulture which are irrigated, cultivated and fertilised regularly. Crops include annual fruits, vegetables, commercial turf production and cut flowers, which are generally shallow rooting. Standard management practices and year round cropping are assumed. Machinery access is required for spraying and harvesting.

2. **Land capability for perennial horticulture**

   Perennial horticulture is usually orchards or vineyards. Crops are generally deep-rooting and require at least 1 m of soil. Land is cultivated only at initial planting, but irrigated and fertilised regularly. Machinery access is required for spraying and harvesting.

3. **Land capability for grazing in high (>600 mm) rainfall areas**

   Grazing refers to sheep and other hoofed stock on dry land pastures with occasional reseeding and fertiliser top-dressing. This classification does not apply to intensively managed areas with small irrigated paddocks, windbreaks and supplementary feeding. If the land use assumptions are changed the land capability ratings will change. For example the assessment for annual horticulture assumes that the capacity for year round cropping is desirable. Under this assumption, land which is waterlogged in winter but highly suitable for summer cropping has a lower rating than land which can be cropped throughout the year.

   If the land use assumption was altered to consider summer cropping only, then the capability could be higher over much of the coastal plain where waterlogging is a major limitation. A difficulty with this example is that winter rainfall is likely to wash excess fertiliser remaining on the soil into the drainage network, hence waterlogged areas will still have a phosphorus export restriction. Phosphorus export could be managed by careful fertiliser use and ensuring soil is not left susceptible to water erosion during the winter rains.

It should be noted that the land capability information is at a broad scale, and that in certain circumstances a more detailed and site-specific investigation may indicate that certain activities are possible. In relation to the Study Area, the following aspects should be kept in mind:

- There are existing, successful horticultural activities near the Study Area on low-lying soils that are reported to have low capability
- The Harvey Water irrigation scheme abuts the Study Area and there may be future potential to expand the scheme into the Study Area should the need arise
- There may be possibilities to consider sub-soil drainage in the western half of the Study Area to allow for perennial agriculture

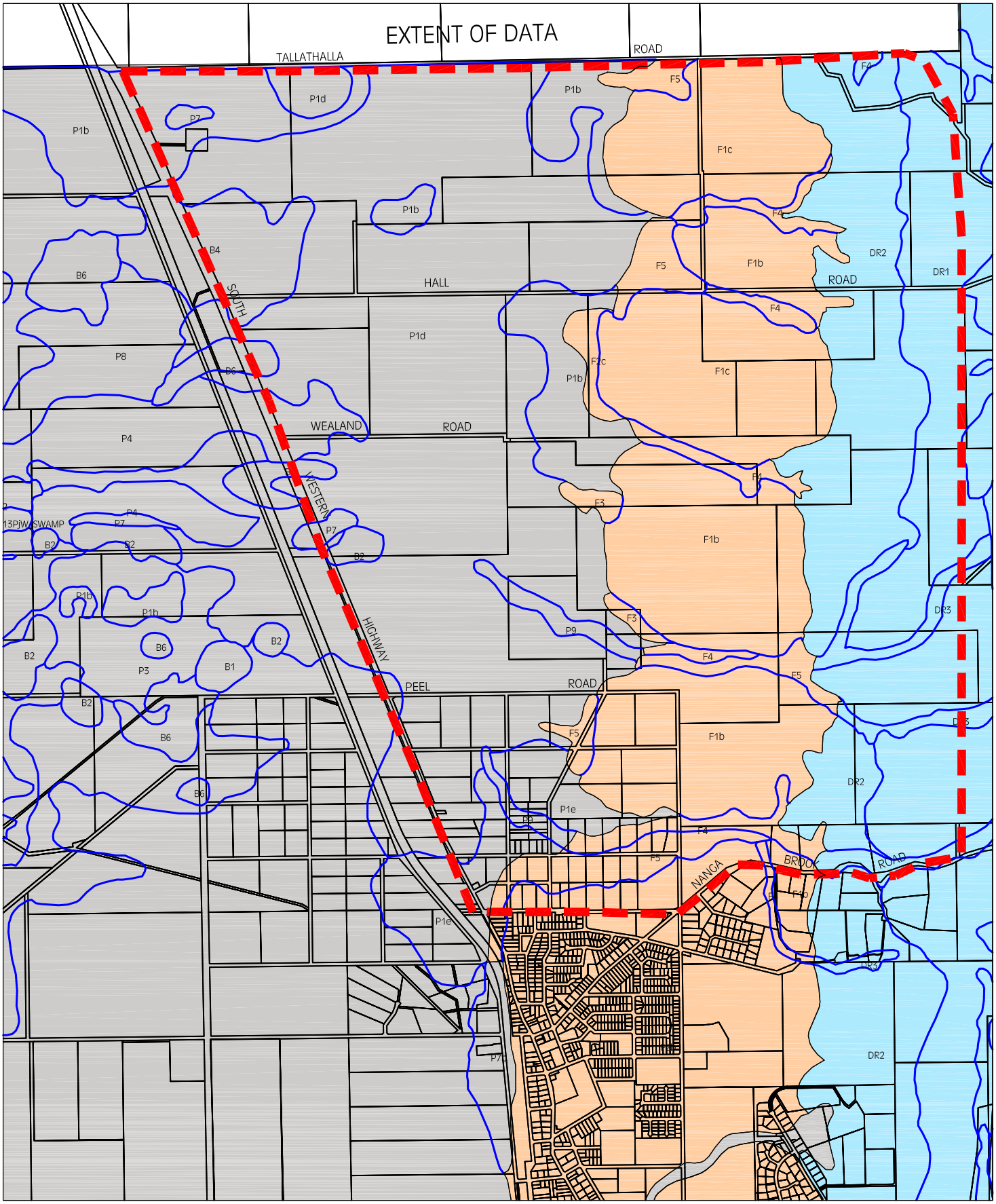
- The Study Area is ideally located near main access corridors and is close to relevant markets.

Implications

The western portion of the site exhibits a generally poor capability for horticulture. The *Forrestfield* soil types have a significantly higher capability for perennial and annual horticulture. The western half of the Study Area, comprising *Pinjarra* soil types has a fair capability for grazing.

It would appear that intensive agriculture is not suited the western half of the Study Area corresponding to the *Pinjarra* soil types. Difficulties with land management in this area, including the need to address waterlogging and management of nutrient runoff, would need to be considered further prior to recommending the intensification of agricultural activities in this area.

It should also be noted that landscape and environmental values are not assessed as part of a land capability assessment. These values, along with land capability, will play a significant role in determining the suitability for the future use and development of the Study Area.



LEGEND

Base data provided by Department for Planning & Infrastructure.

- Study Area
- Cadastre
- Pinjarra System
- Forrestfield System
- Murray Valley System
- P7b Phase

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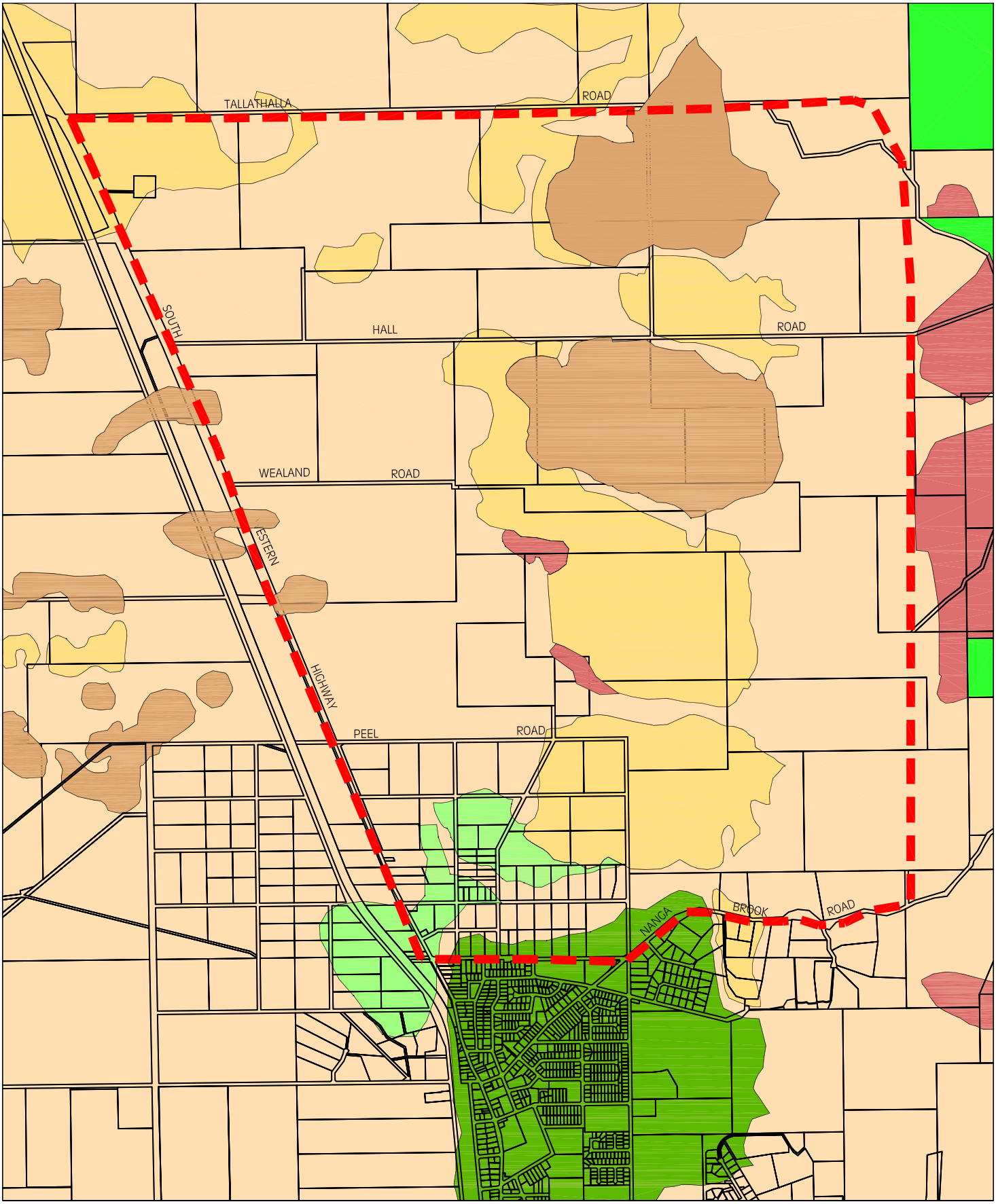
SHIRE OF WAROONA
WAROONA NORTH STRUCTURE PLAN

LAND RESOURCES

FIGURE 4.2



LEGEND

- Study Area
- Cadastre
- >60% of soils have high or very high capability
- 34-59% of soils have high or very high capability and are the dominant soils
- >60 soils have a fair capability
- 34-59% of soils have fair capability and are the dominant soils
- 34-59% of soils have low or very low capability and are the dominant soils
- >60% of soils have low or very low capability
- CALM Estate

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SHIRE OF WAROONA
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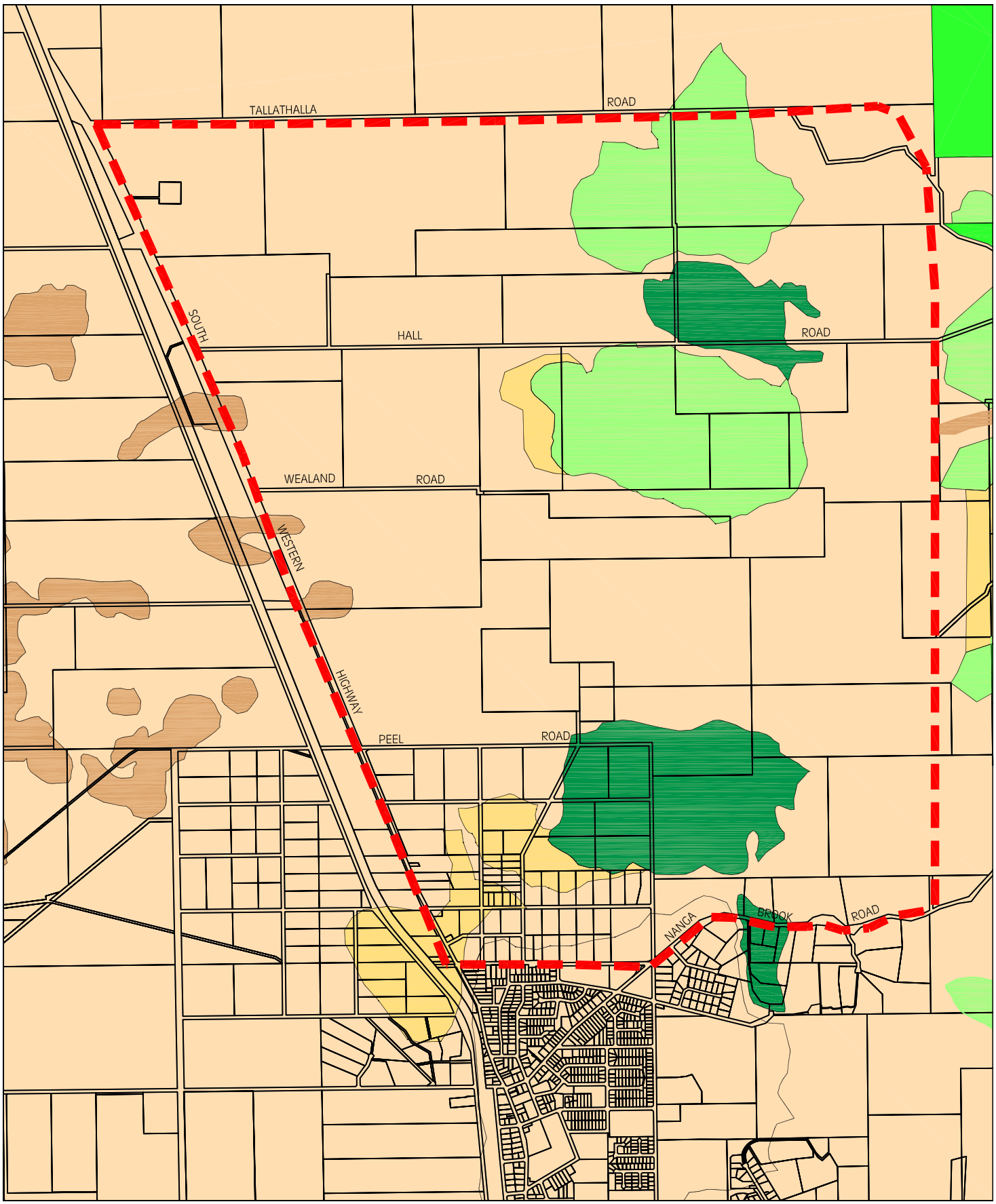
LAND CAPABILITY - ANNUAL HORTICULTURE

FIGURE 4.3



LEGEND

- Study Area
- Cadastre
- >60% of soils have high or very high capability
- 34-59% of soils have high or very high capability and are the dominant soils
- >60 soils have a fair capability
- 34-59% of soils have fair capability and are the dominant soils
- 34-59% of soils have low or very low capability and are the dominant soils
- >60% of soils have low or very low capability
- CALM Estate

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SHIRE OF WAROONA
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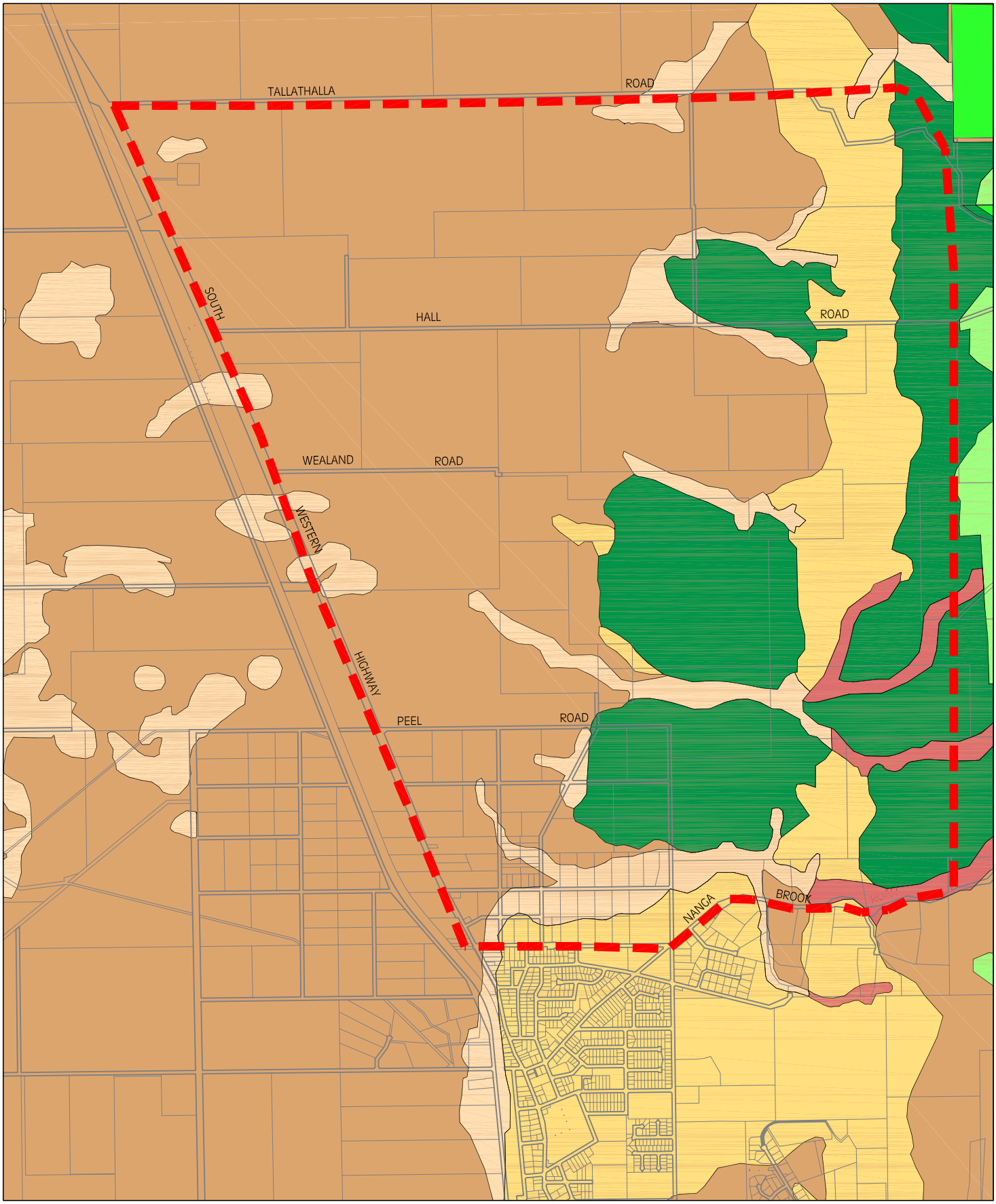
LAND CAPABILITY - PERENNIAL HORTICULTURE

FIGURE 4.4



LEGEND

Study Area

Cadastre

>60% of soils have high or very high capability

34-59% of soils have high or very high capability and are the dominant soils

>60 soils have a fair capability

34-59% of soils have fair capability and are the dominant soils

34-59% of soils have low or very low capability and are the dominant soils

>60% of soils have low or very low capability

CALM Estate

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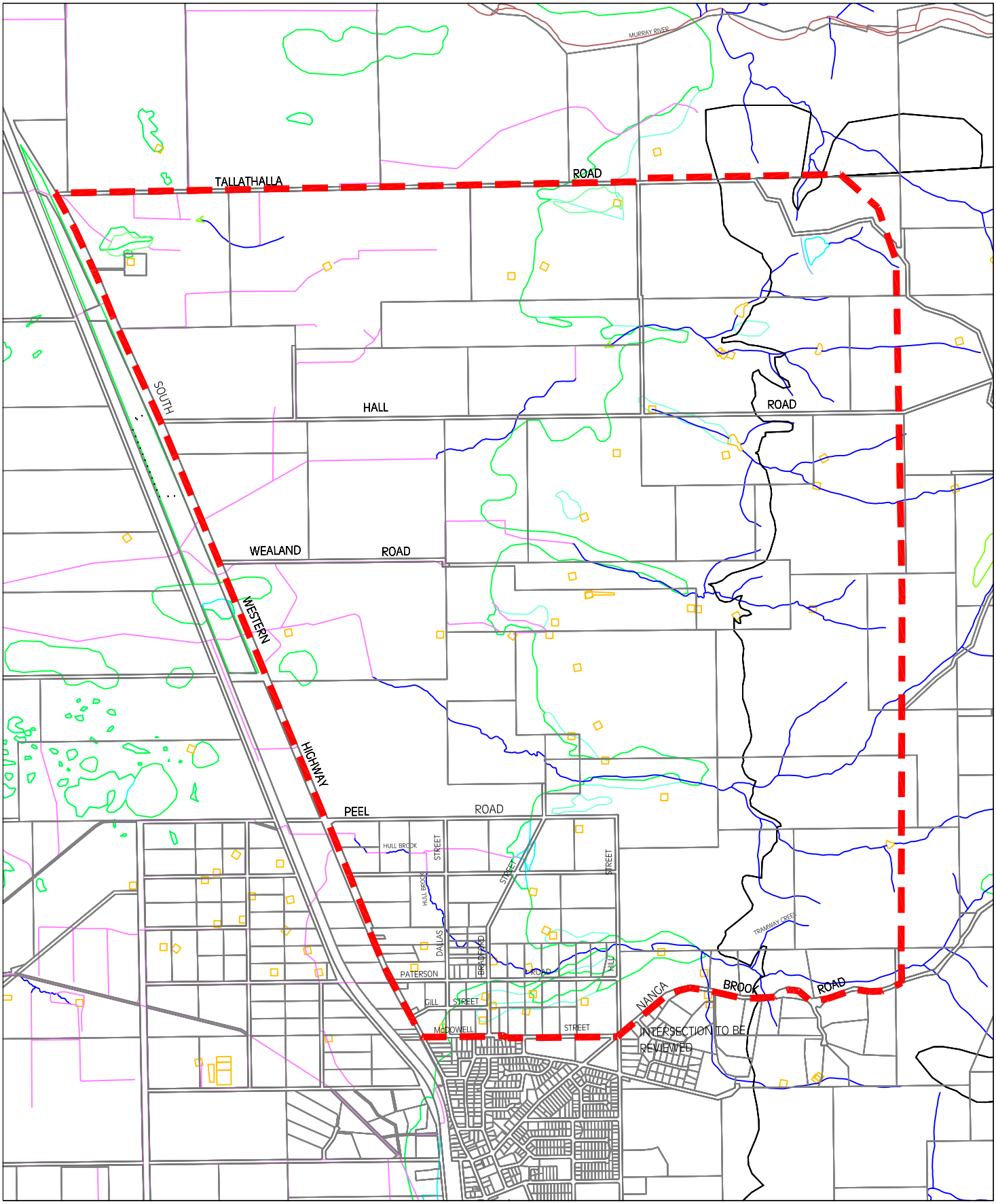
SHIRE OF WAROONA
WAROONA NORTH STRUCTURE PLAN

LAND CAPABILITY - GRAZING (HIGH RAINFALL)

FIGURE 4.5



LEGEND

Base data provided by Department for Planning & Infrastructure.

- Study Area
- Cadastre
- Palusplain
- Dampland
- Drain - Major
- Watercourse - Minor Perennial
- Earth Dam
- Watercourse - Major Perennial

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SHIRE OF WAROONA
WAROONA NORTH STRUCTURE PLAN

WATER RESOURCES

FIGURE 4.6

4.3 Water resources

Surface water features

The flat areas of the Swan Coastal Plain, which characterises the western half of the Study Area, comprises broad flats with poor natural drainage, seasonally inundated swamps and depressions and poorly defined natural stream channels. Wetlands are often interconnected by surface water, which ultimately flows into drainage lines.

The flat areas form part of the *Waroona Drainage District* of the *Harvey Basin* as defined by the Department of Environment. Several streamlines are located within the Study Area, only some of which are perennial. Run-off from rainfall is the major component of stream flow, particularly in the upper catchment areas of the escarpment. Flows in the lower areas, particularly during summer, are supported by base flow from local shallow groundwater resources.

West of the Study Area it appears that the majority of the surface water features have been significantly altered and modified to form part of the irrigation channels, ultimately draining to the Harvey Estuary. Within the Study Area the streamlines appear to support only minor riparian vegetation.

The Department of Environment has indicated that the western side of the Study Area is considered to be a wetland. The area classified as wetland coincides with the approximate boundary of the *Pinjarra* soil-landform unit, and extends some distance to the west of the Study Area. The wetland area is a palusplain wetland, indicating that it is a seasonally inundated flat wetland. The extent of the wetland is shown on the Department of Environment map in Appendix B.

Management categories for wetlands on the Swan Coastal Plain were developed by Hill *et al* (1996). Three categories were identified and these are described in Table 4.3.

Table 4.3 – Wetland categories

Category	General Description	Management Objectives
C – Conservation (incorporates EPA Bulletin 686 categories H and C)	Wetlands support a high level of ecological attributes and functions.	Highest priority wetlands. Objective is preservation of wetland attributes and functions through various mechanisms including: - reservation in national parks, crown reserves and State owned land, - protection under Environmental Protection Policies, and - wetland covenanting by landowners. These are the most valuable wetlands and the Commission will oppose any activity that may lead to further loss or degradation. No development.
R - Resource enhancement (incorporates EPA Bulletin 686 categories	Wetlands which may have been partially modified but still support substantial ecological attributes	Priority wetlands. Ultimate objective is for management, restoration protection towards improving their conservation value. These wetlands have the potential to be restored to conservation category. This can be achieved by restoring wetland

Category	General Description	Management Objectives
O and R)	and functions.	structure, function and biodiversity. Protection is recommended through a number of mechanisms.
M - Multiple use (aligned with EPA Bulletin 686 category M)	Wetlands with few important ecological attributes and functions remaining.	Use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning through land care. Should be considered in strategic planning (e.g. drainage, town/land use planning).

Source: Water and Rivers Commission, 2001.

The wetland area extending over the majority of the western half of the Study Area has been classified *Multiple Use.* The extent of the wetland is shown on the Department of Environment GIS extract at Appendix B. In considering land use wetland management categories are regarded as equivalent to the Department of Environment public drinking water source protection areas. Therefore, the wetland management categories of conservation, resource enhancement and multiple use correspond to water source protection areas Priority 1 (P1), Priority 2 (P2) and Priority 3 (P3) respectively in terms of land use compatibility.

Land uses that are considered to be compatible with Priority 3 areas have been considered by the Department of Environment. Selected land uses that may be of relevance to the Study Area are identified in Table 4.4.

Table 4.4 – Land use compatibility within Priority 3 areas

Group	Development	Compatibility
Agriculture – Animals	Apiary	Restricted
	Aquaculture	Restricted
	Dairy farming	Restricted
	Livestock grazing (extensive)	Compatible
	Livestock grazing (intensive)	Restricted[1]
	Piggeries	Incompatible
	Feedlots	Restricted
	Poultry farming (housed)	Restricted
	Stables	Compatible
	Stockholding and saleyards	Restricted[2]

Group	Development	Compatibility
Agriculture – Plants	Broadacre cropping i.e. non-irrigated	Compatible
	Floriculture (extensive)	Compatible
	Floriculture (intensive)	Restricted
	Field horticulture	Restricted
	Orchards	Compatible
	Potted nurseries	Compatible
	Silviculture (tree farming)	Compatible
	Turf farms	Restricted
	Viticulture	Compatible
Mining and Mineral Processing	Extractive industries	Restricted[3]
	Mineral exploration	Restricted[4]
	Mining and mineral processing	Restricted[4]
	Tailings dams	Restricted
Processing of animals/animal products	Abattoirs	Incompatible
	Cheese/butter factories	Restricted[5]
	Food processing	Restricted[5]
	Tanneries	Incompatible
	Wool-scours	Incompatible
Subdivision	Dog Kennel Subdivisions	Restricted
	Rural – minimum lot size ' 4 hectares (unsewered)	Compatible
	Rural – minimum lot size ' 1 hectare (unsewered)	Compatible
	Special rural – minimum lot size ' 2 hectares (unsewered)	Restricted[6]
	Special rural – minimum lot size ' 1 hectare (unsewered)	Restricted[6]

Group	Development	Compatibility
	Urban residential	Compatible[5]

Source: Department of Environment

Notes:

Restricted: The development/land use may be compatible with the management objectives of the Priority classification, with appropriate site management practices.
Restricted activities should be referred to the Commission for assessment on a case specific basis.

Incompatible: The development/land use is incompatible with the management objectives of the Priority classification.

Compatible: The development/land use is compatible with the management objectives of the Priority classification.

1 Restrictions apply to stocking levels
2 May be permitted if this use is incidental to the overall land use in the area and consistent with planning strategies.
3 Restrictions apply to the storage of fuels and chemicals, with strict guidelines for rehabilitation
4 Subject to conditions placed on lease
5 Must be connected to deep sewerage, where practical, or otherwise to an approved waste disposal system that meets water quality protection objectives.
6 Restrictions apply to siting of effluent disposal systems in areas with poor land capability and a shallow depth to groundwater.

It is important to note that the position of the Department of Environment regarding activities that have the potential to affect wetlands that:

The Commission (DoE) *recognises that many activities were established prior to the introduction of this statement. However, this is not considered justification for establishing new or expanding existing land use activities that are incompatible with the wetland management objectives. Proposed activities are required to be compatible with the management requirements of any wetlands that the land use may impact (WRC, 2001).*

The Department of Environment allows for the classification of a wetland to be reviewed if it is in genuine dispute. The process for achieving this is detailed in EPA Bulletin 686, and must address issues including wetland vegetation, habitat value and distinguishing areas.

There are several seasonal streamlines running through the Study Area. The location and extent of each is identified on Figure 4.6. The Department of Environment has indicated that the following development buffers should apply around these streamlines to protect their environmental qualities:

- watercourses - permanent water - 50 metres
- watercourses - seasonally flowing - 30 metres
- watercourses - flow in response to specific rain events - 10 metres.

The above buffers are the recommended minimum and an analysis of slope, soil drainage and fringing vegetation may require greater and variable buffer widths.

Drainage

The Department of Environment in January 2002 released a position statement on *Urban Stormwater Management in Western Australia*. This Statement provides the principles and objectives for stormwater management and builds upon the already published *Manual for Urban Stormwater Quality for Western Australia*. This position statement supports the *State*

Sustainability Strategy whereby water is used with care and is managed to meet community needs. The objective of this Strategy is to reduce water consumption, achieve water reuse and to extend responsibility for water supply and groundwater protection to Planning Authorities (water sensitive design). The following stormwater management principles should, where practicable, be implemented as part of any development in the Study Area.

1. *Retain and restore natural drainage system.*
   Retain and restore the natural elements of the local interdunal depressions that form wetlands and the groundwater features and processes.
2. *Implement non structural source controls*.
   Minimize contaminant inputs principally by planning development controls and education to reduce the amount of pollution at source that could enter the drainage system.
3. *Minimize runoff.*
   Within the lot and street scale develop systems to infiltrate the rain water so that it can be reused as high in the catchment as possible to reduce the volume of stormwater conveyed and install structural controls at the source to minimize pollutant inputs.
4. *Use of in-system management measures*.
   Includes creating vegetated swales, landscape disposal areas and structural quality improvement devices such as gross pollutant traps and artificial wetlands.

The Study Area is within the Harvey Basin Surface Water Allocation Area. The use of surface water for irrigation or other uses (including dams), requires a license from the Department of Environment.

Implications

The seasonally inundated wetlands that cover almost half of the Study Area may pose a constraint to the use of this land for particular land uses. In certain circumstances, development proposed within this area will need to be referred to the Department of Environment for consideration and advice, particularly where that development is listed as 'incompatible' or 'restricted' in the tables above.

Streamlines (permanent and seasonal) will need to be protected from development, with appropriate foreshore setbacks established where applicable, and following consultation with the Department of Environment.

Use of surface water for irrigation or other purposes will require assessment and licensing from the Department of Environment.

Groundwater

The Project Area is located within the south-east portion of the Waroona Sub-area of the Murray Groundwater Area. The aquifer systems underlying the Study Area are described in Table 4.5.

Table 4.5 – Aquifers

Aquifer	Hydrogeology
Superficial aquifer	• The average saturated thickness of the sediments in this area are approximately 20 metres • The aquifer thickness progressively increases from east to west. • The aquifer consists mainly of clay and sandy sediments. • The watertable is generally very shallow and numerous drains have been constructed throughout the area. • Well yields in this area are expected to be low.
Leederville aquifer	• The Leederville aquifer exists throughout the Waroona sub-area. • The top of the aquifer may be encountered at about 20 metres depth. • The existence of a green clay marker, approximately 5-10 metres thick, separates the aquifer into two principal aquifer zones, described as the 'upper' and 'lower' Leederville aquifers. • The salinity of the aquifer ranges from fresh to brackish. • Downward leakage to the Cattamarra aquifer is expected to be negligible.
Cattamarra aquifer	• The Cattamarra aquifer exists throughout the Waroona sub-area. • The tope of the aquifer may be encountered at depths of between 50 and 200 metres. The depth increases in a westerly direction. • Recharge to the aquifer is negligible due to the high proportion of siltstone and shale in the overlying Leederville aquifer. • The Cattamarra aquifer is likely to be saline through most of the area.

Source: Water and Rivers Commission (1998).

The watertable is generally 1-2 metres below the surface in the Study Area, however can fluctuate during seasons, and to maintain wetlands. The largest seasonal range in the Murray Groundwater Area occurs near the Darling Scarp, and therefore groundwater levels within the Study Area can be significantly lower in summer.

Groundwater discharge can occur to major watercourses, inlets and coastal lakes. Clay layers can prevent groundwater discharge from the aquifer to the rivers/streams that flow across it. Significant quantities of groundwater are lost by evapo-transpiration from the wetlands and areas where the watertable is at a shallow depth. Local discharge to the Leederville aquifer also occurs. It is likely that this is the primary source of recharge for the deeper Leederville aquifer due to the thinness of the surficial sediments.

The Murray Groundwater Area has traditionally been renowned for its agricultural and mining activities and it is anticipated that these activities will continue in the region as a whole in the future. Agricultural and horticultural pursuits will need to be carefully regulated to prevent further nutrient release to the enriched Peel-Harvey estuarine system.

The Study Area is within a proclaimed groundwater area and groundwater abstraction licences are required from the Department of Environment prior to the construction of any groundwater bore. Licensing aims to ensure controls are applied to limit abstraction to sustainable levels consistent with the State conservation strategy to prevent any adverse impacts due to abstraction (WRC, 1998).

Domestic groundwater usage is permitted and is exempt from licensing. Other groundwater uses exempt from licensing include:

- fire fighting purposes
- water of cattle and other stock (other than those being raised under intensive conditions)
- water an area of lawn or garden that doesn't exceed 0.2 hectares in size
- other ordinary domestic uses.

Implications

The land is hydraulically linked to the remainder of the Peel-Harvey catchment. Management practices should be implemented as part of any development to ensure that problems associated with water quality and quantity within the Study Area do not become apparent, and that no off-site impacts occur.

In some instances, the development of the land may provide a suitable opportunity to impose an effective environmental management regime that would otherwise not be possible if the land remains in its current configuration.

More intensive agricultural uses that will rely on a significant water source will be subject to assessment by the Department of Environment, both in terms of their nutrient input/export regimes and also in relation to groundwater abstraction.

Implications of proposed development on groundwater also relate to potential pollution issues and recharge rates. Applications for use of groundwater should be discussed with the Department of Environment at the earliest opportunity so specific land uses can be factored into longer-term planning and allocation rights within the Study Area.

4.4 Vegetation

Original vegetation complexes

The entire Study Area is classified as being within *Eucalypt Woodlands*. The composition of vegetation complexes largely reflects the height above the watertable. At the highest elevation, low banksia woodlands occur on sandy soils grading into jarrah-marri associations on wetter soils. The banks of drainage channels support an overstorey of *Eucalyptus rudis, Melaleuca parviflora* and some *Banksia littoralis*, while swamps and seasonally inundated depressions are dominated by Malelueca species and sedges.

Remnant bushland

Remnant vegetation in the Study Area is limited, with the majority of the site being cleared for agricultural purposes at some time in the past. Some remnant vegetation is located alongside streamlines and in some flat, inundated areas unsuited to development.

The remnant vegetation, wetland chains and parkland cleared areas retain an environmental value that will need to be recognised and protected in any development proposed within the Study Area.

Melaleuca vegetation in low-lying area

Implications
The remnant vegetation within the Study Area is largely associated with streamlines or the ridgeline. Neither of these areas is suitable for agriculture and it would be reasonable to assume they have not been cleared in the past due to this.

The remnant vegetation represents only a small portion of the original vegetation communities in the area.

Connectivity between the streamlines, pockets of remnant vegetation and other fauna habitats (such as the scarp, and conservation reserve west of South Western Highway) is an important regional concept that will need to be interpreted at a local level as part of the Structure Planning process.

5 Cultural and social characteristics

5.1 Land tenure

Land tenure within the Study Area is largely freehold, with the exception of one small reserve on the corner of Peel Road and Hill Street.

Mining Tenements is a generic term given to various leases and licences under relevant mining-related legislation. Various Mining Tenements are located within the Study Area. Tenements include various Mining Leases, Exploration Licences and Prospecting Licences issued under the *Mining Act 1978* and one Mineral Lease issued under the *Mining Act 1904*, located on the eastern boundary of the Study Area.

Mining Tenements are an unusual form of tenure. Certain provisions within the *Mining Act 1978* afford tenement holders certain rights over both Crown and freehold land. The *Mining Act 1978* can also override town planning legislation, and as such the Shire's Town Planning Scheme may have limited ability to control mining activities.

Details of the types of Mining Tenements found in the Study Area are provided in Table 5.1. Further details on tenements and implications for private property are provided in Appendix C. Tenure information, showing reserves, mining tenements and highlighting Iluka Mining tenements, is provided on Figure 5.1 at the end of this section.

Table 5.1 – Mining tenements

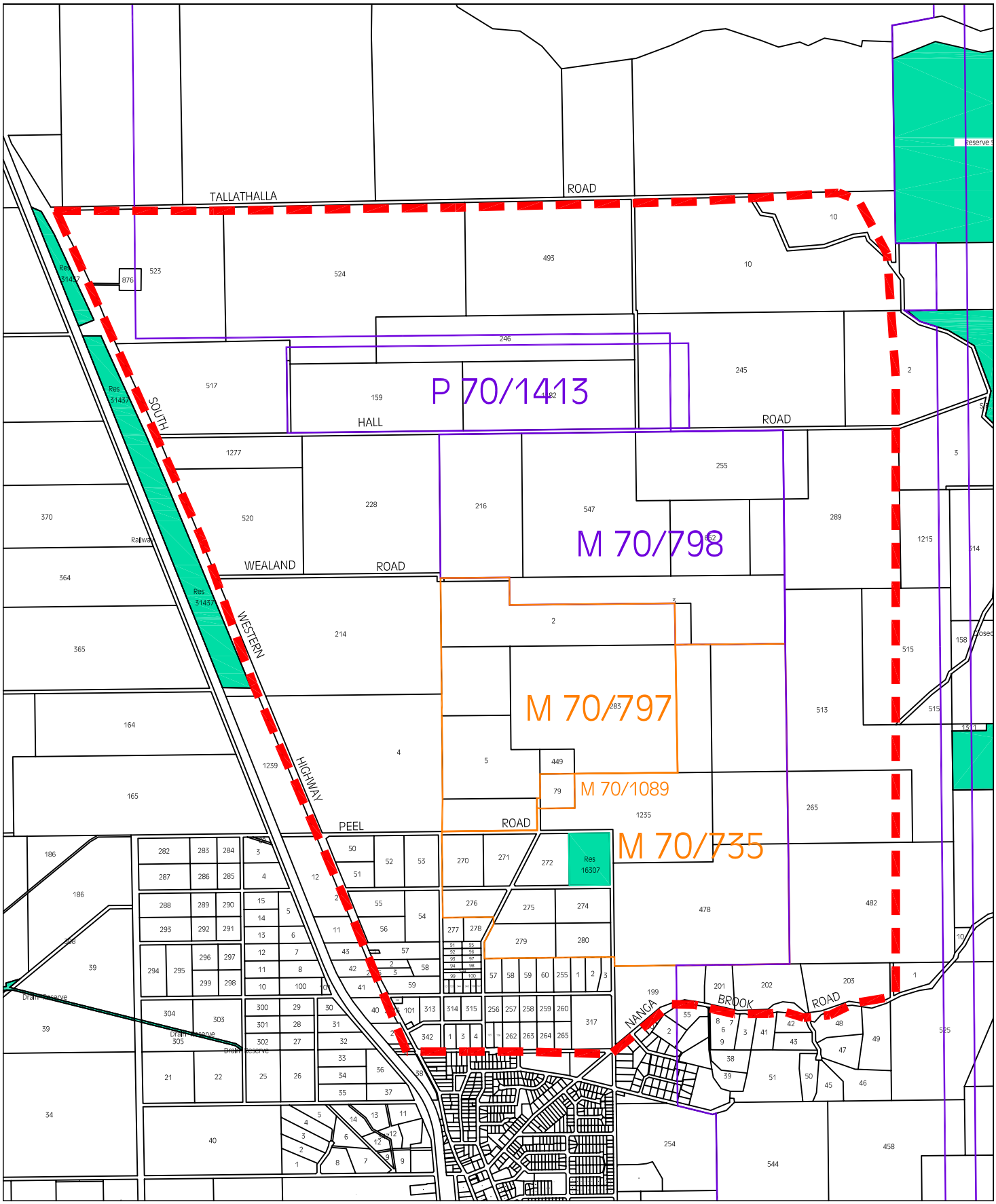
Tenement	Description
Mining Lease	• The maximum area for a mining lease is 1000 hectares. • Mining leases must be marked out. • Application is made to the Mining Registrar of the relevant Mineral Field • An application fee and rental is payable. • There is no limit to the number of mining leases a person or company may hold. • The term of a mining lease is 21 years and may be renewed for further terms. • The lessee of a mining lease may work and mine the land, take and remove minerals and do all things necessary to effectually carry out mining operations in, on or under the land, subject to conditions of title.
Exploration Licence	• In 1991 a graticular boundary (or block) system was introduced for exploration licences. • The minimum size of an exploration licence is one block, and the maximum size is seventy blocks. • An exploration licence is not marked out. • Application is made to the Mining Registrar of the relevant Mineral Field • An application fee and rental is payable. • There is no limit to the number of licences a person or company may hold but a security (or bond) is required in respect of each licence.

Tenement	Description
	• The term of an exploration licence is 5 years. The Minister may extend the term in certain circumstances. • At the end of both the third and fourth year of its term, the licensee is required to surrender 50% of the licence. • The holder of an exploration licence may in accordance with the licence conditions, extract or disturb up to 1000 tonnes of material from the ground, including overburden, and the Minister may approve extraction of larger tonnages.
Prospecting Licence	• The maximum area for a prospecting licence is 200 hectares. • Prospecting licences must be marked out. • Application is made to the Mining Registrar of the relevant Mineral Field • An application fee and rental is payable. • There is no limit to the number of licences a person or company may hold, but a security (or bond) is required in respect of each licence. • The term of a prospecting licence is 4 years. • The holder of a prospecting licence may, in accordance with the licence conditions, extract or disturb up to 500 tonnes of material from the ground, including overburden, and the Minister may approve extraction of larger tonnages.

Source: Department of Industry and Resources.

Implications
As the majority of the land is freehold, its development will largely be at the discretion of the individual landowner unless some form of coordinated approach is adopted.

Mining tenements over the Study Area may have implications for development. In certain circumstances, mainly when land is not being used, tenement holders may have a right to enter private property for exploration and prospecting purposes. Mining of minerals at a depth of greater than 30 metres could also occur on private property under the provisions of the *Mining Act 1978*.



LEGEND

Study Area

Cadastre

Reserves

Iluka Resources Tenements

M70/798 Mining Lease

E70/2407 Exploration Licence

P70/1413 Prospecting Licence

ML 1SA Mineral Lease (1904 Act)

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SHIRE OF WAROONA
WAROONA NORTH STRUCTURE PLAN

LAND TENURE

FIGURE 5.1

5.2 Population and projections[2]

There are a range of residential lots in and around Waroona including single residential lots, approximately 200 special residential lots, 25 rural residential lots to the east of the town and 64 rural smallholding lots to the north and west that vary in size from 2 to 7 hectares and are used for residential, hobby farming and home based businesses.

In 2016 the potential population is projected to be 5 700 persons, an addition of 2 122 persons from 2001.

Based on the potential population addition of 2,176 persons between 2001 and 2016 and an average occupancy rate of 2.45 persons per dwelling, there will be a target of an additional 900 lots. Because land is rarely developed within the projection timelines, it will be necessary to allocate about 25% more lots if achieve the target. That is about 1125 lots.

The projected structure of the additional residential lots is as follows:

- Single Residential Lots 675 (60%)
- Special Residential Lots 180 (16%)
- Small Holding Lots 270 (24%)

Within and around the Waroona townsite, there is land that is either zoned or could be readily zoned for residential and/or special residential lots to cater for the projected lot requirements for the next 15 years to 2016. In relation to the Waroona North area, the following preliminary potential lot yield has been calculated.

North of existing townsite, bounded by McDowell, Hill, Dallas & rear of Paterson Road properties

- *Approx. Area 46 hectares*
- *Lot sizes 800m2 (R12.5)*
- *Approx. Yield 360 lots*

Considerations:

- Subject to the Waroona North Structure Plan and final determination on arrangement of Special Residential vs Residential land use.
- Nanga Brook runs through a portion of the site.
- Drainage to be considered given part of the site is low-lying.
- Numerous landowners to be co-ordinated if it is to be subdivided.
- Requires preparation of an outline development plan prior to subdivision.
- Sand mining to be completed prior to rezoning or subdivision occurring.

5.3 Land use patterns

A review of historical aerial photography of the Study Area has indicated land use patterns have remained relatively static for at least the past 60 years (aerial photography prior to this date is unavailable).

A variety of broadacre agricultural land uses are located within the Study Area with generally larger lot sizes north of Peel Road. Only two more intensive agricultural uses – a vineyard and young olive plantation, were noticed within the Study Area. A *Special Rural* zone has been established on the northern boundary of the Waroona townsite.

Lot sizes within the Waroona townsite are generally in the order of 800 to 1000m^2. Any extension of the townsite would encompass lots of a similar size. Lot sizes within the Study Area are significantly larger than this, ranging from about 1 hectare immediately north of

[2] Information in this section has been sourced from the Shire of Waroona draft Local Planning Strategy.

McDowell Street and becoming increasingly larger further from the townsite. The exception is a small pocket of 4000-5000m^2 lots between Dallas Street, Paterson Road and Bradford Street.

Indicative lot sizes within the Study Area are shown on Figure 5.2.

Young Olive plantation – located on Darling Scarp

Implications
The existing pattern of generally large lot size and flat agricultural land provides a good basis for the consideration of future, varied land uses.

The existing 'barrier' of Special Rural lots to the immediate north of the Waroona Townsite may prove to be a limiting factor for townsite expansion in this area.

5.4 Heritage

Aboriginal

A search of the Department of Indigenous Affairs (DIA) database of recorded Aboriginal sites indicated that there are five recorded sites within and around the Study Area. Details are provided in Table 5.2. An extract from the database, including a generalised location map for each site, is provided at Appendix D.

Table 5.2 – Aboriginal heritage

Site name	Site location
Waroona	Artefacts/Scatter
Gas Pipeline 92	Artefacts/Scatter

Site name	Site location
Twin Creeks	Camp
Wuradjie Waterfall	Mythological
Triple Blackboy	Significant Tree

Source: Department of Indigenous Affairs.

DIA provides advice to developers regarding any form of development. Specifically, to ensure compliance with the *Aboriginal Heritage Act 1972*, the Department advises that the following occur prior to work commencing on a site:

1. Consult to identify heritage sites and values. This should include consultation with DIA, which holds the Aboriginal sites records, information and names of Aboriginal people who are likely to have an association with the locations
2. Undertake an Aboriginal heritage survey (if it is noted from a desk top review that an adequate survey has not been undertaken for an area to be developed) and include consultation with the Aboriginal community
3. Undertake an archaeological survey prior to a development commencing
4. Ensure project staff undergo an introduction to Aboriginal heritage, so that they can recognise material that constitutes the types of sites likely to be found
5. If an Aboriginal heritage site cannot be avoided then they should submit a s18 request to the Minister for Indigenous Affairs.

Should an Aboriginal site be uncovered during construction or skeletal material found, work on the site needs to cease immediately. Various approvals need to be obtained prior to work re-commencing.

European

There are no recorded sites of European Heritage within the Study Area.

Implications

Existing Aboriginal Sites require protection from development. There are processes in place that can require development work to cease if sites are uncovered. Unless such a site is uncovered during development, heritage is not likely to be a significant issue.

6 Infrastructure & servicing

6.1 Roads

Roads in Western Australia are classified as being either State or Local roads. South Western Highway is the only State Road within the Study Area and is under the control and care of Main Roads Western Australia. All other roads are classified as being local roads, under the control and care of the Shire.

There are five main access roads running east-west from South Western Highway. These provide generally good access to the larger lots in the western part of the Study Area. Access to the eastern half of the Study Area is more difficult. There are several road reserves in the eastern half, however many of these have not been constructed. There also appears to be several lots that are landlocked, or rely of easements over other properties to enable access.

The internal layout developed for any coordinated development within the Study area is likely to involve an additional north-south road to complement the existing predominately east-west road layout.

Implications
On the whole, the Study Area has reasonable road access relative to its current use. Consideration may need to be given to constructing roads within existing road reserves or identifying and constructing new roads at some time in the future depending on final land use.

6.2 Power

Western Power has advised that there are both a high voltage supply mains and transmission line in the Study Area, along with an array of distribution lines. Western Power generally requires a 20 metre wide easement on either side of the high voltage mains and transmission lines where development is restricted. Where the easement does not exist it is usually requested if the land is affected by a proposed development.

Western Power has classified itself as an underground power authority. This means that all new development needs to be serviced with underground cabling. In addition, any existing overhead distribution cabling affected by the particular development will need to be replaced by an underground system. These requirements are usually included as conditions of subdivision or development approval and the costs are to be borne by the developer.

Western Power has no future plans for the area, relying on advance knowledge of developments to formulate its network. Capacity of the existing system can only be assessed once full knowledge of the proposed development in question is obtained.

Existing power infrastructure is shown on Figure 6.1.

Implications
Additional costs could be borne when proposing development as all power supplies now need to be underground, including the replacement of any existing overhead cabling affected by the proposed development.

Western Power will need to be kept informed of land use options for the Study Area to assess and plan for capacity upgrades as required.

Twenty metre wide easements alongside high voltage and transmission lines need to be incorporated into any planning undertaken.

6.3 Water supply

Water supply to the Study Area is limited. A water reticulation system is based around the Waroona townsite and extends to the northern boundary of the townsite within the Study Area. There are no other Water Corporation assets within the Study Area.

A 'modest' development serviced by the existing water reticulation system could be possible, subject to it being on the same gradient as the existing system (otherwise pressure problems may result – a problem that apparently affects other sections of the Waroona townsite). Boosting of water pressure may be required in certain circumstances and would be undertaken at the expense of the developer.

Harvey Water advised that there are no irrigation channels within the Study Area. At this stage, there are no plans to expand the Harvey Water system into the Study Area, however this could be looked at in the future if required.

The Department of Environment has indicated there are numerous licensed bores within the Study Area.

Implications
Water supply in the majority of the Study Area will need to rely on either rainwater or groundwater supplies in the absence of any firm plans of Harvey Water to expand the irrigation scheme further north. As detailed previously, groundwater or surface water usage will require a license from the Department of Environment.

Connection to the Water Corporation reticulated system around the main townsite may be possible, however development costs would need to incorporate possible upgrading of the system to be able to provide additional capacity. Ongoing liaison with the Water Corporation would be required in this regard.

6.4 Wastewater

The Water Corporation own a reticulated wastewater treatment plant in the Waroona townsite. An infill program within the townsite is planned for the next couple of years and planning for upgrading the plant has commenced to ensure it has suitable capacity.

There may be some scope for development on the outskirts of the townsite to connect to the existing reticulated system, however it is likely that any significant development or town expansion will create a need for further expansion of the treatment plant.

In other parts of the Study Area reticulated sewer is not available, and on-site systems will need to be considered. The main constraint for on-site effluent disposal is the land and soil qualities associated with each site. In the western portion of the Study Area, effluent disposal will likely need to be via aerobic treatment systems that have the capacity to attenuate nutrients.

The implications of SPP2.1 in relation to provision of reticulated sewer or traditional on-site treatment systems will also need to be taken into account.

Implications
Any urban development should connect to the Water Corporation wastewater system servicing the Waroona townsite. Larger lot development is likely to require individual treatment units that have the capacity to attenuate nutrients. Development of non-rural zoned land for non-rural purposes will also be subject to the requirements of the Government Sewerage Policy.

6.5 Gas

There is no gas reticulation in the area. The site is not affected by the Dampier-Bunbury gas pipeline.

Implications
Nil.

6.6 Telecommunications

Telstra local cables provide a service to the majority of the Study Area. These cables have been designed to a size to suit the rural nature of much of the area.

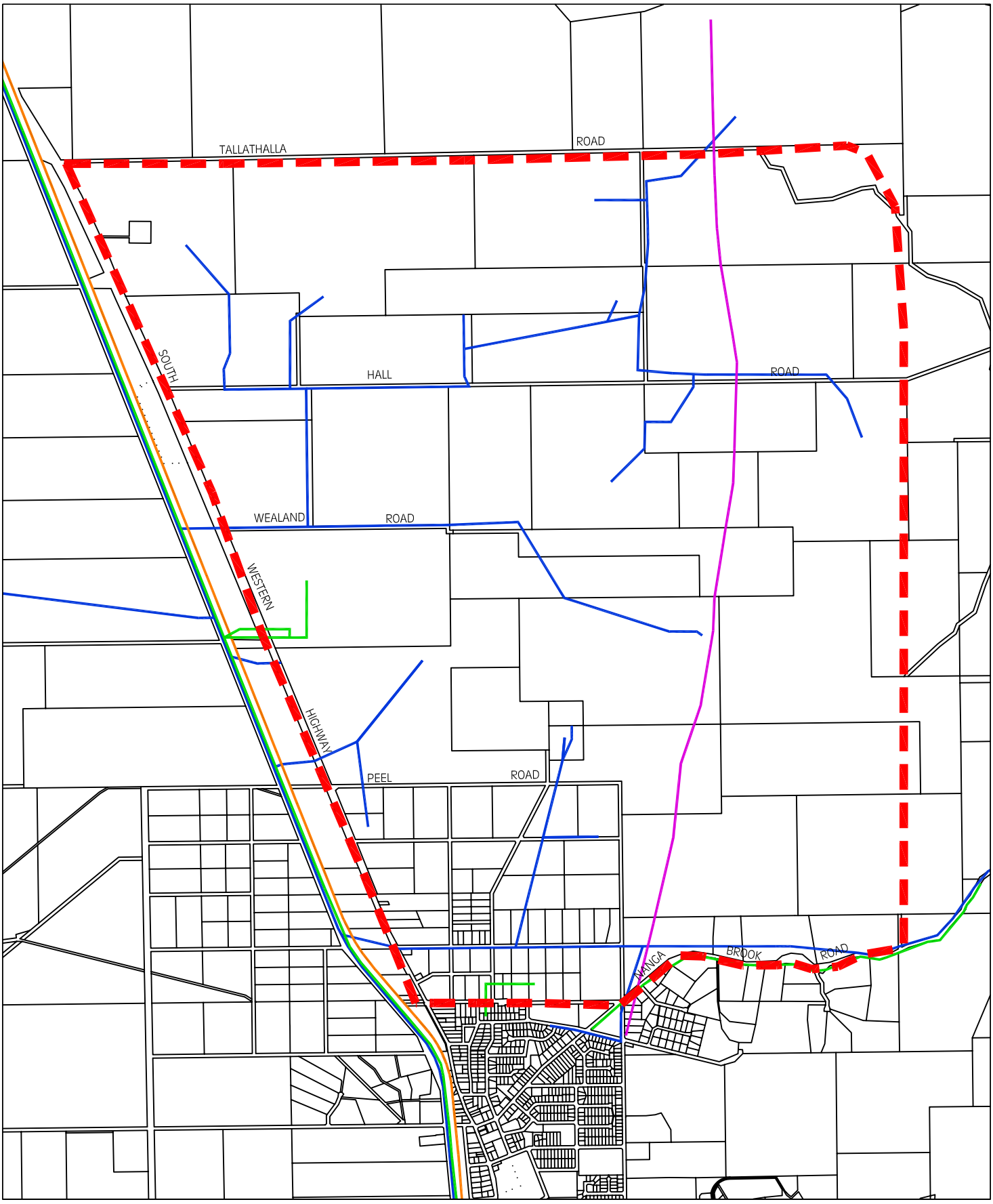
A main cable, incorporating a fibre optic cable, runs along the western side of the South Western Highway and should not restrict development within the Study Area in any way.

The cable network can generally be extended in a frontal manner to follow the development demand. If new subdivision abuts the existing Telstra network it is normally reticulated at no cost to the Developer if common trenching is provided. Where the new subdivision is remote from the main network a main cable extension may be necessary. In this situation the Developer may be required to provide a capital contribution towards the cost. Depending on the size of the development there may also be a contribution required to provide a site and facility for a localized hub.

Existing telecommunications infrastructure is shown on Figure 6.1.

Implications

Basic infrastructure is provided within or near the Study Area, and this can in most cases be extended or provided in a 'frontal' manner.



LEGEND

- Study Area
- Cadastre
- Telstra Optical Fibre Cable
- Telstra Local Cable
- Western Power Transmission Line
- Western Power High Voltage Line

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EXISTING INFRASTRUCTURE

FIGURE 6.1

7 Opportunities & constraints summary

7.1 Introduction

This section provides a summary of the opportunities and constraints for future landuse and development described elsewhere in this report. The various physical, environmental and social characteristics of the Study Area present a range of potential constraints to more intensive development within the Study Area, the most prominent being the restrictions associated with the *Multiple Use Wetland* and the marginal land capability for more intensive agricultural pursuits. In general, the constraints are not considered fatal, but rather highlight issues that may need to be further addressed during detailed design stages.

The broad items identified are presented in Table 7.1 and are shown on Figure 7.1. The opportunities and constraints can vary depending on which portion of the Study Area is being considered. As such, each opportunity and constraint identified as been associated a value within three distinct sub-areas – the area immediately north of the Waroona townsite, the western portion of the Study Area delineated by the Pinjarra land system, and the eastern portion of the Study Area delineated by the Darling Scarp and Plateau.

Table 7.1 – Opportunities and Constraints matrix

		North of townsite	Study Area – West	Study Area - East
Opportunities	Availability of water	Moderate	Moderate	Minor
	Agriculture	Moderate	Moderate	Moderate
	Tourism and recreation	Major-Moderate	Minor	Major-Moderate
	Residential	Major-Moderate	Minor	Minor
	Rural Living	Moderate	Minor	Minor
Constraints	Seasonal waterlogging	Major	Major	Minor
	Mining tenements	Minor	Moderate	Moderate
	Acid Sulphate Soil potential	Moderate	Moderate	Minor
	Existing development	Moderate	Minor	Minor
	Land capability – agriculture	Minor	Major-Moderate	Minor
	Mining activities	Moderate	Moderate	Moderate
	Ground stability after mining	Moderate	Moderate	Moderate
	Basic Raw Materials Policy	Moderate	Moderate	Moderate

Notes:
Constraints
Major: Affects the majority of the area and can severely restrict land use.
Moderate: Affects a significant portion of the area and can moderately restrict land use.
Minor: Affects only a small proportion the area and does not significant restrict any land use.

Opportunities
Major: affects majority of area and high potential for land use.
Moderate: Affects a significant portion of the area and moderate potential for land use.
Minor: Affects only a small proportion the area and minor implications for land use.

7.2 Opportunities

Availability of Water

There is some groundwater available for allocation within the Murray Groundwater Area, which incorporates the Study Area. Groundwater allocation will depend on licensing from the Department of Environment.

Groundwater availability progressively decreases towards the eastern boundary of the Study Area, and as such is only recorded as a minor opportunity in this area.

Agriculture

The majority of the site is well suited to grazing and this is the main agricultural land use within the Study Area. Land capability for grazing is generally good, however capability for more intensive agriculture, particularly in the western portion of the Study Area, is limited. It should however be noted that there are existing horticultural activities on similar soil types near the Study Area. In addition, the possibility of future irrigation scheme availability and possible sub-soil drainage (subject to relevant approvals) could improve the capability of these areas for more intensive agriculture in the longer term.

Tourism and recreation

The proximity to the Waroona townsite, coupled with the natural landform features of the Darling Scarp, provides significant opportunities for tourism and recreation both adjacent to the townsite and in the eastern portion of the Study Area.

Residential

The close proximity of the Waroona townsite to the southern boundary of the Study Area, availability of infrastructure provides opportunities for residential development on the southern portion of the Study Area.

Rural living

Rural living development is already located within the Study Area. It is considered the existing area could be expanded relatively easily in the southern portion of the Study Area.

7.3 Constraints

Seasonal waterlogging

The western portion of the Study Area is classified as a wetland, and the soils within this area are described as being seasonally inundated and waterlogged. This will restrict some forms of development and land use within this area.

Mining tenements

Various mining tenements are located throughout the Study Area. These tenements confer certain rights to the tenement holder, depending on the type of tenement held. Tenements for exploration and prospecting are not necessarily constrained by planning regulations.

Acid Sulphate Soil potential

The western portion of the Study Area has been classified as having moderate to high potential for acid sulphate soils at a depth of greater than 3 metres. This could be a significant constraint to development that requires disturbance to the sediments at this depth including, for example, excavation, dewatering or otherwise changing the natural water balance in the area. A detailed study on how to manage acid sulphate soils would be required to support any proposed development.

Existing development

Existing development within the Study Area is limited. The southern portion of the Study Area contains some existing Rural Living development on larger lot sizes than those within the Waroona townsite. Any potential townsite/residential expansion area would need to consider how linkages and integration between the existing rural living development and possible townsite expansion area further to the north could be achieved.

Land capability

Land capability in the western portion of the Study Area is marginal for more intensive agriculture, thus limiting opportunities for diversification in this area. Some limited forms of annual horticulture may be possible.

Mining activities

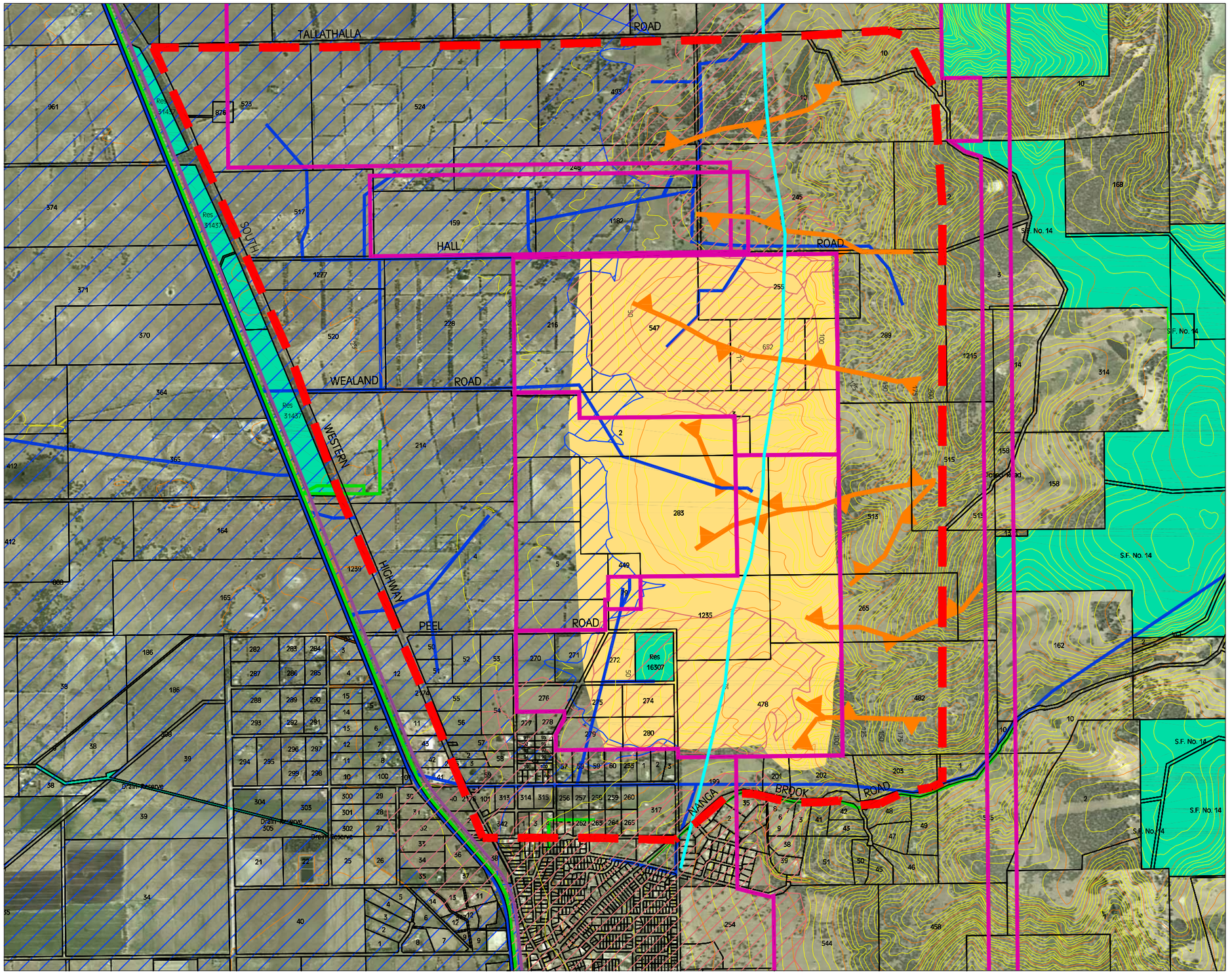
Iluka Resources Ltd proposes to mine mineral sands within its tenements north of the Waroona townsite. Development within the tenements will be restricted for several years while mining occurs. Consideration of appropriate setbacks and buffers to surrounding areas also needs to be considered during this time.

Ground stability after mining

Development on the Iluka Resources Ltd pit areas following mining may be restricted, depending on the type of development proposed for those areas. It is likely geotechnical investigations would be required to ensure that the structural integrity of development over these areas would be retained in the longer-term.

Basic Raw Materials Policy

The policy, as described in Section 2.2 of this document, needs to be considered when planning future land uses within the Study Area. Development that has the potential to restrict access for future mining is unlikely to be supported by either the Council or the Western Australian Planning Commission. Following mining of the Iluka Resources Ltd tenements, it may be possible to seek a reduction in the size of the policy area.



LEGEND

- Cadastral Boundaries
- Study Area
- 25 Metre Contour
- 5 Metre Contour
- Ridgeline
- Western Power Transmission Line (inc 20 metre easement)
- Western Power High Voltage Line (inc 20 metre easement)
- Telstra Optical Fibre Cable
- Telstra Local Cable
- Multiple Use Wetland & Moderate-High Potential for ASS at greater than 3m depth
- Horticulture Potential
- Reserves
- Mining Tenements (Various)
- Peel Region Scheme - Basic Raw Materials Area

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SHIRE OF WAROONA
WAROONA NORTH STRUCTURE PLAN
OPPORTUNITIES AND CONSTRAINTS
FIGURE 7.1

Base data provided under licence by DLI, DOA AND DOIR.

Part 2

Community Vision

8 Preamble

This stage of the Structure Plan involved consulting with the community to begin the development of a *Community Vision*. The main community input in this stage was via a community workshop held towards the beginning of the Structure Planning process.

This Part of the report describes the community workshop process and key outcomes. A full transcription of ideas and comments from the workshop is provided in Appendix E.

8.1 Community workshop

The structure planning process commenced with a community workshop held on 12 February 2005 aimed at:

- Informing participants about the Waroona North Structure Plan purpose and process
- Providing the context surrounding the study area
- Exploring the key aspects of Waroona's character and culture to underpin the structure plan
- Identifying the community values and negative aspects of Waroona North
- Seeking vision ideas and statements for the future of Waroona North

This workshop was attended by 18 local residents, the council's Manager of Planning and Development Services and the project consultants Ray Belton and Michael Taylforth. The workshop was facilitated by Elizabeth Vlok from Community Perspectives, also part of the Belton Taylforth consultancy team working on the project.

The results of the three key participatory exercises of the workshop are summarised below and reported verbatim in the detail of this report, which conclude with a draft community vision statement, based on the community values and outcomes of the workshop.

9 Waroona - Character and Culture

The character of Waroona was generally described as laid back, with a traditional small country town atmosphere, friendly people and a close knit community made up of a diversity of people and cultures. The natural environment is also an important part of Waroona's character, providing plenty to do and see and a unique local identity. Waroona is also characterised by a sense of uncertainty, lack of focus and confidence.

9.1 The Positives

The community values that emerged from the workshop are the country atmosphere and rural lifestyle, open space and natural environment, recreation opportunities and location, with easy access to Perth, Mandurah and Bunbury.

9.2 The Negatives

Waroona's negative aspects generally related to the town centre's poor appearance, disjointed nature, old vacant shops, heavy traffic, poor pedestrian environment and community apathy. Industry being spread over a wide area and the impacts of mining and the proximity of Alcoa were also considered the most negative features of Waroona.

9.3 The gaps

Workshop participants believed that Waroona is missing a clear sense of direction and a long-term vision to guide the future possibilities for growth and development. A thriving local economy, a focus beyond industry, diversification of agricultural pursuits and a lack of small land holdings were also considered shortcomings. Realising the tourism potential of the area, employment for young people, the town centre, an industrial site and investment in infrastructure were also considered lacking.

10 Structure Plan Area

10.1 Positive features

Participants identified the positive aspects of the structure plan area and six key community values emerged:

Natural environment, waterways and scarp

- Natural waterways.
- Scarp and vistas.
- Natural beauty.
- Vegetation, trees and woodlands.
- Good agricultural soil.
- Wildlife.

Potential, opportunity and small land holdings

- Opportunity to develop something unique.
- Opportunity to address local issues, employment, long-term sustainability.
- Undeveloped large area – a clean canvas.
- Potential to support many more people than it does now.
- Suitable land for small holdings within short distance of town site.

Location

- Entry into town: great outlook.
- Location, close proximity to town centre.
- Lifestyle.
- Open plan living.

Opportunity to diversify farming

- Suitable land for agriculture.
- Diverse farming potential.
- Rural zoning.

Availability of infrastructure

- Infrastructure available, or becoming available (power, water, etc.).
- Water availability via Iluka.
- Piped water supply.

10.2 Negative features

Participants identified the negative aspects of the structure plan area and six key negative aspects emerged:

Poor road access and traffic

- Incomplete road access to some areas.
- Standard of roads.

- Increase in traffic due to freeway extension.
- Entry to northern end of town not appealing

Incompatible land uses and degradation

- Incompatible uses and bad farming practices
- Land degradation, more trees needed
- Uncontrolled vermin and noxious weeds.

Possibility of a satellite town site

- Satellite townsite: north vs south.
- Existing rural residential blocks on Patterson and adjacent roads, impact on continuity of northern townsite development.

Poor visual qualities and impacts

- Visual impact of townsite development on existing lifestyle lots above mine site.
- Northern entry not pleasing to the eye.
- Power lines

Winds and erosion

- Prevailing easterly winds.
- Scarp winds - potential for erosion if not cleared sensibly.

Water and drainage

- Shallow perched water table will not allow for high density living: potential for pollution.
- Drainage.

10.3 Issues and Trends

The key issues participants identified as relevant to the future vision of the area related to the preservation of woodlands and waterways, the possibility of a satellite township, traffic safety, managing environmental impacts, block sizes and the need for a transitional/buffer zone between existing townsite and future northern residential developments. Strict council control over all buildings was also identified as an issue.

The trends identified as relevant to the future of the area related to the increase demand for rural lifestyle blocks, rural diversification and growth in eco-tourism and equestrian pursuits.

11 Community Vision

Based on the outcomes of the workshop the following community vision for the Waroona North Structure Plan has been compiled as a starting point for further input and consideration by workshop participants and the wider community.

"The sand mining operation in Waroona North area has long since ceased and the natural environment and beauty of the area has been restored and enhanced with vegetation, trees, woodlands and pristine waterways, providing an endurable environment for a diversity of native flora and fauna. An abundance of quality public park land and open space is the 'jewel in the crown' of the area, incorporating walking and cycleways, horse riding trails and diverse recreational and eco-tourism opportunities that draw locals and visitors alike. A diversity of compatible rural viticultural and horticultural industries adds to a bustling local economy while providing employment opportunities, especially for young people. Small rural landholdings bring additional people to Waroona who value the land, sustainability and the unique lifestyle country living offers and a strong sense of community, pride and peaceful atmosphere prevails. The Waroona town centre remains as the central heart of the community, well connected to Waroona North with safe traffic and easy access to the Waroona townsite and within Waroona North."

Part 3

Land Use Options

12 Preamble

Two land use options have been prepared. Each land use option is represented by a plan that designates certain parts of the Study Area for a possible future use and has been prepared based on the opportunities and constraints identified for the Study Area in Part 1. The two options presented represent varying land uses that could be implemented. This is not to say, however, that other options could not be considered that either contain elements of those options presented or introduce new elements.

In summary, the options presented are designed to stimulate discussion regarding the future land use within the Study Area, and to assist the Shire and the Working Group in determining a preferred option.

The project Working Group considered the options at a meeting on the 19th April 2005. At that meeting the Working Group resolved to endorse Option 1 as the preferred option.

The following chapters of this report identify and describe land use options as follows:

- *Description:* describes the type and extent of each land use proposed as part of the option.
- *Rationale:* provides background as to why the land uses were chosen, and why they cover the particular area shown.
- *SWOT analysis:* Strengths, weaknesses, opportunities and threats associated with each land use proposed.

Land use options presented to the community are presented at Appendix F. The final land use option is presented at the end of this section.

12.1 Public review

The two land use options were advertised for comment and circulated within the community. Written comments were invited on which option was preferred and an Information Evening was held during the advertising period to provide the community with further opportunity to review and discuss each option with the Shire and Working Group.

Based on the submissions received, Option 1 was the clear preference, particularly as it did not include any *Townsite Expansion* areas and thus retained the *rural nature* of the Study Area.

13 Land Use Option 1

13.1 Description

Five land uses have been proposed within this option maximising the possibility for intensive development within the Study Area. A Special Residential area and future recreational area have been proposed in the southern half of the Study Area in the Nanga Brook-Patterson-Peel Road area. The majority of the western side of the Study Area from south of Peel Road to Tallathalla Road set aside for Intensive Agriculture. The top of the scarp along the eastern boundary of the Study Area has been identified as a landscape protection area. This is the only part of the Study Area where development may be limited under this option.

- *Special Residential:* Lot sizes of between 2000 and 4000 square metres surrounding the townsite expansion area. All services would be required to facilitate development in this area. Some subdivision potential would be provided north of McDowell Street/Nanga Brook Road, with lot sizes being similar to the smaller lots currently developed west of Bradford Street.

- *Recreation*: The recreation area has been centred on one of the Iluka Resources Ltd pit areas. A recreation area in this location should be able to be provided without the need for detailed geotechnical investigations into ground stability over the entire site. The area would provide a secondary focus for recreation in the northern part of the extended Waroona townsite to complement the facilities provided towards the southern boundary of the existing townsite. The type of facilities provided in the area would be subject to further assessment and design, but could include passive and active areas, lakes or other water features etc.

- *Highway Area 1:* Subdivision potential down to 1 hectare minimum lot sizes could be considered in this area. Development would be contingent on appropriate setbacks and suitable screening of development from the highway being proposed.

- *Priority Agriculture:* The existing pattern of broad-scale agricultural lots would prevail in this area. Subdivision to facilitate more intensive agricultural pursuits could be considered where appropriate justification is provided, including for example detailed land capability assessment, suitable water supply, appropriate environmental management, landscape protection and agricultural viability.

- *Landscape Protection:* Development within this area would be largely restricted. Some consideration of small-scale development to facilitate tourism or recreation areas could be considered, subject to the ongoing protection of the landscape features of the site and precinct.

13.2 Rationale

Special residential

- Will provide larger lot sizes and thus further lifestyle options to the town's residents. Larger lots may also provide a buffer between the smaller existing townsite lots and agricultural areas. Special Residential development will assist in maintaining the 'rural atmosphere' within the Study Area with no smaller 'townsite' lots being developed.

- Re-subdivision of some areas may be possible.

Priority agriculture

- The priority agriculture area depicted over the western half of the Study Area encompasses soils of varying agricultural quality. Certain areas may therefore be more suited to intensive agriculture than others. Nevertheless, in the longer term there may be opportunities to develop some of the less capable areas for more intensive agricultural uses by, for example, extending the irrigation scheme and consideration of options to address seasonal waterlogging.

- A minimum lot size of 30 hectares has been designated over this area. Landowners wishing to subdivide would need to provide appropriate justification in terms of land capability, water availability, environmental management, landscape protection and agricultural viability.

Recreation / Agriculture

- The proposed recreation area will cover an Iluka Resources Ltd pit. This land will only be developed once Iluka has ceased their operations. The recreation area will cater to both residents within the Study Area and from Waroona and could incorporate a variety of activities.

- Some of the recreation/agriculture areas have some potential for intensive agriculture. These opportunities could be re-assessed following mining activities.

Highway Area 1

- This is a visually sensitive area being one of the main approaches to the Waroona townsite. Maintaining or enhancing the landscape in this area is considered important. Subdivision to 1 hectare lots is proposed for this area. Subdivision and development would be contingent upon appropriate development setbacks being imposed, and suitable screening of development from the highway to maintain or enhance the landscape value of this area.

Landscape protection

- This area is largely unsuitable for other types of more intensive development by nature of the topography and soils. This area is also visually prominent and should be protected from visually intrusive development. Some small scale recreation or tourism development may be considered.

13.3 SWOT analysis

Strengths	**Weaknesses**
• Maintains the 'rural atmosphere' of the Study Area through the provision of larger residential lot sizes, broad agricultural areas and an extensive landscape protection area. • Encourages most intensive use of somewhat marginal land in the north-west portion of Study Area • Maintains the landscape integrity of the Darling Scarp.	• No smaller 'townsite' lots have been proposed (700-1000m^2) and as a result growth of the Waroona townsite will be restricted in this area. • Removes the potential to develop some land with high intensive agricultural potential in the southern half of the Study Area. • Western Power 20 metre easement for Transmission Line would dissect a Special Residential area.
Opportunities	**Constraints**
• Could provide subdivision potential to some landowners in the Study Area.	• Landowners may not wish to subdivide, resulting in stalled development.

• Provides a framework for the future staged provision of infrastructure – both for townsite development, Special Residential and to facilitate intensive agriculture. • Would facilitate an increased semi-urban population and re-enforce Waroona as the primary town in the Shire. • Intensive agriculture in reasonable proximity to the townsite may have positive flow on economic effects to both the Waroona townsite and the Shire.	• The need to protect the BRM area may delay development of some areas indefinitely. • Infrastructure may not be provided in a timely manner to facilitate development. • Land development costs have the potential to influence development timeframes and development viability in marginal areas.

14 Land Use Option 2

14.1 Description

Six distinct land use options have been identified within this option. A townsite expansion area has been identified in the southern section of the Study Area, to the immediate north of the existing townsite. A buffer of Rural Living and recreation/agriculture development has been proposed around the townsite expansion area. The northern two-thirds of the Study Area are dominated by agricultural uses, with the Darling Scarp area incorporated into a Landscape Protection area.

- *Townsite Expansion:* Various urban land uses may be possible, including residential, commercial, recreation/POS etc. Lot sizes could vary however would include urban lots of varying size (depending on community desire and viability). All services, including reticulated sewerage and water supply, would be required.

- *Special Residential:* Lot sizes of between 2000 and 4000 square metres surrounding the townsite expansion area. All services would be required to facilitate development in this area. Some subdivision potential would be provided west of Bradford Street, between the future recreation areas and at the base of the scarp near Nanga Brook Road.

- *Recreation*: The recreation area has been centred on one of the Iluka Resources Ltd pit areas. A recreation area in this location should be able to be provided without the need for detailed geotechnical investigations into ground stability over the entire site. The area would provide a secondary focus for recreation in the northern part of the extended Waroona townsite to complement the facilities provided towards the southern boundary of the existing townsite. The type of facilities provided in the area would be subject to further assessment and design, but could include passive and active areas, lakes or other water features etc.

- *Highway Area 1:* Subdivision potential down to 1 hectare minimum lot sizes could be considered in this area. Development would be contingent on appropriate setbacks and suitable screening of development from the highway being proposed.

- *Priority Agriculture:* The existing pattern of broad-scale agricultural lots would prevail in this area. Subdivision to facilitate more intensive agricultural pursuits could be considered where appropriate justification is provided, including for example detailed land capability assessment, suitable water supply, appropriate environmental management, landscape protection and agricultural viability.

- *Landscape Protection:* Development within this area would be largely restricted. Some consideration of small-scale development to facilitate tourism or recreation areas could be considered, subject to the ongoing protection of the landscape features of the site and precinct.

14.2 Rationale

Townsite expansion area

- The townsite expansion area depicted allows for a northern extension to the existing Waroona townsite. If designed appropriately, the townsite expansion area will have good connectivity to the existing townsite, and will re-enforce Waroona as the primary town within the Shire.

- Re-subdivision of existing rural living development in the south-west portion of the Study Area may be possible.

Special residential

- Will provide larger lot sizes and thus further lifestyle options to the town's residents. Larger lots may also provide a buffer between the smaller existing townsite lots and agricultural areas. Special Residential development will assist in maintaining the 'rural atmosphere' within most the Study Area. Special Residential areas shown in Option 2 provide a buffer between the townsite expansion area and the agricultural area. A small extension of the Special Residential at the base of the scarp, north of Nanga Brook Road, may provide a different type of lifestyle lot with possible views to the west.

- Re-subdivision of some areas may be possible.

Priority agriculture

- The priority agriculture area depicted over the western half of the Study Area encompasses soils of varying agricultural quality. Certain areas may therefore be more suited to intensive agriculture than others. Nevertheless, in the longer term there may be opportunities to develop some of the less capable areas for more intensive agricultural uses by, for example, extending the irrigation scheme and consideration of options to address seasonal waterlogging.

- A minimum lot size of 30 hectares has been designated over this area. Landowners wishing to subdivide would need to provide appropriate justification in terms of land capability, water availability, environmental management, landscape protection and agricultural viability.

Recreation/Agriculture

- The proposed recreation area will cover an Iluka Resources Ltd pit. This land will only be developed once Iluka has ceased their operations. The recreation area will cater to both residents within the Study Area and from Waroona and could incorporate a variety of activities.

- Some of the recreation/agriculture areas have some potential for intensive agriculture. These opportunities could be re-assessed following mining activities.

Highway Area 1

- This is a visually sensitive area being one of the main approaches to the Waroona townsite. Maintaining or enhancing the landscape in this area is considered important. Subdivision to 1 hectare lots is proposed for this area. Subdivision and development would be contingent upon appropriate development setbacks being imposed, and suitable screening of development from the highway to maintain or enhance the landscape value of this area.

Landscape protection

- This area is largely unsuitable for other types of more intensive development by nature of the topography and soils. This area is also visually prominent and should be protected from visually intrusive development. Some small scale recreation or tourism development may be considered.

14.3 SWOT analysis

Strengths	**Weaknesses**
• Allows for the expansion of the Waroona townsite**.** • Allows for intensification of agricultural land uses in the northern part of the Study Area where these are proven viable and environmentally acceptable. • Maintains the landscape integrity of the Darling Scarp. • Maintains the rural nature of the majority of the Study Area. • Provides a variety of Special Residential Areas, each with different features and attractions.	• One Special Residential area has the potential to sterilise areas of BRM land if development not staged appropriately. • Western Power 20 metre easement for Transmission Line would dissect a Special Residential area. • No buffer provided between Townsite Expansion Area and agricultural uses.
Opportunities	**Constraints**
• Could provide subdivision potential to some landowners in the majority of the Study Area. • Sensitive (to landscape and environmental features) development of the Special Residential and Recreation areas could result in an attractive and sought-after lifestyle opportunity. • Provides a framework for the future staged provision of infrastructure – both for townsite development and to facilitate intensive agriculture. • Would facilitate an increased urban population and re-enforce Waroona as the primary town in the Shire. • Intensive agriculture in reasonable proximity to the townsite may have positive flow on economic effects to both the Waroona townsite and the Shire.	• Landowners may not wish to subdivide, resulting in stalled development. • The need to protect the BRM area may delay development indefinitely. • Infrastructure may not be provided in a timely manner to facilitate development. • Land development costs have the potential to influence development timeframes and development viability in marginal areas. • Buffer requirements (both to agricultural and BRM areas) may reduce the developable areas.

15 Adopted land use option

15.1 Description

Following the advertising period the Working Group has met on several occasions and a final land use option has been prepared and adopted as the basis for the Structure Plan. The final land use option is presented at Figure 15.1.

Seven distinct land use options have been identified. A townsite expansion area has been identified in the southern section of the Study Area, to the immediate north of the existing townsite. A buffer of Special Residential and Rural Residential has been proposed around the townsite expansion area. The northern two-thirds of the Study Area are dominated by agricultural uses, with the Darling Scarp area incorporated into a Landscape Protection area. Development has also been proposed over the Iluka Resources Ltd pits as current advice received indicates that this would likely be possible.

- *Townsite Expansion:* Various urban land uses may be possible, including residential, commercial, recreation/POS etc. Lot sizes could vary however would include urban lots of varying size (depending on community desire and viability). All services, including reticulated sewerage and water supply, would be required.

- *Special Residential:* Lot sizes of between 2000 and 4000 square metres surrounding the townsite expansion area. All services would be required to facilitate development in this area. Some subdivision potential would be provided west of Bradford Street, between the future recreation areas and at the base of the scarp near Nanga Brook Road.

- *Rural Residential:* A minimum lot size of 4 hectares would be required in this area, thus negating the need to provide a reticulated water supply to service the development (as water supply would be uneconomic in this area).

- *Recreation*: The recreation area has been centred on the northern portion of one of the Iluka Resources Ltd pit areas. The area would provide a secondary focus for recreation in the northern part of the extended Waroona townsite to complement the facilities provided towards the southern boundary of the existing townsite. The type of facilities provided in the area would be subject to further assessment and design, but could include passive and active areas, lakes or other water features etc.

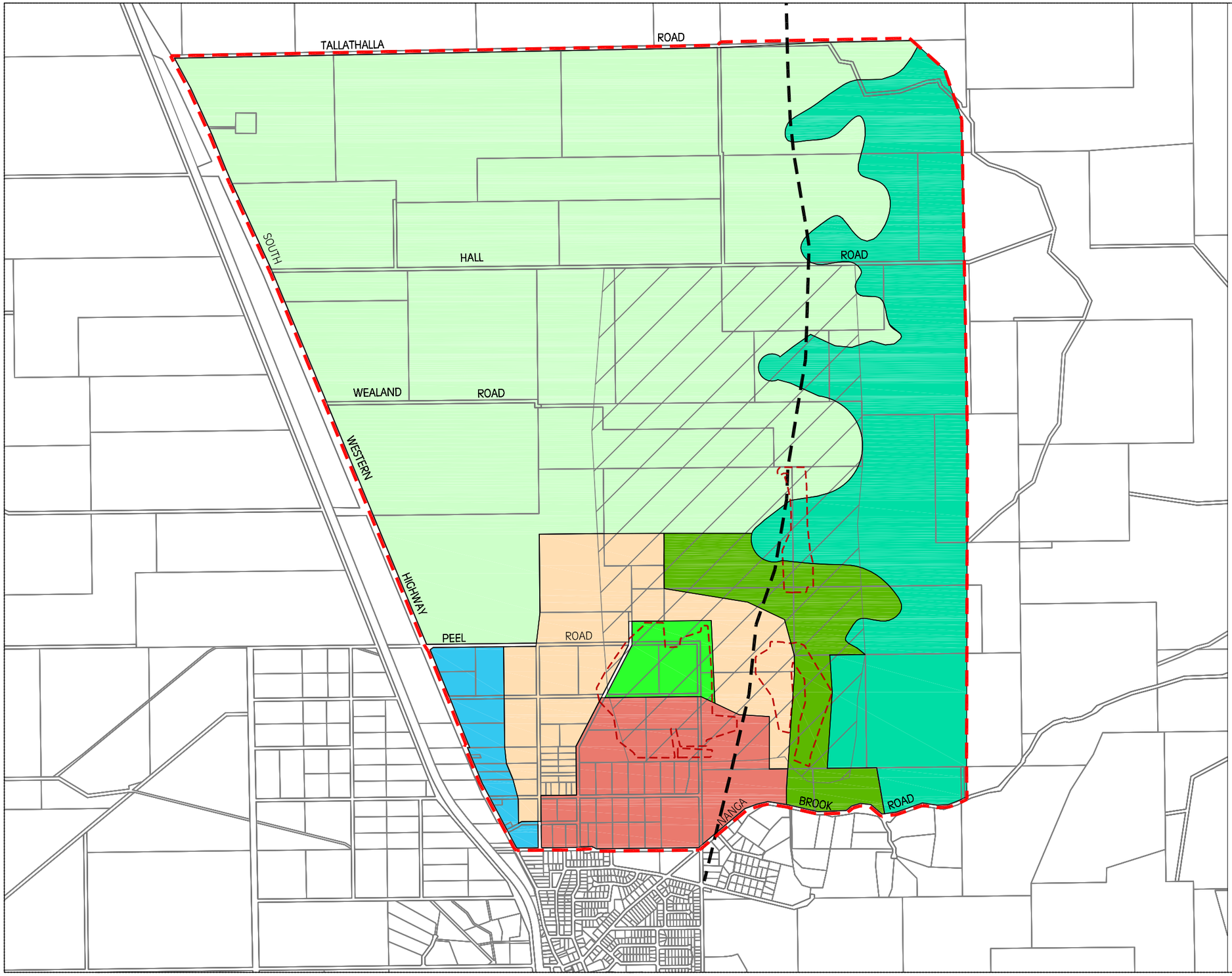
- *Highway Area 1:* Subdivision potential down to 1 hectare minimum lot sizes could be considered in this area. Development would be contingent on appropriate setbacks and suitable screening of development from the highway being proposed.

- *Priority Agriculture:* The existing pattern of broad-scale agricultural lots would prevail in this area. Subdivision to facilitate more intensive agricultural pursuits could be considered where appropriate justification is provided, including for example detailed land capability assessment, suitable water supply, appropriate environmental management, landscape protection and agricultural viability.

- *Landscape Protection:* Development within this area would be largely restricted. Some consideration of small-scale development to facilitate tourism or recreation areas could be considered, subject to the ongoing protection of the landscape features of the site and precinct.

15.2 Adoption

The final land use plan was adopted by the Working Group at its meeting on the 4th October 2005.



LEGEND

- Study Area
- Cadastral Boundaries
- Western Power High Voltage Line (inc 20 metre easement)
- Iluka Resources Pit Areas (approximate)
- **Intensive Agriculture**
  Subject to land capability assessment, water availability, environmental management and landscape protection.
  Minimum lot size:
  30ha productive per lot;
  10ha in special circumstances.
  Area shown: 1105.16ha
- **Landscape Protection**
  Low scale development considered.
  Possible tourism/recreation areas.
  Area shown: 354.27ha
- **Highway Area 1**
  Re-subdivision potential, subject to development being set-back from highway and appropriately screened.
  Average lot size: 1ha.
  Area shown: 32.29ha
- **Long term: Townsite Expansion Area**
  Average Lot size: 1000sqm.
  Area shown: 108.21ha
- **Recreation**
  Area shown: 26.50ha
- **Special Residential Area**
  Re-subdivision potential.
  Lot sizes: 2000-4000sqm.
  Area shown: 145.09ha
- **Rural Residential Area**
  Minimum lot size: 4ha
  Area shown: 89.99ha
- **Peel Region Scheme - Basic Raw Materials Area**
  Non-permanent development only, until such time as raw materials have been extracted.

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VERSION:	1

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SHIRE OF WAROONA
WAROONA NORTH STRUCTURE PLAN
ADOPTED LAND USE PLAN

Base data provided under licence by DLI, DOA AND DOIR.

FIGURE 15.1

Part 4

Structure Plan

16 Preamble

The Waroona North Structure Plan will provide a framework for future decision-making by both the Shire of Waroona and the Western Australian Planning Commission.

This is the final stage in the structure planning process. This Part describes the components of the Structure Plan as well as specific requirements associated with each identified land use. A guide to implementation is also provided.

The final structure plan is presented at Figure 17.1.

17 Proposed Structure Plan

17.1 Townsite expansion

An area of 108.21 hectares has been identified within a *Townsite Expansion* area to facilitate the long-term future expansion of the Waroona townsite. In theory, this could accommodate about 700-800 lots.

Development of townsite lots is a long-term proposition and, under the terms of this structure plan, will not be supported until such time as there is a proven need for development, and when the existing development potential of lots within the Waroona townsite are exhausted. Development of townsite lots will not occur until such time as Iluka Resources has completed its mining activities and the *Basic Raw Materials Area* has been removed from the Peel Region Scheme. At this stage, it is not envisaged development within this area will occur for at least ten years.

Current lot sizes in this area are in the range of 4000m^2 to 6 hectares. In order to protect this area from forms of subdivision and development that will make it difficult to permit future subdivision for townsite expansion purposes, development and subdivision restrictions should be put in place.

A wide range of lot sizes is appropriate within the *Townsite Expansion* area, in order to provide for an orderly and sustainable expansion of the townsite.

When demand for this area is reached, it is recommended that a detailed Structure Plan be prepared to provide the basis for rezoning of the Peel Region Scheme and Town Planning Scheme and subsequent subdivision. The detailed Structure Plan will need to address, amongst other issues, the protection of streamlines within the area, address issues of Water Sensitive Urban Design (in relation to drainage and groundwater levels) and servicing and infrastructure. A mechanism to maintain or enhance the 'rural atmosphere' of the area should also be investigated and implemented.

The existing road reserve network within the area should act as the main connecter routes to the south with Bradford Street and Hill Street being the focus.

Structure Plan requirements

1. Rezoning, subdivision and development of the *Townsite Expansion* area for townsite expansion purposes will not be supported by the Shire of Waroona until such time as all other existing townsite lots available within the Waroona townsite have been suitably developed.
2. Future development of the *Townsite Expansion* area will be subject to the preparation of a detailed detailed Structure Plan over the area.
3. Rezoning and subdivision for other purposes within the *Townsite Expansion* area will not be supported by the Shire of Waroona.
4. Connection to reticulated sewerage connection will be require for any larter residential lots (eg 2000 to 4000m^2) that are proposed within the *Townsite Expansion* area.
5. Rezoning and subdivision for *Townsite Expansion* purposes over the proposed Iluka Resources Ltd Pits will only be supported following detailed geotechnical studies that indicate the land is suitable for the purpose, and following confirmation from Iluka Resources Ltd.

6. Should the proposed Iluka Resources Ltd pits not be suitable for *Townsite Expansion* their land use category will revert to *Recreation*.

17.2 Rural residential

Rural Residential

About 90 hectares of land has been identified for *Rural Residential*. Reticulated water is not able to be economically provided to the area. A minimum lot size of 4ha will be considered in this area, in order to minimise visual impacts of development upon the scarp.

The Shire of Waroona will require a detailed Structure Plan to be prepared to support applications to rezone land for Rural Residential purposes. The detailed Structure Plan would need to consider, amongst other issues, the protection of streamlines within the area, address issues of Water Sensitive Urban Design (in relation to drainage and groundwater levels) and servicing and infrastructure. The detailed Structure Plan should also include proposals to improve the environmental qualities and 'rural atmosphere' of the particular site (for instance by proposing revegetation, streamline setback/development exclusion zones etc).

Development of Rural Residential lots will not occur until such time as Iluka Resources has completed its mining activities and the *Basic Raw Materials Area* has been removed from the Peel Region Scheme.

Structure Plan requirements

1. Detailed proposals for rezoning will need to be prepared in the form of an detailed Structure Plan for *Rural Residential* areas. The detailed Structure Plan will need to address, amongst other issues, lot layout, road connections, environmental management, land capability and infrastructure provision.
2. An detailed Structure Plan should also include proposals for improving the environmental quality and 'rural atmosphere' of the particular area.
3. Minimum lot sizes for *Rural Residential* area will be 4 hectares.
4. Rezoning and subdivision for *Rural Residential* purposes over the proposed Iluka Resources Ltd pits will only be supported based on detailed geotechnical studies that indicate the land is suitable for the purpose, and following confirmation from Iluka Resources Ltd.
5. Should the proposed Iluka Resources Ltd pits not be suitable for *Rural Residential* development their land use category will revert to *Recreation*.

17.3 Hills landscape protection

About 354 hectares has been identified as *Landscape Protection*. The eastern boundary of the Waroona North area is only schematically defined and it is anticipated this land use classification will extend further east within the LPS.

The western boundary of the *Landscape Protection* area has been broadly defined by the 100 metre contour line, above which the land becomes increasingly visible from surrounding areas particularly to the west. In some instances the *Landscape Protection* area extends slightly below the 100 metre contour where there are significant ridgelines that are considered to be worthy of protection from visually intrusive development.

The western boundary is to be considered a guide only. Any proposals for development within or adjacent to this area will need to incorporate a landscape and visual assessment to ensure the landscape integrity of the area remains intact.

Rezoning and subdivision within this area should not be supported where it will result in more intensive development. Limited, low-scale tourism and recreation based development may be considered within the area at Council's discretion.

Structure Plan requirements

1. Proposals for rezoning, subdivision and/or development within or adjacent to the identified *Landscape Protection* area will need to incorporate a detailed landscape and visual assessment to ensure the landscape integrity of the area remains intact.
2. Subdivision to a minimum of 10 hectares will be conditionally supported within the *Landscape Protection* area.
3. Limited, low-scale tourism and recreation based development may be considered within the area at Council's discretion.

17.4 Highway Rural Smallholdings

An area of about 33 hectares has been identified as *Highway*. The purpose of this land use classification is to protect and enhance the visual amenity of the main northern approach to the Waroona townsite. In order to facilitate the enhancement of the area, some subdivision potential has been provided with lot sizes proposed being a minimum of 1 hectare.

Suitable development setbacks and screening of development from the South Western Highway as recommended conditions of subdivision approval are key mechanisms to be used to enhance the visual amenity of this area.

Structure Plan requirements

1. Subdivision within the *Highway* area will be supported subject to minimum lot sizes being 1 hectare, suitable ingress/egress arrangements being available and infrastructure is available to service each lot (including reticulated water and sewer).
2. In supporting subdivision applications, the Shire of Waroona will seek the imposition of conditions requiring development to be set back an appropriate distance from the South Western Highway (based on visual assessment) and/or provision and maintenance of vegetative screening.
3. Wherever possible, access should be provided from local roads. It shall be a recommendation of subdivision that all lots provide the road reserve for a new road along the eastern edge of the 'Highway' land use to enable access from the local road network.
4. It should be noted that residential subdivision adjacent to the Highway may require noise assessment and noise mitigation.

17.5 Priority agriculture

Broad-based land capability assessed as this Structure Plan has been prepared indicated that the majority of the *Priority Agriculture* area has marginal capability for a range of agricultural land uses. As a result, subdivision for agricultural purposes will be limited. Nevertheless, there are other areas within the Shire that exhibit similar land capability qualities where innovative methods and techniques have been employed to gain further productivity from the land.

In recognition of this, an opportunity for subdivision has been provided for in the northern section of the Study Area. While there is a general presumption against subdivision in this area, subdivision to facilitate agricultural purposes will be considered subject to the provision of detailed supporting land capability, water availability and economic viability information. In most situations the Shire will support subdivision applications in this manner when there is at least a minimum of 40 hectares of productive and useable agricultural land on each proposed lot. In certain circumstances, mainly to facilitate specific, economically viable land uses that require smaller areas, subdivision to 10 hectares of productive and useable agricultural land

can be considered. Land uses proposed on each lot would need to be permissible under the relevant Shire of Waroona Town Planning Scheme and in accordance with relevant Department of Environment guidelines and Statements of Planning Policy.

Subdivision applications will be stringently reviewed against these criteria.

Structure Plan requirements

1. There is a general presumption against subdivision in the *Priority Agriculture* area.
2. Notwithstanding this, subdivision may be supported in certain circumstances where land capability, water availability and economic viability can been provided as justification for a proposed agricultural enterprise.
3. Each lot proposed would need to contain, as a minimum, 40 hectares of productive agricultural land (based on justification provided under point 2). In certain circumstances, subdivision to 10 hectares of productive and usable land may be considered.

17.6 Recreation

A single *Recreation* area of about 26.5 hectares has been identified. It is located immediately north of the *Townsite Expansion* area and covers the northern half of Iluka Resources Ltd's western-most pit.

The recreation area is to be used for passive recreation only at this stage (however the need for active recreation may need to be reviewed once the *Townsite Expansion* area has been fully developed). It will be developed following completion of mining by Iluka Resources Ltd – likely in 7-8 years time.

The nature of the site following mining may lend itself to the development of picturesque parklands, walking trails and possible water feature. The area should be low-maintenance. It is recommended a detailed design for this area be prepared in conjunction with Iluka Resources Ltd prior to rehabilitation works commencing.

It is likely this area will revert to Shire of Waroona Local Reserve and it should therefore be reserved for Parks and Recreation in the relevant Shire of Waroona Town Planning Scheme.

17.7 Road network

The Waroona North area is generally well catered for in terms of the existing road network. There are several existing road reserves throughout the area, and while many of these are not constructed, they provide a good basis for traffic circulation particularly in the southern portion of the area.

In order to facilitate north-south movement through the eastern half of the Study Area an additional connector road is proposed that follows the alignment of the Western Power High Voltage line that runs through the Waroona North area. An easterly extension of Peel Road and Wealand Road could complete the linkages through the area.

It is likely the only realistic mechanism for obtaining the land for the roads would be via the land being ceded to the Shire free of cost as a condition of subdivision approval. This would have the additional benefit of ensuring the additional road linkages are constructed as subdivision occurs and demand is created.

17.8 Buffer requirements

The Department of Environment have indicated the following minimum generic buffer distances for watercourses on private land:

- watercourses - permanent water - 50 metres
- watercourses - seasonally flowing - 30 metres
- watercourses - flow in response to specific rain events - 10 metres.

The above buffers are the recommended minimum and an analysis of slope, soil drainage and fringing vegetation may require greater and variable buffer widths. Measurements should be made from the outside edge of riparian vegetation or the edge of the 1 in 100 year floodway where the flood plain is wide. These requirements would need to be undertaken as part of either a subdivision application or detailed Structure Plan as appropriate. Wetland buffers will need to be taken into account as development proceeds within the Study Area. Buffer requirements will be of particular significance in the southern portion of the Study Area where more intensive land uses are proposed. Buffers within this area are shown in Figure 17.2.

Western Power has a High Voltage Transmission Line that runs through the Study Area with a 20 metre easement (10 metres per side) around the line and restricts development within that area. As identified in Section 17.7 above, it is proposed to incorporate a road reserve following the transmission line alignment.

The Department of Environment or WAPC may stipulate minimum buffer requirements for various land uses. When considering development within the *Priority Agriculture* area it will be imperative that buffer distances are calculated so that future development of residential land uses will not be impeded (Townsite Expansion, Rural Residential).

17.9 Environmental requirements

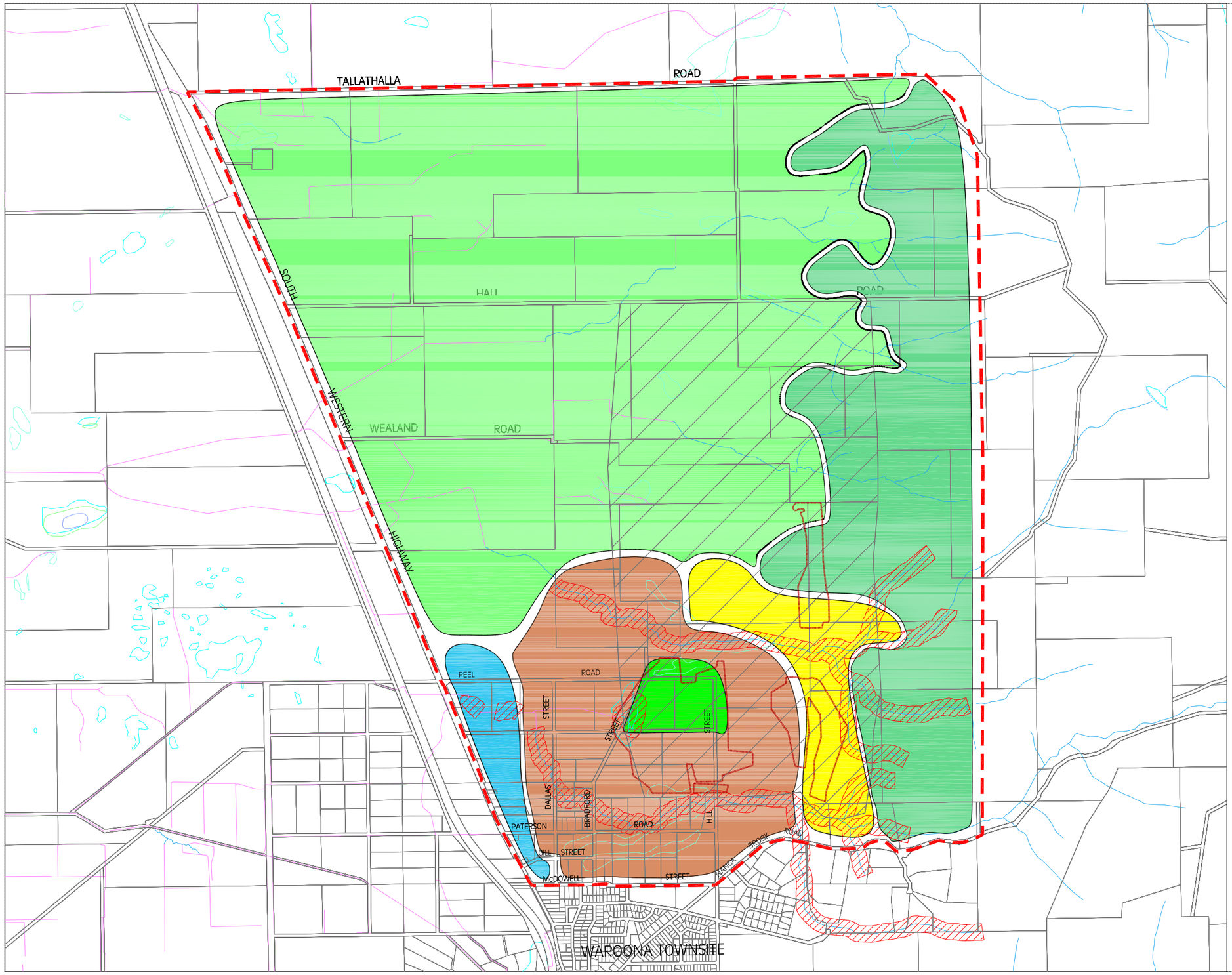
It should be noted that Declared Rare Flora (DRF) and Threatened Ecological Communities (TECs) exist in the Study Area. Spring and Autumn Surveys will be a prerequisite of future rezoning, detailed structure plans and subdivision applications for the area.

Residential development of the area will generate large volumes of stormwater and the EPA will not permit discharge of stormwater to watercourses. A Local Water Management Strategy will be a prerequisite of rezoning or detailed structure planning of the townsite expansion area.

The protection of streamlines and fringing vegetation is a priority for the EPA. As part of any rezoning, detailed structure planning or subdivisions an appropriate foreshore reserve should be identified for each watercourse within the area and a Foreshore Management Plan be prepared for them.

It is noted that portions of the study area have potential or actual acid sulphate soils. Detailed investigation will be required as part of any rezoning, detailed structure planning or subdivision.

A geotechnical report will be required as part of any future residential subdivision, including information regarding proposed fill sources to achieve an improved Phosphorus Retention Index of the native soils.



LEGEND

- Study Area
- Cadastral Boundaries
- Major road network
  (Constructed roads and road reserves)
- Major road nextwork - proposed
  (Roads to be constructed over long-term as land is developed/subdivided)
- Intensive Agriculture
  Subject to land capability assessment, water availability, environmental management and landscape protection.
  Minimum lot size:
  30ha productive per lot;
  Area shown: 1105.16ha
- Landscape Protection
  Low scale development considered.
  Possible tourism/recreation areas.
  Area shown: 354.27ha
- Highway Area 1
  Re-subdivision potential, subject to development being set-back from highway and appropriately screened.
  Average lot size: 1ha.
  Area shown: 32.29ha
- Long term: Townsite Expansion Area
  Average Lot size: 1000sqm.
  Area shown: 274.25ha
- Recreation
  Area shown: 26.50ha
- Rural Residential Area
  Minimum lot size: 4ha
  Area shown: 89.99ha
- Peel Region Scheme - Basic Raw Materials Area
  Non-permanent development only, until such time as raw materials have been extracted.

Implementation of the WNSP in respect to the future townsite expansion area will require amendment(s) to the Peel Region Scheme.

BELTON-TAYLFORTH
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UNIT 1/21 SPRING PARK ROAD, MIDLAND 6056
POSTAL ADDRESS: PO BOX 429, MIDLAND, WA, 6936
PHONE: (08) 9274 1435
FAX: (08) 9274 1440
EMAIL: admin@beltontaylforth.com.au

FILE:	778
DRAWN BY:	MT
DATE:	21 Dec 2007
VERIFED BY:	MT
APPROVED BY:	MT
DRAWING NO.:	778_SP.DWG

NORTH

SCALE 1:25 000
at A3

Note: This plan forms should be read in conjunction with the accompanying *Waroona North Structure Plan* report for further explanation of land uses identified.

Base data provided under licence by DLI, DOA AND DOIR.

SHIRE OF WAROONA
WAROONA NORTH STRUCTURE PLAN
STRUCTURE PLAN

FIGURE 17.1

LEGEND

- Study Area
- 50m Buffer
- Drain - Major
- Townsite Exp.
- Highway
- Cadastre
- Dampland
- Watercourse - Minor Perennial
- Rural Residential
- Intensive Ag.
- Landscape Protection
- Recreation

BELTON - TAYLFORTH
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DATE:	21 Dec 2007
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APPROVED BY:	MT
DRAWNING NO:	778FIG17_2.DWG

NORTH

1:15 000
@
A4

SHIRE OF WAROONA
WAROONA NORTH STRUCTURE PLAN
STRUCTURE PLAN
WATERCOURSE BUFFERS
(INTENSIVE DEVELOPMENT AREAS ONLY)

FIGURE 17.2

18 Implementation

18.1 Relationship to Local Planning Strategy

The Shire of Waroona will utilise the Waroona North Structure Plan as a component of the Shire's Local Planning Strategy and as the basis for future amendments to the Town Planning Scheme. It is anticipated that once the Structure Plan has been endorsed by the Western Australian Planning Commission it will be incorporated into the Local Planning Strategy.

As such, the Structure Plan will be the basis for the Shire's and the WAPC's consideration of rezoning, subdivision and development proposals within the Waroona North area.

18.2 Periodic review

The Structure Plan provides guidance on future land use within the Waroona North area. It is intended as a broad guide only to assist the Shire, WAPC and Iluka Resources Ltd in considering future development of the area following the cessation of mining by Iluka.

It is recommended that the Structure Plan be review as part of the next Local Planning Strategy review, due in about five years time.

19 References and bibliography

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APPENDIX A

Acid Sulphate Soils – Bulletin 64

WESTERN AUSTRALIAN PLANNING COMMISSION

GDA

INDIAN OCEAN

Madora
Lakelands
Stakehill
Myara
Meadow Springs
Parklands
Nambeelup
Solus
Comet Bay
Robert Point
Blue Bay
Mandurah
Greenfields
North Dandalup
Barragup
Halls Head
Dudley Park
Coodanup
Whittaker
Erskine
Furnissdale
Falcon Bay
North Yunderup
Ravenswood
Falcon
Cox Bay
Fairbridge
Wannanup
Peel Inlet
South Yunderup
SHIRE OF MURRAY
Banksiadale
Pinjarra
Robert Bay
Austin Bay
Dawesville
Point Grey
Oakley
Nirimba
Marrinup
West Pinjarra
Cape Bouvard
Bouvard
Blythewood
Holyoake
Harvey Estuary
Dwellingup
Birchmont
Meelon
Teesdale
Herron
Coolup
Inglehope
Clifton
Etmilyn
Kooljerrenup
Lake Clifton
Waroona
Preston Beach
SHIRE OF WAROONA
Nanga Brook
Hamel
Wagerup

N

0 2 4 6 8

Kilometres

Produced by Project Mapping Section, Planning Information - Mapping and Spatial, Department for Planning and Infrastructure, on behalf of the Department of Environment and the Western Australian Planning Commission, Perth, W. A. November 2004

ntw-map17\ \plan_imp\plan_reform\acid_sulphate\ maps\Review_Oct03\prs_review_Nov04.dgn

Cadastral Data supplied by Department of Land Information, Western Australia

LEGEND

- High risk of actual acid sulfate soil (AASS) & potential acid sulfate soil (PASS) <3m from surface
- Moderate to low risk of AASS and PASS occuring generally at depths of >3m
- Low to no risk of AASS and PASS occuring generally at depths of >3m
- Local Government Boundary

The acid sulfate soils maps set out in Planning Bulletin No. 64 cover the Swan Coastal Plain and are provided as a guide to the location of acid sulfate soil layers occurring at different depths in this area. They have been prepared on the basis of geological origin, depth to groundwater, and partial 'ground-truthing'.

The maps have been prepared by the Department of Environment and the Department for Planning and Infrastructure on this basis in good faith, exercising all due care and attention. No representation or warranty, expressed or implied, is made as to the relevance, accuracy, completeness or fitness for purposes of these maps in respect of any particular user's circumstances. Users of these maps should satisfy themselves concerning their application to their situation, and where necessary seek expert advice.

The acid sulfate soils maps set out in Planning Bulletin No. 64 will be periodically updated as new information becomes available and the State Government's acid sulfate soil mapping program progresses.

Users should check the Policies and Planning Bulletins page on the Western Australian Planning Commission's website at www.wapc.wa.gov.au to ensure that they have the most up to date version of the mapping.

Alternative versions of this mapping and the associated digital data can be obtained from the Department for Planning and Infrastructure as follows:

Geographic Information Officer

Phone: 08 9264 7827
Fax: 08 9264 7838
Email: mapping@dpi.wa.gov.au

Planning Bulletin No. 64

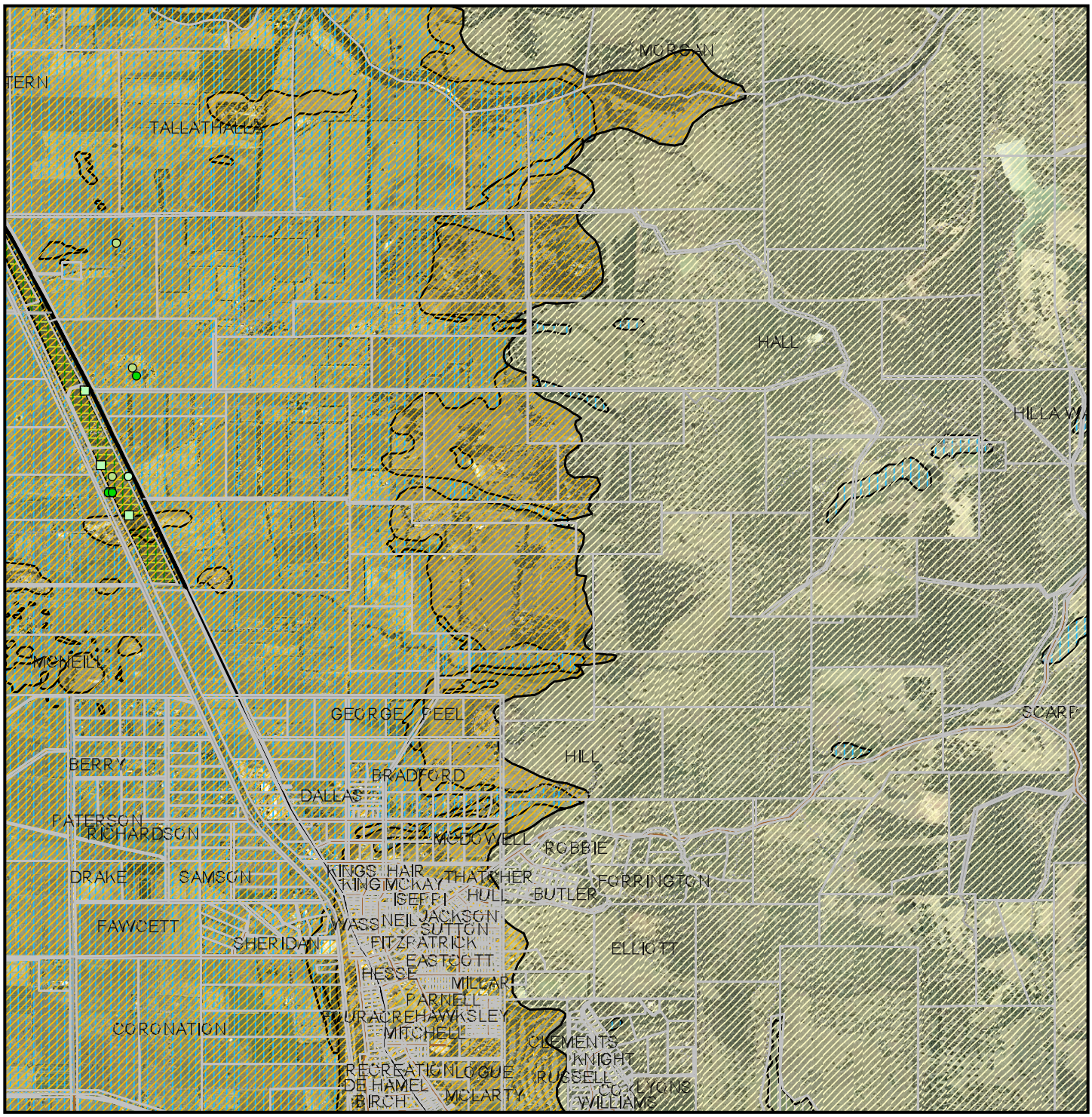
Peel Region Scheme Acid Sulfate Soils

Figure 5

APPENDIX B

Department of Environment Map

Waroona North - Structure Plan Area



LEGEND

- Priority 2 - Poorly Known Taxa
- Priority 3 - Poorly Known Taxa
- Priority 4 - Poorly Known Taxa
- Threatened Ecological Communities - CALM 15/7/03
- Cadastre - DLI 1/09/04
- Highway
- Local Rd - Other
- Local Rd - Sealed
- Track
- Class 2 - Low risk of shallow ASS or PASS (<3m), but moderate to high risk of ASS or PASS occurring at greater than 3 m from soil surface
- Class 3 - No known risk of shallow or deeper ASS or PASS
- Conservation
- Multiple Use
- Not Assessed
- Resource Enhancement

EPI
Swa

N

0 ~1 Km

Scale 1:43,116
(Approximate when reproduced at A4)

Geocentric Datum of Australia 1994

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

Prepared by: thornik
Prepared for:
Date: Thursday, 24 February 2005 09:47

Information derived from this map should be confirmed with the data custodian acknowledged by the agency acronym in the legend.

Department of Environment

WA Crown Copyright 2005

APPENDIX C

Mining Tenement Information

Department of Industry and Resources

Basic Provisions

Revised as at July 2003

Crown Ownership of Minerals

1. Except in the case of land alienated in fee simple before the 1st January, 1899 (in which case minerals other than gold, silver and precious metals are the property of the owner), all minerals are the property of the Crown.
   Section 9
2. The following, when they occur on private land, are not minerals:
   limestone, rock, gravel, shale (other than oil shale), sand (other than mineral sands, silica sand or garnet sand) and clay (other than kaolin, bentonite, attapulgite or montmorillonite).
   Section 8
3. Where the minerals are the property of the Crown a mining title must be obtained from the Department of Industry and Resources before any mining operations may be undertaken.

TOP

Mineral Fields

4. For the purposes of the Mining Act, 1978 the State is divided into various mineral fields, some further divided into districts (Section 16). The locality of the various mining registrars' offices is shown on Appendix "A".

TOP

Miner's Rights

5. A Miner's Right allows the holder to prospect on Crown land and take and keep samples and speciments of any ore or material up to 20 kilograms. However, a Miner's Right does not authorise the holder to carry out mining operations.
6. Entry onto certain classes of Crown land is restricted (eg. within a 400 metre radius of a pastoral lessee's well), other than to gain access to other Crown land for the purpose of prospecting or marking out that other land.
7. The holder of a Miner's Right may also fossick1 on Crown land, whether or not that land is held as a mining tenement, subject to the prior written consent of any occupier of that land and the mining tenement holder.

Note 1:

"Fossick" means to search for remove rock, ore or minerals other than gold or diamonds not exceeding 20 kilograms for a mineral collection, lapidary work or hobby interest by use of hand tools only (ie: mechanised equipment, metal detectors etc may not be used in fossicking). Information Pamphlet No. 2 explains the rights and obligations of the holder of a Miner's Right in more detail.

TOP

Land Open for Mining

8. There are three categories of land open for mining:

   Crown Land (Sections 1-22)
   Public Reserves, etc. (Sections 23-26)
   Private Land (Sections 27-39)

Crown Land

9. 9.1 As defined in the Act Crown land includes reserves for common and public utility, leases for grazing purposes only, leases of Crown land for the use and benefit of the Aboriginal inhabitants and leases for timber or pastoral purposes. It does not include private land or other reserved land.

   9.2 In respect of Crown Land, a miner[2] may:

   - Prospect under the authority of the Miner's Right.
   - Mark out a mining tenement.
   - Carry out exploration or mining activities when a mining tenement has been granted.

   9.3 Where the Pastoralist or a Manager is living on the pastoral lease the miner should give that occupier prior notification of proposed movements and activity, and compensation is payable for damage caused by the miner to any improvements on the lease.

   9.4 When a mining tenement is applied for, the applicant must send to the pastoralist by registered post a copy of the application and plan within 14 days of lodging the application.

9.5 If the mining tenement is granted, the miner must then obtain the approval of the Regional Mining Engineer (located at Perth, Kalgoorlie, Karratha) before mechanical equipment is used for purposes such as clearing, gridding or costeaning.

9.6 An application for an approval to use equipment should include the proposed methods of rehabilitation, and any approval given may be subject to specific conditions. Information as to these conditions can be obtained from the Regional Mining Engineer.

9.7 One of the conditions of grant of a mining tenement, situated on a pastoral lease, is that the lessee/licensee or transferee as the case may be, must notify the pastoralist when the mining tenement is granted or transferred.

Note 2:

For the purpose of these notes "miner" refers to a person who holds a Miner's Right or a granted mining tenement.

TOP

Public Reserves etc

10. 10.1 Mining (which by definition includes prospecting and exploration) may not be carried out on Reserved land without the written consent of the Minister for State Development.

10.2 Restrictions also apply in respect of entry onto some categories of reserved land, and specific permission may be needed to enter and/or mark out land.

10.3 Specific restrictions include:

- National Parks, Class "A" Nature Reserves and any other Class "A" Reserves within the South West Land Division, Esperance and Ravensthorpe Municipal Districts.

  The Act provides that Ministerial consent is required prior to prospecting or marking out in these reserves.

- State Forests or Timber Reserves

  May be marked out or applied for only in accordance with the conditions and restrictions prescribed pursuant to Section 128(1)(h) of the Conservation and Land Management Act 1984 (ie. approval must be obtained from the Regional CALM officer prior to marking out).

- Aboriginal Reserves

  An entry permit must be obtained from the Department of Indigenous Affairs prior to entering an Aboriginal Reserve.

10.4 In instances where part of a mining tenement involves Reserved land, title may be granted with a "no mining condition" in respect of the Reserve. This restrictive condition applies to all exploration, ore development and mining activities. Where such activities are required to be undertaken the prior written consent of the Minister for State Development is necessary.

TOP

Private Land

11. Private land may only be marked off by virtue of a permit to enter private land issued by a warden. Generally, a mining tenement giving a right to the surface (or to within a depth of 30 metres of the natural surface) may only be granted with the written consent of the owner and occupier of that land. Until compensation has been resolved no mining activities can be commenced on the surface of private land.

    Information Pamphlet No. 4 entitled "Private Land Provisions" contains more detailed information.

TOP

Compensation

12. The provisions of Sections 123 to 125 of the Act apply in relation to the determination of compensation in respect of private land.

    In addition to compensation in respect of private land compensation may also be payable to the lessee of a pastoral lease or a lease or concession granted by the Crown for grazing purposes only for damage to improvements, loss of earnings, etc.

TOP

Mining Tenements

13. The mining tenements available under the Act are:
    - Prospecting Licences (Sections 40-56).
    - Special Prospecting Licences for Gold (Sections 56A, 70 and 85B).
    - Exploration Licences (Sections 57-69).
    - Retention Licences (Sections 70A - 70M).
    - Mining Leases (Sections 71-85).
    - General Purpose Leases (Sections 86-90).
    - Miscellaneous Licences (Sections 91-94).

    Some of the basic features of these tenements are outlined in the following paragraphs.

TOP

Prospecting Licence

14.
- The maximum area for a prospecting licence is 200 hectares.
- Prospecting licences must be marked out.
- Application is made to the Mining Registrar of the relevant Mineral Field (see Appendix “A”).
- An application fee and rental is payable.
- There is no limit to the number of licences a person or company may hold, but a security (or bond) is required in respect of each licence.
- The term of a prospecting licence is 4 years.
- The holder of a prospecting licence may, in accordance with the licence conditions, extract or disturb up to 500 tonnes of material from the ground, including overburden, and the Minister may approve extraction of larger tonnages.

TOP

Special Prospecting for Gold (SPL)

15.

- An SPL is limited in area to 10 hectares.
- A person may have an interest in no more than three SPL's at the same time.
- An SPL may be marked out in respect of land within an existing prospecting licence or exploration licence (viz. "the primary tenement") that has been in force for one year.
- With the consent of the lease holder an SPL may be marked out in respect of land within an existing mining lease (viz. "the primary tenement.")
- An SPL on a prospecting or exploration licence may be granted if it is considered that activities could be carried on without undue detriment to the activities of the "primary tenement" holder.
- Other information and restrictions apply in respect of SPL's and these are outlined in the Information pamphlet No. 14 "Special Prospecting Licence (for Gold)"

TOP

Exploration Licence

16.

- On 28.6.1991 a graticular boundary (or block) system was introduced for exploration licences.
- The minimum size of an exploration licence is one block, and the maximum size is seventy blocks.
- An exploration licence is not marked out.
- Application is made to the Mining Registrar of the relevant Mineral Field (see Appendix "A").
- An application fee and rental is payable.
- There is no limit to the number of licences a person or company may hold but a security (or bond) is required in respect of each licence.
- The term of an exploration licence is 5 years. The Minister may extend the term in certain circumstances.
- At the end of both the third and fourth year of its term, the licensee is required to surrender 50% of the licence.
- The holder of an exploration licence may in accordance with the licence conditions, extract or disturb up to 1000 tonnes of material from the ground, including overburden, and the Minister may approve extraction of larger tonnages.

TOP

Retention Licence

17.

- A Retention Licence is a “holding" title for a mineral resource that has been identified but is not able to be further explored or mined. See Information Pamphlet No. 13 "Retention Licence" for further details.
- A Retention Licence may be granted in respect of the whole or any part of land within the boundaries of a primary tenement (ie prospecting licence, exploration licence or mining lease or combination of such tenements).
- Application is made to the Mining Registrar of the relevant Mineral Field (See Appendix "A").
- An application fee and rental is payable.
- The term of a Retention Licence cannot exceed 5 years and is renewable for further periods not exceeding 5 years.
- There is no maximum area.

TOP

Mining Lease

18.

- The maximum area for a mining lease is 1000 hectares.
- Mining leases must be marked out.
- Application is made to the Mining Registrar of the relevant Mineral Field (see Appendix "A").
- An application fee and rental is payable.
- There is no limit to the number of mining leases a person or company may hold.
- The term of a mining lease is 21 years and may be renewed for further terms.
- The lessee of a mining lease may work and mine the land, take and remove minerals and do all things necessary to effectually carry out mining operations in, on or under the land, subject to conditions of title.

TOP

General Purpose Lease

19.

- The maximum area is 10 hectares.
- General purpose leases must be marked out and are limited to a depth of 15 metres or such other depth that may be specified.
- A general purpose lease is for purposes such as operating machinery, depositing or treating tailings etc.
- Application is made to the Mining Registrar of the relevant Mineral Field (see Appendix "A").
- An application fee and rental is payable.
- There is no limit to the number of general purpose leases a person or company may hold.
- The term of a general purpose lease is 21 years, and may be renewed for further terms.

TOP

Miscellaneous Licences

21.

- There is no maximum area for a miscellaneous licence.
- Miscellaneous licences must be marked out.
- A miscellaneous licence is for purposes such as a road, pipeline, water, as prescribed in the Regulations, or such other purposes as the Director General of Mineral and Petroleum Resources may approve.
- Application is made to the Mining Registrar of the relevant Mineral Field (see Appendix "A").
- An application fee and rental is payable.
- There is no limit to the number of licences a person or company may hold.
- The term of a miscellaneous licence is 5 years, and may be renewed for further terms.
- A miscellaneous licence can be applied for over (and can "co-exist" with) other mining titles.

TOP

Requirement to Meet Annual Expenditure Licence

22. Prospecting Licences, Exploration Licences and Mining Leases are subject to a prescribed minimum annual expenditure commitment. This requirement applies to granted tenements only and the labour cost of the tenement holders' own work on the tenement (as if he/she was working for wages) may be treated as expenditure.

    There is no prescribed annual expenditure for a Retention Licence, however, the Minister may determine the level of expenditure by condition on grant.

    If a licensee/lessee cannot fulfil the expenditure obligations, he/she may apply for exemption from all or part of the commitment.

    A separate Information Pamphlet is available concerning exemptions.

TOP

Annual Reporting of Activities

23. The holder of Prospecting Licences, Exploration Licences, Retention Licences and Mining Leases must lodge a Form 5 (Report on Operations on Mining Tenement) Report each year with the Department of Industry and Resources at Perth.

    Any person may, on payment of the prescribed fee, obtain a copy of the front page of that Report, which summarises the activities undertaken and their cost.

TOP

Royalties

24. When any minerals are produced or obtained from a mining tenement, a quarterly production report must be lodged and a royalty is payable. Regulation 86 sets out the rates of royalty payable.

TOP

Fees Payable

25. A handout entitled "Fees and Charges - Information on Mining Tenements" is available from the Department and this shows the charges payable in respect of the various types of tenements.

TOP

Department of Industry and Resources

Private Land Provisions

Revised as at July 2003

Crown Ownership of Minerals

1. Except in the case of land alienated in fee simple before the 1st January, 1899 (in which case minerals other than gold, silver and precious metals are the property of the owner), all minerals are the property of the Crown.

   Section 9

2. The following, when they occur on private land, are not minerals -

   limestone, rock, gravel, shale (other than oil shale), sand (other than mineral sands, silica sand or garnet sand) and clay (other than kaolin, bentonite, attapulgite or montmorillonite).

   Extraction of these minerals when on private land is not governed by the Mining Act 1978.

   Section 8

3. To extract or explore for other minerals on private land a mining title must be obtained from the Department of Industry and Resources before any mining operations may be undertaken.

Entry Onto Private Land

Application for Permit to Enter

4. No person (except the owner in occupation of the land) may search for minerals on private land without a permit to enter which is issued by a Warden.

   Section 28

5. Form 2 is used to apply for a Permit to Enter and the application must be lodged at the Mining Registrar's office, together with a map on which the private land is clearly shown and the prescribed fee per lot or location affected with a prescribed minimum.

   Sections 30(1) to (4), Regulation 5

Rights of Permit Holder

6. The term of a permit to enter shall not exceed thirty days, and the permit only authorises the holder (or his agent) to:

   Section 30(3)

   a. Enter on private land. *Section 32*
   b. Search for minerals.

c. Detach and remove from the land samples of any vein or lode out-cropping on the surface up to an aggregate weight of 13 kilograms, unless the taking of additional samples is authorised by the owner or occupier of the land.
d. Mark out a mining tenement, but not mine or otherwise disturb the surface.

Where the holder of a permit to enter marks out and applies for a mining tenement on the private land concerned, the permit shall be deemed to continue in force, for the purpose only of repairing or maintaining the marks so set up and the notices posted thereon, until the application for the mining tenement is determined.

Section 30(3)

Service of Permit on Owner and Occupier

7. The permit holder (or his agent) shall, on the first occasion that he enters the land after the issue of the permit, hand a copy of the permit to the occupier of the land. If the occupier is not present, the permit holder shall:

   Section 31

   a. place a copy of the permit in a prominent position on the occupier's dwelling, or at the main entrance to the land if there is no dwelling; and
   b. in any event, within forty-eight hours of his entering the land, send a copy of the permit by registered post to the occupier.

8. Where none of the owners of the land is also in occupation of the land, a copy of the permit must also be sent, within forty-eight hours of first entering the land after issue of the permit, by prepaid registered post to one of the owners at the registered office in the case of a body corporate, or in other cases to the last known place of abode or business.

   Section 31(3)

Mining Tenements on Private Land

Consent of Owner and Occupier to Grant in Respect of Surface Land

Section 29

9. A mining tenement in respect of the natural surface and to within a depth of 30 metres thereof shall not be granted in respect of private land which is:
   - in bona fide and regular use as a yard, stockyard, garden, orchard, vineyard, plant nursery or plantation;
   - under cultivation (ie. used for agricultural purposes including cropping or pasturing; whether cleared or uncleared, used for grazing stock in the ordinary course of management of the land);
   - the site of a cemetery, burial ground or reservoir (ie. a dam, bore, well or spring)
   - land on which there is erected a substantial improvement (as adjudged by the Warden);
   - within 100 metres of any private land referred to above;
   - a separate parcel of land having an area of 2000 square metres or less;

   except with the written consent of the owner and occupier of that land.

Grant of Tenement at Depth

10. Where the owner and occupier do not consent; a mining tenement may only be granted in respect of land below a depth of 30 metres from the natural surface.

    Section 29

In the case of a mining tenement granted in respect to land below a depth of 30 metres from the natural surface the mining tenement holder may subsequently, should the owner and occupier of the land subsequently consent, apply to have the remaining portion of the land (from the surface to a depth of 30 metres) included in the mining tenement.

Whilst the right to so apply exists, the land from the surface to a depth of 30 metres is not open for mining to any other person.

Section 29(5)

Revestment of Private Land

11. Where private land, situated within a current mining tenement, ceases to be private land and reverts to the Crown, that land will automatically be included into any underlying mining tenement.

    Section 29

Compensation

No Surface Mining Before Compensation Agreed/Determined

12. The holder of a mining tenement shall not commence any mining on the surface (or to a depth of 30 metres) unless and until he has paid, or tendered to the owner and occupier the amount of compensation required under the Act, or has made an agreement as to the amount; times and mode of compensation, if any.

    Section 35

13. Basis of Compensation

    The compensation shall include compensation for being deprived of the possession of the surface or any part of the surface of the private land, and for damage thereon to the surface or the part, and to any improvements thereon, that may arise from the exercise of the rights conferred by the mining tenement, and for the severance of such land from other land of the owner and occupier, and for rights of way and for consequential damages.

    Compensation is not payable in any case in respect of the value of any mineral known or supposed to be in, on or under the surface of any land to which a claim for compensation under this Act relates.

    Sections 123 and 124

14. How Compensation Determined

    The amount of compensation shall be determined by agreement between the holder of the mining tenement and the owner and occupier, or in default of agreement, an amount determined by the Warden's Court upon the application of the owner, the occupier or the holder of the mining tenement.

    If access is agreed but compensation is not, the holder of a mining tenement and the owner of private land or occupier of Crown land or private land may, consent to have the matter determined by the Warden without requiring any formal proceedings to be taken.

    Section 123(3)

15. Compensation in Respect to Adjoining Land, Etc.

    Compensation is also payable in respect to adjoining or nearby land injured or depreciated in value by mining operations on a mining tenement.

Section 123(5)

16. Warden's Court Plaint

    Actions may be commenced by way of Warden's Court plaint relating to the determination of compensation where agreement cannot be reached.

    Section 123

Application for Mining Tenements

17. Copies to be Served

    An application for a mining tenement on Private land must, within 14 days of the date of application serve a copy of the application (ie. Form 21) together with a map or plan on which the boundaries of the land comprising the proposed mining tenement are clearly defined, on the:

    Section 33(1) Regulation 7(1)

    a. clerk of the council of the municipality;
    b. the owner and occupier of the private land, (but if there is no occupier the copy shall be affixed in some conspicuous place on the land); and
    c. each mortgagee of the land.

    If the time prescribed to serve such copies of the application and map is extended by the Warden, the applicant must then, along with the application and map, serve the affected parties with a written notice that the period for lodging objections is within 21 days of the date of service.

    Regulation 7(2)

    In cases of sub-surface applications for mining tenements on private land (ie. only for land below a depth of 30 metres from the lowest part of the natural surface), it is not necessary to serve a copy of the application on the:

    i. owner and occupier of the land; or
    ii. each mortgagee of the land.

    Section 33(1a)

    Sub-surface conditions also apply to reserved land but not vacant Crown land.

18. Objections

    An objection (in the Form No. 16) to the granting of an application that relates to private land shall be lodged at the office of the Mining Registrar:

    a. within 21 days of the date on which the person was served with a copy of notice required to be given under Section 33(1); or
    b. within 35 days of the date of the application,

    whichever period ends later, or such further period as the Warden considers reasonable.

    Regulation 67(2)

19. The owner and occupier of the land and any mortgagee are entitled to be heard before the application is determined.

20. The Warden may, if in the circumstances of the case warrant, and irrespective of the manner in which the application for the mining tenement is disposed of, order that the applicant pay to the objector or objectors, such sum by way of costs as the Warden orders.

Section 33(2)

This pamphlet is issued by the Mineral Titles Division of the Department of Industry and Resources.

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N.B. The information contained in this pamphlet is designed to assist in gaining a general awareness of the requirements of the Mining Act 1978 and is not intended to be a substitute for understanding the statutory requirements of the Act and Regulations there under.

APPENDIX D

Aboriginal Heritage Register

Department of Indigenous Affairs
Government of Western Australia

REGISTER OF ABORIGINAL SITES

RPGSR

Reference No: 155374

Search Criteria

MGA Coordinates (Zone 50)
Easting: 396159 Northing: 6371640
Easting: 402326 Northing: 6371506
Easting: 402656 Northing: 6365982
Easting: 399028 Northing: 6366089

Disclaimer

Copyright in the information contained herein is and shall remain the property of the Government of Western Australia. All rights reserved. This includes, but is not limited to, information from the Register of Places and Objects (often known as the 'Sites Register') established and maintained under the *Aboriginal Heritage Act 1972* (AHA).
Aboriginal sites exist that are not recorded on the Sites Register, and some registered sites may no longer exist. Consultation with Aboriginal communities is on-going to identify additional sites. The AHA protects all Aboriginal sites in Western Australia whether or not they are registered.

Legend

Restriction	Status	Access
N No Restriction	I Interim Register	C Closed
M Male Access Only	P Permanent Register	O Open
F Female Access Only	S Stored Data	V Vulnerable

Index coordinates are indicative locations and may not necessarily represent the centre of sites, especially for sites with an access code "closed" or "vulnerable". Map coordinates (Lat/Long) and (Easting/Northing) are based on the GDA 94 datum. The Easting / Northing map grid can be across one or more zones. The zone is indicated for each Easting on the map, i.e. '5000000:Z50' means Easting=5000000, Zone=50.

Reliable – The spatial information recorded in the site file is deemed to be reliable, due to methods of capture.
Unreliable – The spatial information recorded in the site file is deemed to be unreliable due to errors of spatial data capture and/or quality of spatial information reported.

Site ID	Status	Access	Restriction	Site Name	Site Type	Additional Info	Informants	Coordinates	Site No.
3309	I	O	N	WAROONA	Artefacts / Scatter			-32.8426 S / 115.9276 E, 399639mE 6365648mN Zone 50 [Unreliable]	S00205
4333	P	O	N	GAS PIPELINE 92	Artefacts / Scatter			-32.7885 S / 115.9282 E, 399639mE 6371648mN Zone 50 [Unreliable]	S00824
15324	I	O	N	TWIN CREEKS.		Camp	*Registered Informant names available from DIA.	-32.8227 S / 115.9419 E, 400961mE 6367871mN Zone 50 [Reliable]	S03052
15325	P	O	N	WURADJIE WATERFALL	Mythological		*Registered Informant names available from DIA.	-32.8069 S / 115.9386 E, 400631mE 6369618mN Zone 50 [Reliable]	S03053

Site ID	Status	Access	Restriction	Site Name	Site Type	Additional Info	Informants	Coordinates	Site No.
17243	P	O	N	TRIPLE BLACKBOY		[Other: Significant Tree]	*Registered Informant names available from DIA.	-32.8081 S / 115.9396 E, 400728mE 6369493mN Zone 50 [Reliable]	

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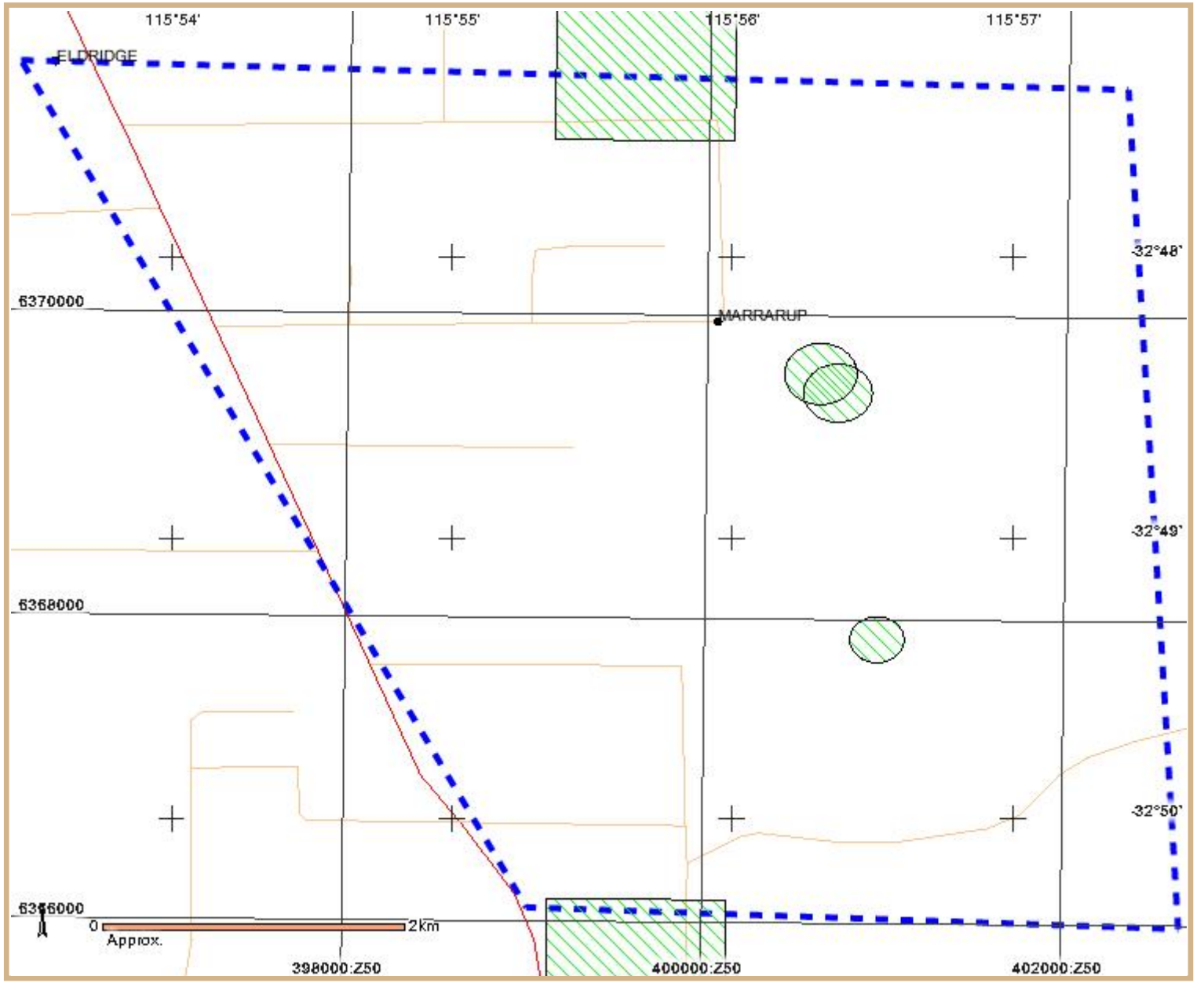
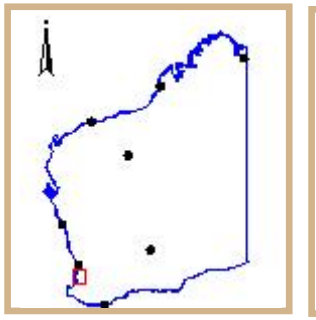
REGISTER OF ABORIGINAL SITES
SITE SEARCH MAP





Legend

- Selected Site
- Town
- Map Area
- Search Area

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Copyright for Native Title Land Claim and Local Government Authority boundaries shall at all times remain the property of the State of Western Australia, Dept of Land Information. All rights reserved.

Copyright for Mining Tenement boundaries shall at all times remain the property of the State of Western Australia, Dept of Industry and Resources. All rights reserved.

5 Aboriginal Heritage Sites found in Polygon

MGA Coordinates (Zone 50)
Easting: 396159 Northing: 6371640
Easting: 402326 Northing: 6371506
Easting: 402656 Northing: 6365982
Easting: 399028 Northing: 6366089

APPENDIX E

Community Workshop Outcomes

Waroona North Structure Plan

Community Workshop

Report

12 February 2004

CONTENTS

EXECUTIVE SUMMARY

The Waroona North Structure Plan covers an area of 1500 hectares north of the Waroona townsite extending from McDowell Street to Tallathalla Road and east of South Western Highway and has the potential to provide for the economic growth of the town and to provide lifestyle and tourism opportunities.

However, a proposed sand mining operation has constrained the area for many years, but with mining due to commence in 2006, the Shire of Waroona, in conjunction with Iluka Resources Limited, has resolved to prepare a structure plan for the area to determine the end land use.

While there is potential for diverse agricultural pursuits, tourism ventures, rural lifestyle blocks, recreation facilities and even an expansion of the Waroona townsite, an important part of this structure plan process involves establishing a shared community vision for the area.

The structure planning process commenced with a community workshop held on 12 February 2005 aimed at:

- Informing participants about the Waroona North Structure Plan purpose and process
- Providing the context surrounding the study area
- Exploring the key aspects of Waroona's character and culture to underpin the structure plan
- Identifying the community values and negative aspects of Waroona North
- Seeking vision ideas and statements for the future of Waroona North

This workshop was attended by 18 local residents, the council's Manager of Planning and Development Services and the project consultants Ray Belton and Michael Talyforth. The workshop was facilitated by Elizabeth Vlok from Community Perspectives, also part of the Belton Talyforth consultancy team working on the project.

The results of the three key participatory exercises of the workshop are summarised below and reported verbatim in the detail of this report, which conclude with a draft community vision statement, based on the community values and outcomes of the workshop.

Waroona - Character and Culture

The character of Waroona was generally described as laid back, with a traditional small country town atmosphere, friendly people and a close knit community made up of a diversity of people and cultures. The natural environment is also an important part of Waroona's character, providing plenty to do and see and a unique local identity. Waroona is also characterised by a sense of uncertainty, lack of focus and confidence.

The Positives

The community values that emerged from the workshop are the country atmosphere and rural lifestyle, open space and natural environment, recreation opportunities and location, with easy access to Perth, Mandurah and Bunbury.

The Negatives

Waroona's negative aspects generally related to the town centre's poor appearance, disjointed nature, old vacant shops, heavy traffic, poor pedestrian environment and community apathy. Industry being spread over a wide area and the impacts of mining and the proximity of Alcoa were also considered the most negative features of Waroona.

The gaps

Workshop participants believed that Waroona is missing a clear sense of direction and a long-term vision to guide the future possibilities for growth and development. A thriving local economy, a focus beyond industry, diversification of agricultural pursuits and a lack of small land holdings were also considered shortcomings. Realising the tourism potential of the area, employment for young people, the town centre, an industrial site and investment in infrastructure were also considered lacking.

Structure Plan Area - Positive features

Participants identified the positive aspects of the structure plan area and six key community values emerged:

Natural environment, waterways and scarp

- Natural waterways.
- Scarp and vistas.
- Natural beauty.
- Vegetation, trees and woodlands.
- Good agricultural soil.
- Wildlife.

Potential, opportunity and small land holdings

- Opportunity to develop something unique.
- Opportunity to address local issues, employment, long-term sustainability.
- Undeveloped large area – a clean canvas.
- Potential to support many more people than it does now.
- Suitable land for small holdings within short distance of town site.

Location

- Entry into town: great outlook.
- Location, close proximity to town centre.
- Lifestyle.
- Open plan living.

Opportunity to diversify farming

- Suitable land for agriculture.
- Diverse farming potential.
- Rural zoning.

Availability of infrastructure

- Infrastructure available, or becoming available (power, water, etc.).
- Water availability via Iluka.
- Piped water supply.

Structure Plan Area – Negative features

Participants identified the negative aspects of the structure plan area and six key negative aspects emerged:

Poor road access and traffic

- Incomplete road access to some areas.
- Standard of roads.
- Increase in traffic due to freeway extension.
- Entry to northern end of town not appealing

Incompatible land uses and degradation

- Incompatible uses and bad farming practices
- Land degradation, more trees needed
- Uncontrolled vermin and noxious weeds.

Possibility of a satellite town site

- Satellite townsite: north vs south.
- Existing rural residential blocks on Patterson and adjacent roads, impact on continuity of northern townsite development.

Poor visual qualities and impacts

- Visual impact of townsite development on existing lifestyle lots above mine site.
- Northern entry not pleasing to the eye.
- Power lines

Winds and erosion

- Prevailing easterly winds.
- Scarp winds - potential for erosion if not cleared sensibly.

Water and drainage

- Shallow perched water table will not allow for high density living: potential for pollution.
- Drainage.

Issues and Trends

The key issues participants identified as relevant to the future vision of the area related to the preservation of woodlands and waterways, the possibility of a satellite township, traffic safety, managing environmental impacts, block sizes and the need for a transitional/buffer zone between existing townsite and future northern residential developments. Strict council control over all buildings was also identified as an issue.

The trends identified as relevant to the future of the area related to the increase demand for rural lifestyle blocks, rural diversification and growth in eco-tourism and equestrian pursuits.

Draft Community Vision

Based on the outcomes of the workshop the following draft community vision for the Waroona North Structure Plan has been compiled as a starting point for further input and consideration by workshop participants and the wider community.

"The sand mining operation in Waroona North area has long since ceased and the natural environment and beauty of the area has been restored and enhanced with vegetation, trees, woodlands and pristine waterways, providing an endurable environment for a diversity of native flora and fauna. An abundance of quality public park land and open space is the 'jewel in the crown' of the area, incorporating walking and cycleways, horse riding trails and diverse recreational and eco-tourism opportunities that draw locals and visitors alike. A diversity of compatible rural viticultural and horticultural industries add to a bustling local economy while providing employment opportunities, especially for young people. Small rural landholdings bring additional people to Waroona who value the land, sustainability and the unique lifestyle country living offers and a strong sense of community, pride and peaceful atmosphere prevails. The Waroona town centre remains as the central heart of the community, well connected to Waroona North with safe traffic and easy access to the Waroona townsite and within Waroona North."

1 WAROONA – THE CHARACTER AND CULTURE

Workshop participants worked in groups and completed worksheets to provide an insight into the character and culture of Waroona which will guide the development of the Waroona North Structure Plan in a manner consistent with Waroona's underpinning character and culture. Participant's responses are recorded below.

1.1 The Character of Waroona

- Laid back.
- Traditional character of small town with close-knit community. Demographics over past 10 years have had major impact on character, as people and infrastructure try to keep up with new diversity. Need to ensure we don't lose the character that makes us unique and attractive, through growth.
- Good fun. Plenty to do if you want to do it.
- Country friendly people.
- Country-town feel.
- A country town, surrounded by the natural environment and farmland, within reach of the city.
- Country, but on the edge of becoming something different.
- Friendly, laid back, close community. Small picturesque.
- Friendly, easy going.
- Friendly and vibrant – there is always something going on somewhere.
- A semi-rural area intermingled with mining.
- Country town with facilities that other closer neighbours envy. Fairly close knit community.
- Close knit country community, full of diversity amongst the people.
- Essentially rural with a unique mix of nationalities (diversity).
- Multi-cultural; rural.
- Uncertain: not focused, lack of confidence – not even aware of its natural attributes and potential future for lifestyle developments.

1.2 The Positives

- Country atmosphere.
- Waroona, to me, is a great location: being only 1½ hours north to Perth, and 1½ hours to wine regions.
- Rural/semi-rural lifestyle.
- Close community: great place to bring up your children. Town on the move.
- Community pride. Lifestyle. Closeness to major centres. Close-knit community.
- Still has a country town feeling with plenty of open space and room to move.
- Rural lifestyle: laid back. Location: beach to hills. Facilities: sporting and leisure.
- The mix of rural beauty (scarp, forests) with recreational lakes/dams (fishing, water skiing, canoeing, marroning) and seaside areas (fishing, boating).
- Community spirit; rural aspect of the town and nearby scarp; recreation facilities; and proximity to Mandurah and Bunbury.
- Small town/friendly people. Sense of community. Easy access to natural environment. Access to Mandurah/Perth.
- Location to major towns and city.
- Accessibility to other locations.
- Location; open space; services that exist now within the town.
- Space: generally not boxed in. Quality of services available – aquatics, etc.
- Situated near Darling Ranges. Excellent sporting facilities. Geographically situated – 100kms from Perth.
- Location: close to Perth, Mandurah, Bunbury and coastal activities. That the shire has still retained a "rural" lifestyle despite other pressures.
- Location from Perth, Bunbury and the coast. Rural identity. Close-knit community.

1.3 The Negatives

- Apathetic nature and response to problems both by the shire and the community.
- The cosmetic of the entrance to town a mainstream; looking forward to the new main centre.
- Public focus on industry.
- Apathy: no one wants to get involved but they don't mind complaining.
- Traffic through main street. Alcoa pollution.
- Traffic.
- Lack of job opportunities. Pedestrian unfriendly main street.
- Is disjointed, with services spread from one side to another.
- Narrow-minded attitudes and visions. Mining impacts. Entry into Waroona (North).
- Town centre, old shops that are vacant.
- Empty businesses, the propensity of people to shop in Mandurah or Perth.
- Industry spread over a wide area – no industrial site. Population not big enough for facilities.
- Out of town business owners who don't care for their buildings (paint upkeep). Main street; Alcoa; traffic; apathy; change: dairy to industry.
- We want country feel, but where are we heading?
- The appearance and presentation of the town.
- Traffic through the main street, especially the trucks. Lack of shopping facilities.
- The main street aspect; visual entry from north of town; use of town water on sporting complexes.
- The close proximity of Alcoa, and the potential that represents for air, land, table water, night sky and visual pollution.

1.4 What is Missing in Waroona

- Direction.
- We have great sporting facilities in Waroona that I would like to be more challenged.
- Focus beyond industry. Sustainable developments post Alcoa. If Wagerup 3 goes ahead Alcoa may be gone as soon as 20 to 30 years.
- Better youth employment opportunities.
- Garden soils and mulches. Plants. Major shopping centre.
- A long-term vision of what direction Waroona will develop.
- Diversification into other farming areas.
- More small holdings enabling more family and businesses to operate.
- A thriving local economy (hence shopping in Mandurah or Perth).
- Industrial site – a good and creative main street. Small holdings.
- Money to do more and keep facilities updated. Direction; industrial site; major shopping centre; small farming land.
- Town beautification. Lack of investment by government (not local government).
- Unique tourism drawcard to attract and retain visitors. Many people pass straight through due to the nature of the main street.
- Sewer; infill programme; reticulation of treated effluent; public transport; more tourist facilities around dams.
- A sense of direction and pride in the future possibilities for growth and development – especially the need to pressure and exploit the natural attributes of forest, water resources, sea and scarp.

2 WAROONA NORTH STRUCTURE PLAN

Workshop participants identified the following positive aspects, or community values, as well as the negative aspects of the Waroona North Structure plan area and the associated issues and trends as follows.

2.1 The Positives

- Remnant vegetation (x3).
- Existing tree planting.
- Opportunity for positive growth.
- Good soils/rich agricultural soil (x3).
- Flat land.
- Preservation and enhancing of Nanga Brook.
- Continue looking after waterways.
- Natural waterways (x2).
- Ground water.
- Water availability via Iluka.
- Piped water supply.
- Infrastructure available, or becoming available (power, water, etc.).
- Location to scarp.
- Views (x3).
- Topography heading towards the scarp.
- National park value: pristine beauty of scarp with brooks, waterfalls, woodlands, granite outcrops with views.
- Natural beauty.
- Trees and waterways.
- Flora/fauna.
- Wildlife.
- Scarp.
- Picturesque land between highway and scarp.
- Jarrah forest transition zone.
- Entry into town: great outlook.
- Location.
- Location: close proximity to town centre.
- Lifestyle.
- Clean, green environment.
- Undeveloped.
- Large area.
- Open plan living.
- Potential to support many more people than it does now.
- Open, cleared land – clean canvas.
- Suitable land for agriculture.
- Diverse farming.
- Rural zoning: general farming, rural living and lifestyle holdings.
- Land development potential.
- Opportunity to develop something unique.
- Opportunity to lead to change.
- Opportunity to address local issues: employment, long-term sustainability.
- Semi-rural potential to share desirable lifestyle.
- Suitable land for small holdings within short distance of town site.
- Small farms; small acreage.
- Farming area with shelter belts and streamlined waterways.
- On harvest highway.

2.2.1 *Common themes*

- Vista.
- Natural environment.
- Location.
- Large, undeveloped area.
- Lifestyle-rural (opposed to residential).
- Natural beauty of scarp woodlands, waterways, and scenic granite country.
- Excellent soils and plentiful water for agriculture/horticulture of flatlands at base of scarp.
- Importance of retaining remnant natural vegetation; tree plantings, and woodlands.
- Environmentally sound.
- Eco-tourism, diversified farming: not industry.
- Ready to go.
- Supporting more people on smaller holdings, providing population growth, to support services provided by the town.
- Services (underground power, piped water) becoming available, or already available.
- Existing shelter and waterways.

2.2 The Negatives

- Power line: sequester this away from living areas (x2).
- Standard of roads.
- Incomplete road access to some areas.
- Road link.
- Increase in traffic due to freeway extension.
- Traffic – mining.
- Entry to northern end of town not appealing to people using the highway (x2).
- Eyesore into town.
- Existing zone of rural residential blocks on Patterson and adjacent roads: desire for continuity of northern townsite development.
- Shallow perched water table will not allow for high density living: potential for pollution.
- Drainage.
- Don't want a satellite townsite: north vs south.
- Two individual towns.
- Visual impact on "lifestyle" lots above mine site: eg from Forrington Heights.
- Incompatible uses.
- Prevailing easterly winds (x2).
- Scarp winds (potential for erosion if not cleared sensibly).
- Easterly winds, some flooding: potential to cause erosion.
- Land degradation.
- More trees needed: not destruction.
- Bad farming practices.
- Uncontrolled vermin and noxious weeds.
- Structure Plan – no structure plan in place.

2.2.1 *Common Themes*

- Problem of the power line running through the middle of the north structure plan area: important to sequester this from living zones.
- Present road access not conceived with future diversified land use plans.
- Northern entry not pleasing to the eye.
- Visual impact of townsite development on existing lifestyle lots above mine site.

- Problem of creating a transitional/buffer zone between existing townsite and future northern residential developments: given existing rural residential blocks on Patterson Rd and adjacent area.
- No two-town concept: townsite needs to stay central.
- Important to avoid creating satellite northern townsite: like Carcoola/Pinjarra.
- Take into account negative impact of howling east winds coming off scarp.
- Environmental factors should govern farming practices.
- Environment: pollution of shallow perched water table – damages probable.
- Tree removal.
- Must consider landscape; groundwater.
- Zoning/compliance/strict by-laws for control an absolute necessity.

2.3 Issues and Trends

- Vital to preserve what is left of woodlands and waterways.
- Eastern tree buffer zone.
- No satellite township: essential to have even transition from high density to low density development moving from town centre.
- "Tree Change" or "Sea Change": Rural eco-tourism should be a main theme for land use.
- Environmental impact study is a first priority.
- Small rural diversity.
- Lifestyle/semi-lifestyle blocks.
- Lifestyle 'In-migration'.
- Equestrian industry.
- Block sizes.
- Future deviation (bypass).
- Safe entry/exits from/to highway.
- Main entry road from Waroona townsite. Only minor roads as access to highway for northern development.
- Strict shire control over all buildings.

3 VISION IDEAS AND STATEMENTS

In developing vision ideas and statements for the Waroona North Structure Plan area, participants worked in groups and identified the following vision ideas. A second component involved participants in completing a 'visualisation' exercise:

"It is 2020 and you are travelling back to Waroona by helicopter. It has been a long time since you have been back to Waroona. As you approach the town you fly over the study area. Mining has long since finished on the site and you see an amazing transformation. You hover low over the study area taking in the new land uses, the landscape, the environment, the views and vistas and the people living and visiting the site…" Describe what you see, hear and feel. The responses to this exercise appear after 3.1.

3.1 Vision Statements

- The "jewel in the crown" of this structure plan should be to set aside as pristine scarp area (comprising lots 265 & 519) as a national park facility, incorporating walking and horse-riding trails, cycleways, and picnic areas, and access from Tallathalla Rd.
- Central parkland area.
- Plots of public space.
- The new subdivision to cater for walking, bike and bridle paths (x2).
- Large recreation area: golf, bowls, etc.
- Equine Centre: riding facilities, training facilities, showing arena.
- Equine industry: monitored to reduce environmental impact.
- Small (15-20 hectare) rural viticulture, horticulture, eco-tourism land holdings.
- Intensive agriculture (15-20 hectares): viticulture, horticulture.
- Small land holdings close to town; getting larger as it moves north.
- Limit residential land use. Rural residential (2-10 hectares) developments, bordering/incorporating/preserving woodlands at base of scarp (avoids potential conflict with existing rural residential landholders on Patterson Rd etc.).
- One new investor to set up new agriculture form. Then you will get smaller satellite forms to diversify (rolling train effect).
- Lifestyle living.
- Rural lifestyle blocks (5-7 hectares).
- Rural community.
- Smaller lots closer to town. Northern area – equestrian.
- Townsite needs to stay central: larger blocks/hobby farms, only, to be out of town.
- Entry to estate within townsite to keep town as one.
- Strict bylaws for overstocking.
- Must be strict by-laws.
- Building design controls, and limit number of dwellings above set contour.
- Inland harvest highway: Hall Rd to Nanga?
- North-south road link.
- Piped water available for all areas.
- All with rainwater tanks.
- Eco waste-water systems.
- No new development without deep sewerage.
- ZONE 1: Tallathalla Rd accessing a beautiful, pristine woodlands/trailways and national park (lots 265/519). Important that Tallathalla Rd dead-ends in the park, and doesn't link up with Nanga Brook Rd to create a "race track".
- ZONE 2: New road running along power line to provide access to eco-tourism landholdings east and west of road – running north-south from Tallathalla to Nanga Brook Rd.
- ZONE 3: Rural residential developments (lots 482, 478, etc.) and special residential (lot 482) north of existing townsite serviced by extensions of Hill St and Peel Rd, and off power line Rd. Consider sewage treatment/plant designed to recycle brown water for golf course/sporting fields. [Accompanying aerial map to identify Zones provided]

3.2 Describe what you see on the site

- I hope to see part cleared blocks, plenty of vegetation, clear waterways, no powerlines, public parks with bridle paths, cycleways, and walking paths.
- A few more houses than there are now.
- Roof tops.
- Parkland, cleared rural lots, small vineyards and orchards, horses and cows.
- Diverse agri/horti/viticulture environments, small rural holdings, sheltered waterways and creeks, together with a bustling economy.
- Massive greenery emanating from viticultural and horticultural areas - all with piped water. Neat buildings; lakes and golf courses.
- Small farm lots, each with a house and an intensive agriculture crop from which a living is made, which in turn employs workers for harvesting – all working together in harmony.
- Farmland used for horticulture, tree farming, parkland, cycleways, waterways.
- Well-planned rural subdivision running up to the scarp.
- Wonderful rural setting of various sized lots, with many various rural pursuits, quality home sites, treed and very private family areas.
- A housing estate at the top of Peel Rd joining onto a golf course, a national park, and with blocks of 2 hectares and upwards spreading northward with vines, fruit, etc.
- Natural vegetation, walk trails, bridle trails, cycleways, lakes, picnic areas, rural land lots through to rural residential. Rural viticulture, horticulture, etc.
- Lifestyle blocks: 50 acres used for intensive growth e.g. horticulture, equestrian pursuits. Area developed for walking, bridle paths. Has water feature e.g. pond, with island in centre as sanctuary for birds. MANY TREES (not in rows!).

3.3 Describe what you hear

- I would like to hear the birds, the bees, and on weekends BBQ noises from parklands and light traffic noise.
- The rotor blades.
- Frogs, horses.
- Birds, livestock, rustling of trees.
- The peace and quiet coupled with the sounds of industry: not heavy industry.
- Happy people intermingled with a healthy environment.
- Not much: nature.
- Happy families living in a quiet rural lifestyle and going about their business.
- The helicopter noise, birds in trees, horses and cattle making a noise.
- Very little, just everyday noise – Great.
- The sound of the scarp meeting the small farm or land holding. No heavy industry.
- Rural tranquillity, birds.
- Birds and animal sounds, and silence at times.

3.4 Describe how you feel about the area

- I feel we have a great chance to develop a diverse farmland, and provide land for equestrian, which is a big need in Waroona.
- Happy to see our ideas have been put into effect.
- The vision the people has worked.
- Welcoming: if I don't look at the highway.
- Contentment, happy that I had my say.
- Healthy feeling, with a sense of pride, because it had started at a workshop (12/02/05).
- Satisfaction: Waroona booming, moving forward!
- Happy to put an input on the development of the area in the year 2005.
- Glad I subdivided our block and moved on.
- It's great: wish this had been in place many years before.
- A sense of calm, a desire to get on the ground and explore the many different things I see.
- An affinity with the rural lifestyle. Pride, definitely rural.

3.5 Draft Vision Statement

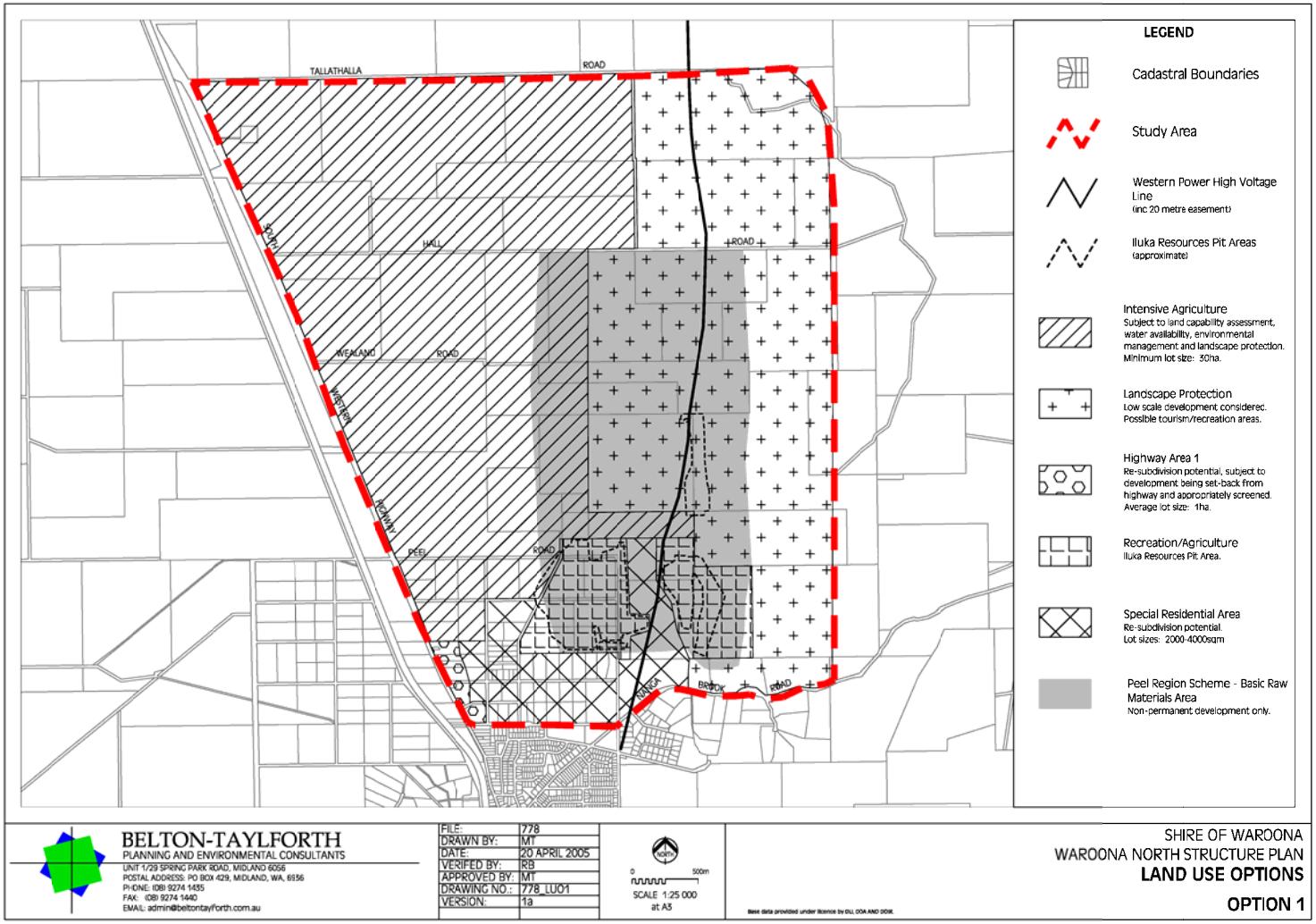
Based on the outcomes of the workshop the following draft community vision for the Waroona North Structure Plan has been compiled as a starting point for further input and consideration by workshop participants and the wider community.

"The sand mining operation in Waroona North area has long since ceased and the natural environment and beauty of the area has been resorted and enhanced with vegetation, trees, woodlands and pristine waterways, providing an endurable environment for a diversity of native flora and fauna. An abundance of quality public park land and open space is the 'jewel in the crown' of the area, incorporating walking and cycleways, horse riding trails and diverse recreational and eco-tourism opportunities that draw locals and visitors alike. A diversity of compatible rural viticulture and horticultural industries add to a bustling local economy while providing employment opportunities, especially for young people. Small rural landholdings bring additional people to Waroona who value the land, sustainability and the unique lifestyle country living offers and a strong sense of community, pride and peaceful atmosphere prevails The Waroona town centre remains as the central heart of the community, well connected to Waroona North with safe traffic and easy access to the Waroona townsite and within Waroona North."

APPENDIX F

Advertised Land Use Options

Land Use Option 1 (preferred)



COMMENTS ARE INVITED ON THE ABOVE LAND USE OPTION.

This option has been identified as the 'preferred' option by the Waroona North Working Group. The Working Group are now seeking your comments and invite you to make a written submission to the Shire by May 17, 2005.

An information evening is also being held between 6.30 and 8.30 Tuesday, May 10 2005 at the Shire Offices.
For further details, or for a copy of the above plan, please contact the Shire Offices.

Waroona North Structure Plan

Land Use Option 1 (preferred)

Special Residential: Lot sizes of between 2000 and 4000 square metres surrounding the townsite expansion area. All services would be required to facilitate development in this area. Some subdivision potential would be provided north of McDowell Street/Nanga Brook Road, with lot sizes being similar to the smaller lots currently developed west of Bradford Street.

***Recreation*:** The recreation area has been centred on one of the Iluka Resources pit areas. A recreation area in this location should be able to be provided without the need for detailed geotechnical investigations into ground stability over the entire site. The area would provide a secondary focus for recreation in the northern part of the extended Waroona townsite to complement the facilities provided towards the southern boundary of the existing townsite. The type of facilities provided in the area would be subject to further assessment and design, but could include passive and active areas, lakes or other water features etc.

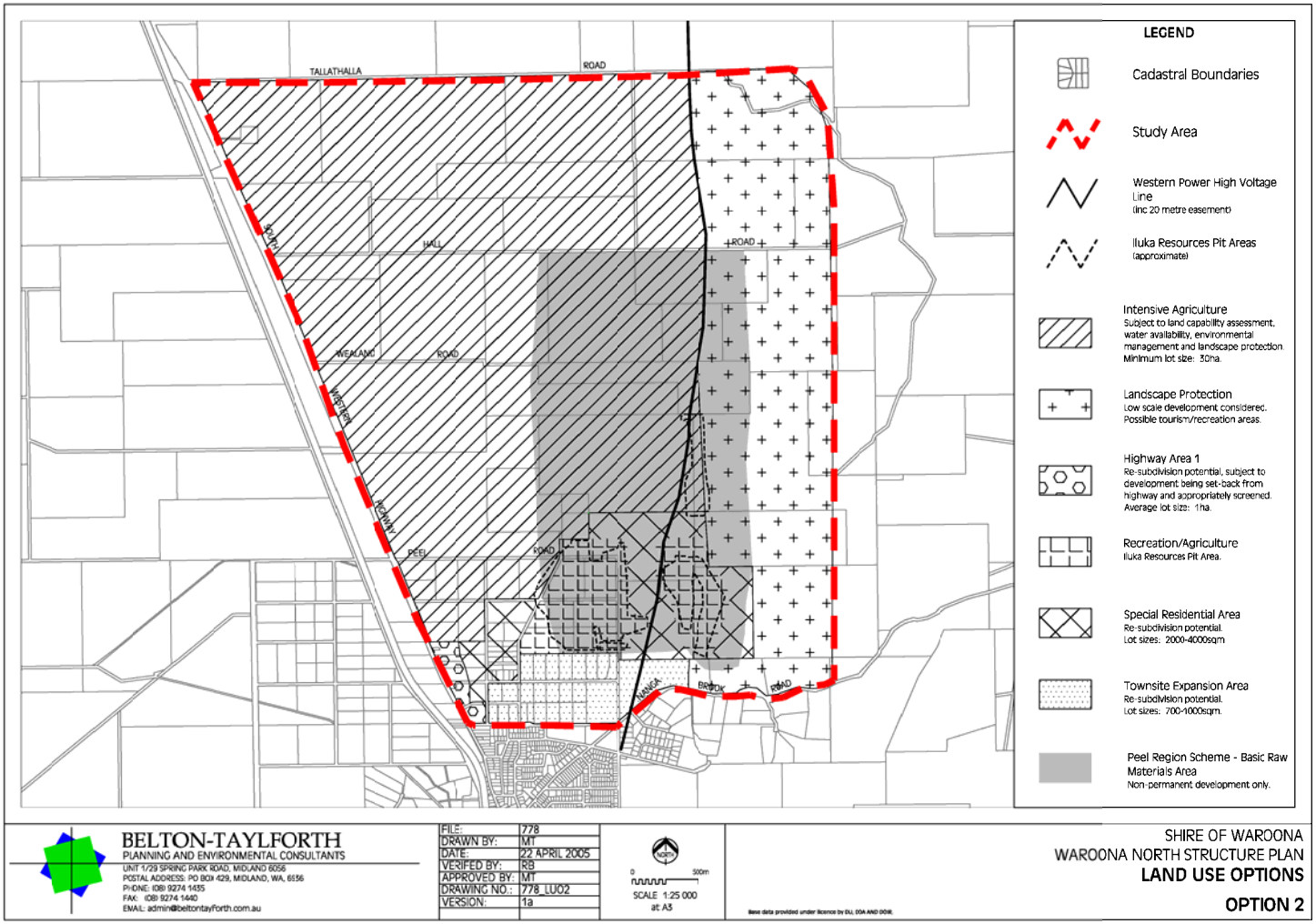
Highway Area 1: Subdivision potential down to 1 hectare minimum lot sizes could be considered in this area. Development would be contingent on appropriate setbacks and suitable screening of development from the highway being proposed.

Intensive Agriculture: The existing pattern of broad-scale agricultural lots would prevail in this area. Subdivision to facilitate more intensive agricultural pursuits could be considered where appropriate justification is provided, including for example detailed land capability assessment, suitable water supply, appropriate environmental management, landscape protection and agricultural viability.

Landscape Protection: Development within this area would be largely restricted. Some consideration of small-scale development to facilitate tourism or recreation areas could be considered, subject to the ongoing protection of the landscape features of the site and precinct.

Strengths	**Weaknesses**
Maintains the 'rural atmosphere' of the Study Area through the provision of larger residential lot sizes, broad agricultural areas and an extensive landscape protection area. Encourages most intensive use of somewhat marginal land in the north-west portion of Study Area Maintains the landscape integrity of the Darling Scarp.	No smaller 'townsite' lots have been proposed (700-1000m^2) and as a result growth of the Waroona townsite will be restricted in this area. Removes the potential to develop some land with high intensive agricultural potential in the southern half of the Study Area. Western Power 20 metre easement for Transmission Line would dissect a Special Residential area.
Opportunities	**Constraints**
Could provide subdivision potential to some landowners in the Study Area. Provides a framework for the future staged provision of infrastructure – both for townsite development, Special Residential and to facilitate intensive agriculture. Would facilitate an increased semi-urban population and re-enforce Waroona as the primary town in the Shire. Intensive agriculture in reasonable proximity to the townsite may have positive flow on economic effects to both the Waroona townsite and the Shire.	Landowners may not wish to subdivide, resulting in stalled development. The need to protect the BRM area may delay development of some areas indefinitely. Infrastructure may not be provided in a timely manner to facilitate development. Land development costs have the potential to influence development timeframes and development viability in marginal areas.

Land Use Option 2 (alternative)



COMMENTS ARE INVITED ON THE ABOVE LAND USE OPTION.

Option 2 is an alternative to the Waroona North Working Group 'preferred' option 1. The Working Group are now seeking your comments and invite you to make a written submission to the Shire by May 17, 2005.

An information evening is also being held between 6.30 and 8.30 Tuesday, May 10 2005 at the Shire Offices.
For further details, or for a copy of the above plan, please contact the Shire Offices.

Waroona North Structure Plan

Land Use Option 2 (alternative)

Townsite Expansion: Various urban land uses may be possible, including residential, commercial, recreation/POS etc. Lot sizes could vary however would include urban lots of varying size (depending on community desire and viability). All services, including reticulated sewerage and water supply, would be required.

Special Residential: Lot sizes of between 2000 and 4000 square metres surrounding the townsite expansion area. All services would be required to facilitate development in this area. Some subdivision potential would be provided west of Bradford Street, between the future recreation areas and at the base of the scarp near Nanga Brook Road.

***Recreation*:** The recreation area has been centred on one of the Iluka Resources pit areas. A recreation area in this location should be able to be provided without the need for detailed geotechnical investigations into ground stability over the entire site. The area would provide a secondary focus for recreation in the northern part of the extended Waroona townsite to complement the facilities provided towards the southern boundary of the existing townsite. The type of facilities provided in the area would be subject to further assessment and design, but could include passive and active areas, lakes or other water features etc.

Highway Area 1: Subdivision potential down to 1 hectare minimum lot sizes could be considered in this area. Development would be contingent on appropriate setbacks and suitable screening of development from the highway being proposed.

Intensive Agriculture: The existing pattern of broad-scale agricultural lots would prevail in this area. Subdivision to facilitate more intensive agricultural pursuits could be considered where appropriate justification is provided, including for example detailed land capability assessment, suitable water supply, appropriate environmental management, landscape protection and agricultural viability.

Landscape Protection: Development within this area would be largely restricted. Some consideration of small-scale development to facilitate tourism or recreation areas could be considered, subject to the ongoing protection of the landscape features of the site and precinct.

Strengths	**Weaknesses**
Allows for the expansion of the Waroona townsite**.** Allows for intensification of agricultural land uses in the northern part of the Study Area where these are proven viable and environmentally acceptable. Maintains the landscape integrity of the Darling Scarp. Maintains the rural nature of the majority of the Study Area. Provides a variety of Special Residential Areas, each with different features and attractions.	One Special Residential area has the potential to sterilise areas of BRM land if development not staged appropriately. Western Power 20 metre easement for Transmission Line would dissect a Special Residential area. No buffer provided between Townsite Expansion Area and agricultural uses.
Opportunities	**Constraints**
Could provide subdivision potential to some landowners in the majority of the Study Area. Sensitive (to landscape and environmental features) development of the Special Residential and Recreation areas could result in an attractive and sought-after lifestyle opportunity. Provides a framework for the future staged provision of infrastructure – both for townsite development and to facilitate intensive agriculture. Would facilitate an increased urban population and re-enforce Waroona as the primary town in the Shire. Intensive agriculture in reasonable proximity to the townsite may have positive flow on economic effects to both the Waroona townsite and the Shire.	Landowners may not wish to subdivide, resulting in stalled development. The need to protect the BRM area may delay development indefinitely. Infrastructure may not be provided in a timely manner to facilitate development. Land development costs have the potential to influence development timeframes and development viability in marginal areas. Buffer requirements (both to agricultural and BRM areas) may reduce the developable areas.