

Mandurah Planning Strategy

Biodiversity Strategy



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Preamble

This Biodiversity Strategy provides the overview and context for the future conservation of natural biodiversity in Mandurah.

It complements the long-term planning directions for Mandurah set out in the Mandurah Planning Strategy, and recommendations for the rationale for the zones and other provisions of the Mandurah Planning Scheme and the management of reserves within the control of the City of Mandurah.

The Strategy should be read in conjunction with the Strategy, the Scheme and the Council's 20 Year Strategic Community Plan 2013-2033, together with the various components of the Strategy which provide further detail and rationale based on a number of topics such as Activity Centres, Urban Form and Housing, Tourism and the Southern Rural Strategies.



Content

Part 1	Introduction		1		Part 4	Biodiversity Protection Mechanisms		33
	1.1	Introduction	2			4.1	Overview	34
	1.2	Application of the Strategy	2			4.2	Government Acquisition	34
	1.3	Strategy Vision	4			4.3	Council Acquisition	35
	1.4	Strategy Objectives	4			4.4	Tax-Deduction for Donation of Land	36
	1.5	Strategy Approach	4			4.5	Public Open Space Allocation	36
	1.6	Overview of Strategy Framework	5			4.6	Negotiated Outcome	38
	1.7	Strategy Values	6			4.7	Local Planning Scheme	38
	1.8	Strategy Area	7			4.8	Management of Reserves	38
	1.9	Strategy Terminology	8			4.9	Reserve Management Plans	41
Part 2	Biodiversity in Mandurah		9			4.10	Environmental Data Management	43
	2.1	Overview	10		Part 5	Biodiversity Targets		45
	2.2	Mandurah’s Natural Areas	11			5.1	Mandurah North District Area	47
Part 3	Biodiversity Protection		17			5.2	Mandurah Central District Area	57
	3.1	Legislative and Policy Framework	18			5.3	Mandurah East District Area	61
	3.2	Pressures on Biodiversity in Mandurah	23			5.4	Mandurah Island District Area	64
	3.3	Risk analysis	25			5.5	Dawesville District Area	71
	3.4	Local Natural Area Assessment and	25			5.6	Parklands District Area	78
		Prioritisation				5.7	Southern Rural District Area	82
	3.5	Specific Biodiversity Feature Targets	29			5.8	Summary Table	94
					Part 6	Administration and Implementation		95
						6.1	Adoption of the Strategy	96
						6.2	Monitoring, Review and Modifications	96
						6.3	Strategy Action Plan	97

List of Tables			List of Figures		
Table 1	Benefits of Conserving Natural Areas and Biodiversity	6	Figure 1	Strategy Structure and Format	3
Table 2	Natural Areas Summary	11	Figure 2	Strategy Area and Districts	7
Table 3	Local Natural Areas by Vegetation Complex	13	Figure 3	Peel Regionally Significant Natural Areas	11
Table 4	Natural Areas within Regional Open Space	14	Figure 4	Natural Areas by Vegetation Complex	13
Table 5	Local Natural Areas	15	Figure 5	Local Natural Areas	15
Table 6	Local Natural Areas: Ecological Criteria	27	Figure 6	Land Use Planning and Development Categories	23
Table 7	Specific Biodiversity Features	30	Figure 7	Management Plan Cycle	42
Table 8	Mandurah North Biodiversity Targets	48	Figure 8	Natural Areas Data Management Cycle	43
Table 9	Mandurah Central Biodiversity Targets	58	Figure 9	Mandurah North Overview	49
Table 10	Mandurah East Biodiversity Targets	62	Figure 10	Mandurah Central Overview	59
Table 11	Mandurah Island Biodiversity Targets	66	Figure 11	Mandurah East Overview	63
Table 12	Dawesville Biodiversity Targets	72	Figure 12	Mandurah Island Overview	67
Table 13	Southern Rural Biodiversity Targets	84	Figure 13	Dawesville Overview	73
Table 14	Biodiversity Protection Targets by District	94	Figure 14	Parklands Overview	81
Table 15	Local Planning Scheme Action Plan	98	Figure 15	Southern Rural Overview	85
Table 16	Reserve and Land Management Action Plan	100			

Mandurah Biodiversity Strategy

Part 1 - Introduction

1.1 Introduction

Biodiversity is the natural variety of living things found in the environment: native plants, animals, natural ecosystems and genetic diversity. Biodiversity is best conserved by protecting and managing the natural areas around us, including bushland, waterways, wetlands, estuarine areas and coastal landscapes. Natural areas are defined as areas that contain native species in a relatively natural state and hence support biodiversity.

Natural areas not only support biodiversity but they provide many benefits to the community and business sector, often for very little cost. Benefits include the support of tourism ventures, cleaner estuarine waters, recreational opportunities, soil stabilisation, more-attractive neighbourhoods and increased house prices. The protection and management of natural areas is a critical part of sustainable development and maintains a quality of life of residents, businesses and visitors.

The Strategy has been prepared in accordance with guidelines developed for local governments by the Western Australian Local Government Association and endorsed by the Western Australian Planning Commission.

The Strategy recommends targets for the protection of specific biodiversity features, such as the habitat of threatened species, as well as the protection of Local Natural Areas in specific areas within Mandurah. The Protection Targets for Local Natural Areas have sought to balance the development expectations arising from the land use planning framework with the levels of likely ecological significance of Local Natural Areas on the site.

Relative ecological significance of each Local Natural Area in Mandurah has been determined from the number of recognised ecological criteria it meets.

1.2 Application of the Strategy

This Strategy forms part of the Mandurah Planning Strategy, as shown in Figure 1 which sets out the role and function of this Planning Strategy.

Each component of the Planning Strategy, which includes the Biodiversity Planning Strategy forms the basis of a Local Planning Strategy as required by the Town Planning Regulations 1967.

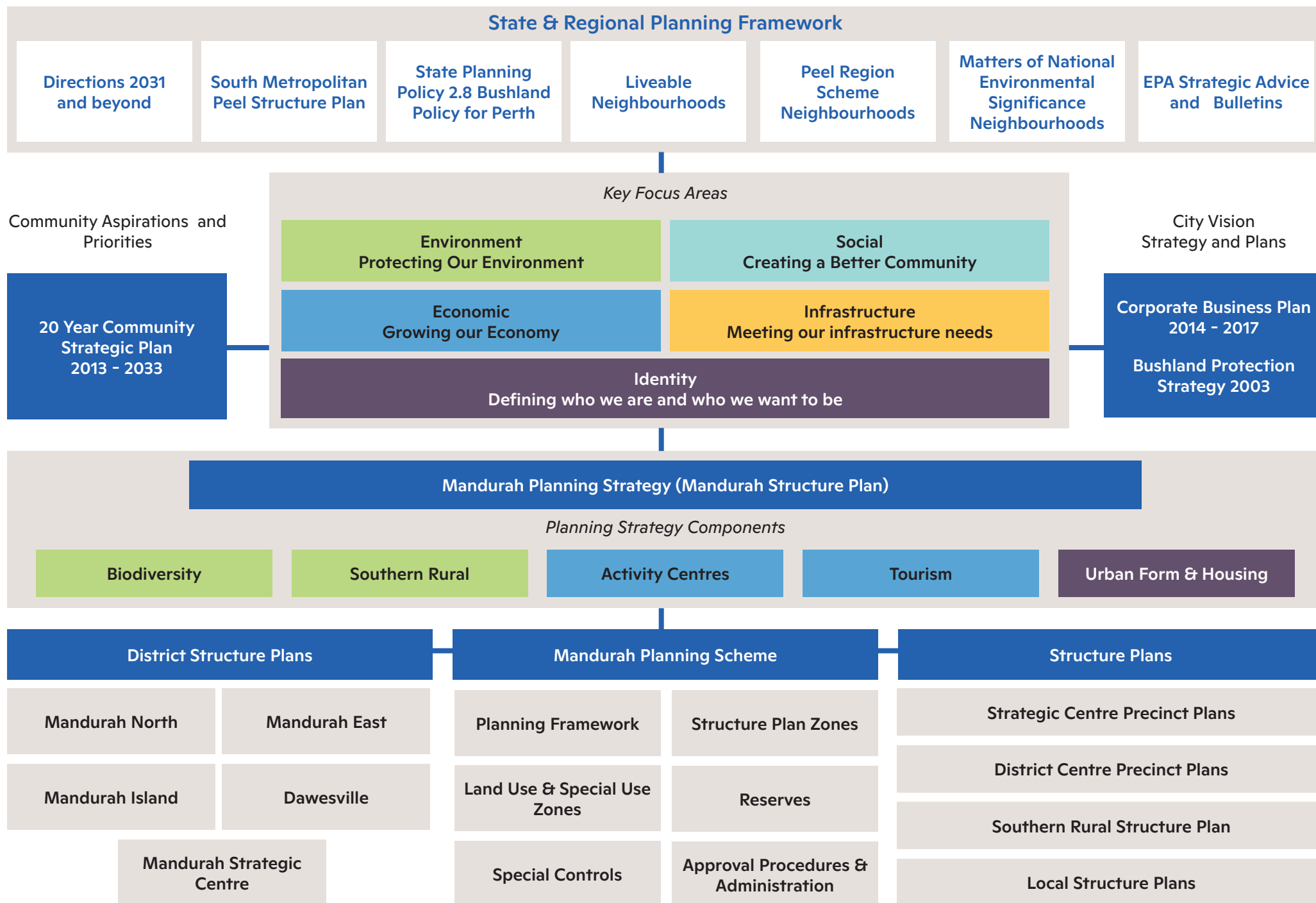
The purpose of the Planning Strategy is to establish a spatial planning framework for Mandurah arising from the relevant Council strategic and corporate plans.

The Planning Strategy will lead to the preparation of the Mandurah Planning Scheme and by reference, future planning determinations under the Scheme are to be consistent with the Strategy.

The Strategy has been prepared based on analysis and research contained within the draft Local Biodiversity Strategy Technical Report prepared by Ironbark Environmental (June 2012), together with the remaining elements of the regional and local planning framework as outlined in Figure 1, including relevant State Planning Policies and Liveable Neighbourhoods.



Figure 1 Strategy Structure and Format



1.3 Strategy Vision

The Strategy forms part of the Council's vision to be a place which is *"..vibrant, prosperous, connected and sustainable... Built upon opportunity, wellbeing, diversity of choice, sense of community, our history and magnificent waterways."*

The strategy is based on a vision of biodiversity conservation within Mandurah that seeks to protect a network of almost 320 hectares of Local Natural Areas, and retain a further 2500 hectares throughout Mandurah for the benefit of current and future generations and to maintain the diversity of species and ecosystems we enjoy today.

1.4 Strategy Objectives

With the aim of conserving biodiversity, the Strategy has four key objectives:

Objective 1:

To provide targets for the protection of specific biodiversity features particularly those zoned urban; or land managed by Council;

Objective 2:

Maximise retention of all other Local Natural Areas on rural zoned lands.

Objective 3:

Protect and manage Local Natural Areas on local reserves to:

(a) maintain their current levels of species diversity, or where degraded, increase diversity through regeneration and revegetation; and

(c) support and encourage compatible passive recreational uses.

1.5 Strategy Approach

The Strategy is designed to advance and complement past and current actions by Council to protect its native vegetation and biodiversity. The Mandurah community places a high value on the protection of the area's natural environment and has supported numerous initiatives over recent decades. These initiatives include:

- A Bushland Protection Strategy Discussion Paper released in 2003 in response to community concerns over the amount of bushland clearing, which canvassed a number of options to improve the protection and management of bushland. The Mandurah community was in favour of conserving Mandurah's natural environment.
- A commitment to allocate a financial contribution each year towards purchase of significant bushland areas. In 2005, Council decided to allocate \$500,000 each year to the purchase of bushland (first instalment 2010/2011). By 2006, the Council had set a goal "to protect 150 hectares of privately owned bushland that will otherwise be developed". The City has protected 22 hectares so far.
- Improvements to the Tree and Bushland Preservation provisions in Town Planning Scheme 3. These provisions require landowners to retain native trees and bushland on their land and apply for planning approval to Council before undertaking any clearing or removal of vegetation.
- Negotiations with landowners to ensure that the best development outcomes are achieved. This includes providing 'transferable developer rights' for additional height and density where the outcome will be of greater benefit to the community.
- Many initiatives to protect and manage bushland, including the management of local reserves, the creation of bushland parks in new subdivisions, support to community Bushcare groups and ongoing environmental education.

Each of these efforts are important and effective, but their effectiveness will be greatly increased through the better integration of biodiversity conservation in Council's land use planning framework and the setting of biodiversity conservation targets.

The preparation of the Strategy is based on a planning approach described in the Local Government Biodiversity Planning Guidelines for the Perth Metropolitan Region and South West Addendum (WALGA & PBP, 2004; Molloy et al, 2007). The approach has been developed by the Western Australian Local Government Association (WALGA) and is supported by the Environmental Protection Authority and Western Australian Planning Commission.

The approach includes WALGA's recommended assessment of the values of Local Natural Areas and the integration of biodiversity conservation into a local government's land use planning system.

Numerous local governments have prepared biodiversity strategies using this method and have found it most effective where the strategy has been integrated into the local planning scheme, local planning strategy, and council operations. This general approach has been adapted to suit Mandurah's context, given that most bushland areas in Mandurah occur on lands where the land use planning context has been well established through urban zoning and complimented by district structure plans and Outline Development Plans.

The Strategy will not only help achieve Council's goal of protecting bushland that might otherwise be cleared, but will ensure the Council plans for protection of local biodiversity across Mandurah's boundaries.

Three key principles of biodiversity conservation have been used as the foundation of the Strategy:

1. Biodiversity is best conserved in natural areas, and preferably natural areas with a high level of ecological viability;
2. The habitat of threatened species and the communities they form needs to be protected to prevent these species becoming even more threatened; and
3. Protection of a representative proportion of ecological communities is important to protect both rare and common forms of biodiversity.

1.6 Overview of Strategy Framework

Protecting natural areas in a rapidly-growing local government area is complex and the Strategy proposes that Council implement a number of initiatives which together form a coherent framework to conserve biodiversity. The implementation components are:

1. An ecological prioritisation methodology and dataset;
4. Protection and Retention targets for zoned lands;
5. Protection and management strategies targeted at local reserves;
6. Strategies for Regional Open Space managed by the City of Mandurah;
7. Improvements to the Council's Local Planning Scheme and Local Planning Strategy; and
8. Database for information management and natural area reporting to Council and the community.

It is important to note that the above components complement the activities that Council undertakes to conserve biodiversity.

1.7 Strategy Values

The Strategy is aimed towards the facilitation of the protection of local natural areas in Mandurah. Whilst the Strategy is based on environmental protection, it will support the continued enjoyment of environmental, social and economic benefits for the community.

Table 1 lists a number of benefits that local natural areas and biodiversity provide and how these are integrated into the Strategy.

Table 1 Benefits of Conserving Natural Areas and Biodiversity

Benefit	Strategy Integration
Natural areas maintain the natural diversity of native species (plants and animals) in Mandurah	The Strategy uses vegetation complexes and other mapped information to protect a wide variety of natural area types.
Natural areas maintain and improve the quality of water resources, stormwater and Estuary water quality	The protection of foreshores and other wetlands is a Strategy target and a criterion used to prioritise natural areas.
- Natural areas are important for passive recreation and nature play. - They provide areas for environmental education	The Strategy leads to the protection of key natural areas within new subdivisions. These areas should be retained within subdivision design to be robust to protect habitats into the long-term and also accommodate passive recreational use.
Natural areas maintain the health of Peel-Harvey Estuary and Yalgorup National Park	- The Strategy aims to protect local natural areas outside of the Ramsar Site which will increase the health and resilience of foreshore habitats and Estuary wildlife. - The Strategy makes recommendations about the protection of bushland in the vicinity of the National Park.
Natural areas provide amenity and landscape for rural residential residents.	Strategy aims to protect remaining significant bushland in existing rural residential areas, and encourage the retention of all other bushland areas.
Natural areas improve the amenity of residential areas, enhance urban landscapes, and increase property values.	- Local bushland parks should be managed in a more strategic manner and their condition improved. - Objectives for the protection of bushland in specific new residential areas are recommended in the Strategy.
Natural areas support cultural values and uses for the community, especially Traditional Owners.	Traditional Owner and other Cultural Owner values of natural areas should be recognised as part of the land use planning process.

1.8 Strategy Area

The Strategy covers the administrative area of the City of Mandurah, but broken down into geographic districts for ease of reference. The districts have been identified and shown on Figure 2 based on suitable catchments and physical barriers which break the area into smaller locations.

The areas have also been identified based on previous planning and strategies undertaken. The identified districts are:

- **Mandurah North**

Madora Bay
Meadow Springs
Silver Sands (north)
Lakelands
San Remo

- **Mandurah Central**

Silver Sands (south)
Mandurah
Greenfields (north-west)
Dudley Park (north)

- **Mandurah East**

Greenfields (east)
Dudley Park (east)
Coodanup

- **Mandurah Island**

Halls Head
Falcon
Dawesville (north)
Erskine
Wannanup

- **Dawesville**

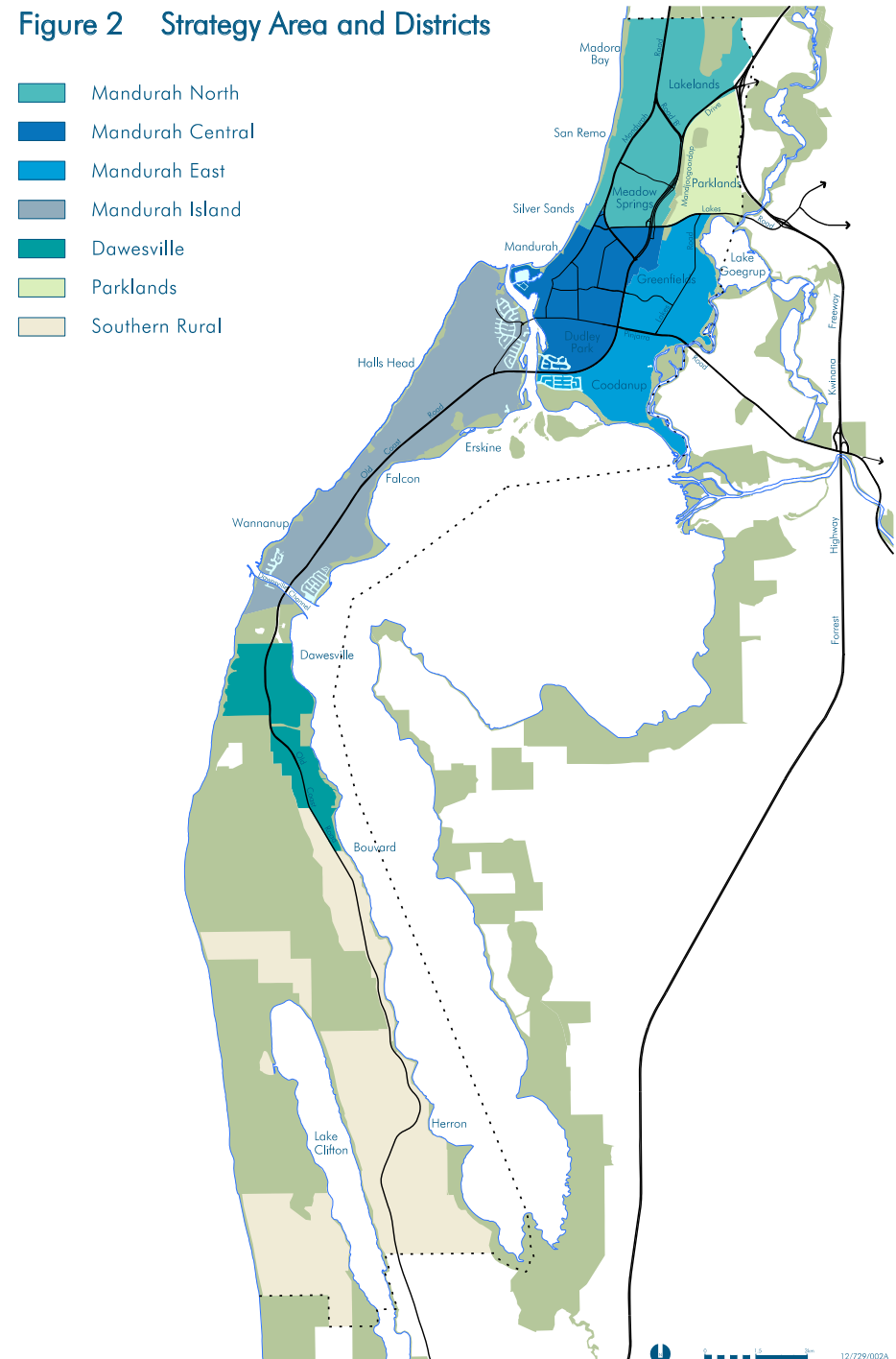
Dawesville
Bouvard (north)

- **Parklands**

- **Southern Rural**

Bouvard (South)
Herron

Figure 2 Strategy Area and Districts



1.9 Strategy Terminology

To understand the meaning of the objectives of the Strategy, it is important to define the following key terminology:

Protection

when applied to a natural area means that the area is covered by a secure mechanism providing the highest level of long-term protection. Secure protection mechanisms in Mandurah at the present time are considered to be:

- Public reserves vested for the purposes of conservation
- Land under a conservation covenant registered with a recognised conservation organisation (e.g. National Trust or DEC), or
- Regional Open Space with a management plan which explicitly states that the area's vegetation is protected from clearing in perpetuity.

This definition of 'protection is drawn directly from the Local Government Biodiversity Planning Guidelines, with the exception of the inclusion of Regional Open Space (WALGA & PBP, 2004).

Further opportunities and mechanisms for protection are covered as part of the Strategy.

Retention

means that the natural area is retained on the site, but there is no mechanism which is proven to provide secure long-term protection to the natural area.

Natural areas that are retained may or may not have laws which specifically prevent clearing within the natural area. Whilst most clearing in Mandurah requires a permit from the DEC, there are numerous exemptions under the Environment Protection (Clearing of Native Vegetation) Regulations which effectively mean that the natural area is not protected in the long-term.

Similarly, many natural areas in urban zoned lands are being subject to the provisions of the Environment Protection and Biodiversity Conservation Act, but this does not necessarily mean that the natural area is protected in the long-term. Retention of natural areas on lands zoned rural residential eventually leads to degradation of biodiversity resources.

Given the above, the Strategy makes the distinction between protection and retention so that a long-term view of conservation is encouraged, as is necessary to protect biodiversity.

Natural Area

are areas that contain native species or communities in a relatively natural state and contain biodiversity, and include areas of native vegetation, vegetated or open water bodies or waterways and coastal dunes or cliffs. Natural Areas exclude parkland cleared areas, isolated trees in cleared settings, oval and turfed areas.

Mandurah Biodiversity Strategy

Part 2 - Biodiversity in Mandurah

2.1 Overview

Biodiversity occurs at numerous scales in the environment, from the broad landscape and habitat levels through to the diversity of species and the genetic variation within species. By protecting and managing natural areas and the habitats they contain, all levels of biodiversity are conserved effectively and most efficiently. For these reasons, this strategy is targeted at the protection and management of natural areas and the habitats within them.

2.1.1 Species Diversity

Knowledge of species diversity in Mandurah is often limited to specific land parcels, or the most threatened species. Characteristic native plant species in Mandurah include trees such as the marri, tuart, WA peppermint, bull banksia and the saltwater paperbark. Smaller trees and shrubs include quandongs, coastal wattle and saltbush, hakeas and parrotbush (*Banksia sessilis*).

Mandurah also provides habitat for two species of Declared Rare Flora (*Caladenia huegelii* and *Eucalyptus argutifolia*), and twelve species of Priority Flora (species which are threatened or otherwise poorly understood by ecologists) and one threatened ecological community (*Thrombolites* of Lake Clifton). There is no estimate of the total number of flora species naturally occurring in the City.

In terms of fauna, Mandurah is fortunate to have a wide range of species because of the diversity of habitats and ecosystem types. Species such as the Southern Brown Bandicoot (*Isodon obesulus fusciventer*), Western Grey kangaroo (*Macropus fuliginosus*) and bungarra (Gould's sand monitor) are found in numerous parts of the City where there are relatively large areas of bushland, such as Marlee Reserve. These species are likely to become rarer as further development reduces the size of large bushland areas in Mandurah.

Other species found in Mandurah which are already at critically low numbers across their natural range are the Western Ringtail Possum (*Pseudocheirus occidentalis*), Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*), Baudin's Black Cockatoo (*Calyptorhynchus baudinii*) and Forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*). These species are protected under the EPBC Act 1999 and the Wildlife Conservation Act 1950.

2.1.2 Habitats and Ecosystems

Natural areas provide feeding, breeding and resting habitats for fauna, and places for flora to grow and reproduce. Habitats for local species can be found in reserves, private bushlands and even in local gardens. Types of habitats include riverine foreshores on the Serpentine River, wetlands such as Paganoni Swamp and Black Swan Lake, coastal heathland, Jarrah-Marri-Banksia woodlands and estuarine foreshores. Most local reserves managed for conservation protect one or more habitats for a range of species as well as examples of vegetation that are characteristic of the City. Most native species need natural areas in good condition and cannot survive in gardens and as isolated trees.

2.1.3 Landscapes

Biodiversity at the ecosystem and landscape scale can be seen in the Peel-Harvey Estuary. The Estuary, as well as Lake Clifton and other major wetlands form the Peel-Yalgorup Ramsar Site. Ramsar Sites are wetlands identified around the world that are of international importance. The Australian Government is a signatory to the Ramsar Convention, and is obliged to manage Ramsar Sites in accordance with the convention. Many of the foreshore reserves in the Peel-Yalgorup Ramsar Site are managed by the City of Mandurah.

2.2 Mandurah’s Natural Areas

2.2.1 Overview

In the Strategy, Natural Areas are identified through the mapping of native vegetation and wetlands. Most natural areas are identified through native vegetation mapping, but some may be non-vegetated natural areas, such as open waters of lakes and the Estuary, bare mudflats and sandy foreshores.

Prior to European settlement, there were 16 725 hectares of native vegetation in Mandurah. This compares to the 8628 hectares (51 per cent) that remains today which is summarised in Table 2.

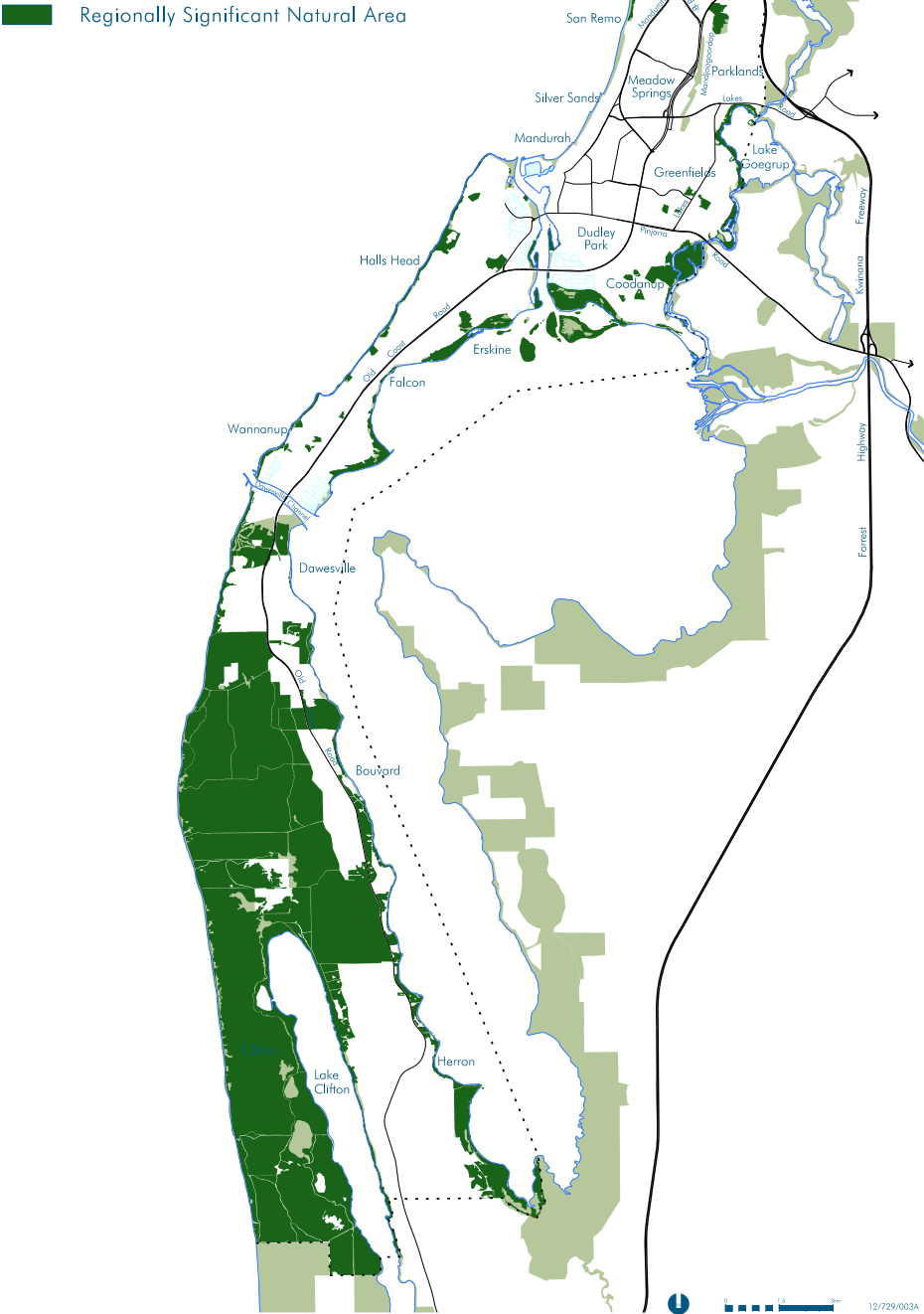
Table 2 Natural Areas Summary

Vegetated Natural Areas	Area
Prior to European Settlement	16 725ha
Existing Natural Areas	8628ha
State Government Managed (DEC Conservation Land)	3837ha (44.2%)
Balance Natural Areas	4817ha (55.8%)

2.2.2 Peel Regionally Significant Natural Areas (Swan Bioplan Project)

The Swan Bioplan Project has identified natural areas with significant flora, vegetation and landform values in the Peel Sector. The mapped Peel Regionally Significant Natural Areas identifies areas that represent the range of landscapes, habitats, vegetation and flora originally found in the Peel Sector as shown in Figure 3.

Figure 3 Peel Regionally Significant Natural Areas



The identification of the Peel Regionally Significant Natural Areas did not take into account site specific wetland and fauna values. These values should be addressed consistent with published EPA assessment guidance and technical guidelines.

The information (digital mapping, spatial dataset and explanatory notes) identifies regionally significant natural areas that should be considered during strategic planning processes. In a highly cleared landscape, these areas represent the range of landscapes, habitats, vegetation and flora originally found in the area. Any developments in this area will be considered on their merits. However, those impacting on regionally significant natural areas will be subjected to higher scrutiny. Every effort should be made to locate any development in cleared areas in preference to uncleared lands.

EPA Bulletin 8 defines the survey standards required to support any rezoning or development proposals. It also builds on previous advice by the EPA in May 2010 on the significance of the Dawesville to Binningup Region and environmentally acceptable development in that area. Identification and selection of the Peel RSNA's was based on 2009 aerial photography and their natural values at this time independent of current zoning or existing approvals that had yet to be implemented.

The EPA notes that:

- the primary protection of remnant native vegetation is best achieved by locating development in cleared areas in preference to un-cleared lands;
- the Peel RSNA's information provides a key resource to inform strategic regional planning;
- the information provides guidance to State and Local Government authorities, community, industry and developers in planning to firstly, avoid, and then minimise, the impacts of development proposals and planning schemes on natural areas; and
- development proposals and planning scheme amendments that impact on the Peel RSNA's will require detailed investigations of

their natural values consistent with EPA Guidance Statements 10, 51 and 56.

6583 hectares has been recognised as Peel Regionally Significant Natural Areas, with 319 hectares having an urban zoning and 1359 hectares having a rural zoning in the Peel Region Scheme. The balance is within Regional Open Space.

2.2.3 Vegetation Complexes

Mandurah's Natural Areas can be categorised into very broad scale ecological groups referred to as vegetation complexes.

Vegetation complexes are groups of vegetation which share similar underlying landforms, soils and climatic influences. Conservation of sufficient representative examples of each vegetation complex within a locality and the full, natural regional extent increases the chance that biodiversity will be conserved in a given area or region. Vegetation complexes are one, significant aspect of planning for biodiversity conservation.

The vegetation complexes which occur in Mandurah have been mapped across the Perth and Peel Regions. The mapping is recognised by the State Government and professional ecologists as a sound method of defining ecological community biodiversity and planning for biodiversity conservation.

There are seven vegetation complexes that occur in Mandurah which are described in Table 3 and Figure 4.

These vegetation complexes extend beyond the City of Mandurah's boundaries.

Vegetation within the complexes is not a uniform mix of species, but rather a collection of different plant and animal species that change with variations in soils, slope, and vegetation condition. Each of these vegetation communities can be separately mapped through vegetation surveys if required. This is one of the reasons why a broad selection of areas of each vegetation complex need to be protected across the landscape to protect the variety of species found within them.

At a natural regional scale, four of the seven complexes that occur in Mandurah are becoming rare and are poorly protected within the conservation estate across their natural (regional) extent. This is a consideration when assessing the relative values of natural areas remaining in the Mandurah.

These vegetation complexes extend beyond the City of Mandurah’s boundaries. Vegetation within the complexes is not a uniform mix of species, but rather a collection of different plant and animal species that change with variations in soils, slope, and vegetation condition. Each of these vegetation communities can be separately mapped through vegetation surveys if required. This is one of the reasons why a broad selection of areas of each vegetation complex need to be protected across the landscape to protect the variety of species found within them.

At a natural regional scale, four of the seven complexes that occur in Mandurah are becoming rare and are poorly protected within the conservation estate across their natural (regional) extent. This is a consideration when assessing the relative values of natural areas remaining in the Mandurah.

Table 3 Local Natural Areas by Vegetation Complex

Vegetation Complex	Pre-European extent (ha)	Total Remaining (ha)	% Remaining
Bassendean Complex Central and South	73	25	34%
Cottesloe Complex Central and South	4701	1984	42%
Herdsman Complex	251	64	25%
Karrakatta Complex Central and South	1760	1227	70%
Quindalup Complex	1884	1269	67%
Vasse Complex	507	187	37%
Yoongarillup Complex	6498	3236	50%
Not mapped	1052	636	60%

Figure 4 Natural Areas by Vegetation Complex

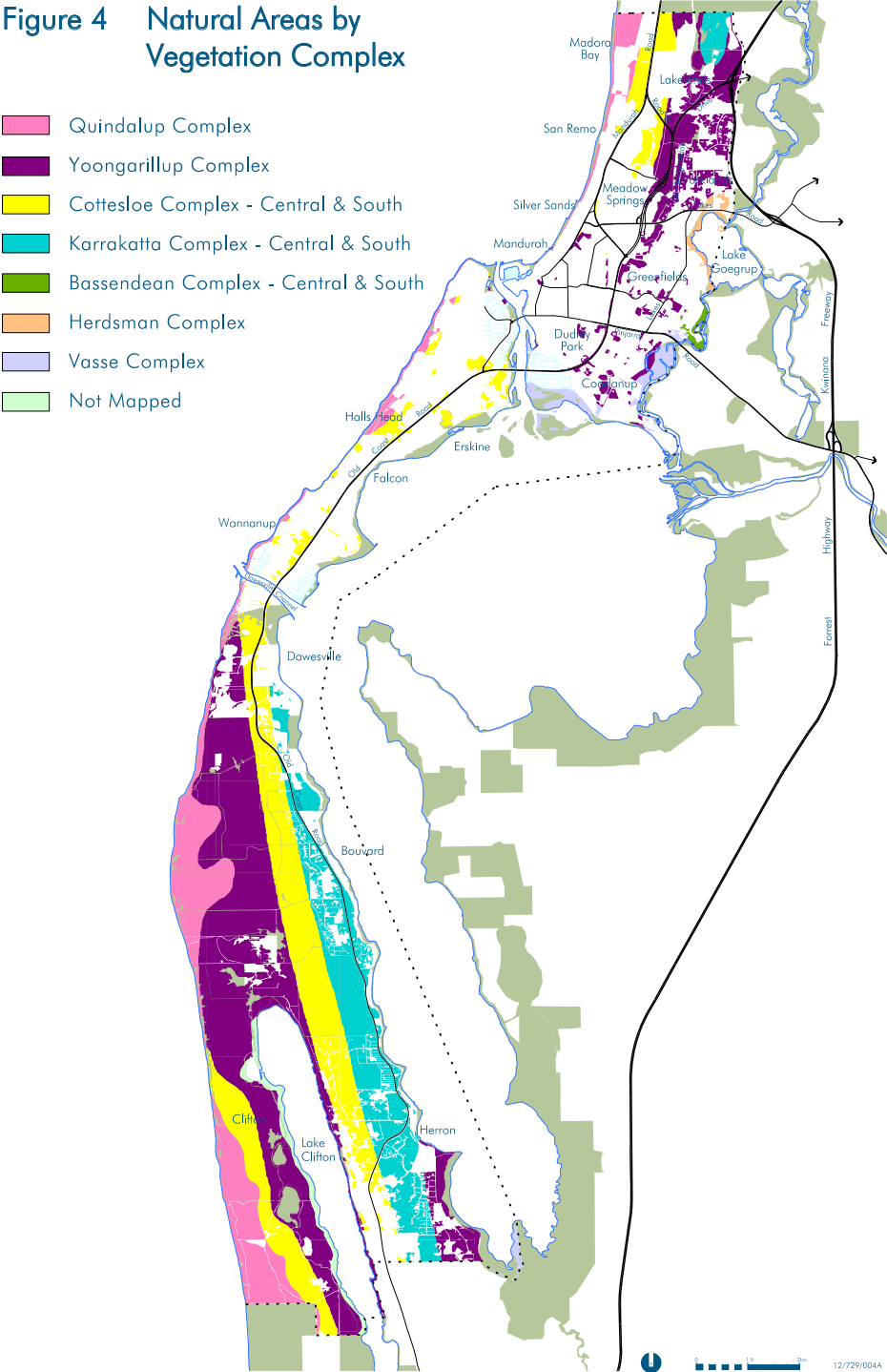




Table 4 Natural Areas within Regional Open Space

	Natural Areas
Existing Natural Areas	8628ha
Natural Areas in Regional Open Space	5024ha (58%)
Management by DEC	3837ha
City of Mandurah Managed	544ha
Other State Government Managed	22ha
Freehold Land	528ha

2.2.5 Defining Local Natural Areas

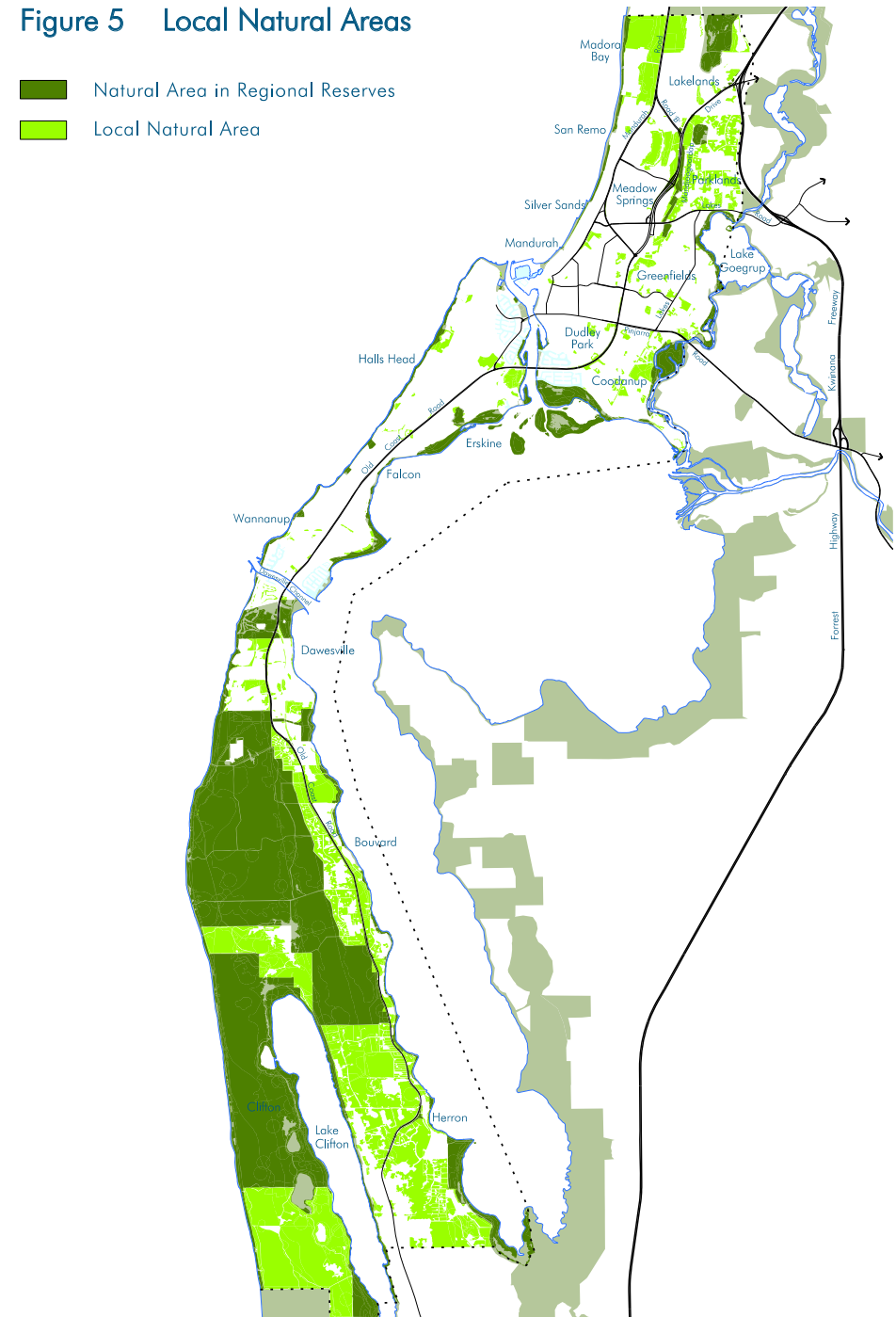
For the purposes of the Strategy, a Local Natural Area is located on land zoned Urban and Rural; and Public Purposes Regional Reserved Land. Unless otherwise identified, the zoning and reservation of land is be referred to in the context of the Peel Region Scheme at a generic level; as distinct from the more detailed zones and reserves in the local planning scheme (Town Planning Scheme 3 'Scheme 3').

Therefore, Local Natural Area are Natural Areas that are not located within Regional Open Space, Waterways Reserves and Primary and Other Regional Roads Reserves within the Peel Region Scheme as identified in Table 5 and Figure 5.

Table 5 Local Natural Areas

Natural Areas	
(A) Existing Natural Areas	8628ha
(B) Less Regional Reserved Land	
Regional Open Space	4905ha
Regional Roads	89ha
Waterways	30ha
(C) Sub-Total	5024ha (60%)
(D) Local Natural Areas	3470ha (40%)
Exiting Local Natural Area Designation	
Urban	844ha (23.4%)
Rural	2588ha (71.8%)
Public Purposes Reserved Land	38ha (1.0%)

Figure 5 Local Natural Areas



Mandurah Planning Strategy

Part 3 - Biodiversity Protection

3.1 Legislative and Policy Framework

The Strategy draws upon the existing legislative and policy framework as the basis for prioritising Local Natural Areas to be protected and improve management.

A summary of key legislation and government policy related to biodiversity conservation is provided below. A more comprehensive description of the relevant policy is provided in the Local Government Biodiversity Planning Guidelines: Addendum to the South West Biodiversity Project Area.

3.1.1 Environment Protection and Biodiversity Conservation (EPBC) Act 1999

The EPBC Act gives protection to biodiversity values and other environmental features that are considered to be of national significance. In Mandurah, the Peel-Yalgorup Ramsar Site, and specifically listed species and ecological communities are recognised as nationally significant. These include Carnaby's Black Cockatoo and the thrombolites of Lake Clifton.

The Act operates by giving authorisation to 'controlled actions', such as subdivisions, that may impact on a matter of national environmental significance. The Act has a significant impact of the land use planning and development process in Western Australia, due to the rate of development and the extent of protected natural areas, species and ecological communities in the Perth and Peel Regions.

To give greater protection to matters of national environmental significance, the State and Federal Governments have recently commenced a strategic environmental assessment of Directions 2031. The Strategic Assessment will ensure responsible and sustainable development and a more co-ordinated and strategic

approach to meeting biodiversity conservation objectives. It allows the Commonwealth Minister for Environment to approve actions or classes of actions without undertaking individual assessments of those actions, provided these are taken in accordance with the endorsed policy, plan or program.

It is unclear what impact the Strategic Assessment will have on local government actions to conserve biodiversity. However, it is likely that the agreement that comes out of the strategic assessment will remain at a high-level and may provide only limited guidance for resolution of disputes at the local level. The City of Mandurah, through this Strategy has the opportunity to build a locally relevant framework for all stakeholders, including development proponents, which proposes clearer targets for protected habitats and species.

3.1.2 Wildlife Conservation Act 1950

The Act is the primary State legislation directly protecting native fauna and flora in Western Australia. It is largely recognised by environmental experts as an outdated piece of legislation which is in need of major reform.

It does not protect threatened ecological communities or habitats. Due to the limited scope and out-dated approach of the Act, the EPBC Act is often used to protect species and habitats in Mandurah.

3.1.3 Swan Bioplan: Peel Regionally Significant Natural Areas (EPA Bulletin 12 (2010))

The Environmental Protection Authority has identified key natural areas in Mandurah of regional and higher significance in its Swan Bioplan – Peel Sector report and mapping (EPA, 2010a). Natural areas identified through this program have been recognised in the indicative ecological prioritisation used in this strategy.

3.1.4 EPA Strategic Environmental Advice on the Dawesville to Binningup Area under s.16(e) Environmental Protection Act (2010)

The Environmental Protection Authority has formally provided public advice to the Minister for the Environment on the likely acceptability of further development on lands surrounding the Yalgorup Lakes, including Lake Clifton in the City. The advice includes the following:

“The internationally recognised Yalgorup lakes and other significant environmental values found together in the study area make it an extremely important area for conservation. These values should be protected by increasing and consolidating the area of the Yalgorup National Park through the acquisition of private land enclaves west of the lakes and lands adjacent to the lakes and/or those that contain internationally, nationally and regionally significant environmental values.

Subdivision and development near the Yalgorup lakes is highly likely to impact the ecological character and integrity of the lake ecosystems. The current decline of the Lake Clifton thrombolite community demonstrates how subdivision and development in the lakes catchment can have serious adverse consequences. The EPA considers the risk of impacts occurring from additional residential and agricultural development to the lakes and the significant vegetation, flora and fauna unacceptable.” (EPA, 2010b).

The report makes the following recommendations in regards to natural areas within Mandurah:

Recommendation 2: There is a presumption against further subdivision and residential development between the western side of the Yalgorup lakes system and the coast.

- Recommendation 3: Development on the eastern side of the Yalgorup lakes system is highly constrained.
- Recommendation 4: The Yalgorup National Park should be:

(a) extended and consolidated, by incorporating private vegetated enclaves west of the Yalgorup lakes and other adjacent reserved lands; and

(b) amended to significantly extend the vegetation buffer, particularly around the wetland areas of Lake Clifton and Lake Preston, including the eastern side.

- Recommendation 6: All existing vegetation on the eastern side of Lake Clifton must be retained, and where degraded, rehabilitated.

The EPA’s advice has particular relevance to development and biodiversity conservation and associated targets in the Dawesville and Southern Rural Districts as outlined in Section 5.

3.1.5 Directions 2031 and Beyond

Directions 2031 is the State Government’s current land planning policy to guide and manage future growth in the Perth and Peel Regions. It contains future potential development areas and strategies to address development, transport, community and environmental objectives.

As one of many policies it directly supports local biodiversity planning, specifically local government’s efforts to:

- Protect and manage significant biodiversity areas;
- Protect matters of national environmental significance;
- Protect water resources;
- Protect coastlines;
- Expand and enhance the open space network;
- Integrate natural resource management into land use planning.

3.1.6 State Planning Policy 2.8: Bushland Policy for the Perth Metropolitan Region

This policy provides the policy and implementation framework for Bush Forever areas shown in the Metropolitan Region Scheme, which cover Bush Forever sites and also supports the preparation of local bushland protection strategies by all local governments in the Perth Metropolitan Region. Whilst the Policy sets out these requirements for the Perth Metropolitan Region, in the context of Directions 2031 and the South Metropolitan Peel Structure Plan overlapping regional boundaries, its application is worthy of consideration in the preparation of this Strategy.

The Strategy identifies the need to enable the identification of locally significant bushland sites for protection and management outside Bush Forever areas. The need for such strategies was identified in Bush Forever, the Urban Bushland Strategy and the State Planning Strategy. In addition, the National Local Government Biodiversity Strategy identified the need to prepare local biodiversity strategies. The policy recognises that bushland is an important component of biodiversity and therefore local bushland protection strategies should form part of a wider local biodiversity strategy, or similar, where possible. Local biodiversity strategies recognise the importance of natural areas of native vegetation that do not fall within the definition of bushland, or naturally non-vegetated environments. Local bushland protection strategies, biodiversity strategies or similar, should form part of or be set in the context of local or regional planning strategies and wider social and economic considerations. To assist local government, draft local biodiversity planning guidelines have been prepared by the Western Australian Local Government Association (2004).

Of note within this Policy, are the following provisions under Section 5.2 that for all areas of bushland outside Bush Forever areas, local governments should:

- (i) Seek to prepare a local bushland protection strategy, which should—
- (a) be part of a wider local biodiversity strategy (which may include an assessment of local natural areas) or similar, where possible;

- (b) be a component of a wider local planning strategy, where possible, and as part of a review of a local government town planning scheme, or as an independent strategy where there are significant issues and pressures relevant to the protection of local bushland, while taking into consideration the broader planning framework;
 - (c) be based on metropolitan-wide guidelines endorsed by the WAPC;
 - (d) identify, or establish processes to identify significant bushland sites for protection and management based on environmental, social and economic criteria and taking into consideration existing approvals and commitments—in particular, site identification should utilise structure planning and rezoning processes and avoid onerous information requirements at the detailed planning stage;
 - (e) identify decision-making processes and include an implementation strategy to protect those sites recommended for protection and management through a range of mechanisms;
 - (f) be in consultation with affected landowners, the broader community, the WAPC and other relevant government agencies;
 - (g) exclude the Conservation Commission of WA managed conservation estate and parks and recreation reserves in the Metropolitan Region Scheme, which are part of the State reserve system and are of regional importance; and
 - (h) be formally considered and endorsed by council and the WAPC, with particular reference to the policy measures listed in the Policy.
- (ii) As an interim measure, prior to formal endorsement of a local bushland protection strategy, local government should seek to identify and protect significant bushland through other planning processes or studies, such as structure planning and rezoning processes. The lack of a formally endorsed local bushland protection strategy should not, in itself, be a reason to refuse a planning proposal. Each proposal should be considered on its merits, with particular regard to specific policy measure 5.2 (iv) below, and existing planning processes or studies that identify

significant bushland for protection.

Proposals or decision-making should—

- (iii) Have regard to the protection of significant bushland sites recommended for protection and management in an endorsed local bushland protection strategy or through other planning processes or studies that have been formally endorsed by council and the WAPC.
- (iv) Support a general presumption against the clearing of bushland, or other degrading activities, for area's containing—
 - the environmental values identified in Appendix 2 (ix) b (of the Policy); and
 - System 6 recommendation areas (Department of Conservation and Environment (1983), Conservation Reserves for Western Australia), the Conservation Commission of WA conservation estate and parks and recreation reserves in the Metropolitan Region Scheme outside the Swan Coastal Plain portion of the Perth Metropolitan Region, except where it is in accordance with the exemptions identified in policy measure 5.1.2.1 (i) of the Policy.
- (v) Proactively seek to safeguard, enhance and establish ecological linkages between Bush Forever areas; and between Bush Forever areas and those areas identified for protection through the implementation of the specific policy measures in this section.

This Strategy is seeking to implement this component of the Policy with regards to its preparation, application and endorsement of the WAPC through the land use planning framework.

Furthermore, the Policy provides clear guidelines in Appendix 3 on 'Best Practice Criteria for Rural Living Subdivision and Rural Development' within in rural areas containing significant natural bushland. In particular it states

'Lot sizes for rural living subdivision will be considered on their merits, with an emphasis on the creation of large bush blocks, generally over 10 hectares' and there is 'a presumption against intensive rural-living subdivision (i.e. lots generally below 4 hectares), except where it forms part of a planning solution designed to secure an improved environmental outcome, the ceding of land as a conservation reserve for management by an appropriate body,

the creation of some smaller lots within cleared or degraded areas combined with a larger lot for the core conservation area, and/or cluster-style rural subdivision and development'.

These best practice criteria have been used in establishing targets in respect to protection and retention in the Southern Rural district in Section 5.

3.1.7 South West Regional Ecological Linkages (SWREL) (Environmental Protection Bulletin No 8)

The importance of ecological linkages has been recognised as an environmental policy consideration by the Environmental Protection Authority, however ecological linkages have not generally been addressed in a form that can be readily interpreted and applied in practice to the assessment of planning schemes or development applications.

Ecological linkages are just one measure of the biodiversity conservation values of an area of native vegetation.

Through Bulletin 8, the EPA expects that in preparing plans and proposals for development, consideration will be given to both the site-specific biodiversity conservation values of areas of native vegetation, as well as the landscape function and core linkage significance of an area in supporting the maintenance of ecological linkage.

Ecological linkages, as identified in the SWREL, are defined as a series of (both contiguous and non-contiguous) areas of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape.

The SWREL project was designed to provide local governments, proponents and others the capacity to consider and take measures to retain and where possible enhance the functioning of ecological linkages in the south west of Western Australia.

The application of the ecological corridors within the City of Mandurah has been considered in the context of identifying protection and retention targets, particularly in the Southern Rural district in Section 5.

3.2 Pressures on Biodiversity in Mandurah

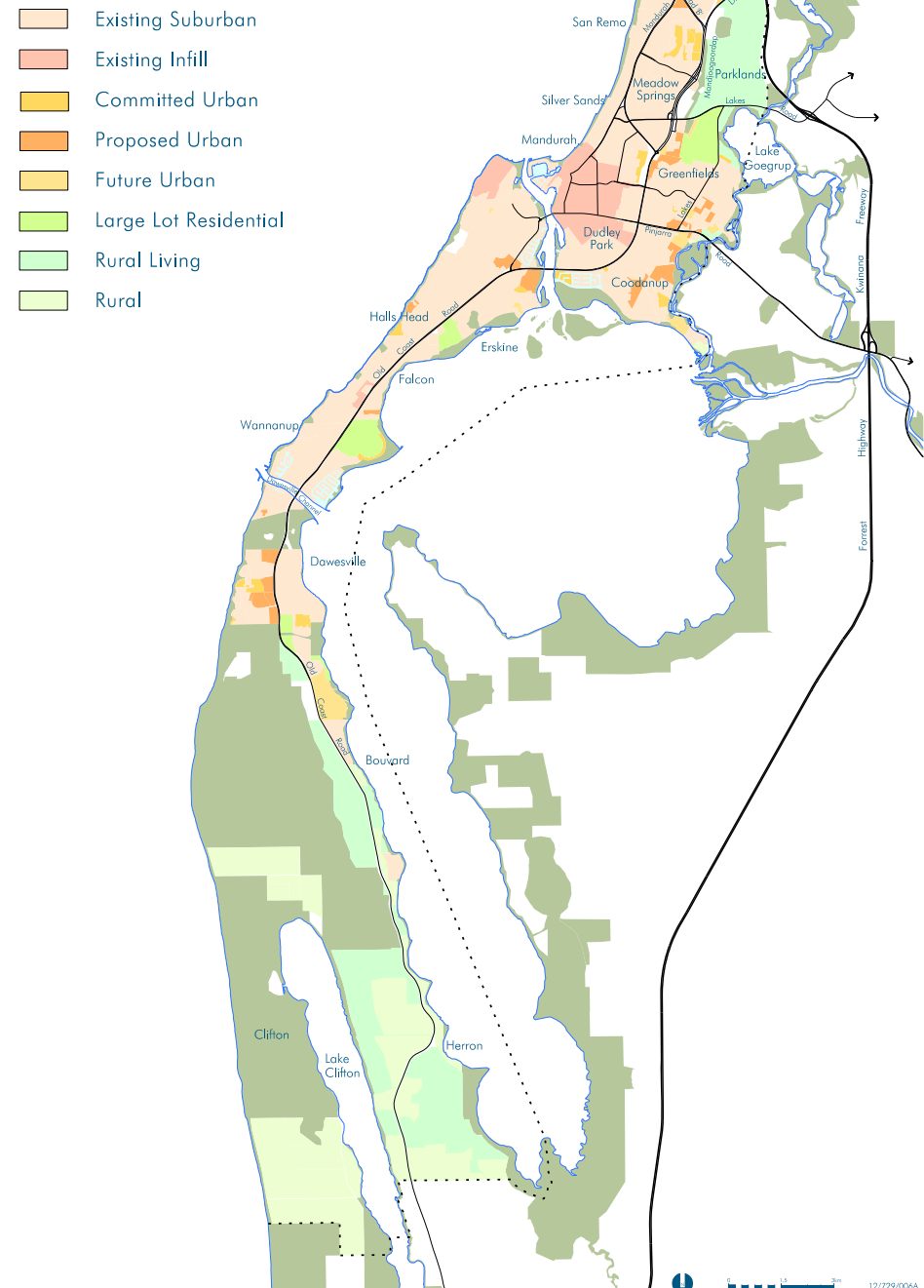
There are pressures that require the need to plan for biodiversity conservation. This Strategy sets out to deal with a number of the major issues related to land use planning and development.

3.2.1 Land Use Planning and Development

Changes in land use and development pose a potential major threat to biodiversity if not adequately planned and designed. Maintaining areas that provide significant habitat for threatened species is one way in which development can conserve biodiversity. Other examples include protecting local parks which are representative of the local vegetation so that fauna can move across the landscape via larger conservation areas, such as the Estuary or Yalgorup National Park.

To provide a context to areas that the Strategy can have influence, current land use planning and development categories can be described as follows and as shown on Figure 6.

Figure 6 Land Use Planning and Development Categories



Existing Suburban

The suburban areas of Mandurah are those that are attributed to the rapid growth that has taken place since the mid to late 1980s together with the established urban areas of that were part of the original settlements in Mandurah, when the coastal villages were established.

Existing Infill

Are areas that were part of the original settlements in Mandurah, but due to their location and urban structure have been identified as being suitable for redevelopment. These areas are those where the development potential applied through zoning, development plans or policy is greater than currently exists or are in a transition towards redevelopment.

Large Lot Residential

Numerous low density residential areas exist in Mandurah, where lot sizes range from 2000 square metres to 1 hectare and provide a location for a different urban lifestyle. The areas are generally characterised by dwellings on large lots with substantial tree cover, wide roads with very few footpaths and a range of infrastructure (power lines, sewer etc) being available dependant on location. Due to the large areas and low densities, providing services such as localised public transport, open space and community facilities that are expected in suburban areas is difficult, given these areas are generally located within urban areas.

Committed Urban

The committed locations are generally those with subdivision approvals in place ready for the construction of new lots, roads or dwellings and likely to be the location for new suburban development in the shorter term (ie within 5 years).

Proposed Urban

The proposed areas are those that have an Outline Development Plan in place and approved, however have not progressed to subdivision approval stages (as provided under committed areas). In a majority of cases, these areas will be developed in the medium term (5-15 years) depending on the rate of development growth. However the design

and layout of proposed development areas is relatively established unless substantial modifications to the Outline Development Plan are proposed by the landowner.

Future Urban

The future urban locations are those that are zoned or identified for new urban development but have not undergone the Outline Development Plan process to determine their form of development and final layout. In some instances, some areas may still be zoned Rural, but identified in regional planning strategies as being appropriate for future urban development.

Rural Living

These areas generally have lots of 2 hectares or more, are heavily vegetated and have restricted clearing areas for dwelling construction. Due to the large area occupied by very few lots, services and infrastructure is minimal

Rural

These areas are currently zoned Rural in Scheme 3, however, in many instances, are areas where the current zoning is a holding pattern until an alternative zoning is proposed. Generally, these areas are not appropriate for rural pursuits such as farming or agricultural activities.



3.2.2 Improvements to Management

The Strategy also recognises the long-term impact of subdivision of land into rural residential lots, especially where the lot size is less than 10 hectares due to clearing and disturbance for building envelopes, firebreaks, fences, and incidental clearing. Arising from the subdivision of these lots, these bushland areas are more vulnerable to weeds, Phytophthora dieback and degradation.

All Natural Areas need some level of management to counteract the effects of intensive development, recreational use, infrastructure development, more-frequent fire regimes, weeds and climate change. These are all direct threats to biodiversity and can be addressed through active management. Where bushland is kept in good condition, it will generally require less management.

Whilst the Strategy does not directly address these types of management issues, it does make recommendations with respect to Bushland Reserve Strategic Management Plans.

3.3 Risk analysis

It is important to consider the outcomes with no change to the current approach to the protection of Local Natural Areas. Under this scenario:

- (a) It is estimated that a high percentage of the 840 hectares of bushland on urban zoned land is likely to be cleared given the current zonings.
- (b) A large proportion of the 2500 hectares on rural residential zoned land is likely to continue to be degraded due to the nature of this type of land use and development.
- (c) Large areas of Regional Open Space, where they are not actively managed or protected on Crown Land, may experience a decline in condition.

Council's State of the Environment Report assessment that without a change in the approach to biodiversity conservation in the City, the prevailing trend is downward through clearing and vegetation degradation. The Strategy seeks to address this downward trend.

3.4 Local Natural Area Assessment and Prioritisation

Understanding the ecological values of Local Natural Areas is an essential part of biodiversity planning and important for the Council and proponents to plan for their protection and management. A consideration of economic and social implications to the protection of natural areas is factored into the Strategy in part through the use of zoning factors.

The ecological prioritisation used in the Strategy is drawn directly from the Regional Framework for Local Biodiversity Conservation priorities in Perth and Peel (Perth Biodiversity Project, 2011). This dataset creates a regional framework so that any natural area in Mandurah can be compared with other natural areas through the Perth and Peel regions. The framework has been developed by the WA Local Government Association and Perth Biodiversity Project in partnership with the Departments of Environment and Conservation and Planning.

The regional framework uses 32 criteria as shown in Table 6 based on broadly accepted ecological values of natural areas for which geographical information exists across the whole Perth-Peel region. Within Mandurah, the ecological values which these criteria represent include the following:

Representation (Regional)

Natural Areas that are important or significant examples at the regional scale. This includes important or restricted ecological communities, poorly protected ecological communities and natural areas over 20 ha. The Regional scale is the ecological region of the Swan Coastal Plain.

Rarity

Natural Areas that contain naturally rare or significantly cleared ecological communities, or flora or fauna which is rare or threatened. These are the rare and threatened components of biodiversity and Mandurah's landscape

Ecological connectivity

Maintaining ecological processes or natural systems. Natural Areas that meet the South West Regional Ecological linkages 500 metre wide axis lines. These are shown in the relevant District Plans. Ecological linkage is the term used to explain the relationship of natural areas in proximity to other natural areas. Biodiversity, flora and fauna, needs to be able to move across the landscape to survive and evolve.

Wetland, streamline, estuarine fringing and coastal vegetation

Natural Areas that are Conservation Category Wetlands, Resource Enhancement Wetlands, Environment Protection (Swan Coastal plain Lakes) Policy wetlands, estuarine wetlands, riparian vegetation (adjacent to streamlines), and vegetation within floodplains. Coastal vegetation on fore dunes and secondary dunes is important in stabilising these sensitive areas and landforms.

Representation (Local)

Natural Areas that are important or significant examples of their type within Mandurah. This includes ecological communities, which have been significantly cleared within Mandurah.

Many of the thirty-two criteria have been reflected in the Specific Biodiversity Feature Targets proposed in the Strategy and are referred to as 'local significance criteria'. They are used to assign an 'indicative prioritisation' score to all Local Natural Areas in Mandurah.

Each Natural Area in Mandurah has been scored against each of the 32 criteria with a value of one assigned to each criteria. This means that potentially, a Natural Area can be assigned a score of 32 if it meets each of the 32 criteria. A site that meets 3 criteria is assigned a score of 3, however within Mandurah, the greatest number of criteria met is 14.

The scores of all Local Natural Areas are provided within the District Overviews in Section 5. The details of which criteria are met by each natural area are included in a database held by the City of Mandurah.

The prioritisation scores for each Local Natural Area are indicative

and should only be used as a preliminary indication of relative significance of any given Natural Area. The scores do not take account of site-specific information such as vegetation condition or local level ecological surveys. Where decisions are being made about individual sites, ecological assessment should occur at the site-specific scale by a qualified expert.



Table 6 Local Natural Areas: Ecological Criteria

Criteria	Spatial Data Representation (applicable to Mandurah)
Representation (Regional)	
P1.1 recognised International, National, State or Regional conservation value	DEC National Park, Nature Reserve Peel Regionally Significant Natural Area Crown Reserve with 'Conservation' Management Order Ramsar Wetlands
P1.2a of an ecological community with only 1500 hectares or 30 per cent or less (whichever is the greater) remaining and less than 10 per cent protected in the biodiversity subregion	2010 Vegetation extent by vegetation complexes: Bassendean Central and South; Cottesloe Central and South; Karrakatta Central and South; Not Mapped;
P1.2b of an ecological community with only 1500 hectares or 30 per cent or less (whichever is the greater) remaining for conservation in the biodiversity subregion	2010 Vegetation extent by vegetation complexes: Bassendean Central and South; Cottesloe Central and South; Hersdman; Karrakatta Central and South; Not Mapped; Vasse; Yoongarillup
P1.2c of an ecological community with 90 to 100 per cent of its original proportion of the original extent	2010 Vegetation extent by vegetation complexes: Cottesloe Central and South; Hersdman;
P1.2d of an ecological community with 60 to 89 per cent of its original proportion of the original extent	2010 Vegetation extent by vegetation complexes: Bassendean Central and South; Karrakatta Central and South; Quindalup
P1.3 large (greater than 20 hectares) natural areas	Remnant Vegetation with an area greater than 20 hectares
P1.4 of an ecological community with only 1500 hectares or 15 per cent or less protected for conservation in the Jarrah Forrest subregion	2010 Vegetation extent by vegetation complexes: None Applicable to Mandurah
P1.5 of an ecological community with only 400 hectares or 10 per cent or less (whichever is the greater) protected for conservation Swan Coastal Plan portion of Perth and Peel	2010 Vegetation extent by vegetation complexes: Bassendean Central and South; Cottesloe Central and South; Karrakatta Central and South; Not Mapped; Quindalup

Rarity	
P3.1 of an ecological community with only 1500 hectares or 10 per cent or less (whichever is the greater) remaining in the biodiversity subregion	2010 Vegetation extent by vegetation complexes: None Applicable to Mandurah
P3.2 of an ecological community with only 400 hectares or 10 per cent or less (whichever is the greater) remaining in Bush Forever Study Area	2010 Vegetation extent by vegetation complexes: None Applicable to Mandurah
P3.3 contains a Threatened Ecological Community (TEC)	Threatened Ecological Community boundaries and buffers
P3.4 contains a Priority Ecological Community (PEC)	Priority Ecological Community (Priority 1, 2 and 3) boundaries and buffers
P3.5 contains Declared Rare Flora (DRF)	Declared Rare Flora boundaries and buffers
P3.6 contains Priority Flora	Priority Flora (Priority 1, 2, 3 and 4) boundaries and buffers
P3.7 threatened and specially protected fauna	Declared Threatened Fauna
P3.8 contains Priority Fauna	Priority Fauna (Priority 1, 2, 3 and 4)
P3.9 contains habitat for significant fauna	P3.9a Carnaby's Cockatoo Habitat – Potential Feeding P3.9b Carnaby's Cockatoo Habitat – Known Breeding Sites (confirmed) with 12km buffer of potential feeding habitat P3.9c Carnaby's Cockatoo Habitat – Known Roosting Sites with 1km buffer of potential feeding habitat P3.9d Western Swamp Tortoise Critical Habitat Area
P3.10 contains other significant flora	Significant flora – range ends; endemics Tuart Woodlands
P3.11 contains other significant fauna	Decliner Bird Species

Criteria	Spatial Data Representation (applicable to Mandurah)
Connectivity – Maintaining Ecological Processes or Natural Systems	
P4.1 natural areas acting as stepping stones in a Regionally Significant Ecological Linkage	500m wide axis line from Perth Metropolitan Region Regional Ecological Linkages and South West Regional Ecological Linkages
Wetland, streamline, estuarine fringing and coastal vegetation	
P5.1 Conservation Category Wetland and Resource Enhancement Wetland plus 50m buffer	Geomorphic Wetland Mapping
P5.2 Environmental Protection Policy (Swan Coastal Plain Lakes) 1992 Lake plus 50m buffer	EPP 1992 SCP Lakes Policy Boundaries
P5.3 riparian vegetation plus buffer	Riparian Vegetation Surrogate; Hydro lines buffered and used to intersect with current remnant vegetation
P5.4 floodplain area plus buffer	Floodplain areas
P5.5 estuarine fringing vegetation	Hydrography – Estuarine
P5.6 coastal vegetation on foredunes and secondary dunes	Q3 & Q4 Soil Landscape Units; and Remaining Quindalup Soil Landscape Units within 150m of coastline.
Representation (Local)	
P6.1 of an ecological community with 10 per cent or less remaining within Mandurah	2010 Remnant Vegetation extent by Vegetation Complexes within Perth and Peel Regions by Local Government area
P6.2 of an ecological community with 30 per cent or less remaining within Mandurah	2010 Remnant Vegetation extent by Vegetation Complexes within Perth and Peel Regions by Local Government area

3.5 Specific Biodiversity Feature Targets

Targets for protection of specific biodiversity features ensure that the rare, special and critical parts of the landscape are conserved and biodiversity is maintained. These targets cover aspects such as:

- Threatened species and ecological communities;
- Wetland, estuarine, riparian and coastal vegetation; and
- Maintaining ecological linkage between natural areas.

Recommended Specific Biodiversity Feature Targets are presented in Table 7, with local examples and related legislation and policy.

These targets effectively provide a clearer, local policy on the Council's expectation with respect to protection of the rare and particularly special parts of the environment.

Each of these targets are based on accepted aspects of biodiversity conservation used by State Government, Environmental Protection Authority, WA Planning Commission and WALGA (Government of WA, 2000; EPA, 2010a; and WALGA and PBP (2004).

The intent of the Specific Biodiversity Feature Targets is to ensure that Council gives priority consideration to the protection of these values when considering development proposals, allocating resources or undertake in any other Council activity.

Monitoring the achievement of specific biodiversity feature targets is difficult, as the location of these features requires determination through site-specific ecological field survey. This reinforces the importance of adequate levels of ecological survey at the earliest possible stage of land use planning.



Table 7 Specific Biodiversity Features

Special Biodiversity Feature	Special Biodiversity Feature Target	Local examples	Relevant legislation and policy
Rare and Significant Species of Flora	All habitat of Declared Rare Flora is to be protected to retain that habitat within an ecologically viable natural area.	DRF in the City includes <i>Diuris drummondii</i> (Tall Donkey Orchid), a species which is also protected under the EPBC Act 1999 (Federal) as well; and <i>Eucalyptus argutifolia</i>	• Environmental Protection and Biodiversity Conservation Act 1999 • Environmental Protection Act 1986 (Environmental Protection (Clearing of Native Vegetation) Regulations 2004 • Wildlife Conservation Act 1950 • EPA Guidance Statement No 33 (Environmental Protection Authority, 2008) • Draft Policy Statement No 9: Conserving Threatened Species and Ecological Communities (Department of Conservation and Land Management, 2003)
	All natural areas that contain significant habitat for priority listed species and other significant species are to be protected within an ecologically viable natural area	There are twelve species of Priority listed flora currently known to occur in the Mandurah	• All natural areas that contain significant habitat for priority listed species and other significant species are to be protected within an ecologically viable natural area • There are twelve species of Priority listed flora currently known to occur in the Mandurah • EPA Guidance Statement No 33 (Environmental Protection Authority, 2008) • EPA Guidance Statement No 10 (Environmental Protection Authority, 2003) • Draft Policy Statement No 9: Conserving Threatened Species and Ecological Communities (Department of Conservation and Land Management, 2003)

Special Biodiversity Feature	Special Biodiversity Feature Target	Local examples	Relevant legislation and policy
Significant Species of Fauna: Western Ring-tailed possum	All verified habitat of WRT possums, consisting of naturally growing vegetation, is to be protected within ecologically viable areas.	WRT possums are known to occur in the southern part of Mandurah beyond Dawesville.	• Environmental Protection and Biodiversity Conservation Act 1999 • Wildlife Conservation Act 1950 • EPA Guidance Statement No 33 (Environmental Protection Authority, 2008) • EPA Guidance Statement No 10 (Environmental Protection Authority, 2003) • Draft Policy Statement No 9: Conserving Threatened Species and Ecological Communities (Department of Conservation and Land Management, 2003)
Significant Species of Fauna: Black Cockatoos: Breeding and roosting habitat.	It is the expectation that all verified breeding and roosting habitat is to be protected in ecologically viable natural areas on all lands	Confirmed breeding and roosting sites are recorded by DEC for Mandurah	• Environmental Protection and Biodiversity Conservation Act 1999 • Wildlife Conservation Act 1950 • EPA Guidance Statement No 33 (Environmental Protection Authority, 2008) • EPA Guidance Statement No 10 (Environmental Protection Authority, 2003) • Draft Policy Statement No 9: Conserving Threatened Species and Ecological Communities (Department of Conservation and Land Management, 2003)
Significant Species of Fauna: Black Cockatoos feeding habitat	Proposed targets seek to identify protection of feeding habitat for Carnaby's Black Cockatoo.	Potential feeding habitat	• Environmental Protection and Biodiversity Conservation Act 1999 • Wildlife Conservation Act 1950 • EPA Guidance Statement No 33 (Environmental Protection Authority, 2008) • EPA Guidance Statement No 10 (Environmental Protection Authority, 2003) • Draft Policy Statement No 9: Conserving Threatened Species and Ecological Communities (Department of Conservation and Land Management, 2003)

Special Biodiversity Feature	Special Biodiversity Feature Target	Local examples	Relevant legislation and policy
Significant Species of Fauna: All Other Specifically Protected Species and Species Listed in the EPBC Act	Habitat of all other significant species is to be protected where development is proposed. Where planning grounds are justified, protection may involve conservation covenants, zoning or reservation.		• As above
Threatened Ecological Communities (TEC) and Priority Ecological Communities (PEC)	All TEC or PEC are to be protected within an ecologically viable area. To protect the thrombolites of Lake Clifton, amend the Town Planning Scheme in line with the EPA's strategic advice for the Dawesville to Binningup area	Thrombolite ecological community at Lake Clifton; Acacia shrublands on taller dunes	• Environmental Protection and Biodiversity Conservation Act 1999 • Environmental Protection Act 1986 (Environmental Protection (Clearing of Native Vegetation) Regulations 2004 • EPA Guidance Statement No 33 (Environmental Protection Authority, 2008) • EPA Guidance Statement No 10 (Environmental Protection Authority, 2003) • Draft Policy Statement No 9: Conserving Threatened Species and Ecological Communities (Department of Conservation and Land Management, 2003)

Special Biodiversity Feature	Special Biodiversity Feature Target	Local examples	Relevant legislation and policy
Foreshores, Wetlands and Waterways	• Protect where development is proposed, all wetlands verified as CCW or REW (including estuarine foreshore wetlands) plus a buffer assessed to maintain ecological values. • Buffers are to be planned using the Draft Guidelines for the Determination of Wetland Buffers. • Protect all riparian vegetation associated with natural watercourses.	CCW and REW wetlands are mapped throughout the City, mapping available from the DEC.	• Water and Rivers Commission Position Statement: Wetlands (2001) • Wetlands Conservation Policy for Western Australia (Government of Western Australia, 1997) • EPA Position Statement No 4: Environmental Protection of Wetlands (Environmental Protection Authority, 2004) • Environmental Protection Act 1986 (Environmental Protection (Clearing of Native Vegetation) Regulations 2004 • EPA Guidance Statement No 33 (Environmental Protection Authority, 2008) • Statement of Planning Policy No 2: Environment and Natural Resources (Western Australian Planning Commission, 2003)
Ecological Linkage	• Ensure the impact of significant development proposals on ecological connectivity across the landscape is assessed by proponents using a recognised tool such as the SWBP Proximity Analysis Tool (Molloy et al, 2009). • Ensure proponents protect, restore or revegetate areas in proximity to SWREL axes	Refer to the SWREL mapping shown in Section 4.	• Australia's Biodiversity Conservation Strategy 2010-2030 (October 2010) • EPA Guidance Statement No 33 (Environmental Protection Authority, 2008) • Environmental Protection Bulletin No 8: South West Regional Ecological Linkages (October 2010) • Statement of Planning Policy No 2: Environment and Natural Resources (Western Australian Planning Commission, 2003)

Special Biodiversity Feature	Special Biodiversity Feature Target	Local examples	Relevant legislation and policy
Coastal Natural Areas	• Retain all natural areas of the Quindalup vegetation complex where they are in Good or better condition; • Where development is supported in the Quindalup vegetation complex, and sound planning grounds exist, protect remaining coastal areas through conservation covenant, zoning or reservation.		• EPA Guidance Statement No 33 (Environmental Protection Authority, 2008) • Statement of Planning Policy No 2.6: State Coastal Planning Policy (Government of Western Australia, 2003) • Position Statement – State Planning Policy No 2.6 State Coastal Planning Policy Schedule 1 Sea Level Rise (Western Australian Planning Commission, 2010) • Statement of Planning Policy No 2: Environment and Natural Resources (Western Australian Planning Commission, 2003) • Development Control Policy No 2.3: Public Open Space (Western Australian Planning Commission, 2002)

Mandurah Biodiversity Strategy

Part 4 - Biodiversity Protection Mechanisms

4.1 Overview

The Strategy has been prepared in the context of a range of mechanisms available by Council to identify and protect or retain significant environmental assets. However, often these actions are in response to a development proposal rather than having a strategic overview in the context of biodiversity.

Further, many actions are in response to an area that has been subject to rapid urban growth, despite very little additional changes to the zoning framework to increase the amount of urban zoned land having taken place for more than 15 years, with the most recent strategy sub-regional structure planning dating back to 1997.

The Inner Peel Region Structure Plan formed the basis for the Peel Region Scheme, and to a lesser extent Town Planning Scheme 3. As the area has undergone rapid population growth, and Local Natural Areas are more accessible to more people, they are receiving a higher level of scrutiny once development and subdivision proposals are being assessed.

The South Metropolitan Peel Structure Plan will replace the Inner Peel Region Structure Plan, whilst covering a larger area, is anticipated to provide specific direction with regards to the extent of urban development for the region. In this respect, it is not expected that there will be substantial additional urban land identified within Mandurah, Mandurah's role in the region is to ensure existing urban land is used efficiently and effectively; and provide significant regional employment, transport and social infrastructure.

Council has been able to achieve many outstanding outcomes in this context in recent years based on an ability and willingness to negotiate and seek a practical designed based solution for the particular site. Actions range from areas of core conservation

being identified and retained (together with an ultimate protection mechanism) such as at Frasers Mandurah, or being proactive in the subdivision design and layout with respect to engineering standards and drainage functions which seek to provide cost benefits to proponents. Whilst the protection of small stands of trees within pocket parks or individual significant trees within road reserves do not meet the terminology associated with biodiversity, these efforts should be recognised.

The Strategy seeks to ensure that these practices continue; albeit with identifying strategic biodiversity targets up front. Mechanisms to implement the protection targets will require this willingness to negotiate outcomes to continue; and operate in a positive environment.

The protection and retention targets in Section 5 are based on the following protection and retention mechanisms.

4.2 Government Acquisition

Acquisition of land by the State or Federal Government would represent the highest level of protection mechanism available with respect to biodiversity in Mandurah.

This action would be restricted to areas of national or regional significance, however given the efforts undertaken in the establishment of the Peel Region Scheme, and subsequently areas reserved as Regional Open Space, any further areas of acquisition are likely to occur outside of the state planning framework.

However a number of recommendations arising from the finalisation of the Peel Region Scheme make reference to the Regional Open Space adjacent to the Harvey Estuary, primarily outside the urban areas, require review. To date, no further actions have proceeded. It is anticipated at this time that any further acquisition would

need to rely of the implementation of any recommendations of the Environmental Protection Authority; or conversely any recommendations arising from the Strategic Assessment of Directions 2031 under the EPBC Act.

Given the above, the Strategy does not anticipate any significant protection or retention targets through this mechanism, short of Council lobbying to ensure areas of national and state significance are protected. Locations that are adjacent to Yalgorup National Park may be locations of such significance.

4.3 Council Acquisition

Since 2004 Council has been successful in acquiring two areas of bushland utilising existing reserve funds being:

- Lot 9014 Mulga Drive, Parklands; and
- Lot 590 Gum Nut Avenue, Dawesville

Council acquiring land under the recommendations of the Bushland Protection Strategy has the following attributes:

- It requires a prompt response to the availability of land. Although it is possible to identify the types of areas where purchases are seen as a priority to the retention of biodiversity, it is not possible to identify specific sites, as generally the property needs to be available on the open market and the timing of this cannot be predicted. It should be noted that, on occasions, properties can be acquired either by negotiation or by a direct approach to a landowner. In both cases, there is immediacy to the requirement to purchase.
- It is most effective where medium to small parcels of land are being considered. The goals of the Plan, to acquire 150 hectares and at the same time protect a range of different vegetation species, tends to promote this acquisition profile. The two acquisitions to date are consistent with this approach being 24 hectares for the Mulga Drive property; and 0.75 hectares for the Gum Nut Avenue property.

Funding the acquisition of land therefore, requires:

- Availability of funds to proceed with an acquisition should the

immediate need arise.

- A regular income stream to allow purchases. A regular stream would allow for the purchase of a bushland site every 3-4 years.
- Recognition that the City has financial resource limitations and, in order to achieve the best outcome, needs to focus on land which is zoned rural or rural residential and can be obtained at better prices than urban residential locations.

Since 2010/11 the City has transferred \$500,000 each year to a specific reserve for the purposes of bushland acquisition. The advantage of this action is that there is certainty over the cash stream available for bushland acquisition.

It is important to note, however, that this is not seen as an open-ended commitment and a review should be undertaken every three years as part of the budget process and reported to Council. In this way the success of the strategy can be regularly assessed. It should be noted that the transfer of funds to reserves has the effect of quarantining cash which would otherwise have been available for other purposes such as capital expenditure. The City's annual capital expenditure programme may, in the future, have to be rebalanced to achieve this strategic objective.

In October 2012, Council resolved the following to continue the annual transfer of \$500,000 to the Bushland Acquisition Reserve; notes that a report will be made every three years as part of the annual budget preparation on the effectiveness of the acquisition strategy and its funding and that the focus of the acquisition strategy will be on land which is zoned rural or rural residential under the City of Mandurah's Town Planning Scheme

Identifying individual sites is beyond the scope of the Strategy, however based on the above mentioned Council decision, and remains a valid protection mechanism.

4.4 Tax-Deduction for Donation of Land

The gifting of land for conservation for the purposes of becoming a tax deduction is a potential mechanism to protect and retain biodiversity.

To be eligible for tax-deductibility, the landowner gifts the land to a registered conservation body, for example the National Trust, and does not receive any additional material benefit other than a tax deduction for the value of donated land as currently zoned. The tax deduction can be spread over a 5-year period, and donations can also be made exempt from Capital Gains Tax.

Whilst tax-deductibility does not appear to be a highly attractive option for most urban developers, as evidenced by the low take-up, it may play a part in some situations where lands of high environmental value have been zoned urban, or may be zoned urban in the future. The greater the land value, the greater the tax deduction to the landowner. A number of sites in other local government areas have been a successful protection mechanism.

It is recommended that Council should ensure that this protection mechanism is recognised when negotiating protection of Local Natural Areas, especially those where the landowner may be keen to promote the environmental credentials of a development, and/or the local community has a strong interest in the protection of the subject Local Natural Area. However, at this stage, it is difficult to quantify this mechanism in establishing protection and retention targets given it is outside the scope of the land use planning framework.

4.5 Public Open Space Allocation

In accordance with long standing Western Australian Planning Commission policy, which at the present time in Liveable Neighbourhoods, for urban subdivisions, a minimum contribution of 10 per cent of the subdividable area must be given up free of cost by the subdivider for public open space.

Liveable Neighbourhoods recognises:

that public open space needs to achieve a balance between bushland and/or vegetation retention and provision of water management features with the provision of useable (ie unencumbered) open space. There is clear recognition by the WAPC of the value of natural features and conservation values as an integral part of a parklands appeal to the community. There needs to be a balanced approach that:

- improves land efficiency through the use of multi-purpose parks (eg shared sports fields with schools);
- maximises the use of smaller parks close to or in the core areas (town centres, neighbourhood centres) and locates larger parks nearer to the edges of neighbourhoods;
- provides for efficient and more sustainable urban structure through convenience, walkability and close proximity of useful parklands; and
- avoids where practical, the separation of communities into dislocated and unconnected precincts with unusable or fenced-off parklands.

Liveable Neighbourhoods allows for one-fifth of the public open space allocation (ie 2 per cent of the gross subdividable area) to be restricted open space such "as natural areas and cultural features; urban water management features; artificial lakes/permanent drainage ponds; and natural wetlands." This restricted use percentage may extended where an appropriate management plan in agreed by the WAPC in consultation with the local government and the subdivider, however public open space contribution will not be given for any land identified as restricted use above the two per cent.

A significant challenge in the delivery of public open space in new urban areas within Mandurah is primarily the potentially competing interests of biodiversity conservation, water management functions and active sporting fields at a district level, which are not adequately provided for in the land use planning system.

The Department of Sport and Recreation recently released a

report on the provision of active playing reserves in Perth- Peel. The study mapped 139 suburbs and looked at the various uses for our public open space including active (ie sports fields), passive (playgrounds etc), conservation and stormwater functions. The Department analysed the impact of changing policy settings since the Stephenson-Hepburn plan of the mid 1950's including the requirement for ten per cent public open space, the introduction of bush forever sites and, more recently, water sensitive urban design (WSUD).

The impact of the policy changes shows active open space (playing fields) falling from 15 per cent to 6.24 per cent of all open space. The big change is the increase in conservation areas which have risen from 21.47 per cent to 28.15 per cent of all public open space. Without a change to the relevant planning policies and without the State Government providing additional active open space as Regional Open Space, this shortage will continue.

At the present time, there are challenges within the Mandurah Central and Dawesville District areas with respect to the identification of active sporting fields, whilst identification of land in the Mandurah North has been undertaken, it is not yet secured.

Therefore, it is imperative that these active recreation requirements are identified and planned for in order to gauge an understanding of the areas available for biodiversity conservation.

There are very few Outline Development Plans (ODP) within Mandurah that have been subject to the level of detail that outlines restricted public open space or the need to quantify the difference between the two on the basis that all public open space is open and accessible by the public whether set aside for biodiversity conservation or not. Furthermore, many larger ODP's actually provide more than 10 per cent of the gross subdividable area, in recognition of the environmental assets that are attributed to the site.

The public open space allocation is the most significant mechanism for the protection of biodiversity in urban areas as land, through the subdivision process, where land is transferred from private

ownership to Crown reserve with the management vested to the City of Mandurah under Section 152 of the Planning and Development Act.

The Biodiversity Retention Targets have been prepared in acknowledgement of this key implementation mechanism, having regard to achievements from existing ODPs in existing and committed urban area in the application of areas that are subject to future ODPs.

4.6 Negotiated Outcome

A negotiated outcome for biodiversity protection and retention needs to complement the provision of public open space in urban areas; and the potential subdivision outcome for rural areas.

The success of a negotiated outcome will be subject to a range of factors, but primarily willingness to seek an improved outcome with respect to biodiversity conservation respecting existing development potential possible under the existing planning framework. Outcomes would generally expect the development potential to occupy a smaller footprint which would require a density and development requirements such as height to be higher than would otherwise be expected. Opportunities for outcomes such as these would also require favourable market conditions whereby the housing product results in a successful outcome for the landowner.

Conversely, a negotiated outcome may be required where sites become subject to a Controlled Action under the EPBC Act in order to ensure that a suitable urban form can be achieved based on the site's region and local context.

The Biodiversity Retention Targets have been prepared in acknowledgement of negotiated outcomes complementing the provision of public open space, particularly in urban areas.

4.7 Local Planning Scheme

A number of key actions arising from the preparation of a new or revised local planning scheme will assist in achieving biodiversity conservation. Specific recommendations relating to the zoning and

reservation of land are contained within Section 5 however more general modifications to Town Planning Scheme 3 (or a new planning scheme) include the following:

- Acknowledge Biodiversity Conservation in the Objectives of the Scheme (Clause 1.6);
- Acknowledge elements of the Strategic Planning Framework which includes this Strategy to ensure that determinations of the Council under the Scheme including decisions regarding development applications, Outline Development Plans and Activity Centre Precinct Plans are to be consistent with the Strategic Planning Framework;
- Reviewing Clause 6.5 Tree and Bushland Preservation Provisions to ensure that:
 - the objectives of the tree and bushland preservation provisions align with the targets of this Strategy;
 - revise the prescribed requirements of Clause 6.5, to include the Local Natural Areas as identified in this Strategy;
 - more clearly identify the areas subject to the tree and bushland preservation provisions, primarily through a Special Control Area rather than listing the areas subject to the provisions and requirements, and;
 - Revise the criteria for assessing applications to remove trees or bushland, to include reference to the targets in the Strategy.
- Create a local Conservation and Passive Reservation in the Scheme, with a description of the objectives of land included in such reservations; and subsequently modify the reserves identified in the Strategy accordingly.

4.8 Management of Reserves

The Management of Reserves is a primary protection and retention mechanisms particularly in existing urban and rural areas. However the City of Mandurah does manage some reserves that are within Regional Open Space, and in accordance with the definition of Local

Natural Areas and therefore not included in the Protection and Retention Targets. Therefore, efforts to improve the management of Natural Areas within Regional Open Space where the management of the reserve is within the City of Mandurah are in addition to the Protection and Retention Targets outlined in the Strategy.

At the present time, the City of Mandurah manages approximately 705 hectares of Natural Areas on Crown Reserves. 544 hectares is within Regional Open Space, with the balance, being 161 hectares, and therefore being Local Natural Areas. A majority of these Local Natural Areas will be zoned Urban and have Management Orders for a variety of purposes, but primarily Public Recreation.

4.8.1 Regional Open Space Reserved Land

The purpose of Regional Open Space is to “protect the natural environment, provide recreational opportunities, safeguard important landscapes and provide for public access”.

In order to provide a more efficient management of these reserves within Regional Open Space, Council should ensure, over time, that where the management of the reserve is vested with the City of Mandurah, that these management plans are prepared and endorsed by the WAPC.

The priority order to the progression of these management plans should reference the ecological prioritisation identified within the Strategy, together with additional social value criteria and in consultation with the Department of Planning, for the endorsement of the WAPC.

4.8.2 Local Reserves

For those reserves that are not Regional Open Space; and therefore local reserves that contain Local Natural Areas, Council should actively protect the reserves with biodiversity conservation values. This should be undertaken by considering the ecological values of these reserves that have been identified in the Strategy at a regional scale, along with other plans that are in place with regard to the

long-term use or development of these reserves.

These reserves currently have a variety of formal purposes as identified in the Management Order. Most are designated for the purpose of Public Recreation, and some may be subject to future planned recreational facilities. In many cases, reserves will be managed informally for conservation by the City of Mandurah or by partnership with a community group, such as Island Point. Conservation values of reserves may also be recognised by the Environmental Protection Authority. For example, approximately 135 hectares of Local Natural Areas in local reserves have been identified as a Peel Regionally Significant Natural Area.

Where a local reserve has significant conservation values, and there are no competing plans for its future use, it is recommended that Council requests a change in Management Order to Conservation and Passive Recreation consistent with the recommendations arising from the designation in the local planning scheme.

The creation of a Conservation and Passive Reserve recognises the primary values of these reserves and confirms the Council's approach to management and investment for conservation.

A preliminary analysis of local reserves with Local Natural Area has identified a number of reserves with native vegetation that should be considered for designation as Conservation and Passive Recreation Reserves as generally outlined in the District Plans in Section 5 of the Strategy.

This identification is preliminary in nature, and all sites should be confirmed on a case-by-case basis. The sites have been identified on the basis that they are a Crown Reserve managed by the City of Mandurah; and are not within Regional Reserved Land within the Peel Region Scheme.

Suggested criteria to assess local conservation significance are as follows:

- Bushland areas with the majority of bushland in Good or better condition.

- Any area with bushland in good or better condition, contiguous or adjacent to Regional Open Space or other lands managed for conservation.
- Area of known or likely habitat of rare or threatened native flora, fauna or ecological communities, or other significant fauna habitat.
- Areas of coastal vegetation or Tuart woodland in Good or better condition, or able to be rehabilitated to good condition
- Areas of special landscape significance
- Sites which are actively managed for conservation by the community; and
- Sites actively used for environmental education purposes.

4.7 Local Planning Scheme

The City carries out management planning, on-ground management and capital works in a significant number of bushland reserves and areas. Reserves for which the City has Management Orders include 575 hectares of Local Natural Area. In addition, the City manages other parts of these reserves including coastal and estuarine areas, including freehold land owned by the City that accounts for another 24 hectares of Local Natural Area.

The City estimates that active on-ground bushland management occurs in eighty reserves, as well as a further 20 sites on the Estuary and coastline. This is guided by forward annual planning schedules and over 30 individual management plans. On-ground management is supported by an \$800,000 annual budget and undertaken by six-person on-ground team.

To achieve a more effective result, it is recommended that Council approach natural area management more strategically, in somewhat of a similar way to the approach to built or road asset planning. This approach is recommended by the WA Local Government Association and is being used by a number of local governments.

Firstly, a prioritisation of reserve natural area value and rapid

assessment of threats should be undertaken. The relative ecological value of reserves can be based on the indicative prioritisation presented in Section 3.4 and could be adapted to incorporate local knowledge and community considerations.

Secondly, once reserves are prioritised in terms of ecological value and management needs, cost estimates of the most significant actions or on-going needs can be obtained. This can be presented as a 5-year forward plan. Management actions may fall into one of the following categories:

- Condition assessment and monitoring (e.g. weed mapping, dieback mapping);
- Reserve management planning (only reserve's with more complex management issues);
- Specific or special projects (including revegetation projects, capital infrastructure projects);
- On-going maintenance projects (weed control, feral animal control, dieback treatment management).

The benefits of this approach are that the Council's investments are supported by data and science, and there is greater confidence that the best biodiversity conservation outcomes are being achieved within available resources.

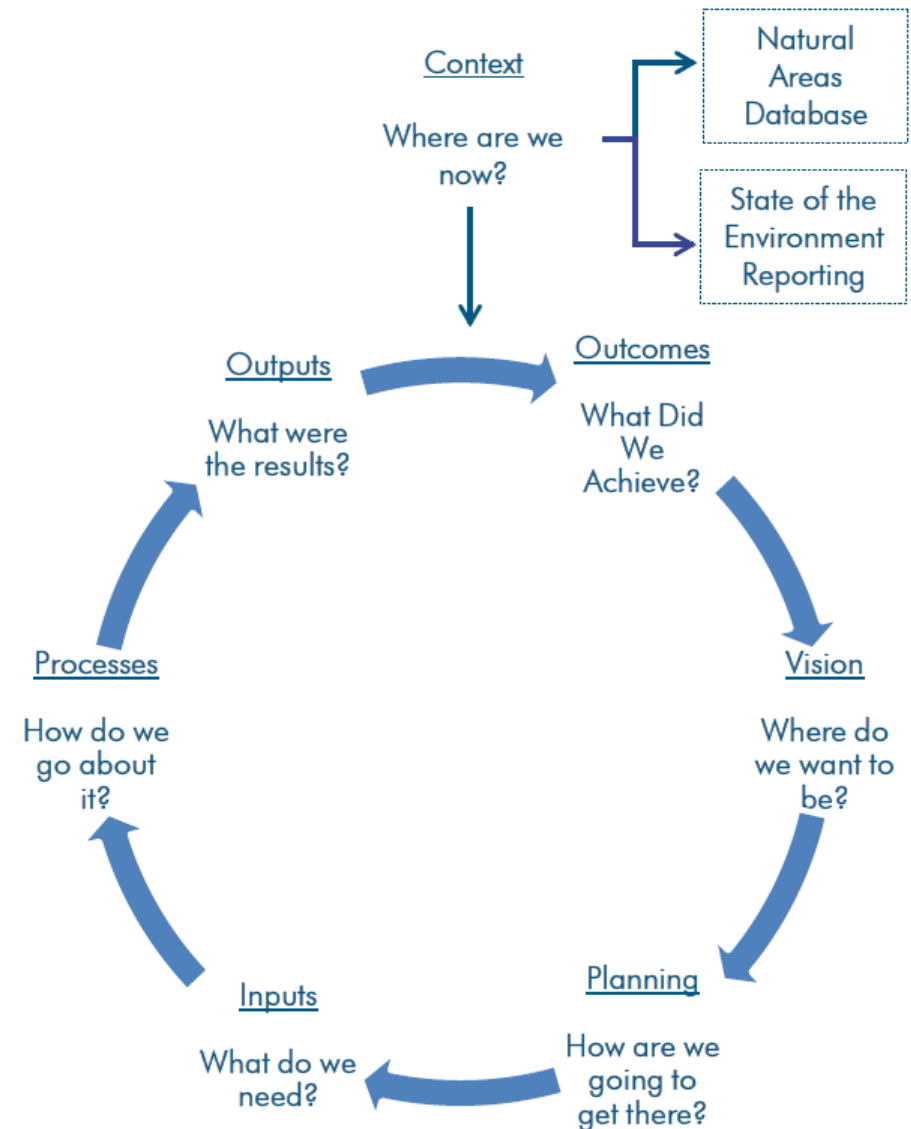
4.7 Local Planning Scheme

Specific reserve management plans are warranted where a reserve has significant conservation values, management issues, and/or complex interactions between user groups.

A large number of management plans for the Council's most significant reserves require update. The best way to monitor the natural areas on City managed Crown land is to build into the management plans a five-year feedback mechanism that provides data on the environmental condition and trends within the reserves as shown in Section 5.

As the Mandurah's landscape (land use) surrounding these reserves

Figure 7 Management Plan Cycle



changes, so will the pressures on those reserves. These impacts can go unnoticed or misdiagnosed if data on the biodiversity / natural environment in these reserves are not captured.

Management plans are integral to conservation of LNA on local reserves and should:

- (a) link back to the City's vision of sustainability;
- (b) evaluate the significance of the reserve both ecologically and socially;
- (c) include the existing state of the protected area and associated data, the expected level of environmental success when the Environmental Management Plan is next reviewed, what needs to be done to achieve this, how will this monitoring be conducted;
- (d) identify the issues such as the ecological pressures on the reserve;
- (e) set smart goals that are measureable and quantifiable (Smart goals are Strategic, Measurable, Achievable, Responsive to key issues/ requirements and Time-bound);
- (f) management plans need to be adaptive and provide management options (flexible);
- (g) be consultative with the public where reserves are openly used by the public for passive recreation; and
- (h) be reviewed after five years with achievement of goals and environment condition assessed.

Updating the current management plans and ensuring that they are reviewed every five years will enable Council to effectively plan and manage biodiversity on managed reserves. The data collected in the management plan cycle can be linked to the State of the Environment Report providing a measure of success or failure to conserve biodiversity through management procedures and or town planning decisions; providing an indicator for ecosystem health relating to land management / use decisions.

4.10 Environmental Data Management

A strategic approach to managing the natural assets within Mandurah involves the capture of environmental data and its management within a central data base system. As the Council increases its capacity to manage the environment, a feedback system of data capture, storage and analysis is required to inform levels of government on decision making and the State of the Environment Report.

Council reports on environmental data at two levels:

1. The areas of the environment that Council has direct responsibility for, such as reserves that are vested within the Council and management order is assigned to, and;
2. Areas that the City has indirect responsibility (reduced or no control of) such as Local Natural Areas on freehold land, regional climate variables, sea level rise etc.

Council's recently released State of the Environment Report provides the current status of the environment based on environmental variables and related trends. The Report is based on the available data, however, gaps in this data is acknowledged and preparing future Reports requires an adaptive mechanism to capture data on both the natural areas that Council has direct responsibility / management of as well as data related to a regional scale and beyond.

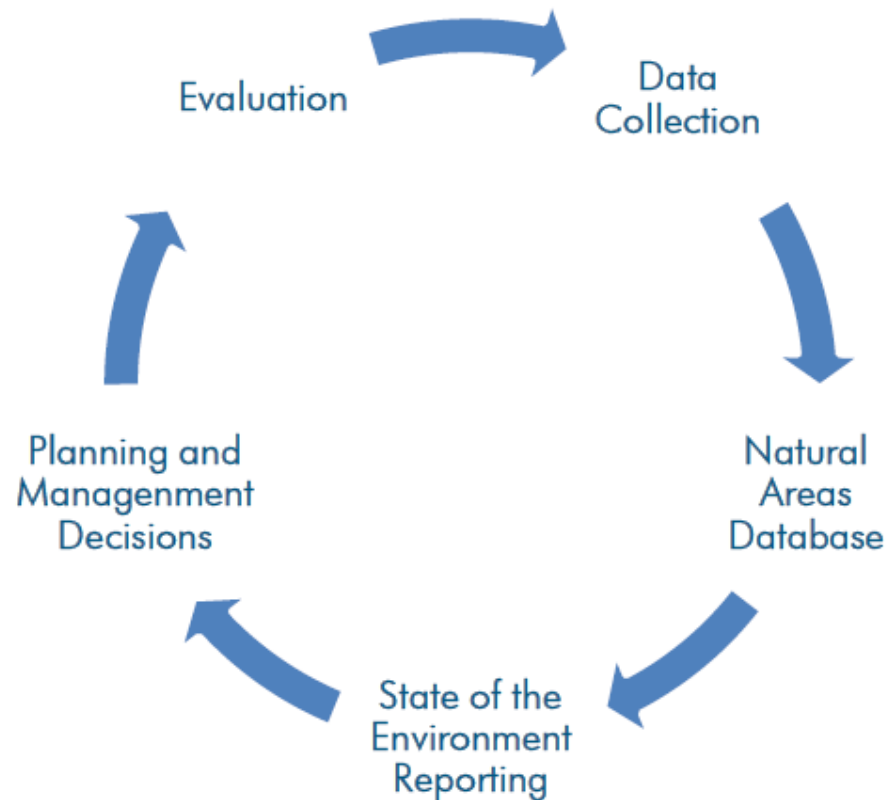
In supporting this structure, decision making in relation to on ground management and projected resources as well as policy development and planning outcomes, requires the development of a Natural Areas Data Base and resources to provide for its ongoing management and development.

The objectives of the Strategy are essentially the strategy's success criteria. From the time the Strategy is adopted, it is imperative that support for the Strategy's objectives are provided as to monitor and ensure its success is ongoing, firstly, on the retention and protection target of 83 per cent of existing Local Natural Areas, and

secondly, ensure the Local Natural Areas is of a condition to support the existing biodiversity, ecosystem function / services and special biodiversity features.

It is essential that retention and protection of Local Natural Areas are followed through with management support underpinned by robust data collection and data management which in principle provides the information required for adaptive management and the State of the Environment Report; which is Councils report card on the environment and success of attaining the Strategy's objectives.

Figure 8 Natural Areas Data Management Cycle



Mandurah Biodiversity Strategy

Part 5 - Biodiversity Targets

A key component of the Strategy is the identification of Protection and Retention Targets that have been prepared for the Local Natural Areas identified within Mandurah.

The achievement of these Protection Targets seeks to meet Objective 2 of the Strategy, and contribute to Objective 1, with the targets achieved through protecting Local Natural Areas through the land use planning framework.

The targets have been calculated based on the opportunities and constraints in various districts and individual precincts. The precincts identified throughout Mandurah cover most of the remaining natural areas on zoned lands. Precinct boundaries have been set based on common land zoning, status of planning approval, and the geographical location of the areas.

The precincts are designed to assist in the setting of protection targets, and identify areas of analysis and implementation of the Strategy.

Precinct Protection Targets have been proposed based on the prevailing opportunities and constraints for both development and biodiversity conservation in each given precinct. This includes consideration of both planning and biodiversity information, including:

- Current zoning of the site and the associated reasonable development expectations;
- stages of subdivision or Outline Development Plan for the site;
- known environmental features on the site, and available environmental studies;
- biodiversity specific feature targets likely to be met on site; and
- principles of sound biodiversity conservation.

On urban zoned land, a critical planning aspect is the presence and status of an Outline Development Plan (ODP) that may exist over a site.

Protection and retention targets for each precinct are presented in according to the district structure planning area in which the Precinct is located.

It is important to note that all precinct targets are preliminary only, and are subject to the confirmation of ecological values through on-site survey detailed on-site planning. The native vegetation mapping was provided in the South West Biodiversity Project and Perth Biodiversity Project between 2010 and 2011 and a 2010 native vegetation dataset produced by the Department of Agriculture and Food. The indicative prioritisation levels of vegetated natural areas has been provided by the Perth Biodiversity Project in 2011.

Council should endeavour wherever possible, to protect natural areas that are:

- a. At least four hectares in size;
- b. Compact in size and shape, with a low perimeter to area ratio;
- c. Have at least 75 per cent of their area in good or better condition; and
- d. Within 500 metres of another protected natural area and located within a local or regional ecological linkage.

The targets are designed to assist Council to establish benchmarks for natural area protection and ensure a balance between development and conservation that will achieve the Strategy's objectives and conserve the diversity of species and habitats currently found in Mandurah.

5.1 Mandurah North District Area

Summary

The Mandurah North District covers the localities of Madora Bay, Lakelands, San Remo and Meadow Springs. Gordon Road and Mandjoogoordap Drive are the district's major boundaries with surrounding districts.

It is expected to cater for the highest rate of future urban developed land in Mandurah, given there are a number of existing large landholdings remaining in the area.

The area is covered by the Mandurah North District Structure Plan, together with numerous Outline Development Plans, with the undeveloped and recently developed areas of the District being zoned Urban Development in Scheme 3.

Key Issues for the Mandurah North District include but are not limited to:

- Dealing with future urban development on the significant north-south coastal dune system on the western side of Mandurah Road;
- Ensuring future urban design of primarily residential subdivision reflects the location's attributes regarding levels and landform and existing significant trees and vegetation;
- Delivering an efficient transport system that respects Mandurah Road's regional and district level function, with regard to the timing of Road 'B'; access to public transport along Mandurah Road; the timing and location of signalised intersections; the development contributions towards signalised intersections; and the treatment of Mandurah Road within identified district town centre;
- Dealing with the interface between major roads and new development with regard to use of vegetated buffers and noise walls and the impact on visual amenity on the major roads and the effect on existing and new development adjacent to these roads.

District Biodiversity Protection and Retention Target

The Biodiversity Protection and Retention Target for the Mandurah North District are provided in Table 8, with further analysis and descriptions of the identified Precincts being provided below. For the balance of the District located outside the identified Precincts, a number of existing reserves have been identified for Protection Targets as identified on Table 8.

Recommended Planning Framework

1. That the Mandurah North District Structure Plan be modified to reflect the District and Precinct Biodiversity Protection Targets to guide future Outline Development Plan preparation and assessment in the District;
2. That areas of public open space within the District that are identified to provide for the District Biodiversity Protection Targets are included in a Passive Recreation and Conservation Reserve in Scheme 3.

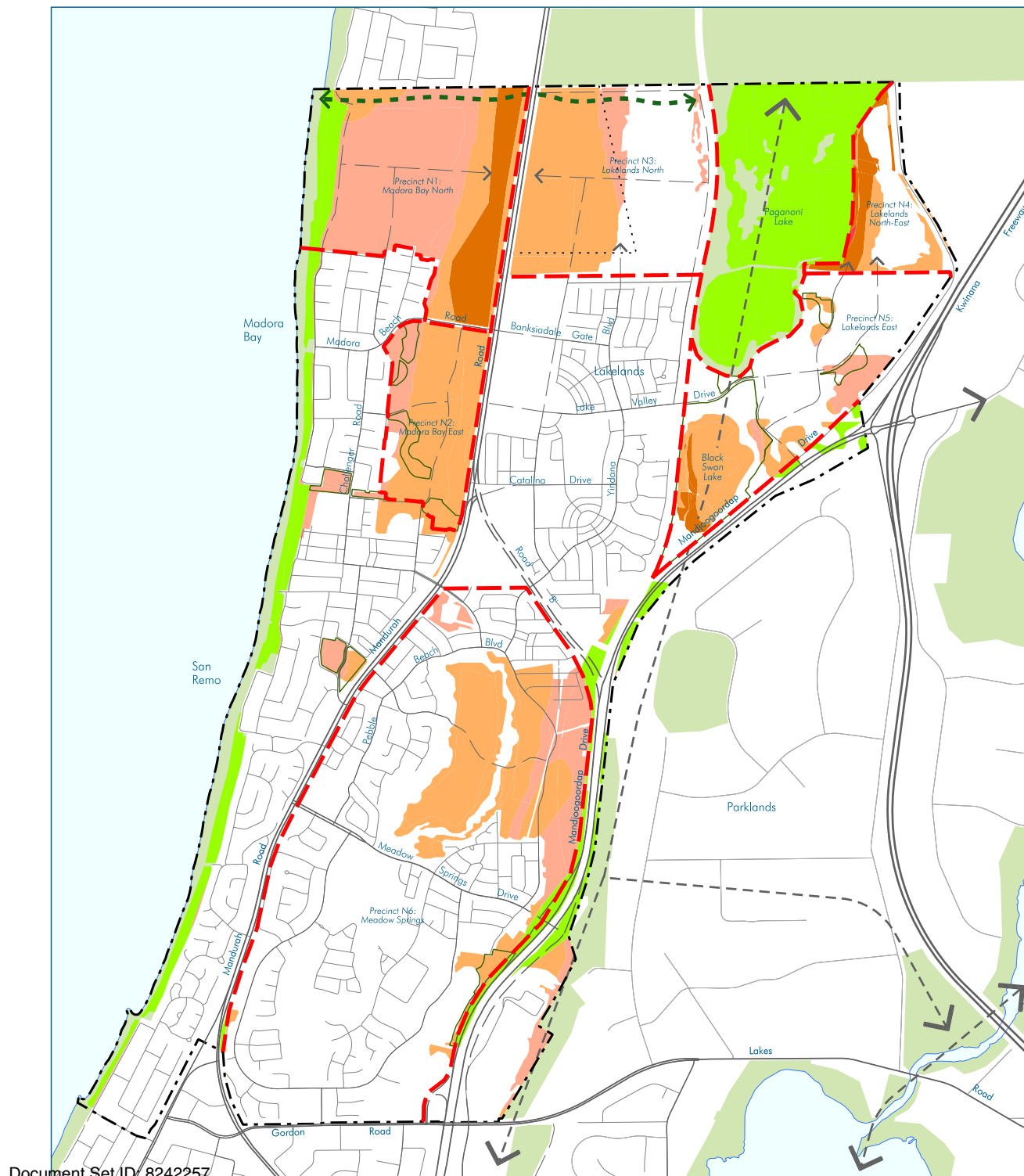
	Precinct N1: Madora Bay North	Precinct N2: Madora Bay East	Precinct N3: Lakelands North	Precinct N4: Lakelands North East	Precinct N5: Lakelands East	Precinct N6: Meadow Springs	Balance of District	Totals for District
Land Areas								
Total Area (ha)	121.0	59.0	120.0	38.0	112.0	446.9	825.0	1721.9
Net Area ¹	121.0 (ha)	59.0	120.0	38.0	112.0	446.9	508.0	1404.9
Local Natural Area (ha)	121.0	59.0	63.9	17.8	40.4	94.7	11.3	408.1
% LNA to Net Area	100.0%	100.0%	53.2%	46.8%	25.4%	21.1%	2.2%	29.0%
LNA Zoning								
Urban Zone (ha)	121.0	59.0	63.9	17.8	40.4	94.7	11.3	408.1
Targets								
Protection Target ² (ha)	9.0	8.5	4.0	8.3	40.4	5.6	6.0	81.8
% of Net Area	7.4%	14.4%	3.3%	21.8%	25.4%	1.2%	1.1%	5.8%
% of LNA	7.4%	14.4%	6.2%	46.6%	100.0%	5.9%	53.0%	20.0%
Retention Target ³ (ha)	0.0	0.0	0.0	0.0	0.0	19.4	0.0	19.4
% of Net Area	0.0%	0.0%	0.0%	0.0%	0.0%	4.3%	0.0%	1.4%
% of LNA	0.0%	0.0%	0.0%	0.0%	0.0%	20.5%	20.5%	4.8%
Implications								
Potential Clearing (ha)	112.0	50.5	59.9	9.5	0.0	69.7	5.3	306.9
Existing ODP ⁴	No	Yes	No	No	Yes	Yes	Y/N	

¹ Total area less Regional Open Space and Regional Road Reserved Lands

² Indicative Protection Target; Subject to Further Detailed Planning

³ Retention Target on Golf Course

⁴ Where an approved ODP is in place, proposed POS in Passive Recreation & Conservation Reserve



Context

- Natural Areas within Regional Reserved Land
- Rural / Urban Zone Boundary
- South West Regional Ecological Linkage

Transport and Movement

- Major Roads & Freeways
- District Roads
- Neighbourhood Connectors
- future roads shown dotted*

Local Natural Areas (Number of Ecological Criteria)

- 2 - 4
- 5 - 7
- 8 - 10
- 11 - 14

Recommendations

- Passive Recreation and Conservation Reserve (Existing and Proposed Reserves)
- East-West Ecological Linkage between Coast and Paganoni Lake System
- Precinct Boundary
- District Boundary

5.1.1 Precinct N1: Madora Bay North

Summary

The Madora Bay North precinct is identified as having native vegetation as a Regionally Significant Natural Area by the Environmental Protection Authority.

In regards to vegetation and ecological community types, the Precinct contains both Quindalup and Cottesloe Central and South Vegetation Complexes, with the Cottesloe Central and South complex occurring on the eastern side adjacent to the Mandurah Road. The condition of vegetation may have been impacted by past grazing, and this should be assessed as part of a comprehensive ecological and landscape survey and analysis.

The Precinct contains significant coastal landscape features, including dune crests of up to 28 metres AHD running generally in a north-south direction, following the previous Rural zone boundary.

The eastern quarter of the Precinct meets six or more of the local significance ecological criteria based on regionally-collected datasets. This is largely due to the presence of the poorly protected Cottesloe Central and South vegetation complex and the large size of the Precinct. Part of the Precinct also supports habitat of Priority listed Fauna.

Protection of the biodiversity values of the site is closely linked to protection of its landscape values. However, whereas the focus landscape feature is the dune ridgelines and slopes, current information on biodiversity values suggests that both the dunes and the vegetation to the east of the dunes have the most significant biodiversity values on the site.

Key features of the Precinct that require further analysis and protection mechanisms applied include the following:

- ridgelines and major dune features of the site are retained in natural state and protected. It is estimated that the major dunal system on the site covers approximately 23 hectares.
- an ecologically viable area of habitat of Priority Fauna and feeding

habitat for Carnaby's Black Cockatoo is protected, and

- at least one ecologically viable area of the Cottesloe Central and South vegetation complex in good or better condition is protected. In this regard, the minimum recommended size for an ecologically viable natural area would be in the order of 4 hectares or greater.

Protection of these assets would require a significant portion of the eastern portion of the site to be conserved (and managed for conservation) and would cover an area of approximately 28 hectares (subject to an on-site ecological assessment). This equates to 23 per cent of the Precinct.

Opportunities to protect significant areas of Local Natural Area within the Precinct are limited due to the area being zoned urban for future suburban development.

Precinct Biodiversity Protection Target

The Strategy recommends a **Biodiversity Protection Target of 9.0 hectares** (7 per cent of the Precinct).

On the basis of the Precinct needing to provide approximately 13 hectares of public open space, achieving a Protection Target of 9 hectares is a reasonable target given the significant features of the site.

It should be noted however, that areas of open space to achieve passive recreation, water management and other amenities will require a balanced approach to achieving this target.

An area that provides feeding habitat for Black Cockatoos should form part of this target.

Recommended Planning Framework

1. That the future Outline Development Plan for the Precinct be prepared consistent with the Precinct Biodiversity Protection Target, subject to the proponents carrying out an ecological assessment of natural areas on the site.

2. That areas of public open space within the Precinct that seek to retain areas covered by the Precinct Biodiversity Protection Target are included in a Passive Recreation and Conservation Reserve in the future Outline Development Plan; and within any future Local Planning Scheme that reflects the future development of the Precinct (ie at a time when the Outline Development Plan is no longer applicable to the Precinct).

5.1.2 Precinct N2: Madora Bay East

Summary

The Madora Bay East Precinct is covered by an approved Outline Development Plan, with the entire Precinct identified as a Local Natural Area. Many of the characteristics of the Madora Bay North Precinct are applicable to the Madora Bay East Precinct.

Precinct Biodiversity Protection Target

A Biodiversity Protection Target of 8.5 hectares (15 per cent of the Precinct) has been identified in the Strategy, consistent with the approved Outline Development Plan which has identified areas of public open space taking into account the key environmental assets of the Precinct.

Recommended Planning Framework

That areas of public open space within the Precinct that seek to retain areas covered by the Precinct Biodiversity Protection Target are identified as a Passive Recreation and Conservation Reserve in any modification to the Outline Development Plan; and within any future Local Planning Scheme that reflects the future development of the Precinct (ie at a time when the Outline Development Plan is no longer applicable to the Precinct).

5.1.3 Precinct N3: Lakelands North

Summary

This Precinct contains 63.9 ha of Local Natural Area (being 53.2 per cent of the 120 hectare Precinct Area), however these Local Natural Areas are likely to be in a degraded condition, due to past grazing and extractive operations that have been undertaken within the Precinct.

At the present time, zoning in the Peel Region Scheme is split between the Urban Zone (66.9 ha) and the Rural Zone (53.1 ha) with the Rural Zone covering the north-western third of the site. The draft Outer Metropolitan Perth and Peel Sub-Regional Strategy identifies the Rural Zone of the Precinct as being subject to future urban development.

The primary ecological features of the Precinct include some remnant mature tuart trees and an ecological connectivity that the Precinct provides between the coast line and Paganoni Swamp which forms part of a South West Regional Ecological Linkage (SWREL) and that provides north-south connectivity to the Serpentine River and Peel-Harvey Estuary.

Precinct Biodiversity Protection Target

A Biodiversity Protection Target of 4.0 hectares (3.3 per cent of the Precinct) has been identified in the Strategy. Subject to the results of on-site ecological survey and analysis, it is recommended that the 4.0 hectare target protect and restore an east-west ecological linkage across the site to provide connectivity for avifauna (birds, bats, flying insects etc) between the coast and the SWREL linkage.

This corridor should be, on average 40 metres wide, and extend the 1000 metres east-west length of the Precinct. The linkage should be closely integrated into the development and provide recreational opportunities, including playgrounds and informal parks, as well as increased amenity for neighbouring residences.

The key requirement for biodiversity would be to:

- provide key habitat areas including multi-structured vegetation, including large trees; and
- retain the majority of mature tuarts of the site within public open space or road verges.

The 4.0 hectare target compliments the Council's recreational planning needs for the District that are identified for the Precinct, and represents an achievable target for the Precinct.

Recommended Planning Framework

1. On the basis that the entire Precinct is zoned Urban in the Peel Region Scheme; and subsequently zoned Urban Development in Town Planning Scheme 3, that the future Outline Development Plan for the Precinct be prepared consistent with the Precinct Biodiversity Protection Target, subject to the proponents carrying out an ecological assessment of natural areas on the site.

2. That areas of public open space within the Precinct that seek to retain areas covered by the Precinct Biodiversity Protection Target are included in a Passive Recreation and Conservation Reserve in the future Outline Development Plan; and within any future Local Planning Scheme that reflects the future development of the Precinct (ie at a time when the Outline Development Plan is no longer applicable to the Precinct).

5.1.5 Precinct N5: Lakelands East

Summary

This 112 hectare Precinct includes an identified 40 hectares of Local Natural Area (25 per cent of the Precinct Area). Of this 40 hectares of Local Natural Area, 25 hectares is contained within the area of Black Swan Lake inclusive of the 30 metre wetland buffer.

The Outline Development Plan for the Precinct has recently been approved by Council following a revision of the previously approved Lakelands Outline Development Plan from 2000. This revised ODP has identified further areas of public open space which provides opportunities to protect mature marri (*Corymbia calophylla*) and tuart (*Eucalyptus gomphocephala*) trees within the Precinct. All of the

identified Local Natural Areas in the Precinct have been identified as potential Carnaby's Black Cockatoo feeding habitat by the Department of Environment and Conservation.

Precinct Biodiversity Protection Target

A Biodiversity Protection Target of 40.4 hectares (25 per cent of the Precinct) has been identified in the Strategy. This target is consistent with the approved Outline Development Plan for the Precinct which includes:

- 25 hectares for Black Swan Lake. Within the ODP, 50 per cent of the wetland is a public open space deduction, with the remaining 50 per cent being a public open space credit;
- A further public open space area of 11.6 hectares surrounding Black Swan Lake forming the necessary wetland buffer together with maximum tree retention, which was modified arising from further detailed design undertaken with the revised ODP from the previously approved ODP;
- A 2.5 hectare centrally located parcel of public open space, designed around mature trees as a landscape feature of the proposed development together with opportunities to retain and restore at least 2 hectares of feeding habitat for Carnaby's Black Cockatoo;
- A 1.3 hectare parcel of public open space in the northern area of the Precinct, designed around an existing water feature that also contained existing jarrah and marri trees.

Further opportunities within the Precinct to preserve biodiversity include the following:

- Ensure Black Swan Lake has a management plan and resources are allocated to carry out the necessary natural area management with the aim is to increase its ecological viability and passive recreational amenity. A requirement of the ODP is to ensure that a management plan is prepared and implemented at subdivision stage;
- Maximise retention of other mature marri and tuart trees within road reserves and other public spaces; and support the use of marri and tuart trees in the subdivision landscaping and revegetation programs.

Recommended Planning Framework

That areas of public open space within the Precinct that seek to retain areas covered by the Precinct Biodiversity Protection Target are identified as a Passive Recreation and Conservation Reserve in any modification to the Outline Development Plan; and within any future Local Planning Scheme that reflects the future development of the Precinct (ie at a time when the Outline Development Plan is no longer applicable to the Precinct).

5.1.4 Precinct N4: Lakelands North East

Summary

This Precinct is 38 hectares and located between Paganoni Swamp and the Kwinana Freeway. Most of the Precinct has been cleared through past grazing and sand quarrying, however there is 17.8 hectares (46.9 per cent of the Precinct) of Local Natural Area identified.

Approximately 14 hectares of the Local Natural Area is located adjacent to the Paganoni Swamp, which is identified as Regional Open Space in the Peel Region Scheme, however currently part of the private landholding. This vegetation provides an important buffer between the Lake and any future urban development, and is identified as Regional Significant Natural Area by the EPA.

Remnant vegetation in the Precinct appears to have been impacted by past grazing and management, but includes large mature marri trees (*Corymbia calophylla*) and other native vegetation. This vegetation provides potential feeding habitat for Carnaby's Black Cockatoo and is mapped as such by the Department of Environment and Conservation.

Precinct Biodiversity Protection Target

A Biodiversity Protection Target of 8.3 hectares (21.8 per cent of the Precinct) has been identified in the Strategy. Subject to the results of on-site ecological survey and analysis.

The priority for conservation is to:

- Protect the native vegetation adjacent to Paganoni Swamp to protect feeding habitat for Carnaby's Black Cockatoo. This could be achieved by providing an average width of 75 metres along the 1100 metre extent of the Regional Open Space. The vegetation currently has an average width 120 metres along ROS frontage; and
- Ensure that the on-site cockatoo feeding resource is maintained, or any loss mitigated, as part of the proposed development.

The key mechanism available to achieve the protection target is subject to confirmation of the wetland buffer for Paganoni Swamp commensurate with the Regional Open Space boundary on the basis that Paganoni Swamp is a Conservation Category Wetland and that necessary buffers are required to protect the regionally significant ecological values of the wetland.

Should further analysis confirm that the Regional Open Space boundary contains the necessary wetland buffer, protection mechanisms, to be explored as part of a future Outline Development Plan for the Precinct include the following:

- Allocation of public open space to Local Natural Area protection;
- State or Federal Government support on the basis of protecting a regionally significant wetland or Black Cockatoo habitat; and/or
- The cooperation of the site's developer. In this regard the site's landowner may be eligible for tax-deductibility for the gifting of land for conservation purposes, for any land that is set aside for conservation over and above standard legislative requirements.

Recommended Planning Framework

The future Outline Development Plan for the Precinct be prepared consistent with the Precinct Biodiversity Protection Target, subject to the proponents carrying out an ecological assessment of natural areas on the site; and confirmation of the location of the necessary wetland buffer to Paganoni Swamp.

5.1.5 Precinct N5: Lakelands East

Summary

This 112 hectare Precinct includes an identified 40 hectares of Local Natural Area (25 per cent of the Precinct Area). Of this 40 hectares of Local Natural Area, 25 hectares is contained within the area of Black Swan Lake inclusive of the 30 metre wetland buffer.

The Outline Development Plan for the Precinct has recently been approved by Council following a revision of the previously approved Lakelands Outline Development Plan from 2000. This revised ODP has identified further areas of public open space which provides opportunities to protect mature marri (*Corymbia calophylla*) and tuart (*Eucalyptus gomphocephala*) trees within the Precinct. All of the identified Local Natural Areas in the Precinct have been identified as potential Carnaby's Black Cockatoo feeding habitat by the Department of Environment and Conservation.

Precinct Biodiversity Protection Target

A Biodiversity Protection Target of 40.4 hectares (25 per cent of the Precinct) has been identified in the Strategy. This target is consistent with the approved Outline Development Plan for the Precinct which includes:

- 25 hectares for Black Swan Lake. Within the ODP, 50 per cent of the wetland is a public open space deduction, with the remaining 50 per cent being a public open space credit;
- A further public open space area of 11.6 hectares surrounding Black Swan Lake forming the necessary wetland buffer together with maximum tree retention, which was modified arising from further detailed design undertaken with the revised ODP from the previously approved ODP;
- A 2.5 hectare centrally located parcel of public open space, designed around mature trees as a landscape feature of the proposed development together with opportunities to retain and restore at least 2 hectares of feeding habitat for Carnaby's Black Cockatoo;

- A 1.3 hectare parcel of public open space in the northern area of the Precinct, designed around an existing water feature that also contained existing jarrah and marri trees.

Further opportunities within the Precinct to preserve biodiversity include the following:

- Ensure Black Swan Lake has a management plan and resources are allocated to carry out the necessary natural area management with the aim is to increase its ecological viability and passive recreational amenity. A requirement of the ODP is to ensure that a management plan is prepared and implemented at subdivision stage;
- Maximise retention of other mature marri and tuart trees within road reserves and other public spaces; and support the use of marri and tuart trees in the subdivision landscaping and revegetation programs.

Recommended Planning Framework

That areas of public open space within the Precinct that seek to retain areas covered by the Precinct Biodiversity Protection Target are identified as a Passive Recreation and Conservation Reserve in any modification to the Outline Development Plan; and within any future Local Planning Scheme that reflects the future development of the Precinct (ie at a time when the Outline Development Plan is no longer applicable to the Precinct).

5.1.6 Precinct N6: Meadow Springs

Summary

This 446 hectare Precinct includes an identified 94.7 hectares of Local Natural Area (21 per cent of the Precinct Area). A significant portion of this Local Natural Area is within areas that have been subject to recent subdivision activity or areas subject to current subdivision approvals, so the areas remaining at the time of writing will be significantly less. Further areas identified include existing areas and proposed areas of public open space; and the edges of the golf course.

Precinct Biodiversity Protection Target

A Biodiversity Protection Target of 5.6 hectares (1.2 per cent of the Precinct) has been identified in the Strategy, consistent with the approved Outline Development Plan which has identified areas of public open space taking into account the key environmental assets of the Precinct.

A Biodiversity Retention Target of 19.4 hectares (4.3 per cent of the Precinct) has been identified in the Strategy which is predominantly the Local Natural Areas identified within the golf course landholding.

Recommended Planning Framework

1. That areas of public open space within the Precinct that seek to retain areas covered by the Precinct Biodiversity Protection Target are identified as a Passive Recreation and Conservation Reserve in any modification to the Outline Development Plan; and within any future Local Planning Scheme that reflects the future development of the Precinct (ie at a time when the Outline Development Plan is no longer applicable to the Precinct).
2. That as part of a review of Scheme 3 that seeks to remove the Urban Development zone (and therefore removing the need for an Outline Development Plan) over the golf course that the Scheme identifies an appropriate zone that provides provisions that retain the existing vegetation in perpetuity; and/or refining the existing Tree Preservation and Bushland Preservation (Clause 6.5) of Scheme 3 to provide clearer and direct requirements.



5.2 Mandurah Central District Area

Summary

The Mandurah Central District covers the localities of Silver Sands, Mandurah and the northern section of Dudley Park, extends to the north-western area of Gordon Road, with Mandurah Road and Gordon Road being the major boundaries, and includes some areas on the eastern side of Mandurah Road to Bortolo Drive. The District is also the key employment and infill redevelopment area for the region.

The area is covered by the Mandurah Inner Area Strategic Plan and Gordon Road Precinct Structure Plan; however there is a recognised need through Council's draft Activity Centres Planning Strategy that a review of these plans is required.

Key Issues for the Mandurah North District include but are not limited to:

- Ensuring the primacy of the Mandurah City Centre with regard to retail and office development and employment in a manner that its urban form and scale represents the centre of Mandurah as a key regional city in a compact manner and that the mix of land uses represents a mixed use centre;
- Ensuring development along the major spines reflect the roads key activity corridors function, entrances to the city centre by being attractive, a mix of uses and a scale that respects the primacy of the City Centre;
- Using the existing grid nature of streets and key road connections to provide a safe, efficient and reliable public transport system that reflects the existing activity nodes, but focuses on the City Centre;
- Ensuring that amenity in the streetscapes reflects the area's redevelopment potential by ensuring that all modes of transport can be accommodated, including walking and cycling through a high quality path networks, and an extensive networks of street trees are provided;

- Dealing with changes to the coast due to the impacts of sea level rise, particularly for existing areas of Mandurah and Silver Sands and the treatment of development control issues;
- Identifying and retaining additional opportunities for passive and active public open space given the relatively low distribution of local parks within areas of significant redevelopment. In this context the Mandurah High School site is critical for the continued provision of active reserve space for organised sport;

District Biodiversity Protection and Retention Target

The Biodiversity Protection and Retention Target for the Mandurah Central District are provided in Table 9 with further analysis and descriptions of the identified Precincts being provided below. For the balance of the District located outside the identified Precincts, a number of existing reserves have been identified for Protection Targets as identified on Figure 10.

Recommended Planning Framework

1. That the proposed Mandurah Strategic (District) Structure Plan reflect the District and Precinct Biodiversity Protection Targets;
2. That areas of public open space within the District that are identified to provide for the District Biodiversity Target are included in a Passive Recreation and Conservation Reserve in Scheme 3 and/or Activity Centre Precinct Plans within the District, subject to the reserves identified balancing the active recreation needs of the region and the district

	Precinct C1: Central Park	Precinct C2: Education \ Greyhounds	Balance of District	Totals for District
Land Areas				
Total Area (ha)	23.0	38.8	1100.0	1161.8
Net Area 1 (ha)	23.0	38.8	976.5	1038.3
Local Natural Area (ha)	16.4	10.5	30.1	57.0
% LN to Net Area	71.3%	27.0%	3.0%	5.5%
LNA Zoning / Reserved				
Zoned Land ² (ha)	15.7	0.7	12.4	28.8
Reserved Land ³ (ha)	0.7	9.8	17.7	28.2
Targets				
Protection Target ⁴ (ha)	2.1	2.0	29.5	33.6
% of Net Area	9%	5%	3%	3%
% of LNA	12%	48%	98%	59%
Retention Target (ha)	0%	0%	0%	0%
% of LNA	0%	0%	0%	0%
Implications				
Potential Clearing (ha)	14.3	8.5	0.6	23.4
Existing ODP ⁵	Yes	No	Y/N	

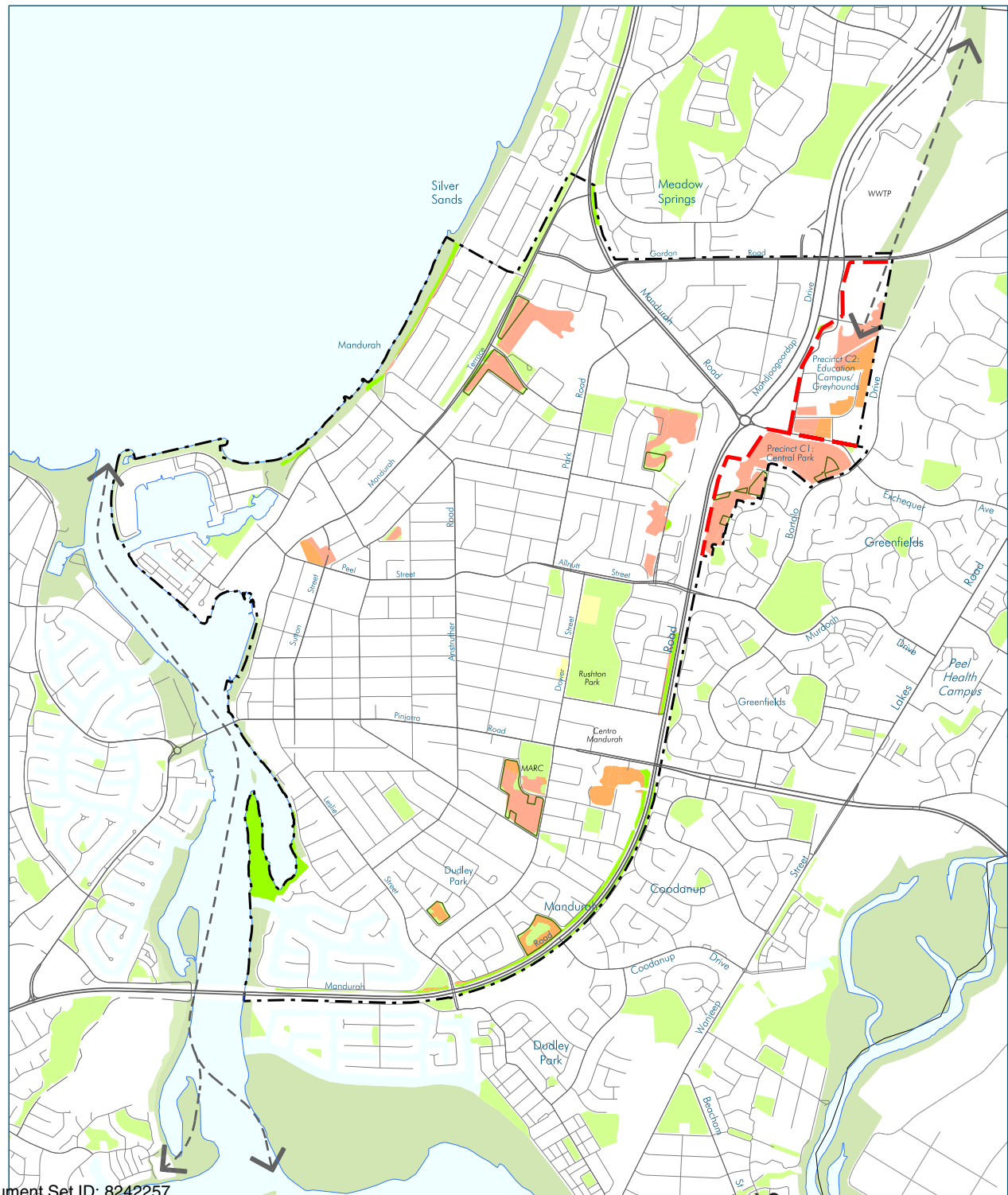
¹ Total area less Regional Open Space and Regional Road Reserved Lands

² Includes Urban & Private Recreation (Peel Region Scheme) & Urban Development Zone (Scheme 3)

³ Includes Public Purposes (Peel Region Scheme) & Local Recreation (Scheme 3) Reserved Land

⁴ Indicative Protection Target; Subject to Further Detailed Planning

⁵ Where an approved ODP is in place, proposed POS in Passive Recreation & Conservation Reserve



Context

- Natural Areas within Regional Reserved Land
- South West Regional Ecological Linkage

Transport and Movement

- Major Roads & Freeways
- District Roads
- Neighbourhood Connectors
- future roads shown dotted

Local Natural Areas (Number of Ecological Criteria)

- 2 - 4
- 5 - 7
- 8 - 10
- 11 - 14

Recommendations

- Passive Recreation and Conservation Reserve (Existing and Proposed Reserves)
- Precinct Boundary
- District Boundary

Figure 10
Mandurah Central District

5.2.1 Precinct C1: Central Park

Summary

This 23 hectare Precinct includes an identified 16.4 hectares of Local Natural Area (71 per cent of the Precinct Area). An Outline Development Plan has been approved for the Precinct with a mix of employment, commercial and medium to high density residential development proposed commensurate with the Precinct's Transit Orientated Development location, maximising the Precinct's central location adjacent to the Mandurah Transit Station.

The development arising from the Outline Development Plan is also subject to a Controlled Action under the EPBC Act. This approval allows the clearing of up to 14 hectares of Local Natural Area, with the approval conditioned in regards to on-site revegetation, public open space management, and the need for an Offsets Plan.

Precinct Biodiversity Protection Target

A Biodiversity Protection Target of 2.6 hectares (11.3 per cent of the Precinct) has been identified in the Strategy, consistent with the approved Outline Development Plan which includes 1.1 hectares of proposed public open space and 1.5 hectares of existing of public open space.

Recommended Planning Framework

That areas of public open space within the Precinct that seek to retain areas covered by the Precinct Biodiversity Protection Target are identified as a Passive Recreation and Conservation Reserve in any modification to the Outline Development Plan; and within any future Local Planning Scheme that reflects the future development of the Precinct (ie at a time when the Outline Development Plan is no longer applicable to the Precinct).

5.2.2 Precinct C2: Education Campus / Greyhounds

Summary

This 38.8 hectare Precinct includes an identified 10.5 hectares of Local Natural Area (27 per cent of the Precinct Area). However, 9.8 hectares of this Local Natural Area is located within the Public Purposes Reserved Land under the Peel Region Scheme for the Peel Education and Training Campus. The balance is located within the Mandurah Greyhounds landholding.

The Precinct is located within the Gordon Road Precinct Structure Plan which provides guidance over future development within the Precinct, with a focus on ensuring that land uses that are not compatible with the buffer for the Gordon Road Waste Water Treatment Plant are considered in the planning for the area.

Precinct Biodiversity Protection Target

A Biodiversity Protection Target of 2.0 hectares (5.1 per cent of the Precinct) has been identified in the Strategy. This protection target primarily seeks to ensure that a parcel of bushland within the Peel Education and Training Campus is retained in the longer term. This identification is consistent with the 2003 Master Plan for the Campus. The master plan also identified the land as "steeply sloping, making it unsuitable for significant development."

Recommended Planning Framework

That the area of bushland identified in the Master Plan for the Peel Education and Training Campus be included in any subsequent Precinct Plan and Council seeks to negotiate with the Department of Education a potential excision of the site for a Conservation Reserve.

5.3 Mandurah East District Area

Summary

The Mandurah East District covers the localities of Greenfields, Coodanup and the south-eastern portion of Dudley Park, with Mandurah Road and Mandjoogoordap Drive generally being the western boundary with the exception of some areas on the eastern side of Mandurah Road being included in the Mandurah Central District. Lake Goegrup and the Serpentine River form the eastern boundary.

Future development in Mandurah East District is generally some smaller scale subdivisions along Lakes Road (South) and completion of existing developments in Dudley Park and Coodanup, and of the urban districts, contains the widest range of zonings and residential densities.

Council's Mandurah East Structure Plan covers a small area of the district around the southern end of Lakes Road, however some components of this plan; and the function of this plan may be subject to review. A number of comparatively small Outline Development Plans are applicable in the District.

Key Issues for the Mandurah East area, include but are not limited to:

- Limiting development opportunities and outcomes adjacent to Lake Goegrup and the Serpentine River, whether there is direct frontage or foreshore reserve;
- Ensuring that development outcomes are maximised at the Peel Health Campus for health, employment and educational opportunities;
- Ensuring that additional neighbourhood road connections are provided for where identified notwithstanding existing land ownership boundaries and constraints;
- Identifying the suitable level and location of social infrastructure required to meet the area's needs, including active open space within the southern section of the District (Coodanup);

A large percentage of the Local Natural Area identified within the District is located within larger private and public school sites and within the Peel Health Campus. The balance is located within the remaining un-subdivided parcels of land.

District Biodiversity Protection and Retention Target

The Biodiversity Protection and Retention Target for the Mandurah East District are provided in Table 10, with further analysis and descriptions of the identified Precincts being provided below. For the balance of the District located outside the identified Precincts, a number of existing reserves have been identified for Protection Targets as identified on Figure 11.

Recommended Planning Framework

1. That the Mandurah East Structure Plan be modified to function as a District Structure Plan and includes the Biodiversity Protection Targets to guide future assessment in the District;
2. That areas of public open space within the District that are identified to provide for the District Biodiversity Protection Targets are included in a Passive Recreation and Conservation Reserve in Scheme 3.
3. That as part of a review of Scheme 3 that seeks to provide an appropriate zoning for the existing private schools in Mandurah (rather than the existing Community Purpose reserve) that the Scheme identify an appropriate provisions that retain the existing vegetation in perpetuity; and/or refining the existing Tree Preservation and Bushland Preservation (Clause 6.5) of Scheme 3 to provide clearer requirements regarding their application.

	Precinct E1: Frasers Mandurah	Balance of District	Totals for District
Land Areas			
Total Area (ha)	52.4	1212.6	1265.0
Net Area 1 (ha)	52.4	1174.2	1226.6
Local Natural Area (ha)	38.0	89.9	127.9
% LN to Net Area	72%	7%	10%
LNA Zoning / Reserved			
Zoned Land 2 (ha)	37.3	80.7	118.0
Reserved Land 3 (ha)	0.7	9.2	9.9
Targets			
Protection Target 4 (ha)	13.5	23.0	36.5
% of Net Area	26%	2%	3%
Retention Target (ha)	0.0	7.4	7.4
% of Net Area	0%	1%	1%
% of LNA	0%	8%	6%
Implications			
Potential Clearing (ha)	24.5	59.4	84.0
Existing ODP 5	Yes	No	

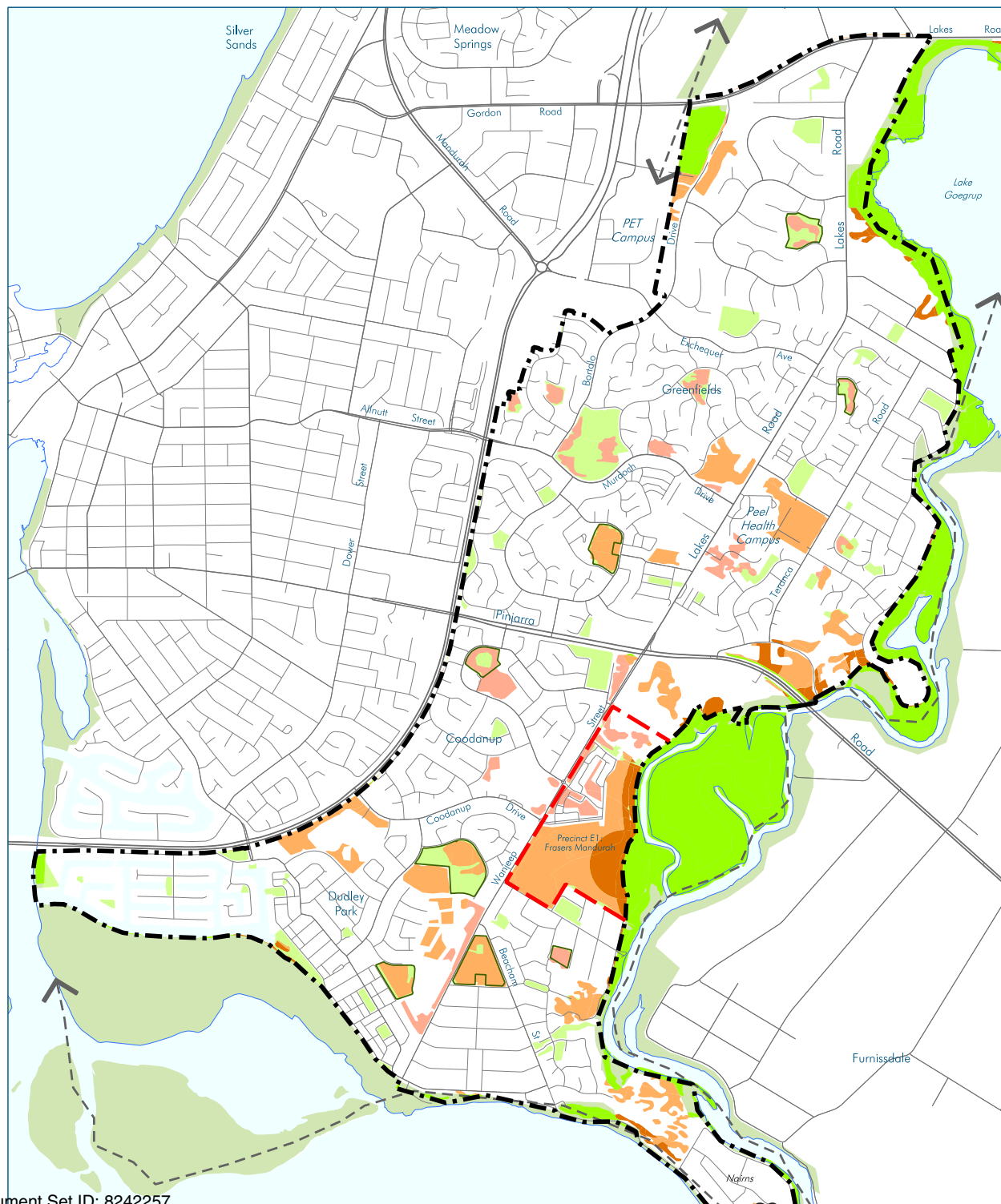
¹ Total area less Regional Open Space and Regional Road Reserved Lands

² Includes Urban & Private Recreation (Peel Region Scheme) & Urban Development Zone (Scheme 3)

³ Includes Public Purposes (Peel Region Scheme) & Local Recreation (Scheme 3) Reserved Land

⁴ Indicative Protection Target; Subject to Further Detailed Planning

⁵ Where an approved ODP is in place, proposed POS in Passive Recreation & Conservation Reserve



Context

- Natural Areas within Regional Reserved Land
- South West Regional Ecological Linkage

Transport and Movement

- Major Roads & Freeways
- District Roads
- Neighbourhood Connectors
- future roads shown dotted*

Local Natural Areas (Number of Ecological Criteria)

- 2 - 4
- 5 - 7
- 8 - 10
- 11 - 14

Recommendations

- Passive Recreation and Conservation Reserve (Existing and Proposed Reserves)
- Precinct Boundary
- District Boundary

Figure 11
Mandurah East District

5.4 Mandurah Island District Area

Summary

The Island District covers the localities of Halls Head, Erskine, Falcon and Wannanup, defined by the estuary channel entrance to the north and extends to and includes the Dawesville Channel, including areas on the southern side of the channel to Caddadup Reserve. Primarily, future development in the Mandurah Island is the completion of overall developments that have been undertaken over an extended period of time, therefore future development is akin to 'infill' development on 'green fields' sites.

The area is covered by the Perth to Bunbury Highway Estuary Bridge to Dawesville Bridge to Bridge Road and Land Use Study ('Bridge to Bridge' Study), while focused on road network improvements has, in a review of the plan, the opportunity to function as a District Structure Plan. Numerous Outline Development Plans and Precinct Plans are also applicable within the District

Key Issues for the Mandurah Island area, include but are not limited to:

- Ensuring that development at the Halls Head Town Centre does not detract from future retail development opportunities in the Mandurah City Centre;
- Delivering an efficient transport system that respects Old Coast Road's regional and district level function, with regard:
 - access and provision of public transport along Old Coast Road;
 - the timing and location of additional signalised intersections;
 - ensuring that neighbourhoods are connected via local roads to reduce reliance on Old Coast Road for local trips;
 - ensuring continuous cycleways are provided along both sides of Old Coast Road.
- Ensuring opportunities to create localised nodes of activity are identified to avoid the whole district being a continuous pattern of low rise, suburban, single use dwellings with high car

dependency, subject to the scale of development respecting its surrounds;

- Ensuring that opportunities for redevelopment at 'Old Halls Head', including Doddi's Beach and Robert's Point are undertaken in a place based, comprehensive manner rather than a landowner based and generic land use zoning approach;
- Ensuring that all new development adjacent to the coast and Peel-Harvey Estuary are setback a suitable distance to take into account impacts of sea level rise, public access to foreshores and protection of the environment, including a requirement that all new development is connected to reticulated sewer regardless of lot size and density;

District Biodiversity Protection and Retention Target

The Biodiversity Protection and Retention Target for the Mandurah Island District are provided in Table 11, where primarily a number of existing and proposed reserves have been identified for Protection Targets as identified on Figure 12.

Recommended Planning Framework

1. That the Bridge to Bridge Study be modified to function as a District Structure Plan; and modified to reflect the District and Precinct Biodiversity Protection Targets to guide future Outline Development Plan and subdivision assessment in the District;
2. That areas of public open space within the District that are identified to provide for the District Biodiversity Protection Targets are included in a Passive Recreation and Conservation Reserve in Scheme 3.

Table 11: Mandurah Island Biodiversity Targets

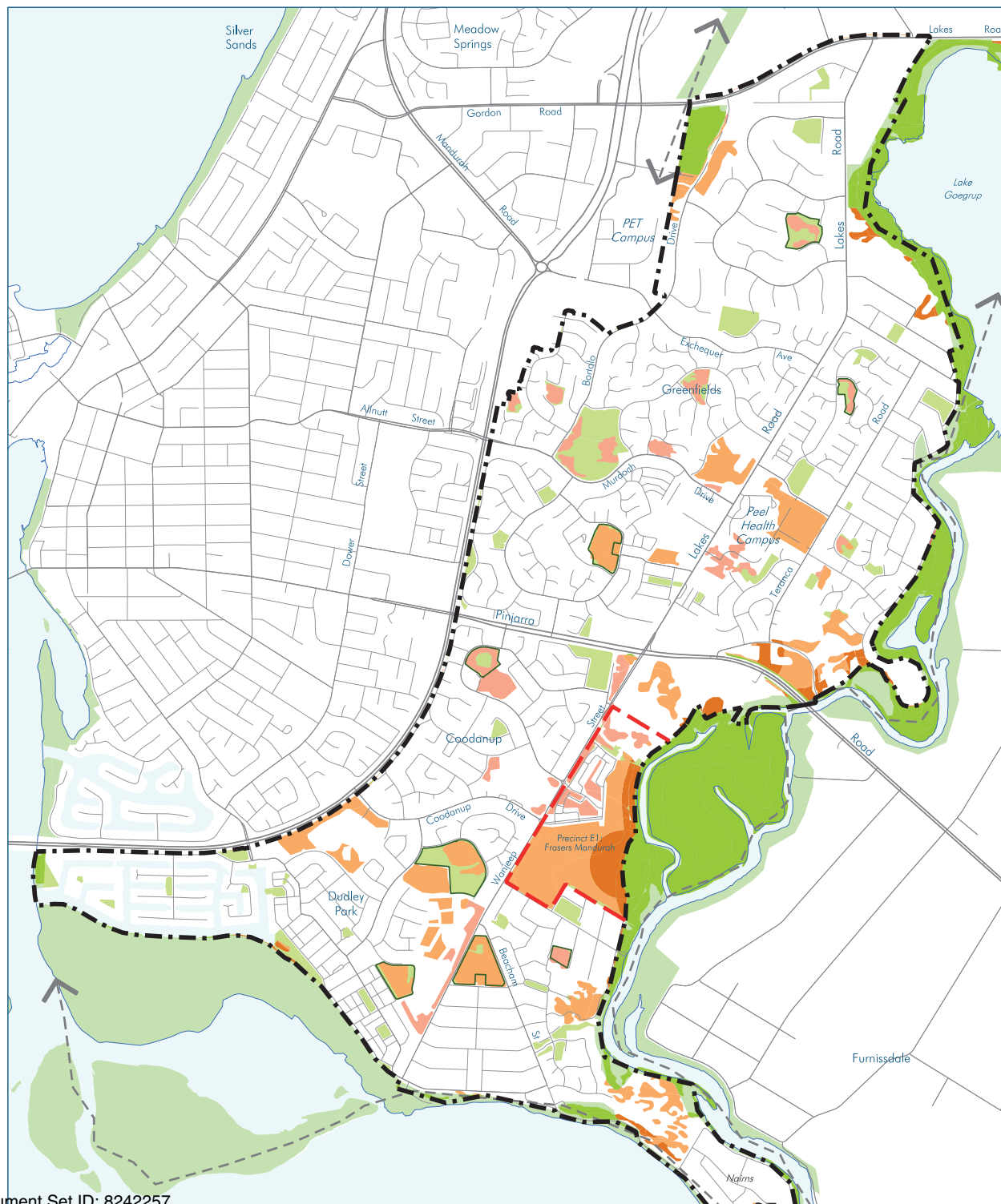
	Precinct E1: Frasers Mandurah	Precinct I2: Bridgewater North	Precinct I3: Southport / Channel Heights	Balance of District	Totals for District
Land Areas					
Total Area (ha)	15.5	29.8	77.4	2344.3	2467.0
Net Area 1 (ha)	15.5	29.8	50.8	1877.5	1973.6
Local Natural Area (ha)	15.5	25.4	10.3	69.9	121.1
% LN to Net Area	100.0%	85.0%	20.3	3.7%	6.1%
LNA Zoning / Reserved					
Zoned Land 2 (ha)	15.5	25.4	10.3	69.9	121.1
Targets					
Protection Target 4 (ha)	0.8	3.8	0.8	38.6	44.0
% of Net Area	5.1%	12.7%	1.6%	2.1%	2.2%
% of LNA	5.1%	15.0%	7.7%	55.5%	36.3%
Retention Target (ha)	0.0	0.0	6.4	11.8	18.2
% of Net Area	0.0%	0.0%	8.2%	0.6%	0.9%
% of LNA	0.0%	0.0%	62.1%	16.8%	15.0%
Implications					
Potential Clearing (ha)	14.7	21.6	3.1	19.5	58.9
Existing ODP 5	Yes	Yes	Yes	No	

¹Total area less Regional Open Space and Regional Road Reserved Lands

² Includes Urban & Private Recreation (Peel Region Scheme) & Urban Development Zone (Scheme 3)

³ Indicative Protection Target; Subject to Further Detailed Planning

⁴ Where an approved ODP is in place, proposed POS in Passive Recreation & Conservation Reserve



Context

- Natural Areas within Regional Reserved Land
- South West Regional Ecological Linkage

Transport and Movement

- Major Roads & Freeways
- District Roads
- Neighbourhood Connectors
- future roads shown dotted

Local Natural Areas (Number of Ecological Criteria)

- 2 - 4
- 5 - 7
- 8 - 10
- 11 - 14

Recommendations

- Passive Recreation and Conservation Reserve (Existing and Proposed Reserves)
- Precinct Boundary
- District Boundary

Figure 11
Mandurah East District

5.4.1 Precinct I1: Halls Head Town Centre

Summary

This 15.5 hectare Precinct includes an identified 15.5 hectares of Local Natural Area (100 per cent of the Precinct Area). A Precinct Plan has been approved for the Precinct due to its location within an identified Activity Centre, with development outcomes required to meet the requirements of State Planning Policy 4.2 (Activity Centres for Perth and Peel). Both the residential and commercial components of the Precinct Plan have been subject to previous assessments under the EPBC Act due to the nature of the vegetation being breeding habitat for black cockatoos.

The current endorsed Precinct Plan contains an 8000 square metre centrally located parcel of public open space which would generally be largely retained in a natural state, subject to landscape upgrades. In any modification to the Precinct Plan or subdivision layout, Council should seek retention of this area of public open space for the Precinct.

Precinct Biodiversity Protection Target

A Biodiversity Protection Target of 0.8 hectares (1.6 per cent of the Precinct) has been identified in the Strategy, consistent with the approved Precinct Plan.

Recommended Planning Framework

That areas of public open space within the Precinct that seek to retain areas covered by the Precinct Biodiversity Protection Target are identified as a Passive Recreation and Conservation Reserve in any modification to the Outline Development Plan; and within any future Local Planning Scheme that reflects the future development of the Precinct (ie at a time when the Outline Development Plan is no longer applicable to the Precinct).

5.4.2 Precinct I2: Bridgewater North

Summary

This 29.8 hectare Precinct includes an identified 25.4 hectares of Local Natural Area (85 per cent of the Precinct Area).

An Outline Development Plan has been approved for the Precinct primarily for a residential development, albeit with a number of taller apartment buildings proposed. As part of the ODP assessment, including assessment under the EPBC Act, identified a number of areas for future areas of public open space, including a 1.5 hectare linkage between the estuary foreshore and the existing north-south lake system, which has an average width of 30 metres; and an additional 2.2 hectares of public open space as an extension to the existing Regional Open Space boundary.

Precinct Biodiversity Protection Target

A Biodiversity Protection Target of 3.8 hectares (12.5 per cent of the Precinct) has been identified in the Strategy, consistent with the approved Outline Development Plan which has identified areas of public open space taking into account the key environmental assets of the Precinct. Any modification to the ODP is to retain, if not expand on the areas of Local Natural Area protected.

Recommended Planning Framework

That areas of public open space within the Precinct that seek to retain areas covered by the Precinct Biodiversity Protection Target are identified as a Passive Recreation and Conservation Reserve in any modification to the Outline Development Plan;

5.4.3 Precinct I3 Southport / Channel Heights

Summary

This 77.4 hectare Precinct includes an identified 10.3 hectares of Local Natural Area (20 per cent of the Precinct Area).

Two Outline Development Plans are applicable within this Precinct that is bisected by Old Coast Road, and has the Dawesville Channel as its northern boundary and Caddadup Reserve as its southern boundary. A key feature of the development contained within the Precinct is the northern golf course holes of The Cut Golf course.

Precinct Biodiversity Protection Target

A Biodiversity Protection Target of 0.8 hectares (2.1 per cent of the Precinct) has been identified in the Strategy, consistent with the approved Outline Development Plans which have identified areas of public open space taking into account the key environmental assets of the Precinct.

A Biodiversity Retention Target of 6.4 hectares (8.2 per cent of the Precinct) has been identified in the Strategy which is predominantly the Local Natural Areas identified within the golf course landholding.

Recommended Planning Framework

1. That areas of public open space within the Precinct that seek to retain areas covered by the Precinct Biodiversity Protection Target are identified as a Passive Recreation and Conservation Reserve in any modification to the Outline Development Plan; and within any future Local Planning Scheme that reflects the future development of the Precinct (ie at a time when the Outline Development Plan is no longer applicable to the Precinct).
2. That as part of a review of Scheme 3 that seeks to remove the Urban Development zone (and therefore removing the need for an Outline Development Plan) over the golf course that the Scheme identify an appropriate zone that provides provisions that retain the existing vegetation in perpetuity; and/or refining the existing Tree Preservation and Bushland Preservation (Clause 6.5) of Scheme 3 to provide clearer and direct requirements.



5.5 Dawesville District Area

Summary

The Dawesville district primarily covers the Dawesville locality, and extends south to include portions of Bouvard. Notably, the district covers the southern extent of urban land in Mandurah. The northern boundary is Caddadup Reserve and the southern boundary is the southern point of the 'Parkridge' area.

No overall strategic Structure Plan applies to the District, however a number of Outline Development Plans are applicable in the District. The District also contains a mix of Urban and Rural zoned land in the Peel Region Scheme. The City of Mandurah expects that some of this Rural zoned land may come under scrutiny as part of the South Metropolitan Peel Structure Plan, and therefore, the recommendations of the Strategy will assist in providing Council's input into this Structure Plan.

Key Issues for the Dawesville area, include but are not limited to:

- Identifying suitable planning mechanisms through zoning, development control and design outcomes in regard to retaining the character of old Dawesville;
- Identifying and securing an additional location for district active sporting reserves in order to fulfil the requirements of the Peel Region Sport and Recreation Facilities Plan;
- Determining the appropriate scale, form and nature of development on the remaining parcels of undeveloped urban land noting their identification as regionally significant natural areas.

District Biodiversity Protection and Retention Target The Biodiversity Protection and Retention Target for the Dawesville District are provided in Table 12, where primarily a number of existing and proposed reserves have been identified for Protection Targets as identified on Figure 13.

Recommended Planning Framework

1. That Council seek to prepare a Dawesville District Structure Plan that seeks to integrate the relevant issues to the future development and planning needs of the District, with the District and Precinct Biodiversity Protection Targets be included to guide future Outline Development Plan and subdivision design assessment in the District;
2. That areas of public open space within the District that are identified to provide for the District Biodiversity Protection Targets are included in a Passive Recreation and Conservation Reserve in Scheme 3.
3. That Council seek to rationalise the road reserve for Old Coast Road between Dawesville Road West and Fernwood Road by including identified Local Natural Areas within a Passive Recreation and Conservation Reserve in order to retain approximately 6.5 hectares of Local Natural Area.
4. That Lots 102 – 104, 3 – 5, 201 and 200 and 8 – 9 Estuary Road Dawesville be rezoned from Urban Development to Residential R5, together with these lots being included in identified Tree Preservation Areas under Clause 6.5 of Scheme 3 in order to retain approximately 3.5 hectares of Local Natural Area.

Table 12 Dawesville Biodiversity Targets

	Precinct D1: Florida	Precinct D2: Bailey Boulevard	Precinct D3: Tims Thicket Road North	Precinct D4: Tims Thicket Road South	Precinct D5: Dawesville South	Balance of District	Totals for District
Land Areas							
Total Area (ha)	114.5	40.1	17.1	27.9	131.4	560.4	882.4
Net Area ¹ (ha)	114.5	40.1	17.1	27.9	122.4	430.8	752.8
Local Natural Area ² (ha)	24.6	33.3	9.8	18.8	97.8	43.5	227.8
% LNA to Net Area	21%	83%	54%	67%	80%	10%	22%
LNA Zoning							
Urban Zone (ha)	24.6	33.3	0.0	0.0	66.7	43.5	168.1
Rural Zone (ha)	0.0	0.0	9.8	18.8	31.1	0.0	59.7
Targets							
Protection Target ³ (ha)	9.5	3.0	0.7	0.0	⁴ *	25.1	63.3
% of Net Area	8%	⁵ 7%	4%	0%	*	6%	8%
% of LNA	38%	9%	7%	0%	*	58%	28%
Retention Target ⁶ (ha)	0.0	0.0	8.8	18.2	*	4.9	31.9
% of Net Area	0%	0%	51%	65%	*	1%	4%
% of LNA	0%	0%	90%	97%	*	11%	14%
Implications							
Potential Clearing	15.1	30.3	0.3	0.6	*	15.0	134.1
Existing ODP ⁷	Yes	Yes	No	No	Yes	No	

¹Total area less Regional Open Space and Regional Road Reserved Lands

² 8.0 hectares are located on a future High School site; excluding this site there is 25.3ha of LNA

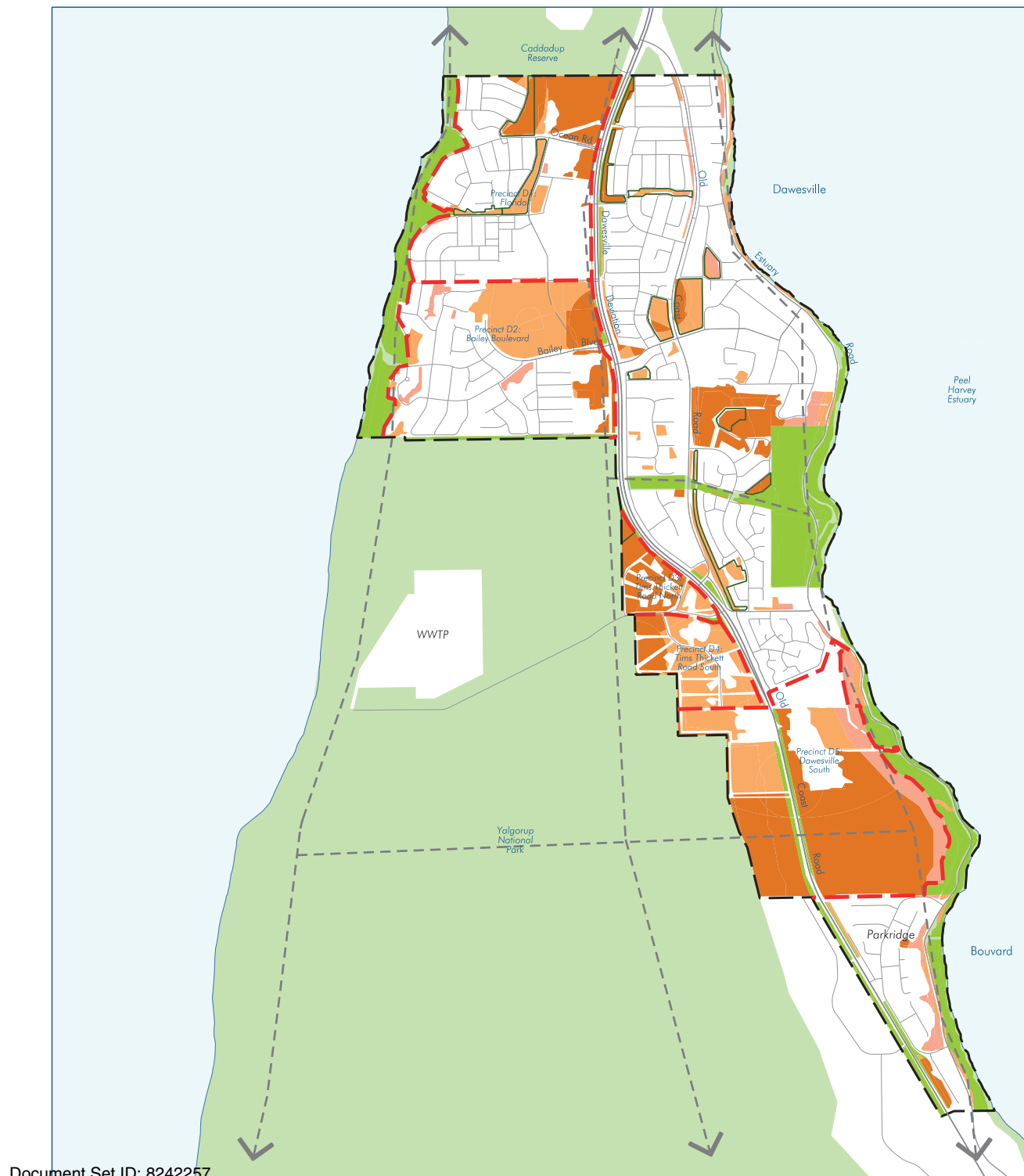
³ Indicative Protection Target; Subject to Further Detailed Planning

⁴ Target to be set based on detailed environmental assessment for the Precinct during a review of the Outline Development Plan.

⁵ Excluding the High School site the percentage of protection is 9.3%

⁶ Retention targets on large residential and rural residential lots

⁷ Where an approved ODP is in place, proposed POS in Passive Recreation & Conservation Reserve



Context

- Natural Areas within Regional Reserved Land
- South West Regional Ecological Linkage

Transport and Movement

- Major Roads & Freeways
- District Roads
- Neighbourhood Connectors
- future roads shown dotted

Local Natural Areas (Number of Ecological Criteria)

- 2 - 4
- 5 - 7
- 8 - 10
- 11 - 14

Recommendations

- Passive Recreation and Conservation Reserve (Existing and Proposed Reserves)
- Precinct Boundary
- District Boundary

Figure 13
Dawesville District

5.5.1 Precinct D1: Florida

Summary

This 114.5 hectare Precinct includes an identified 24.6 hectares of Local Natural Area (21.4 per cent of the Precinct Area).

An Outline Development Plan has been approved for the Precinct with approximately 13 per cent of the development area provided as or proposed public open space.

Precinct Biodiversity Protection Target

A Biodiversity Protection Target of 9.5 hectares (8.2 per cent of the Precinct) has been identified in the Strategy, consistent with the approved Outline Development Plan which includes an east-west and north-south linear corridor and a consolidated stand of tuarts at the northern end of the Precinct Area.

Recommended Planning Framework

That areas of public open space within the Precinct that seek to retain areas covered by the Precinct Biodiversity Protection Target are identified as a Passive Recreation and Conservation Reserve in any modification to the Outline Development Plan; and within any future Local Planning Scheme that reflects the future development of the Precinct (ie at a time when the Outline Development Plan is no longer applicable to the Precinct).

5.5.2 Precinct D2: Bailey Boulevard

Summary

This 40 hectare Precinct includes an identified 33.3 hectares of Local Natural Area (83.0 per cent of the Precinct Area). 8.0 hectares of this Local Natural Area is located on the proposed future High School site, leaving 25.3 hectares within this Precinct.

An Outline Development Plan has been approved for the Precinct for residential development following environmental extensive assessment of site under the federal, state and local environmental frameworks.

Precinct Biodiversity Protection Target

A Biodiversity Protection Target of 3.0 hectares (7.4 per cent of the Precinct; or 9.3 if the High School land is excluded) has been identified in the Strategy, consistent with the approved Outline Development Plan which includes a central area of public open space of 1.8 hectares and larger road reserves to provide for tree and vegetation retention.

Recommended Planning Framework

That areas of public open space within the Precinct that seek to retain areas covered by the Precinct Biodiversity Protection Target are identified as a Passive Recreation and Conservation Reserve in any modification to the Outline Development Plan; and within any future Local Planning Scheme that reflects the future development of the Precinct (ie at a time when the Outline Development Plan is no longer applicable to the Precinct).

5.5.3 Precinct D3: Tims Thicket Road North

Summary

This 17 hectare Precinct includes an identified 9.8 hectares of Local Natural Area (54.3 per cent of the Precinct Area).

The Precinct is currently zoned Special Use, with permitted uses and development standards being in accordance with the Rural Residential zone; however an R5 (2000 square metre lot size is applicable). Generally, lots are 1 hectare in size. The Precinct is zoned Rural in the Peel Region Scheme, meaning that the Town Planning Scheme 3 zoning is inconsistent with the Peel Region Scheme due to the residential density code that applies to the land. Under Section 124^① of the Planning and Development Act, a region planning scheme prevails in the case of inconsistency between a region planning scheme and local planning scheme.

Precinct Biodiversity Protection Target

A Biodiversity Protection Target of 0.7 hectares (4 per cent of the Precinct) has been identified in the Strategy, consistent with the existing reserve; A Biodiversity Retention Target of 8.8 hectares (51.4 per cent of the Precinct) has been identified in the Strategy; allowing for no further clearing on each of the lots with the exception of a 2000 square metre building envelope for the two vacant lots in the Precinct.

Recommended Planning Framework

That the Precinct be rezoned to Rural Residential in Town Planning Scheme 3 from the existing Special Use (R5) zoning ensuring that no further subdivision is permitted within this Precinct; and ensure that the local planning scheme zoning is consistent with Peel Region Scheme zoning of Rural.

5.5.4 Precinct D4: Tims Thicket Road South

Summary

This 27.9 hectare Precinct includes an identified 18.8 hectares of Local Natural Area (67.3 per cent of the Precinct Area).

The Precinct is a rural living area, with the zoning being Rural Residential in Town Planning Scheme 3. Lots are generally 2 hectares; and have a 2000 square metre building envelope. Due to the Precinct being located within the Coastal and Lakelands Planning Strategy, but outside the Lake Clifton Catchment, a 2 hectare minimum and 3 hectare average lot size is applicable.

Precinct Biodiversity Protection Target

A Biodiversity Retention Target of 18.2 hectares (96.8 per cent of the Precinct) has been identified in the Strategy allowing for the two vacant lots in the Precinct to clear a 2000 square metre building envelope.

Recommended Planning Framework

That the zoning of Rural Residential continue, subject to clarification over subdivision lot sizes due to conflicting presentation of provisions outlined in Table 7 of Scheme 3; and criteria regarding building envelopes and restrictions on clearing being more specific than current provisions.

5.5.5 Precinct D5: Dawesville South (Panorama)

Summary

This 131.4 hectare Precinct includes an identified 97 hectares of Local Natural Area. 5.7 hectares of the Precinct Area is the Old Coast Road reserve that divides the Precinct between the eastern portion, which is zoned Urban; and the western portion which is zoned Rural in the Peel Region Scheme. 66 hectares of the Local Natural Area is within the Urban zoned area and 31 hectares in the Rural zoned area. The Precinct forms a significant ecological connection between the Estuary and Yalgorup National Park.

There is a clear distinction between the condition of the Local Natural Area in the north and the south of the site due to clearing, understorey loss, and quarrying activities. The southern part of the Precinct has been identified as a Peel Regionally Significant Natural Area. The Precinct's vegetation is potential feeding habitat for Carnaby's Black Cockatoo; and has high ratings in respect to ecological prioritisation. The Precinct also contains undulating topography.

Current Planning Framework

Within Scheme 3, the eastern portion of the Precinct is zoned Urban Development with an Outline Development Plan having been approved over this area in 1999. As part of its assessment on the Peel Region Scheme, the EPA, through Bulletin 994 advised that it "acknowledged the land being zoned for residential purposes on Scheme 3, however it recommended that an assessment on the impacts on remnant vegetation be undertaken at subdivision stage to allow the EPA the opportunity to assess the detailed design of the subdivision to ensure significant vegetation is adequately protected within the subdivision design." Within the recommendations of Bulletin 994, the vegetation in the Precinct was a 'deferred factor'.

The western portion of the Precinct is zoned Rural Residential in Scheme 3. Due to the proximity of reticulated water, existing lot size requirements would be 1 hectare, meaning this portion could

be subdivided into 35 rural living lots, dependant on road and lot layout, with approximately 30 being located within identified Local Natural Area. This outcome would potentially result in 12 hectares of the 31 hectares of Local Natural Area being lost, with the balance (19 hectares) being potentially retained within private landholdings with no protection mechanism. The impacts of the 12 hectares being lost would be lessened if the minimum lot size was 2 hectares.

During 2010, the landowners undertook a planning design forum for the Precinct which resulted in the production of a concept plan for future urban development for the Precinct in its entirety. At this stage, no formal plans or proposals have been progressed, however the concept plan seeks to generate discussion regarding the future of the Precinct, particularly in regard to the potential for the western portion to be zoned Urban.

The EPA has made reference to the Precinct in its Section 16(e) advice for the Dawesville to Binningup area as follows:

"Other development interests in the area include rural and urban zoned land located at the northern boundary of the study area between Yalgorup National Park and the Harvey Estuary... any proposal for the urban zoned land that may have a significant impact on the vegetation is expected to be referred to the EPA. It is understood that the landowners are in the process of developing their proposal and undertaking environmental studies".

Key features of the Precinct that require further analysis and protection mechanisms applied include the following:

- the likely and/or confirmed feeding habitat for Carnaby's Black Cockatoo;
- the ecological linkage the site provides between the Yalgorup National Park and the Estuary;
- the site's Karrakatta Central and South vegetation Complex vegetation, a complex which is under-represented in the Perth-Peel regions; and
- the large un-fragmented portions of Local Natural Area, with

some being greater than 20 hectares and free of significant clearing tracks and incursions.

The protection of these biodiversity values should be the performance measures by which any future zoning, structure planning or subdivision proposals are considered in the Precinct.

Precinct Biodiversity Protection Target

Due to the above factors and due to the Environmental Protection Authority not having completed an assessment under Part IV of the Environmental Protection Act, a Biodiversity Target has not been identified in the Strategy.

It is however recognised that a negotiated outcome will be required over this Precinct with possible actions to achieve an appropriate outcome include the following:

- given consideration to an urban zoning on the western portion of the site, subject to potential outcomes of development supporting the increased protection targets for the whole Precinct; and other design issues relative to the site such as road networks, bushfire protection and like being satisfied;
- rationalisation of the Old Coast Road reserve (inclusive of the Peel Region Scheme Primary Regional Road reserve) subject to an assessment of the vegetation quality within this existing reserve;
- rationalisation of the existing Regional Open Space boundary if possible, subject to specific on-site investigation; and focusing on achieving protection targets of the whole Precinct;
- achieving an appropriate design outcome for the Precinct via negotiated outcome between the proponents and decision makers (including Council, Western Australian Planning Commission and the Environmental Protection Authority).

Achieving these outcomes may be best achieved by allowing urban development to occur on the western portion of the Precinct and focusing on outcomes across the whole Precinct rather than in separate segments. This will serve the primary objective of protecting

an ecological linkage in an east-west fashion. Due to the vegetation quality, and on site characteristics, this linkage would be located towards the southern area of the Precinct.

Recommended Planning Framework

That areas of public open space within the Precinct that seek to retain areas covered by the Precinct Biodiversity Protection Target are included in a Passive Recreation and Conservation Reserve in the future Outline Development Plan; and within any future Local Planning Scheme that reflects the future development of the Precinct (ie at a time when the Outline Development Plan is no longer applicable to the Precinct).

5.6 Parklands District Area

The Parklands District is a rural living area with a zoning of Rural Residential in Town Planning Scheme 3 and a Rural zoning in the Peel Region Scheme.

It has an area of 577 hectares and contains approximately 222 hectares of Local Natural Area being 38.4 per cent of the District. These Local Natural Areas are considered to be significant in the Mandurah context and it is recommended that priority be given to mechanisms available to ensure its long term protection and retention.

This is somewhat problematic due to the potential that the District could become urbanised in the medium and long term given its location in a regional context, however localised access, servicing and land assembly may provide a significant constraint to urbanisation. Further, a provision of Appendix 4 of Town Planning Scheme 3 states the following, despite, at this stage no regional or sub-regional planning of the Western Australian Planning Commission recognising or acknowledging the future urbanisation of Parklands:

"In the future, strategic planning of the District the whole of Areas 8 and 9 (the subject District) has been earmarked for future urban development and as such the Rural Residential Zoning provided in the Scheme is seen as an interim measure which is likely to change to "Urban Development" and "Residential" zones when the demand for further urban development generates a need for Areas 8 and 9 (the subject District) to be taken up for residential purposes.

That a structure plan be prepared showing how Areas 8 and 9 (the subject District) will be developed for urban residential development and in particular delineate the location of commercial, recreational, open space, school sites etc.

In the interim however, protection and retention of biodiversity is

problematic due to the existing minimum lot area of 2 hectare for the Rural Residential zone; or 1 hectare with 'Scheme Water'.

In recent years, lots in the southern portion of the District have been connected to scheme water and therefore are eligible to subdivide generally from 1 lot into 2. Piecemeal, ad hoc subdivision generally causes the degradation of the remaining vegetation through clearing, fragmentation, removal of understorey dieback, weed invasion and general increased development by virtue of additional building envelopes and firebreaks.

It is recommended that Council acts proactively, to protect the biodiversity values of the District before further fragmentation of its Local Natural Areas occurs. Tighter controls are required to reduce the cumulative impact of successive proposals.

Further to the above, the District is located adjacent to Lakes Road which over time, will be a significant east-west transportation corridor between Mandurah and the balance of the Peel Region which will place pressure on the land fronting this road to be used for more intensive land uses, which would need to be balanced against the proximity of this location to Lake Goergup and the Local Natural Areas identified in the Strategy.

A number of possible strategies could be explored to conserve biodiversity within the District such as:

- The preparation of a (statutory) Structure Plan with the aim of protecting biodiversity whilst allowing some subdivision. The plan could define the most significant areas of Local Natural Area which include bushland, ecological corridors, wetlands, important fauna habitat, as well as building envelopes, road and servicing requirements together with appropriate Lakes Road land uses due to its future regional function.
- The Structure Plan being supported by a conservation planning exercise that should

- e. verify the vegetation condition, types and habitat values of all Local Natural Areas,
 - f. identify significant or ecological viable Local Natural Areas, and measures to maintain their significance and ecological viability (e.g. restoration, revegetation, buffering, fencing etc);
 - g. define ecological connectivity requirements between significant Local Natural Areas, and measures to maintain or recreate this connectivity (restoration and revegetation).
- 3. Maintain ecological connectivity between regionally significant natural areas within and surrounding the District, preferably as near-continuous corridors, or where not possible, through protection of Local Natural Areas of at least 4 hectares with a low perimeter-area ratio, with maintaining connectivity north-south, east-west and between wetland and upland ecosystems being important for the range of species found in the area.
 - 4. Protect all Local Natural Areas that have high ecological viability, including all Local Natural Areas greater than 4 hectares within the constraints imposed by past clearing for lots, fences and firebreaks. Ecological viability is influenced by size and shape of area, perimeter to area ratio, condition of vegetation, and connectivity to other protected areas.

This recommended implementation mechanism should be pursued if the South Metropolitan Peel Structure Plan confirms the long term future of the District being Rural Residential.

Given this Structure Plan has a long term horizon (potentially 30 to 50 years) some interim measures should be considered, such as removing the current 1 hectare minimum lot size irrespective of the availability of services.

Precinct Biodiversity Protection and Retention Target

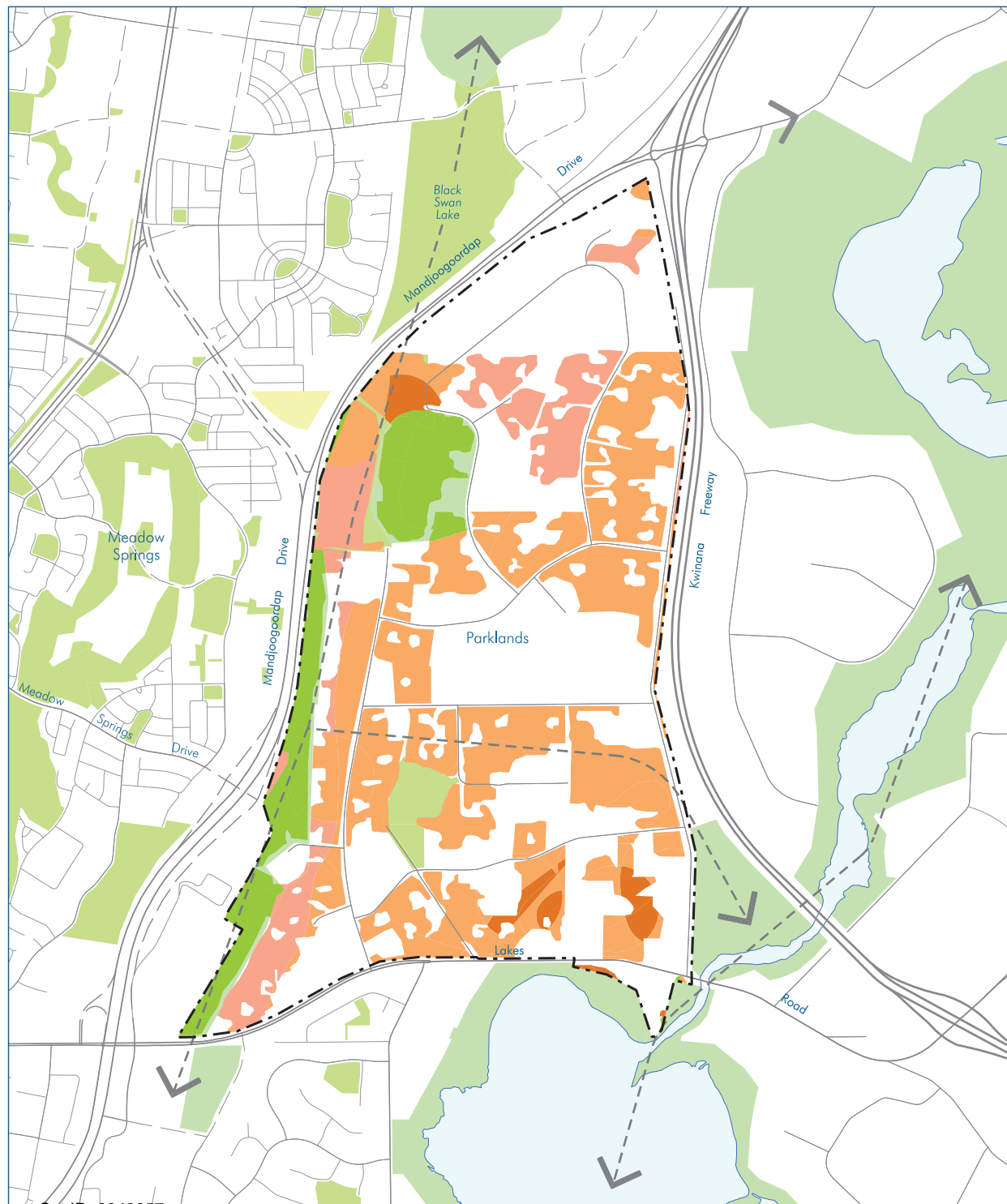
The Strategy recommends that the ultimate protection and retention targets be as follows:

- 1. Protect a minimum 70 per cent of the 222 hectares of Local Natural in the District which equates to protection of 155 hectares and retention of a further 22 hectares (10% within road reserves, drainage areas etc).
- 2. Protect all areas of confirmed Black Cockatoo habitat (all three Black Cockatoo species) in the District. Significant areas of potential feeding habitat for Carnaby's Black Cockatoo have been identified in the District, with an estimated 200 hectares of Local Natural Area mapped by the Department of Environment and Conservation potential Carnaby's feeding habitat (DEC, 2011).

Recommended Planning Framework

1. Given the current preparation of the South Metropolitan Peel Structure Plan, the above targets should be used as part of Council's input and submission into the Structure Plan, where by a strategic assessment of the vegetation and habitat values within Parklands to inform whether future long-term zoning of the land is retained with a Rural Residential zoning, or a future urban zoning is appropriate for this location;
2. As an interim measure (which could be in place for a 30 year period, subject to the outcomes of the South Metropolitan Peel Structure Plan, the Rural Residential zone provisions be modified so that no further subdivision is permitted in the zone; and that criteria regarding building envelopes and restrictions on clearing being more specific than current provisions, including the removal of the provisions in Appendix 4 of the Scheme Text which identifies the area as possible future urban.
3. This recommendation will result in a retention target of 216 hectares of Local Natural Area (being 97 per cent of the existing 222 hectares of Local Natural Area), on the basis that there are currently 15 vacant lots within Local Natural Areas and that 4000 square metres per lot of clearing is required for building envelopes and firebreak requirements for currently approved subdivisions where lots are not yet created.
4. Should the South Metropolitan Peel Structure Plan recommend the long term retention of the District as a Rural Residential / Rural Living area, that Council prepare a statutory Structure Plan to provide for the protection targets with the provisions of Town Planning Scheme requiring subdivision and development to be in accordance with the Structure Plan.





Context

- Natural Areas within Regional Reserved Land
- South West Regional Ecological Linkage

Transport and Movement

- Major Roads & Freeways
- District Roads
- Neighbourhood Connectors
- future roads shown dotted

Local Natural Areas (Number of Ecological Criteria)

- 2 - 4
- 5 - 7
- 8 - 10
- 11 - 14

- District Boundary

Figure 14
Parklands District



5.7 Southern Rural District Area

The Southern Rural District is located south of Dawesville between the coast and the Peel-Harvey Estuary. This District has a size of 6995 hectares, however once Regional Open Space, Waterways and Regional Roads are subtracted, has a net area of 3267 hectares. Within the District there is a total of 2276 hectares of Local Natural Area; which represents 70 per cent of the District; but also 75 per cent of Mandurah's total Local Natural Areas.

The District also contains a large portion of the Peel-Yalgorup System stretching over 60 km from north to south and approximately 10 km east to west. This complex ecosystem includes the Peel Inlet and Harvey Estuary, the Yalgorup National Park coastal environment and the inland saline Lake Clifton containing the rare thrombolite population. The Peel-Yalgorup System was designated as a wetland of international importance in 1990, when it was added to the Ramsar List under the International Convention on Wetlands (or Ramsar Convention).

The District is zoned Rural in the Peel Region Scheme, with a mix of Rural and Rural Residential zones in Town Planning Scheme 3. Of each of the District Areas, the Southern Rural District provides the greatest opportunity to provide for significant achievements in Biodiversity Protection and Retention Targets.

The key issues for the Southern Rural District include the following:

- Existing Town Planning Scheme 3 provisions for the Rural and Rural Residential Zones have been provided from an Local Rural Strategy text prepared in 1993; subject to inclusion of subdivision standards being in accordance with the Coastal and Lakelands Planning Strategy and EPA Bulletin 864 (Final criteria for Environmental Acceptability for Land Use proposals within the Catchment of Lake Clifton) requirements;

- The existing subdivision standards reference the Coastal and Lakelands Planning Strategy, however generally a 2 hectare minimum lot size has been applied, despite an average lot size requirement forming part of this Strategy, where the application and coverage of the average lot size requirements is not specified (such as a precinct or landownership basis);
- Existing Rural Zoned land is generally seen as a 'holding pattern' until rezoning occurs in a reactive manner due to the existing purpose and intent of the Rural Zone. To some degree this 'holding pattern' is reinforced by virtue of the provisions of the Coastal and Lakelands Planning Strategy and Council's Lake Clifton Herron Structure Plan. Notwithstanding, a 40 hectare minimum lot size is applicable in the Rural zone;
- Council's State of the Environment Report and the EPA's¹⁶ (e) Strategic Environmental Advice indicate that the environmental assets within the district are under threat and more stringent planning requirements are needed.
- The application of bushfire controls relative to subdivision, development and clearing outcomes that may conflict with bushland protection and retention priorities.

District Biodiversity Protection and Retention Target

The Biodiversity Protection and Retention Target for the Southern Rural District are provided in Table 13 and Figure 15. .

Recommended Planning Framework

1. That Council modify the provisions of Town Planning Scheme 3 to provide for clearly understood planning controls that seek to reduce the scope of responding to requests to rezone individual properties that seek to deliver outcomes in accordance with endorsed (strategic) structure plans; and revoke the existing Lake Clifton Herron Structure Plan.
2. Modify the Rural Residential zone provisions to ensure that all subdivision and development requirements are clearly outlined and seek to eliminate the need to cross reference existing broad policy and strategic plans in making determinations for subdivision and development, by primarily outlining the minimum lot size requirements;
3. Modify the Rural zone provisions to eliminate any reference to the purpose and intent of the zone being areas that are suitable for agriculture or general rural activity and land being suitable for rezoning for rural residential and residential development; and any reference to the 'local rural strategy';
4. Ensure that in modifying the Rural Residential zone and Rural zone subdivision and development requirements, that with the District and Precinct Biodiversity Protection and Retention Targets are used as a key reference point in determining the appropriate subdivision requirements, that seek to compliment and not replace the recommendations of the Coastal and Lakelands Planning Strategy.
5. Given the above the most appropriate response is to prepare a new Statutory Structure Plan to provide for the comprehensive zoning and land use framework for this District in order to address the above recommendations.

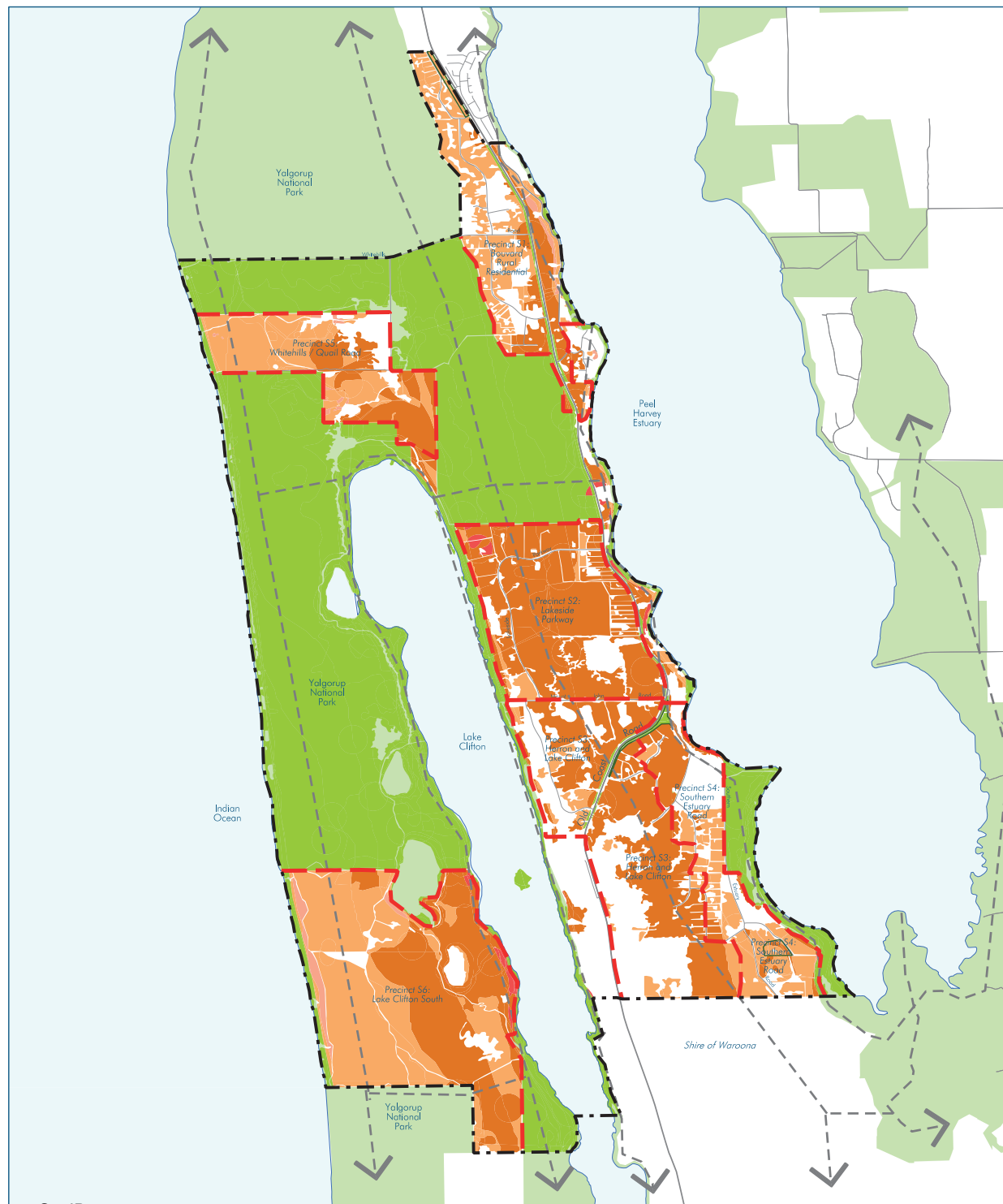
Table 13: Southern Rural Biodiversity Targets

	Precinct S1: Bouvard Rural Residential	Precinct S2: Lakeside Parkway	Precinct S3: Herron and Lake Clifton	Precinct S4: Southern Estuary Road	Precinct S5: White Hills / Quail Road	Precinct S6: Lake Clifton South	Balance of District	Totals for District
Land Areas								
Total Area (ha)	394.9	506.7	667.8	321.3	334.9	821.2	3948.2	6995.0
Net Area 1 (ha)	367.3	506.7	640.3	321.3	334.9	821.2	276.0	3267.7
Local Natural Area (ha)	234.8	417.6	367.8	199.7	274.0	759.7	52.9	2306.5
% LN to Net Area	63%	82%	58%	62%	82%	93%	19%	71%
LNA Zoning / Reserved								
Zoned Land 2 (ha)	234.8	417.6	367.8	199.7	274.0	759.7	52.9	2306.5
Targets								
Protection Target 4 (ha)	0.0	0.0	0.0	24.5	0.0	0.0	0.0	24.5
% of Net Area	0%	0%	0%	8%	0%	0%	0%	1%
% of LNA	0%	0%	0%	12%	0%	0%	0%	1%
Retention Target (ha)	230.0	413.9	355.1	175.2	274.0	759.7	52.9	2260.8
% of Net Area	63%	82%	53%	59%	82%	0%	19%	70%
% of LNA	98%	99%	96%	95%	100%	100%	100%	98%
Implications								
Potential Clearing (ha)	4.8	3.7	12.7	0.0	0.0	0.0	0.0	21.2

¹Total area less Regional Open Space and Regional Road Reserved Lands

² Indicative Protection Target; Subject to Further Detailed Planning

³ Retention targets on large residential and rural residential lots



Context

- Natural Areas within Regional Reserved Land
- South West Regional Ecological Linkage

Transport and Movement

- Major Roads & Freeways
- District Roads
- Neighbourhood Connectors
- future roads shown dotted*

Local Natural Areas (Number of Ecological Criteria)

- 2 - 4
- 5 - 7
- 8 - 10
- 11 - 14

Recommendations

- Passive Recreation and Conservation Reserve (Existing and Proposed Reserves)
- Precinct Boundary
- District Boundary

Figure 15
Southern Rural District



5.7.1 Precinct S1: Bouvard Rural Residential

Summary

This 395 hectare Precinct includes an identified 235 hectares of Local Natural Area (64 per cent of the Precinct Area). The western boundary of this precinct directly adjoins the Yalgorup National Park reserved as Regional Open Space and is within the catchment of the Ramsar listed Harvey Estuary. Vegetation within this precinct is fairly fragmented amongst established rural residential areas with lot sizes averaging 2 hectares with building envelopes cleared mostly in excess of 2000 square metres for domestic purposes. Clearing of vegetation in the Rural Residential zone is currently stringently restricted within Scheme 3 with development approval being required for any clearing including building envelopes and any ancillary removal.

All of the vegetated Local Natural Area within the precinct meet 4 ecological significance criteria with the entire area being identified as potential feeding habitat for Carnaby's Black Cockatoo (DEC, 2011).

Precinct Biodiversity Retention Target

A Biodiversity Retention Target of 230 hectares (98 per cent of the Local Natural Area within the Precinct) has been identified in the Strategy which is predominantly the Local Natural Areas dispersed across private rural residential properties outside of existing cleared building envelopes.

This equates to the 11 vacant and uncleared lots where a total of 4.84 hectares of Local Natural Areas will be cleared to facilitate construction of building envelopes and 4 metre wide perimeter boundary firebreaks per lot. This equates to 4400 square metres per lot with an average lot size of 2ha (22% of a lot), and 7,600 square metres of clearing per lot with an average lot size of 10ha (7.6% of the lot). All lands within this precinct have been subdivided to the current permitted minimum lot sizes allowed under the scheme so no new lots are to be created or cleared.

Recommended Planning Framework

That within the proposed Southern Mandurah Rural Structure Plan (as identified under the District Recommendation) the following provisions apply to this Precinct:

1. A minimum lot size of 5 hectares, which restricts further subdivision of lots within the Precinct;
2. Clearly identified building envelope provisions where undeveloped lots within approved subdivisions will be restricted to allowing clearing for building envelopes (2000 square metres), any extension to bushfire protection zones and 4m perimeter boundary firebreak requirements

5.7.2 Precinct S2: Lakeside Parkway

Summary

This 507 hectare Precinct includes an identified 417 hectares of Local Natural Area (82% per cent of the Precinct Area). The Precinct is located between Lake Clifton, the Yalgorup National Park and the Harvey Estuary. The entire Precinct is located within the Study Area of the EPA's strategic advice on the Dawesville to Binningup area (EPA, 2010b), where recommendation 3 states that 'Development on the eastern side of the Yalgorup lakes system is highly constrained'. Recommendation 6 also states that 'All existing vegetation on the eastern side of Lake Clifton must be retained and where degraded, rehabilitated'.

Most vegetated LNA in the Precinct's meet at least eight ecological significance criteria, of which at least four criteria have the backing of legislation or Government policy (PBP, 2011). All of the Precinct's vegetated LNA are mapped as potential feeding habitat for Carnaby's Black Cockatoo (DEC, 2011) and those lots fronting Lake Clifton are identified as Peel Regionally Significant Natural Areas (EPA, 2010a).

The western half of the Precinct is within the Lake Clifton groundwater catchment, the eastern half having groundwater flows to the Estuary. The entire Precinct, except for one large lot of 194 hectares (Lot 721 Old Coast Road), is zoned Rural Residential and subdivided to lots sizes ranging from 2 hectares to 10 hectares adjoining Lakeside Parkway. The 194 hectare rural zoned lot supports a sand quarry, where approval has been obtained to extend into the more degraded portions of the lot. The northern section of this lot contains a 70ha area containing the largest highest quality vegetation in the district and is in excellent condition meeting 8 ecological criteria.

There are two major opportunities to achieve biodiversity conservation outcomes in this Precinct, being the retention of a 70 hectare bush land block directly to the north of the sand quarry. A north-south Regional Ecological Linkages (or SWREL axis lines)

traverses the western edge of the area to the rear of established 10ha rural residential lots bordering Lakeside Parkway. The intent of the SWREL linkage is to protect the ecological connectivity across the landscape to assist flora and fauna to move across the landscape to meet their survival, feeding and breeding requirements.

The second opportunity for biodiversity conservation is an area of approximately 30 hectares to the east of the quarry adjoining Mount John Road to the north. It contains the similar ecological value and high condition status as the 70 hectare lot to the north. Both areas are outside the approved

20 year extraction boundaries for the sand quarry and present the best opportunities for biodiversity retention through suitable zoning restrictions outside of existing subdivided rural residential lots in the precinct.

Precinct Biodiversity Protection Target

A Biodiversity Retention Target of 413.9 hectares (98 per cent per cent of of the LNA within the Precinct) has been identified in the Strategy which is predominantly the Local Natural Areas dispersed across private rural residential properties outside of existing cleared building envelopes and within the two large landholdings to the north and east of the Sand Quarry.

This also equates for the 10 vacant and uncleared lots where a total of 3.72ha of Local Natural Areas will be cleared to facilitate construction of building envelopes and 4m wide perimeter boundary firebreaks per lot. This equates to 4400 square metres per lot with an average lot size of 2ha (22% of a lot), and 7,600 square metres of clearing per lot with an average lot size of 10ha (7.6% of the lot). All lands within this precinct have been subdivided to the current permitted minimum lot sizes allowed under the scheme so no new lots are to be created or cleared.

Recommended Planning Framework

That within the proposed Southern Mandurah Rural Structure Plan (as identified under the District Recommendation) the following provisions apply to this Precinct:

1. A minimum lot size of 10 hectares, which restricts further subdivision of lots within the Precinct for those lots already created along Lakeside Parkway; and retention of the Rural zone (minimum lot size of 40 hectares) for remaining Lot 721 Old Coast Road;
2. Clearly identified building envelope provisions where undeveloped lots within approved subdivisions will be restricted to allowing clearing for building envelopes (2000 square metres – reduced from 4000 square metres for the subject lots), any extension to bushfire protection zones and 4m perimeter boundary firebreak requirements.

5.7.3 Precinct S3: Herron and Lake Clifton

Summary

This 640.3 hectare Precinct includes an identified 367.8 hectares of Local Natural Area (57.8 per cent of the Precinct Area) where the largest areas of high quality vegetation are located in the elevated sections of the precinct to the east of the Limestone Quarry accessed from Old Coast Road. The remainder of the precinct is mostly parkland cleared, primarily those rural residential lots fronting onto Lake Clifton where limited vegetation of ecological value remains on private properties.

Most vegetated LNA in the Precinct's meet at least eight ecological significance criteria, of which at least four criteria have the backing of legislation or Government policy. All of the Precinct's vegetated LNA are mapped as potential feeding habitat for Carnaby's Black Cockatoo and those lots fronting Lake Clifton are identified as Peel Regionally Significant Natural Areas.

The Precinct is located between Lake Clifton and the Harvey Estuary falling mostly within the Lake Clifton Groundwater catchment being subject to the considerations of the EPA's advice in regard to protection of Lake Clifton through Guidance Statement 28 (1998). The entire Precinct is located within the Study Area of the EPA's strategic advice on the Dawesville to Binningup area (2010), where recommendation 3 states that 'Development on the eastern side of the Yalgorup lakes system is highly constrained'.

Notwithstanding the above, the assessment of rezoning proposals in this Precinct since 2006 has been directed by the Lake Clifton / Herron Structure Plan, a non-statutory planning document largely based on the Coastal and Lakelands Planning Strategy (WAPC, 1999), and hence does not reflect the EPA's latest advice.

There are two major opportunities to achieve biodiversity conservation outcomes in this Precinct. The first is the retention of one of the major vegetated Local Natural Areas on the largest lot remaining within the Precinct being approximately 7 hectares directly to the east of the limestone quarry. This area contains the largest highest quality vegetation in the district and is in excellent condition meeting 8 ecological criteria and also contains the axis line of a Southwest Regional Ecological linkage.

The second is a 72 hectare area of a 94 hectare landholding adjoining the City's southern boundary which also contains a large area of high quality vegetation meeting 8 ecological criteria and containing the axis line of a Southwest Regional Ecological linkage. These two areas present the best opportunities for biodiversity retention through suitable zoning restrictions outside of existing subdivided rural residential lots in the precinct.

Precinct Biodiversity Protection Target

A Biodiversity Retention Target of 355.1 hectares (96.5 per cent of the LNA within the Precinct) has been identified in the Strategy which is predominantly the Local Natural Areas dispersed across private rural residential properties outside of existing cleared building envelopes and within the two large landholdings to the east of the Limestone Quarry and adjoining the City of Mandurah's Southern Boundary.

To achieve the above target a lot yield analysis based on land capability and maximum bushland retention targets incorporating the two large remaining undeveloped landholdings mentioned above results in potential subdivision in the precinct of an additional 38 lots. Of these 38 lots, 15 should have a minimum lot size of 10 hectares. Overall, the larger minimum lot size over these areas of high quality vegetation would result in a net loss of 7600 square metres per lot accounting for building envelopes and firebreak requirements comparatively to the remaining 23 lots with a proposed minimum lot size of 5 hectares (5736sqm or 11.5 per cent of the lot cleared). Overall these lots yields would result in a total of 12.72ha of vegetation being cleared.

Recommended Planning Framework

That within the proposed Southern Mandurah Rural Structure Plan (as identified under the District Recommendation) the following provisions apply to this Precinct:

1. A minimum lot size of 5 hectares for lots on the northern / western side of Old Coast Road; and 10 hectares for lots within the Precinct on the southern / eastern side of Old Coast Road.
2. Clearly identified building envelope provisions where undeveloped lots within approved subdivisions will be restricted to allowing clearing for building envelopes (2000 square metres), any extension to bushfire protection zones and 4m perimeter boundary firebreak requirements

5.7.4 Precinct S4: Southern Estuary Road

Summary

This 321.3 hectare Precinct includes an identified 199.7 hectares of Local Natural Area (62.1 per cent of the Precinct Area) containing extensive areas of high quality bushland dispersed amongst private rural residential properties. The highest quality vegetation lies on western slopes on the steep dune ridge, falling to more dispersed areas closer to the lower lying Harvey estuary wetland flats. Some areas of the precinct adjoining Island Point Reserve to the west are parkland cleared although pockets of high quality bushland remain.

Most vegetated Local Natural Area in the Precinct meet at least eight ecological significance criteria. All of the Precinct's vegetated Natural Area's are mapped as potential feeding habitat for Carnaby's Black Cockatoo and those lots fronting the Harvey Estuary are identified as Peel Regionally Significant Natural Areas. The Precinct is located within the Harvey Estuary Groundwater catchment being subject to the provisions of State Planning Policy 2.1: The Peel Harvey Coastal Plain Catchment and the Peel Inlet – Harvey Estuary Environmental Protection Policy (EPP).

The precinct also contains an area of Conservation Category wetlands extending over Lots 479 and 437 Southern Estuary Road. Through the subdivision of Lot 479, 2.3 hectares of wetland within Lot 2 has been protected through a Conservation Covenant registered on the title to ensure long term management. An additional 6.39 hectare EPP wetland area has been reserved through the subdivision of Lot 479, with an additional 6.39 hectares identified on Lot 437, resulting in a protection target for this wetland inclusive of a 50 metre buffer being required.

A strip of Regional Open Space forms a vegetated buffer of varying widths between the Harvey Estuary and private land holding also being identified as a SWREL axis line. Similarly to Precinct S3, the assessment of rezoning proposals in this Precinct since 2006 has

been directed by the Lake Clifton

/Herron Structure Plan, a non-statutory planning document largely based on the Coastal and Lakelands Planning Strategy (WAPC, 1999) which does not reflect the EPA's latest advice.

Precinct Biodiversity Protection and Retention Target

A Biodiversity Retention Target of 190.0 hectares (95.1 per cent of the LNA within the Precinct) has been identified in the Strategy which is predominantly the Local Natural Areas dispersed across private rural residential properties outside of existing cleared building envelopes.

This equates to the 22 vacant and uncleared lots where a total of 9.68ha of Local Natural Areas will be cleared to facilitate construction of building envelopes and 4m wide perimeter boundary firebreaks per lot. This equates to 4400 square metres per lot with an average lot size of 2ha (22% of a lot).

All other lands within the precinct which have not been subdivided have been identified as being environmentally significant in terms of meeting ecological criteria and in terms of the potential adverse impacts of further development on the fragile Ramsar Listed Harvey Estuary. Therefore in accordance with retention targets, no new lots are to be created within this precinct.

A Biodiversity Protection Target of 24.57ha incorporating the three areas of Conservation Category wetland within Lots 479 and 437 Southern Estuary Roads are protected through

2.3ha of Conservation Covenant and 22.27ha of Wetland to be ceded to the Crown as reserve (6.39ha + 15.88ha).

Recommended Planning Framework

That within the proposed Southern Mandurah Rural Structure Plan (as identified under the District Recommendation) the following provisions apply to this Precinct:

1. A minimum lot size of 5 hectares, which restricts further subdivision of lots within the Precinct; and a minimum lot size of 10 hectares for all lots adjacent to the Peel Harvey Estuary (inclusive of any Regional Open Space);
2. Clearly identified building envelope provisions where undeveloped lots within approved subdivisions will be restricted to allowing clearing for building envelopes (2000 square metres), any extension to bushfire protection zones and 4m perimeter boundary firebreak requirements.

5.7.5 Precinct S5: White Hills Road

Summary

This 335 hectare Precinct includes an identified 274 hectares of Local Natural Area (81.8 per cent of the Precinct Area) representing a cluster of 6 lots ranging from 200ha to 13ha in area surrounded to the north, south and east by the Yalgorup National Park, Lake Clifton to the South and the Indian Ocean to the west.

Land within this precinct represents one of the remaining areas on the Swan Coastal Plain where a full suite of high conservation value, vegetated Quindalup Dunes occur including large healthy tracts of tuart woodlands and shrublands. The precinct contains extensive areas of high quality bushland meeting between 6 to 8 biodiversity criteria being of regional significance including representation of ecological communities; diversity; rarity; maintaining ecological processes and natural systems; scientific or evolutionary importance; and protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation warranting stringent protection from insensitive subdivision and development.

Approximately half of the precinct is identified as an 'area of particular environmental sensitivity or of high conservation value' within the Coastal and Lakelands Planning Strategy and is located within the coastal hazard line (WAPC, 1999). All of the vegetated

LNA in Precinct 16 is identified as Peel Regionally Significant Natural Area, and the eastern half is mapped as potential feeding habitat for Carnaby's Black Cockatoo (DEC, 2011).

Part of the Precinct is within the Lake Clifton groundwater catchment and contains well vegetated wetlands. It is assumed that the EPA's Section 16(e) recommendation 3 which states 'The Yalgorup National Park should be extended and consolidated by incorporating private vegetated enclaves west of the Yalgorup lakes and other adjacent reserved lands' applies within this precinct.

Precinct Biodiversity Retention Target

A Biodiversity Retention Target of 274 hectares (100 per cent of the LNA within the Precinct) has been identified in the Strategy.

Recommended Planning Framework

That within the proposed Southern Mandurah Rural Structure Plan (as identified under the District Recommendation) the following provisions apply to this Precinct:

1. No further subdivision of lots within the Precinct;
2. Clearly identified building envelope provisions where undeveloped lots within approved subdivisions will be restricted to allowing clearing for building envelopes (2000 square metres), any extension to bushfire protection zones and 4m perimeter boundary firebreak requirements

5.7.6 Precinct S6: Clifton South

Summary

This 821.2 hectare Precinct includes an identified 759.7 hectares of Local Natural Area (92.5 per cent of the Precinct Area) representing a cluster of 6 lots ranging from 283ha to 21ha in area surrounded to the north and south by the Yalgorup National Park to the east by Lake Clifton and the Indian Ocean to the west.

Land within this precinct represents one of the remaining areas on the Swan Coastal Plain where a full suite of high conservation value, vegetated Quindalup Dunes occur including large healthy tracts of tuart woodlands and shrublands. The precinct contains extensive areas of high quality bushland meeting between 6 to 8 biodiversity criteria being of regional significance including representation of ecological communities; diversity; rarity; maintaining ecological processes and natural systems; scientific or evolutionary importance; and protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation warranting stringent protection from insensitive subdivision and development.

Approximately half of the precinct is identified as an 'area of particular environmental sensitivity or of high conservation value' within the Coastal and Lakelands Planning Strategy and is located within the coastal hazard line (WAPC, 1999). All of the vegetated LNA in Precinct 16 is identified as Peel Regionally Significant Natural Area, and the eastern half is mapped as potential feeding habitat for Carnaby's Black Cockatoo (DEC, 2011).

Part of the Precinct is within the Lake Clifton groundwater catchment and contains well vegetated wetlands. It is assumed that the EPA's Section 16(e) recommendation 3 which states 'The Yalgorup National Park should be extended and consolidated by incorporating private vegetated enclaves west of the Yalgorup lakes and other adjacent reserved lands' applies within this precinct.

This advice has been reaffirmed in the EPA's latest advice to the Minister for Environment in regard to a subdivision proposal over the site (EPA, 2011). The Environmental Protection Authority has reiterated that the entire area should be incorporated into the Park, that the proposed subdivision could not be implemented in an environmentally acceptable manner and would result in significant impacts on biodiversity (EPA, 2011). The EPA also advised that other proposals, such as the introduction of grazing stock on the site would require referral to the Federal Government for consideration under the EPBC Act.

Precinct Biodiversity Retention Target

A Biodiversity Retention Target of 759.7 hectares (100 per cent of the LNA within the Precinct) has been identified in the Strategy.

Recommended Planning Framework

That within the proposed Southern Mandurah Rural Structure Plan (as identified under the District Recommendation) the following provisions apply to this Precinct:

1. No further subdivision of lots within the Precinct;
2. Clearly identified building envelope provisions where undeveloped lots within approved subdivisions will be restricted to allowing clearing for building envelopes (2000 square metres), any extension to bushfire protection zones and 4m perimeter boundary firebreak.



5.8 Summary Table

Table 13: Southern Rural Biodiversity Targets

	Mandurah North	Mandurah Central	Mandurah East	Mandurah Island	Dawesville	Parksland	Southern Rural	Totals
Land Areas								
Total Area (ha)	1720.9	1161.8	1265.0	2467.0	882.4	577.0	6995.0	15069.1
Net Area 1 (ha)	1404.9	1038.3	1226.6	1973.6	752.8	577.0	3267.7	10240.9
Local Natural Area (ha)	408.1	57.0	127.9	121.1	227.8	222.0	2306.5	3470.4
% LN to Net Area	29%	5%	10%	6%	30%	38%	71%	34%
LNA Zoning / Reserved								
Urban Zone (ha) ²	346.1	28.8	118.0	121.1	168.1	0.0	0.0	782.1
Rural Zone (ha)	61.0	0.0	0.0	0.0	59.7	222.0	2306.5	2649.2
Reserved Land (ha) ³	0.0	28.2	9.9	0.0	0.0	0.0	0.0	38.1
Targets								
Protection Target ⁴ (ha)	81.8	33.6	36.5	44.0	5 38.3	0.0	24.5	⁵ 258.7
% of Net Area	6%	3%	3%	2%	5%	0%	1%	3%
% of LNA	20%	59%	29%	36%	17%	0%	1%	7%
Retention Target ⁶ (ha)	19.4	0.0	7.4	18.2	5 31.9	216.0	2260.8	⁵ 2553.7
% of Net Area	1.4%	0.0%	0.6%	0.9%	4.2%	37.4%	69.2%	24.9%
% of LNA	4.8%	0.0%	5.8%	15.0%	14.0%	97.3%	98.0%	73.6%
Combined Target	101.2	33.6	43.9	62.2	5 70.2	216.0	2285.3	⁵ 2812.4
% of LNA	25%	59%	34%	51%	31%	97%	99%	81%
Implications								
Potential Clearing (ha)	306.9	23.4	84.0	58.9	157.6	6.0	21.2	⁵ 658.0

¹ Total area less Regional Open Space and Regional Road Reserved Lands

² Areas identified for future urban development in sub-regional strategy shown as urban zoned

³ Public Purposes (Peel Region Scheme)

⁴ Indicative Protection Target; Subject to Further Detailed Planning

⁵ Excludes targets over Dawesville South Precinct as area is subject to further assessment

⁶ Retention targets on large residential and rural residential lots, golf courses and school sites

Mandurah Biodiversity Strategy

Part 6 - Administration and Implementation

6.1 Adoption of the Strategy

This Strategy forms part of the City of Mandurah's Mandurah Planning Strategy, as shown on Figure 1 which sets out the role and function of this Strategy. Each component of the Strategy which includes the *Mandurah Biodiversity Strategy* will form the basis of a Local Planning Strategy as required by the *Town Planning Regulations 1967*.

The Town Planning Regulations 1967 set out the procedure for preparation, consultation, approval and endorsement of a Local Planning Strategy.

Whilst this Strategy forming part of the Local Planning Strategy, the following procedures are required to adopt this Strategy:

1. Adoption of the draft Strategy by Council;
2. Public advertising of the draft Strategy for public, stakeholder and Department of Planning comment;
3. Consideration of Submissions, Modification (if necessary) and Adoption by Council;
4. Submission of modified strategy to WAPC for final endorsement;

The Strategy therefore comes into operation once endorsed by the Western Australian Planning Commission.

6.2 Monitoring, Review and Modifications

The Strategy will need to respond to future changes in state and regional policy as well as any changes to local circumstances and priorities. This may be done through occasional updates as well as periodic comprehensive review.

A comprehensive review of the Strategy should be undertaken every 5 years, in conjunction with a scheme review and the publication of the next and each successive State of the Environment Report. It is recommended that background information be updated on a more frequent basis in response to the availability of information or changes which may not have been foreseen at the time of formulating the original strategy.

Modifications to the strategy should be undertaken in response to significant changes in circumstances in the period between comprehensive reviews, for example, in the event of major economic development or major infrastructure projects which were not addressed in the endorsed Strategy and or significant changes to environmental / climate conditions and forecast trends.

The Procedure for review or amendment of the strategy is generally the same as that for the preparation of the Strategy except that, in the case of an amendment, it is only the changes that are subject to advertisement, assessment and endorsement by the commission.

The focus of monitoring and review should be on the extent to which the Strategy has been successful in:

- Articulating and achieving the planning objectives of state and local government;

- Effectively guiding land use and development decisions to achieve the outcomes of the Strategy;
- Achieving the protection / retention targets of LNA;
- Maintaining LNA in a viable condition to maintain current biodiversity and ecosystem processes.

The success of the Strategy would inevitably be reported via the State of the Environment Report which is informed by the Natural Areas Data Management Cycle.

The Strategy will be successful if it meets the objectives and the following criteria:

1. Specific biodiversity features protection targets on Local Natural Areas are achieved in all precincts and lands managed by the City;
2. Achieve the maximum protection and retention targets of Local Natural Areas within all precincts (urban and rural precincts);
3. Maintain at the least or improve / increase vegetation condition, biodiversity and ecosystem processes on local reserves; and
4. Successfully develop and implement a Natural Areas Data Management Cycle

6.3 Strategy Action Plan

6.3.1 Local Planning Scheme

The primary implementation mechanism for the Strategy is through the Local Planning Scheme and subsequent decision making in regard to applications for planning approval, local structure plans (Outline Development Plans) and subdivisions.

On the basis of the contents of the Strategy and recommendations regarding the implications for the Local Planning Scheme, Council has resolved to prepared a new local planning scheme.

Table 15 outlines the key recommendations arising from the Strategy that should be reflected in the Local Planning Scheme.

Table 15: Local Planning Scheme Action Plan

Planning Scheme Text
1. Acknowledge Biodiversity Conservation in the Objectives of the Scheme (Clause 1.6).
2. Provide a reference to the elements of the Strategic Planning Framework including this Strategy to ensure that determinations of the Council under the Scheme including decisions regarding development applications, Outline Development Plans are to be consistent with the Strategic Planning Framework.
3. Modifying existing Clause 6.5 Tree and Bushland Preservation Provisions to ensure that: - the objectives of the tree and bushland preservation provisions align with the targets of this Strategy; - revise the prescribed requirements of Clause 6.5, to include the Local Natural Areas as identified in this Strategy; - more clearly identify the areas subject to the tree and bushland preservation provisions, primarily through a Special Control Area rather than listing the areas subject to the provisions and requirements and - Revise the criteria for assessing applications to remove trees or bushland, to include reference to the targets in the Strategy.
4. Create a Local Conservation and Passive Reservation in the Scheme, with a description of the objectives of land included in such reservations; and subsequently modify the reserves identified in Section 5 of the Strategy accordingly.
5. That as part of a review of Scheme 3 that seeks to provide an appropriate zoning for the existing private schools and golf courses in Mandurah (rather than the existing Community Purpose reserve or Urban Development zoning) that the Scheme identify appropriate provisions that retain the existing vegetation in perpetuity; and/or refining the existing Tree Preservation and Bushland Preservation (Clause 6.5) of Scheme 3 to provide clearer requirements regarding their application.
6. Modify the Rural Residential zone provisions so that no further subdivision is permitted in the zone for lots less than 2.0 hectares; and those criteria regarding building envelopes and restrictions on clearing being more specific than current provisions. On the basis of Recommendation 14, these modifications primarily affect the Parklands District and the Tims Thicket Road South Precinct.
7. Modify the Rural zone provisions to eliminate any reference to the purpose and intent of the zone being areas that are suitable for agriculture or general rural activity and land being suitable for rezoning for rural residential and residential development; and any reference to the 'local rural strategy'.
District Structure Plans
8. That the Mandurah North District Structure Plan be modified to reflect the District and Precinct Biodiversity Protection Targets to guide future Outline Development Plan preparation and assessment in the District.
9. That the proposed Mandurah Strategic (District) Structure Plan reflect the District and Precinct Biodiversity Protection Targets to guide future Activity Centre Precinct Plans and/or Outline Development Plans preparation and assessment over the District.

10. That the Mandurah East Structure Plan be modified to function as a District Structure Plan; and modified to reflect the District and Precinct Biodiversity Protection Targets to guide future Outline Development Plan and subdivision design assessment in the District;

11. That the Bridge to Bridge Study be modified to function as a District Structure Plan; and modified to reflect the District and Precinct Biodiversity Protection Targets to guide future Outline Development Plan and subdivision design assessment in the District.

12. That Council seek to prepare a Dawesville District Structure Plan that seeks to integrate the relevant issues to the future development and planning needs of the District, with the District and Precinct Biodiversity Protection Targets be included to guide future Outline Development Plan and subdivision design assessment in the District.

13. That Council revoke the existing Lake Clifton Herron Structure Plan.

Specific Modifications to Local Planning Scheme

14. In order to demonstrate the importance of the Peel-Harvey Estuary, impose a 50 metre setback to all development adjacent to the Estuary, consistent with the EPA's Guidance Statement 33. No development is permitted within the identified 50 metre setback. In a majority of cases land is already a crown reserve or reserved as Regional Open Space in the Peel Region Scheme. Notwithstanding the above, all subdivision within 100 metres of the Peel-Harvey Estuary should be connected to reticulated sewer regardless of lot size.

15. Prepare a new Statutory Structure Plan for the Southern Mandurah Rural District to provide for the comprehensive zoning and land use framework for this District in order to address specific lot size requirements, land use provisions, reduce cross referencing to secondary documents for development and subdivision assessment in the District; with the Scheme giving statutory effect to the provisions of the Structure Plan.

16. That the area of bushland identified in the 2003 Master Plan for the Peel Education and Training Campus be included in any subsequent master plan and/or Activity Centre Precinct Plan as recommended in the Council's Activity Centres Planning Strategy; and Council seek to negotiate with the Department of Education a potential excision of Reserve 45344 as a separate reserve for the purposes of Passive Recreation and Conservation Reserve subject to confirmation that any modification to Reserve 45344 does not compromise the provision of education facilities necessary at the Peel Education and Training Campus.

17. That the Tims Thicket Road North Precinct be rezoned to Rural Residential in Town Planning Scheme 3 from the existing Special Use (R5) zoning ensuring that no further subdivision is permitted within this Precinct; and ensure that the local planning scheme zoning is consistent with Peel Region Scheme zoning of Rural.

18. That Lots 102 – 104, 3 – 5, 201 and 200 and 8 – 9 Estuary Road Dawesville be rezoned from Urban Development to Residential R5, together with these lots being included in identified Tree Preservation Areas under Clause 6.5 of Scheme 3 in order to retain approximately 3.5 hectares of Local Natural Area.

6.3.2 Management of Reserves

The Management of Reserves is a primary protection and retention mechanisms particularly in existing urban and rural areas. However the City of Mandurah does manage some reserves that are within Regional Open Space, and in accordance with the definition of Local Natural Areas and therefore not included in the Protection and Retention Targets. Therefore, efforts to improve the management of Natural Areas within Regional Open Space where the management of the reserve is within the City of Mandurah are in addition to the Protection and Retention Targets outlined in Section 5.

At the present time, the City of Mandurah manages approximately 705 hectares of Natural Areas on Crown Reserves. 544 hectares is within Regional Open Space, with the balance, being 161 hectares, and therefore being Local Natural Areas. A majority of these Local Natural Areas will be zoned Urban and Management Orders exist for a variety of purposes, but primarily Public Recreation.

Table 16 outlines the key recommendations arising from the Strategy with regard to the management of reserves.

Table 16 Reserve and Land Management Action Plan

1. For reserves within Regional Open Space within the Peel Region Scheme and that Council has the Management Order, ensure management plans are prepared; and endorsed by the Western Australian Planning Commission under the provisions of the Peel Region Scheme.
2. For reserves identified within Section 5, that Council requests a change in the Management Order to the Department of Regional Development and Lands for the purpose of the Management Order to be modified to 'Conservation and Passive Recreation'.
3. That Council seek to rationalise the road reserve for Old Coast Road between Dawesville Road West and Fernwood Road by including identified Local Natural Areas within a Passive Recreation and Conservation Reserve in order to retain approximately 6.5 hectares of Local Natural Area.
4. That the City develop a Management Plan 'Proforma' that conforms to best practice and the "Management Plan Cycle"
5. Prioritise and renew, in accordance with the "Management Plan Cycle" and the Proforma, those management plans which have not been renewed within the five year cycle;;
6. Develop a Natural Areas Asset Database that can capture and manage the environmental information of the reserves;
7. Develop and fully implement a Natural areas data management cycle;
8. Review the Biodiversity Strategy every 5 years in conjunction with the State of the Environment, inclusive of natural areas mapping and ecological criteria mapping as to report on the success criteria.

