AUGUST 2015

Austin Cove

OUTLINE DEVELOPMENT PLAN

As approved by the Shire of Murray and
Western Australian Planning Commission

CHAPPELL
LAMBERT
EVERETT

ENDORSEMENT PAGE

This structure plan is prepared under the provisions of the Shire of Murray Local Planning Scheme No. 4

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

DECEMBER 2008

In accordance with Schedule 2, Part 4, Clause 28 (2) and refer to Part 1, 2. (b) of the *Planning and Development (Local Planning Schemes) Regulations 2015.*

Date of Expiry: **19 OCTOBER 2027**

AUSTIN COVE
OUTLINE DEVELOPMENT PLAN

As approved by the Shire of Murray and
Western Australian Planning Commission

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Project No. 2054Rep144J

August 2015

Record of Amendments made to the Austin Cove Outline Development Plan as endorsed by Council on 28/02/2008 and the WAPC on 10/12/2008.

Austin Cove Outline Development Plan

Amendment No.	Description of Amendment	Finally Endorsed Council	Finally Endorsed WAPC
1.	R-Code Variation and Built Form Requirements (superseded by Amendment 2) • Amendment 1 Report (Misc267) approved as an addendum to Austin Cove Outline Development Plan	22/12/2009	N/A
2.	R-Code Variation and Built Form Requirements Revision 1 (superseded by Amendment 3) • Amendment 2 Report (Rep403) approved as an addendum to Austin Cove Outline Development Plan	26/04/2012	N/A
3.	R-Code Variation and Built Form Requirements Revision 2 • Amendment 3 Report (Rep473) approved as an addendum to Austin Cove Outline Development Plan	24/12/2013	N/A
4.	Austin Lakes Local Centre (superseded by Amendment 5) • Austin Cove Outline Development Plan (Rep144) amended to include Local Centre site, development control provisions and update ODP Map (2054-547A-01)	25/09/2014	12/11/2014
5.	Updates to ODP Map and Review of Density Criteria • Austin Cove Outline Development Plan (Rep144) amended to modify density criteria and update ODP Map (2054-547H-01)	23/06/2015	

AUSTIN COVE PROJECT TEAM

• **Landowner & Project Manager**	Satterley Property Group
• **Urban Design & Planning**	Chappell Lambert Everett Town Planning & Urban Design
• **Civil Engineers**	Cossill & Webley Consulting Engineers
• **Environmental Consultants**	RPS Bowman Bishaw Gorham Environmental Services
	Bayley Environmental Services
• **Landscape Architects**	McNally Newton Landscape Architects
• **Hydrologist**	Jim Davies & Associates Pty Ltd
• **Traffic Consultant**	Riley Consulting
• **Surveyors**	McMullen Nolan & Partners
• **Acoustic Consultant**	Lloyd Acoustics
• **Fire Management Consultant**	FirePlan WA
• **Heritage Consultant**	Yates Heritage Consultants

FIGURES

TABLES

PART ONE: BACKGROUND

1.0 BACKGROUND

1.1 Introduction

The Austin Cove Outline Development Plan is lodged pursuant to Clause 6.8.4 of the Shire of Murray Town Planning Scheme No 4, where an approved Outline Development Plan (ODP) is required prior to development within the 'Special Development' zone.

The Austin Cove ODP is a review of the current 1997 Murray Lakes Golf Course & Lakes Estate ODP, approved by Council and the Western Australian Planning Commission (WAPC) as part of Amendment 115 to Shire of Murray Town Planning Scheme No 4. The approved ODP received environmental approval from the Minister under Section 46 of the Environmental Protect Act 1986 in June 1997.

The Austin Cove ODP area covers Lot 9500 and 548 South Yunderup Road and Lots 2 and 3 Bens Road (refer Figure 1). The total area of Lots 9500, 548, 2 and 3 is approximately 526 hectares. The ODP is broken into two key development areas, phase one and phase two, which are dissected by the Murray River floodway.

Phase one is located in the north western corner of the ODP area within Lot 9500 South Yunderup Road, and covers approximately 20 hectares. Phase one is generally consistent with the approved 1997 Murray Lakes Golf Course & Lakes Estate ODP. A subdivision application, creating approximately 150 residential lots was approved over phase one in August 2006, in accordance with the endorsed ODP and existing environmental approvals (WAPC Ref 129296).

The Austin Cove ODP and accompanying reports focus on the phase two area. The phase two boundary corresponds with the southern 'Urban' zoned portion under the Peel Region Scheme and the 'Special Development 'zoned area, under Shire of Murray Town Planning Scheme No.4, and covers a portion of Lots 548, 2 and 3. The total phase two area is approximately 271 hectares.

The Austin Cove ODP will guide future development of phase two and will be used as the basis for further subdivision applications and preparation of Detailed Area Plans.

1.2 District and Local Context

The Austin Cove ODP area consists of approximately 526 hectares located adjoining South Yunderup Road to the north and the future Perth Bunbury Highway to the east (refer Figures 1 and 2).

The western boundary of the ODP area abuts the Peel Regional Park and Peel Harvey Estuary (refer Figure 3). The southern boundary of the ODP abuts Bens Road and existing rural uses.

The ODP area is located immediately south of the existing South Yunderup canal development, which consists of approximately 1500 lots. There are a number of existing services and facilities within South Yunderup including: general store, tavern, caravan park, post box and the Yunderup Sports and Recreation Club, including tennis and bowls facilities.

Austin Cove is located approximately 10 kilometres east of Mandurah, allowing easy access to more substantial services; including health, recreational, educational and shopping facilities.

Austin Cove is located approximately 100 kilometres south of Perth.

1.3 Statutory Planning Framework

The Austin Cove site has been identified for urban development within strategic and statutory planning documents for some time and all necessary zonings are in place to allow for urban development.

The Inner Peel Regional Strategy 1994 and both the Draft Inner Peel Region Structure Plan 1996 and Final Inner Peel Region Structure Plan 1997 identify the development area as 'Urban'.

Importantly the development area (phase one and two) is zoned 'Urban' under the Peel Region Scheme (refer Figure 2). The phase two area corresponds with the 'Urban' zoning under the Peel Region Scheme.

The phase one boundary is consistent with the urban zoning, endorsed ODP and environmental conditions, as well as the subdivision approval (WAPC 129296).

The Perth Bunbury Highway, abutting the sites eastern boundary, is reserved under the Peel Region Scheme as a 'Primary Regional Road'. An existing truncation in the Reservation allows for the north western portion of a future interchange (provision to be confirmed).

Following discussions with Main Roads, Department for Planning and Infrastructure and Shire of Murray it has been agreed that connections from Austin Cove to the regional road network will be confirmed as part of the review of the broader district context. It has been confirmed that the ODP and a first stage subdivision application can be approved, with the detail of the regional road network to be defined following a review by Main Roads and Department for Planning and Infrastructure by late 2008 (refer Appendix Ten).

Discussions have occurred with the Shire of Murray and Main Roads with regards to contributions to major road infrastructure. It has been agreed that these items are of district significance and any required contributions are to be shared equally between developers within the locality. This will be implemented through a Developer Contribution Area covering the broader district and will be prepared pursuant the district planning studies currently being undertaken by the Shire of Murray.

The Murray River floodway, dissecting the site, is zoned 'Private Recreation' (approximately 98.85ha) and 'Regional Open Space' (approximately 97.02ha), with a small portion of 'Rural' zoning, under the Peel Region Scheme with corresponding zonings under the Shire of Murray Town Planning Scheme No 4 (refer Figures 2 and 4). Any proposed use of the floodway will be considered in eight of the provisions of the Peel Region Scheme and Town Planning Scheme No 4.

The development area (phase one and two) is zoned 'Special Development' under the provisions of the Shire of Murray Town Planning Scheme No 4 (refer Figure 4). The 'Special Development' zone allows subdivision and development generally in accordance with an approved ODP and subject to the provisions specific to the land holding under Schedule 7. The current provisions of Schedule 7 of Scheme No 4, adopted through Amendment 115, set out specific provisions applying to Austin Cove, with reference to the 1997 Murray Lakes Golf Course Estate Outlined Development Plan.

Amendment 218 to the Shire of Murray Scheme has been initiated to remove the outdated provisions relating to the 1997 Murray Lakes Golf Course Estate ODP and insert the provisions necessary to enable the Austin Cove ODP. This Amendment was adopted for final approval by Shire of Murray on 27 September 2007 and is now with the Western Australian Planning Commission. Importantly the Environmental Protection Authority (EPA) treated Amendment 218 as "Scheme Amendment not Assessed – Advised given under Section 4A (I) (A) (no appeals)", as advised on 14 May 2007.

1.4 Existing Planning and Environmental Approvals

In addition to the development zonings over the site the ODP area has a history of previous planning and environmental approvals as summarised below.

1.4.1 Sunland Golf Course Outline Development Plan 1989

In 1989 the Department for Planning & Infrastructure approved a Golf Course ODP partially over the subject area (refer Figure 5). The ODP covered Lot 1 (now referred to as Lots 9500 & 548) South Yunderup Road providing for a residential golf course based estate, including a resort and retirement village.

The Minister for the Environment issued a Statement on 25 September 1989 that the ODP could be implemented subject to a number of conditions contained in the Ministerial Statement (Bulletin 385), refer Appendix One.

In November 1993 the plan of subdivision (Ref 90349) was approved consistent with the ODP, refer Appendix Two.

1.4.2 Murray Lakes Golf Course and Lakes Estate Outline Development Plan 1997 (Current)

In 1997 Amendment 115 to Shire of Murray Town Planning Scheme No 4 over Lot 1 South Yunderup Road and Lots 2 and 3 Bens Road, was gazetted, zoning the development area 'Special Development'.

As part of Amendment 115 the Murray Lakes Golf Course & Lakes Estate ODP (88/47/13) was endorsed by Council and the WAPC (refer Figure 6). This operative ODP allows for:

- 1550 residential dwelling units over the entire ODP area;
- A 27 hole golf course;
- A commercial area with a maximum gross leaseable area of 5000m^2, and;
- 62.5 hectares of public open space (including floodway).

Murray Lakes Golf Course and Lakes Estate ODP (88/47/13) was submitted to the Environmental Protection Authority (EPA) by Murray Lakes Pty Ltd in 1994 and was assessed under Part IV Section 46 of the Environmental Protection Act 1986, as modifications to the previously approved 1989 ODP. In June 1997 the Minister granted environmental approval with conditions (EPA Bulletin 844), refer Appendix Three.

In February 1997 Amendment 115 was referred separately to the EPA under Section 48A of the Environmental Protection Act 1986. The EPA set the level of assessment at 'Scheme Not Assessed – Advice Given' and advised that the Scheme Amendment was subject to the environmental conditions set by the Minister for the Environment through the previous assessment of the ODP.

There are a number of key elements of the approved ODP that have been recognised in the current Austin Cove ODP:

1. Village centre with a maximum gross leaseable area of 5000m^2 located within phase two;
2. Potential for a diamond interchange to the future Perth Bunbury Highway located in the south east corner of the development;
3. Vehicular and pedestrian connections from phase two to South Yunderup Road through the floodway, particularly the most eastern connection which corresponds to an existing track and wetland crossing;
4. Residential development is contained within the 'Urban' zoned land;
5. Location and boundaries of the phase one development, and;
6. Development of a water based, recreation focused estate.

1.5 Key Objectives & Initiatives

The key objectives and initiatives of the Austin Cove ODP are to:

1. Provide a framework for urban land uses within the ODP area, supporting and accommodating a residential community;
2. Provide a framework for subdivision approvals within the ODP area;
3. Provide for a variety of housing choice through a range of densities, predominately at an R25 density with higher codings (up to R60) within and around the village centre and other nodes;
4. Define a neighbourhood connector network reflecting and accommodating public and private transport priorities;
5. Provide for a main street based village centre accommodating 5 000m^2 of retail floorspace and mixed uses;
6. Allow for a mixed use precinct located adjoining the possible Perth Bunbury Highway diamond interchange;
7. Allow for a primary school integrated with adjoining open space to accommodate active open space areas;
8. Create an integrated open space, conservation and drainage network, balancing environmental, recreational and engineering objectives;

9. Provide for sustainable land use and lot design;
10. Encourage local employment within village centre and mixed use areas as well as through home based businesses; and
11. Reflect and integrate the development area with surrounding land uses and interfaces.

1.6 Supporting Documentation

The effective implementation of the Austin Cove ODP is reliant on a range of supporting technical documents to be prepared and/or adopted with the ODP, or at subsequent stages. Schedule 7 (Amendment 218) sets out a comprehensive environmental management plan framework, prepared in collaboration with the Shire of Murray and state government agencies, to meet the following objectives;

a) To maintain and enhance the integrity, functions and values of the environment and water dependent ecosystems;
b) To maintain and enhance the quality of surface water and groundwater so that existing and potential uses, including ecosystem maintenance, are protected;
c) To ensure environmental values of the Peel-Harvey Estuary are not adversely impacted by development, and that development, is consistent with the provisions of the Statement of Planning Policy No. 2.1: The Peel-Harvey Coastal Plain Catchment, the Environmental Protection (Peel Inlet - Harvey Estuary) Policy 1992 and the Water Quality Improvement Plan - Peel Harvey Region, as appropriate.

In accordance with Schedule 7 of Town Planning Scheme No. 4 (Amendment No. 218) and the Statutory Provisions of the ODP (refer Section 11.0), the following environmental management plans are being prepared and adopted with the ODP as part of the final approval issued by WAPC:

- Urban Water Management Strategy;
- Lake Management Plan;
- Wetland Management Plan;
- Conservation Area Management Plan;
- Noise Management Plan;
- Fire Management Plan;
- Ethnographic & Archaeological Survey; and
- Fauna and Flora Survey.

A supporting Traffic Report has also been prepared for the ODP, refer Appendix Five.

Further detailed environmental documentation will be approved prior to subsequent stages of planning, in accordance with Schedule 7. Prior to final subdivision approval (issue of clearances) the following management plans will be prepared and adopted by the relevant authorities:

- Urban Water Management Plan;
- Mosquito Management Plan; and
- Perth Bunbury Highway Traffic Management and Implementation Plan.

Prior to commencement of substantial bulk earthworks the following management plans will be prepared and adopted by relevant authorities:

- Acid Sulfate Soils and Dewatering Management Plan; and
- Construction Management Plan.

PART TWO: ENVIRONMENTAL MANAGEMENT

This section is a summary of the Environmental Assessment Report, Urban Water Management Strategy, Wetland Management Plan, Conservation Area Management Plan, Mosquito Management Plan and Acid Sulfate Soils Detailed Site Assessment.

2.0 EXISTING ENVIRONMENT

2.1 Topography, Geology and Soils

The site is 0.5 – 2.5 m AHD and is flat to gently undulating.

Regional geological mapping (Geological Survey of Western Australia, 1977) shows the western portion of the site as comprising Holocene soils (Qhg) - Estuarine and lagoonal deposits, with the eastern portion of the site being comprised of Pleistocene soils (Qpg) – Guildford Formation.

The majority of the northern, central and western portions of the site form part of the Vasse Estuarine and Lagoonal System, which is characterised by poorly drained plains, subject to inundation, adjacent to the Peel Inlet, Harvey Estuary and coastal lake systems. These soil units have been mapped as having a high risk of actual and potential acid sulphate soils (ASS) at depths of less than 3m from the surface (WAPC, 2003). The high risk area corresponds to Holocene estuarine and lagoonal deposits and reworked Bassendean sands associated with the floodway.

The majority of the site (the southern and eastern sections) forms part of the Bassendean Dunes and Pinjarra Plain systems. The soil units associated with these landforms have a moderate risk of ASS at depths of less than 3m (WAPC, 2003).

To assess the extent and severity of ASS across the development area, RPS has undertaken extensive sampling and testing in accordance with Department of Environment Guidelines for the "Identification and Investigation of Acid Sulfate Soils (DoE, 2004b)". The purpose of these investigations is discussed further in Section 2.2.6.

2.2 Surface Hydrology

The ODP site falls within the catchment of the Murray River, with all drainage from the site eventually discharging to the Peel Estuary.

A significant proportion of the site is mapped as floodway for the Murray River, which corresponds with the areas reserved as Parks and Recreation and Private Recreation under the PRS, dissecting the phase one and phase two areas, with the remainder mapped as the flood fringe (WAPC, 2002). This floodway (South Yunderup Floodway) provides additional capacity for flood flow for the Murray River between Ravenswood and the Peel Estuary (PWD, 1984). This floodway was documented primarily in response to the then recent developments at South Yunderup and Yunderup Lakes which effectively blocked off a more natural flood flow path. The South Yunderup Floodway discharges directly into the Peel Estuary (and not the Murray River).

One road connection will be constructed through the floodway from phase two to South Yunderup Road. This connection is necessary to allow permeable traffic connections. This road will be built at grade to ensure that it does not constitute an obstruction to major flows and an increase in flood levels upstream.

As a result of the site's historical rural landuse, across the site there is an extensive system of shallow drainage channels. This system drains surface water and shallow groundwater away from the paddock areas and through the wetlands into the downstream floodway and eventually into the Peel Estuary.

2.3 Groundwater

An extensive network of 32 groundwater monitor bores cover the site (a further 9 are located in phase one), having been installed in December 2005. These bores are subject to monthly groundwater level monitoring commencing in January 2006 and selective water quality testing. The monitoring results suggest that the groundwater is low in nutrients, with very low levels of phosphorus (FRP mostly less than 0.01mg/L; TP mostly less than 0.1mg/L) and nitrogen (TN mostly 1mg/L or less; NOx mostly less than 0.15mg/L).Groundwater monitoring data will form a key component of the environmental assessment and the adopted monitoring schedule will provide a comprehensive baseline dataset ahead of construction commencing.

From available data and site inspection it is known that the groundwater occurs at shallow depth below natural surface during winter months. In many locations winter groundwater is at natural surface. To some extent the shallow drainage channels control the winter groundwater levels but only close to the drains.

From available data and site inspection it is known that the groundwater table occurs at or close to the ground surface over much of the site during the winter months. The maximum groundwater levels are modified to some extent by the extensive network of shallow drainage channels that cross the site.

There are a number of Department of Water monitoring bores within 5 km of the site. These bores are screened in the superficial aquifer. Data is available for these bores from 1988 onwards. This data indicates that the seasonal variation of groundwater levels in the area is between 1.0 to 1.5 m.

2.4 Wetlands

Most of the site is floodway and is currently classified as Multiple Use (MU) management category wetland by the Department of Environment and Conservation (DEC). The DEC's management objectives for MU wetlands are that use, development and management should be considered in the context of ecologically sustainable development and best management practice catchment planning through various projects, such as Landcare. The DEC recommends that these wetlands may be considered for development provided that their hydrological and remaining ecological functions are preserved or replaced (WRC, 2001).

There is a central wetland area within the site (located within the floodway) that is classified as a Conservation Category Wetland (CCW). CCWs are considered to be the highest priority with the objective of preserving wetland attributes and function through various mechanisms, including protection under Environmental Protection Policies and reservation in national parks, crown reserves and State-owned land (WRC, 2001).

One wetland area that adjoins the southern boundary of the main CCW in the centre of the site is classified as a Resource Enhancement (RE) management category wetland by the DEC, this is partly located within the 'Urban' area of Phase Two. Another RE wetland is located in the north east of the site. RE wetlands are those that have been partially modified but still support substantial ecological attributes and functions. The ultimate objective is for management, restoration and protection towards improving their conservation value, consistent with the relevant legislative framework.

The geomorphic wetland mapping for the area shows the CCW and RE wetland boundaries as slightly west of where they actually are. The wetland boundaries used as a basis for the ODP have been corrected where necessary to reflect the true wetland boundaries as indicated by the location of wetland vegetation.

A portion of one of the watercourses that traverses the site is registered and legally protected under the *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992* (Figure 10). There is an existing access road intersecting the watercourse, which will be retained and ugraded as part of the proposed

development. It should be noted that as part of its assessment and advice on the ODP, the EPA authorised an upgrade to the existing road crossing subject to a rehabilitation programme including weed control and revegetation. Subsequently, the Wetland Management Plan has been modified to include and show this requirement.

2.5 Vegetation and Flora

Vegetation Complexes

The vegetation of the site falls within the Vasse Complex (Heddle et. al., 1978), which is described as a mixture of closed scrub of Melaleuca spp., fringing woodland of Eucalyptus rudis – Melaleuca spp. and open forest of E. gomphocephala-E. marginata and Corymbia calophylla.

There is approximately 3,028ha (40%) of the Vasse Complex remaining in the Peel Region. The percentage of this complex reserved or proposed for reservation in Regional Open Space under the Peel Region Scheme (PRS) is currently unknown. However, within the System 6/part System 1 area approximately 37% is in secure tenure (EPA, 2003). None of this complex is proposed for development under the ODP.

Vegetation Types and Condition

The majority of the site is cleared or parkland cleared and has been used for grazing for a number of years. A preliminary vegetation survey showed that the remaining vegetation varies from scattered mature trees in cleared paddocks to dense shrublands of wetland vegetation, which was generally found to be in Good condition.

The most extensive stand of remnant vegetation within the site is a Closed Shrubland of Melaleuca uncinata with Melaleuca ?viminea and occasional Melaleuca cuticularis shrubs over scattered patches of introduced species including grasses and ?Watsonia sp. Scattered mature trees within cleared paddocks in a large proportion of the property included Eucalyptus rudis (Flooded Gum), Melaleuca preissiana (Modong Paperbark), Melaleuca rhaphiophylla (Swamp or Freshwater Paperbark) and very occasional Casuarina obesa (Swamp Sheoak).

Two watercourses occur within the floodway portion of the property. These contain mature Eucalyptus rudis and Melaleuca rhaphiophylla trees along the edges, with sedges including Juncus in parts, and occasional weed species in the understorey. Occasional Baumea articulata sedges were observed in these areas. The condition of vegetation in these areas is classified as Good.

A detailed vegetation and flora survey has been undertaken to provide detailed vegetation descriptions and mapping. Further detail is provided in the attached Environmental Assessment Report.

Floristic Community Types

Based on preliminary flora and vegetation surveys undertaken to date, Floristic Community Types (FCTs) 5 and 11 are inferred to occur within the site. These are not listed as Threatened Ecological Communities (TECs) by DEC. The detailed vegetation and flora survey being undertaken will confirm the FCTs present within the site.

Significant Flora

A search of the DECs databases was undertaken for the site. Twenty-five species, including eight Rare, two Priority 2, seven Priority 3 and eight Priority 4 species are listed as possibly occurring in the area within 10km of the site.

A Declared Rare and Priority Flora search has been undertaken for the site and further detail is provided in the attached Environmental Assessment Report.

2.6 Fauna

The following fauna habitats on the study site can be recognised:

- The main area of shrubland in Part Lot 1;
- The tree-lined watercourses;
- The wetland in the north-west of the property; and
- Farmland with scattered trees.

The proposed development is largely restricted to flood fringe areas which support farmland with scattered trees, and avoids constraints such as conservation category wetlands. It also avoids most areas of remnant vegetation, while public open space within the development has the potential to provide some wildlife habitat. The shrubland within the floodway to the west, and the conservation category wetland in the north-west, are indicated as being incorporated into the Peel Regional Park that extends along the eastern shoreline of Peel Inlet.

Further detail on fauna is provided in the Environmental Assessment Report.

2.7 Ethnography and Archaeology

An Aboriginal Site Survey report for the ODP area, prepared by Yates Heritage Consultants (April 2006), together with an application under Section 18 of the Aboriginal Heritage Act, was lodged with the Department of Indigenous Affairs in October 2006. A conditional consent under Section 18 (3) of the Aboriginal Heritage Act 1972 was issued by the Department of Indigenous Affairs on the 6th February 2007. The Section 18 enables works in accordance with the ODP. The Aboriginal Sites Survey Report, Section 18 Application and Conditional Consent are attached as Appendix Seven.

3.0 ENVIRONMENTAL RESPONSE

3.1 Wetland Management

The ODP proposes to retain CCWs and RE wetlands that are within urban zoned areas. A 50m buffer has been applied around all wetland areas and watercourses mapped as CCW within and adjacent to the site and a 30m buffer has been applied around the two RE wetlands located within the centre and the north east portion of the site.

A Wetland Management Plan has been prepared for the wetland areas and buffer within the urban zoned area of the site in order to ensure that they are managed in an appropriate and sustainable manner.

The Wetland Management Plan includes but is not limited to the following:

- A description of the wetlands including their ecosystem, attributes and values;
- Management objectives, including the protection of the water regime that supports the wetland;
- Management actions to ensure that the management objectives are achieved, including the determination of buffers, demarcation of wetland buffer areas, control of access through fencing and paths.
- A monitoring program, including definition of performance criteria and analysis procedures, to demonstrate whether the management objectives are being met;
- Contingency plans to be implemented in the event that performance criteria are not met; and
- Identification of responsibilities and timeframes for implementing the Wetland Management Plan.

3.2 Peel Regional Park

CCWs within the Peel Regional Park located in the western portion of the site, west of the site and adjacent to the Peel Inlet may be indirectly impacted on by the proposed development through weed infestation and uncontrolled access. The ODP proposes a 50m buffer to these CCWs to mitigate this impact.

A Conservation Area Management Plan over the estuary foreshore reserve adjoining the subject area and interface to the Peel Region Park has been prepared to ensure that the estuary foreshore reserve and Peel Regional Park areas are protected and managed in an appropriate and sustainable manner.

The Conservation Area Management Plan includes but is not limited to the following:

- Description of existing environmental values, site constraints and opportunities (such as landscape and landforms, water dependent ecosystems, vegetation and flora);
- Clear delineation of significant areas to be protected;
- Appropriate buffer/setback to built development, to ensure the preservation, protection and ongoing sustainability of the Peel Regional Park and foreshore area and its estuarine functions;
- Construction, location and management of walking trials;
- Control of pedestrian and vehicle access;
- Management of fire, weeds and dieback;
- Identification of management aims, objectives and actions;
- Contribution to management and ecological restoration activities;
- Contingency measures to be implemented in the event that the management of the estuary foreshore and Peel Regional Park is not achieving agreed sustainability targets; and
- Implementation Plan including roles, responsibilities, funding and maintenance arrangements

3.3 Fauna, Vegetation and Flora

The ODP proposes to reserve, protect and manage existing native vegetation and wetland areas within the site.

As stated previously, the ODP proposes to retain CCWs and RE wetlands. A 50m buffer has been applied around all wetland areas and watercourses mapped as CCW within and adjacent to the site and a 30m buffer has been applied around the two RE wetlands located within the centre and the north east portion of the site.

Additionally, there is a transition in vegetation and fauna habitats along the watercourses which traverse the site in the east to the wetland areas in the centre of the site, to the estuary foreshore west of the site. The existing reservation of these areas as Parks and Recreation and Private Recreation under the PRS will ensure that the native fauna within or near the site is adequately protected.

Furthermore, the implementation of the Wetland Management Plan and Conservation Area Management Plan will contribute towards their conservation and protection in the long-term.

The phase two development area is located in the southern portion of the site, adjacent to the 50m buffer for the CCWs and the 30m buffer for the RE wetlands. This section of the site predominantly contains scattered mature trees in cleared paddocks and is classified as Completely Degraded or 'parkland cleared'. Some vegetation, consisting of trees over cleared paddocks with no understorey, will be cleared within the development area.

The proposed Multiple Use Corridors will be designed to incorporate existing trees and understorey vegetation where possible. The retention of water-tolerant tree species such as Paperbarks and Flooded Gums will be critical to establishing an immediate passive recreation opportunity.

Detailed management measures for the wetlands within urban zoned areas and the adjacent Peel Regional Park will be set out in the Wetland Management Plan and Conservation Area Management Plan (see sections 3.1 and 3.2).

3.4 Water and Drainage Management

The ODP proposes to manage all stormwater, groundwater, flood issues and irrigation, for both quantity and quality, in accordance with Department of Water (DoW) guidelines and Best Management Practices (BMP's).

3.4.1 Floodway

The South Yunderup Floodway requires that all development adjacent to the floodway is set above the 100 year ARI flood level within the floodway. This flood level decreases from the upstream extent of the site to the downstream. Fill will be required above the existing natural surface to provide the required flood protection (0.5 m above 100 year ARI predicted flood level). Depth of fill will vary across the site (refer Section 6.0).

3.4.2 Groundwater Levels

Groundwater levels are not expected to change significantly from pre to post development. The existing land-use for the majority of the site is pasture. Rainfall recharge to groundwater is generally high for such land-use. Urban development similarly has a high rainfall recharge ratio, and therefore should not result in a changed groundwater balance and a rise in groundwater levels.

The DoW Average Annual Maximum Groundwater Level (AAMGL) policy was developed in the early 1990's by the then Water & Rivers Commission (WRC) as a mechanism to prevent nutrient rich groundwater being drained from an area as surface water and preventing the drying out of wetlands and saving groundwater dependent vegetation. The policy requires that post development AAMGL cannot be set lower than the pre development AAMGL (using subsoil drains), and that fill must be imported to give adequate separation between land surface and groundwater.

WRC's Southern River / Forrestdale / Wungong / Brookdale Structure Plan Urban Water Management Strategy (JDA, 2002) saw a shift towards a more flexible AAMGL policy, where post development AAMGL can be set below pre development AAMGL where it can be shown that (a) wetland groundwater levels will not be adversely affected or (b) limiting the peak seasonal groundwater level does not significantly increase nutrient export to its receiving environment. However, the proponent does not propose to lower the AAMGL at the site, as the fill that will be required to provide flood protection will also provide sufficient clearance between finished land surface and groundwater levels.

3.4.3 Lake

A large lined lake is proposed within the eastern section of the site. The lake level will be set above existing AAMGL and will have no hydraulic connection with the superficial aquifer. The lake will serve general amenity and drainage functions. The lake area will be approximately 15.9 ha.

It is estimated that the lake will lose 220,000 m^3 of water each year through evaporation, mostly during the summer months. The lake will be maintained at a constant water level by a combination of pumped Leederville groundwater, roof runoff and direct rainfall. Groundwater will be the primary water source in summer, with up to 1,270m^3/day being required to replace evaporative losses from the lake. This water will be non-potable brackish water.

In winter, direct rainfall onto the lake plus roof runoff harvested from about 17ha of roofs will maintain lake levels and create periodic overflows into the multiple-use corridor. The annual water inputs to the lake will comprise about 135,000m^3 of direct rainfall, 124,000m^3 of roof runoff and 196,000m^3 of bore water.

The input of roof water to the lake will assist in flushing accumulated salts from the lake during winter, thereby avoiding the need to create artificial turnover during summer by excess input of bore water. This flushing of the lake will also enable low-salinity water from the main lake to be used for irrigation in the early part of summer, improving the capability of the lawns and gardens within the estate to cope with irrigation with marginal groundwater (1,600 mg/L TDS) in the latter part of summer.

A section of the lake will be hydraulically separated from the balance of the lake and will be used for irrigation storage. The water in this section of the lake will be marginally suitable for irrigation (1600 mg/L TDS). Water balance modelling will determine the size of the fresh section of the lake, although it is anticipated to be no more than 2 ha.

Irrigation water will be supplied by a combination of Leederville groundwater, harvested rainwater and roof runoff via the feature lake and separate irrigation lake.

Exploratory drilling and test pumping undertaken in 2006 by Rockwater Pty Ltd demonstrated the availability of groundwater with a salinity of about 1,600mg/L TDS from the Leederville aquifer at a depth of 45-81m. The test results indicated that continuous abstraction at up to 2,160m^3/day could be sustained without excessive drawdown. The actual irrigation requirement for the estate is predicted to be up to 1,600m^3/day on an intermittent basis. Water will be supplied by two bores, with one primarily used for irrigation and the other primarily for lake maintenance

A Lake Management Plan has been prepared for the feature lake (central open space) to ensure that water quantity and quality, and the management and maintenance of the water body, is at sustainable and appropriate levels.

The Lake Management Plan includes but is not limited to the following:

- Compliance with design objectives in the UWMS;
- A description of the dimensions, features, purpose and function of the lake;
- A description of the function of the lake during significant storm events, including details about the management of overland flow from that water body to the water dependent ecosystems;
- Details regarding the volumetric capacity of the lake and the proposed means for maintaining water levels;
- Details of predicted source water, including associated catchment requirements - as well as groundwater availability, replenishment capacity and sustainability;
- Details of water quality maintenance proposals (such as algal management) including circulation through connection to, and routine use within, the irrigation system for open space areas within the development area of the subject land;
- Management of disease vector and nuisance insects such as mosquitoes and midges;
- Details regarding construction (to a fully functional capability) of the water body and the preservation and protection of the surrounding environment and water dependent ecosystems during this process;

- A detailed 'Management and Maintenance Schedule' for the lake, covering a period of 5 years and commencing from time of its practical completion. This Schedule shall include a monitoring and reporting program and contain details in respect to 'whole of life' costings for the management and maintenance of the water body (for a 20 year cycle), the establishment and ongoing operation of a 'strata reserve fund' to meet those total costings, and the transfer in perpetuity (after 5 years) of management and maintenance responsibility to the Shire of Murray;
- A monitoring program, including definition of performance criteria and analysis procedures, to demonstrate whether the management objectives are being met;
- Contingency measures to be implemented in the event that pollution and nutrient concentrations exceed agreed performance targets; and
- Identification of responsibilities and timeframes for implementing the Lake Management Plan.

3.4.4 Stormwater

The drainage system at Austin Cove Phase 2 will be designed and managed in accordance with best management practices set out in the Stormwater Management Manual for Western Australia (DoE, 2004), the WA Stormwater Management Objectives, Principles and Delivery Approach (DoE, 2004) and the Decision Process for Stormwater Management in WA (DoE and SRT, 2005).

In addressing stormwater quantity, the following are proposed:

- To manage the increased runoff expected from urban development, a drainage system will be designed to manage both minor and major events. The system will incorporate the following features:
  - It will protect environmental values by retaining and infiltrating the 1 year ARI events as close to source as possible.
  - It will convey runoff from rainfall events up to the 5 year ARI event and will comprise a network of pipes and swales.
  - It will convey the major events (greater than the 5 year ARI) by a network of roads, drainage reserves and open space.
- The development drainage disposal strategy for various events will be as follows:
- 1 year ARI event to be infiltrated on site in swale basins, unless there is a benefit to it being directed to the wetlands. Drainage will be disposed in Multiple Use Corridors and open space areas as well as verge drainage swales, refer Appendix 4.

- 1 year to 100 year ARI events will progressively overflow to wetland buffers, the multiple use corridor and the floodway.
- Runoff from the 100-year ARI storm will be conveyed off site by means of basins, roads and public open space. The peak discharge from the site under these conditions is expected to be considerably less than the pre-development condition as a result of a decreased runoff coefficient.

Given that the wetlands at present receive runoff from the pasture areas in winter storm events, it is essential that the existing hydrological regime near the wetlands be maintained. This may require that the broad disposal strategy referred to above in (2) be modified if there is a benefit to the wetland environment in having treated stormwater directed into them for events less than the 10 year ARI storm.

In addressing stormwater quality, "source controls" and "in transit treatment" are proposed to be used as the primary approach for stormwater quality management. This uses a more fundamental "Prevention is better than Cure" philosophy, than previous "end of pipe" solutions. This has seen a movement towards catchment management measures and pollutant input control rather than on purely engineering approaches.

Structural controls such as gross pollutant traps and swales will be used alongside non-structural controls such as education campaigns, native plantings, and streetsweeping.

3.4.5 Urban Water Management Strategy

A comprehensive Urban Water Management Strategy has been prepared to protect water resources, provide street drainage and ensure that the rate, quantity and quality of water leaving the site will not adversely impact on the Peel Inlet - Harvey Estuary, or wetlands in the vicinity of the subject land. The draft strategy is appended to the attached Environmental Assessment Report.

The Urban Water Management Strategy (UWMS) consists of the following five key elements to ensure an integrated water management approach based on a catchment management approach:

a) Water quality management;
b) Wetland and waterway management;
c) Drainage management;
d) Nutrient management;
e) Monitoring; and
f) Implementation

3.5 Best Management Practices

It is proposed to incorporate as many DoW best management practices as possible into the drainage design. Some of these could be:

- As far as practical rainfall from minor storms is being disposed as close to where it lands as possible.
- As far as practical stormwater runoff is required to pass through a number of elements that provide opportunities for it to be captured and infiltrated. These elements in order from top of catchment to bottom of catchment are as follows:-
  - Soakwells in road reserves and swales in public open space.
  - "Bottomless" access chambers and roadside drainage swales.
  - Wetlands for storms greater than 10-year ARI event.
- For storm events of less than 1-year and where practical, all lots having an area greater than 350m² will be required to dispose of stormwater on site in soakwells. The exception to this will be an area of about 17ha close to the lake, where clean roof runoff only will be piped to the lake to assist in flushing.
- For storm events of less then 1-year and where practical, roadside swales will be provided to dispose of stormwater runoff from roads where they do not adjoin public open space.
- Roads adjoining public open space or conservation category wetlands, buffers or Bush Forever sites will be designed with flush kerbing and be graded towards such areas meaning rainfall from all storms will be disposed not far from the edge of the road. It is recognised that conservation category wetlands have special environmental significance and as such part of their buffers will be revegetated to assist with the treatment of runoff originating from adjoining roads.
- Use of gross pollutant traps.

3.6 Nutrient Management

Nutrients, particularly phosphorus, emanating from agricultural land uses in the catchment have caused severe eutrophication of the Peel-Harvey estuarine system since the 1970s. Since the 1980s the EPA and other agencies have been working to reduce nutrient loads and improve flushing of the estuary. Measures used have included the development of slow-release fertilisers and the construction of the Dawesville Channel. The water quality of the estuary has improved markedly since the construction of the Channel due to improved flushing, but little change to nutrient inputs has been achieved and the water quality of the lower reaches of the Murray, Serpentine and Harvey Rivers remains poor.

The Environmental Protection (Peel Inlet-Harvey Estuary) Policy 1990 (EPP) placed limits on phosphorus exports from each of the major catchments of the Estuary. However the EPP has proven difficult to implement and the phosphorus targets have not been translated into meaningful land use planning tools.

The EPP is currently being revised as part of the development of a broader Water Quality Improvement Plan (WQIP) for the Peel-Harvey Catchment through the Coastal Catchments Initiative project (CCI). Also as part of the WQIP process, the DoE has undertaken predictive modelling of phosphorus and nitrogen exports from 216 subcatchments, grouped into 17 "reporting catchments". The WQIP is currently being reviewed by the EPA where targets will be established for each of the 17 reporting sub-catchments.

Recent advice from the DoW (C. Zammit, pers. comm.) is that interim targets should be based on pre development water quality levels, where the policy of no net increase in concentrations and loads from pre development levels will be followed.

With the following initiatives and features of the site and the development, nutrient exports from the proposed development are likely to be less than under the existing land use:

- development without any requirement for lowering of the water table;
- the extensive use of fill, which will be selected to achieve a medium to high phosphorus retention capacity; and
- the implementation of water-sensitive urban design and best drainage management practices.

The WQIP found that unmanaged urban development can have higher phosphorus inputs than broadacre agriculture. However, modelling for projects including the Southern River Urban Water Management Strategy (JDA, 2002) and the Austin Cove Urban Water Management Strategy (BES/JDA, 2007) has found that implementation of recognised non-structural water-sensitive urban design (WSUD) measures could achieve reductions of more than 50% in phosphorus and nitrogen inputs compared to non-WSUD developments

3.7 Acid Sulfate Soils

The Austin Cove development area is mapped as having two risk levels for Acid Sulfate Soils (ASS), high and moderate; these risk associations are coupled to the regional geology (see Section 2.1.1). The northern and western portions of the site are identified as high risk, while the eastern and southern boundaries are mapped as moderate risk.

To assess the extent and severity of ASS across the development area, RPS has undertaken extensive sampling and testing in accordance with the (then) Department of Environment Guidelines for the "Identification and Investigation of Acid Sulfate Soils (DoE, 2004b)".

Investigations for ASS have been completed for the following purposes:

- Investigate the presence and severity of ASS in the area of the proposed Feature Lake(s);
- Assess potential fill sources within the site, adjacent to the development area, where these have been shown to have substantial depth of sand; and
- Assess soil material recovered from installed shallow groundwater monitor wells to enable correlation between groundwater and soil quality.

A total of 83 ASS sampling and testing locations have been established. From the available data the following general statements on the presence of ASS can be made:

Where overlying sands are present across all parts of the site, these are typically free of any substantial pyritic acidity (potential acidity).

Potential Acid Sulfate Soils (PASS) are generally associated with deeper profiles that have a discernable clay content; that is soils ranging from clayey sands to clays.

ASS risk mapping correctly identifies the eastern and far southern portions of the site as having a lower risk; testing in these areas has found no to low levels of PASS at depth, with generally no PASS present in near-surface soils.

The development design has sought to manage Acid Sulfate Soils primarily through avoidance, in accordance with DEC preferred practice. On the basis of the ASS investigative findings the feature lake(s) design has been amended so that the footprint is restricted to the eastern (lower risk) portion of the site. With the site requiring substantial filling, and a vacuum sewerage system being proposed, the requirement to excavate into natural soils for the provision of services has been removed, hence avoiding ASS. The lined feature lake will require only a relatively shallow cut (~1-2 mbgl) and minimal dewatering for its construction.

A groundwater monitoring program for ASS has been initiated, collecting baseline groundwater quality data for any future dewatering requirements. An Acid Sulfate Soils and Dewatering Management Plan will be prepared for the development in accordance with DEC requirements.

3.8 Mosquito Management

Within any area of surface water and surrounds, mosquitoes may cause nuisance as a pest and as a vector of pathogens. They require a body of water for the development of their immature stages (larvae and pupae), although the nature of the habitat and the duration of the association may vary and are often specific to each species.

The mosquito borne disease risk associated with the Peel Region and other coastal parts of Western Australia is recognised. Mosquito borne disease risk is a regional problem which affects the whole of the Peel Region, and also in varying degrees all of the coastal parts of Western Australia and other Australian states,

However, on this basis, it would not be reasonable to expect development to be treated differently to existing residential areas surrounding the Peel Harvey Estuary, and the incremental expansion within these areas which is ongoing.

The EPA encourages the adoption of mosquito control measures which maintain healthy wetland ecosystems and minimise the physical alteration of foreshore areas or wetlands. The use of Water Sensitive Urban Design principles is also encouraged to ensure appropriate management of stormwater run-off (EPA, 2000).

The key to mosquito management will be to partner with the Shire of Murray in both monitoring and control programs and providing a built form that responds to this environmental parameter.

Management of mosquito populations can be addressed through the careful design and management of the drainage treatment systems, and the following aspects should be considered in the proposed design:

- minimise potential areas of winter water stagnation through suitable design of water inflow and outflow points (no water proposed in summer); and
- removing accumulations of debris and dead vegetation.

Residents will be informed through memorials/notifications on titles of the issues associated with mosquitoes in the area. Residents will be educated and warned about the need for repellents and will also be encouraged to reduce domestic breeding areas such as empty containers, tyres, drums, roof gutters, fish ponds and swimming pools.

Furthermore, a Mosquito Management Plan has been prepared to identify mosquito nuisance, public health risks and management strategies.

The Mosquito Management Plan includes but is not limited to the following:

- The identification and detailed description of known mosquito breeding sites and habitats on, and in the near vicinity of Pt Lot 1, Lots 1 and 2;
- A detailed analysis and description of methods to reduce and manage identified mosquito breeding sites and habitats on, and in the near vicinity of the subject land;
- Details of the built form response to mosquito nuisance and health risk;
- Details of partnering arrangements agreed between the Council and the developer for mosquito monitoring and control (including a 'Reporting Schedule' which incorporates a Sampling and Analysis Plan to specify the overall sampling collection, storage, analytical specification and reporting methodology) - such details to include description of strata reserve funding to ensure appropriate ongoing contributions;
- Details of a public health education program for future residents of Pt Lot 1, Lots 1 and 2;
- Contingency measures to be implemented in the event that monitoring indicates that mosquito management is determined by the Council to be unsatisfactory; and
- Identification of responsibilities for implementing the Mosquito Management Plan.

3.9 Fire Management Plan

A Fire Management Plan has been prepared in accordance with Clause 2.7 of Schedule 7 of the Shire of Murray Scheme provisions (Amendment 218) and is attached as Appendix Eight to this report.

The ODP reflects the recommendations of the Fire Management Plan through appropriate buffers and road reserves adjoining conservation areas.

3.10 Noise Management Plan

A Noise Management Plan has been prepared in accordance with Clause 2.6 of Schedule 7 of the Shire of Murray Scheme provisions (Amendment 218) and is attached as Appendix Nine to this report. The ODP reflects the recommendations of the Noise Management Plan through the implementation of an appropriate interface between the ODP area and the Perth Bunbury Highway to minimise noise impacts for adjoining residences. Following investigation of a number of alternatives for the Perth Bunbury Highway interface the Shire of Murray have indicated that they require a 50 metre buffer adjoining the Perth Bunbury Highway Road Reserve, including a 34 metre landscaped portion and a 16 metre road reserve. The Shire of Murray's primary objective for this interface is to avoid the appearance of houses

backing onto the road reserve, as well as minimise noise and amenity impacts. As a result of this the Shire of Murray's preferred interface to the Perth Bunbury Highway is a landscaped earth bund, this is accommodated in POS area 'E'. The earth bund has been designed so as to satisfy the requirements of the recognised noise criteria.

In summary, the following noise mitigation measures are proposed as part of the ODP. To achieve WAPC noise criteria:

- A 50m buffer from the edge of the Perth Bunbury Highway reserve to the nearest dwelling, this may include public open space and road reserve;
- A suitably designed earth bund within the 50m buffer adjoining the Perth Bunbury Highway Reserve. A noise wall of appropriate height and design (instead of an earth bund) may be proposed for a short section at the northern end of the development, adjoining an existing wetland;
- Open graded asphalt (or similar) road surface treatment on that section of Perth Bunbury Highway where it is directly adjoining the development. Where open graded asphalt is not provided, a modification may be required to that portion of the ODP and / or the height of the earth bund to accommodate additional buffer requirements;
- Dwellings constructed within the 55-60 LAeq, Day contour will need to incorporate quiet house design principles; and
- An acoustic engineer is required to carry out an assessment of any proposed residential development exceeding a single storey on land within the 55-60 LAeq, Day or greater contour. The developer will administer this assessment through the contract of sale. Confirmation of the assessment will be included in the Building Licensing Application.

In addition, the proponent will address noise impacts arising from any future interchange with the new Perth Bunbury Highway at the time of detailed interchange design.

PART THREE - OUTLINE DEVELOPMENT PLAN

4.0 LAND USE SUMMARY

The Land Use Schedule below describes the Austin Cove ODP (Phase Two) included as Figure 7.

TABLE 1: LAND USE SCHEDULE

AUSTIN COVE OUTLINE DEVELOPMENT PLAN PHASE TWO

	Sub Total (ha)	Total (ha)
GROSS (PHASE TWO) AREA (GA)		**271.74**
Non Residential Land Uses (NRLU)		
Wetlands	11.54	
Primary School	5.5	
Village Centre (Commercial Uses)	2.5	
Mixed Business	1.2	
POS Area E (Perth-Bunbury Highway Buffer)	5.43	
Total NRLU		**26.17**
GROSS RESIDENTIAL AREA (GRA) [GA less NRLU]		**245.57**
Public Open Space		
Required @ 10%	24.5	
Gross Open Space (Phase Two) 29.15% of GRA	71.6	
Credit Open Space to be provided 13.46% of GRA (Refer POS Schedule)		**33**
Surplus Open Space to 10%		**8.5**
(Note: Refer POS contribution rates described in Section 9.0)		

5.0 HOUSING STRATEGY

5.1 Housing Principles

The principles of the Austin Cove Housing Strategy are:

- To create a diversity of residential housing types and lifestyle opportunities;
- To promote mixed use opportunities around and within the village centre, encouraging home based business;
- To pursue environmentally sustainable design approaches in terms of solar orientation of lots and water wise initiatives; and
- Provide a variety in housing choice and lot sizes (e.g. 300m^2 to 700m^2 typically).

5.2 Residential Densities

Austin Cove will ultimately comprise a range of residential densities and housing types, to be developed and refined through the subdivision process. In general terms higher densities and mixed use development will be promoted within and around the village centre and areas of amenity such as open space.

Given the purpose of the ODP is to guide future development, providing key land use distribution and road connections with reasonable flexibility, it is not appropriate at ODP level to set statutory boundaries to R Codings, which will complicate and constrain future subdivision, both for the proponent and approval authorities.

It is necessary to provide guidance and a level of certainty as to the location of areas of low, medium and high density within the ODP area. These parametres and certainty have been provided by setting out residential density location criteria below, forming controls for the location/distribution of residential density codings (refer Sections 5.2.1, 5.2.2 and 5.2.3). The key aspects of this are noted on the ODP (refer Figure 7).

Residential density boundaries will be specifically determined at subdivision stage. Residential densities will be provided on an Outline Development Plan modification and shall be lodged prior to or in parallel with lodgement of the subdivision application for approval, where in accordance with the provisions of the ODP. This process is documented and allowed for through the Statutory Provisions of the ODP, Schedule 7 (Amendment 218) and a notation on the ODP (refer Figure 7).

Generally the base residential density coding is Residential R25. Residential densities in the ODP area will range between Residential R25 to R60.

5.2.1 Medium Density – Residential R25

The following is a summary of the provisions and locational criteria for residential development coded R25.

Residential Density Codings: Residential R25

Dwelling Types: Single and grouped dwellings

Development Controls: Residential Design Codes

Town Planning Scheme No 4 and Council Policies

Detailed Area Plan (to be prepared following subdivision approval for lots less than 350m²)

Location Criteria:

- Residential R25 will be the base coding over the Structure Plan area allowing for the provision of traditional lots ranging in size from approximately 450m² to 650m²,as well as cottage lots ranging from 320m² to 350m²; and
- Located to enhance passive surveillance of public spaces.

5.2.2 Medium to High Density – Residential R30 to R60

The following is a summary of the provisions and locational criteria for residential development coded R30 to R60.

Residential Density Codings: Residential R30, R40 and R60

Dwelling Types: Single, grouped and multiple dwellings

Development Controls: Detailed Area Plans (to be prepared following subdivision approval for lots less than 350m²)

Residential Design Codes

Town Planning Scheme No 4 and Council Policies

Location Criteria:

- Generally adjoining surrounding areas of high amenity, such as open space, lake, village centre, mixed business and key transport connections;
- Generally R60 development will be located within 400m of the village centre;
- Located to maximise access and use of services and facilities, and;
- Located to enhance passive surveillance of public spaces.
- 5.3 Lot Yield Estimates

At this broad level of planning estimated yields based on gross areas have been made largely so calculations can be finalised with respect to traffic volumes, primary school catchments, retail floorspace allocations etc. Residential lot yields, lot sizes and types will be refined at detailed subdivision stage.

The dwelling and lot yields below anticipate an average lot size for Residential R25 lots of approximately 500m^2 to 650m^2 and Residential R30 and R40 lots of approximately 300m^2 to 400m^2.

For the purposes of calculating yield it has been assumed that within each precinct there will be approximately 70% of the land area R25 and 30% R30/R40. This yield breakdown is provided for calculation purposes only, lot sizes will be further refined as the development proceeds.

Based on the Yield Precinct Plan (refer Figure 8), Table 2 below estimates a potential dwelling yield of between 2370 to 2590 dwelling units (including phase one), allowing for single residencies, grouped and multiple dwellings.

TABLE 2: TOTAL ODP AREA DWELLING/LOT YIELD ESTIMATES (REFER FIGURE 8)

CELL	CELL AREA (has) RESIDENTIAL ONLY	APPROX. NO. LOTS	R40 DWELLING UNITS
1	25.01	380	
2	17.95	260	
3	11.3	160	
4	6.98	110	
5	32.92	480	
6	9.36	150	
7	16.61	220	
8	24.03	310	
9	21.19	280	
10	2.50	-	110
11 (Phase One)	19	150	
TOTAL	**186.85**	**2500**	**110**
TOTAL SINGLE LOTS: 2500 **TOTAL DWELLING UNITS: 2610**			

6.0 COMMERCIAL USES

6.1 Village Centre Precinct

The village centre is strategically located adjoining the central open space, lake and primary school with easy access to the Perth Bunbury Highway.

The approved Murray Lakes Golf Course and Lakes Estate Outline Development Plan 1997 and the current Schedule 7 to Town Planning Scheme No 4 allows for a village centre with a maximum retail floor space of 5 000m^2 gross leaseable area (GLA). The Austin Cove village centre will maintain the same approved retail floor space allocation of 5000m^2 GLA. The village centre precinct is approximately 4.5 hectares (2.5 hectares commercial uses).

It is anticipated that the village centre precinct will accommodate a range of uses including: grocery, café/restaurant, newsagent, chemist, specialty retail as well as residential and community uses. Within the village centre precinct residential development will generally be two or more storeys, possibly including multiple dwellings.

The location, size and configuration of the Mixed Business Village Centre Precinct will be reviewed if the zoning of the land to the south changes to Urban, an annotation has been included to this effect on the ODP (refer Figure 7).

Uses within the village centre will generate local employment. Residential development within and surrounding the centre will be an appropriate location for home based business, further boosting local employment. Where possible home based business will be encouraged.

Residential and amenity uses (ie café / restaurant) will be closely integrated with the lake creating an active, vibrant public space at the lake edge. The lake will add considerable amenity, interest and viability to the village centre precinct.

At subdivision stage a village centre precinct Detailed Area Plan will be prepared setting out development standards for uses within the precinct, such as: setbacks, height, car parking, vehicular, bicycle and pedestrian access and relationship to surrounding uses.

Land use permissibility within the village centre will be in accordance with 'Special Development' zone, Table 1 - Zoning Table.

6.2 Mixed Business

An area of Mixed Business has been located adjoining the possible Perth Bunbury Highway interchange. Uses accommodated within this precinct could include showrooms and a service station, although it shall not detract from the use and viability of the village centre.

The retail floorspace of the mixed business area will comprise part of the 5000m² GLA floorspace provision of the Village Centre.

The location, size and configuration of the Mixed Business and Village Centre will be reviewed if the zoning of the land to the south changes to Urban.

Land use permissibility within the Mixed Business area will be in accordance with 'Special Development' zone, Table 1 - Zoning Table.

7.0 PRIMARY SCHOOL

One primary school has been located centrally to the future Austin Cove catchment. The primary school is strategically located adjoining the village centre and has road frontage on three sides. The primary school site has been located adjoining approximately 2 ha local open space to allow for shared use of oval facilities, providing active recreation opportunities (refer Section 8.0).

A number of meetings have been held with Department of Education Training (DET) regarding this school site. It has been confirmed that the Austin Cove estimated yield (2500 lots) is greater than the lot yield for a single primary school catchment(1500-1800 lots), in accordance with WAPC Policy DC 2.4 'School Sites'.

The configuration of the phase two urban zoned land makes catchment definition difficult. The current primary school location is central to the ODP area, in close proximity to the Village Centre, easily accessible from dual use paths from stage one and bus routes, and is co-located with public open space.

The District Distributor Type B (adjoining the southern boundary of the ODP area) forms a significant catchment barrier based on traffic volumes of between 16 000 - 8 000 vpd at the eastern portion. Based on this it has been discussed with DET (16 January 2008) that the Austin Cove ODP area should be considered as a stand alone catchment area. With an expected lot yield of 2500 lots it has been agreed that a larger school site of 5.5ha with 2ha co-located public open space is to be provided.

Concept plans are to be provided by the proponent at the time of subdivision in liaison with DET and SOM to demonstrate that the configuration of the Primary School site will accommodate all required facilities and appropriate access, drop-off and pick-up. The concept plans will also demonstrate integration of the adjoining 2.0 hectare public open space site, which will accommodate shared use active open space for the community and the Primary School.

The proponent is committed to working with DET, Shire of Murray and Department for Planning and Infrastructure to ensure school site provision and site configuration is adequate.

8.0 PUBLIC OPEN SPACE STRATEGY

This section sets out the basic principles of the overall open space strategy for the Austin Cove development. Austin Cove will be developed around a range of open space opportunities. The key categories of open space within the ODP area are:

- Central Open Space and Lake;
- Neighbourhood Parks;
- Local Open Space;
- Multiple Use Corridors;
- Wetlands and Wetland Buffers, and;
- Local Open Space (Perth Bunbury Highway Buffer).

It is envisaged that no resident will be more than approx 400m away from an open space area.

8.1 Public Open Space Schedule

Public open space has been strategically located to balance recreational, asthetic environmental and drainage objectives. Table 3: Public Open Space Schedule and Figure 9 summarise open space provision within the Phase Two (Urban zoned) area.

TABLE 3: AUSTIN COVE PUBLIC OPEN SPACE SCHEDULE
BASED ON LIVEABLE NEIGHBOURHOODS EDT 4
(Plan Ref: 2054-66D-01)

Public Open Space Schedule (all areas are in hectares)		
Site Area		**271.7**
Deductions		
Pump Station	0.1	
Wetland Core	11.5	
Forrest Highway Open Space Noise Bund	5.7	
Local Centre	0.7	
Village Centre	1.8	
Mixed Business	0.8	
Primary School	3.5	
1:1 Year Drainage within POS	0.8	
Restricted Use (above 2%)	6.4	
Total Deductions	**31.3**	
Net Site Area		**240.5**
Gross Subdivisible Area		240.5
POS @ 10%		24.0
Public Open Space Requirement May Comprise:		
Min 8% unrestricted POS	19.2	
Max 2% restricted POS	4.8	
TOTAL POS REQUIRED		**24.0**
Public Open Space Provided	***Unrestricted POS Area***	***Restricted POS Area***
Cenral Lake (F)	2.0	2.4
Destination Park (I)	2.0	0.0
Destination Park (H)	1.5	0.1
Neighbourhood Parks - East (B,C,D,E,G,K,M)	3.4	0.1
Central Linear (J & L)	7.5	0.0
Local Open Space - Primary School (N)	2.0	0.0
Multiple Use Corridor	0.0	8.6
Neighbourhood Parks - West (Q,S,T,V)	3.7	0.0
TOTAL (ha)	**22.1**	**11.2**
Restricted Open Space Surplus		6.4
Revised Public Open Space Contribution		
Min 8% unrestricted POS	22.1	9.2%
Max 2% restricted POS	4.8	2.0%
Total Creditable POS Provided	**26.9**	**11.2%**

1. Site Area is the total area depicted on plan no. 2054-66D-01

2. In accordance with Liveable Neighbourhoods: the area subject to indunation more frequently than a one year average recurrance interval rainfall event is not included as restricted or unrestricted open space and is a deduction from the site area (LN R33); areas for the detention of stormwater for a greater than one year average recurrance interval up to the five year recurrance interval is restricted open space up to 20%, the area greater than 20% is a deduction (not applicable in this case) (LN R26 & Table 11); areas for the dentention of stormwate for a greater than five year average recurrance interval is within unrestricted open space (LN R25).

3. The areas listed as 'Unrestricted POS Area' exclude any areas required for 1 in 1 year drainage.

8.2 Public Open Space Design Principles

The key public open space objective is to provide a readily useable, aesthetic and liveable environment to potential residents from day one. Landscaped open space areas shall incorporate features and facilities to both encourage residential growth and to provide public, aesthetic and site character building amenities to residents. Landscape works shall contain and maximise both aesthetic and functional uses where possible.

8.2.1 Central Open Space & Lake

A major large park will be developed as the defining point of Austin Cove. The large park will be approx 27ha in size and located with a range of adjoining land uses, including a Village Centre with retail and mixed use opportunities and a range of residential lot sizes, see Appendix No.4.

The focal point of the large park will be an open water body approximately 15.9ha in size. The open water body will be fringed with parkland areas that will offer a range of recreation and community facilities. These parkland areas will serve both informal active and passive recreation functions. The parkland adjoining the lake shall consist of open grassed spaces bounded and defined by both feature avenue trees and native tree clumpings. Shrub plantings are planned to strategic areas to provide spatial definition and colour where required. Shrub planting shall primarily consist of lower growing species to enable clear vision and security through passive surveillance. It is proposed that the shrubs will consist of a mix of exotic and native species, with consideration and adherence to Waterwise principles.

The incorporation of landscaped areas fronting the water body and its associated facilities will provide a setting for picnics and informal gatherings. BBQ's and picnic shelters within smaller open areas suitable for informal active recreation will exist. These open areas will vary in size from 80m dia to 20m dia. Vista views and formal path systems to the parkland areas will connect each smaller space generally. All spaces are intended to have water views.

The Central Open Space shall incorporate dual use and pedestrian path systems with built in vehicular crossing and access points for maintenance purposes. Dual use and pedestrian systems shall provide smooth and easy access to all features of the open space and link accordingly into residential and other areas adjacent. Disability access will be given a high priority and will be designed in accordance with relevant Australian Standards.

The open water body will have a static water level maintained by the installation of a lined base and sides. The maximum depth of the water body will be 3m. It is proposed that the open water body will consist of 'marginal / brackish' water obtained from a deep aquifer bore. The water body will be topped up via the bore to maintain the water level. Numerous aeration features will be provided as a central aspect to maintaining good water quality through turnover of the vertical layers of water within the water body and through recirculation. The water body will typically have a shallow bench to its perimeter and grading after this bench at 1:3.5 into the water body beyond for safety. It is envisaged that active recreation possibilities such as kayaking, canoeing or rowing will be possible on the open water body, although this is subject to further investigation. Small launching jetties that will enable the community to launch small water craft will be provided. It is not intended that swimming will be a recreation option within the lake. Signage to lake perimeter will provided to discourage this.

A section of the lake, about 2ha in size, will be hydraulically separated from the major waterbody to be used as an irrigation storage.

Further detailed information relating to the management of the lake will be provided as part of the Lake Management Plan, pursuant to Schedule 7 of the Town Planning Scheme.

With the range of adjoining land uses proposed to adjoin both open water body directly and the large park as a whole, a variety of edges treatments are proposed, refer Appendix No.4. Edge treatments will range from hard finishes such as walling between 300 – 500mm high with grassed, planted or paved edges behind. Boardwalk treatments at key focal points around the Village Centre to allow for al fresco dining opportunities and limestone lot retaining walls which will provide direct lot frontage onto the water body although this is subject to further investigation. Soft edge treatments will consist of grass edges with concrete mowing kerbs and or planted edges.

8.2.2 Neighbourhood Parks

Neighbourhood Parks will generally range in size from 0.4ha up to 1.0ha. Typically these parks will consist of a central built feature and possible playground. Path systems will link to the adjoining residential streets to provide access as necessary. Avenues of trees and minimal shrub planting are preferred. Species will be a mix of native and exotic species that are Waterwise. Drainage areas may be required in these open spaces, and where provided drainages will be landscaped basins, serving a recreational and amenity function.

8.2.3 Local Open Space

Formal active recreation facilities will be associated with the Primary School site located in the centre of the development. A 2ha Local Open Space area will be located directly adjacent the proposed Primary School site. This open space will allow for the shared use of active recreation facilities with both the wider community and the Primary School. Typically the facilities associated with this site will include:

- 1 x minimum size Australian Rules oval with Cricket Pitch;
- 1 x Full size Mixed Use Sports Court, comprising tennis, netball and basketball infrastructure with associated court line markings, and;
- 2 x Cricket Practice Nets.

8.2.4 Multiple Use Corridors

A series of linear open spaces, known as Multiple Use Corridors, will be provided throughout the proposed development, running primarily in an east to west orientation from the Central Public Open Space. Multiple Use Corridors will generally be located on existing drainage lines and will be enhanced to include drainage basins, drainage swales, artificial wetlands and recreation / grassed areas.

The primary function of the Multiple Use Corridors will be to reduce nutrients within urban stormwater runoff from residential areas prior to directing it from the site. In the event of a larger storm event, these open space areas will provide an overflow outlet for the Central Open Space.

Stormwater runoff from the residential areas will be treated in a first flush arrangement within the streetscapes, prior to entry into the open spaces drainage corridors. The open space drainage corridors will consist of swales (grassed and planted) and artificial and natural wetlands with sedges and fringing trees providing additional nutrient stripping capabilities prior to the stormwater exiting from the site.

It is proposed that the drainage open spaces will be designed to incorporate existing trees and understorey vegetation where possible. The retention of water tolerant tree species such as Paperbarks and Flooded Gum will be critical to establishing an immediate passive recreation opportunity. The function of the open space drainage corridors will be primarily a passive recreation function. It is proposed that shelters, boardwalks and associated dual use paths will be constructed over and around the drainage lines and wetland areas providing vital connection links to the residential areas beyond. Opportunities for Interpretative Signage describing the function, flora and fauna of the wetlands will exist.

Drainage lines and wetland areas will incorporate stabilised water entry points, smooth and even grading of contours and mass planting of suitable native water tolerant tree and shrub species and possible adjacent bushland revegetation or turf for informal public use. These swales will not exceed 900mm deep when full.

The Public Open Space Drainage Corridors will exhibit many of the features described previously such as BBQ's and picnic shelters in areas where informal kickabout spaces can be created.

8.2.5 Wetland Buffers

Vegetated buffers will be retained or established around all Conservation and Resource Enhancement category wetlands within the site, with nominal widths of 50m for Conservation Category Wetlands (CCW) and 30m for Resource Enhancement Wetlands (REW). The buffers will be developed and managed for the purposes of conservation, water quality protection and passive recreation.

Passive recreation opportunities within the buffers may include walk trails, boardwalks and shelters. Interpretative signage will be located along footpaths and boardwalks, informing users of the importance of the wetlands and highlighting local flora and fauna.

Stormwater runoff from rainfall events greater than the 1 year ARI event will overflow from the primary infiltration swales within the development site into the wetland buffers, where it will be further filtered by vegetation before entering the wetlands.

The development and management of the wetland buffers will be described in the Wetland Management Plan and Conservation Area Management Plan following consultation with the DEC and the Shire of Murray.

8.2.6 Local Open Space (Perth Bunbury Highway Buffer)

Following investigation of a number of alternatives for the Perth Bunbury Highway interface the Shire of Murray have indicated that they require a 50 metre buffer adjoining the Perth Bunbury Highway Road Reserve, including a 34 metre landscaped portion and a 16 metre road reserve. The Shire of Murray's primary objective for this interface is to avoid the appearance of houses backing onto the road reserve, as well as minimise noise and amenity impacts. As a result of this the Shire of Murray's preferred interface to the Perth Bunbury Highway is a landscaped earth bund, this is accommodated in POS area 'E'.

An indicative concept has been prepared demonstrating the principles of this interface (refer Appendix 6). The key aspects of this are:

- A 50 metre buffer within the ODP area, from the edge of the Perth Bunbury Highway Road Reserve to the commencement of the lots;
- A local road will be provided within this buffer so that adjoining lots front onto and address the open space, and;

- The open space will be landscaped to provide a visual and noise buffer as well as serve a passive recreation function for adjoining dwellings.
- A planted bund to be provided within the buffer for noise attenuation with buffers at a maximum 1:3 grade.

8.3 Streetscapes

Streetscapes throughout the development shall incorporate a variety of treatments in response to the road hierarchy system. In all cases landscape works shall incorporate tree planting in accordance with accepted traffic standards. Treatments may include soft works such as street trees, hedge planting and groundcovers.

Tree species are yet to be selected however it is anticipated that exotic species be selected for major roads and possibly native species for residential streets. The timing of installation (pre or post home construction) is yet to be determined. Street trees shall be allocated at one per lot and two per lot for corner blocks.

It is envisaged that the stormwater runoff from residential roads will be contained in drainage swales within road reserves. Verge swales will only be used adjoining cottage product and public open space. This will be achieved through flush kerbing and verges that are grassed and occasionally planted. The drainage swales will serve as a first flush treatment to remove harmful nutrients and other elements from stormwater runoff prior to it entering Public Open Space Drainage Corridors. A preliminary landscape detail is included, refer Appendix No.4.

8.4 Irrigation Strategy

The project is committed to undertaking water sensitive design with minimal impact on good quality groundwater sources and preserving water quality.

Irrigation water will be supplied by a combination of Leederville groundwater, harvested rainwater and roof runoff via the feature lake and separate irrigation lake.

Exploratory drilling and test pumping undertaken in 2006 by Rockwater Pty Ltd demonstrated the availability of groundwater with a salinity of about 1,600mg/L TDS from the Leederville aquifer at a depth of 45-81m. The test results indicated that continuous abstraction at up to 2,160m^3/day could be sustained without excessive drawdown. The actual irrigation requirement for the estate is predicted to be up to 1,600m^3/day on an intermittent basis. Water will be supplied by two bores, with one primarily used for irrigation and the other primarily for lake maintenance

All irrigation will be installed to the Shire of Murray's standard specifications and industry best practice. Maintenance minimisation processes will apply in all circumstances. Controllers will be keyed and accessed in accordance with Shire of Murray standards. Irrigation will be designed to incorporate stations that can be terminated as agreed upon planting establishment and maintenance handover to the Council in accordance with relevant policies.

8.5 Public Open Space Landscape Maintenance

The mandatory Developer funded and managed landscape and irrigation maintenance period of two years will apply to all public open space areas following completion of landscape construction works. Typically the first year is an establishment period, followed by a second year of consolidation.

After the two year period the public open space landscape and irrigation maintenance will be handed over to the Shire of Murray to manage. As part of the ongoing approval process, every public open space landscape and irrigation design will be submitted to and approved by the Shire of Murray prior to construction commencing. Landscape design will incorporate recreation and environmental requirements, whilst focusing on maintenance minimisation principles and techniques.

The lake (water body) will be maintained, as per the Lake Management Plan, for 10 years or until after completion of Austin Cove Phase 2, whichever is later.

Satterley Property Group would be prepared to enter in discussions with SOM regarding an extended maintenance period for the local open space around the lake edge.

The developer is committed to working with the Shire to deliver outcomes in this process to reflect best practice throughout the development.

9.0 COMMUNITY DEVELOPMENT

The following section provides a summary of key community development initiatives proposed at Austin Cove.

9.1 Communications

The implementation of relevant forms of communication will be the driver ensuring a continued dissemination of community information regarding the development of the estate and all other key initiatives that are proposed and being implemented.

Development of a website that incorporates a main community development heading for the Austin Cove Estate. Relevant links to key stakeholders aims to commence some localised community development, for example the Shire of Murray has existing programs and services and further information can be obtained.

Development and production of local community newsletter on a quarterly basis leading to ownership from the Association to provide this service.

Development of welcome kits for all new residents to the Estate as a good will and welcoming gesture.

9.2 Physical Amenities, Events & Programs

The identification and provision of physical amenities including infrastructure (parks, playgrounds, physical activity opportunities etc) are crucial in the development of the community. The events/programs will complement the physical amenities and build a sense of community through usage of localised infrastructure within the Estate.

- The up-front provision of physical amenities including a venue for the community to utilise will be crucial to effective implementation of community development initiatives.
- Events will commence early in the life of the Estate, for example, a resident welcome night will 'kick off' the sense of community by getting new residents to meet and greet each other to share common stories.
- Events and programs will be on-going encompassing all age brackets of the community within the Austin Cove Estate, for example, community barbeque days, environmental programs with local schools, arts and culture programs, school holiday activities, physical activity opportunities, theme nights, wine and cheese night etc will provide a basis to develop a sense of community.

9.3 Resident Development

The Community Development Plan endeavours to capture the spirit of the community and enhance this into key community initiatives. This will be achieved through a community survey and identified key community development areas including, activities/events, youth, community services, education, environmental initiatives, economic development, recreational pursuits and crime prevention/community safety.

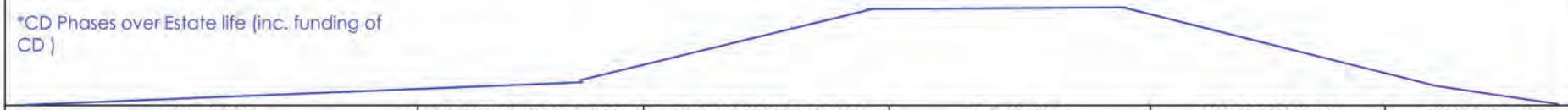
The following are key resident development initiatives:

- The formation of a positive Residents Association early in the development of the Estate will be crucial for sustainable community development;
- Build a strong and positive relationship with local key stakeholders, for example, Shire of Murray, Department Community Development etc;
- A detailed community review of surrounding communities will be undertaken to provide an overview of existing opportunities for community development;
- The development of 'ownership' in the community development of the estate through the formation of sub-committees for example, event committee, youth committee, newsletter committee etc;
- The development of a dual use sales office will provide the 'community space' to commence the localized community development, for example, resident association, playgroups, resident welcome nights, workshops etc.;
- A youth focused strategy will be developed and implemented for the Austin Cove Estate and aims to provide positive outcomes for youth well after the developer has finalised the Estate;
- Development of localized directories for trades, services, contacts etc.; and
- The development and utilisation of a 'point of sale' information gathering tool (1 or 2 page tick and flick document) will provide essential community demographic and desirability of the community to be involved with the communities development of the Austin Cove Estate.

9.4 Phases for Community Development

TABLE 4: AUSTIN COVE COMMUNITY DEVELOPMENT PHASES

*CD Phases over Estate life (inc. funding of CD)



PLANNING	*CONSTRUCTION & SALE*	*ESTABLISHMENT OF CD*	*GROWTH / CONSOLIDATION*	*SUSTAINABILITY*	*PHYSICAL EXIT*
1	2	3	4	5	6
* Tender for Estate Development	* Sale of lots	* Residents move into estate	* Community Survey	* Establish links with existing external groups	* Establishment of facilities e.g.: shops, medical etc.
* Budget Consideration	*Approval proposal CD plan and action for estate	* Establishment of Residents Assoc.	* Establishment of Community Groups	*Funding program & workshops for community group for sustainability	*Finalise budget for CD in estate
* Entry and Exit strategy for CD	*Contact LGA and other key stakeholders to form partnerhips	* Community Event e.g.: concert	* Formalisation of Exit Strategy	*Handover on-going events & programs to community as part of exit strategy	*Exit strategy finalised
* Community facilities design and timing	*Construction of infrastructure & physical amenities	*Promotion of use of localised facilites and infrastructure	* Extent of Community Events	*Staged handover of physical amenities to LGA	*Finalised handover to LGA and other partner
* Development of CD program/plan	*CD plan and community audit	*Implementation of plan	*Review of plan	*Review of plan	*Finalise and evaluate CD plan
* Board Approval	Overall CD program	*Report to Board in-conjunction with CD plan	*Report to Board	*Report to Board	*Report to Board
* Marketing and Communication input	*Development of website & soft marketing	*Commence community newsletter with community news included.	*Continue newsletter and communication with more community input/focus (incorporate community)	*Build community capacity to write and produce newsletter etc	*Handover to community of newsletter etc
* Exit and Entry Strategy in place					
* Key Stakeholder inclusion					
		Resident info pack	Community BBQ in park		
		Newsletters	Environmental programs		
		Resident Welcome nights	Garden competitions		
		Community contact/co-ordinator established	Workshops with key stakeholders		
		Open community space	Community identified events/programs		

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9.5 Community Facilities Needs Assessment

A Community Facilities Needs Assessment is being prepared to identify community facility requirements and funding arrangements. This will inform the preparation of an Memorandum of Understanding between the Shire of Murray and Satterley Property Group for developer contributions and shared infrastructure provision.

10.0 SERVICING AND INFRASTRUCTURE

This section provides an outline of servicing, infrastructure and staging at Austin Cove.

10.1 Staging & Land Release Program

The land release program will commence January 2009 and will end in 2020. This is a period of 11.75 years with a development and release program of four stages per year consisting of approximately 200 lots per annum. Staging of the release will be from the north eastern end of the development and progress south then moving west to complete the development. The release program will be controlled to reflect the market requirements.

10.2 Siteworks and Earthworks

10.2.1 Site Geology

The preliminary investigation of subsurface geology has been carried out by Golder Associates, Geotechnical Engineers. The findings of this investigation have determined the following:

- The northern portion of the site, adjacent to the proposed Perth Bunbury Highway, contains loose to medium dense sand with lenses of clayey sand and sandy clay. These soils present few constraints to residential development and a site Classification of Class 'A' or Class 'S' should be readily achievable.
- The balance of the site comprises a thin layer of surficial sand underlain by a layer of soft clay and loose clayey sands that is generally about 0.4m to 1.5m thick. The layer of soft clay and loose clayey sand is relatively compressible and will undergo settlement in response to loading from placement of fill and future construction. To render this portion of the site such that it is suitable for residential housing, it is proposed to fill and surcharge the site or carry out some form of ground treatment such as dynamic compaction. Once the site is remediated a site classification of predominately 'S' should be achievable.

10.2.2 Fill Levels

It will be necessary to fill the site to elevate final ground levels at least 500mm above predicted 1:100 year flood levels. It is anticipated the final ground level along the western and eastern fringes of the site will be approximately RL 2.6m AHD and 3.6m AHD respectively. This means it will be necessary to place between 1.0m and 3.0m of sand fill over the site.

It is anticipated placement of fill to satisfy flooding issues will also render each lot with an adequate freeboard to the underlying water table, which is at or close to the existing ground surface in winter.

10.2.3 Fill Materials

Imported material to be used as structural fill will comply with the material requirements stated in AS 3798-1996, "Guidelines on Earthworks for Commercial and Residential Developments". As agreed with Main Roads fill materials will be brought to the site via the Beacham Road west access from the Perth Bunbury Highway, using a temporary access track though land owned by Satterley Propoerty Group.

10.3 Roadworks

10.3.1 Access and Road Standards

It is proposed road access to the site be via two principal routes. These are:

- Freeway access to/from the south east corner of the site.
- A north-south road connecting the project with South Yunderup Road.

All internal roads and road links to South Yunderup Road and Perth Bunbury Highway will be constructed to the Shire of Murray requirements.

It is proposed to construct the road link to South Yunderup Road at grade across the Floodway, so that it may become inundated during major floods. Unimpeded access to the Perth Bunbury Highway would still be available for residents during major floods when connection to South Yunderup Road may be temporarily interrupted.

10.3.2 Road Drainage

The traditional kerb and inlet pit piped system is very functional, cost effective and has low maintenance, but it does not accord DoE best management practices since it collects water and concentrates it in a single location, sometimes well downstream from source.To comply with best management practices it is proposed to install short lengths of shallow (approx. 0.5m deep) roadside drainage swales connected by pipes under road crossings. Each swale will be designed to retain low flow events such that water does not pass from one swale to the next until it has filled to a depth of about 200mm. Swales will be grassed and reticulated. It is intended runoff retained in swales will infiltrate through granular fill in the base of the swale. Soakwells may be used to contain frequent, low volume storm events to help provide amenity to adjacent Public Open Space.

To meet DoE requirements, it is proposed sufficient swales be provided to retain and dispose of runoff generated from 1-year ARI storm. It is anticipated about 15 to 20% of all roads will incorporate a roadside swale. The exact percentage will be determined as part of the Urban Water Management Strategy for the project.

10.4 Wastewater

The method for collecting wastewater from the site is being evaluated from three options:

- Vacuum sewer system;
- Low pressure pumping system;
- Gravity sewer system;

The first two options involve much shallower excavations than gravity sewers, meaning it is unlikely underlying Acid Sulphate Soils will be disturbed during construction.

The vacuum sewer system would involve a centralised vacuum pumping station connected to households via a network of vacuum pipes in road reserves. Wastewater would be collected at the central facility and pumped into a below ground pipeline which would discharge to the Water Corporation's infrastructure north of the Murray River.

The low pressure pumping system would involve a small pumping station at each household, which discharges into a pressure sewer in the road reserve. There would be no requirement for a central pumping station, as the driving force provided by the household pumping stations would deliver the wastewater in a below ground pipeline to the Water Corporation's infrastructure north of the Murray River. Although not currently approved by the Water Corporation, low pressure pumping schemes have been trialled by the Water Corporation, and it is anticipated these will be approved by the Water Corporation in the near future.

The strategy for each of the three options is consistent with the Water Corporation's initial planning for the area. Each system is being evaluated on a whole of life costing basis for consideration by the Water Corporation.

10.5 Water Supply

The Water Corporation has confirmed an adequate potable water supply is located in close proximity to the project and can be readily extended to service the site.

10.6 Electricity and Telephone Supply

It is understood electricity and telephone services can be readily extended to the site.

10.7 Gas Supply

As with all of the South Yunderup area, there is no gas supply in close proximity to the site.

PART FOUR: STATUTORY PROVISIONS

This Part is to be read in conjunction with the Amendment Reports as noted in the Record of Amendments.

11.0 RESIDENTIAL DENSITY

Residential densities are to be in accordance with the approved ODP.

A range of lot sizes between the R10 and R60 codes is to be provided to meet the needs of a diverse range of household types and ensure a continuous supply of affordable land.

Medium density (R25 to R60) is to be provided in proximity to areas of high amenity being the village centre, local centre, mixed business area and open space and adjacent public transport routes. This is to maximise access and use of public services and facilities and enhance surveillance of public places.

Generally the R60 density code is to be provided within 400m of the Village Centre.

Target residential densities for the ODP area are:

- 20 dwelling units per site hectare; and
- 25 to 30 dwelling units per site hectare within 400m of the village centre.

Relevant information is to be provided with subdivision applications to demonstrate that the density targets have been addressed,

R Codes will be determined at the time of subdivision, in accordance with the ODP, and be adopted as a modification to the ODP.

12.0 COMMERCIAL USES

The maximum combined retail floor space of the Village Centre and Mixed Business precinct is not to exceed 5000m² GLA.

The location, size and configuration of the Village Centre and Mixed Business precinct areas may be reviewed if the zoning of the Satterley Property Group land south of the ODP area changes to Urban.

Land use permissibility within the Village Centre is to be as per TPS4 Table 1 – Zoning Table – 'Special Development Zone', with the following exceptions:

> Caravan Park; Camping Area; Park Home Park; Car, Caravan Hire; Showrooms; Hire Outlet; Landscape Supplies; Garden Centre; Cottage Industry; and Rural Pursuit shall be 'X' uses.

Land use permissibility within the Mixed Business precinct is to be as per TPS4 Table 1 – Zoning Table – 'Special Development Zone' with the following exceptions:

> Single House; Grouped Dwelling; Aged or Dependent Persons Dwellings; Ancillary Accommodation; Retirement Village; Chalet Park; Caravan Park; Camping Area; Bed and Breakfast Accommodation; Park Home Park; Bank; Cottage Industry; and Rural Pursuit shall be 'X' uses; and
>
> Office shall be an 'IP' use.

The maximum retail floor space of the Local Centre is not to exceed 1500m² net lettable area.

Land use permissibility within the Local Centre is to be as per TPS4 Table 1 – Zoning Table 'Commercial Zone', with the following exceptions which shall be 'X' uses:

> Motel; Car, Boat, Caravan & Agric. Equip Sales; Car Park; Service Station/Petrol Filling Station; Warehouse & Storage; Hardware Outlet; Hire Outlet; Landscape Supplies; Open Air Display; and Service Industry.

13.0 DEVELOPMENT STANDARDS

This section modified by Amendment 3: Austin Cove Outline Development Plan R-Code Variations and Built Form Requirements Part 1: Statutory Provisions. Approved by the Shire of Murray under delegated authority on 24 December 2013.

14.0 PUBLIC OPEN SPACE

A minimum of 10% of the Gross Residential Area (21.47 hectares based on Table 3 of this report, as amended to reflect Liveable Neighbourhoods) is to be provided as public open space within the ODP area. The provision of open space will be staged, consistent with development staging. Public open space contribution rates shall be calculated in accordance with Table 3.

Wetland buffers are to be in accordance with the approved Wetland Management Plan.

The public open space locations and configuration shown on the ODP are indicative and subject to detailed design at the time of subdivision, in accordance with the principles set out in Section 8.2.

A performance review program is to be implemented for Stage 1 of the lake to assess water use efficiency and accuracy of numerical modelling, with achievement of benchmarks forming the basis of approval for subsequent stages of the lake.

A schedule shall be provided with each subdivision application, demonstrating the amount of POS proposed, the amount provided to date and the amount to be provided in the balance of the estate.

15.0 TRANSPORT INFRASTRUCTURE

Regional Road connections to the Perth Bunbury Highway are to be confirmed (refer ODP Report Section 1.3). Developer contributions for major road infrastructure are to be confirmed through a Developer Contributions Area, possibly covering the broader district context.

Upgrading requirements for South Yunderup Road will be determined following a more detailed traffic assessment and will take into account traffic volumes, development staging and alternative access to the Perth Bunbury Highway. The upgrading requirements will be subject to agreement between the proponent and Shire of Murray. Traffic volume triggers for the upgrading will be provided to the Shire with the lodgement of the first stage subdivision application for Phase 2. The formalisation of this agreement shall be reflected as a condition of subdivision approval for the first subdivision application in Phase 2.

Provision of emergency access/egress, in addition to South Yunderup Road, is to be shown on the first stage subdivision application for Phase 2.

The road layout and dual use path locations are indicative only and subject to detailed design and relevant approvals. Permeability, legibility and orientation of street and pedestrian networks shall be outlined in Schedule 7 of TPS4.

Road reserve widths and cross sections are to be in accordance with Liveable Neighbourhoods principles, with detailed designs to be determined in conjunction with the Shire of Murray and Department for Planning and Infrastructure.

16.0 ENVIRONMENTAL MANAGEMENT PLANS

The following section sets out the requirements of the Environmental Management Plans which are to be prepared for the land zoned 'Special Development', pursuant to the provisions of Schedule 7 of the Shire of Murray Town Planning Scheme No.4.

16.1 Urban Water Management Strategy

Prior to adoption of the Outline Development Plan, an Urban Water Management Strategy (UWMS) shall be prepared to the satisfaction of the Shire of Murray, on advice from the Environmental Protection Authority and Department of Water, to adequately demonstrate protection of water resources, provide street drainage and ensure that the rate, quantity and quality of water leaving the site will not adversely impact on the Peel Inlet - Harvey Estuary, wetlands in the vicinity of the subject land, or adversely affect groundwater quality, and that the hydrological balance and ecological flows are demonstrated.

The Urban Water Management Strategy (UWMS) will consist of the following five key elements to ensure an integrated water management approach based on a catchment management approach:

a) Water quality management;
b) Wetland and waterway management;
c) Drainage management;
d) Monitoring; and
e) Implementation

The Urban Water Management Strategy shall include but is not limited to the following:

(i) A baseline sampling program to determine existing quality of groundwater beneath Pt Lot 1, Lots 1 and 2;

(ii) Existing site characteristics such as geology, hydrogeology and groundwater characteristics;

(iii) Principles, objectives and requirements for total water cycle management outlined in the most recent and relevant guidelines and policies;

(iv) A derivation of agreed performance targets for water quality, urban stormwater and drainage treatment system(s) based on protection of water quality within the Peel Inlet – Harvey Estuary;

(v) Identification of water dependent ecosystems and an assessment of the likely impact of changes in quality and quantity of groundwater and/or surface water on water dependent ecosystems;

(vi) Detailed pre and post development total water balance including consideration of imported scheme water, stormwater and groundwater and how these interact with the environment including the Peel Inlet – Harvey Estuary;

(vii) Description of existing stormwater management infrastructure and natural systems (including wetlands), and its impact on groundwater levels;

(viii) Identification of the capacity of the receiving infrastructure and downstream environment to adapt to the post development water balance;

(ix) Discussion of existing superficial/surficial groundwater quality and quantity based on the regional district level information;

(x) Identify the purpose, design and management of the proposed water body;

(xi) Develop 'Water Sensitive Urban Design' best management practices to achieve removal of pollutants and nutrients from surface water and groundwater discharges from the subject land;

(xii) Develop 'Water Sensitive Urban Design' best management practices to maximise stormwater detention, treatment and infiltration on site;

(xiii) Determination of predicted requirement(s) for groundwater to be used for irrigation and / or ornamental purposes at the completion of the development, and predicted impacts on the landscaped and / or native vegetation on the subject land as a result of the drawdown of that required groundwater ;

(xiv) The conceptual stormwater management plan for the area including consideration of the ability of the system to meet any identified targets;

(xv) Issues to be addressed through local structure planning, subdivision and development;

(xvi) Likely sources and infrastructure requirements for water supply, and infrastructure for stormwater management;

(xvii) Monitoring for the purpose of performance monitoring and continuous improvement of the Model for Urban Stormwater Improvement Conceptualisation (MUSIC);

(xviii) Contingency measures to be implemented in the event that pollution and nutrient removal and stormwater detention are not achieving agreed performance targets; and

(xix) Identification of responsibilities and timeframes for implementing the approved Urban Water Management Strategy.

16.2 Lake Management Plan

Prior to adoption of the Outline Development Plan, a Lake Management Plan for the feature lake (central open space) shall be prepared to the satisfaction of the Shire of Murray, on advice from the Department of Water, to adequately demonstrate that water quantity and quality, and the management and maintenance of the water body, is at sustainable and appropriate levels.

The Lake Management Plan shall include but is not limited to the following:

(i) Compliance with design objectives in the UWMS;

(ii) A description of the dimensions, features, purpose and function of the lake;

(iii) A description of the function of the lake during significant storm events, including details about the management of overland flow from that water body to the water dependent ecosystems;

(iv) Details regarding the volumetric capacity of the lake and the proposed means for maintaining water levels;

(v) Details of predicted source water, including associated catchment requirements - as well as groundwater availability, replenishment capacity and sustainability;

(vi) Details of water quality maintenance proposals (such as algal management) including circulation through connection to, and routine use within, the irrigation system for open space areas within the development area of the subject land;

(vii) Management of disease vector and nuisance insects such as mosquitoes and midges;

(viii) Details regarding construction (to a fully functional capability) of the water body and the preservation and protection of the surrounding environment and water dependent ecosystems during this process;

(ix) A detailed 'Management and Maintenance Schedule' for the lake, covering a period of 5 years and commencing from time of its practical completion. This Schedule shall include a monitoring and reporting program and contain details in respect to 'whole of life' costings for the management and maintenance of the water body (for a 20 year cycle), the establishment and ongoing operation of a 'strata reserve fund' to meet those total

costings, and the transfer in perpetuity (after 5 years) of management and maintenance responsibility to the Shire of Murray;

(x) A monitoring program, including definition of performance criteria and analysis procedures, to demonstrate whether the management objectives are being met;

(xi) Contingency measures to be implemented in the event that pollution and nutrient concentrations exceed agreed performance targets; and

(xii) Identification of responsibilities and timeframes for implementing the Lake Management Plan.

16.3 Wetland Management Plan

Prior to adoption of the Outline Development Plan, a Wetland Management Plan over the wetland areas and buffers shall be prepared to the satisfaction of the Shire of Murray, on advice from the Department of Environment and Conservation (DEC), to adequately demonstrate protection of the wetland area and buffer in an appropriate and sustainable manner.

The Wetland Management Plan shall include but is not limited to the following:

(i) A description of the wetlands including their ecosystem, attributes and values;

(ii) Management objectives, including the protection of the water regime that supports the wetland;

(iii) Management actions to ensure that the management objectives are achieved, including the determination of buffers, demarcation of wetland buffer areas, control of access through fencing and paths.

(iv) A monitoring program, including definition of performance criteria and analysis procedures, to demonstrate whether the management objectives are being met;

(v) Contingency plans to be implemented in the event that performance criteria are not met; and

(vi) Identification of responsibilities and timeframes for implementing the Wetland Management Plan.

16.4 Conservation Area Management Plan

Prior to adoption of the Outline Development Plan, a Conservation Area Management Plan over the estuary foreshore reserve adjoining the subject Lots and interface to the Peel Region Park shall be prepared to the satisfaction of the Shire of Murray, on advice from the DEC to adequately demonstrate that the estuary foreshore reserve and Peel Regional Park areas are protected and managed in an appropriate and sustainable manner.

The Conservation Area Management Plan shall include but is not limited to the following:

(i) Description of existing environmental values, site constraints and opportunities (such as landscape and landforms, water dependent ecosystems, vegetation and flora);

(ii) Clear delineation of significant areas to be protected;

(iii) Appropriate buffer/setback to built development, to ensure the preservation, protection and ongoing sustainability of the Peel Regional Park and foreshore area and its estuarine functions;

(iv) Construction, location and management of walking trials;

(v) Control of pedestrian and vehicle access;

(vi) Management of fire, weeds and dieback;

(vii) Identification of management aims, objectives and actions;

(viii) Contribution to management and ecological restoration activities;

(ix) Contingency measures to be implemented in the event that the management of the estuary foreshore and Peel Regional Park is not achieving agreed sustainability targets; and

(x) Implementation Plan including roles, responsibilities, funding and maintenance arrangements.

16.5 Noise Management Plan

Prior to adoption of the Outline Development Plan, a Noise Management Plan shall be prepared to the satisfaction of the WAPC, on advice from the Shire of Murray and DEC to adequately demonstrate protection of the residences from potential noise impacts from traffic on the Perth Bunbury Highway.

The Plan shall include measures to manage the impact of traffic noise on residences and residential area from the Perth Bunbury Highway.

In the event that open graded asphalt is not able to be used on the section of the New Perth Bunbury Highway that adjoins the subject land, a modification to the ODP may be required in order to achieve WAPC noise criteria.

16.6 Fire Management Plan

Prior to adoption of the Outline Development Plan, a Fire Management Plan shall be prepared for the subject land to the satisfaction of the Shire of Murray, on advice from Fire Emergency Services Authority and Department of Environment and Conservation to adequately demonstrate reduction of the threat to residents and fire fighters in the event of bush fire within or near the site.

The Fire Management Plan shall incorporate the following fire management methods:

(i) Protection around each stage of development;

(ii) Fire Protection in Undeveloped Areas;

(iii) Fire Protection in Public Open Space

(iv) Strategic Firebreaks systems;

(v) Dwelling Construction Standards

(vi) Building Protection Zones;

16.7 Urban Water Management Plan

Prior to final subdivision approval (issue of clearances), an Urban Water Management Plan for that stage of subdivision shall be prepared and implemented to the satisfaction of the Shire of Murray, on advice from the Department of Water, to adequately demonstrate protection of water resources, provide street drainage and ensure that the rate, quantity and quality of water leaving Pt Lot 1, Lots 2 and 3, South Yunderup will not adversely impact on the Peel Inlet - Harvey Estuary, wetlands in the vicinity of the subject land, groundwater quality or the new Perth Bunbury Highway.

The Urban Water Management Plan shall include but is not limited to the following:

(i) Compliance with design objectives in the UWMS;

(ii) Measures to achieve water conservation and efficiencies of use including sources of water for non-potable uses and detailed designs, controls, management and operation of any proposed system;

(iii) Detailed stormwater management design including the size, location and design of public open space areas, integrating drainage management capability;

(iv) Specific structural and non-structural BMPs and treatment trains;

(v) Management of groundwater levels, including maintenance of ecosystem health and any proposed dewatering;

(vi) Protection of waterways, wetlands (and their buffers), remnant vegetation and ecological linkages;

(vii) Identify the purpose, design and management of the proposed water body;

(viii) Management of subdivisional works (to ensure no impact on regional conservation areas and management of any dewatering and soil/sediment, including dust);

(ix) Management of disease vector and nuisance insects such as mosquitoes and midges;

(x) Identification of areas of open space within the subject land requiring irrigation and fertiliser application;

(xi) Details of the physical attributes of soils within the identified open space areas and a

determination as to whether fill and/or soil amendment is required to optimise nutrient retention;

(xii) Determination of the overall characteristics of landscape treatments proposed within the identified open space areas;

(xiii) A schedule of tailored fertiliser application and irrigation to protect the receiving environment;

(xiv) An auditing and reporting program for fertiliser and water application to the subject land, including a Sampling and Analysis Plan to specify the overall sampling collection, storage, analytical specification and reporting methodology;

(xv) Monitoring program and/or contribution;

(xvi) Contingency measures to be implemented in the event that pollution and nutrient removal are not achieving agreed performance targets as a result of management of open space areas; and

(xvii) Implementation plan including roles, responsibilities, funding and maintenance arrangements.

16.8 Mosquito Management Plan

Prior to final subdivision approval (issue of clearances), a Mosquito Management Plan shall be prepared to the satisfaction of the Shire of Murray, on advice from the DEC, to adequately identify mosquito nuisance, public health risks and management strategies.

The Mosquito Management Plan shall include but is not limited to the following:

(i) The identification and detailed description of known mosquito breeding sites and habitats on, and in the near vicinity of Pt Lot 1, Lots 2 and 3;

(ii) A detailed analysis and description of methods to reduce and manage identified mosquito breeding sites and habitats on, and in the near vicinity of the subject land;

(iii) Details of the built form response to mosquito nuisance and health risk;

(iv) Details of partnering arrangements agreed between the Council and the developer for mosquito monitoring and control (including a 'Reporting Schedule' which incorporates a Sampling and Analysis Plan to specify the overall sampling collection, storage, analytical specification and reporting methodology) - such details to include description of strata reserve funding to ensure appropriate ongoing contributions;

(v) Details of a public health education program for future residents of Pt Lot 1, Lots 2 and 3;

(vi) Contingency measures to be implemented in the event that monitoring indicates that

mosquito management is determined by the Council to be unsatisfactory; and

(vii) Identification of responsibilities for implementing the Mosquito Management Plan.

16.9 Acid Sulfate Soils and Dewatering Management Plan

Prior to commencement of subdivision works, an Acid Sulfate Soils and Dewatering Management Plan shall be prepared to the satisfaction of the Shire of Murray, on advice from the DEC for the subject land, to adequately identify 'actual' and 'potential' acid sulfate soils and to determine appropriate management strategies for these.

The Acid Sulfate Soils and Dewatering Management Plan shall include but is not limited to the following:

(i) A description of the geology and soils of the subject land;

(ii) Consideration of 'avoidance principles';

(iii) A description of the preliminary areas of proposed ground disturbing activity on Pt Lot 1, Lots 1 and 2 greater than 3 metres in depth, recognising that the risk of disturbing acid sulfate soils is not limited to over 3 metres in depth;

(iv) Detailed designs for any ground disturbing activities, and associated dewatering, of over 3 metres in depth to avoid areas within the targeted PSA identified as containing 'actual' or 'potential' acid sulfate soils (any activities requiring dewatering must first obtain approval and a licence from the DEC);

(v) A specific methodology to address design, management and/or treatment options for any disturbed areas where 'actual' or 'potential' acid sulfate soils are encountered during construction;

(vi) Monitoring and reporting procedures during construction;

(vii) Contingency measures to be implemented in the event that Acid Sulfate Soil and dewatering management is determined by the Shire of Murray or DEC to be unsatisfactory; and

(viii) Identification of responsibilities for implementing the Acid Sulfate Soil and Dewatering Management Plan.

16.10 Construction Management Plan

Prior to commencement of subdivision works, a construction management plan shall be prepared for the subject land to the satisfaction of the Shire of Murray, on advice from the DEC, to adequately demonstrate protection of remnant vegetation, fauna and their associated habitat during construction.

The Construction Management Plan shall include but is not limited to the following:

(i) the minimisation of clearing and vegetation disturbance;

(ii) the protection of wetland areas;

(iii) the control and monitoring of dust, noise and smoke;

(iv) the prevention and control of the spread of dieback; and

(v) the inclusion of environmental protection specifications in all construction related contracts.

16.11 Fauna & Flora Management Plan

Prior to adoption of the Outline Development Plan a Flora and Fauna Survey shall be undertaken to the satisfaction of the Shire of Murray on the advice from the DEC. If any protected and/or threatened fauna or declared rare flora are identified through these surveys, a Flora and Fauna Management Plan shall be prepared to the satisfaction of the Shire of Murray on advice from the DEC to adequately demonstrate management, protection or relocation of specialty protected and/or threatened fauna or declared rare flora within the development area .

The Fauna and Flora Management Plan shall include but is not limited to the following:

Fauna

(i) A description of existing fauna species including frogs, reptiles, avifauna, mammals and significant invertebrates;

(ii) A description of fauna habitat location(s), including those to be retained within the development area of Pt Lot 1, Lots 2 and 3;

(iii) A description of the constraints and/or threats to the long term sustainability of habitat and management proposals to minimise/mitigate these constraints/threats;

(iv) A description of breeding, incubation and fledgling periods of key avifauna and other fauna species, along with details of construction management programs and methods to minimise disturbance;

(v) Details of a fauna relocation program, including an 'Implementation Schedule' containing proposed timing and responsibilities;

(vi) Details of any desirable exclusion of domestic cats from the development, given the significant remnant vegetation, native fauna habitats and environmental values to remain OR what education/information program will be undertaken to advise prospective residents of their responsibilities to ensure the proper control and management of their cats to prevent adverse impacts on the local environment; and

(vii) Identification of responsibilities for implementing the Fauna Management Plan.

Flora

(i) Identification and detailed description of existing significant vegetation, habitat trees, 'tree retention areas' and flora within the development area;

(ii) Identification of flora species that can be successfully relocated;

(iii) A detailed analysis of the required protection and/or relocation process for each species, including timing, protection and/or relocation methods, and immediate and ongoing care requirements;

(iv) The intended destination of such flora specimens and the practicalities of relocation in terms of long-term survival;

(v) Dieback management;

(vi) A 'Monitoring and Reporting Schedule' of identified, protected and/or relocated flora, including a Sampling and Analysis Plan to specify the overall sampling collection, storage, analytical specification and reporting methodology;

(vii) Details of seed collection and replanting opportunities; and

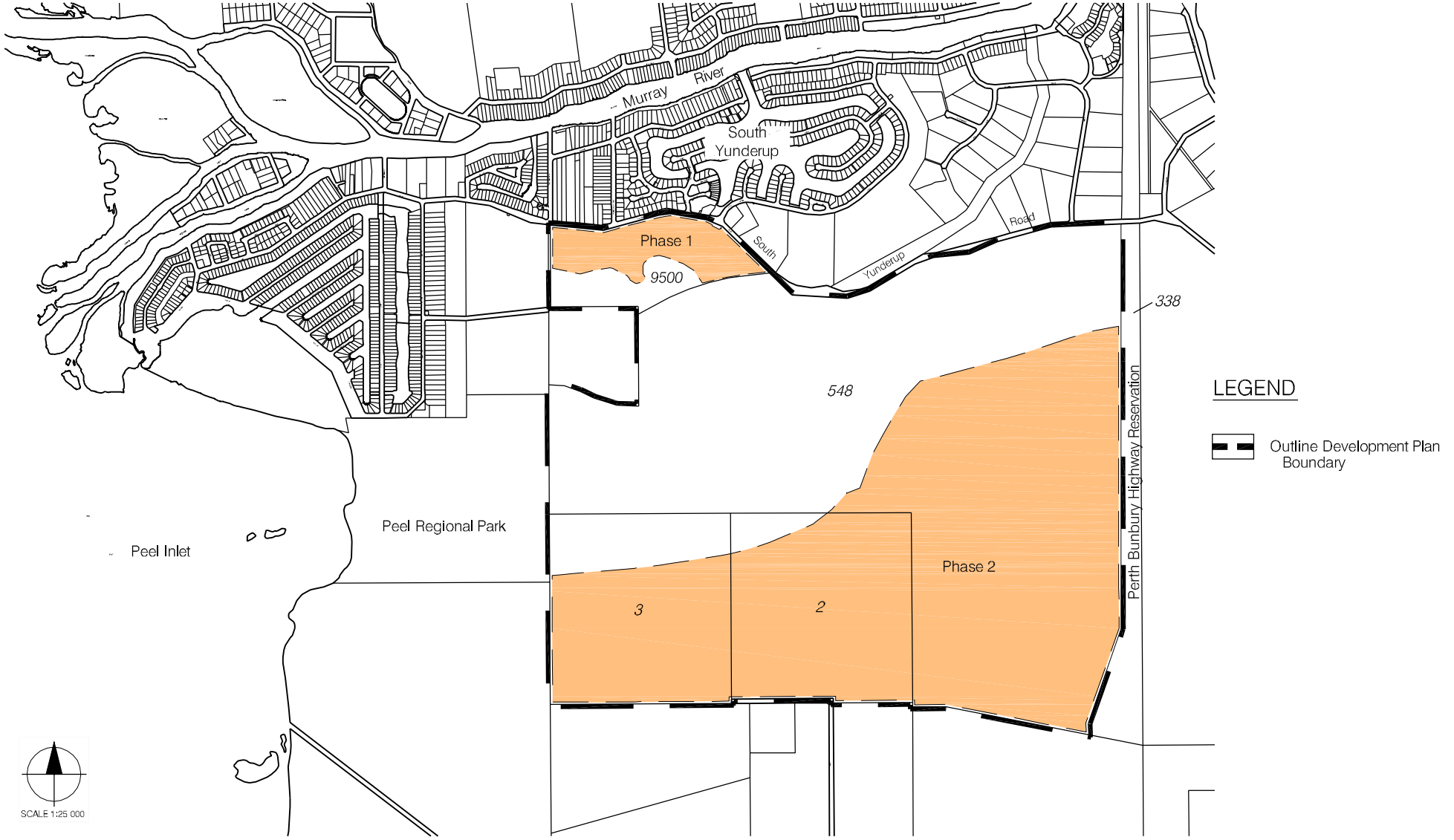
(viii) Identification of responsibilities for implementing the Flora Management Plan.

16.12 Additional Environmental Provisions

Prior to clearance of conditions for the first stage of subdivision, the proponent shall prepare a Threatened Ecological Community management plan to the satisfaction of the Department of Environment and Conservation, demonstrating the location of this community and outlining how it will be protected and managed.

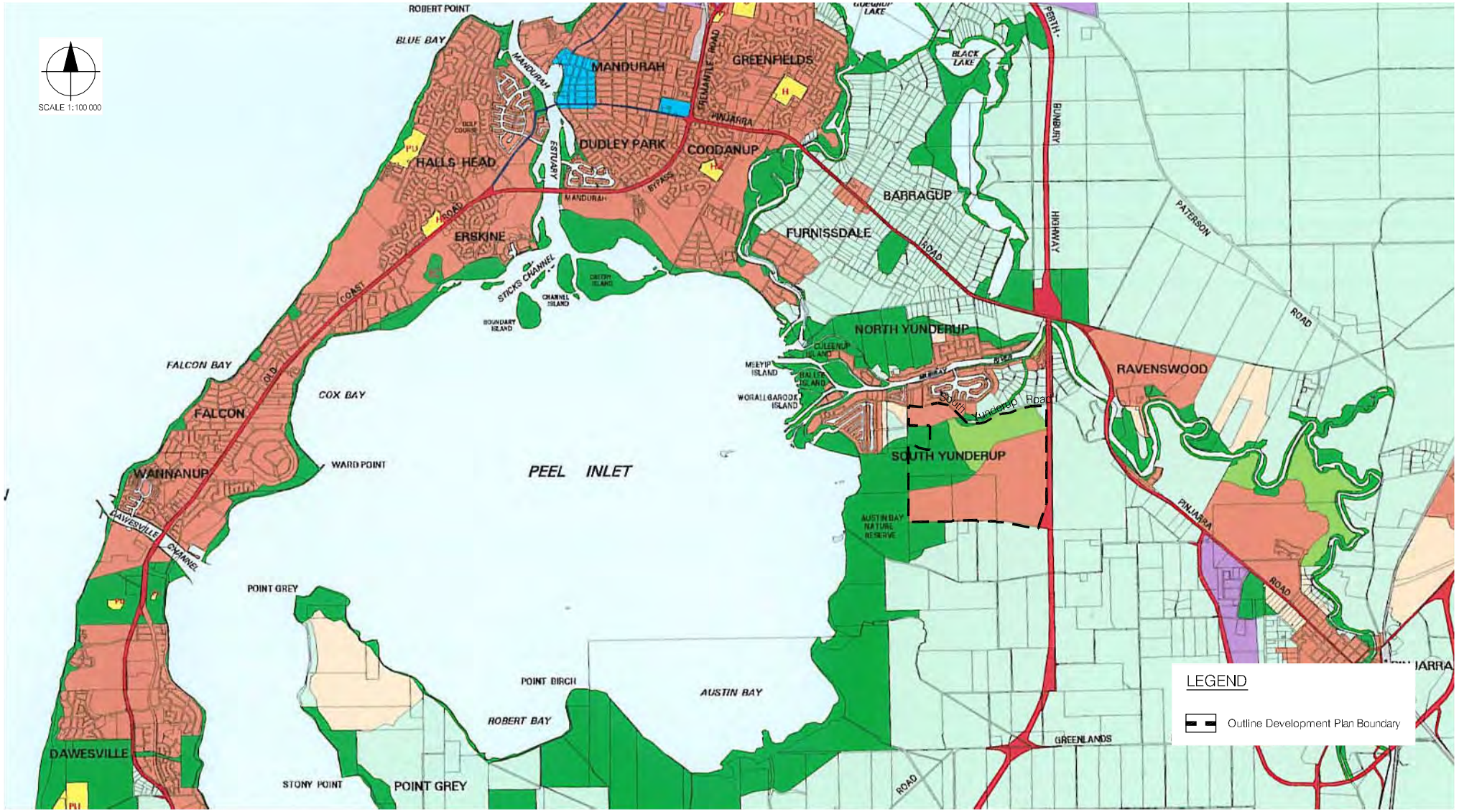
FIGURES

CHAPPELL LAMBERT EVERETT



LOCATION PLAN

FIGURE 1

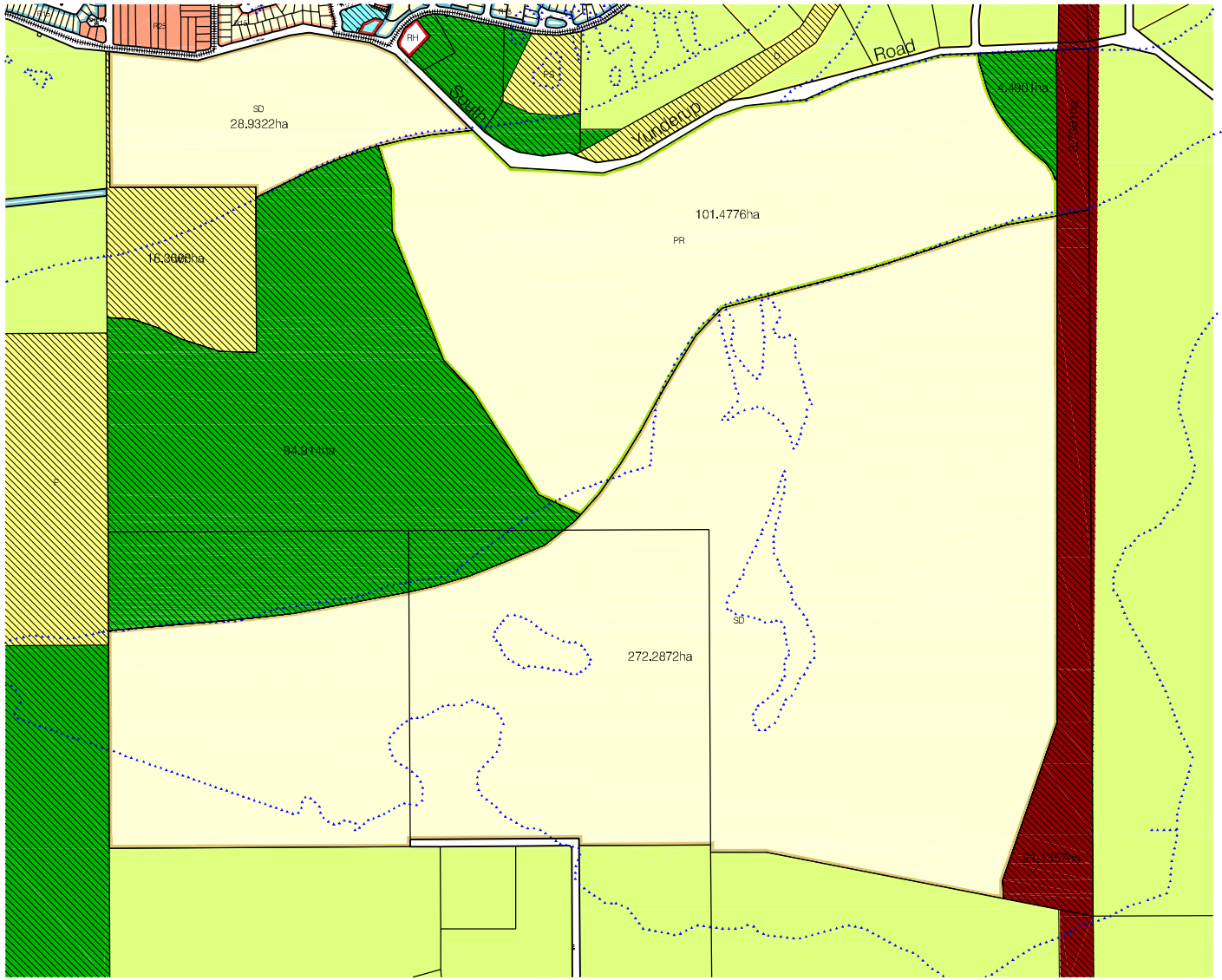


PEEL REGION SCHEME

2054-42B

FIGURE 2

AUSTIN COVE ORTHOPHOTO



LEGEND

LOCAL SCHEME RESERVES

- MAJOR HIGHWAY
- PUBLIC PURPOSE
  - DENOTED AS FOLLOWS:
  - D — DRAIN
  - F — FLOODWAY
  - PS — PRIMARY SCHOOL
  - PU — PUBLIC UTILITY
  - T — TELECOM
  - WSD — WATER SUPPLY
  - WT — WATER TREATMENT
- PUBLIC RECREATION/CONSERVATION

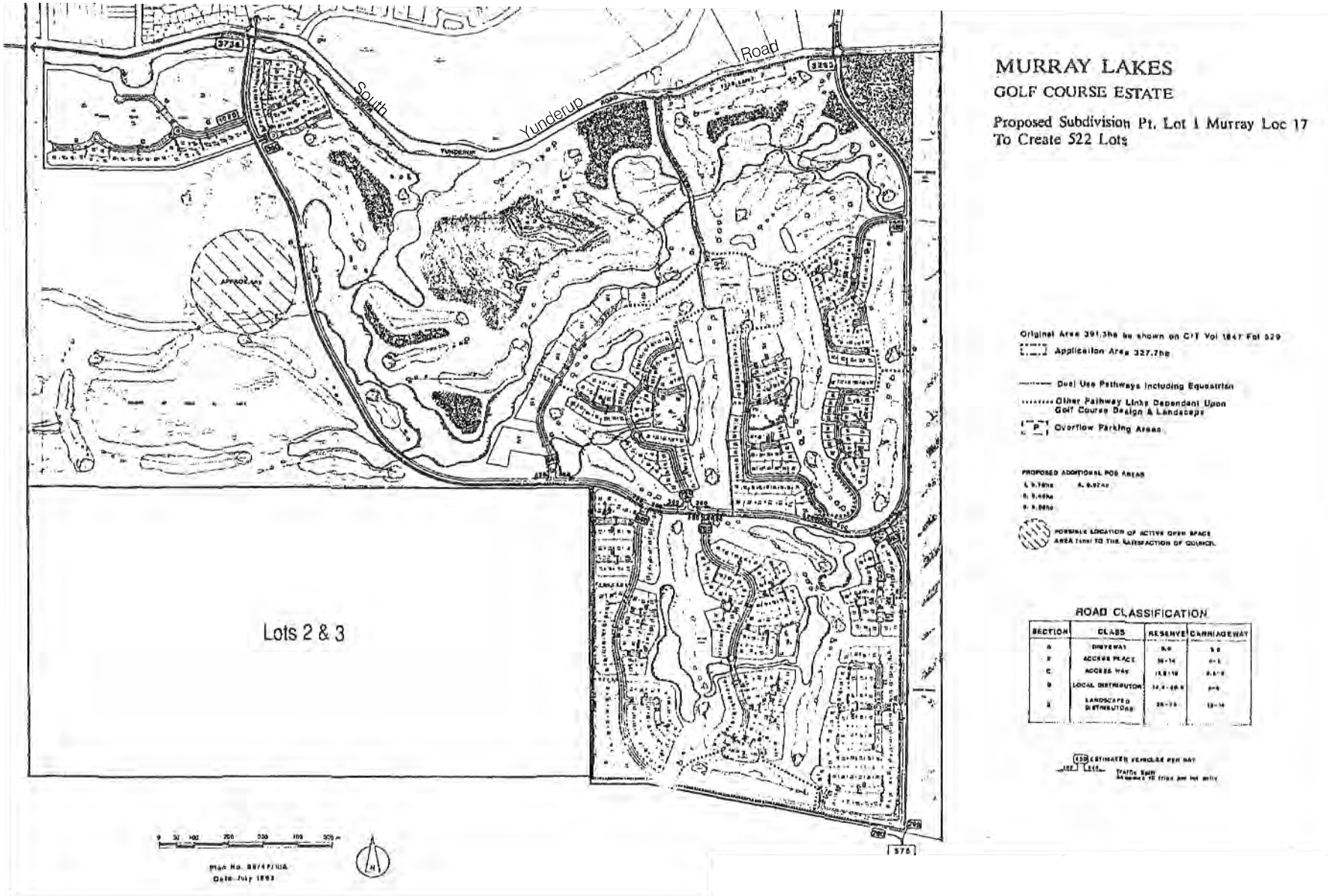
ZONES

- CANAL DEVELOPMENT
- RESIDENTIAL
- SPECIAL RESIDENTIAL
- SPECIAL DEVELOPMENT
  - SD — SPECIAL DEVELOPMENT
- COMMERCIAL
- HOTEL/MOTEL
- SPECIAL USE
  - RH — RECREATION HALL
- PRIVATE RECREATION
  - PR — PRIVATE RECREATION
- RURAL
- SPECIAL RURAL

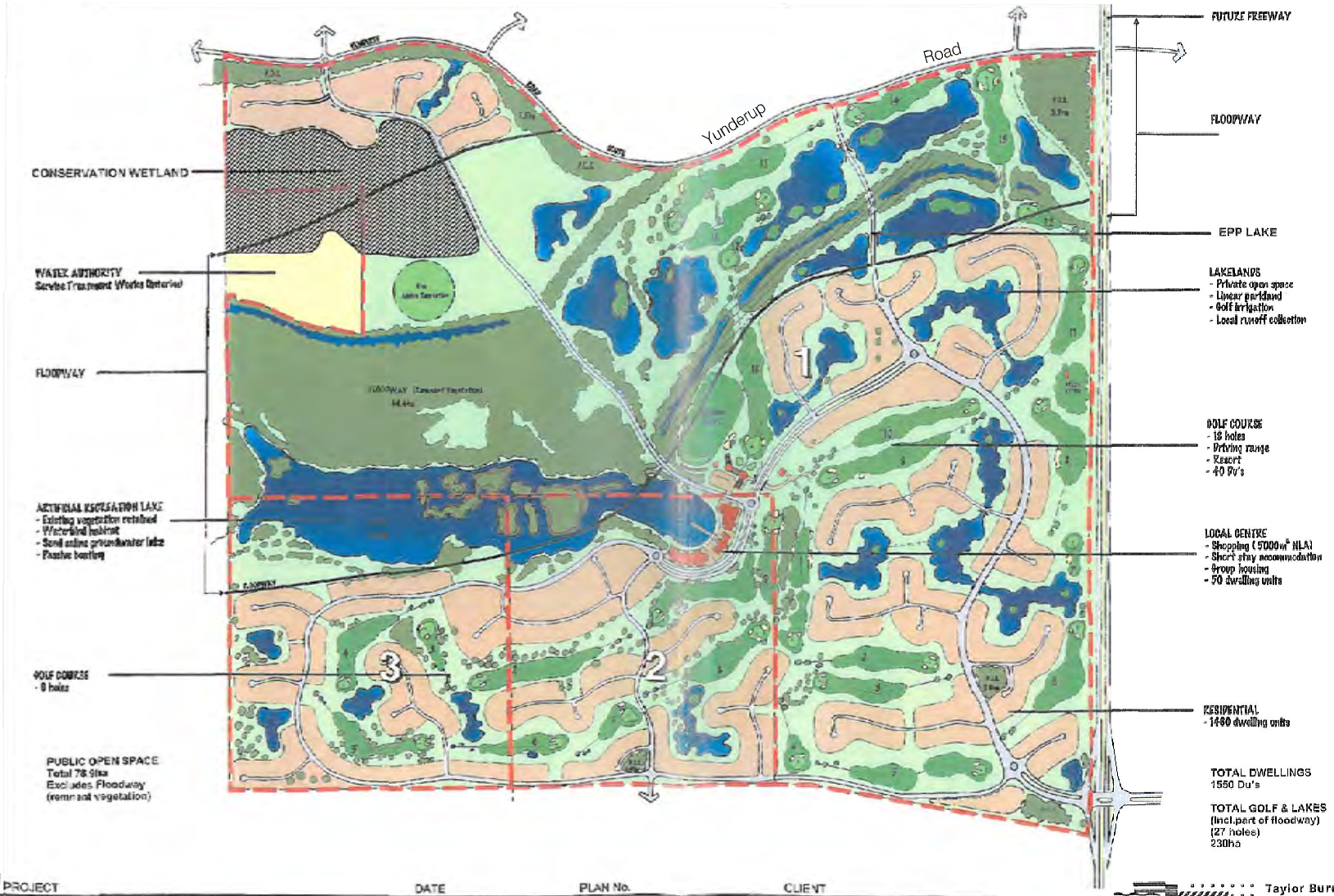
OTHER

- R CODES
- FLOODPRONE AREAS

TOWN PLANNING SCHEME No.4



SUN LAND OUTLINE DEVELOPMENT PLAN 1989



PROJECT	DATE	PLAN No.	CLIENT
MURRAY LAKES GOLF COURSE & LAKES ESTATE	October 1997	88/47/13	Murray Lakes Pty Ltd

Taylor Burrell
Town planning and design
197 Roberts Road Subiaco
PO Box 503 West Perth
Western Australia 6872
Telephone (09) 382 2911
Facsimile (09) 382 4586

Not to Scale

APPROVED MURRAY LAKES GOLF COURSE AND LAKES ESTATE OUTLINE DEVELOPMENT PLAN 1997

LEGEND

- Outline Development Plan Boundary
- Phase 1 Boundary (19.92ha)
- Phase 2 Boundary (271.74ha)
- Residential (R10-R60)
- Wetlands
- Wetland Buffers
- Village Centre Precinct
- Local Centre
- Mixed Business
- Primary Regional Road Reservation
- Major Neighbourhood Connector
- Other Neighbourhood Connector
- Primary School
- Public Open Space (Refer ODP Report Section 9.0)
- Lake Edge (Indicative Lake Layout)
- Parks & Recreation Reserve
- Private Recreation
- Indicative Dual Use Path Location

NOTES:
Residential

1. A range of lot sizes between the R10 and R60 codes is to be provided to meet the needs of a diverse range of household types and ensure a continuous supply of affordable land.
2. Target residential densities are:
   a. 20 dwelling units per site hectare; and
   b. 25 to 30 dwelling units per site hectare within 400m of the village centre.
3. Medium density (R25 to R60) is to be provided in proximity to areas of high amenity being the village centre, local centre, mixed business area and open space and adjacent public transport routes. This is to maximise access and use of public services and facilities and enhance surveillance of public places.
4. Generally the R60 density code is to be provided within 400m of the village centre.

Transport Infrastructure

5. Regional Road connections to the Perth Bunbury Highway to be confirmed (refer ODP Report Section 1.3). Developer contributions to major road infrastructure to be confirmed through a Developer Contributions Area possibly covering the broader district context.
6. Upgrading requirements for South Yunderup Road will be determined following a more detailed traffic assessment and will take into account traffic volumes, development staging and alternative access to the Perth Bunbury Highway. The upgrading requirements will be subject to agreement between proponent and the Shire of Murray. The formalisation of this agreement shall be reflected as a condition of subdivision approval for the first subdivision application in Phase 2. Traffic volume triggers for the upgrading will be provided to the Shire with the lodgement of the first stage subdivision application for Phase 2.
7. Provision of emergency access/egress, in addition to South Yunderup Road, is to be shown on the first stage subdivision application for Phase 2.

Schools

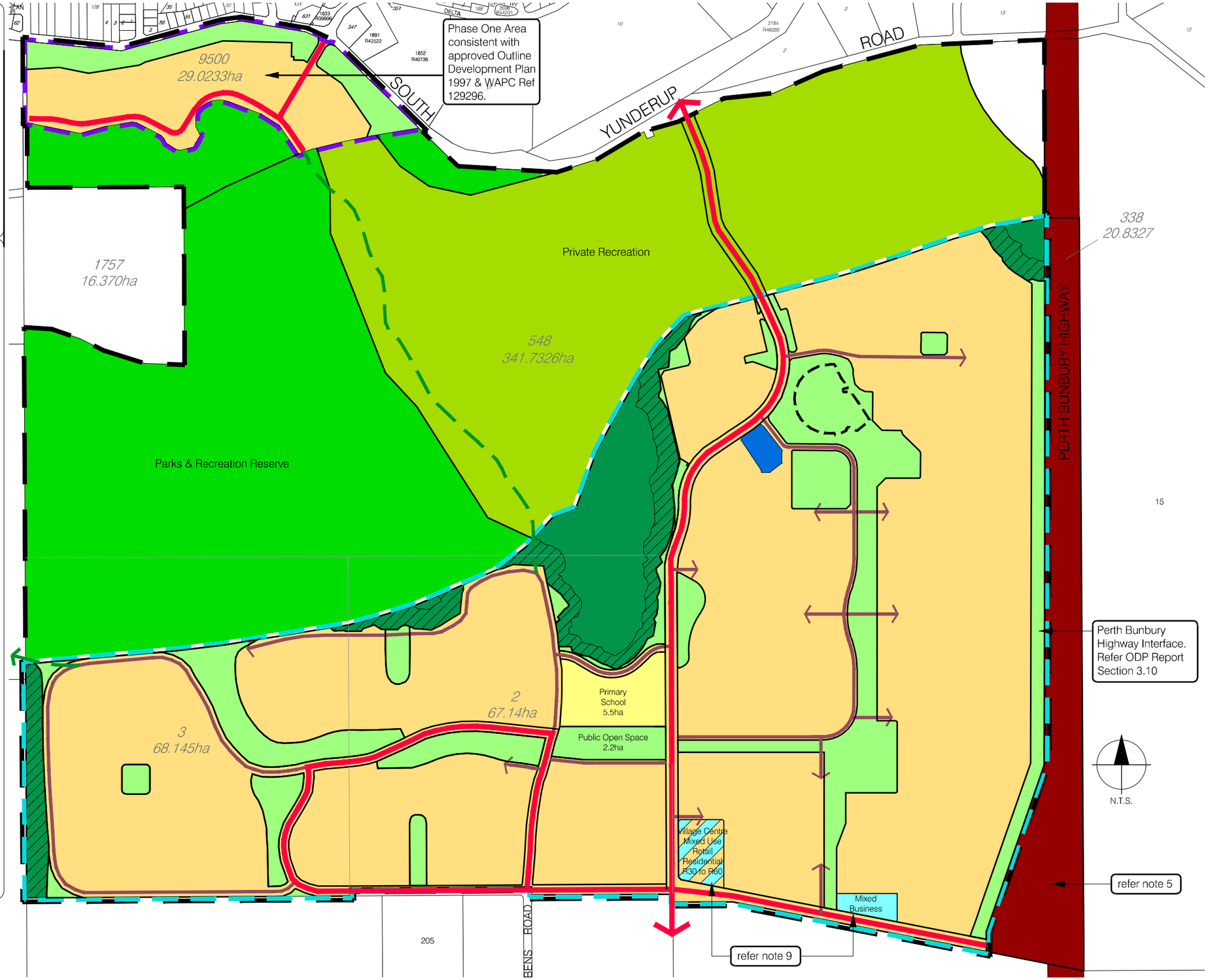
8. Further discussions will be held with the Department for Education and Training, Shire of Murray and Department for Planning and Infrastructure at the time of subdivision to create the school site, regarding the detailed design and configuration of the primary school site (refer ODP Report Section 7.0). If a second primary school is warranted, an Outline Development Plan modification will be required.

Commercial

9. The location, size and configuration of the mixed business and village centre may be reviewed if the zoning of the Satterley Property Group land south of the ODP area changes to Urban.
10. The local centre shall have a maximum retail floor space of 1500m² NLA.
11. Land use permissibility within the local centre shall be in accordance with the commercial zone as set out in Table 1 of the scheme.
12. Local centre buildings are to be located to address streets and/or public open space. Buildings are to be located and detailed to create a strong and identifiable sense of place, with public space detailing appropriate to pedestrian scale.

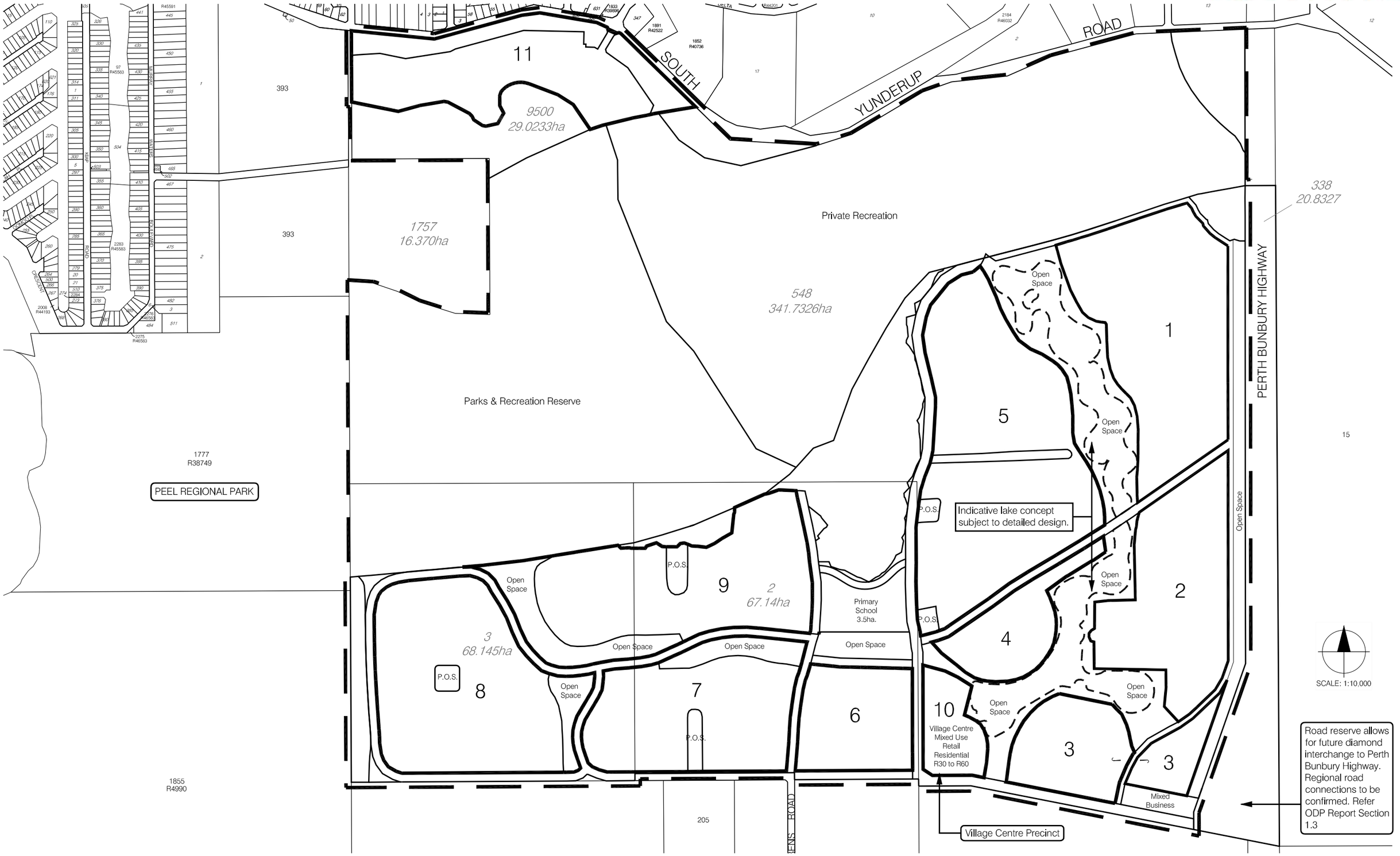
General

13. The road layout, dual use path and public open space locations are indicative only and subject to detailed design and relevant approvals.
14. The approved Outline Development Plan report outlines additional Statutory Provisions that apply to the subject land, including Environmental Management Plans required to be prepared, approved and implemented for the subject land.
15. The Outline Development Plan does not propose any development for the land designated 'Private Recreation' (except for the dual use path and road connection). Any future development will require a modification to the Outline Development Plan and will include measures to protect the wetland.
16. A performance review program is to be implemented for Stage 1 of the lake to assess water use efficiency and accuracy of numerical modeling, with achievement of benchmarks forming the basis of approval for subsequent stages of the lake.
17. It is intended that the finished floor levels of the development will be constructed to a height of between 2.8m and 3.9m AHD.
18. This plan is to be read in conjunction with the Outline Development Plan text.



PLAN 1: AUSTIN LAKES OUTLINE DEVELOPMENT PLAN

2054-547H-01 (17.06.2015), Not to scale



LOT YIELD PRECINCT PLAN


9500
29.0233ha
SOUTH
YUNDERUP
ROAD
1757
16.370ha
548
341.7326ha
338
20.8327
PERTH BUNBURY HIGHWAY
PEEL REGIONAL PARK
1777
R38749
Local Centre
Primary School 3.5ha
2
67.14ha
3
68.145ha
Village Centre
Mixed Use
Retail
Residential
R30 to R60
Mixed Business
205
NS ROAD
A
B
C
D
E
F
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V
W
X
Y
LEGEND
Open Space:
Central Open Space
Neighbourhood Parks
Local Open Space
Multiple Use
Lake
Wetlands
Wetland Buffer

REFERENCES

REFERENCES

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