

# WELLARD

R E S I D E N T I A L



LOCAL STRUCTURE PLAN

OCTOBER 2012





# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN

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## WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN

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**Project No. 2263Rep49C**

**October 2012**



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## **LANDOWNER**

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Wellard Residential Pty Ltd

## **PROJECT TEAM**

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Project Management - Wellard Residential Pty Ltd

Planning and Urban Design - CLE Town Planning + Design

Environmental Assessment - PGV Environmental

Groundwater and Drainage - Emerge Associates

Engineering Infrastructure and Services - JDSI Consulting Engineers

Traffic and Transport - Bruce Aulabaugh Traffic Engineering

Acoustic Assessment - Lloyd George Acoustics

Bush Fire Protection - South West Fire Services

Landscaping - Urban Landscaping

Visual Analysis - EPCAD



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## EXECUTIVE SUMMARY

The Wellard Residential Local Structure Plan (LSP) allows for the creation of a diverse and vibrant urban community within an urban infill setting that responds to the surrounding land use context, natural environment, and State Government infill targets.

The LSP area covers approximately 73ha over Lots 167-170, 83, 85, 92 & 1278 Wellard Road, and Lots 2, 10, and 1 Johnson Road, Wellard ("the subject land"), of which approximately 61.5ha is zoned Urban under the MRS, with the balance zoned Rural. The LSP establishes a robust statutory planning framework that provides a comprehensive guide for future land use and development, whilst recognising the site's context within the strategic planning framework, as well as its physical setting.

The urbanisation and development of the subject land provides further opportunities to maximise the catchment to existing and planned infrastructure through consolidation of urban development, while satisfying State Government infill housing targets, and recognising the natural setting of the land. The wider area between the Kwinana town centre and the Kwinana Freeway has been subject to extensive growth and urban consolidation over the past decade. As a result essential infrastructure is either already in place, or is capable of being extended into the subject land, making it a logical choice for urban infill.

The Minister for Planning approved amendment 1189/57 to the Metropolitan Region Scheme on 30 November 2010 to rezone approximately 89ha of Rural zoned land in Wellard to Urban Deferred. A portion of the Urban Deferred land including the LSP area was subsequently transferred to Urban zone in October 2011.

In considering MRS amendment 1189/57, the Environmental Protection Authority (EPA) set the level of assessment as 'Scheme Not Assessed' and advised that a 50m buffer to the Environmental Protection Policy (EPP) wetland, the southern portion of which sits within the north eastern corner of the LSP, is sufficient to protect and retain the core values of the wetland area. The LSP complies with this requirement.

The LSP responds to the current strategic planning framework provided by the Jandakot Structure Plan, and the draft Eastern Residential Intensification Concept (ERIC). The LSP recognises and elaborates on the key principles of these strategies to provide a statutory mechanism for their implementation.

The LSP allows for the creation of approximately 770-820 dwellings over approximately 61.5ha of Urban zoned land, located between Wellard Road and Johnson Road, to the south of the Bollard Bulrush Wetland. Overall the Plan allows for the provision of approximately 11 hectares of public open space, plus an additional 10ha of wetland core area, achieving an ideal balance between useable passive and active open space, as well as recognising significant vegetation and drainage requirements within public open space



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reserves, and providing view corridors from Homestead Ridge to the west of the subject land. Of the gross urban zoned area the LSP area delivers 18% open space. In accordance with Liveable Neighbourhoods, once appropriate credits are applied 15.4% open space is provided.

Once developed, the LSP area will provide a broad range of housing choice and a variety of lot product. Medium density housing options will be located around key areas of public open space, adjoining primary school and local centre, and adjacent to planned public transport routes, balanced with transitional densities away from core infrastructure and adjoining the Bollard Bulrush Wetland and Bush Forever, recognising that these environmental features do not provide the context for high density development. The LSP achieves an appropriate density for residential development in greenfields locations, in the context of the Bollard Bulrush wetland core and Tramway Reserve to be ceded free of cost to the Crown, and given the proposed betterment of the wetland buffer, Tramway Reserve and POS areas within the LSP.

The LSP is environmentally responsive, recognising areas of mature vegetation in passive areas of open space, and providing a suitable interface to the Bush Forever reserve to the south through a combination of road reserves and public open space. The LSP also provides a similar interface to the Bollard Bulrush Wetland to the north, meeting EPA wetland buffer requirements, ensuring

that the urban land uses are clearly delineated from the wetland areas. Drainage has been designed to be consistent with pre-development flows into the Wetland area and the Peel Main Drain, ensuring that the development will not impact on any downstream wetlands or waterways through a reduction in drainage volumes or water quality.

The LSP demonstrates a clear and legible hierarchy of roads that respond to the existing road network and the City of Kwinana's traffic forecasting and modelling. The internal road network provides permeable east-west and north-south connections via a primary local distributor and local access streets, ensuring that traffic flows and volumes are distributed appropriately throughout the estate.

The LSP demonstrates and confirms that the subject land can be readily serviced, with essential infrastructure already available in the area. Furthermore, given the large majority of the land is in single ownership, cost sharing for provision of infrastructure is not in any way prohibitive to development, and can be addressed through standard agreements with service providers.



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As part of the preparation of the LSP, the following reports, assessments and management plans have been prepared, and are summarised in the LSP report, with full copies included as technical appendices.

1. Environmental Assessment Report (including Wetland Management Strategy)
2. Transport and Access Strategy
3. Local Water Management Strategy
4. Landscape Concept Plan and Open Space Strategy
5. Servicing and Infrastructure Strategy
6. Road and Traffic Acoustic Assessment
7. Fire Management Plan
8. Landscape and Visual Study

These strategies and reports comprehensively address all of the applicable planning considerations, and demonstrate that the subject land is capable of supporting urban development in the form proposed via this LSP.



# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



2263-72-01 (01.09.2011), nts



SITE PLAN & ORTHOPHOTO

Wellard Residential : Figure 1



## 1.0 PLANNING BACKGROUND

### 1.1 Introduction and Purpose

This Local Structure Plan (LSP) has been prepared on behalf of Wellard Residential Pty Ltd, and is lodged with the City of Kwinana pursuant to clause 6.17 of Town Planning Scheme No.2.

The purpose of this LSP is to provide a broad statutory planning framework to guide future subdivision, development, and use of the subject land. The LSP draws on the current strategic planning framework, and refines the level of detail in order to ensure that environmental, social, economic and infrastructure issues are comprehensively addressed, and that a clear and robust statutory framework is provided.

Preparation of this LSP has involved extensive consultation with the City of Kwinana, Department of Planning, Department of Education, Main Roads WA, Department of Water, Public Transport Authority and relevant service authorities. In addition the proponent has also met with adjoining owners who represent the Homestead Ridge Progress Association. The extensive consultation at the beginning of the process has ensured that the LSP addresses all matters raised by the various agencies prior to lodgement.

### 1.2 Land Description

The LSP area encompasses all of Lots 167-170, 83, 85, 92 & 1278 Wellard Road, and lots 2, 10 and 1 Johnson Road. A site plan and orthophoto is Figure 1.

The following sections provide a detailed description of the land and surrounds.

#### 1.2.1 Location

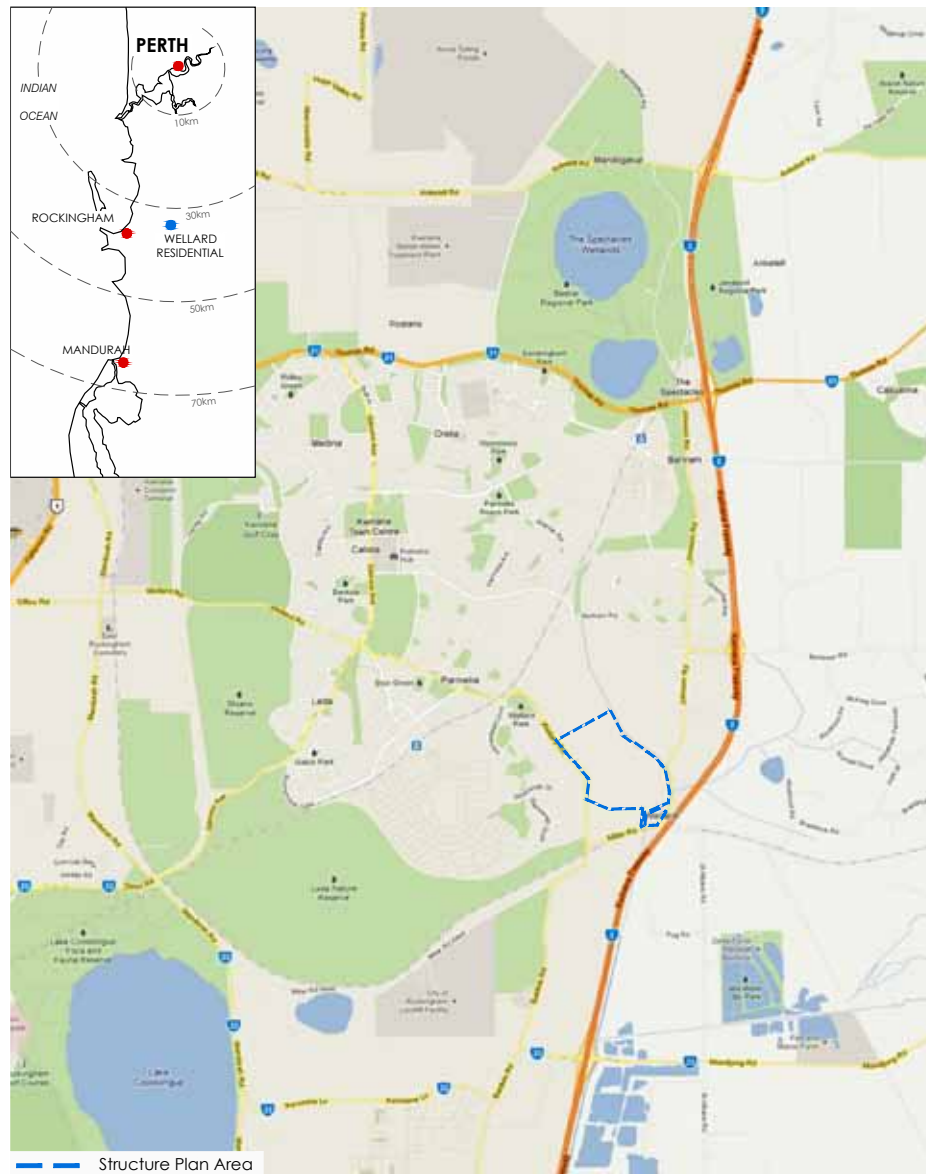
The LSP area is located within the City of Kwinana, approximately 32km south of the Perth CBD, and 2km south east of the Kwinana town centre, identified as a Secondary Centre under WAPC's State Planning Policy 4.2 – Activity Centres for Perth and Peel. A location plan showing the subject land within the Kwinana district is Figure 2.

The areas between the Kwinana town centre and the Kwinana Freeway have been subject to extensive growth and urban consolidation over the past decade. As a result of the extensive consolidation in this area, essential infrastructure is either already in place, or is capable of being extended into the subject land. New housing estates are either planned, under construction, or completed surrounding the site at Bertram, Casuarina, Wellard Village, Wellard East, and Emerald Park (Wellard West).





# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



Source: Google Maps 2011  
2263-73-01 (01.09.2011), 1:50,000 @ A4



LOCATION PLAN  
Wellard Residential : Figure 2



Further infill development is also underway in the Kwinana town centre, Parmelia, and Orelia. The urbanisation of the subject land provides further opportunities to maximise the catchment to existing and planned infrastructure through consolidation of urban development, and to achieve state government infill housing targets.

Figure 3 provides a District Context Plan, showing the context of the surrounding endorsed local structure plans and the strategic planning framework of the WAPC's Outer Metropolitan Perth and Peel Sub-regional Strategy.

The Wellard locality is largely defined by Bertram Road to the north, Wellard Road to the west, the Kwinana Freeway to the east, and Millar Road to the south. The surrounding infrastructure and proximity to the Kwinana town centre afford excellent opportunities to provide a large scale urban infill project.

The subject land is broadly bounded by Bush Forever Area 349 to the south west, the Peel Main Drain to the east, Wellard Road to the west, the Bollard Bulrush Wetland to the north east, and Lot 87 Wellard Road to the north west. An unconstructed portion of road reserve forms a portion of the north eastern boundary of the LSP area, and can be utilised to provide access and servicing of the LSP area.

Lots 1, 10 and 2 Johnson Road are separated from the balance of the site via the Peel Main Drain, which forms the western boundary to these lots. These lots all have frontage and access to Johnson Road, while Lot 2 also has direct frontage to Millar Road. These lots are under separate ownership to the balance of the LSP area, and have been included in the LSP at the request of the City of Kwinana.

### 1.2.2 Area and Land Use

The LSP area provides a gross area of approximately 73.82ha. This includes 11 freehold lots ranging in size from 0.7ha to 15ha.

The land is predominantly cleared, and has historically been used for grazing of livestock, and other agricultural purposes.

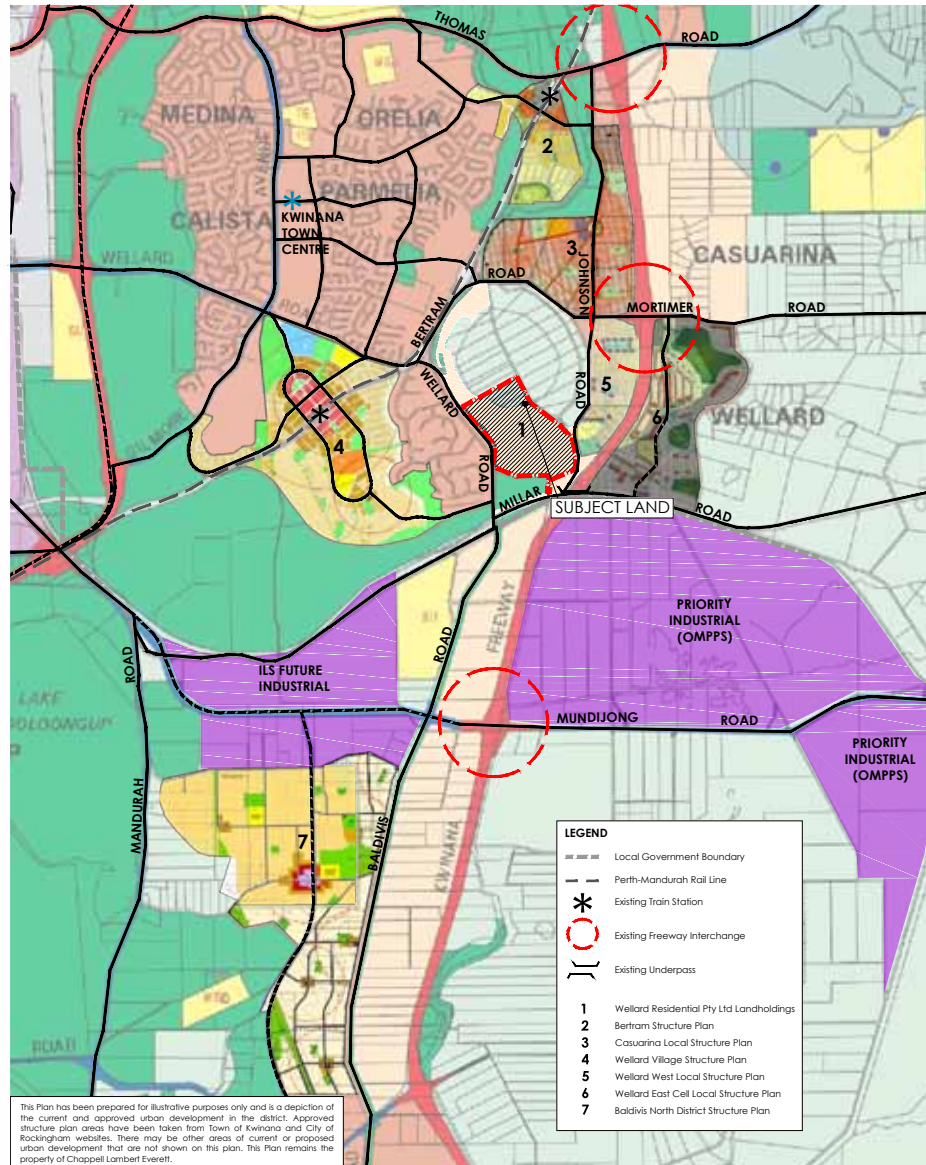
### 1.2.3 Legal Description and Ownership

The LSP area comprises of Lots 167-170, 83, 85, 92 & 1278 Wellard Road, and Lots 1, 10, and 2 Johnson Road in Wellard. Wellard Residential Pty Ltd is the sole beneficial landowner of the large majority of the subject land, with the exception of Lots 1, 10 and 2 Johnson Road, which are privately owned.

Table 1 provides the legal description and ownership of the subject land.



# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



Source: Google Maps 2011  
2263-74-01 (01.09.2011), nts



## DISTRICT LAND USE AND TRANSPORT CONTEXT

Wellard Residential : Figure 3





**Table 1 – Land Ownership and Legal Description**

Lot Number	Plan Number	Area zoned Urban	Rural zone and Parks and Recreation Reserve	Lot Area (Total 73.82ha)	Landowner
167 Wellard Road	202766	1.7161	3.732	5.4481ha	Wellard Residential Pty Ltd
168 Wellard Road	202766	2.0774	3.3378	5.4152ha	Wellard Residential Pty Ltd
169 Wellard Road	202766	2.5738	2.7959	5.3697ha	Wellard Residential Pty Ltd
170 Wellard Road	202766	4.1189	1.1977	5.3166ha	Wellard Residential Pty Ltd
83 Wellard Road	202766	7.1171	0.5927	7.7098ha	Wellard Residential Pty Ltd
85 Wellard Road	202641	15.1150	0	15.1150ha	Wellard Residential Pty Ltd
1278 Wellard Road	144366	14.2084	0.6471	14.8555ha	Wellard Residential Pty Ltd
92 Wellard Road	202645	11.9780	0	11.9780ha	Wellard Residential Pty Ltd
<b>Total Wellard Residential Landholdings</b>		<b>58.9047</b>	<b>12.3032</b>	<b>71.2079ha</b>	
2 Johnson Road	65344	1.0326	0	1.0326ha	Seth Anthony Bombara
10 Johnson Road	65115	0.6943	0	0.6943ha	Amanda Rogers
1 Johnson Road	65344	0.8881	0	0.8881ha	Roy Anthony Eddleston
<b>Total LSP Area</b>		<b>61.5197</b>	<b>12.3032</b>	<b>73.8229ha</b>	



# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



## MRS LEGEND

--- CURRENT BOUNDARY

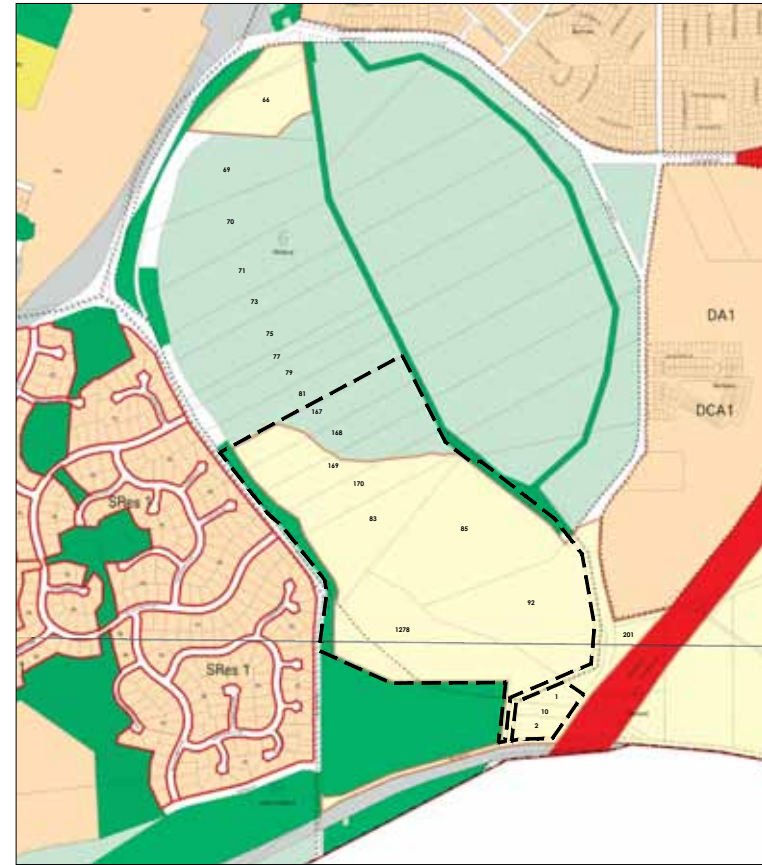
### RESERVED LANDS

- PARKS AND RECREATION
- PUBLIC PURPOSES
- ROAD

### ZONES

- RESIDENTIAL
- RURAL A

METROPOLITAN REGION SCHEME  
Wellard Residential : Figure 4



## MRS Reserves

- Parks and Recreation
- Primary Regional Roads
- Structure Plan Area

## Local Scheme Reserves

- Park Recreation & Drainage
- Public Purposes

## Zones

- Development
- Special Residential
- Residential
- Special Rural
- Rural A

TOWN OF KWINANA - TOWN PLANNING SCHEME No. 2  
Wellard Residential : Figure 5



### 1.3 Planning Framework

#### 1.3.1 Zoning & Reservations

##### Metropolitan Region Scheme

The Metropolitan Region Scheme (MRS) currently zones the bulk of the subject land as Urban. 9.7ha in the north east corner of the site is zoned Rural, while a 2.42ha strip adjacent to Wellard Road is reserved for Parks and Recreation, reflecting the existing 'Kwinana Tramway Reserve'.

The Bush Forever Area 349, located to the south of the subject land, is reserved for Parks and Recreation. The Bollard Bulrush Wetland and Peel Main Drain to the north and east is currently zoned Rural, though it is understood that the wetland area may also be reserved for Parks and Recreation as part of a future MRS amendment.

Figure 4 shows the current MRS zoning.

##### City of Kwinana Town Planning Scheme No.2

The City of Kwinana Town Planning Scheme No.2 (TPS 2) currently zones the large majority of the subject land Development, with the exception of the Tramway Reserve on the western boundary, which is shown as Parks and Recreation (MRS) Reserve, and the Bollard Bulrush Wetland core area which is zoned Rural A. The Peel Main Drain is reserved under TPS 2 for Parks, Recreation and Drainage.

A plan showing the current zonings under TPS 2 is Figure 5.







### 1.3.2 Structure Planning

#### Jandakot Structure Plan

The subject land is included within the area covered by the Jandakot Structure Plan, a sub-regional structure plan prepared by the WAPC in 2007. The Jandakot Structure Plan provides a broad strategic planning framework to guide future region and local scheme amendments, and local structure plans.

Importantly the Jandakot Structure Plan broadly identifies the entire area of the subject land and surrounds as 'Short Term Urban'. The Jandakot Structure Plan is Figure 6. Many of the more detailed principles of the Jandakot Structure Plan have now been addressed & clarified through the draft Eastern Residential Intensification Concept and as part of the MRS amendment to rezone the land to Urban Deferred, and subsequent transfer to Urban.

#### Eastern Residential Intensification Concept District Structure Plan (draft)

The Eastern Residential Intensification Concept (ERIC) was prepared as a draft by the City of Kwinana in 2005. The ERIC has not been formally adopted by the City of Kwinana or the WAPC following advertising, though it is understood that it is still used as an operational guide for urban development and structure planning by the City. A copy of the draft ERIC is Figure 7.

The draft ERIC is a district level structure plan and identifies a number of urban cells, and provides a broad strategic framework guiding land use, infrastructure and environmental management for each cell.

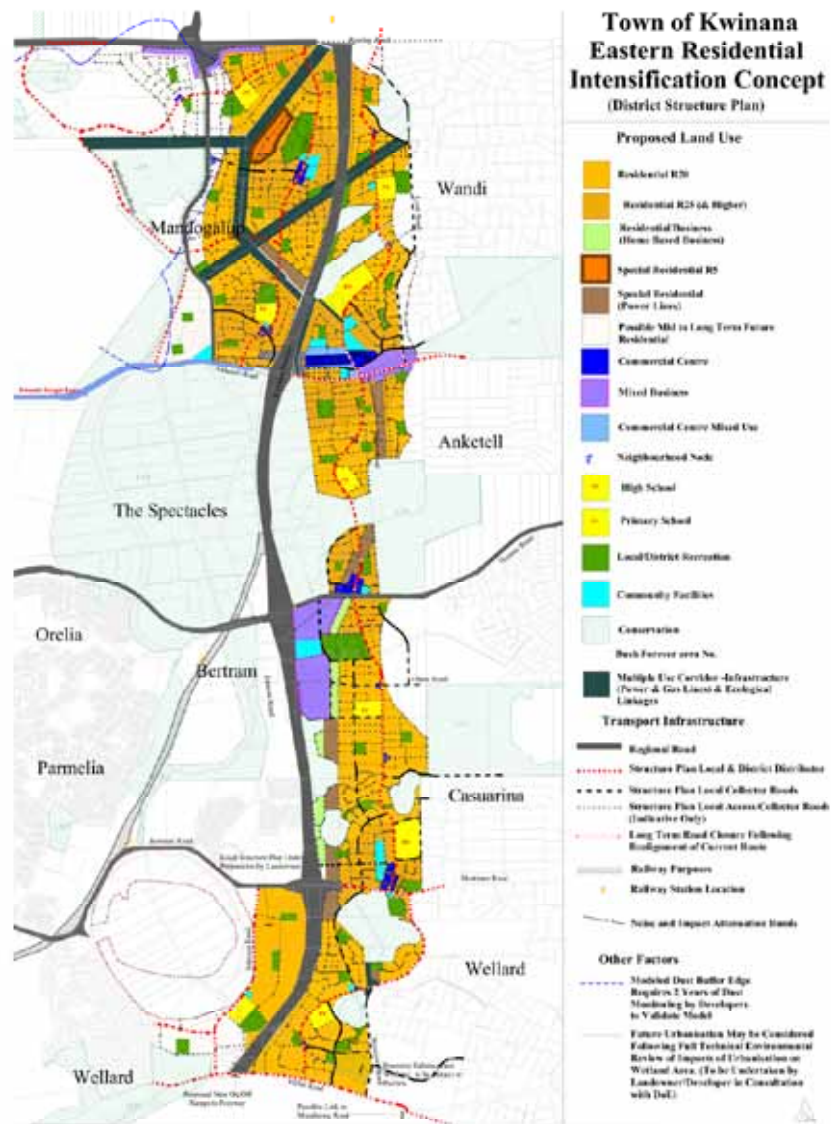
The LSP area is located within the Wellard (west) cell with the majority of the land identified as 'Possible Mid to Long Range Future Residential'. The draft ERIC notes that future urbanisation over the balance of the land may be considered following full technical environmental review of the impact of urbanisation on the EPP wetland area. Further discussion on the EPP wetlands and the technical environmental review is included in Appendix 1. Importantly, this work has now occurred and is reflected in the Urban zoning of the land.

Other key elements of the draft ERIC which are applicable to the LSP area include:

- Recognition that the subject land has sufficient elevation from groundwater and the wetland area to indicate that it has the potential for urbanisation;
- A half diamond interchange to the Kwinana Freeway at the existing Millar Road underpass (which Main Roads have since confirmed will not be provided);
- Proposed realignment of Johnson Road, crossing the Peel Main Drain and passing through the LSP area. The alignment has been refined in the LSP to connect north south to Millar Road as requested and agreed with the City of Kwinana;



# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



Source: Open Office 2011  
2263-79-01 (06.09.2011) nls

DRAFT EASTERN RESIDENTIAL INTENSIFICATION CONCEPT PLAN

wellard Residential - Page 7





- An east / west local distributor connecting the realigned Johnson Road with Wellard Road, reflected in the LSP;
- A primary school and district open space located to the east of the LSP area and Johnson Road.

Further discussion on these elements and how they are addressed through the LSP is provided in part 3 of this report.

### 1.3.3 Relevant WAPC Policies & LSP Response

The following sections summarise those government policies and strategies that are relevant to the urbanisation and development of the LSP area.

#### SPP 5.4 – Road and Rail Transport Noise and Freight Considerations in Land Use Planning

The LSP area is located in close proximity to the Kwinana Freeway – an existing primary regional road and major transport corridor, as well as the Mundijong Freight railway line. As such, the proposal must be considered in the context of SPP 5.4, which guides noise sensitive development in proximity to major transport routes.

An assessment of the site in the context of both the Kwinana Freeway and the Mundijong rail line confirmed that the easternmost portions of the LSP area are affected by traffic noise generated by the Kwinana Freeway. The same investigation confirmed that the LSP area is not affected by noise or vibration generated by the Mundijong rail line.

In accordance with SPP5.4, a Road Traffic Acoustic Assessment has been prepared by Lloyd George Acoustics. The Acoustic Assessment is prepared in accordance with the parameters of SPP 5.4, and identifies the portions of the LSP area that will require additional noise mitigation / quiet house design. The Acoustic Assessment is included as Appendix 2 to the LSP.

#### Planning for Bush Fire Protection Guidelines

The WAPC and FESA released Planning for Bush Fire Protection guidelines in May 2010 as a means of outlining the matters that need to be addressed through the planning process in order to protect life and property in the event of a bush fire.

The LSP shares its southern boundary with Bush Forever Area 349. In accordance with the guidelines, a Fire Management Plan (FMP) has been prepared by Southwest Fire Services, refer Appendix 3. The FMP identifies a combination of wider road reserves, building setbacks, and built form treatments in accordance with Australian Standard AS3959 as the best means of ensuring adequate fire protection for future development in affected areas.

The FMP has been prepared in consultation with the City of Kwinana fire and building officers, who have confirmed that those lots that are deemed to be affected are to be constructed in accordance with AS3959 construction standards, as determined and required by the City of Kwinana.



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### 1.3.4 Previous Approvals & Decisions

The WAPC resolved in 2010 to amend the MRS to rezone the Wellard Urban Precinct (west), including the LSP area, to Urban Deferred. This decision was informed by a submission presented by the previous landowners and their consultant team.

Prior to rezoning the land, the proposed amendment was referred to the Environmental Protection Authority (EPA) to determine the level of assessment. The EPA reviewed the proposal, and subsequently set the level of assessment as 'Scheme Not Assessed', noting that a 50m buffer to the EPP Lake will provide adequate protection to the EPP lake and wetland. A copy of the EPA advice is Appendix 4. The LSP provides a minimum 50m buffer to the EPP lake and wetland in accordance with the EPA advice. A portion of the Precinct, including the LSP area has since been transferred to Urban zone.

## 1.4 Context Analysis

As demonstrated in the District Context Plan at Figure 3, the subject land is one of the last remaining undeveloped sites west of the Freeway within the City of Kwinana that is suitable for urban development. The LSP provides an excellent opportunity to further consolidate urban development in the area, and to ensure that land use and infrastructure planning is integrated and coordinated throughout the district. This is further demonstrated in the sections below.

### 1.4.1 Transport Routes

The site has convenient access to a number of existing north-south and east-west transport routes, providing strong linkages to a range of activity centres, employment nodes, public transport, and recreational areas.

The Kwinana Freeway provides the primary north-south transport route. The Freeway can be readily accessed via interchanges at Mortimer Road to the north, and Mundijong Road to the south.

Wellard Road has been identified by the City of Kwinana as a future District Distributor, providing a secondary north-south route. Early discussions with the City have indicated an anticipated ultimate traffic volume for Wellard Road in the vicinity of 15 000 vehicles per day at capacity. The LSP provides controlled access to Wellard Road via a roundabout or priority T intersection, ensuring that the future community has a convenient access to the district distributor. A secondary access to Wellard Road is proposed further to the north, improving access and permeability for the north western lots. This access has been identified as a full movement priority T intersection, though it is recognised that it could potentially be downgraded to a left in / left out when Wellard Road is constructed as a dual carriageway with a divided median.



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The City of Kwinana has also identified Johnson Road as a local distributor within the district hierarchy. Johnson Road is expected to carry relatively low volumes of north-south traffic, with an estimated volume of 1 260 - 2 100 vehicles per day at capacity. Consistent with the draft ERIC, the LSP proposes to realign Johnson Road through the centre of the LSP area, enhancing the function of the local distributor. Discussions with the City have confirmed anticipated volumes for the realigned Johnson Road will not exceed 3 000 vpd.

East-west transport routes are currently provided via Millar Road to the south, including a Freeway underpass linking the future industrial area to the south east with the Kwinana town centre and surrounds. The LSP provides a direct connection to Millar Road via the realigned portion of Johnson Road.

Bertram Road also provides an east-west connection further to the north, linking Wellard Village to the Kwinana Freeway at the Mortimer Road interchange.

A comprehensive Traffic and Transport Assessment has been prepared by Bruce Aulabaugh, traffic consultant, and is included as Appendix 5. The Traffic and Transport Assessment identifies the existing transport routes and road hierarchy, and ensures that the LSP is appropriately integrated into the existing network.

#### *1.4.2 Services and Infrastructure*

As demonstrated in the servicing strategy included as Appendix 6, the subject land can be readily serviced, with essential infrastructure already available in the area. The servicing strategy demonstrates how infrastructure provision to the LSP area can be integrated with the existing infrastructure in the broader district. As such, servicing and timely provision of service infrastructure is not a constraint to development.

#### *1.4.3 Activity Centres and Employment Nodes*

The LSP area is located in close proximity to a number of activity centres and employment nodes, ensuring good accessibility to commercial services, and providing excellent opportunities to achieve employment self sufficiency targets prescribed in Directions 2031 and Beyond.

The Kwinana Secondary Centre (approx 4km) and Rockingham Strategic Metropolitan Centre (approx 12km) are both easily accessible from the LSP area, providing employment opportunities, as well as convenient access to commercial and retail services, and community facilities. A small local centre is planned for Emerald Park (Wellard West), located immediately to the north-east of the LSP area adjacent to Johnson Road and approximately 500m from the centre of the LSP area. The local centre will provide local convenience facilities to the future community within the LSP area.



WELLARD RESIDENTIAL  
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There are a number of major existing employment nodes in the Kwinana and Rockingham areas including the Western Trade Coast, Kwinana Industrial Area, Australian Marine Complex, Kwinana Secondary Centre, Rockingham Strategic Metropolitan Centre, and Jandakot airport. In addition, there are expansive areas of planned industrial development including Latitude 32 industrial area, North-East Baldivis, and East Rockingham. Development of the subject land is a logical solution to increasing the local employment catchment, which is critical to achieving the employment self sufficiency targets set by Directions 2031 and Beyond.

#### 1.4.4 Reserves, Open Space and Community Infrastructure

The LSP area has excellent access to a range of regional and district level open space and community infrastructure. The land is bounded to the south and west by regional MRS Parks and Recreation reserves, providing a variety of regional level passive open space within proximity to the site.

The LSP area also has good access to district active open space, with the Orelia district open space in close proximity, and the planned sub-regional open space at Thomas Oval also easily accessible from the LSP area.

A local sporting ground along with a sporting pavilion is identified in the Wellard West (Emerald Park) Local Structure Plan to be located in the southern portion of the Emerald Park estate. This active open

space is within a walkable catchment of the LSP area and provides a complimentary local active open space for the LSP area.

The City of Kwinana has prepared an amendment to TPS 2 which creates a mechanism for the provision for regional, district and local level community facilities included via a development contribution plan (DCP). The DCP is informed by a draft Community Infrastructure Plan that identifies the specific type and location of community infrastructure to be funded via the DCP.

In addition to the infrastructure identified in the DCP, there is a planned government primary school immediately to the west of the subject land in Emerald Park, which can service the subject land once developed. The Department of Education was consulted during the preparation of the LSP, and confirmed that the primary school would have sufficient capacity to accommodate the future population of the LSP area. The Department intends to construct the school by 2013/2014 in recognition of the growing population in the area. The school is co-located with approximately 3.5ha of active open space, providing for the planned local sporting facility and pavilion.

The King's College is an existing private K-12 school located to the north of the site between Bertram Road and the northern end of the Bollard Bulrush Wetland, while there are numerous existing government primary and secondary schools in the area that are easily accessible from the subject land.



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## 2.0 SITE CONSIDERATIONS

### 2.1 Environmental Assets & Constraints

The subject land is substantially unconstrained and environmental factors affecting the land, including protection of wetlands, groundwater, drainage, and bushfire management can be managed through standard mechanisms via the implementation of management plans at the subdivision stage.

A comprehensive Environmental Assessment Report (EAR) has been prepared by PGV Environmental, and is included as Appendix 1. The EAR includes a vegetation survey, flora and fauna analysis, desktop heritage analysis and wetland management strategy. The EAR concludes that:

- There are no Threatened Ecological Communities, Declared Rare and Priority Flora species within the LSP area.
- There are no fauna species of conservation significance within the LSP area.
- The development buffers provided to the EPP Lake (50m) and Resource Enhancement Wetland (30m), in accordance with the EPA's advice and DEC standard recommendation, are sufficient to ensure that development of the LSP area will not compromise the ecological values of the Bollard Bulrush Wetland.

- There is limited remnant vegetation on the site due to historic clearing and grazing. The existing vegetation condition is predominantly classified as 'Completely Degraded', with only a small pocket of vegetation in the south-west corner of the LSP, adjacent to the Bush Forever reserve that is classified as 'Very Good', which is recognised in the LSP concept.
- The LSP area currently contains introduced plant species that are classified as 'Declared' weeds under the Agriculture and Related Resources Protection Act 1976. Development of the subject land will create opportunities to manage and eradicate these species.

The City of Kwinana has advised that the adjacent Bush Forever Area 349 may contain suitable foraging habitat for Carnaby's Black Cockatoo.

### 2.2 Landform & Soils

The topography and soil types within the LSP area are similar to surrounding urban areas and are not constraints to development. The ultimate earthworks design will respect the current landform through the minimisation of retaining walls, and recognition of the general fall of the site from south to north towards the Bollard Bulrush wetland.



## WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN

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The LSP area is predominantly flat, supporting varying geomorphological features of the wetland depression in the northern corner of the LSP area, and the relatively low relief sand dunes in the south. The northern edge of the LSP area adjacent to the Bollard Bulrush Wetland has a level of approximately 4m AHD. The southern portion of the site is higher than the Bollard Bulrush Wetland, with a level of between 5 and 10m AHD. The highest points are located in the southern portion of the site on Lot 1278, and towards the Johnson Road portion of the LSP area. The relatively flat nature of the site ensures that the site can be drained and serviced without the need for substantial retaining, or significant changes to the topography.

Soil types within the LSP area range from Bassendean and Spearwood sands, and sandy silts typical of the Beeliar Wetland chain. The south and west of the LSP area are predominantly sandy soils, providing free draining soils suitable for urban development. Further discussion on soil types and drainage is provided in sections 3.4 and 3.5 and the Local Water Management Strategy at Appendix 7.

### **2.3 Ground & Surface Water**

Management of ground and surface water is comprehensively addressed through the Local Water Management Strategy (LWMS) at Appendix 7, and is not a constraint to development. The LWMS is

consistent with the DWMS, which was approved by the Department of Water in August 2011.

The existing hydrological conditions are summarised below, while the key principles of the LWMS are outlined in section 3.5 of the LSP.

Surface water flows are currently conveyed across the LSP area via a series of local drains and sheet flow, to discharge into the Bollard Bulrush wetland and Peel Main Drain. The Wetland area provides detention storage, slowing the flows before entering the Peel Main Drain.

Groundwater flows are generally towards the Bollard Bulrush Wetland and Peel Main Drain. Maximum Groundwater Levels (MGLs) range from 5.01m AHD in the south, to 4.23m AHD in the north of the LSP area. The majority of the LSP area is approximately 0.03m – 4.67m above the MGL, with the exception of the northernmost portion of the LSP area, where the ground level and MGL meet, coinciding with the edge of the Wetland. The earthworks and drainage strategy, in response to the MGL's, is discussed further in Section 3.6.7.

The LWMS proposes to retain pre-development flow rates to ensure that water quality and quantity is not adversely affected.



## WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN

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## 2.4 Fire Management

In accordance with the recommendations of the WAPC's Planning for Bush Fire Protection Guidelines, a Fire Management Plan (FMP) has been prepared by Southwest Fire Services, and is included as Appendix 3. The FMP concludes that bush fire risk is not a constraint to development in the LSP area, and any risk can be managed through the implementation of an adequate hazard separation zone, and by requiring minimum standards of construction for those dwellings that abut the hazard separation zone.

In accordance with the FMP, the LSP ensures that adequate separation is provided between Bush Forever Area 349 and the future urban area via a 23m wide road interface. The combination of the 23m road interface and 6m building setback provides an adequate hazard separation zone in accordance with the Bush Fire Protection Guidelines. As agreed with the City of Kwinana fire and building officers, the first row of houses facing the Bush Forever reserve are to be constructed to satisfy the BAL-12.5 construction standard in accordance with AS 3959, to provide adequate protection in the event of a bush fire. This can be addressed via a Detailed Area Plan or other statutory mechanism as a condition of subdivision.

## 2.5 Noise Management

The site is in close proximity to the Kwinana Freeway and the Mundijong freight rail line, and as such, the development proposal must have regard to the WAPC's SPP 5.4 – Road and Rail Transport Noise and Freight Considerations in Land Use Planning.

An Acoustic Assessment has been prepared by Lloyd George Acoustics in accordance with SPP 5.4, and is included as Appendix 2 to the LSP. The Assessment uses detailed noise modelling to determine any potential impact from the adjoining Freeway and rail line on noise sensitive uses. The Assessment concludes that while portions of the LSP area are deemed to be affected by Freeway noise, this is not a constraint to development and can be addressed through a combination of open space buffers, noise walls and quiet house design.

The southernmost portion of Lot 2 Johnson Road is affected by noise from the freight rail line. Again, this is not a constraint to development, and can be addressed through a combination of open space buffers, noise walls and quiet house design.

Impacts of rail vibration have also been taken into consideration as part of a preliminary desktop assessment. The nearest residential dwelling will be greater than 25m from the rail line, and as such satisfy the DEC's requirements with respect to rail vibration.



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## 2.6 Heritage

Previous surveys for Aboriginal archaeological and ethnographic sites, as well as a search of the Department of Indigenous Affairs database, have not identified any archaeological sites in the LSP area.

The City of Kwinana's Municipal Heritage Inventory (MHI) identifies the Tramway Reserve, forming the western boundary of the LSP area, as having cultural heritage significance for its historic context as a supply route. There are no buildings or structures within the Tramway Reserve that have recognised heritage significance.

The MHI identifies the tramway reserve as a 'Management Category B' site, and notes that its significance arises from its historic value as a former tramway alignment. The MHI describes this category as having to provide a "high level of protection for places of considerable cultural heritage significance to the City of Kwinana."

As noted previously, the Tramway Reserve is reserved under the Metropolitan Region Scheme for Parks and Recreation. The LSP does not propose any development within the Reserve; however, there are opportunities to incorporate the Reserve into the broader open space network, and to improve the reserve as part of the LSP so that the heritage significance can be suitably recognised.

The MHI also identifies the 'Wellard Swan/Bollard Bulrush Swamp' as having cultural heritage significance for its Aesthetic and Historic value. The Swamp is listed as Management Category A. The LSP does not propose any development or modification to the Swamp, and as such its significance remains intact.

A desktop heritage assessment is included in Appendix 1.

## 2.7 Area of Landscape Protection

The LSP area and broader surrounds fall within an 'Area of Landscape Protection' pursuant to clause 6.16 of TPS 2. An Area of Landscape Protection is a form of Special Control Area under the Scheme, and prescribes matters to which Council should have regard in considering development proposals. These matters include:

- a. the overall impact of the proposed development on the landscape amenity of the area;
- b. the need for an overall management plan prepared by Council in consultation with the affected landowners as a prerequisite to any Planning Approval being issued;
- c. the extent to which any subdivision proposal should guarantee the protection of natural ecological features and areas of landscape amenity;
- d. the desirability of minimizing the effect of new road construction, including earthworks and clearing of vegetation within road reserves.

In order to demonstrate that the proposal satisfies the abovementioned criteria, the proponent has undertaken a comprehensive Landscape and Visual Study, with a specific focus on Lots 167-169 Wellard Road, in the north western precinct of the LSP area. A copy of the Study is Appendix 9, and further discussion of the recommendations is included in section 3.2.5.







### 3.0 LOCAL STRUCTURE PLAN

#### 3.1 Plan Overview & Land Use Description

The LSP presents an opportunity for robust and environmentally responsive urban development that respects the natural amenity of the area, while forming an important addition to the Wellard community as an infill development project.

The LSP Concept Plan at Figure 8 indicatively demonstrates how development could occur on the site consistent with the LSP principles and requirements, while the LSP Statutory Plan at Figure 23 provides the statutory framework and development principles, based on the Concept Plan. The Concept Plan represents just one way development could occur within the framework of the statutory plan; the final subdivision plan will be a further refinement of the concept plan, consistent with the statutory plan.

The fundamental principles of the LSP are:

- Enabling the creation of a diverse range of high quality housing choices that appeal to a broad section of the market, that address and survey public spaces and recognise the site's context adjoining a Wetland and Bush Forever.
- Providing robust urban form and land use response that recognises the site's location within the broader district context.

- Acknowledging the natural landscape through the inclusion of view corridors, extensive planting within the Tramway Reserve, and retention, where possible, of existing vegetation and ground levels within areas of open space throughout the site.
- Providing a range of services and infrastructure to support the future community.
- Delivering a permeable, interconnected road and path network encouraging and facilitating multi-modal transport outcomes.
- Addressing the principles of the draft ERIC through the realignment of Johnson Road.
- Delivering a network of public open space meeting local active and passive, conservation and drainage needs, as well as allowing for planned and unplanned community activity.
- Recognising high quality vegetation and landform within public open space throughout the LSP area.

Based on these principles, the LSP provides the framework for:

- Approximately 770-790 residential lots, and potentially up to 820 dwellings when including density sites, over the LSP area. Higher densities are focussed around neighbourhood connectors, public transport routes, and key areas of open space, and transitional densities providing a suitable interface to the wetland and Bush Forever, recognising they do not provide a context for high density development.



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- Approximately 22ha of open space overall, including the Bollard Bulrush Wetland Core, Tramway Reserve, wetland buffers, wetland interface and remnant vegetation and neighbourhood parks.
- Approximately 12ha of public open space in addition to the Wetland Core, meeting active and passive recreation, drainage and cultural heritage objectives, as well as exceeding the 10% minimum public open space requirement of Liveable Neighbourhoods.
- Integration of the historic Tramway Reserve into the open space network, improving connectivity to communities to the north via an open space corridor, whilst also recognising the cultural heritage significance of the Tramway Reserve.
- Recognition of areas of remnant vegetation and mature trees within passive public open space.
- Provision of a managed interface to the EPP Lake and Resource Enhancement Wetland, ensuring that the development will not compromise the function of the wetland, and recognising the natural landform of the area. In accordance with the EPA's advice on MRS Amendment 1189/57 development is outside the 50m buffer to the EPP Lake. In addition the plan provides a 30m buffer to the Resource Enhancement Wetland.
- Provision of a managed interface to the Bush Forever reserve, ensuring the provision of adequate bush fire separation, management of introduced weeds, and controlled access.

- Inclusion of view corridors in open space and road reserve, recognising the views of the wetland area from Wellard Road and Homestead Ridge estate, as requested by the City of Kwinana.
- A permeable grid of local distributors and local access streets that is responsive to the existing district road hierarchy, while providing opportunities for future public transport, cyclist and pedestrian connections to the district network.
- Integration of the LSP area with the adjacent primary school and local sporting ground with senior oval through the realignment of Johnson Road, and provision of a crossing over the Peel Main Drain, as requested and agreed with the City of Kwinana.

## 3.2 Residential

### 3.2.1 Housing Principles

The LSP provides a structure for the delivery of a diverse range of climate responsive housing, achieving residential density targets specified under state policy.

A diverse mix of lot and housing typologies will be achieved. There may be opportunities for the proponent to build out pockets of housing to deliver a range of housing types and amenity. The following provides a brief description of the housing typologies that could be delivered within the LSP area.



# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



*Traditional Home Site Examples*



TRADITIONAL HOME SITES	
Typical Width	17m+
Typical Depth	30m +
Area	600m <sup>2</sup> to 900m <sup>2</sup>
Residential Density Code	Residential R20
Built Form Control	<ul style="list-style-type: none"> <li>• Residential Design Codes</li> <li>• DAP's</li> <li>• Design Guidelines</li> </ul>
Built Form Delivery	<ul style="list-style-type: none"> <li>• Single dwellings</li> <li>• Typically sold as land only</li> </ul>







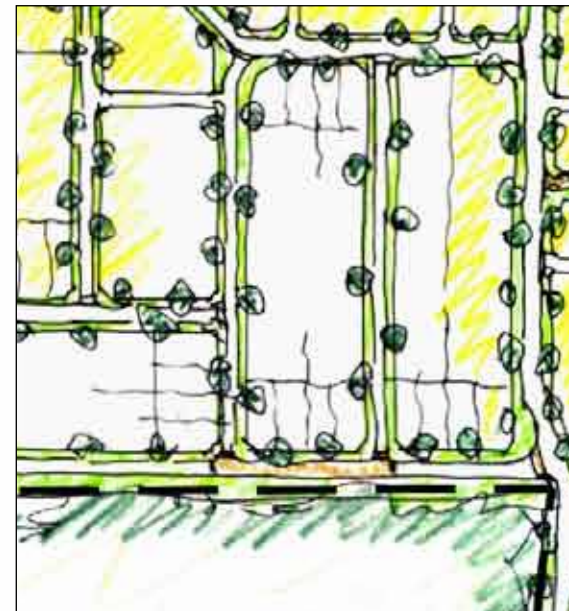
# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



*Contemporary Front Loaded Lot Examples*



CONTEMPORARY FRONT LOADED LOTS	
Typical Width	12.5m -17m
Typical Depth	<ul style="list-style-type: none"> <li>• 30m</li> <li>• 22 - 25m</li> </ul>
Area	300m <sup>2</sup> to 600m <sup>2</sup>
Residential Density Code	Residential R30
Built Form Control	<ul style="list-style-type: none"> <li>• Residential Design Codes</li> </ul>
Built Form Delivery	<ul style="list-style-type: none"> <li>• Single dwellings</li> <li>• Typically sold as land only</li> </ul>





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*Cottage Lot Housing Examples*





COTTAGE LOT HOUSING	
Typical Width	7.5m - 12m
Typical Depth	28m to 30m
Area	210m <sup>2</sup> to 360m <sup>2</sup>
Lane access	Rear laneway provided for vehicular access
Residential Density Code	<ul style="list-style-type: none"> <li>Residential R30/R50</li> <li>Opportunities for corner duplex lots at R50 to improve surveillance of laneways and secondary streets</li> </ul>
Built Form Control	<ul style="list-style-type: none"> <li>Residential Design Codes</li> <li>Detailed Area Plans</li> </ul>
Built Form Character and Delivery	<ul style="list-style-type: none"> <li>Single and grouped dwellings</li> <li>Potential for studios over garages</li> <li>Lots less than 10m wide typically built out and sold as a house and land package</li> <li>Opportunities for innovative delivery of housing on narrow lots</li> <li>Opportunities for terrace housing abutting POS</li> </ul>





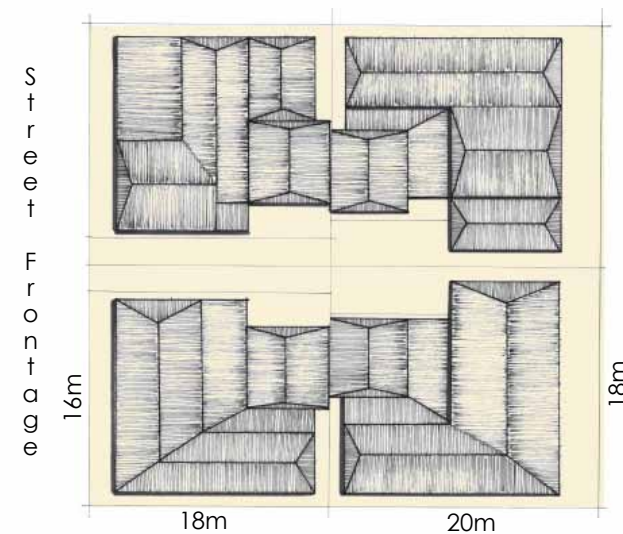
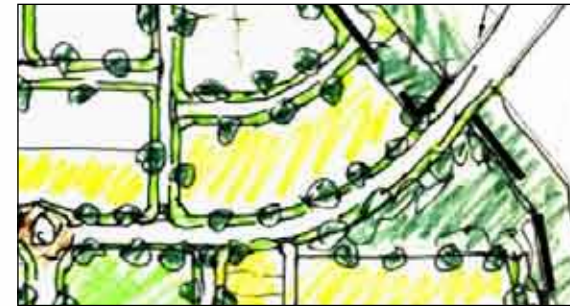
## WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



*Four Pack Housing Examples*



FOUR PACK HOUSING	
Typical Width	36m
Typical Depth	38m
Area	<ul style="list-style-type: none"> <li>• 1368m<sup>2</sup></li> <li>• front lots 288m<sup>2</sup></li> <li>• rear lots 360m<sup>2</sup> (excluding access leg)</li> </ul>
Residential Density Code	Residential R50
Built Form Control	<ul style="list-style-type: none"> <li>• Residential Design Codes</li> <li>• DAP's</li> </ul>
Built Form Delivery	<ul style="list-style-type: none"> <li>• Single and grouped dwellings</li> <li>• Potential for studios over garages</li> <li>• Typically built out and sold as house and land packages</li> <li>• Rear dwellings have primary frontage to the rear</li> </ul>





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The delivery of quality housing is a key objective, ensuring the housing style and character reflects the amenity and attributes of the area. Key principles will be housing that addresses and surveys public spaces, incorporation of solar passive design principles for private outdoor living areas and ensuring garages / carports are appropriately located. This will be implemented through Detailed Area Plans, discussed in Section 3.2.4 and potentially Design Guidelines (to be determined by the proponent).

### 3.2.2 Lot Yield and Density Estimates

The LSP will deliver a range of densities, housing types and tenures to facilitate residential yields commensurate with the strategic and statutory planning framework, as well as the site's location within the broader district context.

The LSP has the potential to realise approximately 770-790 residential lots, or up to 820 dwellings, at densities ranging from R20 to R50, based on the following principles:

- The majority of the LSP area has a density code of R30, providing opportunities to deliver traditional front loaded lots, ranging in size from approximately 300m<sup>2</sup> – 600m<sup>2</sup>.
- Larger lots are located in the north western portion of the site, coded R20, ensuring a suitable transition to the rural land to the north. Lot sizes are likely to range from 600m<sup>2</sup> up to

approximately 900m<sup>2</sup>, providing a suitable transition in lot sizes between the contemporary lots to the south and east, and potential larger lots to the north.

- Medium density R50 coded lots are located through the centre of the LSP area adjacent to the central open space, the planned east-west bus route, as well as primary school and local centre to the east. This coding provides opportunities to deliver contemporary cottage style housing with rear lane access, as well as grouped housing options. Single house lot sizes will generally range from 200 m<sup>2</sup> up to 360 m<sup>2</sup>.

Directions 2031 and Beyond recommends a housing density target of 15 dwellings per gross urban zoned hectare. The need for density targets to encourage more efficient and effective housing is acknowledged. However, it is important that the application of these targets recognises the impact of site specific constraints on the ability to actually deliver density.

The LSP recognises the need to deliver specific densities, and balances this with the recognition of a number of site specific environmental and land use constraints including:

- Wetland conservation buffers including EPP lake buffers and Resource Enhancement wetland buffers;
- Bush fire separation setbacks;



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- Freeway noise buffers;
- A 20m wide strip of urban land connecting Millar Road to the LSP area that is not sufficiently wide to allow for urban development, other than the construction of a road;
- City of Kwinana requirements for lower density 'transition zone' and inclusion of view corridors in the north western portion of the site;
- Retention of 1 in 100 year stormwater runoff and retaining existing site hydrology;
- Provision of approximately 14% of the gross site area as multi-purpose public open space, in addition to the tramway reserve.

Once these land constraints are taken into consideration, the actual developable residential area is considerably less than the gross urban area.

In addition, consistent with the existing strategic planning framework, the LSP does not include any provision for activity centres, rail stations or employment generators which would warrant a higher density response.

Despite this the LSP delivers the potential for approximately 14.14 dwellings per gross urban hectare based on ceding of the Bollard Bulrush Wetland Core and the Tramway Reserve, and deduction of public open space areas in excess of 10% of the gross urban area, on the basis of the betterment of the wetland buffer, Tramway Reserve and Public Open Space.

### 3.2.3 Residential Density Coding

Allocation of residential density codings across the LSP area establishes a flexible framework for a diverse range of housing types. Density codes are allocated based on the following criteria:

- In recognition of the value in retaining view corridors, providing a more traditional housing type, and a suitable interface to the Wetland and land to the north, the north-west portion of the site is R20.
- The R20 density coding transitions to a base coding of R30 across the balance of the development area allowing for both traditional and cottage lots.
- Densities of up to R50 are located closest to the central open space and key transport routes.



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### 3.2.4 Development Standards: R Code Variations

Detailed Area Plans (DAPs) will be prepared as condition of subdivision approval for select lots to ensure the delivery of quality built form and allow variations to the Residential Design Codes to facilitate medium density housing. DAPs will be prepared for:

- Residential R50 density sites
- Cottage Lots
- Lots directly abutting public open space
- R20 coded lots in area of Landscape Protection

A series of R Code variations have been developed to support the delivery of the standard small cottage lot (R50) housing typologies outlined above.

These provisions are subject to further discussions to determine optimum built form outcomes for the development, and DAP's require approval by the local authority at subdivision stage.

The following outlines the key provisions and provides a brief explanation as to their application and benefit.

**Setbacks** - Reduced setbacks to the primary street for lots with vehicular access to a public laneway (2m minimum and 4m maximum, with porticos, verandahs or similar permitted to 1.5m);

At present the R Codes require an average 4m setback from the primary street with a minimum of 2m to the dwelling in areas coded R50.

The variations propose a minor relaxation to the front setback requirements with the 4m setback a maximum rather than average to facilitate flexibility in building design, as well as reinforcing engagement with the public realm. In particular, the setback variation will:

- bring the dwellings forward to address and engage with the street in a more interactive manner than a traditional street setback
- allow 'tight' urban streetscapes, consistent with the urban context for laneway lots
- allow efficient siting and sizing of the private open space/ outdoor living areas at the rear of the dwelling, maximising the use of land, and reducing unusable open space.



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**Boundary Walls** - Permitted boundary walls on both side boundaries (with the exception of laneway and street boundaries) in accordance with the following table:

BOUNDARY WALLS		
Description	Max. Height	Max Length
Dwelling – Single Storey	3.5 m	No Limit
Dwelling – Two Storey	6.5 m	12 m
Garage – Single Storey	3.5 m	7 m
Garage – Two Storey (with portion of dwelling above)	6.5 m	7 m

The R Codes currently allow as of right a single storey boundary wall for up to two thirds of the length of one boundary within R50 coded areas, with no second storey boundary walls. This precludes terrace style development, restricts design options on smaller lots where efficient use of space is critical, and discourages two storey development. Greater flexibility is needed if housing forms are to respond to density and solar imperatives.

Allowance for walls on both side boundaries for the length of the boundary is proposed, with a restricted length of 12m for the second storey, or 7m where the garage is incorporated as part of the two storey development. This allowance provides sufficient flexibility

to encourage two storey built form, while achieving a reasonable level of amenity protection for adjoining properties.

**Private Open Space** - *Minimum open space provided reduced to a minimum of 30% of the site area.*

The R Codes currently require 45% of the site to be retained as open space at R50, which severely limits single storey dwelling design on smaller lots, undermining affordability imperatives.

A variation in the minimum open space provision to 30% is necessary to successfully achieve and implement terrace housing, facilitating the delivery of affordable and diverse dwellings.

Reductions in open space are contingent upon provision of an outdoor living area of 20m<sup>2</sup> with minimum dimension of 4m.

**Design for Climate** - *The overshadowing provisions shall not apply.*

Greater flexibility in regards to overshadowing requirements has been incorporated as a necessary prerequisite to achieving the densities and housing diversity outlined in this report.

The standards for overshadowing applicable to lower density areas cannot reasonably be applied in the same way in higher density precincts without severely impacting on the quality of dwellings. For example, the overshadowing provisions would limit, or in some



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situations preclude the majority of single storey development on the 8m and 10m wide cottage lots, and would preclude almost all two storey development. It is important that there is no disincentive to the construction of two storey dwellings to encourage this housing form. As such, the overshadowing standards do not apply.

**Privacy** – *The setback to major openings and unenclosed outdoor active habitable spaces (balconies, verandahs, terraces or other outdoor living areas) that have a floor level more than 0.5m above natural ground level and overlook any part of any other residential property behind its street setback line, shall be setback in direct line of sight with a cone of vision from a boundary to a minimum of 4.5m for all laneway lots.*

Like overshadowing, the standards for privacy applicable to lower density areas cannot be applied in the same way in higher density precincts without severely impacting on the quality of dwellings. For example, the 7.5m balcony privacy setback would preclude provision of balconies on almost all of the R50 lots due to the narrowness of lots.

Again, greater flexibility in regards to these requirements has been incorporated as a necessary prerequisite to achieving the densities and housing diversity. As such, the standard privacy provisions do not apply to the R30 and R50 areas, with a reduced privacy setback of 4.5m applying to major openings to all habitable

spaces, including bedrooms and balconies. This approach is widely accepted by the building industry, local authorities and WAPC in other new residential communities.

**Public Open Space** – *Dwellings and major structures on lots adjoining public open space to be setback between 2 and 3m, dwellings designed to address the open space and outbuildings abutting open space of materials that complement the dwelling.*

Typically the interface to public open space will be via roads; however in some instances direct lot frontage can provide increased surveillance, activity and diversity to the public spaces. Lots adjoining open space will be provided in accordance with Liveable Neighbourhoods principles.

Where lots do interface with open space it is critical to ensure the adjoining housing addresses and adds value to the open space. This includes appropriate setbacks and major openings addressing the space, rather than nil setbacks and blank walls. It is also important to ensure outbuildings do not undermine the amenity of the interface.

**Surveillance** - Surveillance of laneways and secondary streets is required through appropriate building design, location of major openings to habitable spaces, and inclusion of lofts/studios.



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Secondary street fencing will be visually permeable in accordance with the City of Kwinana's Residential and Subdivision Guidelines Policy 3.3.30.

The DAP's could be complemented by Design Guidelines prepared and implemented by the developer for particular housing precincts. This will be determined at subdivision stage by Wellard Residential.

### 3.2.5 Landscape Protection Area

The north western precinct of the LSP area, comprising lots 167 – 169 Wellard Road falls within an Area of Landscape Protection pursuant to TPS 2, and has been identified by the City of Kwinana as an area requiring a specific design and built form response in order to ensure that the landscape amenity is retained.

At the request of the City of Kwinana, the landowners have prepared a Landscape and Visual Study in order to identify the most appropriate design and built form response for this precinct. A copy of the Landscape and Visual Study is Appendix 9.

The Landscape and Visual Study recommends the following design and built form control features for this north western precinct:

- Inclusion of an open space interface on the northern boundary of lot 167 to provide a transition to the land to the north, and a view corridor to the wetland, corresponding with the Farrier Court cul-de-sac on the opposite side of Wellard Road;

- Reconfiguration of development on lot 167 to retain views towards the wetland when travelling south on Wellard Road, and to create an irregular urban edge;
- Inclusion of larger lots of approximately 600m<sup>2</sup> – 700m<sup>2</sup> on lot 167, providing a graduated transition to the Urban Deferred zoned land to the north;
- Inclusion of wider landscaped local road reserves of approximately 18-21 metres for those roads which align with public vantage points within the Homestead Ridge estate, preserving and framing views towards the wetland from the public realm;
- Development of a landscaped and vegetated visual screen within the Tramway Reserve adjacent to Wellard Road, retaining the existing character of the site and minimising any visual impact on those properties fronting Wellard Road.

The abovementioned elements have been incorporated into the LSP design to ensuring that the LSP respects the visual amenity of the area.

In addition to the urban design, the Study recommends restrictions on roof colour, limited to "dark recessive colours that are not visually prominent in respect to the local landscape." These additional recommendations relate to matters of detailed design, and can be addressed via Detailed Area Plans at subdivision and construction stage.



# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN

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### 3.3 Activity Centres

As noted in section 1.4.3, the LSP area is located in close proximity to the planned Local Centre/Neighbourhood Node immediately to the north of the primary school on the eastern side of Johnson Road. The planned Local Centre is identified in the Wellard West Local Structure Plan as a small convenience store of approximately 100-200m<sup>2</sup> GLA, with associated community based uses.

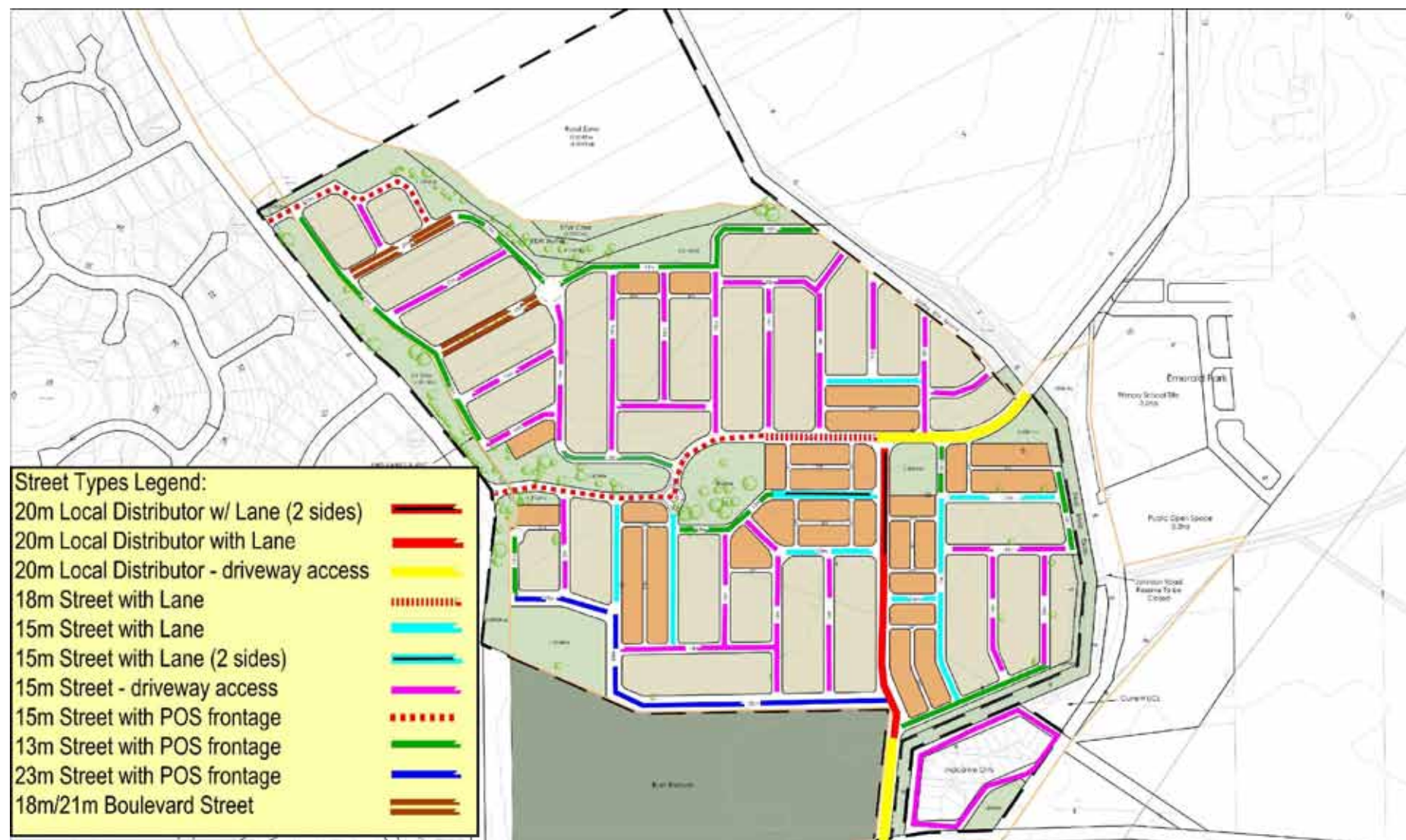
In general, the viability of Local Centres is typically determined by the following elements:

- The residential population within the walkable catchment;
- The amount of passing vehicle trade; and
- Competition with other centres in the locality.

The planned Local Centre has reasonable exposure to passing vehicle trade using Johnson Road, and has limited competition from other centres in the locality for local convenience retail. Considered in isolation however, the Local Centre has only a very limited population within the walkable catchment at present, due to the high proportion of non residential land uses within the catchment, including the Kwinana Freeway, and the Rural zoned land to the west of Johnson Road.

The Wellard Residential LSP will improve the viability of the planned Local Centre by:

- Increasing the residential population within the 800m walkable catchment of the Centre, thereby improving opportunities for local, non car-based patronage; and
- Increasing passing trade on Johnson Road through its realignment, and through the increase in residential population.







### 3.4 Movement Network

Traffic and transport aspects of the LSP have been analysed and assessed in the context of the information provided by the City of Kwinana, the Jandakot Structure Plan, the draft ERIC, and Element 2 of Liveable Neighbourhoods.

A detailed traffic and transport analysis has been prepared by Bruce Aulabaugh, Traffic Consultant, and is included as Appendix 5 to the LSP. The key findings and recommendations of the analysis are summarised below.

#### 3.4.1 Road Network, Capacity and Arterial Road Access

The Street Types plan in Figure 9 identifies the proposed local road network, including the identification of a hierarchy of local distributor roads and access streets within the LSP area.

The realigned Johnson Road is identified as a local distributor, connecting through the LSP area via a new crossing over the Peel Main Drain in the north eastern section, and passing through the LSP area to link with Millar Road in the south where Johnson Road terminates. The realigned Johnson Road is forecast to carry approximately 1800-2100 vehicles per day, significantly less than the Liveable Neighbourhoods 5,000 vpd threshold which limits direct vehicle access from residential lots. The Johnson Road alignment

and treatment has been extensively discussed with the City of Kwinana, and the LSP reflects the agreed alignment.

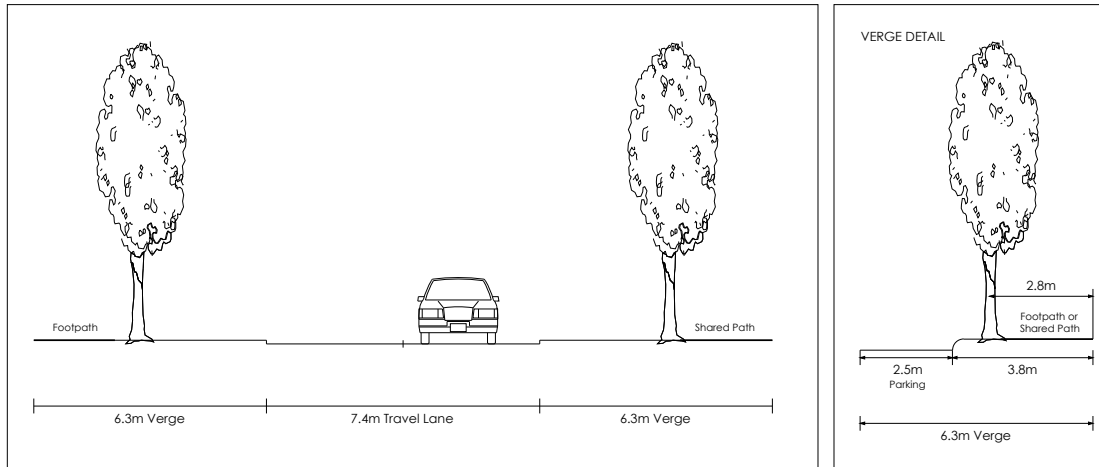
The LSP provides a key local access road linking Wellard Road in the west with the realigned Johnson Road in the centre of the LSP area. This local access road is forecast to carry approximately 2,200 – 2,800 vpd, and provides a strong east-west link through the LSP area, without compromising the functional road hierarchy, or disrupting the local movement network throughout the LSP area.

The remainder of the road network comprises of local access streets, supporting short trips for local traffic to and from the residential areas. The local road network is based on a modified grid layout, providing strong north-south and east-west connections throughout the LSP area. Perimeter local roads abutting the Bush Forever site to the south, and the wetland areas to the north provide a hard edge interface to these features, as well as allowing for local access. Traffic volumes on these 'interface' roads are estimated to be less than 1,000 vpd.

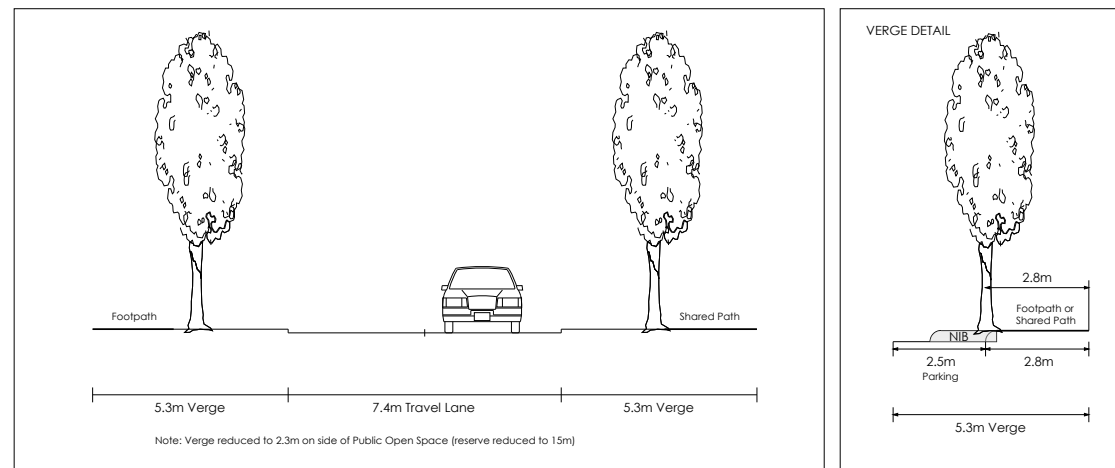
The estimated traffic volumes and road hierarchy are consistent with the City of Kwinana's latest traffic and transport planning, the draft ERIC, and the indicative volume range provided in Liveable Neighbourhoods.



# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



**STREET CROSS SECTION - LOCAL DISTRIBUTOR**  
Wellard Residential: Figure 10

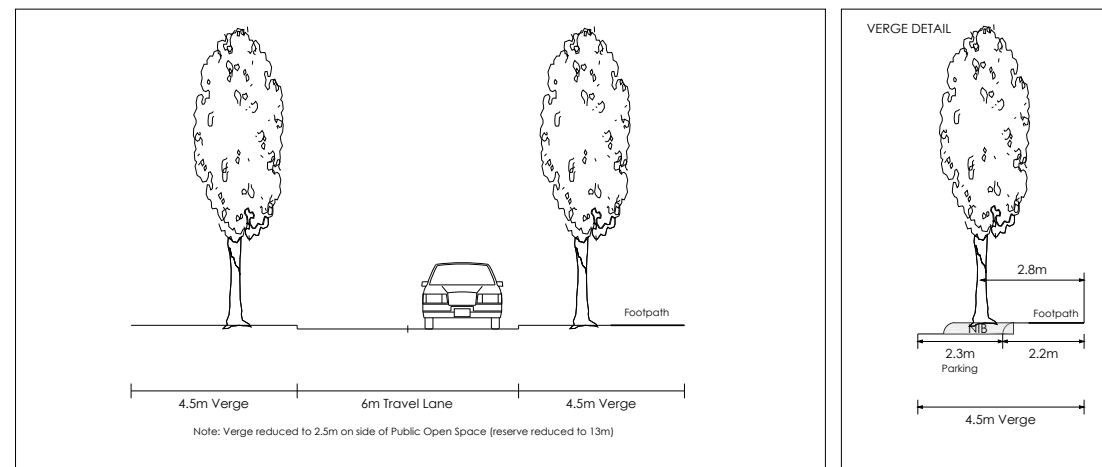


**STREET CROSS SECTION - KEY LOCAL ACCESS STREET**  
Wellard Residential: Figure 11



Access to the existing arterial road network is provided at four separate connections:

- A full movement T or roundabout access to Wellard Road to the west of the LSP area. Wellard Road is identified by the City of Kwinana as a district distributor road estimated to carry in excess of 16,000 vpd at ultimate capacity, at which point it will be upgraded to a four lane divided road. The preferred traffic control and intersection treatment will be confirmed at subdivision stage.
- A second access to Wellard Road to the north of the LSP area. This access will be a full movement T, and can be downgraded to a left in / left out when Wellard Road is upgraded, and a solid median is constructed.
- A full movement T or roundabout access to Millar Road via the realigned Johnson Road at the south of the LSP area. The existing Johnson Road / Millar Road intersection will remain, however the current Johnson Road reserve will be closed to the north of lot 10, and will provide local access only.
- The realignment of Johnson Road, a designated local distributor, through the centre of the LSP area will provide the fourth access point to the site. Access will be provided via a crossing over the Peel Main Drain, in the north eastern corner of the LSP area, connecting to the existing Johnson Road alignment immediately to the west of the planned primary school at Emerald Park estate.



STREET CROSS SECTION - LOCAL ACCESS STREET

Wellard Residential: Figure 12



# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN





### 3.4.2 Local Street Cross Sections & Traffic Management Treatments

Local access streets will form the vast majority of local streets within the LSP area. The indicative cross sections for these access streets are consistent with Liveable Neighbourhoods cross sections figures 20-22, and range from 15m reserves to 18m for key local access streets, as well as allowing for reduced verges (typically 4.5m to 2.5m) for roads adjoining open space. Road reserve widths and design of access streets can be further refined at subdivision stage.

Wider local access streets of 18m - 21m have been introduced in order to provide view corridors from key aspects of the adjoining Homestead Ridge Estate. These streets will continue to function in the same manner as a typical local access street. These view corridors are discussed further in Section 3.5.4.

Figures 10 – 12 show indicative street cross sections.

Section 5.4 of Appendix 5 establishes traffic management treatments for the LSP area. Generally the intersections of higher volume access streets and local distributors will be controlled via single lane roundabouts, while lower order intersections will have priority control – either stop signs or give way.

In addition to road construction treatments, speed control devices will be implemented along the key local access street that connects Wellard Road with the realigned Johnson Road to ensure safe vehicle speeds commensurate with the residential surrounds.

Speed control measures on planned bus routes will be designed in consultation with Transperth and the Public Transport Authority at detailed design stage, and will ensure that bus movements are not compromised.

### 3.4.3 Public Transport

The LSP allows for a bus route connecting Wellard Road to the realigned Johnson Road via a key east-west local access street. This bus route has been planned and prepared in consultation with Transperth and the Public Transport Authority.

Proposed route 544 will connect Wellard Station with Kwinana Station, and will travel via Leda Boulevard and Wellard Road, before passing through the LSP area and connecting to Johnson Road.

Road reserve widths, street cross sections and traffic management devices have all taken the bus route into consideration, and will be refined at subdivision / detailed design stage in consultation with Transperth and the PTA.

The PTA and Transperth are also planning to create new bus route 548 connecting Wellard train station and the Kwinana town centre via the eastern side of the Kwinana Freeway. This route passes along Millar Road to the south of the LSP area.

Figure 13 shows the planned bus routes.





# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



## PUBLIC OPEN SPACE

Wellard Residential : Figure 14

2263-91A-01 (27.04.2012), nts







#### 3.4.4 Pedestrians & Cyclists

The LSP makes provision for a comprehensive network of pedestrian and cycle facilities, allowing a safe, convenient and legible movement network. Key principles for cyclist and pedestrian movement are:

- The principle cycle network is aligned with the local distributor roads, providing a balance of on road cycle lanes in the higher traffic volume areas, and dual use paths within the road verges.
- The cycle network provides safe and convenient access to the existing regional Principal Shared Path that runs parallel to the Kwinana Freeway linking Perth CBD to Mandurah.
- Pedestrian footpaths provided on at least one side to all local streets.
- Key local access streets providing either footpath on one side and dual use path on the other, or footpaths on both sides.
- A shared path circumnavigating the LSP area, providing recreational access to key areas of open space, Bush Forever, and opportunities for northern connections via the Tramway Reserve.
- A strong pedestrian link following the eastern portion of the realigned Johnson Road, providing safe and convenient access to the adjoining primary school and local centre.

- Low speed zones will be provided around key pedestrian linkages and areas of high amenity to ensure a safe, pedestrian friendly environment.

### 3.5 Public Open Space

#### 3.5.1 Open Space Provision & Schedules

There is a total of approximately 21.16ha of open space within the Wellard Residential land holding and LSP area, including approximately 10ha of Bollard Bulrush Wetland, zoned Rural under the MRS. This equates to 29% open space across the gross area of 73ha.

Once Liveable Neighbourhoods credits are applied the open space provision is 15.4% exceeding the minimum 10% credited public open space requirement, refer Table 2, Figure 14 and Appendix 10.

The following outlines the key aspects of public open space provision based on Liveable Neighbourhoods requirements, with the detailed description of each open space type outlined in Section 3.5.3 below.

- Based on a Gross Subdivisible Area (gross site area less Rural zoned Wetland Core, and Parks and Recreation Reserve) of 61ha, the 10% open space requirement is 6.1ha.



# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN

**Table 2 - Public Open Space and Drainage Summary**

Wellard Residential Local Structure Plan – Public Open Space and Drainage Summary					
Park Name	POS #	Gross POS Area	Total Deductions	Total Restricted Use POS	Total Unrestricted POS
Wetland Core (includes MRS Rural Zone & REW Core)	1	10.01	10.01	0.00	0.00
Wetland Buffer	2	1.33	0.00	1.33	0.00
Wetland Interface	3	0.81	0.00	0.24	0.58
North Western Open Space	4	1.24	0.00	0.00	1.24
Tramway	5	2.42	0.00	0.00	2.42
Western Linear Park	6	1.06	0.00	0.00	1.06
Western Entry South	7	0.12	0.00	0.12	0.00
Main POS	8	1.22	0.09	0.25	0.88
Woodland Park	9	1.32	0.00	0.00	1.32
Eastern Neighbourhood Park	10	0.50	0.05	0.12	0.33
Eastern Entry	11	0.44	0.02	0.06	0.36
Main Drain Interface	12	0.39	0.03	0.36	0.00
Millar Park	13	0.29	0.03	0.04	0.22
<b>TOTAL</b>		<b>21.16</b>	<b>10.23</b>	<b>2.51</b>	<b>8.42</b>

1. Deductions include EPP Wetland and Buffer (MRS Rural Zone), RE Wetland Core, and 1 year 1 hour drainage areas in open space.
2. Restricted Use Open Space includes all drainage areas in POS for greater than 1 year 1 hour and up to 1 in 5 year storage areas, as well as all of the following:
  - Wetland buffer
  - Main Drain interface
  - Western Entry South
3. Refer to Appendix 10 for a full POS Schedule in accordance with Liveable Neighbourhoods requirements.



- The LSP provides 11.15ha of gross open space, with open space areas serving a shared drainage function, while not compromising the active and passive recreational uses.
- Approximately 0.22ha of open space will receive drainage for events occurring more frequently than the 1 in 1 year (1 hour) event, and as such is a deduction from the Gross Subdivisible Area in accordance with Liveable Neighbourhoods (LN R33).
- Liveable Neighbourhoods allows up to 2% of the 10% open space requirement to comprise of restricted use open space. The balance of restricted use open space becomes a deduction (LN R33).
- Based on the requirements of Liveable Neighbourhoods, a maximum of 1.25ha can be restricted use open space and a minimum of 5.02ha unrestricted open space.
- Approximately 0.86ha (7% of the total POS contribution) of open space will receive drainage from the 1 in 1 year to 1 in 5 year drainage event in landscaped infiltration basins and bio-retention areas, in accordance with water sensitive urban design principles. The 1 in 1 to 1 in 5 year drainage event is treated as restricted use open space in accordance with Liveable Neighbourhoods.
- Main Drain Interface and Western Entry South are small pocket parks providing local amenity and a drainage function and are entirely restricted use open space.

- The POS area within the Wetland Buffer is restricted use open space in accordance with Element R33 of Liveable Neighbourhoods.
- The Tramway Reserve is unrestricted open space in accordance with Element R8 of Liveable Neighbourhoods and will continue to be available as multi-purpose open space, providing a green link between the Bush Forever Reserve to the south, and the land to the north of the LSP area, as well as and allowing for an integrated path network throughout the reserve, in accordance with the City's Loop Trail network.
- All other POS areas are unrestricted open space, providing a range of passive and active functions, as well as recognising the existing environment through the retention of mature trees and vegetation. The total unrestricted use open space area is 8.42ha.

### 3.5.2 Urban Water Management & Open Space

The LSP adopts best practice urban water management principles through the integration of storm water detention and infiltration areas into public open space, creating multi-purpose areas, without compromising the amenity or functionality.

A Local Water Management Strategy (LWMS) has been prepared by Emerge Associates, and is included as Appendix 7 to the LSP.



Wellard Residential : Figure 15







Part 7 of the LWMS sets out the stormwater management strategy, and details the key types of drainage methods and infrastructure to be included within areas of open space. Drainage in open space will be managed through bio-retention areas and infiltration basins, as described below.

- **Bio-retention areas** – Dedicated drainage areas within both road reserves and open space that will strip nutrients from storm water runoff before infiltrating back into the groundwater system. Generally bio retention areas will form small pockets of passive open space, comprising of dense, low level vegetation to assist in nutrient stripping, and to provide a visual feature within the broader open space area. Bio retention areas are included within the central POS areas, as well as the eastern entry POS adjacent to Johnson Road.
- **Infiltration basins** – used to detain and infiltrate stormwater runoff from major events, infiltration basins are large shallow basins within areas of open space. These basins can form either passive or active functions within the open space, and will generally be large, flat grassed areas, with side slopes not steeper than 1 in 6. Infiltration basins will be incorporated into the central POS areas, as well as adjacent to the Wetland buffer, and local parks south and east.

### 3.5.3 *Description of Open Space Areas*

The following provides a summary of the key characteristics for landscape distribution, function and design throughout the LSP area. A detailed Landscape Strategy is Appendix 8, and is shown as Figure 15.

#### North Western Open Space

- Approximately 1.2ha of informal active open space, providing opportunities for kick-about, as well as conveying drainage from Homestead Ridge to the Peel Main Drain.
- Provides a landscaped interface to the Urban Deferred land to the north, allowing for a transition zone between this land and the developed area to the south.
- Allows for a view corridor recognising key aspects from Homestead Ridge to the Wetland.

#### Tramway Reserve

- Approximately 2.4ha reserved for Parks and Recreation under the MRS, providing opportunities for active and passive recreation through provision of extensive path network.
- Creates opportunities for the extension of the Kwinana Loop Trail (Stage 4), forming part of a greater regional open space network.



WELLARD RESIDENTIAL  
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- Allows for a 'green link', connecting the Bush Forever site with land to the north, providing opportunities for wildlife corridors.
- Opportunities for interpretive signage recognising the heritage significance of the historic Tramway Reserve.
- Conveys storm water runoff from the broader area towards the North Western Open Space.
- Provides a landscaped interface to Wellard Road, reducing vehicle noise, and contributing to the amenity of the area.
- Opportunities for an early planting program to be introduced to better screen temporary visual impacts associated with earthworks, and the need for long term softening of proposed future development.

#### Western Linear Parkland

- 1.1ha of linear open space, retaining existing mature trees wherever possible.
- Provides a landscaped entry from Wellard Road, as well as forming the western portion of the east-west open space link through the centre of the LSP area.
- Opportunities for an integrated path network, picnic and barbeque areas, and passive recreation, with mature trees providing shade and amenity.

#### Main POS

- Forms a central focus for the future community, providing a 1.2ha space for formal and informal gatherings.
- Includes a variety of play equipment, communal bbq facilities, shaded picnic areas
- Existing mature flooded gums will be retained wherever possible, providing additional shade and amenity, as well as recognising the existing environment.
- Infiltration and bio-retention areas will be integrated with the surrounding open space, using a combination of turfed areas and native planting.
- Path networks connect the western areas with the open space and primary school to the east.

#### Wetland Interface

- A predominantly turfed area of approximately 0.8ha, providing a landscaped transition between the urban area and the wetland buffer to the north.
- Provides opportunities for informal active and passive recreation via turfed areas, and pedestrian pathways around the perimeter.



# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN





- Includes a useable infiltration area for the detention and treatment of stormwater runoff, retaining pre-development hydrology and ensuring water quality is maintained. Infiltration areas are shallow depressions with a broad base, ensuring that they remain useable.

#### Wetland Buffer

- Approximately 1.3ha of open space, providing suitable buffers to the Resource Enhancement Wetland.
- Provides opportunities to revegetate and enhance the wetland area, and allows for controlled access via pedestrian paths throughout.
- Pedestrian paths also provide a suitable separation between the buffer and the Wetland Interface, allowing for weed management and preventing introduced weeds from entering the wetland buffer and core.
- No drainage detention or infiltration proposed within the Wetland Buffer.

#### Eastern Entry

- 0.4ha of high amenity landscaped area, including a mixture of hard and soft landscape treatments, entry statement signage, and pedestrian connections across the Peel Main Drain linking to the primary school.

- Includes shallow, turfed infiltration areas to detain and infiltrate storm water before discharging into the Peel Main Drain via a controlled discharge.

#### Eastern Neighbourhood Park

- Provides an intimate community space of approximately 0.5ha, which complements the Main POS, and provides a secondary community meeting space.
- Includes landscaped infiltration and bio-retention areas which can double as informal active space.
- Provides an important link between the Main POS and the Eastern Entry, allowing for a continuous green corridor through the centre of the LSP area.

#### Woodland Park

- A 1.3ha area that recognises and retains good quality vegetation, and complements the adjacent Bush Forever reserve.
- Includes controlled access via pedestrian pathways, allowing for passive recreation throughout.





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2263-78A-01 (19.04.2012), nts



SPECIAL STREETSCAPE CROSS SECTION (21m Reserve)

Wellard Residential : Figure 16



#### Main Drain Interface

- Local pocket park of approximately 4,000m<sup>2</sup>, providing drainage infiltration areas, and opportunities for informal recreation.
- Provides opportunities for surveillance of the Peel Main Drain, and allows for future improvement of the Peel Main Drain subject to agreement of the Water Corporation as landowners.

#### Millar Park

- A local park of approximately 0.29ha located on the corner of Millar and Johnson Road.
- Provides adequate noise buffers from both the Kwinana Freeway and the Mundijong rail line, minimising impact on residential areas, and providing a high amenity open space to support the development of this cell.
- Includes useable infiltration areas, and an integrated pedestrian path.

#### 3.5.4 *Special Streetscapes*

The LSP makes provision for streetscape treatments that provide a high level of public amenity through a combination of waterwise native and exotic tree species. Roadside swales and bio-retention areas will generally be planted with native shrubs to assist with nutrient stripping. Detailed landscape design for streetscape areas will be confirmed with the City of Kwinana at detailed design stage.

Wider road reserves of 21 metres and 18 metres have been provided in the north western precinct in order to provide view corridors from key aspects of the adjoining Homestead Ridge Estate. These wider roads align with key access roads on the opposite side of Wellard Road, ensuring views of the wetland from the public realm of Homestead Ridge Estate.

Figures 16 and 17 show indicative street cross sections of these special streetscapes, and demonstrate the use of extensive planting in both the road verge, and the central median. Medians range from 3 metres in the 18 metre reserve, to 6 metres in the 21 metre reserve, allowing for extensive planting and soft landscaping through the centre of the road. The road pavement can be provided with a different surface treatment to further delineate these special streetscape areas, and to promote a semi-rural feel to the area.



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2263-93A-01 (19.04.2012), nts



SPECIAL STREETSCAPE CROSS SECTION (18m Reserve)

Wellard Residential : Figure 17





### 3.6 Urban Water Management

The LSP provides a framework that allows for best practice urban water management, and remains sensitive to the existing hydrology and natural environment.

This framework emphasises the application of water sensitive urban design to manage the way in which water within an urban context is utilised. This type of design aims to minimise the impact of urbanisation on the natural water cycle.

A Local Water Management Strategy (LWMS) has been prepared by Emerge Associates, and is included as Appendix 7. The LWMS demonstrates in detail how the LSP addresses urban water management, and water sensitive urban design. The key principles of the LWMS are:

- A total water cycle management approach to water management at the site has been developed based on detailed site-specific investigations, industry best-practice and relevant state and City of Kwinana policies relating to water management. The overall objective for water management is to mimic the hydrological regime that currently exists prior to urban development of the site.
- The predevelopment hydrology has been well characterised by the Jandakot DWMP and in the Bollard Bulrush DWMS and this has been further refined in the LWMS. Runoff from within the site has been well characterised. The high permeability of soils beneath the majority of the site will result in onsite infiltration for most rainfall events, and there is a minor flow into the Peel Main Drain during major events. A portion of the site is low-lying, and rainfall in this area drains to the Bollard Bulrush Swamp.
- The overall approach to surface water management at the site will be to mimic the natural environment. This will require onsite infiltration of minor (frequent) events, which will be achieved in lot-scale soakwells, roadside swales within road reserves and infiltration basins.
- While lots will be required to retain minor events within soakwells, all runoff which exceeds this will be conveyed first to roadside swales, located within road reserves. Where runoff cannot be captured within roadside swales it will be conveyed to a bio-retention area within the nearest downstream POS area. Water quality treatment requirements will be met within the lot soakwells, roadside swales and bio-retention areas. All other detention/retention requirements to ensure that the post-development environment mimics the predevelopment will be met by providing infiltration basins located within POS.



# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



Source: EMERGE (EP11-008(01)-F10a)

2263-92A-01 (30.04.2012), nts



## INDICATIVE DRAINAGE PLAN

Wellard Residential : Figure 18



- Runoff from within the development will be conveyed by either direct sheet flow and flush kerbs to roadside swales, or via a concrete piped network. The concrete pipe network will either discharge to roadside swales or a bio-retention area. Once the capacity of roadside swales has been reached these will convey runoff to the next downstream swale/basin. When roadside swales and bio-retention areas reach capacity, excess runoff will be directed to an infiltration basin or discharge structure. These will be designed so that the post-development peak flows will mimic the pre-development peak flows.
- Runoff from the wider area is currently conveyed through the site and discharged to Bollard Bulrush Swamp. This flow regime will be continued, and provision has been made within the LSP to ensure that the upstream flows will continue to be conveyed to the Bollard Bulrush Swamp via a shallow open swale located within POS. The conveyance of the upstream flows will be kept separate from any roadside swales/treatment areas provided within the site.
- The quality of groundwater will be maintained by directing all runoff from minor events to either soakwells, roadside swales or bio-retention areas. Runoff will be treated by a number of processes that occur within the soil profile which assist in removing nutrients. Further treatment will occur within roadside swales and bio-retention areas as these will be vegetated and underlain by soils with a high capacity to remove nutrients.

- Water conservation requirements will be met by providing:
  - A broad range of lot sizes, which do not encourage large garden areas
  - Waterwise landscape packages will be offered with sale of lots
  - Water efficient fittings will be mandated within all dwellings through the building licence process
  - Promotion of water efficient appliances and rainwater tanks

Figure 18 shows the indicative size and location of the drainage within POS and roadside swales, as well as identifying the areas of open space that will be inundated in both the 1 year 1 hour, and 100 year events.



# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



Source: Urban Landscaping  
2263-89-01 (06.09.2011), nts



## WETLAND INTERFACE CROSS SECTION 1

Wellard Residential : Figure 19



### 3.7 Infrastructure Coordination, Servicing & Staging

Civil engineering consultants JDSi have prepared a detailed servicing strategy demonstrating the availability of service infrastructure to the LSP area. The strategy is summarised below, and is provided in full as Appendix 6.

Further detailed infrastructure planning and design will occur as the planning and development of the land progresses.

#### 3.7.1 Wastewater

The Water Corporation has confirmed that the subject land is included in current scheme planning for wastewater infrastructure in this area, and allowances have been made in the capacity planning for the development of the subject land.

The preliminary planning allows for wastewater from the site to be managed and distributed via a combination of existing and proposed pump stations.

#### 3.7.2 Water Supply

The Water Corporation has advised that the development is located within the Thompson's Lake Gravity Scheme and can be serviced by an extension of the DN300 main, which currently terminates at

the entrance road to the Emerald Park development (Gemstone Parade). The DN300 will ultimately require extension along Johnson Road to service eastern portions of the subject land.

#### 3.7.3 Power Supply

The existing Western Power distribution infrastructure in the vicinity of the site comprises high voltage underground and overhead feeder lines along Wellard Road. There are opportunities to connect to these feeder lines to provide electricity to the subject land, and thus there is no constraint to urban development. The internal electrical network, including location of substations and transformers, can be determined at subdivision stage as part of the detailed design process.

#### 3.7.4 Gas Supply

Alinta Gas has an existing pressure main located in close proximity to the subject land that can be extended to service the property.





# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



Source: Urban Landscaping  
2263-90-01 (06.09.2011), nts



## WETLAND INTERFACE CROSS SECTION 2

Wellard Residential : Figure 20





### 3.7.5 Telecommunications

Telstra has existing telecommunications infrastructure surrounding the site, and has confirmed that connection to the development will be possible.

### 3.7.6 Infrastructure Funding

The service infrastructure described above is typically funded via standard agreements between developers and the service agencies as part of the ongoing subdivision and development works. Given that the land is largely in single ownership, and that there are standard infrastructure funding agreements available, servicing of the land is not considered a constraint to the urbanisation and development of the land.

### 3.7.7 Earthworks and Staging

The preliminary earthworks modelling recognises the existing topography and landform of the LSP area. The LSP remains consistent with the overall landform by ensuring that the gentle slope towards the wetland is maintained, providing a natural battered interface to the wetland area, and avoiding the use of retaining walls or steep batter.

The site currently grades from south adjoining the Bush Forever down to the north adjoining the Bollard Bulrush Wetland. In the central and southern sections earthworks will be minimal, with ground

levels remaining as existing in the central section and some cut in the northern section. The northern portion adjoining the wetland will require fill, to achieve finished ground levels that are elevated above the 1 in 100 year flood, with a gentle slope toward the wetland. The relationship between the existing ground level and the proposed fill level is demonstrated in the cross sections provided at Figures 19 and 20, and shows how the proposed earthworks respect the existing landform.

It is anticipated that subdivision works will commence within the LSP area by 2012-2013, with the first stage of development likely to commence on the eastern side of the LSP area, adjacent to Johnson Road and the Peel Main Drain. Subsequent development will progress to the south and west, with final stages estimated to be completed by 2020.

## 3.8 Environmental Response

The following provides a summary of the Wetland, Vegetation, and Fauna management strategies provided in Appendix 1.

### 3.8.1 Wetland Management

The LSP recognises the value and significance of the Bollard Bulrush Wetland, and provides buffers that exceed the minimum requirements set by the EPA and DEC. A minimum 50m buffer is provided to the EPP Lake, in accordance with EPA's advice on MRS



# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



Source: Wetland Boundaries - PGV Environmental  
2263-94-01 (07.09.2011), nts



## WETLAND BOUNDARIES

Wellard Residential : Figure 21



Amdt 1189/57. A 30m buffer has been provided to the Resource Enhancement Wetland, in accordance with DEC requirements. Figure 21 shows the location of the wetland core and buffer boundaries in relation to the development area, demonstrating compliance with the EPA's advice on MRS Amdt 1189/57.

Passive open space, revegetation, and gentle battering of the land provides a seamless transition between the development area and the wetland, respecting and enhancing the existing environment.

Appendix 1 includes a broad level Wetland Management Strategy for the portion Bollard Bulrush Wetland within Wellard Residential's ownership. The Wetland Management Strategy provides the framework for a future Wetland Management Plan (WMP) to be prepared as a condition of subdivision approval. The preparation of a WMP as a condition of subdivision approval is a standard and typical mechanism used to manage such issues, and occurred as part of the Bertram stage 1 subdivision. In addition it is also commonly acceptable for a WMP to be prepared over part of a wetland area, where a wetland is over multiple land ownerships and Local Structure Plans, and development intentions for adjoining land are uncertain.

As a condition of subdivision approval, the WMP will be required to address:

- Retention of existing vegetation within the buffer
- Management of potential fire hazards

- Fencing requirements
- Pedestrian access and educational signage
- Weed management
- Management responsibilities and timing

### 3.8.2 *Trees, Vegetation, Flora Management*

The LSP recognises the value of the existing vegetation in both the Wetland (rural zone) to the north, and a 1.33ha area of vegetation in the south western corner adjacent to the Bush Forever reserve, and retains these areas in public open space where practicable.

The LSP does not propose the removal or modification of the vegetation within the wetland core or buffer.

The vegetation to be retained in the south west will provide a useable passive space, whilst retaining the best quality vegetation. The environmental and social value of the 1.33ha of vegetation to be retained is enhanced by the fact that it directly adjoins the Bush Forever site.

The LSP provides a hard edged road interface to these areas, ensuring an adequate separation between the vegetated areas and future development to manage weeds, public access and surveillance of these spaces.





Lots 75, 83, 92, 167-170 & 1278 Wellard Road Proposed Subdivision  
Noise Control Option 2 - Architectural Treatments & Wall





### 3.8.3 Fauna Management

The fauna assessments have confirmed that the LSP area does not include any fauna species of conservation significance. The LSP remains sympathetic to any potential existence of fauna within the LSP area by:

- Retaining vegetation, where possible, in areas of open space;
- Avoiding clearing of vegetation in spring to avoid disturbance to nesting birds;
- Introducing of a fauna relocation program (if deemed necessary at construction stage) prior to clearing of vegetation.

### 3.9 Acoustic Attenuation

The LSP considers and responds to any potential noise impact from the Kwinana Freeway through the following measures:

- Possible inclusion of an open space buffer and noise wall around the edge of the buffer in the south eastern portion of the LSP area, adjacent to the existing Johnson Road reserve; to be determined at subdivision stage;
- Provision of 'Quiet House Design' (package A) for the majority of properties on the eastern side of the Peel Main Drain, and some of the first row of dwellings on the western side of the Drain. Figure 22 identifies those future lots which will require Quiet House Design;

- Implementation of the Quiet House Design requirements through appropriate notifications on title following subdivision approval.

### 3.10 Bush Fire Prevention

The LSP provides adequate measures to reduce potential risk in the unlikely event of a bush fire in the adjoining Bush Forever site 249. These measures include:

- Inclusion of a wider road reserve of approximately 23 metres adjoining the Bush Forever site, providing a combined fire separation distance of 29 metres including the front setback area;
- Requirements through future subdivision conditions / DAPs to satisfy the BAL12.5 requirements of AS3959 (2010) for the first row of dwellings fronting the Bush Forever reserve, as agreed with the City of Kwinana;
- Inclusion of suitable notifications on title at subdivision stage advising of the BAL requirements.

The Fire Management Plan at Appendix 3 provides further detail on bush fire prevention, including a summary of the roles and responsibilities of the developer and the local authority to ensure that the LSP area is adequately protected from the unlikely event of a bush fire in the area.



# WELLARD RESIDENTIAL LOCAL STRUCTURE PLAN



## LOCAL STRUCTURE PLAN

Wellard Residential : Figure 23

2263-88C-01 (08.10.2012). nts





## 4.0 STATUTORY IMPLEMENTATION

### 4.1 Status of Local Structure Plan

The statutory Local Structure Plan is Figure 23. This report and technical appendices provide an explanation of the LSP and its implementation.

The LSP applies to Lots 167-170, 83, 85, 92 & 1278 Wellard Road, and Lots 2, 10, and 1 Johnson Road, Wellard, and consists of all land contained within the inner edge of the line denoting the Structure Plan boundary on the Structure Plan Map at Figure 23.

Pursuant to Clause 6.17.7.2 of Town Planning Scheme 2, the LSP, Figure 23, shall have effect as if it were part of the Scheme and designates zonings, reserves, densities, classifications and land use permissibility.

### 4.2 Detailed Area Plans

Pursuant to clause 6.17.6 of Town Planning Scheme 2, Detailed Area Plans shall be prepared for the following lots as a condition of subdivision approval:

- Residential R50 density sites
- Lots with rear or side lane access

- Lots directly abutting public open space
- Lots subject to quiet house design requirements, as identified in Figure 22. Additional noise modelling will be required for any two storey development.
- Lots subject to BAL construction standards
- R20 coded lots

### 4.3 General Subdivision and Development Requirements

The following describes the general subdivision and development requirements:

- A hard edged road interface is to be provided to Bush Forever site 349, and to the Wetland buffer area, with the width of the road reserve to be determined at subdivision.
- Northern access to Wellard Road is a full movement "T" intersection with priority to Wellard Road. This intersection may be downgraded to left in/left out when Wellard Road is constructed as a dual carriageway.
- Southern access to Wellard Road is either a roundabout or a full movement "T" intersection, to be determined at subdivision stage.
- The wetland core comprises of both the EPP lake and Resource Enhancement wetland boundaries.



WELLARD RESIDENTIAL  
LOCAL STRUCTURE PLAN

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- The wetland buffer is 50m to the EPP lake and 30m to the Resource Enhancement wetland as agreed with relevant authorities. The EPP Lake and 50m buffer are located outside of the LSP area.
- Implementation of the recommendation of the Noise Impact Assessment to the satisfaction of the City of Kwinana
- Inclusion of notifications on title for those lots deemed to be affected by noise, and subject to Quiet House Design construction standards.
- Inclusion of notifications on title for those lots identified in the Fire Management Plan, acknowledging the requirement to meet specific construction standards in order to minimise risk in the event of a bush fire.
- The proponent acknowledges and understands referral responsibilities in accordance with the Environmental Protection and Biodiversity Conservation Act 1999 as a separate process to the planning approvals process pursuant to the Planning and Development Act 2005.
- An appropriate interface treatment for the Peel Main Drain is to be identified, to the satisfaction of the City of Kwinana, including but not limited to appropriate fencing, surveillance, landscaping of reserves/wider road reserves to allow for landscaping, with details to be determined at the subdivision stage.
- Inclusion of Notifications on Title to advise of potential impacts of mosquito and midge nuisances in accordance with an approved Mosquito and Midge Management Plan.
- Implementation of an approved Fauna Management Plan to the specification of the City of Kwinana at the subdivision stage, which is to include identification of any potential fauna habitat trees retained in public reserves, strategies for relocation of fauna prior to clearing, salvaging of any suitable hollow logs from cleared trees for installation within Public Open Space and/or the adjacent Bush Forever Area 349, outlining clearing protocol for trees possibly containing Brushtail Possums, strategies for feral pest management, installation of educational signage in the Public Open Space and Bollard Bulrush Swamp, and reporting on the number and variety of species trapped, recorded or relocated both prior to and during subdivision works.
- The ceding of the Bollard Bulrush Wetland core and the Tramway Reserve free of cost to the Crown at the subdivision stage.



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#### 4.4 Management Plans

The following management plans are to be prepared where applicable as conditions of subdivision approval.

##### 4.4.1 Wetland Management Plan

A Wetland Management Plan is to be prepared as a condition of subdivision approval to the satisfaction of the Department of Environment and Conservation on advice from the City of Kwinana, and is to address the provisions of the Wetland Management Strategy included in Appendix 1.

##### 4.4.2 Urban Water Management Plan

An Urban Water Management Plan is to be prepared as a condition of subdivision approval. The Urban Water Management Plan is to be prepared in accordance with the approved Local Water Management Strategy at Appendix 7, and the WAPC's Better Urban Water Management Guidelines (October 2008).

##### 4.4.3 Landscape Management Plan

A Landscape Management Plan is to be prepared as a condition of subdivision approval, and shall detail the following:

- Entry statements and verge treatments
- Development and maintenance of public open space
- Remnant vegetation management, requiring on-site tree surveys to be carried out with regards to earthworks and drainage requirements prior to subdivision. This is to determine those trees within the development area to be retained within public reserves and should consider the size and species of trees and potential fauna roosting and nesting hollows.
- Early tree planting and landscaping program for the Tramway Reserve
- Weed control

##### 4.4.4 Mosquito and Midge Management Plan

A Mosquito and Midge Management Plan (including monitoring programs) is to be prepared as a condition of subdivision approval. The Mosquito and Midge Management Plan is to be to the satisfaction of the City of Kwinana, and in accordance with Environmental Protection Authority Guidance Statement 40: Guidance Statement for Management of Mosquitos by Land Developers (EPA 2000).





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#### 4.4.5 Fauna Management Plan

A Fauna Management Plan is to be prepared as a condition of subdivision approval. The Fauna Management Plan is to be to the specification of the City of Kwinana, and is to include:

- Identification of potential fauna habitat trees retained in public reserves;
- Strategies for relocation of fauna prior to clearing;
- Salvaging of any suitable hollow logs for installation in POS or Bush Forever Area;
- Outlining clearing protocol for trees possibly containing Brushtail Possums;
- Strategies for feral pest management;
- Installation of educational signage in POS; and
- Reporting on the number and variety of species trapped, recorded or relocated prior to and during subdivision works.