Local Structure Plan

on behalf of Geographe Developments Pty Ltd

Lot 59 Mortimer Road, Wellard

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Prepared by:

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Job Number: C1925
Version / Date: Final / 9 February 2016

PETER D WEBB AND ASSOCIATES

CONSULTANTS IN TOWN PLANNING AND URBAN DESIGN

CERTIFIED THAT THIS STRUCTURE PLAN
WAS ADOPTED BY RESOLUTION OF THE
WESTERN AUSTRALIAN PLANNING COMMISION ON

..... Date

Signed for and on behalf of the Western Australian Planning Commission

.....
an Officer of the Commission duly authorised by the Commission pursuant to Section 16 of the *Planning and Development Act 2005* for that purpose, in the presence of:

..... Witness

..... Date

And by
RESOLUTION OF THE COUNCIL OF THE CITY OF KWINANA ON

..... Date

And by
PURSUANT TO THE COUNCIL'S RESOLUTION HEREUNTO AFFIXED IN THE PRESENCE OF:

.....
Mayor, City of Kwinana

.....
Chief Executive Officer, City of Kwinana

..... Date

This Structure Plan is prepared under the provisions of the City of Kwinana Town Planning Scheme No. 2.

EXECUTIVE SUMMARY

The Local Structure Plan Area (LSP Area) is described as Lot 59 Mortimer Road, Wellard with a total land area of 12.482 hectares. The land is situated on the south western corner of the intersection of Mortimer and Woolcoot Roads.

The LSP Area forms part of the City of Kwinana 'Wellard East (Urban) Cell', as defined by the draft District Structure Plan - Eastern Residential Intensification Concept. The 'Wellard East Cell' is bound by Kwinana Freeway to the west, Mortimer Road to the north, Millar Road to the south and Woolcoot Road to the east.

This Local Structure Plan (LSP) has been prepared to facilitate the urban development of the LSP Area. The subject site is located in the north eastern corner of the Wellard East Cell and is relatively isolated and independent of the surrounding land contained within this Urban Cell. It is therefore considered by the City of Kwinana that a LSP for this land is able to be progressed independently of the surrounding landholdings.

SUMMARY			
SITE AREA			**12.482ha**
DEDUCTIONS:			
Environmental:			
CCW and REW Wetland	*3.78ha*		
Other:			
Surplus Restricted POS (see below)	*1.79ha*		
TOTAL REDUCTIONS			**5.57ha**
GROSS SUBDIVIDABLE AREA			6.912ha
Public Open Space @ 10 %			**0.6912ha**
Add Shortfall Wellard Glen LSP (Unrestricted POS only)	*0.1205ha*		
TOTAL POS Requirement:			***0.8117ha***
8% unrestricted POS			*0.5530ha*
+ unrestricted POS from Wellard Glen			*0.1205ha*
2% restricted POS			*0.1382ha*
Public Open Space contribution:			
POS – Restricted:			
- *Wetland Buffer*	*1.1558ha*		
- *Landscaped Buffer Reservations to Mortimer and Woolcoot Roads*	*0.7954ha*		
Total Restricted use POS	**1.9512**		
Total Restricted POS Credited to a Maximum of 20% (20% of 0.812ha)			**0.162ha**
Surplus Restricted POS Not Credited	**1.79ha**		
POS – Unrestricted:			

- *Active POS*	*0.3404ha*		
Total Unrestricted use POS:			**0.3404ha**
TOTAL POS PROVISION:			**0.5024ha**
Shortfall in POS			0.3093ha
Estimated Lot Yield			33 lots
Estimated No. of Dwellings			56 dwellings

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PART ONE – STATUTORY SECTION

1.0 STRUCTURE PLAN AREA

This Structure Plan applies to Lot 59 Mortimer Road, Wellard being the land contained within the inner edge of the line denoting the structure plan boundary on the Structure Plan Map. (Refer to **Plan 1**: Structure Plan Map.)

2.0 STRUCTURE PLAN CONTENT

This Structure Plan comprises the following two sections together with the accompanying annexures, which includes copies of the technical supporting reports, plans and maps.

- **Part One – Statutory Section**

This Section contains the Structure Plan Map and Statutory Planning Provisions and Requirements.

- **Part Two – Non-Statutory Section**

This Section is to be used as a reference guide to interpret and justify the implementation of Part One.

3.0 INTERPRETATION & RELATIONSHIP WITH THE CITY OF KWINANA TOWN PLANNING SCHEME NO. 2

Unless otherwise specified in this part, the words and expressions used in this Structure Plan shall have the respective meanings given to them in the City of Kwinana Town Planning Scheme No. 2 (TPS 2) including any amendments gazetted thereto.

The Structure Plan Map outlines the land uses, zones and reserves applicable within the Structure Plan area. (Refer to **Plan 1**: Structure Plan Map.)

The zones and reserves designated under this Structure Plan apply to the land within it as if the zones and reserves were incorporated into the Scheme.

Pursuant to Clause 6.17.7 – Operation of Structure Plan of the City's TPS 2:

a) The provisions, standards and requirements specified under Part One of this Structure Plan shall have the same force and effect as if it were a provision, standard or requirement of the Scheme. In the event of there being any variations or conflict between the provisions, standards or requirements of the Scheme and the provisions, standards or requirements of the Structure Plan, then the provisions, standards and requirements of the Scheme shall prevail to the extent of any inconsistency.

b) Any other provision, standard or requirement of Part One of the Structure Plan that is not otherwise contained in the Scheme, shall apply to the Structure Plan Area as though it is incorporated into the Scheme, and shall be binding and enforceable to the same extent as if part of the Scheme; and

c) Part Two of this Structure Plan and all annexures are to be used as a reference only to clarify and guide interpretation and implementation of Part One.

4.0 OPERATION

In accordance with Sub-clause No. 6.17.4.15 – Adoption and Approval of Structure Plans of the City's TPS 2, this Structure Plan shall come into operation following the adoption of the Structure Plan by the City of Kwinana and receipt of the notice of approval of the Structure Plan by the Western Australian Planning Commission (WAPC).

5.0 LAND USE AND SUBDIVISION

The Structure Plan Map outlines the land uses, zones and reserves applicable within the Structure Plan area. The zones and reserves designated under this Structure Plan apply to the land within it as if the zones and reserves were incorporated into the Scheme.

5.1 LAND USE PERMISSIBILITY

Land use permissibility within the Structure Plan area shall be in accordance with the corresponding zones and reserves under the Scheme.

5.2 RESIDENTIAL

5.2.1 Dwelling Target

a) Objective

To provide a minimum of 56 dwellings within the Structure Plan area, which includes the potential number of dwellings anticipated to be developed as part of the Grouped Dwelling sites.

b) Subdivision is to achieve the following:

The City of Kwinana identified in its preparation of the Developer Contributions Plans for the Wellard East Cell that a total of 1500 dwellings are to be developed, which accords with the dwelling yield target identified in the Outer Metropolitan Perth and Peel Sub-Regional Strategy of the WA Planning Commission, which also identifies a target yield for Wellard East of 1500. The proposed development of this Local Structure Plan will assist the City in achieving the dwelling yield target for the Wellard East Cell by providing an additional (approximately) 56 dwellings, which is 3.7% of the total dwellings to be developed in this Cell.

5.2.2 Density

a) **Plan 1** identifies the applicable Residential Density Code of R12.5, R20, R30 and R40 to various lots within the Structure Plan. Subdivision and development of individual lots is to be consistent with the Structure Plan identified at Plan 1.

5.3 PUBLIC OPEN SPACE

The LSP area includes the provision of 5024m^2 of public open space (POS).

The area of land provided for public open space has been agreed to by the City of Kwinana and consists of 1620m^2 of unrestricted public open space and 3404m^2 of restricted open space (associated with the Conservation Category Wetland (CCW) buffer).

Please see POS Schedule at Section 5.4 of the Non-Statuory Component of the LSP.

5.4 BUSHFIRE MANAGEMENT PLAN

Certain areas within Western Australia have now been designated as “bushfire prone” by the FES Commissioner. This order was gazetted in tandem with the *Planning and Development (Local Planning Scheme) Amendment Regulations 2015* and new State Planning Policy 3.7: Planning in Bushfire Prone Areas (SPP 3.7) which together form the State Government’s bushfire planning reforms.

The Map of Bush Fire Prone Areas identify the parts of the State that are designated as “bushfire prone” and are in effect as of 8 December 2015.

The subject site is within a bushfire prone area.

The Bushfire Management Plan prepared to accompany the LSP identifies the site as a ‘Declared Bushfire Prone Area’. The BAL ratings associated with the development of the residential lots is to be addressed as a condition of subdivision approval. (Refer to **Annexure 7**.)

5.5 CONDITIONS OF SUBDIVISION APPROVAL

At the stage of subdivision, conditions may be recommended which require the preparation and implementation of the following Investigations and Management Plans.

a) Detailed Site Investigation (City of Kwinana);
b) Urban Water Management Plan (City of Kwinana);
c) Mosquito and Midge Management Plan (City of Kwinana); and
d) Wetland Management Plan (City of Kwinana)

6.0 DEVELOPMENT

6.1 LOCAL DEVELOPMENT PLANS

Local Development Plans (LDPs) are to be prepared in accordance with Clause 6.17.6 – Detailed Area Plans of TPS 2, prior to development of the two (2) R40 Grouped Housing sites.

PLAN 1

Structure Plan Map

PART TWO – EXPLANATORY SECTION

1.0 INTRODUCTION AND PURPOSE

A Local Structure Plan (LSP) has been prepared to facilitate the urban development of Lot 59 Mortimer Road, Wellard. The subject site is located in the north eastern corner of the Wellard East Cell and is relatively isolated and independent of the surrounding land contained within this Urban Cell as it is largely separated from other urban land by an extensive Wetland, being referred to as the Mortimer Road Wetland. It is therefore considered by the City of Kwinana that an LSP for this land can be progressed independently of the surrounding landholdings.

The LSP has generally been prepared in accordance with the fundamental objectives and principles of the overarching guiding strategic strategies, including the Jandakot Structure Plan and the draft Eastern Residential Intensification Concept District Structure Plan.

The design of the LSP has been prepared to accord with the main objectives of Liveable Neighbourhoods (WAPC, 2009) and in doing so, responds to the natural and manmade physical attributes of the land.

The LSP proposes a high quality medium density residential development which is designed to provide for maximum interaction with and passive surveillance over the adjacent Wetland and proposed Park Home/Retirement Village.

2.0 LAND DESCRIPTION

2.1 LOCATION

The Local Structure Plan Area (LSP Area) is located approximately 36 kilometres from the Perth Central Business District and forms part of the City of Kwinana 'Wellard East (Urban) Cell', as defined by the draft District Structure Plan - Eastern Residential Intensification Concept.

The 'Wellard East Cell' is situated in the South West Corridor of Perth and is bound by Kwinana Freeway to the west, Mortimer Road to the north, Millar Road to the south and Woolcoot Road to the east. (Refer to **Figure 1**: Location Plan.)

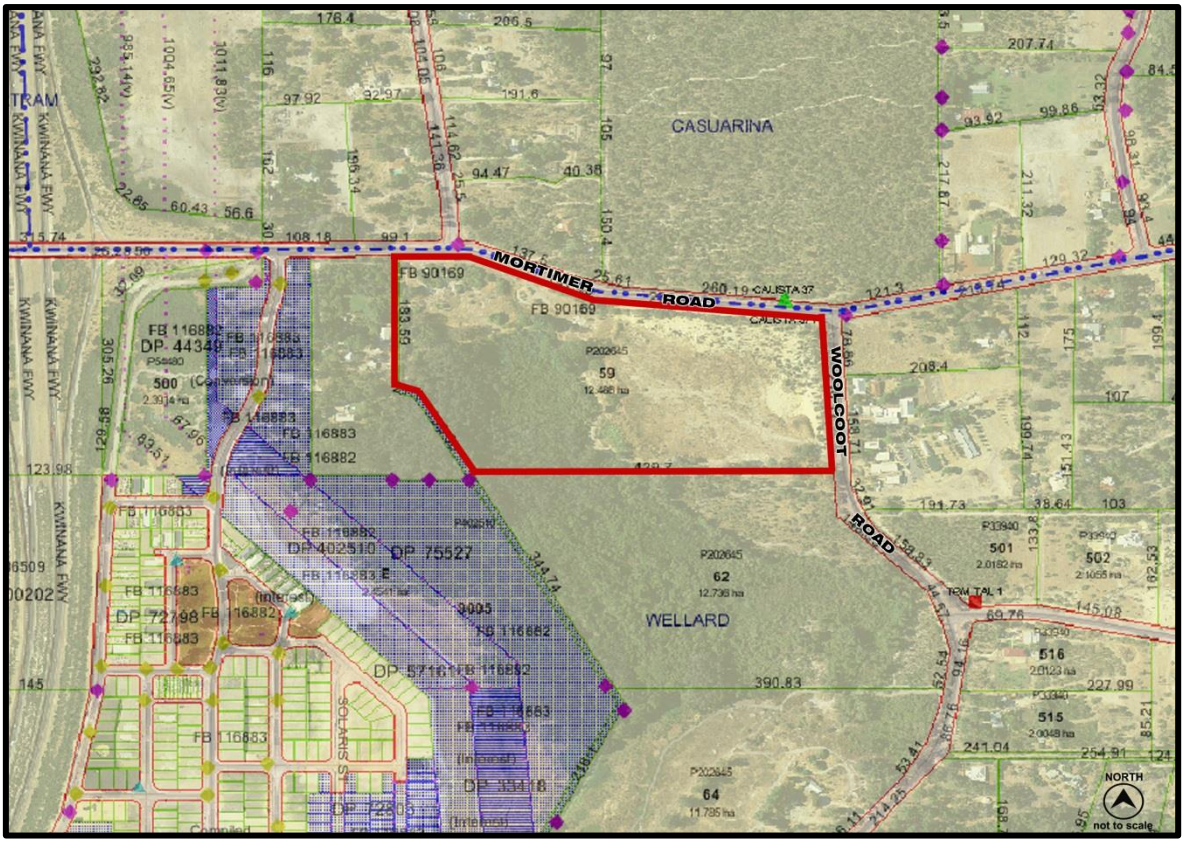

Figure 1: Location Plan

2.2 AREA AND LAND USE

The LSP Area has a total land area of 12.482 hectares and is situated on the south western corner of the intersection of Mortimer and Woolcoot Roads. The LSP Area enjoys a primary frontage to Mortimer Road of 518.77 metres, a secondary frontage to Woolcoot Road of 218.17 metres, a western side boundary of 339.37 metres and southern rear boundary length of 429.7 metres.

The LSP Area currently comprises of vacant land. It is known to have historically been used as a sand quarry and for a short while a portion of the site was used for landfill for construction and demolition waste only. The following list provides an understanding of the previous known uses of the site, which activities have been identified by Emerge as part of its review of historical aerial photography on the land.

- Prior to 1953 and up until 1965: The land was used for Rural Residential purposes involving agricultural use of the northern portion of the wetland and a number of now demolished supporting buildings.
- From 1965 to the early 1970s: There is no clear evidence of use on the land.
- By 1974 and completed sometime before 1985: quarrying activities occurred on the land.

- Between 1985 and 2003: There is no visible evidence of land use.
- Between 2003 and completed sometime before 2006: Some landfilling operations (construction and demolition waste) occurred over portion of the site.
- 2007: Soil stockpiling was undertaken on the land. As a result of this stockpiling (the majority of which soil has since been removed), the site was classified by the DEC as *'Possibly contaminated – investigation required'*, pursuant to the provisions of the *Contaminated Sites Act 2003.*

The south western portion of the land comprises of Wetland, known as the Mortimer Road Wetland. The Wetland component of the land covers approximately 3.78 hectares of the overall site area. The Wetland forms part of the regional drainage network and is used for detention capacity for stormwater flowing through the Peel Sub N2 Drain, which drain runs along the southern section of the western side boundary of the LSP Area. The water exits the Wetland to the south and continues further south connecting to the Peel Main Drain to the south west of the site. The Wetland is degraded in part and will be the subject of remediation and protection as part of the development of this land.

2.3 LEGAL DESCRIPTION AND OWNERSHIP

The LSP Area is owned by *Geographe Developments Pty Ltd* and is described on Certificate of Title Volume 2034, Folio 690 as Lot 59 (SN 136) Mortimer Road, Wellard on Deposited Plan No. 202645. (Refer to **Annexure 1**: Certificate of Title and Deposited Plan.)

3.0 PLANNING FRAMEWORK

3.1 ZONING

The LSP Area is zoned 'Urban', pursuant to the Metropolitan Region Scheme (MRS).

The LSP Area is zoned 'Development' and forms part of Policy Area No. 6 – Wellard and is subject to the requirements of Development Contribution Area 11 – Wellard East, pursuant to the City of Kwinana Town Planning Scheme No. 2 (TPS 2).

The extent of the Wetland is identified on the City's TPS 2 Scheme Map No. 10 as being an 'Area of Landscape Protection'.

A portion of Mortimer Road adjacent to the northern boundary of the LSP Area at its western end is classified as an 'Other Regional Road'.

3.2 STATE AND REGIONAL PLANNING FRAMEWORK

3.2.1 Directions 2031 and Beyond (WAPC, August 2010)

Directions 2031 and beyond (Directions 2031) outlines the Planning framework for the future growth of the Perth and Peel Regions of Western Australia.

This Local Structure Plan accords with the relevant objectives of Directions 2031 which *inter alia* encourages infill development to provide additional housing stock, together with the provision of higher residential densities along high frequency bus routes and near local commercial centres.

The Wellard East Cell is identified in Directions 2031 as forming part of the 'south west sub-region', which sub-region comprises the local government areas of the Cities of Kwinana and Cockburn.

Directions 2031 provides the spatial network for future urban expansion within the south west sub-region which is focused on accommodating urban growth around the primary 'Activity Centre' of Rockingham.

The proposed LSP Area accords with the fundamental principles of Directions 2031 by providing for residential development which connects to an existing interconnecting movement network and proposes Wetland retention and conservation.

3.2.2 Outer Metropolitan Perth and Peel Sub-Regional Strategy (WAPC, August 2010)

The Outer Metropolitan Perth and Peel Sub-Regional Strategy provides future strategic planning framework for the 'South-west sub-region', which includes the Wellard East Cell within which the LSP Area is located.

This Strategy identifies the LSP Area as *'urban deferred zone undeveloped'* as it was released in 2010 and prior to the MRS rezoning of the land to Urban.

At Figure 56 – South-West Sub-Regional Framework Map of the Sub-regional Strategy, Wellard East is identified as 'WE *1500+*'. At Appendix 4 of the Strategy, 'WE *1500+*' refers to the area name of 'Wellard East' which is identified as providing an estimated dwelling yield of 1500. The proposed development of this Local Structure Plan will assist the City in achieving this dwelling yield target for the Wellard East Cell by providing an additional (approximately) 56 residential dwellings in an appropriate, sustainable location.

3.2.3 South Metropolitan Perth & Peel Sub-Regional Structure Plan (WAPC, June 2009)

The draft South Metropolitan Perth and Peel Sub-Regional Structure Plan (advertised for public comment in 2015) provides future detailed strategic planning guidance for urban expansion. This Structure Plan identifies the LSP Area as 'Urban'.

3.2.4 Jandakot Structure Plan (WAPC, August 2007)

The Jandakot Structure Plan provides strategic guidance for future development and management of environmental issues within the South West Corridor and specifically, the southern section of the land surrounding the Jandakot Underground Water Pollution Control Area.

The Structure Plan identifies the Wellard East Cell as being situated within the locality identified as 'Area 4: Casuarina/Wellard'. It is estimated that the ultimate population of 'Area 4' will comprise a total of 8190 people. Further, that 4990 (60%) of the total estimated population (8190) will be accommodated within this locality by 2026.

The majority of the Wellard East Cell is identified as being suitable for medium term urban development. However, it recognised that development in this location is occurring in the short term due to the recent progression of residential development on a number of landholdings within Wellard East.

The Structure Plan identifies the LSP Area as containing a portion of Conservation Category Wetland in the south western corner of the land, with the remaining area being identified as suitable for (medium term) residential development.

The proposed LSP is consistent with the objectives and intent of this Strategy.

3.2.5 Liveable Neighbourhoods (WAPC, January 2009)

The proposed LSP has been designed to respond to the principle aims, objectives and relevant requirements of the Design Elements of Liveable Neighbourhoods.

In particular, the LSP incorporates the following design element requirements of Liveable Neighbourhoods:

- The proposed layout ensures maximum connectivity with the existing and proposed surrounding development within the Wellard East Cell.

- The proposed layout of the street network ensures a high level of external and internal connectivity. Vehicular access to the LSP Area is proposed at both the primary and secondary frontages to Mortimer and Woolcoot Roads.
- The minimum separation between road centre lines between Woolcoot Road and the proposed internal road exceeds the standard Liveable Neighbourhoods requirements of 20m.
- A pedestrian footpath network is proposed through the development together with a dual use path to ensure the proposed development provides strong internal and external walkable linkages connecting Mortimer and Woolcoot Roads and the area of public open space.
- The layout of the lots and street network takes advantage of the elevated land along the northern and eastern boundaries of the land, which ensures that all the dwellings are able to front the street with access being provided to footpaths and public open space. The proposed layout enhances the amenity of the development and provides a high level of passive surveillance over the public recreational areas.
- The LSP identifies the need for Local Development Plans to be approved for the two (2) R40 Grouped Dwelling sites as a condition of subdivision approval.
- The residential density proposed for the LSP Area is well suited to this location, with the land being situated in close proximity to a high frequency bus route.
- The public street and footpath network is designed to be highly interconnected providing convenient access throughout the development.
- The proposed development with a range of lots overlooking the Wetland provides a unique and attractive medium density housing choice for people in this locality.
- The orientation of the lots allows for environmentally and energy efficient housing design.
- The residential lots are designed to orientate towards public open space, the Park Home/Retirement Village and the Wetland, which enhances the amenity of the area and provides an opportunity for passive surveillance.
- The area of land set aside for public open space is (in the circumstances) sufficient for the LSP area.
- A Stormwater and Groundwater Management Strategy is to be prepared at subdivision design stage, which will include appropriate measures to manage stormwater run-off to protect and enhance the environmental values and physical characteristics of the area. A preliminary proposal for the Stormwater and Groundwater Management Strategy has

been prepared in support of the LSP by GHD, which is further discussed at **Section 3.5** of this LSP report.

- The development of this site will ensure each lot is provided with essential infrastructure servicing, including underground power, sewer, water, public lighting and telecommunications.

3.2.6 Bush Forever (WAPC, December 2000)

The Bush Forever Policy (WAPC) identifies regionally significant bushland for conservation purposes. No regionally significant bushland areas are listed within the LSP Area.

3.3 LOCAL PLANNING FRAMEWORK

3.3.1 City of Kwinana Town Planning Scheme No. 2

The LSP Area is zoned 'Development', pursuant to the City of Kwinana Town Planning Scheme No. 2 (TPS 2). At Clause 6.15.2 - Development of TPS 2, it is stated that the subdivision, use and development of land is generally to be undertaken in accordance with a Structure Plan which has been prepared and adopted under the provisions if Clause 6.17 – Division 14 – Structure Plans'. It is further stated at Clause 6.15.4 that the permissibility of uses in the Development Zone is subject to Clause 6.17.7 and shall be determined in accordance with the provisions of the Structure Plan.

A portion of the land is also identified as being contained within a 'Landscape Protection' area. The extent to which the Landscape Protection area is delineated on the Zoning Map generally aligns with the boundaries of the Wetland located in the south western corner of the LSP Area. At Clause 6.16.2 – Areas of Landscape Protection of TPS 2, the City's objective is stated as being to *'…conserve areas of natural ecological value or landscape amenity whilst at the same time allowing development as provided in the Zoning Table of the Scheme'.* The design of the LSP recognises the need to conserve the Wetland.

The LSP Area is also identified as being included as part of the Wellard East Development Contribution Area 2 (DCA 2) for hard infrastructure contributions, and Wellard East Developer Contribution Area No. 11 (DCA 11) for community infrastructure contributions.

3.3.2 Draft District Structure Plan – Eastern Residential Intensification Concept (City of Kwinana, November 2005)

The City's draft District Structure Plan Eastern Residential Intensification Concept provides a strategic Planning framework which provides guidance in the preparation of Local Structure Plans.

The design of the LSP Area generally accords with the design principles of this draft District Structure Plan, which identifies the site as being suitable for Residential land use with density

codes of R25 and higher; and a Local/District Recreation reserve. The Wetland is identified in the Structure Plan for conservation.

It is noted in the Structure Plan that the central portion of the LSP Area has previously been used for a short period of time for landfill purposes (construction and demolition waste). The Structure Plan recognises that remediation of this part of the site is unlikely to be financially feasible and therefore recommends that it be developed as an Park Home/Retirement Village site, provided that the finished levels of the land are modified to accommodate appropriate development.

The Structure Plan also recognises that the northern, eastern and southern parts of the site have development potential.

It is also noted that this Structure Plan identifies a site for 'Community Facilities'. This option has been considered and it has been determined to be impracticable given the very limiting physical constraints of this land.

3.3.3 Wellard East – Local Structure Plan (Cardno, August 2011)

A Local Structure Plan has been prepared for the Wellard East Cell, which Structure Plan provides Planning framework for the entire Cell but focuses specifically on Lot 201 Mortimer Road and Lot 379 Millar Road. The Local Structure Plan identifies the land uses for the LSP Area as being similar to the City's Draft District Structure Plan - Eastern Residential Intensification Concept, being that it is identified as being suitable for medium density residential development, with a density code of R25.

It is noted that the layout for the LSP Area as shown on this LSP is indicative only.

3.3.4 Local Policy - Conservation of Remnant Vegetation

The City's Local Natural Environment Policy relating to the Conservation of Remnant Vegetation states that the retention of existing trees as part of the development of residential subdivisions be given a high priority. Any existing trees on the land are required to be surveyed and identified on Structure Plans, *'with roads and lot alignments being designed to maximise tree preservation'*.

The LSP proposes the retention of remnant large *Eucalyptus rudis* and *Corymbia caliophylla* trees around the periphery of the proposed Park Home/Retirement Village and within the buffer to the Wetland, where possible.

4.0 SITE CONDITIONS AND CONSTRAINTS

A number of site specific investigations have been undertaken by Emerge Associates (Emerge) on behalf of Geographe Developments, which support the residential development of the LSP Area. These investigations include:

- Flora, Vegetation and Wetland Assessment, April 2012;
- Preliminary Site Investigation, May 2012;
- Groundwater Investigation, February 2013; and
- Landfill Extent Assessment, June 2013.

In addition to these investigations, Emerge obtained approval from the (then) Department of Environment and Conservation (DEC) on December 3, 2012 for a modification to the *Geomorphic Wetlands Swan Coastal Plain* Dataset for the Conservation Category Wetland UFI No. 12918. (Refer to **Annexure 2:** Revised Geomorphic Mapping of Wetland.)

4.1 BIODIVERSITY AND NATURAL AREA ASSETS

The site is located within the Swan Coastal Plain Interim Biogeographic Regionalisation for Australia and is characterised by *Banksia* low woodlands on leached sands, woodlands of tuart (*Eucalyptus gomphocephala*), jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*) on less leached soils and *Melaleuca* swamps.

Vegetation complex mapping undertaken by Heddle *et al* (1890) for the Swan Coastal Plain indicates that the LSP Area is located within the Bassendean Central and South Complex. Vegetation in this complex mainly consists of a mixture of Woodland of *Eucalyptus marginata-Allocasurarina frasriana-Banksia* spp. to Low Woodland of Melaleuca spp. and sedgelands on moister sites (Heddle *et al.* 1980.)

It is recognised that the Bassendean Central and South Complex retains 27.7 percent of the pre-European settlement vegetation complex. Emerge has identified that of this remaining 27.7 percent, a total of 13.56 percent of the complex is currently under some form of protection (Perth Biodiversity Project 2011). The Environmental Protection Authority (EPA) has applied a biodiversity protection objective of retaining 10 percent of each vegetation complex (EPA 2006). The Bassendean Central and South Complex is above the ten (10) percent 'constrained area' objective.

A detailed Flora, Vegetation and Wetland Assessment was undertaken by Emerge on March 12 and 13, 2012. Refer to **Annexure 3**: Flora, Vegetation and Wetland Assessment, Emerge.)

The purpose of the Assessment was to record the flora, vegetation and wetland values within the LSP Area and identify the conservation significance of these values and the policy and legislative requirements related to these values.

A total of 41 native and 40 weed species were recorded within the LSP Area, representing 34 families and 64 genera. The dominant families containing native taxa were Mytracease (11 native taxa and 7 introduced taxa). Fabaceae (8 native taxa and 3 introduced taxa) and Cyperaceae (6 native taxa).

Six (6) plant communities and areas of 'Parkland Cleared' paddocks were identified within the LSP Area. These are described by Emerge as follows:

- **EBGt -** Emergent *Eucalyptus gomphocephala* and planted **Eucalyptus* spp. over open woodland of *Adenanthos cygnorum, Banksia attenuata, B. menziesii* and *Jacksonia* spp. over open forbland *Gompholobium tomentosum, Scholtzia involucrata, Leucopogon conostephioides* and *Acacia huegelii* on yellow sand. (Refer to Annexure 3: Flora, Vegetation and Wetland Assessment (Plate 3, page 19).)
- **ErTILl** - Emergent trees to woodland of *Eucalyptus rudis* over low open woodland to woodland of *Taxandria linearifolia*, *Astartea scoparia* and *Pteridium esculentum* over open to closed sedgeland of *Lepidosperma longitudinale* and open forbland of *Centella asiatica* on dark brown organic soils. (Refer to Annexure 3: Flora, Vegetation and Wetland Assessment (Plate 4, page 19).)
- **ErKgCa** - Emergent *Eucalyptus rudis* over open shrubland of *Adenanthos cygnorum, Kunzea glabrescens* and *Melaleuca rhaphiophylla* over *Conostylis aculeata* and *Gompholobium tomentosum* on dry white to grey sand. (Refer to Annexure 3: Flora, Vegetation and Wetland Assessment (Plate 5, page 20).)
- **CcErAf** - Open forest of *Corymbia calophylla* and *Eucalyptus rudis* over tall shrubland of *Pteridium esculentum, Allocasuarina fraseriana, Kunzea glabrescens, Acacia saligna* and *Xanthorrhoea preissii* on light brown sand. (Refer to Annexure 3: Flora, Vegetation and Wetland Assessment (Plate 6, page 20).)
- **AsPeRa** - Emergent *Astartea scoparia* over closed shrubland of *Pteridium esculentum* and open to closed vineland of **Rubus anglocandicans* on dark brown soils. (Refer to Annexure 3: Flora, Vegetation and Wetland Assessment (Plate 7, page 21).)
- **ErPeBa** - Open forest of *Eucalyptus rudis* over closed shrubland of *Pteridium esculentum* and open to closed vineland of **Dipogon lignosus* and **Rubus anglocandicans* (mainly on the edges of the wetland) over open sedgeland of *Baumea articulata* on dark brown organic soils. (Refer to Annexure 3: Flora, Vegetation and Wetland Assessment (Plate 8, page 21).)
- **'Parkland Cleared'** – Isolated *Eucalyptus rudis*, *Corymbia calophylla* and non-endemic **Eucalyptus* spp. over weeds with isolated *Acacia saligna* and *Adenanthos cygnorum*

shrubs and clumps of *Pteridium esculentum* and *Kunzea glabrescens*. (Refer to Annexure 3: Flora, Vegetation and Wetland Assessment (Plate 9, page 22).)

Emerge identifies the vegetation across the site as ranging from 'Completely Degraded' to 'Excellent' Condition. The areas of 'Parkland Cleared' were 'Completely Degraded' and comprise 8.24 hectares (66%) of the total LSP Area. The mapped plant communities ranged from 'Degraded' to 'Excellent' condition and occupied the remaining 4.3 hectares (36%).

No priority or Threatened Flora were recorded on the site.

The LSP Area includes two wetland systems which includes a Conservation Category Wetland (CCW) (Dampland) UFI No. 12918 which exists in the south west corner of the land and a small portion of Resource Enhancement Wetland (REW) (Sumpland) UFL No. 15801 which also exists in the west of the land.

These Wetland systems and a surrounding buffer of 50 metres is also an Ecologically Sensitive Area. The eastern portion of CCW UFI No. 12918 is also identified as an Environmental Protection Policy (EPP) Lake, protected under the *Environmental Protection (Swan Coastal Plain Lakes) Policy 1992*.

It is noted that little dryland vegetation outside of the wetland on the site is associated with the wetland. However, it is noted that some dryland species which exist in the Parkland Cleared area are considered to hold value as fauna habitat.

It is also recorded that one third of the EPP Lake is 'Completely Degraded' due to clearing along the eastern edge of the CCW, however to the west of the EPP lake area, a large proportion of the vegetation is in 'Very Good' to 'Excellent' condition. (Refer to Annexure 3: Figure 5 – Vegetation Condition, Flora, Vegetation and Wetland Assessment, Emerge.)

Emerge identified inconsistencies with the wetland boundaries and the mapped geomorphic wetland boundary of the Conservation Category Wetland with some areas no longer retaining native wetland vegetation due to clearing. As a result, Emerge obtained approval from the DEC in 2012 to revise the geomorphic mapped wetland boundary to reflect the extent of the existing wetland boundaries. (Refer to **Annexure 2**: Revised Geomorphic Mapping of Wetland.)

The following recommendations of this Assessment are to be actioned as part of the urban development of the LSP Area.

- Retention and buffering of wetland dependent vegetation within CCW UFI No. 12918 and the EPP Lake;
- Conduct a field survey in spring to verify presence or absence of *Diuris micrantha* (Threatened) and *Schoenus capillifolius* (Priority 3);

- Removal of disturbing factors within the wetland such as rubbish and aggressive weeds including Japanese Pepper, Tagasaste, Fig, Arum Lily and Blackberry; and
- Retention of remnant large *Eucalyptus rudis* and *Corymbia caliophylla* trees within the 'Parkland Cleared' areas, where possible.

4.2 LANDFORM AND SOILS

The topography of the LSP Area has a gradual rise in a south-westerly to north easterly direction from RL 10.0 metres AHD to RL 17.0 metres AHD and rises steeply to approximately RL 29.0 metres AHD along the northern and eastern boundaries of the land. (Refer to **Annexure 4**: Topography of LSP Area.)

The soil condition varies across the site, with different conditions identified within the Wetland (swamp) area; the area formerly used for land fill; and the natural sand areas. (**Annexure 5**: Geotechnical Investigation.)

The natural soil profile of the site is identified in the exposed batters of the former sand quarry excavations and is 'light yellow sand' which is consistent with the Bassendean Sand profile predicted by the geological mapping. (Refer to **Annexure 6**: Preliminary Site Investigation, Emerge Associates.)

4.3 ACID SULFATE SOILS

Acid Sulfate Soils (ASS) is described by Emerge as being a naturally occurring soil that contains iron sulphide (iron pyrite materials). Should ASS be disturbed, it is recognised that the pyrite can oxidise which releases acidity and potentially causes environmental impacts, damage to infrastructure and has effects on human health.

The then DEC has classed the risk of ASS over the LSP Area as:

- south western corner of the site (corresponding with the extent of the Wetland) as a Class 1 risk with high to moderate risk of ASS being present within three (3.0) metres of the natural surface; and
- the remainder of the site as a Class 2 with a moderate to low risk of ASS occurring within three (3.0) metres of the natural surface.

Emerge states that the remaining area which is identified by the (then) DEC as being Class 2 is likely to be inaccurate as the depth to groundwater observed on the site and the original ground elevation prior to the sand mining and filling indicates that the ASS beneath the site is unlikely to have been disturbed as part of previous site activities. (Refer to **Annexure 6**: Preliminary Site Investigation, Emerge.)

4.4 GROUNDWATER AND SURFACE WATER

4.4.1 Groundwater

The Department of Water (DoW) Hydrogeological Atlas indicates that the groundwater beneath the site is described as a 'multi-layered system' comprising:

- Perth – Superficial Swan aquifer;
- Perth – Leederville (confined) aquifer; and
- Perth – Yarragadee North (confined) aquifer.

The *Perth Groundwater Atlas* identifies the depth to groundwater is likely to be:

- 13.0 metres AHD (approx.) in the north eastern corner of the site;
- 11.0 metres AHD (approx.) at the western edge of the filled area; and
- 9.0 metres AHD (approx.) in the south western corner of the site.

Monitoring of the groundwater on site has been undertaken. In March 2012, Emerge inspected the wells and determined that the groundwater level was approximately 14.3 metres AHD in the north eastern portion of the site and reduced to approximately 10.7 metres AHD near the Wetland in the south of the site.

The groundwater flow direction inferred by the groundwater levels is south westerly, which is consistent with the regional groundwater flow direction.

The groundwater ultimately flows towards the wetland located in the south west of the site which is connected to other interdunal wetlands via the PSN2D and subsequently the Peel Main Drain.

The site is located within the Serpentine Groundwater Area. However, it is not located in a Public Drinking Water Source Area (PDWSA). Further, no registered bores are identified within the site, as determined by Emerge in its search of the DoW Registered Groundwater Bore Database.

4.4.2 Surface Water

Surface water was not visible by Emerge during its site inspection in March 2012. It is however recognised that the Wetland in the south western corner may contain surface water which is not visible due to the presence of dense vegetation. Emerge did identify saturated soils within the Wetland during the vegetation assessment.

Emerge found no evidence of surface water flow paths within the site, other than the Wetland. Surface water flows are unlikely on the site because of the moderate to high permeability of the natural superficial soils. It is expected that surface water will only occur infrequently during excessive storm events. Any such surface water would potentially flow in a south westerly

direction. It is noted that surface water may also pool during high rainfall as a result of the unknown properties of the fill area.

Emerge concludes that it is not expected that there will be any substantial surface water flow onto the site other than via the PSN2D.

4.5 CONTAMINATED SITE INVESTIGATIONS AND REMEDIATION

Lot 59 Mortimer Road has been classified by the (then) Department of Environment and Conservation (DEC) as *'Possibly contaminated – investigation required' pursuant to the provisions of the Contaminated Sites Act 2003'*. This classification was based upon information obtained by the (then) DEC relating to unauthorised filling/soil stockpiling activities undertaken by a previous owner of the site, although not directly associated with the historic operation of a licenced inert landfilling operation within Lot 59.

The LSP area has historically supported agriculture which involved the clearing of native vegetation from most of the site including part of the wetland area, a sand quarry, an inert landfill and waste depot, and has been vacant supporting no active land use since around 2006. The current landowner acquired the site in 2010 with the intention of progressing residential development in accordance with its zoning and the strategic planning context available at the time associated with the Jandakot Structure Plan and the Eastern Residential Intensification Concept.

Given the range of historic land uses within the site, and in order to understand the potential for soil and/or groundwater contamination, Emerge Associates was engaged to undertake the necessary investigations, including the Preliminary Site Investigation (Emerge Associates 2012). The PSI revealed the following:

- The inert landfill (receiving construction and demolition waste) operated within the site between approximately 1997 and 2006.
- This facility was regulated under the *Environmental Protection Act 1986*, and was licenced and operated under a Part V licence, initially Category 63 for a Class 1 inert landfill and subsequently also Category 62 for a solid waste depot.
- The waste facility appeared from DEC inspection records to be largely operated without incident or concern, and the operation continued until the licence was terminated by the operator in 2006 and the site was sold to a new landowner.
- Concerns were raised around 2007 associated with unauthorised stockpiling of soil within the site by the new landowner. This stockpiled soil appeared to be Acid Sulfate Soils (ASS) and triggered a series of communications between the land owner, the (then) Town of Kwinana and the (then) DEC, and the stockpiling ceased.

- The site was classified by the (then) DEC in 2009 as *'Possibly contaminated – investigation required'*, which was associated with reports of inappropriate stockpiling of ASS within the site, and subsequent DEC observations of fragments of Asbestos Containing Material (ACM) within the site.
- A Memorial on the Title indicating that the site had been classified pursuant to the Contaminated Sites Act 2003 was registered in January 2010.

While the primary basis of the historic site contamination concerns related to the ASS stockpiling rather than the operation of the inert landfilling facility, given the site's classification by the (then) DEC, future detailed contamination investigations are to be undertaken to address the contamination status of the entire site. In order to resolve the site classification and associated Memorial, the investigation will consider the proposed change in land use (facilitated through the LSP and resultant subdivision) and specifically address the known occurrence of ACM within the site, in addition to a range of other potential contaminants.

Site specific contamination investigations undertaken to date (including the Preliminary Site Investigation (2012) and the Groundwater Investigation (2013)) indicate that site remediation is unlikely to require the full removal of historically landfilled materials. With some remediation to be undertaken by the current landowner as part of subdivision works, Lot 59 will be suitable for residential development and the development of the Park Home/Retirement Village without onerous ongoing management requirements.

Notwithstanding this, given the (then) DEC's classification and the associated Memorial on the Title, a Detailed Site Investigation (DSI)) will be required to be undertaken, with such an investigation being typically triggered by the subdivision approval process. Under this process, new Titles cannot be created through subdivision without the contaminated site investigation and any remediation requirements being resolved to the satisfaction of a Department of Environmental Regulation (DER) accredited contaminated site auditor, and then ultimately to the satisfaction of DER.

In order to provide the City with certainty regarding the contamination status of this area and any ongoing management requirements, the landowner will provide an auditor reviewed DSI report covering the entirety of Lot 59 to the City of Kwinana prior to or accompanying any application for subdivision approval being lodged with the Western Australian Planning Commission (WAPC). (Refer to Section 5.6 – Other Requirements, Part 1.)

The contaminated site investigations are to be consistent with the current DER contaminated site series guidelines, which recommend a staged approach to investigations. This staged approach will therefore be integrated into the land use planning process, and ultimately facilitate the development of a portion of the site for residential use (Retirement Village) and/or a Park Home.

As previously mentioned, the first stage of the investigation process (the PSI) has been completed (Emerge Associates 2012). In addition, an initial Groundwater Investigation was undertaken in 2012 (Emerge Associates 2013). Both of these first stage investigations indicate that while there are contamination issues that will require further detailed investigation and potentially remediation, it is recognised that the site will ultimately be suitable for the intended uses proposed by the LSP.

The next step of the staged investigation process involves undertaking and documenting a Detailed Site Investigation (DSI), which is a comprehensive exercise and will inform any site remediation requirements. This process has commenced with the groundwater investigations and is planned to be completed prior to subdivision works commencing within the site.

Given the site's current site classification and associated Memorial on the Title, even in the absence of any planning requirements arising from this LSP, a contaminated site investigation (and if necessary remediation) condition will be triggered as part of the subsequent subdivision approval process. This condition will require a Mandatory Audit Report (MAR) to be prepared by a Department of Environment Regulation (DER) accredited auditor to clear and ultimately create new Titles. It will be necessary to demonstrate that there is either no 'contamination', or the site has been remediated to the extent that it doesn't pose a threat to human health or the environment given the proposed future land uses.

The full suite of site classifications under the Contaminated Sites Act 2006 are as follows:

- *Report not substantiated* – information submitted to DER provides no grounds to indicate possible contamination exists.
- *Possibly contaminated – investigation required* – there is a basis for suspecting contamination but further investigation is required.
- *Not contaminated – unrestricted use* – there is no contamination at levels that pose a risk to human health and/or the environment.
- *Contaminated – restricted use* – there is contamination at levels that pose a risk to human health and/or the environment, but this risk is negligible if used for certain purposes and/or is mitigated if undertaken in a certain way.
- *Contaminated – remediation required* – contamination poses a risk to human health or the environment which must be addressed through remediation.
- *Remediated for restricted use* – the site has been remediated but is still only suitable for certain uses.
- *Decontaminated* – contamination has been remediated to remove all contamination or to levels that do not pose a risk to human health and/or the environment.

The following classifications require notifications on title:

- *Possibly contaminated – investigation required*

- *Contaminated – restricted use*
- *Contaminated – remediation required*
- *Remediated for restricted use*.

The aim of subsequent contamination investigations and any associated remediation within the site will be to ensure that the LSP land uses can be acceptably implemented without the need for unreasonable ongoing management requirements or impractically limit the future use of the area, and if a memorial was required this would be for an associated Remediated for restricted use site classification.

Therefore in order to provide sufficient time to allow full consideration of the site conditions, remediation requirements, and any likely ongoing management obligations or site use limitations, the landowner will prepare and lodge an auditor reviewed DSI with the City of Kwinana before or at the same time that any subdivision application is lodged with the Western Australian Planning Commission (WAPC). This requirement has been incorporated into Section 5.6 – Other Requirements of Part 1 of this LSP. This LSP requirement brings forward the investigation process (usually addressed as a conditional requirement of subdivision approval) but will not circumvent the usual subdivision clearance and formal MAR process that will involve DER as part of ultimately creating new Titles.

4.6 BUSHFIRE HAZARD

A Bush Fire Management Plan has been prepared by FirePlan WA, which identifies the Bush Fire Hazard rating as 'extreme' in the vicinity of the Wetland, with 'moderate' and 'low' rating applying to the areas identified for residential development and the Park Home/Retirement Village. It is recommended that the bush fire hazard management include 20m minimum Building Protection Zones separating the dwellings from the retained vegetation (i.e. the Wetland) and that dwelling construction on the lots within 100m of the retained vegetation be designed to accord with the designated bush fire attack level (BAL), pursuant to AS 3959 – Construction of Buildings within a Bush Fire Prone Area.

A copy of the Bush Fire Management Plan which includes the complete recommendations for fire management of the proposed LSP area is attached at **Annexure 7**.

4.7 HERITAGE

4.7.1 Indigenous Heritage

A search of the Department of Aboriginal Affairs Inquiry System has been undertaken. No Registered Aboriginal Heritage Sites are identified as being present within the LSP Area.

The Department of Aboriginal Affairs has identified 'Another Heritage Place' (Site No. 3627) as being located on the eastern portion of the LSP Area which encompasses the eastern portion of

the site as well as the adjacent property to the north and east of the site. The status of this site is identified in the Aboriginal Heritage Inquiry System as 'Stored Data' which means that it has been assessed as not being an Aboriginal Site under the *Aboriginal Heritage Act 1972*. (Refer to **Annexure 8**: Aboriginal Heritage Site Record.)

4.7.2 Non-Indigenous Heritage

A search of the available non-indigenous heritage registers has been undertaken.

No non-indigenous heritage sites have been identified as being located within the boundaries of the LSP Area.

5.0 LAND USE AND SUBDIVISION REQUIREMENTS

5.1 LAND USE

The proposed land uses are illustrated on the attached Structure Plan. (Refer to **Plan 1**: Structure Plan Map.)

The proposed land uses include Residential (R12.5, R20, R30 and R40) and Parks, Recreation and Drainage and Park Home/Retirement Village.

The LSP design accords with the guiding principles of Liveable Neighbourhoods (WAPC) and the City's draft Eastern Residential Intensification Concept and the South Jandakot Structure Plan by proposing a medium density residential development adjacent to and overlooking the Mortimer Road Wetland. The design incorporates a strong permeable road network which provides a strong connection between Mortimer and Woolcoot Roads and future development to the south. Further, the creation of the road connection to Mortimer Road will enable the permanent road connection to be established between Mortimer Road and the land currently being developed further south by Armana Holdings, in accordance with the earlier prepared Wellard East Local Structure Plan.

The design also incorporates urban water management principles.

5.2 RESIDENTIAL

The LSP design proposes a range of density codes between Residential R12.5 and R40. It is anticipated that a total of 33 lots (including two (2) Grouped Dwelling sites) and approximately 56 dwellings will be created on the land, each respectively in accordance with the minimum lot sizes for the varying density codes set out in the Residential Design Codes of WA (R-Codes).

The density codes for this site are proposed to ensure that the density targets identified for the Wellard East Cell are met and to respond to the existing physical topography of the site.

The City of Kwinana has identifies that a total of 1500 dwellings are to be developed in the Wellard East Cell, in its preparation of the Developer Contributions Plans. The LSP Area is estimated to provide a total of 56 dwellings, which is 3.7% of the total dwellings to be developed in this Cell.

As illustrated on the LSP, the lots are orientated towards the Wetland and proposed Park Home/Retirement Village. Those lots which are Grouped Housing sites are to be the subject of Local Development Plans, in order to ensure the dwellings that are designed on these lots, maximise interaction and passive surveillance over adjoining public spaces and open space.

The lot layout includes lots on land comprising the banks of the former sand quarry. These banks of the former quarry provide an excellent and unique opportunity to create a residential

development with elevated views, offering a high level of interaction with and passive surveillance over the adjacent Wetland and Park Home/Retirement Village.

5.3 MOVEMENT NETWORKS

The design incorporates a permeable road network which provides a strong connection between Mortimer and Woolcoot Roads and future development to the south. Further, the creation of the road connection to Mortimer Road will enable the permanent road connection to be established between Mortimer Road and the land currently being currently developed further south by Armana Holdings, in accordance with the earlier prepared Wellard East Local Structure Plan..

A dual use path is proposed along the 50m buffer edge of the Wetland and adjacent to the Park Home/Retirement Village. This dual use path is to connect to the internal road network, extending south from Mortimer Road and to Woolcoot Road to the east of the land. In addition, a local pedestrian footpath system is proposed on one side of the internal road system. The proposed pathway system is illustrated on the LSP.

5.4 OPEN SPACE

The LSP design includes an appropriate level of public open space (POS).

The gross subdividable area, excluding the area of the Wetland (3.78ha) and excluding surplus restricted use open space, arrives at a total of 6.912 hectares. We have negotiated with the City of Kwinana to also address a shortfall in unrestricted use open space from Wellard Glen (1205m^2). The required public open space therefore at 10% of the gross subdividable area (6912m^2) plus 1205m^2 is **8117m^2**.

In order to meet the requirements of the WAPC Liveable Neighbourhoods Policy, the subdivision of the land is required to provide 8% active POS and 2% restricted POS, which based on 6.912 hectares arrives at a total of 5530m^2 of unrestricted (active) POS and 1382m^2 of restricted POS. We then need to provide an additional 1205m^2 for the shortfall in unrestricted use open space from Wellard Glen.

The LSP area provides 1.9512 hectares of restricted use open space. Only 20% of the total public open space requirement (8117m^2) can be credited to restricted use POS (1620m^2).

The LSP area provides 3404m^2 of unrestricted (active) use POS, located on the southern end of the LSP area.

In total, the LSP area provides 5024m^2 of public open space, which then indicates that the LSP area is 3093m^2 short of the required public open space requirement (Refer to **Table 1**: POS Schedule)

TABLE 1: PUBLIC OPEN SPACE SCHEDULE			
SITE AREA			**12.482ha**
DEDUCTIONS:			
Environmental:			
CCW and REW Wetland	*3.78ha*		
Other:			
Surplus Restricted POS (see below)	*1.79ha*		
TOTAL REDUCTIONS			**5.57ha**
GROSS SUBDIVIDABLE AREA			6.912ha
Public Open Space @ 10 %			**0.6912ha**
Add Shortfall Wellard Glen LSP (Unrestricted POS only)	*0.1205ha*		
TOTAL POS Requirement:			***0.8117ha***
8% unrestricted POS			*0.5530ha*
+ unrestricted POS from Wellard Glen			*0.1205ha*
2% restricted POS			*0.1382ha*
Public Open Space contribution:			
POS – Restricted:			
- *Wetland Buffer*	*1.1558ha*		
- *Landscaped Buffer Reservations to Mortimer and Woolcoot Roads*	*0.7954ha*		
Total Restricted use POS	**1.9512**		
Total Restricted POS Credited to a Maximum of 20% (20% of 0.812ha)			**0.162ha**
Surplus Restricted POS Not Credited	**1.79ha**		
POS – Unrestricted:			
- *Active POS*	*0.3404ha*		
Total Unrestricted use POS:			**0.3404ha**
TOTAL POS PROVISION:			**0.5024ha**
Shortfall			0.3093ha

The shortfall of POS has been generally agreed to be provided as cash in lieu, as the City has recognised the difficulty in providing appropriate POS on the site. The method for determining the amount of cash in lieu of providing POS will be in accordance with S.153 the *Planning & Development Act 2005*.

The detailed management of the POS area to ensure nutrient runoff into the Wetland is to be addressed through the Wetland Management Plan, at subdivision stage.

5.5 WETLAND MANAGEMENT

The LSP area includes a Conservation Category Wetland (CCW), referred to as the 'Mortimer Road Wetland'. The area that would comprise a generic 50 metre buffer surrounding this

Wetland has been largely cleared of native vegetation, historically filled with materials associated with the operation of the inert landfilling operation, and currently supports infestations of invasive exotic weed species.

In discussions between Emerge and the City of Kwinana, the City has confirmed its support for the following measures to be adopted to ensure the protection of the portion of Wetland which extends over the subject land.

- The retention of the Mortimer Road Wetland as POS, to be vested with and managed by the City of Kwinana.
- The selective reduction of the generic 50 metre buffer surrounding the Wetland to respond to the design of the LSP.
- The provision of a landscaped interface as the Wetland buffer, between the Wetland boundary, the adjacent road reservation and the Park Home/Retirement Village.

A Wetland Management Plan is to be required to be prepared as a condition of subdivision approval. (Refer to Section 5.5 – Conditions of Subdivision Approval, Part 1.)

This Management Plan will outline the wetland management and landscape treatments to be undertaken within the Wetland and its buffer area to ensure that the Wetland's attributes and values are protected and maintained, whilst ensuring acceptable ongoing maintenance requirements for the City of Kwinana. The City has indicated that the landscaped interface should not involve a revegetation approach, but rather a soft landscape treatment that is easily accessible, manageable, promotes passive surveillance from adjacent areas, manages the fire hazard for adjacent residential areas, as well as providing an ongoing Wetland buffer function.

As indicated previously, the LSP area contains a significant portion of a larger wetland referred to as the 'Mortimer Road Wetland'. This Wetland is identified as being 'Conservation Category' and 'Resource Enhancement' under the Department of Parks and Wildlife (DPaW) Geomorphic Wetlands Dataset, and also has been partly identified under the *Environmental Protection (Swan Coastal Lakes) Policy 1992*.

From an environmental significance point of view, the extent of the Conservation Category component of this wetland system is an important environmental asset that is regionally significant. This has been the driver for its retention within POS under the LSP, and the implementation of the LSP (through subdivision and associated works) will be an important mechanism to achieve long term conservation and management outcomes for this Wetland.

As previously mentioned, a range of historic land uses have been undertaken within the broader extents of Lot 59, including agricultural use commencing sometime prior to 1953. Based on historic aerial photography, this resulted in the majority of the site including the wetland area being cleared of native vegetation by 1965. This agricultural use was largely discontinued

sometime prior to 1974, with wetland vegetation re-establishing within the wetland area by 1979. Notwithstanding this, ongoing sand quarrying and inert landfilling operations in adjacent areas have meant that the areas outside of the existing wetland area are devoid of intact remnant vegetation. The Wetland would have extended further to the east and northeast than the currently mapped boundaries indicate, prior to these areas being filled. An artificial drainage network has been historically established through the wider locality and involves a surface drain through the lowest point of the Wetland. This surface drain ultimately discharges to the Peel Main Drain further to the east of the site, and is likely to reduce the extent and duration of seasonal inundation within the wetland area compared to the wetland conditions prior to the drainage network being installed.

Prevailing Environmental Policy in Western Australia establishes the importance of Conservation Category Wetlands, and therefore presumes their long term management to achieve conservation outcomes. In a land use planning/subdivisional context, this generally means the retention of the Conservation Category Wetland area in some form of public reservation (usually POS) which in most cases is vested with the local government for ongoing management. In addition to this, planning is generally required to consider the separation of surrounding uses from the Wetland through wetland buffers (also usually accommodated into the extent of the public reserve), and the management of stormwater generated from developed areas in relation to the wetland.

In this situation, the Wetland boundary and wetland attributes/values within Lot 59 have bene recently verified and confirmed by the (then) DEC. The Wetland does support wetland dependent vegetation in mostly 'Very Good' to 'Excellent' condition, and provides relatively intact habitat for fauna. This is despite historic direct disturbance from agricultural activities, hydrological regime modification through drainage, the absence of a dryland vegetation buffer, extensive weed infestation in adjacent areas, and filling and other associated activities having been undertaken right up to the boundary of the existing wetland area.

Recent investigations have highlighted the apparent resilience of the Wetland system despite these threats and ongoing pressures. The implementation of the LSP provides a considerable opportunity to resolve the necessary future management requirements of the Wetland, through:

- providing an impetus to undertake detailed contaminated site investigations that will ensure that there are no ongoing threats to the Wetland from soil or groundwater contamination in adjacent areas.
- undertaking earthworks and landscaping works that will enable the recontouring of filled areas currently comprising the 'wetland buffer', remove unsuitable materials from the wetland buffer, control/remove existing weed infestations and implement appropriate wetland buffer landscape treatments.

- covert the wetland and immediately surrounding areas from unused, unmanaged, and inaccessible private land to being publicly accessible and actively managed through the development process and then transfer the Wetland to the City of Kwinana as POS for the area to be appropriately managed, in the long term.

For Conservation Category Wetlands, it is generally expected that a Wetland buffer be provided that is at least 50 metres from the boundary of the wetland. The purpose of the buffer is to retain dryland buffer vegetation to protect the wetland core and also to exclude activities that may impact on the ongoing viability of the wetland. The LSP has responded to this requirement through the placement of POS around the Wetland.

A wetland buffer landscape treatment area will extend right around the Wetland, ranging in width. In the location where the buffer is proposed to be the narrowest, a 16.5 metre wide local road reservation will separate the adjacent residential lots from the buffer and ultimately the Wetland area. This partially reduced Wetland buffer is considered acceptable on the basis that:

- the Wetland area is large, extending significantly beyond Lot 59, and therefore a localised reduction is unlikely to affect the long term viability of the wetland.
- there are no particularly sensitive wetland values in this area;
- there is no intact remnant vegetation where the road reserve is situated;
- the entire buffer area is not providing a buffer function in its current physical state, and without intervention is actually a source of ongoing pressure and threats;
- stormwater generated from the road can be managed away from the Wetland area;
- the entire wetland and buffer area is clearly delineated with a 'hard edge' comprising either public roads or a dual use path.

Given that the City of Kwinana is a key stakeholder in the long term management of the Wetland and surrounding areas (including any wetland buffer), specific consultation was undertaken regarding the LSP, the Wetland, and what was its view on an appropriate Wetland management approach. This involved an onsite meeting and in summary indicated:

- the current edge of the Wetland (as defined by the existing wetland mapping) should form the boundary of the area to be managed exclusively for conservation purposes.
- there are no wetland buffer values or conservation values currently existing within the nominal 50 metre wetland buffer area given the extent of historic disturbance.
- there is a strong preference against the buffer area (or any other area within the site other than the wetland) being rehabilitated/revegetated, as this is likely to present long-term management liabilities for the City of Kwinana.

- the area that would ultimately comprise the wetland buffer under the LSP should be landscaped adopting the following principles:
    - All obvious signs of waste and rubble be removed and any site remediation works be completed as per the contaminated site investigation and remediation process.
    - The existing landform be re-contoured, to be 'flattened out' and ideally aim to achieve a maximum 1 in 6 grade from the wetland boundary to adjacent areas at the edge of the road reserve.
    - All areas (except for the wetland) be extensively 'scalped' and intensively targeted for ongoing weed control as part of the management program prior to handover.
    - The wetland buffer area not be turfed or irrigated, but sensitively landscaped with clumped native vegetation and areas potentially mulched. It should reflect be a manicured/managed landscape treatment (and not revegetation) that can be easily accessible and manageable in the long term.
    - All wetland buffer area treatments be open to maximise visual permeability and therefore opportunities for passive surveillance from adjacent residential dwellings and the Park Home/Retirement Village.

In order to address all of the above, and as reflected in Section 5.5 of Part 1 of this LSP, a comprehensive Wetland Management Plan will be undertaken as a condition of subdivision approval.

5.6 WATER MANAGEMENT

A preliminary proposal for the Stormwater and Groundwater Management Strategy has been prepared in support of the LSP by GHD. (Refer to **Annexure 9:** Stormwater and Groundwater Management Strategy.) It is intended that the detailed Management Strategy be prepared as part of the detailed subdivision design of the land, which Strategy will ensure the protection of the environment values of the land, including the protection of the Wetland.

This Water Management Strategy adopts the principles and recommendations of the *Stormwater Management Manual for Western Australia* (DoW, 2007); *Jandakot Drainage and Water Management Plan* (DoW, 2009) *and IPWEA Subdivision Guidelines* (IPWEA, 2012, adopted by the City of Kwinana).

The objectives of the Stormwater Management Strategy are described in the attached submission as being to:

- protect infrastructure and assets from flooding caused by groundwater or the 100-year ARI surface water flood;
- maintain or improve existing groundwater quality and surface water quality; and
- maintain existing runoff rates and volumes.

In order to meet these objectives, the following strategy is proposed by GHD.

- In the **1-year ARI event**, lots will drain to soakwells.
- Stormwater generated from roads will be retained in one of two basins, treated and infiltrated using a biofiltration system within each basin.
- Bioretention areas which represent approximately 2% of connected impervious areas are typically sufficient to treat nutrients and suspended solids prior to infiltration.
- The connected impervious areas for this development represent approximately 5000m^2, therefore the bioretention areas will need to be at least 100m^2.
- In the **5-year ARI event**, stormwater exceeding the capacity of soakwells will be collected and conveyed in a westerly direction along the access roads using a pit and pipe system, and then discharged into one of two infiltration basins.
- In the **100-year ARI event**, flows exceeding the capacity of the pit and pipe network will be conveyed as overland flow towards one of two basins for retention and infiltration.
- No stormwater will be discharged from the basins in any of the design storms. To achieve this, each basin will retain 340m^3 of stormwater. At 1.0m deep with 1 in 6 side slopes, this will result in a top water area of 580m^3 in each basin. Both basins have been located in areas of highly permeable sands with sufficient clearance to groundwater.

In regard to the Groundwater Management Strategy, GHD confirms that the proposed development is anticipated to have sufficient clearance to groundwater for most of the site. On the far western side of the development, a minor number of lots may require fill to achieve sufficient clearance.

Given that groundwater will not be intercepted, and stormwater will be treated prior to infiltration, no change to groundwater quality is expected.

GHD conclude that the LSP Area is capable of supporting the proposed urban development on the basis that the stormwater and groundwater management measures outlined in this report are included in the structure plan or engineering design, as appropriate.

5.7 INFRASTRUCTURE COORDINATION, SERVICING AND STAGING

5.7.1 Reticulated Water

The Water Corporation has advised that the development will require a 250mm water main extension from existing 100mm mains within the LSP Area. (Refer to **Annexure 10**: Indicative Reticulated Water Mapping.)

5.7.2 Reticulated Sewer

The Water Corporation has confirmed that 300mm, 225mm and 150mm sewer mains will be required. Current planning is illustrated on the attached map. (Refer to **Annexure 11**: Reticulated Sewer Mapping.)

5.7.4 Power

Overhead power exists along both Mortimer and Woolcoot Roads. The power has been upgraded in the past to service the rural residential developments which have occurred to the east of the Site, however it is not expected to be of a sufficient capacity for urban development loads. Western Power will provide more detail on the requirements for upgrading of its services at subdivision stage.

5.7.5 Telecommunications

Telstra infrastructure is available in close proximately to the LSP Area, which can be extended to service the residential subdivision.

5.7.6 Gas

Natural gas is available and proposed to be extended to the land which is currently being developed to the west of the LSP Area by Amana Holdings.

5.8 DEVELOPER CONTRIBUTION ARRANAGEMENTS

At Schedule V – Development Contribution Plans of TPS 2, the Wellard East Cell is identified as Development Contribution Area 11 (DCA 11) and is subject to the requirements of Development Contribution Plan 11. This particular Development Contribution Plan lists the community infrastructure items towards which developers are required to make contributions. These infrastructure items include Sub-Regional Facilities, District B Facilities, and Local Facilities, including District and Local Sporting Pavilions and associated car parking facilities. Amendment No 145 to TPS 2 also updates the requirements of DCA 11.

In addition, the Wellard East Cell was subject to Amendment No. 100A to TPS 2, which related to the introduction of a Development Contributions Plan for 'hard' infrastructure, including road construction. This is now known as Wellard East DCA 2.

It is recognised now that the Senior Playing Field will not be required in the Wellard East locality and as such the Contribution Plans have been amended to exclude a contribution for these facilities.

6.0 CONCLUSION

This LSP document provides overwhelming support for the proposed urban development of the LSP Area in accordance with the relevant State and Local Planning Strategy and Policy requirements.

Further, it is noted that the site does not contain any constraints which cannot be effectively managed through appropriate strategies to be comprehensively developed at subdivision stage and that this site can be developed independently without compromising the development potential of surrounding land.

The ability for the land to be developed in accordance with the LSP is further evidenced through the overwhelming support provided in the accompanying assessment reports, including the Flora, Vegetation and Wetland Assessment; preliminary Site Investigation; Groundwater Investigation; Landfill Extent Assessment; GHD proposed Stormwater and Groundwater Management Strategy; and the Bushfire Management Plan.

Accordingly, the approval of this LSP by the City of Kwinana and the Western Australian Planning Commission (WAPC) is respectfully sought.

Peter D Webb and Associates

TECHNICAL ANNEXURES

ANNEXURE 1

Certificate of Title and Deposited Plan

ANNEXURE 2

Revised Geomorphic Mapping of Wetland

ANNEXURE 3

Flora, Vegetation and Wetland Assessment, Emerge - April 2012

ANNEXURE 4

Topography of LSP Area

ANNEXURE 5

Geotechnical Investigation,
Galt Geotechnics

ANNEXURE 6

Preliminary Site Investigation,
Emerge Associates

ANNEXURE 7

Bush Fire Management Plan,
FirePlan WA

ANNEXURE 8

Aboriginal Heritage Site Record

ANNEXURE 9

Stormwater and
Groundwater Management Strategy, GHD

ANNEXURE 10

Indicative Reticulated Water Mapping, Water Corporation

ANNEXURE 11

Reticulated Sewer Mapping
Water Corporation