

# Yarrabilba Precinct One Planning Report

Application for a Development Permit  
For

Reconfiguring of Lot (part of 1 Lot into 542 Residential Lots, Village Centre – comprising 3 lots and 30 lots for Non-residential uses)

And

Material Change of Use for -

North Village Stages 1 to 10 – House, Multiple Residential and Other Residential.

South Village Stages 1 to 10 – House, Multiple Residential and Other Residential.

Lot 5030 – Sales Office and Display Home, Retail – Food Premises, Shop, Community Facility, Business and Market.

Lots 5029 and 5031 – Business, Medical Centre, Fast Food Premise, Food Premise, Market, Neighbourhood Centre, Shop, Shopping Centre, Car Park, Child Care Centre, Community Facility, Education Establishment, Multiple Residential, Other Residential and Research and Technology Facility.

Lot 5008 - Business, Medical Centre, Fast Food Premise, Food Premise, Market, Neighbourhood Centre, Shop, Shopping Centre, Car Park, Child Care Centre, Community Facility, Education Establishment, Multiple Residential, Other Residential, Research and Technology Facility and Showroom.

Lots 5009 and 5007 – Business, Medical Centre, Low Impact Industry, Research and Technology Facility, Service Industry, Warehouse, Fast Food Premise, Food Premise, Service Station, Shop, Showroom, Emergency Services, Indoor Entertainment, Research and Technology Facility and Showroom.

Lots 5000 to 5006 - Business, Medical Centre, Low Impact Industry, Research and Technology Facility, Service Industry, Warehouse, Fast Food Premise, Food Premise, Service Station, Shop, Showroom, Emergency Services, Indoor Entertainment.

Lots 5010 to 5020 - Business, Medical Centre, Low Impact Industry, Research and Technology Facility, Service Industry, Warehouse, Fast Food Premise, Food Premise, Service Station, Shop, Showroom, Emergency Services, Indoor Entertainment and Utility Installation.

Lots 5024 to 5028 - Business, Medical Centre, Low Impact Industry, Research and Technology Facility, Service Industry, Warehouse, Fast Food Premise, Food Premise, Service Station, Shop, Showroom, Emergency Services, Indoor Entertainment and Utility Installation.

Lot 5033 – Educational Establishment

Lot 5032 – Child Care Centre, Educational Establishment, Community Facility and Medical Centre.

Lot 9008 – Outdoor sport and recreation

February 2011

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## SECTION 1 APPLICATION SUMMARY

### 1.1 SITE DETAILS

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Address                  | Waterford Tamborine Road. Yarrabilba.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Lot Description          | Part of Lot 2 on RP 138537                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Name of Development Area | Precinct One                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Land Owner               | Hancock Resources Pty Ltd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Easements                | Nil                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Total Site Area          | 82.62Ha                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Local Government         | Logan City Council                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Planning Instrument      | Yarrabilba Interim Land Use Plan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Proposal                 | <p>Reconfiguring of Lot (part of 1 Lots into 542 Residential Lots, Village Centre – comprising 3 lots and 30 lots for Non-residential uses)</p> <p>And</p> <p>Material Change of Use for -</p> <p>North Village Stages 1 to 10 – House, Multiple Residential and Other Residential.</p> <p>South Village Stages 1 to 10 – House, Multiple Residential and Other Residential.</p> <p>Lot 5030 – Sales Office and Display Home, Retail – Food Premises, Shop, Community Facility, Business and Market.</p> <p>Lots 5029 and 5031 – Business, Medical Centre, Fast Food Premise, Food Premise, Market, Neighbourhood Centre, Shop, Shopping Centre, Car Park, Child Care Centre, Community Facility, Education Establishment, Multiple Residential, Other Residential and Research and Technology Facility.</p> <p>Lot 5008 - Business, Medical Centre, Fast Food Premise, Food Premise, Market, Neighbourhood Centre, Shop, Shopping Centre, Car Park, Child Care Centre, Community Facility, Education Establishment, Multiple Residential, Other Residential, Research and Technology Facility and Showroom.</p> <p>Lots 5009 and 5007 – Business, Medical Centre, Low Impact Industry, Research and Technology Facility, Service Industry, Warehouse, Fast Food Premise, Food Premise, Service Station, Shop, Showroom, Emergency Services, Indoor Entertainment, Research and Technology Facility and Showroom.</p> <p>Lots 5000 to 5006 - Business, Medical Centre, Low Impact Industry, Research and Technology Facility, Service Industry, Warehouse, Fast Food Premise, Food Premise, Service Station, Shop, Showroom, Emergency Services, Indoor Entertainment.</p> <p>Lots 5010 to 5020 - Business, Medical Centre, Low Impact Industry, Research and Technology Facility, Service Industry, Warehouse, Fast Food Premise, Food Premise, Service Station, Shop, Showroom, Emergency Services, Indoor Entertainment and Utility Installation.</p> <p>Lots 5024 to 5028 - Business, Medical Centre, Low Impact Industry, Research and Technology Facility, Service Industry, Warehouse, Fast Food Premise, Food Premise, Service Station, Shop, Showroom, Emergency Services, Indoor Entertainment and Utility Installation.</p> <p>Lot 5033 – Educational Establishment</p> <p>Lot 5032 – Child Care Centre, Educational Establishment, Community Facility and Medical Centre.</p> <p>Lot 9008 – Outdoor sport and recreation</p> |
| Assessment Level         | Code Assessable (Permissible)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                     |                                                                    |
|---------------------|--------------------------------------------------------------------|
| Public Notification | As per Section 54 of the Urban Land Development Authority Act 2007 |
|---------------------|--------------------------------------------------------------------|

## 1.2 APPLICATION DETAILS

|                   |                                                                                          |
|-------------------|------------------------------------------------------------------------------------------|
| Applicant         | Rob Moore                                                                                |
| Applicant Details | Delfin Lend Lease Yarrabilba Pty. Ltd.                                                   |
| Address           | Level 2, 349 Coronation Drive<br>Milton Qld 4064<br>Or<br>PO Box 1512<br>Milton Qld 4064 |
| Phone             | 07 3292 2200                                                                             |

## INTRODUCTION

This report has been prepared in accordance with Section 51 of the Urban Land Development Authority Act 2007. The Development Application seeks a Development Permit for Reconfiguration of Lot to create 597 residential lots, a Village Centre – comprising 3 lots and 30 lots for Non-residential uses in Yarrabilba and Material Change of Use approval for associated lot specific uses. The land is located at Waterford-Tamborine Road, Yarrabilba and properly described as Part of Lot 2 on RP 138537 and Part Lot 1 on RP 27552.

The area of land subject to this application is located within the overall Yarrabilba Urban Development Area (UDA) and is defined as part of Precinct One in the Yarrabilba Interim Land Use Plan 2010. The land area associated with this stage of the overall development area encompasses 93.2 hectares and is located within the north-western portion of the UDA. The subdivision of land within Precinct One will not prejudice further development or subdivision of the balance area within the UDA.

To assist the Urban Land Development Authority's assessment of this Development Application, the planning report covers the following matters:

- Section 2: A site description including the site characteristics and its immediate surrounds.
- Section 3: A detailed description of the development proposal.
- Section 4: A review of the relevant legislative provisions. A review of the Yarrabilba Interim Land Use Plan provisions and identification of the level of assessment.

## SECTION 2 THE SITE

### 2.1 SITE DESCRIPTION AND CHARACTERISTICS

The Yarrabilba site is situated 40 kilometres south-east of the Brisbane CBD and 35 kilometres north-west of Southport on the Gold Coast. Located within Logan City, the site is also only 15 minutes from the existing regional centres of Beenleigh, Yatala and Logan Central. Yarrabilba consists of 27 separate parcels of land with a total area of approximately 2014ha. The land was historically used for commercial pine production, with harvesting completed through to the early 2000's leaving the site in its current vacant state.

Yarrabilba is strategically located within South East Queensland, adjacent to the expanding Brisbane-Gold Coast corridor. Because of its location, size, site characteristics and single ownership Yarrabilba has a distinct advantage over other growth areas, enabling a comprehensive planning and integrated approach to sustainable urban development. Such a strategic approach will result in the timely delivery of infrastructure, achievement of new benchmarks in all facets of sustainable development and creation of an environment conducive to quality employment, lifestyle and business opportunities. For Yarrabilba, development can occur in an integrated and environmentally sensitive way, delivering a place that supports a community and ensuring that those who live there will thrive.

The Preferred Structure Plan (Appendix 1) prepared for the project shows the preferred pattern of land use. The plan is based on the principles and concepts outlined in Section 3, structure planning outcomes from consultation with Logan City Council throughout 2009-10 and reflects a complete community offering the full range of services and facilities to support a population in excess of 45,000 people which is comparable in size to the city of Gladstone. In this regard, Yarrabilba has been comprehensively planned as a self-sufficient "town" rather than perpetrating the all too common process of small scale, piecemeal land development. The master planning also respects and responds to the identified environmental constraints and opportunities of the site as determined through comprehensive technical and environmental investigations.

A Site Analysis for the Yarrabilba project has been prepared and is contained in the supporting documents (Appendix 2). In summary this plan indicates that constraints across the site are limited in area primarily due to previous pine harvest activities. The plan also indicates that there are a number of opportunities presented by the development of the land.

Yarrabilba can be described as gently undulating (Refer to Appendix 3 for Yarrabilba Slope Analysis), with the majority of the site having grades of less than 1 in 20 (< 5%).

Within Precinct One the land generally slopes away from Waterford-Tamborine Road at a grade of 1 in 12.5 to 1 in 20 (5 – 8%) and then continues to grade at less than 1 in 20 (5%). Small areas within the ERA grade at 1 in 6 to 1 in 12.5 (8% to 16%).

With the exception of the marginally steeper land adjacent to the eastern property boundary, Yarrabilba's topography will enable residential development with minimal requirements for cut/fill.

In summary, the main site constraints include:

- The visual impact of the high voltage powerlines traversing the site;
- The potential need to accommodate a future east-west arterial road (the Southern Infrastructure Corridor or 'SIC') through the northern most area of the site;
- Corridors subject to Q100 flood inundation;
- Wildlife corridor connections;
- Areas of significant vegetation adjoining the Plunkett Environmental Reserve; and
- The need to buffer development in certain locations against Plunkett Environmental Reserve.

Also, the opportunities presented by the site include:

- Single ownership of a very large parcel of land with only limited areas of environmental or physical constraints;
- A gently undulating site, well suited for urban development;
- A significant area of the site with north-east aspect to maximise solar orientation of allotments;
- Minimal visual impact on adjoining areas;
- Well served by an external road network providing access in all directions;
- Natural site features that could be incorporated into the urban design of the project;
- A site naturally encased by mountain ranges providing a scenic backdrop to future urban development;
- Very minor external stormwater catchments draining into the site; and
- Opportunities to undertake a comprehensive integrated water cycle management plan.

## 2.2 PLANNING CONTEXT

Delfin Lend Lease (DLL) submitted a Development Application for a Preliminary Approval under Section 3.1.6 of the Integrated Planning Act on 11 June 2004. This application has been progressed by:

- Acknowledgement Notice from Beaudesert Shire Council on 12 July 2004;
- Information Request being received on 30 September 2005;
- submission of an amended Development Application in response to the Information Request on 28 November 2005;
- application advertised from 29 November 2005 to 1 February 2006;
- receipt of nine (9) submissions; and
- extensions to the decision making period for the Department Transport and Main Roads (formally Department of Main Roads) as a Concurrence Agency until 29 April 2011.

In recent years, with the change of local government jurisdiction from Beaudesert Shire to Logan City, the assessment of this original Development Application has also been influenced by:

- Substantial commencement of the structure planning process with Logan City Council (LCC) and relevant State Government Agencies – Logan City Council's preferred structure plan is expected to go to full Council around the end of November 2010. (Refer to Appendix 1 for the Preferred Structure Plan submitted to LCC)
- Yarrabilba declared an Urban Development Area (UDA) under the Urban Land Development Authority (ULDA) in October 2010.



## SECTION 3 THE PROPOSAL

### 3.1 BACKGROUND

The creation of a community with a strong sense of place making is fundamental to the success of a master planned community. Delfin Lend Lease is recognised for creating urban environments that are characterised by quality, safety, security and convenience in a bid to create special places.

The location, size and limited constraints of the Yarrabilba site means there is an opportunity for a 'very special place' to be created.

The desired future for the Yarrabilba project is:

*"A complete town, with a strong, healthy and prosperous community, rich in social capital which provides life long learning and Ecologically Sustainable Development principles".*

Five principles have been formulated to guide the development of the Yarrabilba project. The development will aim to be:

- Economical sustainability
- Inclusiveness
- Innovation
- Conserving and respecting resources; and
- Fully planned community.

In addition, five 'cornerstones' have been developed to make the vision for the Yarrabilba project a reality. These comprise:

- A complete community;
- A prosperous community;
- Quality urban fabric;
- Ease of accessibility for all; and
- A small environmental footprint.

This application will analyse the site at three different scales –

- The Overall Site (The Structure Plan Area);
- the Urban Footprint Area (as defined in the DEQ Regional Plan 2009 – 2031); and,
- Precinct One Early Release Area (the area in which this application directly refers to).

Studying Yarrabilba at the abovementioned scales will give a broad land use and planning context to the Precinct One proposal. Site constraints mapping has also been completed to inform the design of the Precinct One. Please refer to Appendix 2 and 3.

### 3.2 SUPPORTING SPECIALIST REPORTS

The following specialist's reports and information have been prepared in support of this development application along with consideration for future development within the Yarrabilba Urban Development Area –

- Traffic
- Stormwater and Water Quality (WSUD)
- Servicing
- Geotechnical
- Unexploded Ordinance (UXO)
- Cultural Heritage

- Environmental Assessment
- Traffic Noise Assessment Report
- Economic Report

### 3.3 PRECINCT ONE NON-RESIDENTIAL PROPOSAL

Approval of the Development Application will authorise a Development Permit for the Reconfiguration of Lots to create Employment Generation Land and a mixed use Village Centre within Precinct One. The proposed reconfiguration is identified on the Reconfiguration of Lot plan and the Plan of Development included at Appendix 4 and 5 of this report.

An analysis of the required commercial and retail floor space has been undertaken by Core Economics for the entire Yarrabilba project and their report is contained in Appendix 6. In summary, Core Economics (now RPS) found that for the proposed yield of around 17,000 dwellings, the design of the community lends itself to a town centre (surrounded by a frame of less intensive activities), two village centres and four neighbourhood centres, as illustrated in the Preferred Structure Plan.

The village centres and neighbourhood centres would also host many of the schools, child care and recreation facilities and these would be distributed through the community as it grows and evolves.

Within Precinct One there is approximately 7 hectares of employment land proposed along the Waterford-Tamborine Road frontage. This area will have high exposure to passing traffic along Waterford-Tamborine Road and it is envisaged that businesses within this area will potentially have a relationship with the future proposed Mixed Industry and Business Area (MIBA) to be developed to the south of the Village Centre.

A new intersection at the corner of Waterford Tamborine Road and Camp Cable Road will provide access to the Yarrabilba Village Centre. It is envisaged that the Village Centre, defined by two street blocks and a main street, will include retail and commercial activities, a health hub, a community centre, and the Delfin Lend Lease Sales and Information Centre.

In summary, the non residential uses included in Precinct One have been divided into the following areas:

- Superblock A – Comprises both sides of the entry road. These sites will be developed for mixed use employment focused uses. The site directly opposite the Village Centre is also to be developed for mixed use, residential. This superblock has not been subdivided and will be subject to a separate ROL application. Refer Appendix 5 – Yarrabilba Plan of Development.
- Superblock B - Comprises the two blocks of the village centre excluding the Sales and Information Centre Site. This superblock has not been subdivided and will be subject to a separate ROL application. Refer Appendix 5 – Yarrabilba Plan of Development.
- Block C – Comprises a subdivision of mixed use (major road frontage) lots with a direct frontage to Waterford-Tamborine Road north of the entry road to Yarrabilba. These lots are accessed by a service road along that frontage and uses that could potentially be located along the service road are service stations, fast food outlets, possible emergency services and the like. Refer Appendix 5 – Yarrabilba Plan of Development.
- Block D – Comprises a subdivision of mixed use (employment focus) lots adjacent to the Village Centre and north of the future MIBA. Refer Appendix 5 – Yarrabilba Plan of Development.
- Block E – Comprises a subdivision of mixed use (employment focus) lots adjacent to the Village Centre and north of the future MIBA. Refer Appendix 5 – Yarrabilba Plan of Development.

- The Sales and Information Centre - will be developed as a signature building on the corner of the Village Centre and will be the stage one anchor for the Village Centre. Refer Appendix 5 – Yarrabilba Plan of Development.

It will likely comprise the following uses –

- Sales Centre
- Project Office
- Café
- Community Use
- Business Incubator (To assist the establishment of new business enterprises within the community)

Refer Plan of Development - Appendix 5 for the Design Proposal for the Sales and Information Centre

- Education Facility – located at the eastern end of Precinct One, the site is proposed to be developed as a state primary school. Refer Appendix 5 – Yarrabilba Plan of Development.
- Community Facility – located at the eastern end of Precinct One, the site is proposed to be developed as a child care centre or community facility. Refer Appendix 5 – Yarrabilba Plan of Development. A Village Park is proposed as part of the Village Centre. This will be the principal meeting spot for the Precinct One community and will potentially include a market square, amphitheatre, water play area, covered play areas and climbing areas. There are stands of Melaleucas along the creek line open space that connect into the Village Park that will be protected as part of this proposal and connect into the future community open space network.

### 3.4 PRECINCT ONE RESIDENTIAL PROPOSAL

Approval of the Development Application will authorise a Development Permit for the Reconfiguration of Lot to create five hundred and ninety seven (597) residential allotments associated with Precinct One of the overall Yarrabilba UDA.

The proposed subdivision layout conforms with the DLL preferred Structure Plan layout (Appendix 1).

The proposed lots will incorporate site areas between 202m<sup>2</sup> and 836m<sup>2</sup>, with this stage of development at an average density of 15 dwellings per hectare.

There are two residential villages within this proposal – North Village and South Village. The North Village has a density of 14 dwellings/hectare and the South Village has a density of 16 dwellings/hectare.

This density is in line with the overall density objective of 15 dwellings/hectare as specified by the ULDA.

The residential neighbourhoods have been structured around geometric grids which allow for adaptation to suit a variety of housing product. The flexibility in the grid offers opportunities for alternative solutions. The urban design aims to create a detached subdivision that is as compact as possible but with a strong sense of place. This sense of place is achieved by creating a strong relationship with the surrounding natural environment bordering the villages. All of the services are external to the lots, so there is the opportunity to re-subdivide to suit alternative product.

As identified on the proposed Reconfiguration of Lot Plan (Appendix 4) there is a wide mix of residential housing product, which has been designed to encourage a wider choice in housing style and create affordable product for the south western growth corridor.

Each of the proposed allotments will incorporate access onto the proposed internal roads, which will ultimately be connected to Waterford-Tamborine Road via a hierarchy of roads that limit through traffic in residential neighbourhoods, provide efficient access to the Village Centre and other community destinations, allow for casual

surveillance of parkland by providing a large percentage of road fronting parkland and control traffic speed by the use of traffic control measures. Refer plans which show road hierarchy and road widths – Appendix 7.

Refer to Appendix 20 for Typical House Plans.

### 3.5 INDICATIVE SERVICES LAYOUT

Indicative services layouts have been prepared for all of the residential and non-residential land uses (Appendix 8). These include stormwater, sewerage, potable & recycled water and electrical systems. Sizing and design of the layouts have been determined based on commonly accepted design guidelines such as those from Water Services Association of Australia (WSAA) for sewer and water mains and the Queensland Urban Drainage Manual (QUDM) for stormwater.

Electrical supply for Precinct One is available from existing overhead high voltage mains in Waterford Tambourine Road. All internal high & low voltage electrical and communications mains will be underground. Negotiations are continuing with Energex on the implementation strategy for both Precinct One and the Yarrabilba UDA generally. These have been provided to demonstrate that a base case scenario for servicing of this precinct can be provided. This is not intended to limit the opportunity to incorporate innovative solutions for each of these services as and when the constraints within this site will allow. Opportunities for innovative solutions will become more apparent as the detailed design process is advanced and incorporated into the final design documentation for construction. Further information on the background upon which the water based layouts have been devised is outlined in the following sections 3.8, 3.9, and 3.10.

The stormwater system will have a series of outlets discharging to water quality and detention elements across the site associated with open space corridors aligned with creek corridors. Ultimate sizing will be confirmed in detail design.

The gravity fed sewerage system follows the topography of the site and connects to the temporary package sewer treatment located to the north of the precinct. Ultimate sizing will be confirmed in detail design.

The water and recycled water networks are consistent with the global site master planning done by MWH. There will be a local reticulation system servicing each allotment, with the ultimate sizing to be confirmed in detail design.

Allconnex have confirmed the site will be serviced from the Travis Reservoir which will provide the initial supply to the site.

Electricity supply will come from a high voltage point of connection adjacent the site. The initial reticulation system will extend from that point.

Refer to Appendix 8 for the Engineering Drawings for Precinct One.

### 3.6 ROADS

#### Background

In order to assess the external and internal road implications of the Preferred Structure Plan that has been previously proposed for the Yarrabilba site, extensive traffic modelling has been carried out. These studies have been largely carried out in regular consultation with the Department of Transport & Main Roads (DTMR) using regional modelling systems developed and refined by Veitch Lister Consulting (VLC).

These have been included as part of an overall assessment of transport strategies based on Travel Demand Management principles. This takes into account an integration of road, public transport, cycle and pedestrian modes in driving the land use and corridor patterns to maximise the opportunities for optimum travel efficiency.

### External Road Connections

The principal access roads servicing the Yarrabilba site are Waterford-Tamborine Road for north-south traffic movements and Camp Cable Road for east-west traffic movements. Both roads are State controlled, coming under the jurisdiction of the DTMR and are currently constructed to a rural standard, in keeping with the existing environs.

Development within the Yarrabilba UDA is proposed to commence in the north-western quadrant of the site and will require access to/from Waterford-Tamborine Road. At the present time access to the site from Waterford-Tamborine Road is informal, via a number of sub-standard and poorly maintained 'tracks'.

To minimise the number of intersections onto Waterford-Tamborine Road the initial access to Yarrabilba development is proposed via an upgrade to the existing intersection at Camp Cable Road. The Camp Cable Road intersection is currently constructed as an uncontrolled tee-intersection.

To service the Yarrabilba development there are two options for upgrading the Camp Cable Road intersection:

1. A signalised intersection.
2. A roundabout.

The two upgrade options have been discussed with officers of DTMR and resolved that a roundabout is the preferred configuration for an intermediate planning horizon.

In the longer term it is likely that a signalised intersection may be required. However, in the more immediate future an isolated signalised intersection is undesirable from a road safety perspective.

The design configuration of the roundabout is to incorporate four lanes on each approach. It is envisaged that construction of the roundabout may be staged in accordance with traffic volumes.

The final configuration for Waterford-Tamborine Road is yet to be resolved by DTMR; i.e. rural or urban arterial standard. A preliminary rural arterial configuration has been supplied by DTMR which has the following attributes:

- 80m road reserve width
- 7m service road on the west (to access existing rural residential properties)
- 4 lanes with a central 15m median (capable of ultimately being expanded to 6 lanes)

DTMR officers are currently reviewing the standard rural arterial cross-section and it is possible that the 80 metre reserve width may be reduced due to efficiencies in the final design.

The proposed roundabout at Camp Cable Road will be designed to accommodate DTMR's preliminary configuration.

Waterford-Tamborine Road currently has a nominal 60m road reservation. As a result if DTMR adopt the 80m rural configuration (or modified version subject to the current DTMR cross-section design review) then property truncations will be required. Delfin Lend Lease has undertaken a preliminary analysis of the property truncations required and has made provision within the Yarrabilba site for the provisional truncation. The final property truncation will be based on the final road configuration adopted by DTMR.

### Internal Roads

From the VLC modelling Cardno Eppell Olsen have used boundary conditions to analyse the proposed internal major road network and prepare a report which was intended initially to inform discussions with Logan City Council on the most suitable hierarchy for the total Yarrabilba UDA. In turn, this has been used to develop the criteria adopted for the Precinct One road layout.

Refer Appendix 9 Cardno Eppell Olsen "Yarrabilba Internal Road Network Design Note" dated September 2010.

Beyond the major road network, the residential roads will be a grid modified to the topography of the site. Within the grid layout a series of collector streets, access streets, access places and lanes will ensure that adequate access is provided for all residents. The grid will be designed to provide a diversity of routes of travel thus minimising concentrations of traffic flows on the local street network.

At the same time, the local street network will incorporate the use of lanes, culs-de-sac and other street types that minimise unnecessary through traffic. Generally, the street network will force users out onto the road network to access other areas thus minimising the amount of traffic on local street networks. Additionally, complementary pedestrian and cycle networks will provide more direct connections between adjacent residential areas. This pedestrian and cycle network will also provide direct links to all community facilities. The accessibility should be increased to the extent that it reduces the number and length of car trips within the community.

Road reserve widths, pavement widths and building setbacks will be used together to create a legible street network that clearly communicates to users the function of the road they are on. In addition to the visual legibility requirements, road reserve widths will be set to:

- allow adequate pavement widths for access and parking;
- ensure that servicing infrastructure requirements can be met within the verge;
- allow significant landscape development to the verge;
- allow for variation in the pavement alignment where it is desirable for vehicle speed control;
- ensure footpaths can fit where car usage levels require the construction of a footpath;
- allow for the creation of shared pedestrian and car zones;
- allow for the implementation of water sensitive urban design water quality elements;
- allow for the retention of trees;
- allow for the provision of a dedicated and safe cycle and pedestrian network where appropriate; and
- allow the development of road reserve and street widths that respond to garaging needs and driveway locations including development of rear of lot access lanes to free up driveway access to particular roads.

It is envisaged that the pedestrian and cycle network will offer pedestrians and cyclists an alternative to the road. Shared use paths within road reserves (especially sized to ensure they can be accommodated), within parks and within 'path-link' road reserves, will provide direct access to all facilities and public transit stops. A 200 metre by 400 metre generalised grid of pedestrian and cycle paths is envisaged. This should coincide with the bus stop allowances when detail design is implemented.

Typical cross-sections of the different road typologies planned for Precinct One are included in Appendix 7.

### **Public Transport**

The objective of the Yarrabilba Public Transport Strategy is to provide viable alternatives to private vehicle usage and promote sustainable transport options.

Key elements of the strategy are –

- A walkable community
  - Access to a range of social, education, recreation and community facilities
- A robust jobs strategy
  - Maximum employment in Yarrabilba and surrounding areas
- Public transport from Day 1
- Travel Demand Management for Day 1
- Increased residential densities of an average of 15 dwellings per hectare across the site.

The following table sets out the key phases in the delivery of a bus-based public transport service commencing in the first year of residential occupation within Precinct One.

| Provision                                                        | Responsibility                                     | Timing                                              |
|------------------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------|
| Community Bus                                                    | Delfin Lend Lease                                  | First Year (i.e. once initial residents move in).   |
| Delfin Lend Lease sponsored Translink Public Transport services. | Delfin Lend Lease funding.<br>Translink operation. | To commence at a defined/agreed population trigger. |
| Public Transport service review                                  | Delfin Lend Lease<br>Translink<br>DTMR             | At year 5 of Translink operations.                  |

In Precinct One, provision for a dedicated bus lane and bus stops will be provided along the trunk collector / entry road. Further provision will be extended into the residential neighbourhoods as the community develops.

#### Cycle and Pathway Connections

Integral with the road and open space network and aiming to provide a viable alternative transport within Yarrabilba is a comprehensive network of on street and off street hike and bike trails (Appendix 10). In Precinct One a network of on-street cycle ways will be developed on all trunk collector and collector roads and they will connect to a dedicated pedestrian and cycle way network within each residential village.

### 3.7 TRAFFIC NOISE ASSESSMENTS

Where possible, frontage will be established along major roads at regular intervals through specifically designed housing products and other community and recreational amenities. These points will become frequent 'windows' into the village from the major road system. It is intended to minimise where possible the use of acoustic fences around the edges of individual villages.

Initial traffic noise modelling has been carried out by VIPAC Engineers & Scientists for the proposed subdivision layout on the subject land. This modelling indicates that some consideration of future traffic noise attenuation is required for specific land uses and locations adjacent to the main road in the long term. Options to mitigate potential noise impacts have been raised and include physical barriers eg mounding & fencing, building orientation & construction methods or combinations of such measures. These measures will be refined within the detailed design process. A report summarising the initial modelling work, its outcomes and mitigation options in the potentially impacted areas is contained in Appendix 11.

### 3.8 POTABLE AND RECYCLED WATER SUPPLY

Specialist engineering consultant MWH has been engaged by Delfin Lend Lease to undertake a preliminary assessment of water supply, sewerage and recycled water necessary to service the Yarrabilba UDA. MWH has prepared two recent reports;

- August 2010: Yarrabilba Urban Footprint Water Supply and Sewerage Master Plan.
- October 2010: Yarrabilba Assessment for Water Supply, Wastewater and Recycled Water Infrastructure

In developing a strategy for the provision of water services to Yarrabilba, DLL and MWH have met with representatives of Logan Water Alliance and AllConnex since they assumed control of the water supply and sewerage services at 1 July 2010. The strategy adopted by MWH and outlined in the October 2010 report aligns with that advised by the Logan Water Alliance as the preferred strategy, as at October 2010.

Yarrabilba will form part of the Travis Road reservoir supply zone. It was initially indicated that the water would be supplied from the South McLean WTP and this is reflected in the MWH report. From a 15 November 2010 meeting held with AllConnex / Logan Alliance representatives, including Tony Goodhew, Marco Bonotto, Sandie



Stewart and Matthew Pollard, it appears this strategy is now being revised and the South McLean treatment facility may not be retained in the long term, although the Travis Road reservoir facility will remain as the primary connection point to the regional network for the Yarrabilba UDA, & particularly Precinct One. Consequently AllConnex has indicated that external upgrade requirements to be considered in the short term will only be at the Travis Road site and upgrade of linking trunk mains to Yarrabilba as necessary. The timing of these upgrades is subject to further clarification from AllConnex.

AllConnex advised at the on 15 November 2010 meeting that a 300mm dia trunk water main is currently being constructed from Travis Road via Camp Cable Road to augment water supply to Logan Village. They have noted that it has capacity to service the initial stages of the Yarrabilba Precinct One (ERA) area, although the extent of this is to be confirmed by AllConnex. This trunk main is programmed to be completed in January 2011.

Further augmentation of the trunk mains needed to feed the Precinct One design demand will be determined once this initial supply capacity has been confirmed and in conjunction with the detailed design process. Subject to this information it is generally anticipated that trunk main augmentation would be required within 3 to 4 years of the first land occupancy.

AllConnex have also recently indicated that their recycled water use regional strategy is currently under review although there is no specific policy direction at this time. Until firmer direction is available from AllConnex this application has assumed that the provision of reticulated recycled water to each household is still applied as part of the Integrated Water Cycle Management principles previously investigated and proposed for the Yarrabilba UDA. This is reflected in the indicative services layouts provided. Should AllConnex future policy differ to this, a review of the potable and recycled mains layouts and sizing may be required as part of the detailed design process.

AllConnex have indicated that many of the factors impacting on the water services provision should be clarified by early 2011. Further meetings with AllConnex are being arranged to address these planning and design criteria in December 2010 and January 2011.

### **3.9 SEWERAGE**

At the present time the Yarrabilba UDA is not serviced by sewerage infrastructure. The surrounding rural residential lots generally operate on individual septic tanks or other proprietary household treatment systems. Various analyses have been carried out and documented for previous DA submissions, which have investigated options for on site treatment of wastewater or transporting to off site treatment facilities. Factors impacting on these options have changed with time and the shift of responsibility through the change in local authority jurisdictions.

Most recently the parameters relating to the Yarrabilba site have been discussed initially with the Logan Water Alliance on behalf of AllConnex and then with AllConnex directly. Out of July 2010 discussions, the August 2010 analysis by MWH Consultants considered a longer term strategy by Logan Alliance for sewage from the Yarrabilba development to be pumped to a proposed regional STP located in the vicinity of Cedar Grove. Planning for the Cedar Grove STP was at a very preliminary stage and estimated to not be operational for another 10 to 15 years.

Given the uncertainty and timeframes associated with the proposed Cedar Grove regional STP the October 2010 analysis by MWH considered Yarrabilba as a 'stand alone' development. In developing the wastewater treatment concept for Yarrabilba, MWH noted that it is unlikely a discharge licence would be granted for any wastewater effluent to be discharged to Logan River. As a result MWH proposed a wastewater treatment plant (WWTP) designed to initially treat effluent to the standard suitable for open space irrigation where available, and later to a higher Class A+ standard for potential use as a recycled water source. A recycled water supply network was proposed to provide this for residential, commercial & other uses.

From the 15 November 2010 meeting with AllConnex, as referenced in Section 3.8 above, they indicated that their regional strategy is being revised and now proposes the inclusion of a second regional STP at or near the



northern section of the Yarrabilba site. A copy of the planning report upon which this proposal is based is being provided by AllConnex. Subject to a review of this relative to Yarrabilba, the report will assist in defining and refining the most appropriate wastewater strategy for the Yarrabilba UDA. AllConnex has acknowledged that the confirmation of a suitable strategy may take some time to resolve and consequently an interim wastewater treatment system to initially service the Precinct One area is likely to be required.

The MWH report proposed that a temporary WWTP will be provided via a modular packaged treatment plant enabling the plant to be upgraded in line with development, until such time as the Permanent WWTP is commissioned. Further refinements to this strategy are being progressively evolved in conjunction with AllConnex and provision of a small packaged treatment plant located in the vicinity of the northern property boundary, at Pump Station 1 (PS1) has been acknowledged as a more cost effective measure until construction of Stage 1 of the temporary or permanent WWTP is resolved. Licensee requirements are being revised and will be lodged with DERM as needed for the temporary and permanent facilities.

A preliminary wastewater network for the ultimate Yarrabilba development is attached for reference (Appendix 8). Refer to Appendix 19 for MWH report regarding engineering services.

### **3.10 STORMWATER WATER QUALITY AND MANAGEMENT**

The stormwater management strategy is a component of the site analysis that identifies sections within the site that are suitable to implement water management principles to improve water quality. It also identifies areas where rehabilitation of natural creek systems can occur.

As a result of the natural topography of Yarrabilba, there are various aspects of the site that are favourable for the development of water quality management as part of system based on Total Water Cycle Management Principles. The natural creek system and drainage lines provide opportunity for water sensitive urban design practices to be incorporated into Yarrabilba and for degraded sections of creek systems to be rehabilitated to ensure an ecologically sustainable approach to development.

Based on guidelines such as the State Planning Policy 4/10 "Healthy Waterways", a general strategy for the management of stormwater flows and quality has been determined for the Precinct One site. An initial study of the WSUD opportunities and requirements for the Precinct One area has been carried out by specialist consultant Design Flow. A copy of this report is provided in Appendix \*\*\*. This will be refined in conjunction with detailed design and confirmed through the final Site Based Stormwater Management Plans.

Refer to Appendix 12 – DesignFlow Yarrabilba Precinct A Water Sensitive Urban Design Preliminary Advice.

### **3.11 BUSHFIRE**

Yarrabilba is not identified as a bushfire risk in the Logan City Planning Scheme.

The proximity of Yarrabilba to the extensive bushland to the site's east (i.e. Plunkett Conservation Park) poses significant bushfire potential for future stages of Yarrabilba. The most vulnerable areas of the township would be those east of the disused railway line, and especially those steeper parts of the site to the east adjoining the conservation areas. This includes the escarpment area and the ravine in the sites south-east corner. A Bushfire Management Plan will be completed for these areas as they are developed.

It is important to note that Precinct One is located well clear of those eastern parts of the site where there is increased risk of bushfire.

### **3.12 FLOODING**

Approximately two thirds of the total Yarrabilba UDA site drains to the north to Quinzeh Creek, which joins the Logan River. The remainder of the total Yarrabilba UDA site drains south, to south-east, to the Albert River. The

Precinct One subject land occupies 93.2 ha of the 214ha secondary catchment which drains north to the boundary with adjacent rural residential land. The only flood analysis has been undertaken by Logan City Council. Flood level information provided by LCC has been used to delineate the areas of Q100 inundation (1% ARI) in the network of open space and associated corridors through the site, including Precinct One.

A general assessment of detention requirements has been carried out as part of the designFlow WSUD review. A detailed flood model for the catchment containing Precinct One is being developed by DesignFlow and will provide the data necessary for the detailed design of stormwater facilities to be carried out. This in turn will be refined in conjunction with the water quality modelling to prepare a comprehensive Site Based Stormwater Management Plan that accurately reflects the detailed design of Precinct One and forms part of the Operational Works documentation.

### 3.13 GEOTECHNICAL

As part of the previous overall Development Application in 2004, Bowler Geotechnical Pty Ltd was engaged to undertake a preliminary, broadscale geotechnical investigation of the Yarrabilba site.

The objective of the work undertaken by Bowler Geotechnical was two-fold:

1. to gain an overview of key geotechnical conditions that exist across the site; and
2. to commence the development of a GIS-based, geotechnical model for the site.

A total of twenty (20) test locations were identified across the site at various ridgeline and gully locations. In addition, three (3) water bores were drilled to determine the existence of groundwater. Of these, four (4) test locations are within or adjacent to the subject Precinct One area.

A report titled *Broadscale Geotechnical Investigation Report for the Yarrabilba Development*, (22 April 2004) is contained in the supporting documentation (Appendix 13). The main findings of the investigation include:

1. The excavation pits located along the ridgelines encountered silty sand, sand and silty sandy gravel, with some silty clay strata, over extremely weathered rock at relatively shallow depth (from 0.7m to 2.7m);
2. Deeper and variable soil profiles were revealed in the boreholes drilled along the gully lines, but weathered rock was also encountered at 5 of the 10 boreholes drilled;
3. Groundwater was encountered in all 3 water bores drilled, which extended to 33m each. Supply varied from 0.25 – 1.26 l/sec and the quality of water also varied; and
4. Individual house site classifications should predominantly be Class S and M, with some Class H sites.

From this investigation and an interpolation of these findings as they pertain to Precinct One, it is apparent that the land is suitable for development for urban purposes in a geotechnical context, with few, if any, constraints to development.

### 3.14 SALINE OR DISPERSIVE SOILS

As noted in Section 3.13, a broadscale geotechnical investigation of the Yarrabilba site was undertaken by Bowler Geotechnical in May 2004. The Bowler investigation identified broadly similar subsurface conditions across the site, which are described as silty sand over weathered sandstone.

Emerson Class tests provide an indication of the dispersive characteristic of soil, with Class 1 being most dispersive and Class 8 least dispersive. Eleven (11) were tests undertaken with the following results:

| No. Of Tests | Emerson Class Number | Comments                  |
|--------------|----------------------|---------------------------|
| 7            | 3                    | Moderately dispersive     |
| 1            | 5                    | Relatively non-dispersive |

|   |   |                |
|---|---|----------------|
|   |   |                |
| 3 | 8 | Non-dispersive |

From the test results it can be concluded that Yarrabilba contains moderately dispersive soils and care must be taken to minimise the potential for sediment and erosion.

### 3.15 LAND CONTAMINATION

The Yarrabilba site was used by both the United States and Australian Military Forces as an administrative and training area during and after World War II. The site was known as "Camp Cable".

Based on this use and the incidence of UXO reported since WWII, the Department of Defence has categorised parts of the former Camp Cable as having a "Slight" potential for UXO contamination. To assess the practical implications of this DoD classification, specialist consultant G-tek Australia was engaged to conduct a study of the UXO information available on the Yarrabilba site and provide a summary of its impacts.

Refer to Appendix 14 for the G-tek report. This report states –

*"Defence recommends that all land usage and development, within these areas, may continue without any further UXO investigation or remediation."*

Apart from isolated superficial contaminants such as dumped asbestos sheeting, no evidence of major soil based contaminants such as those typical of old stock dips or dump sites have been detected onsite.

### 3.16 HERITAGE VALUES

Bonhomme Craib and Associates undertook a comprehensive cultural heritage assessment of the site in 2002. The Bonhomme Craib report concluded that the site is of relevance in relation to indigenous and non-indigenous heritage.

#### Indigenous

The Traditional Owners of the land are the Eastern Yugambeh. A 2002 cultural heritage search of the Environmental Protection Agency records indicated that "no Designated Landscape Areas are located in or adjacent to the study area nor are there any known sites." Although the cultural heritage search did not identify any areas of significance, there are a number of artefacts which were located in the region during field surveys, including "scarred trees, stone artefact scatters, stone quarry, shell midden, stone arrangements and three bora rings."

The most common cultural materials found during the survey were flaked stone artefacts, primarily located adjacent to the stream margins and across ridges. Bonhomme Craib noted that the "Majority of the stone artefacts were relatively small (<4 cm) flakes, usually containing little or no cortex."

Additionally, three rock shelters were found; two of which are small openings in the sandstone outcrops and the third is a low rock overhang.

Any sites of indigenous cultural heritage value that may be discovered during on-site works will be preserved or reviewed for significance by the Traditional Owners.

#### Non-Indigenous

The non-indigenous cultural heritage of the Yarrabilba site primarily relates to its use for pastoral and rural related activities and as the location of Camp Cable, which was occupied by American troops during the Second World War and later by Australian Army recruits. Bonhomme Craib noted that the study area "retains features and

artefacts from its use as a camp...with historic sites found at five locations within the study area." The items identified include a cement pad, a cement tank, a small rock wall and fragments of fibreboard, bricks and broken ceramic pipes. Additionally, memorials that commemorate Camp Cable are situated near the intersection of Camp Cable Road and Waterford Tamborine Road. The existing memorials will be retained in road reserve or possibly relocated into the site within a future park.

Overall, the survey results presented by Bonhomme Craib "indicate that the probability is high that additional Indigenous and non-Indigenous cultural materials exist within the study area." The 2002 Cultural Heritage assessment made the following recommendations:

- "A Cultural Heritage Management Plan (CHMP) should be developed; and
- In conjunction with the Cultural Heritage Management Plan, further cultural heritage work should be undertaken within the study area during the more detailed design and approval phase."

Whilst a CHMP for Yarrabilba is not a mandated requirement Delfin Lend Lease is currently pursuing a voluntary management plan in collaboration with local Traditional Owner representatives of the Gold Coast Native Title Group.

### 3.17 ENVIRONMENTAL ASSESSMENT

Flora and fauna considerations have been reviewed in detail in conjunction with the development of a Land Use Structure Plan developed in consultation with Logan City Council throughout 2009-10. The resultant corridors shown on the preferred structure plan have taken account of fauna, including on-site evidence of koalas. The major open space also incorporates flora including Regional Ecosystem Mapping (Remnant Endangered, Remnant Of Concern, Remnant Not Of Concern) plus areas of remnant unmapped vegetation (non-mapped).

In reviewing the Land Use structure Plan environmental consultant Yurrah made the following observations:

#### Environmental Corridors

- The corridor should be designed for, and secured over, a long period of time. In relation to Yarrabilba, this is a distinct advantage of a large scale master planned community under the control of one developer that will be developed over a long development timeframe (i.e. approx 30 years).
- The corridor should be aligned along waterways where possible to include their more mesic environment (requiring a moderate amount of moisture) as well as more xeric environments (adapted to an extremely dry habitat) away from the immediate influence of higher soil moisture. This combination will result in the inclusion of the maximum structural complexity of vegetation and habitat. Such a corridor will provide for the highest species richness and niches for the maximum number of groups of fauna.
- The shortest possible corridor should be designed to facilitate both fauna movement and gene exchange.
- Existing habitat values should be incorporated where possible, or alternatively an assured rehabilitation plan should be included for this purpose.
- The interface between corridor and adjacent land use should be designed as a functional buffer to protect the ecological values of the corridor from continuing impacts and edge effects. These include securing the physical protection of the asset, protection of water quality, control of invasion by introduced flora and fauna, minimisation of uncontrolled access by humans and their pets, and the elimination of any interruptions to primary corridor continuity through the construction of essential infrastructure.

#### Environmental Corridor Interface / Buffers

- Long term protection of habitat and integrity of the natural waterway resource, including enhancement of fauna movement corridors;

- Provision of a physical separation distance or physical barriers such as fencing (with landscape screening) as a barrier between adjacent development and the natural waterway resource, and clarification of real property boundaries;
- Accommodation within the buffer of natural physical processes including land stability, erosion and accretion, flood mitigation, climate change and the greenhouse effect;
  - The filtration of pollutants and competition from potentially invasive species; and
  - Provision of appropriate, controlled human access and activities.
- Buffers to the open space corridors be designed in response to the appropriate functional form of the interface between future development and corridor.
- A series of interface treatments have been developed by Delfin Lend Lease and considered by Logan City Council as part of the Land Use Structure Plan Process.

#### Biodiversity

The most recent study of biodiversity was undertaken by environmental consultant GHD on behalf of Logan City Council (March 2010). The findings and recommendations of the GHD report were used to inform and direct the development of the Land Use Structure Plan.

The work undertaken by GHD was in addition to the previous Environmental Planning Assessment completed in 2002, by Planit Consulting, and environmental reviews by Yurrah in support of Delfin Lend Leases 2004 s3.1.6 Development Application.

Structure Planning outcomes of the GHD report, previous Planit site assessments and Yurrah environmental reviews include:

- The provision of a 200m wide east-west koala corridor to provide a link between the Plunkett Reserve east of Yarrabilba to the Birnam Range, west of Waterford-Tamborine Road.
- Linkages to the Plunkett Conservation Park to the Wallace Curtis block and through the 'eastern flank of the development';
- The development of functional buffer designs responsive to the expected threats to the environment in order to provide an integrated landscape solution to ensure protection;
- Recommendation that a site management plan be prepared that ensures long term protection of the site from fire, weed invasion and other similar incremental impacts; and

Design of the Early Release Area (Precinct One) has taken into account the recommendations detailed above noting that the potential wildlife/koala corridor identified on the structure plan are external to Precinct One.

Refer to Appendix 15 for environmental assessment reports.

### **3.18 LANDSCAPE MASTER PLAN**

Precinct One, for the past five decades has been used to grow pine trees. During this period, only small portions of the broader site have been allowed to return to a more naturally vegetated state. Of these, two areas occur in Precinct One, namely, the regrowth remnant riparian vegetation to the creekline between villages one and two and the remnant Eucalypt canopy adjacent to and within the Waterford Tamborine Road frontage.

It is these two remnants that give us a glimpse of the natural character of the site and that will allow us to rebuild a landscape from the natural vegetation as we urbanise the site. It is intended to use the local species as much as

possible and to develop urban landscapes that have fingers of the naturally occurring plant communities throughout the urban areas. This natural character will be extracted from the extensive natural and corridor areas that are to be rehabilitated across the broader site.

The fingers of endemic vegetation will form the backdrop for an overall landscape that will include both native and exotic species, picked for their ability to create the urban spaces that people desire and aspire to. The species selected will also be highly cognisant of the need to build a sustainable landscape in both the urban areas and the natural areas.

The combination of a linear and nodal park structure allows an exciting blend of linear parks that are dominated by their natural/riparian vegetation and its unique qualities with nodal spaces and parks that blend the more urban species or simply use native species in a more formalised manner. The linear and nodal structure also delivers a park network within 200 metres of most houses, providing a real access alternative for all residents, which engages them with the open space and allows the development of a real walking and cycling network as well a broad recreational offering.

Refer to Appendix 16 – Landscape Concept Plans.

## SECTION 4 REGULATORY FRAMEWORK

The Development Application requires assessment against relevant provisions of the Urban Land Development Authority Act 2007 and the Yarrabilba Interim Land Use Plan.

### 4.1 URBAN LAND DEVELOPMENT AUTHORITY ACT 2007

The Urban Land Development Authority Act 2007 has been established to provide a mechanism for particular parts of the State to be declared Urban Development Areas (UDA's), ensuring the availability of land for urban purposes to provide a range of housing options with a particular focus on the provision of affordable housing options for low to moderate income households.

There are several areas within Queensland that have been designated for future development by the Urban Land Development Authority. The subject land is within the designated Yarrabilba Urban Development Area boundaries as defined by the Yarrabilba Interim Land Use Plan 2010. The Yarrabilba Urban Development Area was declared on 8<sup>th</sup> October 2010.

### 4.2 YARRABILBA INTERIM LAND USE PLAN

The purpose of the Yarrabilba Interim Land Use Plan is to regulate orderly development and provide direction as to the preferred form of development within the nominated precincts in the Urban Development Area.

The Urban Development Area principles and development requirements in the ILUP relate to:

1. Housing and community
2. Urban design and placemaking
3. Transport, access and parking
4. Environment and sustainable development

#### 4.2.1 Precinct One

The Yarrabilba ILUP specifies that –

*“Precinct One shall be developed in consideration of the Vision for Yarrabilba UDA and must accommodate future transport corridors, including road corridors.*

*The precinct will deliver residential development, offering a range of lot sizes and dwelling types (including House, Multiple dwelling and Other residential) and achieve a minimum average net residential density of 15 dwellings per hectare across the UDA.*

*It is acknowledged that given the scale of development within the UDA the target residential density may not be achieved. In this instance, the UDA development application must demonstrate how this target density can be achieved over a broader area.*

*The precinct will accommodate up to 500 residential lots.*

*Residential building heights in the order of 9 metres or less are expected.*

*The precinct will initially deliver Neighbourhood centre of up to 3000m<sup>2</sup> staged over time which will provide for the needs of the local neighbourhood catchment.*

*The precinct will also deliver retail, industrial and commercial opportunities within a mixed industry and business area.*

*The precinct will contribute to the park network.*

*The precinct will protect and enhance the natural water course and associated vegetation communities and be designed to integrate with and provide access to bushland walk trails and passive recreation opportunities at featured areas within the corridor.*

*Each lot/dwelling within the precinct must be serviced by essential services including water, sewer, energy, telecommunication conduits and capable of being serviced by public transport.*

*Infrastructure (including roads, water and sewer infrastructure) required to support the development may need to be accommodated outside of the precinct." Yarrabilba ILUP, P. 8, October 2010.*

#### Commentary

The design and layout of the proposed subdivision within Precinct One of the Yarrabilba ILUP has been prepared in accordance with the Precinct One Vision and the Yarrabilba Preferred Structure Plan (Appendix 1) as prepared by Delfin Lend Lease in consultation with Logan City Council.

#### 4.2.2 Housing and Community

| Interim Land Use Plan Development Requirements                                                                                                                            | The Proposal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Principle</b>                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Development delivers sustainable communities that offer housing affordability, accessibility and choice.                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Requirements</b>                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Deliver a minimum of 30% of all dwellings across the UDA available to purchase or rent by a household on the median household income for the local government area.       | <p>Refer to the Precinct One Reconfiguration of Lot plan for the housing product mix. The median income for Logan City Council is \$54,000. 30% of the housing product will be available to purchase or rent by a household on the median household income.</p> <p>The Gold Coast Housing Company (GCHC) has worked closely with Delfin Lend Lease Woodlands over the past few years to deliver affordable homes at 75% below market rent or for sale to Key Workers (ie. school teachers, police officers, nurses etc). Initial discussions introducing Yarrabilba to the GCHC have been held and the current intention is to continue this relationship (pending further agreements).</p> <p>Refer to Appendix 17 – Delfin Lend Lease Housing Affordability Strategy</p> |
| Deliver a minimum of 5% of all dwellings across the UDA available to purchase or rent by a household on 80% of the median household income for the local government area. | Refer to the Precinct One Reconfiguration of Lot plan for the housing product mix. The median income for Logan City Council is \$54,000. 30% of the housing product will be available to purchase or rent by a household on the median household income.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |



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|                                                                                                                                                                                                                                 | <p>The Gold Coast Housing Company (GCHC) has worked closely with Delfin Woodlands over the past few years to deliver affordable homes at 75% below market rent or for sale to Key Workers (ie. school teachers, police officers, nurses etc). Initial discussions introducing Yarrabilba to the GCHC have been held and the current intention is to continue this relationship (pending further agreements).</p> <p>Refer to Appendix 17 – Delfin Lend Lease Housing Affordability Strategy</p> |
| Provide housing choice and diversity to meet the needs of the community, through a mix of densities, types, and designs, ensures and levels of affordability, to cater for a range of lifestyles, incomes and lifecycles needs. | The first two residential villages at Yarrabilba will introduce a diverse residential mix to the area. The proposed lots will incorporate site areas between 202m <sup>2</sup> and 826m <sup>2</sup> , with this stage of development encompassing an overall average lot size of 461m <sup>2</sup> at an average density of 15 dwellings per hectare. Refer to Appendix 4 Precinct One Reconfigure of Lot Plan and Appendix 5 Precinct One Plan of Development.                                |
| Deliver affordable housing which is designed and located so that it is well integrated into the community.                                                                                                                      | <p>Refer to Appendix 4 Precinct One Reconfigure of Lot Plan and Appendix 5 Precinct One Plan of Development.</p> <p>The affordable product will be developed throughout Precinct One.</p> <p>Refer to Appendix 17 – Delfin Lend Lease Housing Affordability Strategy</p>                                                                                                                                                                                                                        |
| Deliver accessible housing to meet the changing needs of people and households over time.                                                                                                                                       | The gentle topography of the site will generally allow development of a highly accessible site in the public realm. This facilitates the ability to deliver accessible and flexible housing within the community in significant numbers. Adaptation of a covenant control system that allows builders other preferable outcomes in return for constructing universally designed houses will be considered.                                                                                      |
| Deliver sustainable communities with a strong community identity and access to community facilities and services that meet diverse needs.                                                                                       | <p>The proposal includes provisions for a Village Centre that will include a community centre, a child care centre and a regional park incorporating a community meeting space.</p> <p>Delfin Lend Lease also has a proven track record in community development. Please refer to Appendix 17 Community Development strategy for Yarrabilba.</p>                                                                                                                                                |

#### 4.2.3 Centre Vitality and Employment

| Principle                                                                                                                                                |  |
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| <p>The UDA delivers:</p> <ul style="list-style-type: none"> <li>A vibrant town centre completed by a smaller network of neighbourhood centres</li> </ul> |  |

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| <ul style="list-style-type: none"> <li>• A mix of retail, commercial, residential, civic, cultural, community and education uses to meet the needs of the community</li> <li>• A high degree of local employment opportunities</li> <li>• Appropriate signage.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Requirements</b>                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Centres planning and design:</b>                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Demonstrates best practice urban design.                                                                                                                                                                                                                                  | <p>The approach to the planning and urban design for Precinct One residential draws upon a comprehensive approach to local context and best practice urban design principles.</p> <p>Non residential development draws upon the broad experience within Delfin Lend Lease that will ensure best practice urban design outcomes.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Creates a high order of mixed use centres providing for residential, retail, business, civic, health, community, park network, public realm, employment, transport, educational, recreational and entertainment which support live/work opportunities.                    | <p>The proposed Village Centre will likely accommodate:</p> <ul style="list-style-type: none"> <li>• Retail space (up to 8,000m<sup>2</sup> – staged development)</li> <li>• Commercial Space (up to 2,500m<sup>2</sup>)</li> <li>• A possible Health Hub</li> <li>• A Community Centre (potentially integrated with Delfin Lend Lease's Sales and Information Centre)</li> <li>• The Delfin Lend Lease Sales and Information Centre</li> <li>• A possible row of SoHo product – this product has been designed to address the needs of a home business.</li> <li>• Other possible community, commercial and residential facilities;</li> <li>• District Park with multi use community open space area.</li> </ul>                                                                   |
| Create centres that function with a high level of self containment of retail expenditure and demand.                                                                                                                                                                      | <p>Precinct One includes a village centre with up to 8,000 sqm of retail and as much space as is required to accommodate the employment and commercial uses that can be attracted to the precinct. Additionally it is located adjacent to the MIBA business areas. It is intended to facilitate this village to maximise the inclusiveness of the facilities for the residents of Yarrabilba and the surrounding areas. Commercial, community, retail, education and other uses are envisaged.</p> <p>This inclusive approach continues through the wider community with the central town centre, the southern village centre and several smaller local centres, all providing a high level of inclusiveness in an attempt create a true mixed use diverse place, that minimises</p> |

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|                                                                                                                                                                                | <p>the need for its residents to leave the site for day to day functions.</p> <p>Refer to Appendix 17 – Delfin Lend Lease Jobs Strategy</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Provide for a range of community facilities and services to meet the life cycle, cultural and spiritual needs of the local population.                                         | <p>The proposed Village Centre will likely accommodate:</p> <ul style="list-style-type: none"> <li>• Retail space (up to 8,000m<sup>2</sup> – staged development)</li> <li>• Commercial Space (up to 2,500m<sup>2</sup>)</li> <li>• A possible Health Hub</li> <li>• A Community Centre (potentially integrated with Delfin Lend Lease's Sales and Information Centre)</li> <li>• The Delfin Lend Lease Sales and Information Centre</li> <li>• A possible row of SoHo product – this product has been designed to address the needs of a home business.</li> <li>• Other possible community, commercial and residential facilities;</li> <li>• Village Park with multi use community open space area.</li> </ul> |
| <b>Advertising Devices:</b>                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Cater for the needs of businesses to clearly identify the goods and services which are supplied to the public.                                                                 | Any advertising devices required by businesses establishing within Precinct One will be in accordance with this requirement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Are consistent with the scale and design of existing buildings and other works on the site and in the locality where they are located, complement the local streetscape.       | Any advertising devices required by businesses establishing within Precinct One will be in accordance with this requirement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Where appropriate, reflect the character of the area.                                                                                                                          | Any advertising devices required by businesses establishing within Precinct One will be in accordance with this requirement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Are sited and provided on premises having regard to safety and amenity.                                                                                                        | Any advertising devices required by businesses establishing within Precinct One will be in accordance with this requirement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Employment, education and training opportunities are provided:</b>                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Which promote self containment through a range of local employment opportunities including the existing employment centres at Logan Central, Park Ridge, Beenleigh and Yatala. | <p>The proposed development includes employment land, Village Centre and education establishment uses to promote self containment from the early years of development.</p> <p>Refer to Appendix 17 – Delfin Lend Lease Jobs Strategy</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| By working with established institutions to locate                                                                                                                             | Delfin Lend Lease is currently working with Education                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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| education and training facilities in the UDA that complement the local and regional jobs profile and provide life-long learning opportunities for the Yarrabilba community. | <p>Queensland regarding early delivery of education facilities.</p> <p>Potentially an interim education facility (primary school) can be accommodated in the commercial buildings in the Village Centre initially before being relocated to the permanent school site.</p> |
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#### 4.2.4 *Neighbourhood, Block and Lot Design*

| Principle                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| <p>The UDA delivers development designed to:</p> <ul style="list-style-type: none"> <li>• Maximise connectivity</li> <li>• Be responsive to the local climate and site features</li> <li>• Include walkable streets and neighbourhoods</li> <li>• Provide personal safety and security</li> <li>• Enhance character and amenity</li> <li>• Use infrastructure efficiently</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Requirements                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Gives the neighbourhood a strong and positive identity by responding to the site characteristics, setting, landmarks and views, and through clearly legible street networks, the park network and use of streetscape elements.                                                                                                                                                       | Precinct One will be the beginning in establishing a strong and positive community identity for Yarrabilba. A defined precinct entry will help to create this sense of identity. The streetscape design reinforces the function of a street, provides ample car parking and legible neighbourhood design. A variety of park types and facilities offer active and passive recreation opportunities for a wide range of users and age groups within a walkable distance for all residents. |
| Delivers appropriate scale of development.                                                                                                                                                                                                                                                                                                                                           | The Village Centre is proposed to meet the needs of early residents, and in the longer term continue to serve its immediate catchment.                                                                                                                                                                                                                                                                                                                                                    |
| Incorporates principles for crime prevention through environmental design (CPTED).                                                                                                                                                                                                                                                                                                   | CPTED Principles have informed the design of the proposed development.                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Identifies appropriate areas for multiple residential uses.                                                                                                                                                                                                                                                                                                                          | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Ensures adequate visual and noise amenity.                                                                                                                                                                                                                                                                                                                                           | Design guidelines for the residential and non-residential component of Precinct One ensure adequate visual and noise amenity. Refer to Appendix 5 Yarrabilba Non-residential Plan of Development and Appendix 11 Yarrabilba Acoustics Report.                                                                                                                                                                                                                                             |
| Maximises opportunities for views and vistas.                                                                                                                                                                                                                                                                                                                                        | The orientation of the design maximises views and vistas to surrounding mountain ranges. Within the residential villages the connectivity to the surrounding open space corridors have been maximised through the orientation of the roads and local open space.                                                                                                                                                                                                                          |
| Achieves a balanced mix of lot sizes to provide housing choice and streetscape variety.                                                                                                                                                                                                                                                                                              | The development provides a balanced mix of lot sizes, promoting choice, streetscape variation and                                                                                                                                                                                                                                                                                                                                                                                         |

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|                                                                                                                                                      | affordability. The development will offer a range of lifestyle options within a variety of dwelling types to meet the needs of the community and provide housing diversity and mix. Lot sizes vary from 180m <sup>2</sup> to 800m <sup>2</sup> . Refer to Appendix 5 Yarrabilba Plan of Development for more details.                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Responds to natural features, including topography and natural drainage features.                                                                    | The positioning of open space, road layout and lot orientation responds to the topography and natural drainage of the site and minimises cut/fill requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Promotes healthy and active lifestyles by prioritising walking and cycling within the UDA and connecting to facilities and services outside the UDA. | The neighbourhood is of a walkable scale serviced by a comprehensive pedestrian and cycle network with easy access to bus stops and the Village Centre. This layout provides high levels of internal pedestrian and cycle connectivity. Residents will have excellent access to open space parks and recreation facilities which will promote an active and healthy lifestyle.                                                                                                                                                                                                                                                                                                                                                                       |
| Provides opportunities to benefit from solar access and prevailing breezes.                                                                          | <p>Precinct One subdivision has been oriented to maximise opportunities to benefit from solar access and prevailing breezes. The development proposes high quality built form reflecting energy efficient design that is responsive to local and regional environmental attributes and character.</p> <p>Refer to Appendix 17 – Delfin Lend Lease Sustainability Strategy</p>                                                                                                                                                                                                                                                                                                                                                                        |
| Integrates development with the surrounding area.                                                                                                    | Refer to Appendix 2 and 3 for site analysis for design context and an illustration of how the proposed development integrates with the surrounding area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Provides a park network that caters for a variety of functions and experiences and that are safe for users.                                          | <p>Precinct One incorporates a number of different types of open space. Those being –</p> <ul style="list-style-type: none"> <li>• Village Park which is a District Level Park</li> <li>• Linear Open Space corridors (including protection of Regional Ecosystem 'of concern' vegetation)</li> <li>• Local Parks centred within the residential villages.</li> </ul> <p>The Village Centre has been designed adjacent to a district level 'super' park that will likely incorporate –</p> <ul style="list-style-type: none"> <li>• Market Space/Village Square</li> <li>• Amphitheatre/performance lawn</li> <li>• Covered play setting</li> <li>• Water plan</li> <li>• Climbing play setting</li> <li>• Courts</li> <li>• Picnic areas</li> </ul> |

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|                                                                                                                                | <p>The local parks will accommodate facilities needed by the surrounding residential facilities.</p> <p>Refer to Appendix 17 – Delfin Lend Lease Open Space Strategy</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Locates services and utilities to maximise efficiency and ease of maintenance.                                                 | <p>On a micro level the road cross sections have indicated preferred locations of services so as to allow the road verges to perform their most important use - that of giving some of the reserve back to the people so as to encourage walking, cycling and interaction. The ability to ensure that footpaths and street trees not only fit into the verge areas, but ensure they are positive places for the community as a whole, has been addressed in these road cross sections. Generally the lots have been graded to ensure that minimal service easements occur within the lot, thus maximising housing buildability.</p> <p>On a macro level the location of major trunk services has been accommodated to ensure that forward flexibility can be maintained to allow future technologies to be able to be incorporated into the community.</p> |
| Incorporates orientation for solar access and natural ventilation.                                                             | <p>Precinct One subdivision has been oriented to provide opportunities to benefit from solar access and prevailing breezes. The development proposes high quality built form reflecting energy efficient design that is responsive to local and regional environmental attributes and character.</p> <p>Refer to Appendix 17 – Delfin Lend Lease Sustainability Strategy</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Incorporates natural and cultural features.                                                                                    | <p>The proposed development responds to the natural features of the site and will not adversely impact on any cultural heritage features (to be reviewed with Traditional Owners as part of the voluntary CHMP process).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Connects the regional corridor of the Birnam Range Reserve west of the UDA through the site to the Plunkett Conservation Park. | <p>The proposal incorporates connections of the regional corridors in accordance with the Yarrabilba Preferred Structure Plan (Appendix 1).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

#### 4.2.5 Building Design

| Principle                                                                                                                                                 |  |
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| Buildings are designed and sited on the lot to:                                                                                                           |  |
| <ul style="list-style-type: none"> <li>• Deliver diversity and affordability with smaller sized dwellings</li> <li>• Make the most of the site</li> </ul> |  |

| <ul style="list-style-type: none"> <li>• Positively contribute to the streetscape character</li> <li>• Be comfortable for users and facilitate an outdoor lifestyle</li> <li>• Reduce home energy demands</li> </ul> |                                                                                                                                                                                                                                                                                                               |
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| Requirements                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                               |
| Meet the needs of residents for privacy.                                                                                                                                                                             | The proposed building design will encourage measures for visual and acoustic privacy. The Plan of Development provides design guidelines for privacy and surveillance to ensure it is designed into the citing of dwellings. These guidelines are in the form of setbacks for buildings and screening.        |
| Provide adequate outdoor areas and car parking on small and narrow lots.                                                                                                                                             | The streetscape design reinforces the function of a street, provides ample parking for residents and visitors and creates appealing settings for homes. The Plan of Development specifies the amount of open space required for each lot.                                                                     |
| Provide adequate building setbacks that account for slope and protect the amenity and privacy of adjoining uses including the appropriate use of building to boundary walls.                                         | The Plan of Development provides housing typologies and building envelopes to establish appropriate setbacks for each dwelling.                                                                                                                                                                               |
| Complement or enhance the character of the local neighbourhood and contribute to the creation of attractive and safe residential environments.                                                                       | The development establishes a compact neighbourhood that offers choices, supports housing affordability and is set within an attractive landscape context. Precinct One will deliver high quality open space and amenity to improve the quality of life.                                                      |
| Ensure on-street car parking spaces do not dominate the streetscape, do not interfere with the efficient functioning of the street, and enable on-street car parking.                                                | The Plan of Development specifies the car parking requirements for each lot. The setback of the garages on each lot will ensure on-site car parking doesn't dominate the streetscape.<br>Refer to Car Park Plan – Appendix 8.                                                                                 |
| Have clearly defined front entries and contribute towards the passive surveillance of the street.                                                                                                                    | The proposed development requires the built form to address the street and to create interesting facades that support passive surveillance of the public realm. Each lot will provide enhancements to the front building facades, that may include verandas, full length windows, covered entry and the like. |
| Incorporate elements which provide diversity in building form and attractive frontages to all streets, the public realm and park network.                                                                            | Variation and diversity in product type along each street will ensure diversity in building form.                                                                                                                                                                                                             |
| Integrate fencing into the building, street and park design.                                                                                                                                                         | Design guidelines for front yard landscaping, fencing and driveways will be provided for each lot at point of sale. Fencing between the side and rear boundaries of residential lots and adjacent public space is generally provided by Delfin Lend Lease.                                                    |
| Provide integrated solutions for home energy reduction opportunities such as natural lighting, cross ventilation and passive cooling.                                                                                | The typical dwelling typologies have been designed to maximise opportunities for climate responsive and energy efficient housing that capture prevailing breezes and benefit from the optimum solar orientations. The                                                                                         |

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|  | <p>Plan of Development allotment and street layout are designed to maximise opportunities for building siting and design to be responsive to the subtropical climate and utilise energy strategies to support sustainable development practices while maximising liveability and comfort.</p> <p>Refer to Appendix 17 Yarrabilba Sustainability Strategy.</p> |
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#### 4.2.6 *Infrastructure, Street Design and Parking*

| Principle                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                 |
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| <p>The UDA delivers:</p> <ul style="list-style-type: none"> <li>• Efficient and effective use of infrastructure and services</li> <li>• Efficient and safe street networks for all users</li> <li>• Efficient land use and transit integration</li> <li>• Adequate car parking.</li> </ul> |                                                                                                                                                                                                                                                                                 |
| Requirements                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                 |
| <b>Infrastructure and Services:</b>                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                 |
| Are provided in a timely, orderly, integrated and coordinated manner to support urban uses and works.                                                                                                                                                                                      | The necessary water reticulation, sewer reticulation, electricity and telecommunication infrastructure works will be provided to service all residential and non-residential allotments created as a result of the proposed development. Refer to Appendix 8 Engineering Plans. |
| Must be available or capable of being made available (including key infrastructure such as roads, public transport, water supply, sewerage, drainage, park network, community facilities, electricity and telecommunications).                                                             | The necessary water reticulation, sewer reticulation, electricity and telecommunication infrastructure works will be provided to service all residential and non-residential allotments created as a result of the proposed development. Refer to Appendix 8 Engineering Plans. |
| Are designed to allow for future developments in information technology and providing access to technology in neighbourhood facilities.                                                                                                                                                    | Refer to Appendix 8 Engineering Plans.                                                                                                                                                                                                                                          |
| Are located and designed to maximise efficiency and ease of maintenance.                                                                                                                                                                                                                   | Refer to Appendix 8 Engineering Plans.                                                                                                                                                                                                                                          |
| <b>Street network planning and design:</b>                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                 |
| Connects to existing networks while ensuring acceptable levels of amenity and minimising negative impacts of through traffic.                                                                                                                                                              | Yarrabilba Precinct One provides an interconnected street network to optimise walking opportunities and acceptable levels of safety and convenience for all street users while ensuring acceptable levels of amenity and minimising negative impacts through traffic.           |
| Provides a safe and pleasant environment through lighting, pavement treatment and materials, clear sight lines and landscaping.                                                                                                                                                            | Refer to Appendix 8 Engineering Plans.                                                                                                                                                                                                                                          |
| Provides movement networks for vehicles, pedestrians                                                                                                                                                                                                                                       | Yarrabilba Precinct One provides an interconnected                                                                                                                                                                                                                              |



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| and bicycles that have a clear structure, provide a high level of internal accessibility and good external connections with the surrounding area.                                                                                 | street network to optimise walking opportunities and acceptable levels of safety and convenience for all street users while ensuring acceptable levels of amenity and minimising negative impacts through traffic.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Provides for pedestrian and cycle connections within the site which connect to existing facilities and support movement to key local and district destinations such as shops, schools, the park network and community facilities. | Yarrabilba Precinct One has been designed to promote and support walking and cycling to daily activities and will utilise open space, parks and streets. The pedestrian and cycle network will provide a safe convenient and legible movement network to provide excellent accessibility between residence and to points of attraction within Yarrabilba..                                                                                                                                                                                                                                                                                                                                                                                                         |
| Minimise the impact of traffic noise on residential development.                                                                                                                                                                  | Refer to Appendix 11 Yarrabilba Acoustic Report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Support public transport routes and facilities and provides safe, legible and attractive connections from residential areas to public transport nodes or stops.                                                                   | Delfin Lend Lease has held extensive discussions with Translink regarding public transport strategies for Yarrabilba and design accommodates appropriate bus routes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Does not unreasonably constrain future provision of public transport infrastructure and does not adversely impact on the function or operation of existing or future public transport corridors.                                  | Delfin Lend Lease has held extensive discussions with Translink regarding public transport strategies for Yarrabilba and design accommodates appropriate bus routes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Planning and design of vehicle access and parking:</b>                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Ensures safety and convenience for residents, visitors and service providers.                                                                                                                                                     | <p>The street layout and streetscape design that reinforces the function of a street, provides ample parking for residents and visitors and provides appealing setting for homes. This is demonstrated in the Yarrabilba Plan of Development (Appendix 5).</p> <p>Car parking standards are in accordance with Logan City Council.</p> <p>For non-residential uses; car parking will be assessed dependent on use and in line with the Logan City Council Parking Standards. Notwithstanding this requirement, a time of use analysis can be undertaken to reduce car parking requirement by 25% where peak car parking uses do not occur at the same time. On-street parking adjacent to the development site can be counted towards the parking requirement.</p> |
| Is adequate for the user.                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Adequately provides for the number and nature of vehicles expected.                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

#### 4.2.7 Environment and Sustainable Development

| Principle                                                                                                                                                                                                                                                    |  |
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| <p>Development Delivers:</p> <ul style="list-style-type: none"> <li>• Minimal emissions to land, water and atmosphere</li> <li>• Efficient use of land and resources and</li> <li>• Protection of amenity, ecological values and natural systems.</li> </ul> |  |

| Requirements                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| Maintain the safety of people and property from contamination.                                                                                           | <p>There is no registered contaminated land on site.</p> <p>Delfin Lend Lease has engaged specialist consultants (G-tek Australia) to provide advice on UXO including the development of a procedure for induction of all contractors and site workers of the 'slight' risk of UXO on-site and the procedures to be followed in the event of finding an UXO. Refer to Appendix 14.</p>                                                                                                                                                                                                                      |
| Ensures that all land and groundwater will be fit for purpose in accordance with accepted standards and practices.                                       | Refer to Appendix 8 Engineering Plans.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Maintains and enhances the functioning and characteristics of the hydrological network, i.e. streams and watercourses, including their riparian ecology. | <p>All watercourses and streams are protected in the Precinct One subdivision design. Refer to Appendix 15 Yurrah Environmental Assessment Report.</p> <p>Refer to Appendix 17 – Delfin Lend Lease Biodiversity Strategy</p>                                                                                                                                                                                                                                                                                                                                                                                |
| Maintains and enhances the environmental values of the receiving waters and wetlands.                                                                    | <p>All watercourses and streams are protected in the Precinct One subdivision design. Refer to Appendix 15 Yurrah Environmental Assessment Report.</p> <p>Refer to Appendix 17 – Delfin Lend Lease Biodiversity Strategy</p>                                                                                                                                                                                                                                                                                                                                                                                |
| Incorporates total water cycle management and water sensitive urban design principles.                                                                   | <p>The Precinct One design incorporates Water Sensitive Urban Design. Refer to Appendix 12 DesignFlow Yarrabilba Precinct A Water Sensitive Urban Design Preliminary Advice.</p> <p>Refer to Appendix 17 – Delfin Lend Lease Integrated Water Cycle Management Strategy</p>                                                                                                                                                                                                                                                                                                                                 |
| Appropriately manages floodwater and stormwater.                                                                                                         | Refer to Appendix 17 – Delfin Lend Lease Integrated Water Cycle Management Strategy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Minimises adverse impacts on natural landforms and the visual amenity of the site enabling the local environmental values to flourish.                   | <p>The macro staging of the project aims to minimise the need to come back into established areas once residents (being people who live, learn or work in the community) have moved into these areas of the community. This allows the amenity of these areas to be established early and for it not to be disrupted by ongoing construction processes. Generally, uses that can only occur later, as they depend on delivery of higher levels of amenity, have been located to the edge of these core areas, so as to minimise impacts once main streets and open space areas have become established.</p> |

|                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                        | Within the residential villages, the staging generally sees the future civil construction works being several stages away by the time residents have moved into these areas, with the works being able to be carried out without having to move construction vehicles and the like through established areas.                                                                                                                                                                                                                                                                           |
| Maintains and enhances significant vegetation and provides appropriate landscaping.                                                                                                                    | All significant environmental features on site are protected under the proposed development.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Retains vegetation where possible along streets and within park networks.                                                                                                                              | Existing vegetation will be protected within open space corridors, streetscape and natural habitat to achieve environmental protection and a sense of maturity in the landscape.                                                                                                                                                                                                                                                                                                                                                                                                        |
| Promotes the efficient use of resources, maximises recycling opportunities and reduces waste generation.                                                                                               | Refer to Appendix 17 – Delfin Lend Lease Sustainability Strategy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Incorporates koala conservation and habitat protection outcomes in a way that contributes to a net increase in koala habitat and assists in the long term viability of koala populations in SEQ.       | Precinct One is predominantly located in Category X of the SPP for Koala Protection. The GHD Environmental Study (2010) over the site commissioned by Logan City Council found no evidence of Koala within the Precinct One area. The creeklines within the application area have been identified as 'Of Concern' and protected under the current proposal as a result.                                                                                                                                                                                                                 |
| Incorporates leading energy efficiency and water efficiency practices, maximises recycling opportunities and reduces waste generation.                                                                 | Delfin Lend Lease will encourage the use of environmentally responsible materials used to build new dwellings and commercial buildings.<br><br>Refer to Appendix 17 – Delfin Lend Lease Integrated Water Cycle Management Strategy                                                                                                                                                                                                                                                                                                                                                      |
| Incorporates landscaping that contributes to the bushland character, flora and fauna habitat, and fauna movement, with street trees selected from species native and/or endemic to the Yarrabilba UDA. | Landscaping of the open space will contribute positively to the amenity and character of the neighbourhood. Species will be predominantly selected from native and/or endemic vegetation.                                                                                                                                                                                                                                                                                                                                                                                               |
| Respects cultural heritage, places or items.                                                                                                                                                           | The proposed development will not impact on any sites of cultural heritage. Any sites identified during construction will be referred to Traditional Owners for inspection and protection as appropriate in accordance with the voluntary CHMP.                                                                                                                                                                                                                                                                                                                                         |
| Minimises adverse impacts on amenity during construction.                                                                                                                                              | The macro staging of the project aims to minimise the need to come back into established areas once residents (being people who live, learn or work in the community) have moved into these areas of the community. This allows the amenity of these areas to be established early and for it not to be disrupted by ongoing construction processes. Generally, uses that can only occur later, as they depend on delivery of higher levels of amenity, have been located to the edge of these core areas, so as to minimise impacts once main streets and open space areas have become |

|                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                         | <p>established.</p> <p>Within the residential villages, the staging generally sees the future civil construction works being several stages away by the time residents have moved into these areas, with the works being able to be carried out without having to move construction vehicles and the like through established areas.</p>                |
| Ensures compatibility of land uses is achieved (for example through appropriate mitigation measures such as buffering). | <p>Natural areas will be managed in ways that maintain and improve their health and resilience and their contribution to important habitat and corridors and open space network and regional landscape values. The proposed development will ensure the natural drainage lines and creeks are protected and integrated into the open space network.</p> |

#### 4.3 RESIDENTIAL 30 GUIDELINES

Development is generally in accordance with Residential 30 Guidelines. Refer to Appendix 18.

#### 4.4 LEVEL OF ASSESSMENT

The Level of Assessment Table for the Yarrabilba Interim Land Use Plan indicates that a Reconfiguration of Lot application is Code Assessable (Permissible) application to be made to the ULDA for assessment and decision.

All uses proposed as part of this application are Code Assessable (Permissible) under the Yarrabilba Interim Land Use Plan.

#### 4.5 NOTICE OF APPLICATION

The application will be notified in accordance with requirements of Section 54 of the Urban Land Development Authority Act 2007.

## SECTION 5 CONCLUSION

This application proposes a –

Reconfiguring of Lot (part of 2 Lots into 542 Residential Lots, Village Centre – comprising 3 lots and 30 lots for Non-residential uses)

And

Material Change of Use for -

North Village Stages 1 to 10 – House, Multiple Residential and Other Residential.

South Village Stages 1 to 10 – House, Multiple Residential and Other Residential.

Lot 5030 – Sales Office and Display Home, Retail – Food Premises, Shop, Community Facility, and Business.

Lots 5029 and 5031 – Business, Medical Centre, Fast Food Premise, Food Premise, Market, Neighbourhood Centre, Shop, Shopping Centre, Car Park, Child Care Centre, Community Facility, Education Establishment, Multiple Residential and Other Residential.

Lot 5008 - Business, Medical Centre, Fast Food Premise, Food Premise, Market, Neighbourhood Centre, Shop, Shopping Centre, Car Park, Child Care Centre, Community Facility, Education Establishment, Multiple Residential and Other Residential.

Lots 5009 and 5007 – Business, Medical Centre, Low Impact Industry, Research and Technology Facility, Service Industry, Warehouse, Fast Food Premise, Food Premise, Service Station, Shop, Showroom, Emergency Services, Indoor Entertainment.

Lots 5000 to 5006 - Business, Medical Centre, Low Impact Industry, Research and Technology Facility, Service Industry, Warehouse, Fast Food Premise, Food Premise, Service Station, Shop, Showroom, Emergency Services, Indoor Entertainment.

Lots 5010 to 5020 - Business, Medical Centre, Low Impact Industry, Research and Technology Facility, Service Industry, Warehouse, Fast Food Premise, Food Premise, Service Station, Shop, Showroom, Emergency Services, Indoor Entertainment.

Lots 5024 to 5028 - Business, Medical Centre, Low Impact Industry, Research and Technology Facility, Service Industry, Warehouse, Fast Food Premise, Food Premise, Service Station, Shop, Showroom, Emergency Services, Indoor Entertainment.

Lot 5033 – Educational Establishment

Lot 5032 – Child Care Centre, Educational Establishment and Community Facility

Lot 9008 – Outdoor sport and recreation

The subject site is located within the Yarrabilba Urban Development Area (UDA) which is intended for development containing a mixture of residential dwellings ranging from single detached dwellings to multi unit dwellings. The land subdivision is the first stage of development within the Yarrabilba UDA.

There is a large mix of residential housing product, which has been designed to encourage a wide choice of housing styles and create a range of affordable products for the south western growth corridor. The proposed residential lots will incorporate sites areas between 202m<sup>2</sup> to 836m<sup>2</sup>.

Creation of a range of non-residential and mixed use lots ranging from 705m<sup>2</sup> to 1.61 Ha are also included in the proposal. These lots will form part of the initial Village Centre and surrounding mixed use/employment land for Yarrabilba, Precinct One.

The proposal is consistent with the intent of the Urban Land Development Authority to create affordable and sustainable housing upon traditional and smaller lots. Furthermore, the proposed subdivision layout and structure complies with the assessment criteria and intent of Precinct One established in the Yarrabilba Interim Land Use Plan 2010. The proposal is therefore recommended for approval subject to reasonable and relevant conditions.

The proposal is supportable from a town planning perspective, for the reasons discussed in the report, as summarised below –

- The proposal is properly made;
- The proposal is in accordance with the intent of the UDA;

- The proposed development is generally in accordance with the ULDA Residential 30 Guidelines;
- The proposed development facilitates a range of housing options to address diverse community needs, including the provision of an ongoing availability of affordable housing options for low to moderate income households;
- The proposed development uses planning principles that give effect to ecological sustainability and best practice urban design;
- The proposed development promotes self containment with the establishment of a Village Centre, mixed use employment lands and education all within the Early Release Area.

## **Appendix 1 – Preferred Structure Plan**

## **Appendix 2 – Site Analysis Plans**



## **Appendix 3 – Slope Analysis**

## **Appendix 4 – Reconfiguration of Lot Plans**

## **Appendix 5 – Plan of Development**

## **Appendix 6 – Core Economics (now RPS) Report**

## **Appendix 7 – Road Hierarchy and Typical Road Cross Sections**

## **Appendix 8 – Engineering Drawings**

## **Appendix 9 – Cardno Eppell Olsen Yarrabilba Internal Road Network Design Note**

## **Appendix 10 – Access and Mobility Plan**



## **Appendix 11 – Acoustic Report**

## **Appendix 12 – DesignFlow Yarrabilba Precinct A Water Sensitive Urban Design Preliminary Advice**

## **Appendix 13 – Geotechnical Report**

## **Appendix 14 – G-Tek UXO Report**

## **Appendix 15 – Environmental Reports**

## **Appendix 16 – Landscape Concept Plans**

## **Appendix 17 – Yarrabilba Strategy Documents**

## Sustainability

Lend Lease is a creative organisation with global reach, long term partnerships and world class local capability, delivered by employees dedicated to working with integrity and collaboration with stakeholders. The company is passionate about safely creating, building, managing, and owning inventive and sustainable people places.

The vision of Lend Lease is to become a sustainable property group in social and economic, as well as environmental, terms.

In the context of Lend Lease's corporate commitment, Delfin Lend Lease has a clear sustainable development aspiration:

Our aspiration is to create sustainable communities – places where people can reduce their eco-footprint and enjoy amenities and opportunities that a socially connected and prosperous community offers.

Consistent with these broader corporate aspirations, the vision for Yarrabilba is:

A complete town, with a strong, healthy and prosperous community, rich in social capital which provides lifelong learning and delivers sustainable development solutions.

The Yarrabilba project presents a unique opportunity by way of its strategic location, size and minimal environmental constraints to set a new world benchmark in sustainable urban development. To make the vision a reality, five 'cornerstones' were established in conjunction with the development application submitted to Council in 2004:

- A complete community
  - Initiatives to ensure the development of a community rich in networks and relationships with services provided when and where people need them.
  - Learning centres located at the heart of the town centre and within each neighbourhood and strong links to tertiary education providers;
- A prosperous community
  - Through the implementation of a targeted Jobs Strategy;
- Quality urban fabric
  - Through the implementation of a Housing Strategy that identifies a complete range of housing choice, housing for special groups and environmentally sensitive design techniques;
- Ease of accessibility for all
  - Through the implementation of a detailed Transport Strategy that espouses Travel Demand management Initiatives and an effective public transport system; and
- A small environmental footprint
  - By incorporating initiatives within the development that promote resource conservation and water cycle management.

Each cornerstone incorporates a range of specific strategies and actions that build upon the successful programs of Delfin Lend Lease projects across Australia as well as the global sustainability achievements of the broader Lend Lease business.



In the creation of strong, connected communities, Delfin Lend Lease's aspirations mirror those of the Queensland Government, as outlined in the 'Towards Q2: Tomorrow's Queensland' document. The Government's 2020 vision for Queensland is framed around five ambitions:

- Strong: To create a diverse economy, powered by bright ideas.
- Green: To protect our lifestyle and environment.
- Smart: To deliver world-class education and training.
- Healthy: To make Queenslanders Australia's healthiest people.
- Fair: To support a safe and caring community.

For each of the five ambitions cited by the State Government the Yarrabilba project will achieve best practice, as follows:

- Strong: Yarrabilba's employment and economic development strategy seeks to implement early jobs, a diverse economic base, work from home opportunities and an aspirational goal of full jobs balance of over 20,000 jobs. On average some 2,000 construction related jobs per annum will also be created at Yarrabilba. Flagship initiatives such as the creation of an Environmental Business Cluster, potentially within the first stages of the development, demonstrate Delfin Lend Leases commitment to the prosperity of the Yarrabilba community.
- Green: Within Yarrabilba, Delfin Lend Lease aims to create a benchmark in sustainable urban development. Areas of remnant and endangered vegetation will be protected and enhanced in balance with urban development. Emerging green technologies will be embedded into the urban fabric on a large scale in order to considerably reduce the creation of greenhouse gas emissions, reduce the reliance on centralised electrical power distribution, promote walking, cycling and efficient public transport and reduce waste.
- Smart: Life long learning is central to Yarrabilba. Partnerships with a diverse range of education providers and leading industries will provide the opportunity for smart jobs, leading edge research and access to a range of education choices. Current initiatives such as Delfin Lend Lease's successful 'school-to-work' program and other youth skilling and training strategies will be built upon and refined.
- Healthy: Yarrabilba's predominantly gentle topography and urban design will make the entire community and associated facilities and services readily accessible via highly interconnected grids of walking and cycling paths. In addition, Yarrabilba will provide recreational opportunities and facilitate a range of health and well-being programs aimed at promoting healthy lifestyles and activities.
- Fair: Yarrabilba is planned as a complete community, providing for a diverse and inclusive population. Community programs are a central platform of all Delfin Lend Lease communities. These comprehensive programs are designed to connect new residents and provide opportunities for social connections to be made.

## **Housing Affordability**

A complete community' is one of the five cornerstones developed for Yarrabilba in 2004 that continues to be relevant in updated planning reflected in the 2010 Preferred Structure Plan. This cornerstone mirrors the earlier SEQ2021 'Desired Regional Outcomes', whereby Delfin Lend Lease will create an "urban community with a strong sense of identity and place – that is inclusive, culturally vibrant, equitable and safe; with access to a full range of services and facilities; and appropriate housing that meets all needs."

Delfin Lend Lease believes that a sustainable community is a diverse community. Diversity makes a place interesting so that people aspire to live, work, play in and visit the community. Varying housing products and innovation in the design of these products also ensures that there is a broad range of choice and price points available to purchasers and a consequential diverse range of people choosing to live at Yarrabilba. Delivering a wide range of housing choices means Yarrabilba will appeal to a broad section of the Logan City, Brisbane, Gold Coast and surrounding communities.

The creation of affordable housing options from the start of the project is a key strategy within the overall Yarrabilba development proposal. Delfin Lend Lease has proposed that 30% of house and land packages will be at or below the typical median price for Logan City including 5% of dwellings delivered for 'Below Market Rent'. With an anticipated 17,000+ dwellings planned for Yarrabilba, Delfin Lend Lease's targets for improved housing affordability will see the delivery of some 5,000 affordable dwellings with a diversity of product choice. This provision will accommodate up to 13,000 people - comparable to housing the current population of Nambour.

Delfin Lend Lease's commitment to affordable housing at Yarrabilba reflects a substantial contribution on the part of Delfin Lend Lease to address the need for an increased supply and timely delivery of new affordable housing products onto the market in response to the State Government's Queensland Housing Affordability Strategy and key mandate of the ULDA.

While the diversity achieved within current Delfin Lend Lease developments provides a platform for housing affordability, additional and specific strategies are being developed to achieve the Yarrabilba Affordable Housing targets. Strategies will include working with experienced not-for-profit housing organisations to deliver specific, affordable housing outcomes.

## **Public Transport and Mobility**

While recognising Delfin Lend Lease's commitments to job creation and community self containment, it is acknowledged that commuting will generate significant volumes of external passenger movements each day. Specialist consultants Cardno Eppell Olsen CEO), with additional public transport analysis by McCormick Rankin Cagney, were engaged to develop a Transport Strategy for Yarrabilba. The aim of the strategy was to limit Vehicle Kilometre Trips (VKT) to no greater than, and preferably less than, commensurate levels in South East Queensland. VKT provide a useful measure of the environmental impacts of vehicle travel such as pollutant loads. Another useful measure of travel patterns is PersonTrip-Length (PTL) which in master planned communities is positively influenced by the significant proportion of shorter 'trips' undertaken by active transport modes of walking and cycling.

The provision of a Public Transport (PT) system within the earliest phases of the emerging community is seen as a key to establishing sustainable transport outcomes. The PT strategy developed by CEO detailed a range of initiatives including:

- A staged approach to the implementation of a bus network commencing from the outset of the project, rather than lagging the residential development.
- The project funding the initial phases of public transport implementation to ensure it was provided in parallel with the new community.
- Implementing a targeted program of Travel Demand Management from the outset of the project.

These key public transport initiatives have been discussed in considerable detail with Translink and the delivery strategy and staging has been resolved in principle.

Travel Demand Management (TDM) is not a new concept. 'IndiMark' (individual marketing) has been successfully used across Australia within established communities to alter the car-dependent travel patterns of residents. For Yarrabilba it is proposed to use an 'IndiMark' approach with new purchasers and residents to establish sustainable travel behaviours from the outset of the project. To date IndiMark has adopted a reactive approach by seeking to alter existing travel patterns of households. Delfin Lend Lease proposes to proactively implement IndiMark at Yarrabilba to establish sustainable travel patterns from the outset of the project.

The change from reactive to proactive is seen as a crucial key to the successful provision of public transport within Yarrabilba with a resultant reduction in vehicle kilometres travelled (VKT) for the community. Implementation of the IndiMark styled program will be achieved by Delfin Lend Lease employing a dedicated Community Transport Coordinator to work with purchasers, new residents, public transport providers Translink and Queensland Transport officers to provide targeted Public Transport information and a central transport contact for the new community. Due to the unique nature of the IndiMark strategy within the Yarrabilba project, it offers the Queensland Government and Delfin Lend Lease an important opportunity to study travel behaviours within this new community and to benchmark outcomes against other urban developments.

In addition to these initiatives, Delfin Lend Lease will implement a comprehensive open space system that, as far as practicable, is intended to be a continuous network so as to facilitate accessibility and non-motor vehicle movement from homes, to community and employment centres, to recreational facilities and for scenic enjoyment. By providing over 120 kilometres of walk/cycle routes along linear parks and within road reserves at Yarrabilba, both commuting and social / recreational needs can be met to encourage walk and cycle trips.

Yarrabilba will also achieve a high level of self-containment by providing a large number and diverse range of employment opportunities, as well as supporting community and education facilities. Together with the provision of direct walk / cycle routes, this self-containment will result in a significant reduction in the length of trips and the dependence on motorised transport at Yarrabilba.

## **Utilities and Services**

The regional services surrounding Yarrabilba are limited for urban purposes as the majority of the land uses surrounding the site are predominantly rural residential or rural. There are a number of small water treatment plants and storage tanks in the area. However, the services are not in the appropriate locality, nor do they have the capacity to serve the development of the Yarrabilba site. Yarrabilba currently has limited water services and no sewerage service available to service any urban development.

The Southern Regional Water Pipeline (SRWP) running from Mt Crosby through to the Gold Coast, crossing through the northern section of Logan's Local Government Area has been constructed as the ultimate source of supply along with the future Glendower Dam. The supply to site will be through the existing Travis Road reservoir site which will be upgraded with more storage as needed.

Existing power running along the Waterford-Tamborine Road boundary of the site and along the Plunkett Road boundary could be utilised as a power source for development on the site. There are also Powerlink Queensland 275KV Transmission Lines that run through the northern section of the site. Currently two low level and one high level set of towers are constrained within the easement.

The closest existing gas service in immediate proximity to the site is the gas main located on Dairy Creek Road, Waterford. Yarrabilba can be serviced by this gas via a steel main running along Waterford Tamborine Road, between Dairy Creek Road and Camp Cable Road ( a distance of approximately 10.5km).

Major cables and conduits are currently existing along Waterford-Tamborine Road. Telecommunication infrastructure can initially be supplied to the area via these existing services. Mobile Telecommunication companies currently have coverage on and around Yarrabilba.

## **Open Space Strategy**

As part of the broad Structure planning of the Yarrabilba development, the major definitive open space areas, covering those areas such as the identified conservation areas, drainage paths and infrastructure areas, have already been identified.

In addition to the major open space shown on the Preferred Structure Plan and parkland defined in Precinct One, Village Parks and other forms of local open space will need to be identified in conjunction with further development applications.

The following information is a brief summary of the open space intent from the structure planning undertaken to date and included in the Preferred Structure Plan.

The open space will eventually be designated across over 25% of the site in one form or another. When additional planting in the form of the landscaped portions of road reserves is added, it means that over a third of the site is available to create the landscape setting for the community. The open space will be designated with varying functions including infrastructure provision, environmental conservation, recreational activities, village or local parks and buffers.

The aim of the open space area will be to ensure that the broadest recreation opportunities that can be economically delivered and maintained are provided within the Yarrabilba site. A further aim of the development of the open space will be to ensure that all areas are developed in a sustainable manner that maximises their usability, respects the degree of use they are likely to receive and minimises the degree of maintenance intervention required so as to minimise community cost.

Open space within a community fulfils many roles. It has the role of providing for the recreational amenity of the residents. It has a site presentation role in terms of the visual look of the community to the residents and visitors. It has the role of being the gathering spaces for the residents and the place where many of their memories of the Yarrabilba project, as a place, are created. It has the role of ameliorating the density of the residential areas as well as being the major element of the physical place we create. The open space will become 'fingers' of nature wrapping through the community, creating pockets of residential rather than one large mass of housing. In a word, open space makes the place 'liveable'.

## **Jobs Strategy**

As part of the original Development Application, an Employment Strategy for Yarrabilba was proposed with the target of generating a 'Jobs Balance' (i.e. one job for every two residents), with two thirds on site, over the life of the project.

This Employment Strategy also indicated that early jobs were seen as a priority to ensure that the development was as 'jobs led', recognising the need to bring jobs into the region.

DLL has a proven track record in the delivery of employment on its major projects around Australia. At Yarrabilba, DLL has always recognised that the creation of early jobs would require a commitment of resources to attract employment prior to the formal approval being granted.

In late 2005 several factors caused DLL to believe it was appropriate at that time to dedicate resources towards jobs generation, these included:

- a recognition in the draft Regional Plan that Yarrabilba should be developed for urban purposes, rather than rural residential development;
- formal advice from the Premier's Office that the State Government would be prepared to consider an early commencement of the Yarrabilba project provided an appropriate State Infrastructure Agreement was entered into; and
- provision of a program by Beaudesert Shire Council indicating that WOSP (Whole of Shire Planning) would be undertaken to allow for a commencement on site at Yarrabilba in 2008.

As a consequence of this decision, staff resources were given the task to carry out a visioning process to identify potential employment generating activities that could be promoted ahead of the formal approvals.

Out of these activities the concept of the creation of a cluster of industries focussing on environmental goods and services was proposed, as a 'signature' jobs strategy for Yarrabilba.

The rationale for this approach included:

- there seemed to be a 'tipping point' being reached in relation to environmental business activities, that is, the time was right;
- the vision of Yarrabilba to be a 'world bench mark of sustainable urban development' appeared to offer an opportunity for environmental businesses to co-locate, become involved in the research programs on sustainability and promote their product; and
- Yarrabilba provides a large project with critical mass to innovate new products in the environmental area.

The range of business activities expected to establish at the Environmental Business Cluster necessitate the ability to allow the development of:

- manufacturing, warehouse and distribution facilities;
- service industries;
- research;
- consulting; and
- environmental displays.

In May 2006, the Deputy Premier launched a road show in Brisbane, which was the first public promotion of the Environmental Business Cluster. This was followed by promotional events in Melbourne, Sydney and Perth.

These road shows proved the concept of the cluster was sound and resulted in an ever-increasing level of interest and business attraction towards the cluster.

Highlights of 2006 in relation to promotion of the cluster included:

- over fifty expressions of interest to participate received as a result of one advertisement in the Financial Review in August;
- completion of an independent report by Environment Business Australia that confirmed that no similar cluster exists anywhere in the world, and if the cluster as proposed was developed, it would be a "World's First";
- signing of Statement of Intents with Strategic Alliance Partners - Thiess Services, Chromagen, Silver Communities, Bluescope Water, Hills Industries and QED Occtech in Brisbane on 2 November 2006; and
- signing of a Statement of Intent with Schneider Electric as a Strategic Alliance Partner in London on 10 November 2006.
- Since the Premier's recent announcement that Yarrabilba would come under the control of the ULDA and the increased certainty on timing of project commencement, there has been renewed interest in the Environmental Business Cluster from many of the original interested companies. Delfin Lend Lease is continuing to develop the concept of the cluster as part of more detailed planning for the early phases of the project.

Work undertaken for Delfin Lend Lease on the broader Jobs Strategy by economic consultancy Conics (now RPS), provided an overview of employment generation for a major development site. As outlined below, Conics concluded that for any major community:

- 40% of jobs required by a community are population serving and will occur on or off site simply as a result of the number of residents without the input of specific economic development strategies. Examples of population serving jobs include
  - o retail staff, teachers and professionals such as doctors, chemists and dentists
  - o required on a regular basis by the community.
- A further 40% of the jobs required by a community can be realised by value adding employment opportunities, through focused employment strategies. This employment seeks to build on a region's economic strengths and signatures.
- The top 20% of jobs requires the most effort and success depends on identification and creation of significant economic 'signatures' and builds on the foundation base of the other 80% (eg. The Environmental Business Cluster).

Conics Yarrabilba Employment Analysis (12 June 2009) for the project re-affirms the potential for Delfin Lend Lease to achieve a jobs balance at Yarrabilba. A copy of this Conics research is included as Supporting Documentation to this submission.

Delfin Lend Lease has a proven record in economically sustainable development and job creation, including its recognised achievements on projects such as Varsity Lakes on the Gold Coast and Mawson Lakes in Adelaide. A significant reason for Delfin Lend Lease's success in employment generation is the proven ability to build on existing regional economic strengths and signatures and to grow and establish new economic initiatives and signatures. Delfin Lend Lease therefore has the track record, the strategies and resources in place to deliver on its commitment of creating a jobs balance in order to achieve an economically sustainable community at Yarrabilba.

This strategy will also need to be periodically reviewed to ensure that it reflects contemporary economic development trends, has the centres staged in an appropriate manner and reflects the needs of the residents of the Yarrabilba project.

## **Community Facilities**

Delfin Lend Lease has a good track record of developing strong and sustainable communities. Delfin Lend Lease understands that people aspire to live in communities where they feel a unique sense of 'belonging' – a place where they feel connected and valued. Community and social infrastructure plays an important role in defining a place, but it is people and the culture they create that ensures a community will stand apart from others that appear similar.

One of Delfin Lend Lease's most significant points of difference when creating new communities is the development and implementation of strategies that engage all residents, businesses and partners in that sense of belonging.

The incorporation of education and learning is critical to the development of a complete community and the ability of those who work and live there to build a strong future. Yarrabilba will therefore provide access to a range of life-long learning opportunities including preparatory, primary and secondary school facilities to support an ultimate population of up to 45,000 residents. Strong partnerships with tertiary institutions and research institutes are also integral to the lifelong learning strategy. Communities that have strong links to universities and the research they carry out have the capacity to attract investment and skilled people.



## **Integrated Water Cycle Management**

As Yarrabilba is an unserviced greenfield site, specialist consultancy WBM Oceanics Australia were engaged to investigate sustainable water cycle management options for the development. In their 2004 report titled “*Yarrabilba Integrated Water Management Study*”, prepared in collaboration with consultants Bligh Tanner, WBM proposed the creation of a network similar to that proposed under the Pimpama-Coomera Water Futures Study.

WBM's network included rainwater tanks with trickle top-up for every household and high quality treated wastewater reticulation via a third (purple) pipe network. WBM concluded in their 2004 research that such a network implemented at Yarrabilba has the potential to reduce potable water consumption by up to 70-80% over 'Business as Usual' with an associated 90% reduction in wastewater outfall.

The work undertaken by WBM was developed to 'proof of concept' stage. In June 2004 Delfin Lend Lease engaged consultants MWH to review the work undertaken by WBM Oceanics and to prepare conceptual designs for water, sewerage and wastewater networks within Yarrabilba. This analysis provided a peer review of the WBM work and conceptual layouts for costing purposes.

Since the time of WBM's research there has been a considerable reduction in resident's water consumption across South East Queensland and the evolution of the SEQ Water Grid which will impact on the regional opportunities for water supply and reuse. Consequently the integrated water cycle management strategies are based on some of those original principles, will evolve in response to changing trends.

The work undertaken on behalf of Delfin Lend Lease acknowledges water as a valuable resource rather than an unlimited and disposable commodity. While stretch targets and associated detailed analysis has yet to be completed, the aspiration is for Yarrabilba to be ultimately developed as a system which efficiently addresses both internal and regional factors that may influence long term demands.

## **Biodiversity**

The Yarrabilba site is visually enclosed by the Cooingee Range to the east and the Burnham Range to the west. The Cooingee Range is well vegetated and includes the Plunkett Conservation Reserve providing a north-south environmental spine parallel to the eastern boundary of the site. Yarrabilba is separated from the Burnham Range by Waterford-Tamborine Road. Historic rural residential subdivisions to the west of Waterford-Tamborine Road have impacted on the extent of vegetation and continuity of vegetation broadly associated with the Burnham Range.

Use of the Yarrabilba site as a commercial pine plantation has resulted in the removal of native vegetation from the majority of the site. It is acknowledged that broad-scale clearing of the site has impacted the biodiversity of the site: the different plants, animals and microorganisms, their genes and the ecosystems of which they are a part.

Areas of vegetation with higher conservation value do exist on the site, typically associated with watercourses and on steeper land located along the eastern perimeter. The most significant vegetation on the site bounds the Plunkett Conservation Reserve and primarily consists of eucalypt forest. Small areas of vegetation located in the north-east corner of the site have been identified as having significant biodiversity values. Initial site planning includes buffers to these areas and other areas within the adjacent Plunkett Conservation Reserve, including provision for bush fire management.

Delfin Lend Lease's planning for the site has drawn on a number of relevant investigations and associated assessments. These include:

- Gamble McKinnon and Associates (2002), Landscape and Visual Assessment, Celebration Township.
- Planit Consulting (2002), Environmental Planning Assessment, Celebration Township.
- Yurrah Pty Ltd (2004), Yarrabilba Environmental Review
- GHD Environmental Corridors Study 2010 – Commissioned by Logan City Council

The work undertaken by Planit Consulting provided a comprehensive assessment of the site for ecological values, including flora, vegetation, fauna and habitat. Planit Consulting identified a total of 216 species of flora and vegetation, of which two were noted as being protected under the Nature Conservation (Wildlife) Regulations 1994, namely the Plunkett mallee (*Eucalyptus curtisii*) protected as being 'Rare' and an *Leucopogon recurvisepalus*, protected as being 'Endangered'. A further ten species were defined as being 'regionally significant'.

Investigation of the site's fauna and associated habitat by Planit Consulting noted the area immediately east of the site as a major habitat site being 'relatively intact' with extensive remnant vegetation incorporated within the Plunkett Conservation Reserve, Timber Reserve 766 and adjoining private properties. In particular, the north-eastern and eastern parts of the Yarrabilba site were considered likely to contain the highest levels of fauna abundance and diversity. The analysis identified the following:

- o Forty-four species of birds with the majority of recordings occurring within the north-east of the site. No bird species listed within the Nature Conservation (Wildlife Regulation) 1994 were recorded on site.
- o A total of eighteen mammal species with none listed as endangered, vulnerable or rare under the Nature Conservation (Wildlife Regulation) 1994.
- o Eleven lizard species and two species of snakes were recorded with none listed as endangered, vulnerable or rare under the Nature Conservation (Wildlife Regulation) 1994.
- o Nine species of native frogs were recorded with none listed as endangered, vulnerable or rare under the Nature Conservation (Wildlife Regulation) 1994.

While the site has been highly disturbed through the operation of the pine plantation, it does offer an opportunity to protect and enhance areas of on-site remnant vegetation within a linked and functional open space network. Delfin

Lend Lease's approach to structure planning of the site has been to create a heritage for itself, in years to come, by the quality, quantity and vitality of its proposed green environment. The 'green' approach is fundamental to the environmental sustainability outcomes of Yarrabilba. It is intended that the open space and public areas will:

- protect and enhance areas of existing, high quality vegetation;
- provide significant areas of open space for the active and passive recreational need of residents;
- include an integrated pedestrian and cycle network linking neighbourhoods and community facilities; and
- implement a co-ordinated landscape strategy for the public and private areas of the project.

In developing the planning for the site, Delfin Lend Lease has identified the importance of buffers to the Plunkett Conservation Park to protect and enhance the biodiversity of the area and to promote a healthy ecosystem. The Yarrabilba structure plan has identified additional open space / conservation area adjacent to the Plunkett Conservation Park. Yurrah also recommended a functional approach to the buffer design, similar to the Department of Primary Industry guidelines for the protection of Fish habitat (DPI, 2000). The objectives of the buffer are deemed to be:

- the long term protection of habitat and integrity of the natural resource, including
- enhancement of movement corridors;
- provision of physical separation distance and/or barrier between adjacent development and the natural resource, and clarification of real property boundaries;

Accommodation within the buffer of the natural physical processes including land stability, erosion and accretion, flood mitigation, climate change and the greenhouse effect, filtration of pollutants and competition from potentially invasive species; and provision of appropriate human access and economic benefit. From an overall site area of some 2014ha, open space at Yarrabilba will eventually be designated on over 25% of the site.

In the development of Yarrabilba, Delfin Lend Lease is committed to identifying opportunities to preserve and restore the biodiversity of the site within a healthy ecosystem. Most importantly, Delfin Lend Lease is seeking to create a long-term sustainable balance between development and the natural environment in which it is created.

## **Appendix 18 – Residential 30 Guidelines**

## Neighbourhood Design Checklist

| Design Guideline                                                                                                                                 | Response  |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Does the neighbourhood layout and design respect and respond appropriately to local conditions, including:                                       |           |
| The local market and need for housing and business                                                                                               | Compliant |
| Physical features such as topography, natural drainage systems and vegetation                                                                    | Compliant |
| Places of cultural heritage significance                                                                                                         | Compliant |
| Opportunities for views and vistas and other elements that will clearly identify and, from a commercial perspective, 'brand' the neighbourhood.  | Compliant |
| Providing connections to existing facilities, services and movement networks in the surrounding area                                             | Compliant |
| Does the neighbourhood have:                                                                                                                     |           |
| Defined entries and legible neighbourhood boundaries to foster a sense of identity                                                               | Compliant |
| A highly permeable, legible street pattern                                                                                                       | Compliant |
| A variety of multi-use parks                                                                                                                     | Compliant |
| A safe, attractive and efficient pedestrian and cycle network                                                                                    | Compliant |
| Distribution of land uses, layout of streets and building densities that support public transport use                                            | Compliant |
| A mix of lot sizes providing wide choice in affordable and accessible housing                                                                    | Compliant |
| Lots of a size to allow small-scale, compatible land uses such as child care, aged care, retirement living, local shops and home-based business. | Compliant |

## Lot Design

### Lot Design and Dimensions

| Design Guideline                                                                                                  | Response                                             |
|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| Are the lots of a regular shape and standard dimension:                                                           |                                                      |
| To contribute to delivery of street pattern that are rectilinear                                                  | Compliant                                            |
| To contribute to cost savings in engineering and building construction                                            | Compliant                                            |
| To suit proven dwelling designs                                                                                   | Compliant                                            |
| Consistent in lot depth(s) and widths                                                                             | Compliant                                            |
| Of a standard depth of 25.0 metres and 32.0 metres and widths generally in multiples of 2.5 metres and 5.0 metres | Compliant. Lots are a standard depth of 24m and 32m. |

## Slope

| Design Guideline                                                                                                                                            | Response  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Unless the dwellings are to be contracted in an integrated or attached development, is the slope on a lot less than 450m <sup>2</sup> in area no more than: |           |
| 10% of side slope                                                                                                                                           | Compliant |
| 5% lengthwise slope                                                                                                                                         | Compliant |
| Less, if both these figures approach the maximum together                                                                                                   | Compliant |

## Block Design

### Block Shape and Dimensions

| Design Guideline                                                                                                                                                                                                       | Response  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Are the blocks of a size and dimension that, when arranged, facilitate:                                                                                                                                                |           |
| An efficient neighbourhood pattern, scale and area                                                                                                                                                                     | Compliant |
| High levels of pedestrian connectivity throughout the neighbourhood                                                                                                                                                    | Compliant |
| Safe and direct pedestrian, cycle and vehicle access to destinations such as local shops, neighbourhood centre, public transport stop or station, neighbourhood park and nearby district and regional sport facilities | Compliant |
| Choice in the type of housing                                                                                                                                                                                          | Compliant |
| Rear lanes that maintain standard lot types and dimensions.                                                                                                                                                            | Compliant |

### Laneway Lots

| Design Guideline                                              | Response                                                                                   |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| If more than one dwelling is proposed, are the laneway lots:  |                                                                                            |
| At least 7.5 metres wide                                      | Compliant                                                                                  |
| At least 30.0 metres deep on at least one side of the laneway | 4 of the 34 laneway lots in Precinct One are 27m deep. The remainder are 30m deep or more. |

### Orientation for Climate

| Design Guideline                                                                             | Response                                                                                                                                                     |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Where the design for the prevailing summer breeze is paramount, is the long road leg length: |                                                                                                                                                              |
| Oriented perpendicular to the prevailing breeze                                              | The road grid is both east-west and north-south and the majority of the long road lengths are oriented NNE-SSW, which will pick up on the prevailing breeze. |
| Where the design for access to winter sun is paramount, is the long road length:             |                                                                                                                                                              |

|                                                                                                   |                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Oriented in an east-west direction                                                                | The road grid is both east-west and north-south to optimise solar access and respond to site topography.                                                                                                    |
| To avoid the western summer sun are:                                                              |                                                                                                                                                                                                             |
| Wide lots minimised on the north-south streets                                                    | Larger lots are generally located on street corners, opposite intersections and opposite groups of narrower lots, to ease on street parking. They have not generally been minimised on north-south streets. |
| Built-to-boundary walls, unless constrained by topography, located on the west to southern walls. | Build to boundary walls generally respond to topography and are located on the low side of lots.                                                                                                            |

### Lot Arrangement

| Design Guideline                                                                                                                                                                      | Response   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| Are lots within the block arranged so that:                                                                                                                                           |            |
| The highest densities are located around open space, amenity features or other focal points                                                                                           | Compliant  |
| There are between four and six adjoining terraces or row housing lots in a group (to enable group housing construction and integrated streetscape solution)                           | Compliant  |
| There are no more than eight narrow frontage lots in a row                                                                                                                            | Compliant  |
| There are no more than four lots with a width of 7.5 metres or less in a row unless serviced by a rear lane                                                                           | Compliant  |
| There are no minor mismatches (e.g. less than 1.0 metre) in the rear corner lot boundaries of adjoining lots (to minimise the risk of set out error)                                  | Compliant  |
| Multi-family housing lots are preferred on highly accessible: <ul style="list-style-type: none"> <li>Block ends</li> <li>Corner lots</li> <li>Lots with dual road frontage</li> </ul> | Compliant  |
| Are small lots minimised:                                                                                                                                                             |            |
| At the end of a T-intersection                                                                                                                                                        | ?Compliant |
| At the entrance to a precinct if not rear land accessed                                                                                                                               | Compliant  |

## Street Design

### Street function and Experience

| Design Guideline                                                                                | Response  |
|-------------------------------------------------------------------------------------------------|-----------|
| Do streets:                                                                                     |           |
| Provide a diversity of functions and experience that prioritise use by pedestrians and cyclists | Compliant |
| Provide routes for vehicles and public transport                                                | Compliant |

|                                                                              |           |
|------------------------------------------------------------------------------|-----------|
| Accommodate utility services and drainage systems                            | Compliant |
| Provide pedestrian and cyclists movement                                     | Compliant |
| Include street tree planting and water sensitive urban design features       | Compliant |
| <b>Is the movement network designed to encourage walking and cycling by:</b> |           |
| Ensuring a highly interconnected and permeable street network                | Compliant |
| Establishing good linkages to surrounding development and features           | Compliant |
| Providing a well located, legible and convenient to use pathway network      | Compliant |

#### Vehicle Speed

| Design Guideline                                                                                                           | Response                                                          |
|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| <b>Are the streets designed to reduce traffic speeds for the safety of pedestrians, cyclists and all vehicle users by:</b> |                                                                   |
| Using short block lengths (less than 100m)                                                                                 | Block lengths are generally shorter than 100m.                    |
| Using narrowed carriageways in select locations                                                                            | Where longer lengths of road are used, carriageways are narrowed. |
| Extending verges to narrow the carriageway at the intersections (creating 'pinch points')                                  | Compliant                                                         |
| Using appropriate street markings and signage                                                                              | Compliant                                                         |
| Using differently textured materials on the carriageway across the throat of intersections                                 | At the entry to neighbourhoods.                                   |

#### Pedestrian and Bicycle Routes and Paths

| Design Guideline                                                                                            | Response  |
|-------------------------------------------------------------------------------------------------------------|-----------|
| <b>Are Pedestrian and Bicycle routes:</b>                                                                   |           |
| Direct, continuous and well lit, and provide appropriate street crossings                                   | Compliant |
| If separated, cycle paths indicated with street markings or by clearly displayed and well-designed signage. | Compliant |

#### Footpaths

| Design Guideline                                                                                                                  | Response  |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Are footpaths:</b>                                                                                                             |           |
| Provided on at least one side of every street, including in culls-de-sac that provide through routes for pedestrians and cyclists | Compliant |



|                                                                                                                                                                                                                                                                                     |           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Provided on both sides <ul style="list-style-type: none"> <li>• Of connector or collector streets</li> <li>• Of every street to and from key focal points and destinations</li> <li>• Of every street when the neighbourhood density approaches and /or exceeds 30 dw/ha</li> </ul> | Compliant |
| Generally 1.2m wide                                                                                                                                                                                                                                                                 | Compliant |
| 1.5 metres wide where demand requires, to allow pedestrians, including those with prams and ambulant people with disabilities, to walk two abreast or comfortably pass each other                                                                                                   | Compliant |

### Topography

| Design Guideline                                                                                                                                    | Response                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| <b>Are streets shaped in response to topography and natural features:</b>                                                                           |                                      |
| To reveal desirable views                                                                                                                           | Compliant                            |
| Help to enhance the character of the neighbourhood                                                                                                  | Compliant                            |
| Assist in wayfinding throughout the neighbourhood                                                                                                   | Compliant                            |
| <b>Where land slopes at a grade of 6% or more is:</b>                                                                                               |                                      |
| The predominant street alignment perpendicular to contours                                                                                          | Land slopes at a grade less than 6%. |
| <b>Does the street layout avoid lots:</b>                                                                                                           |                                      |
| Being considerably higher or lower than the street level                                                                                            | Compliant                            |
| <b>Does the Street terminate with:</b>                                                                                                              |                                      |
| Views that make the most of the special features of a site (such as a park, a stand of mature trees, distant hills, water or significant buildings) | Compliant                            |

## **Appendix 19 – Engineering Background Reports**

## **Appendix 20 – Typical House Plans**