GLEN IRIS ESTATE

STRUCTURE PLAN

BERRIGAN DRIVE, JANDAKOT

03 MAY 2022

VOLUME 1
STRUCTURE PLAN

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STRUCTURE PLAN

BERRIGAN DRIVE, JANDAKOT

05 MAY 2022

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RECORD OF ENDORSEMENT

This Structure Plan is prepared under the provisions of the City of Cockburn Town Planning Scheme No. 3.

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

..... Date

Signed for and on behalf of the Western Australian Planning Commission:

.....

an officer of the Commission duly authorised by the Commission pursuant to section 16 of the Planning and Development Act 2005 for that purpose, in the presence of:

..... Witness

..... Date

..... Date of Expiry

TABLE OF AMENDMENTS

AMENDMENT NO.	SUMMARY OF THE AMENDMENT	AMENDMENT TYPE	DATE APPROVED BY WAPC

EXECUTIVE SUMMARY

This Structure Plan has been prepared to guide the subdivision and development of Lot 3 on Diagram 30047, Lot 6 on Diagram 91027, Lot 7 on Plan 21402, Lot 512 on Diagram 94292, Lot 139 on Plan 18946, and Lot 509 (No. 76 Dean Road) on Diagram 91028 (herein referred to as the 'subject site'). The subject site comprises an area of approximately 53.74 hectares, located in Jandakot within the municipality of the City of Cockburn.

The subject site, a former golf course, comprises underutilised vacant land located within the Glen Iris Residential Estate, encompassing a total area of approximately 130 hectares. The existing residential neighbourhood is inherently confined by its adjacent land uses, including the Rural Residential land to the east, Kwinana Freeway to the west, freight rail to the north and industrial land uses to the south.

The site presents a unique opportunity for a site responsive, infill residential development which integrates with, and contributes to, the existing residential area. The future development of the site will respect the existing pattern of residential development and enhance the sense of community within the locality, whilst providing for a diverse range of housing opportunities, including aging in place.

The site is ideally located within proximity to major employment nodes and transport infrastructure, with direct vehicular connections to the broader metropolitan area. It is within proximity to the Cockburn Central Secondary Centre, which provides for significant community facilities and amenity to support the proposed development.

The urban design rationale for the site has been informed through an extensive community engagement process undertaken with representatives from the Glen Iris Project Reference Group. Through the community engagement process, the following priority areas for consideration were identified as:

- Traffic and Access;
- Future Housing;
- Open Space and Environment;
- Interface with existing residences; and
- Local Amenities.

The above elements have been considered within the Structure Plan to provide for a site responsive design that integrates with, and is in keeping with, the characteristics of the existing residential area. The increase in the residential population provides the impetus for improved community facilities (public open space) and services.

As a result, the design philosophy has been based around the following:

- The retention of some 500 existing mature trees;
- Providing a landscaped interface 'buffer' to the rear of existing single residential houses that abut the former golf course;
- Providing a design outcome which responds to the topography of the land, including retention of existing drainage;
- Enhancing local traffic management through such means as including a new traffic light-controlled intersection with Berrigan Drive, and directing traffic to the internal subdivisional roads, away from the existing Glen Iris precinct roads, to safely navigate through the new intersection onto Berrigan Drive; and
- Listening carefully to resident's requests and running a thorough and well-balanced design consultation process in order to arrive at a lineal parkland design that respects many of the wishes and wants of existing local residents.

The proposed Structure Plan has been prepared in accordance with the provisions of Part 4 of Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015* ('Regulations') and provides the planning framework to guide and facilitate the urban residential development of the subject site.

The preparation of the Structure Plan has been undertaken in consultation with the City of Cockburn and other relevant stakeholders.

STRUCTURE PLAN SUMMARY

ITEM	DATA	SECTION NUMBER REFERENCED IN PART TWO OF REPORT
Total area covered by the Structure Plan (Site Area)	53.74 hectares	2.2
Gross Subdivisible Area	48.62 hectares	5.3
Area of each land use proposed: Residential Local Centre Public Open Space	 27.92 hectares 0.72 hectares 9.27hectares	 5.4 5.8 5.3
Total estimated lot yield	399 Residential lots 1 Local Centre lot	5.4 5.8
Estimated number of dwellings	550 residential dwellings	5.4
Estimated residential site density	19.69 dwellings per site hectare	5.4
Estimated population	1,595 people (based on 2.9 people per household)	5.4
Number of high schools	nil	5.7
Number of primary schools	nil	5.7
Estimated retail/ commercial floor space	2,500m^2	5.8
Estimated area and percentage of public open space given over to Neighbourhood and Local Parks	9.27 hectares, (20 parks) 18.75% of gross subdivisible area	5.3
Estimate percentage of 'green' space (parks + landscape interface)	12.3 hectares, 24.9% of gross subdivisible area (22.8% of site area)	5.3

Note: All information and areas are approximate only and are subject to survey and detailed design.

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APPENDIX NUMBER	DOCUMENT TITLE	NATURE OF DOCUMENT	REFERRAL/APPROVAL AGENCY	APPROVAL STATUS AND MODIFICATIONS
1	Community Engagement Report	Supporting	-	-
2	Community Engagement Register	Supporting	-	-
3	Certificates of Title	Supporting	-	-
4	Environmental Assessment Report	Supporting	-	-
5	Bushfire Management Plan	Requires Approval	DFES and City of Cockburn	Awaiting approval
6	Acoustic Assessment	Requires Approval	MRWA and City of Cockburn	Awaiting approval
7	Landscape and Public Open Space Strategy	Requires Approval	City of Cockburn	Awaiting approval
8	Prinsep Park Flora and Vegetation Assessment	Supporting	-	-
9	Transport Impact Assessment	Requires Approval	MRWA and City of Cockburn	Awaiting approval
10	Local Water Management Strategy	Requires Approval	DWER and City of Cockburn	Awaiting approval
11	Sustainability Initiatives	Supporting	-	-
12	Dept of Education Correspondence	Supporting	-	-
13	Retail Needs Assessment	Supporting	-	-
14	Local Centre Concept Plan	Supporting	-	-
15	Engineering Services Report	Supporting	-	-

PART ONE
IMPLEMENTATION

1 STRUCTURE PLAN AREA

This Structure Plan applies to Lot 3 Dean Road on Diagram 30047, Lot 6 on Diagram 91027, Lot 7 on Plan 21402, Lot 512 on Diagram 94292, Lot 139 on Plan 18946, and Lot 509 (No. 76 Dean Road) on Diagram 91028, being the land contained within the inner edge of the line denoting the Structure Plan boundary on the Structure Plan map (Refer **Plan 1** situated at the end of Part 1 of this Structure Plan report).

2 OPERATION

In accordance with Schedule 2, Part 4 of the *Planning and Development (Local Planning Schemes) Regulations 2015* (Regulations), this Structure Plan shall come into operation when it is approved by the Western Australian Planning Commission (WAPC) pursuant to Schedule 2, Part 4, Clause 22 of the Regulations.

Pursuant to clause 27(1) of Schedule 2 of the Regulations:

> *A decision-maker for an application for development approval or subdivision approval in an area covered by a structure plan that has been approved by the Commission is to have due regard to, but is not bound by, the structure plan when deciding the application.*

Pursuant to clause 28(1) of Schedule 2 of the Regulations, this Structure Plan has effect for a period of 10 years, commencing on the day the WAPC approves the plan.

3 STAGING

Staging of the Structure Plan area is anticipated to commence generally from the intersection of Hartwell Parade and Dean Road, progressively extending to the north and south from this point. The development is likely to be undertaken over 17 stages of approximately 30 to 40 lots each.

It is anticipated full build out will be complete within approximately 5 years of Structure Plan and Subdivision approval, depending on sales rates.

4 SUBDIVISION & DEVELOPMENT REQUIREMENTS

4.1 LAND USE AND ZONES

The Structure Plan Map (**Plan 1**) outlines the land use, zones and reserves applicable within the Structure Plan area. The zones and reserves designated under this Structure Plan apply to the land within it as if the zones and reserves were incorporated into the Scheme.

4.2 ENVIRONMENTAL FEATURES

The Structure Plan proposes to retain approximately 500 mature trees across the site. The retention and protection of these trees during and post construction is to be considered through detailed design and construction methodologies. The lineal parkland design incorporated in the Structure Plan allows for Water Sensitive Urban Design outcomes with swales and at-source infiltration a key feature of the drainage strategy, providing improved soil moisture levels around retained mature trees and additional planted street trees.

4.3 INTERFACE WITH ADJOINING LAND

The Structure Plan is surrounded by existing residential development with 220 residential dwellings directly abutting the land. To ensure appropriate management of this interface, a landscaped buffer is identified for the majority of the perimeter of the site. This is achieved through the provision of public open space, landscaped pedestrian access ways, and widened road reserves with landscaped streetscapes; or otherwise adjoining an existing road reserve, as depicted on Plan 1.

Where a landscaped buffer and/or widened road reserve adjoins the rear of existing residential properties, where appropriate, a 0.1 metre wide Pedestrian Access Way may be applied to the landscaped buffer and/or widened road reserve as a means of preventing vehicular access from the existing residential property to the landscaped buffer and/or widened road reserve.

There are only limited portions of the site in the south of the Structure Plan area where residential development is proposed to directly abut existing residential development. These interfaces will be managed by a Local Development Plan and in instances could include retention of trees and vegetation.

4.4 PUBLIC OPEN SPACE

Public open space should be provided generally in accordance with the Structure Plan Map (Plan 1).

In accordance with Liveable Neighbourhoods, a minimum of 10% of the gross subdivisible area shall be provided as public open space, comprising a minimum of 8% unrestricted open space.

4.5 RESIDENTIAL DENSITY TARGETS

The residential density codes applicable to the Structure Plan shall be in accordance with those shown on the Structure Plan Map (**Plan 1**). The Structure Plan prescribes a base code of R20, with areas of R30 dispersed throughout in strategic locations.

The Structure Plan area shall provide for an average minimum of 15-20 dwellings per residential site hectare and 10 dwellings per gross urban hectare, generally consistent with surrounding residential densities.

5 LOCAL DEVELOPMENT PLANS

Local Development Plans (LDP) may be prepared and implemented pursuant to Part 6 of Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015* ('Planning Regulations') for lots comprising one or more of the following site attributes:

- Lots with an area less than 260m^2;
- Lots with an irregular configuration;
- Lots where specific vehicle access and egress control is required;
- Lots abutting public open space, a pedestrian access way or an area of landscape interface;
- Lots zoned 'Local Centre';

- Lots with particular site constraints (e.g. steeply sloping land);
- Lots directly abutting existing residential development;
- Lots that require quiet house design for noise attenuation through deemed-to-comply noise attenuation packages, and/or lots requiring specialist acoustic requirements, as identified in an approved Noise Management Plan; and/or
- Any lots requiring variations to the Residential Design Codes to achieve specific built form and streetscape outcomes.

6 OTHER REQUIREMENTS

6.1 BUSHFIRE CONSTRUCTION STANDARDS

This Structure Plan is supported by a Bushfire Management Plan. Regardless of whether the land has been formally designated as bushfire prone, any buildings on land identified as falling within 100 metres of a bushfire hazard shall comply with the requirements of *Australian Standard 3959* under the *Building Code of Australia*.

6.2 DEVELOPER CONTRIBUTION ARRANGEMENTS

The Structure Plan area is located within Development Contribution Areas 13 and 15 ('DCA 13' and 'DCA 15'), as identified in Table 10 of the *City of Cockburn Town Planning Scheme No. 3* ('TPS 3'). Under TPS 3, a Development Contribution Plan applies to the Structure Plan area and should be read in conjunction with this Structure Plan.

The landowner/developer is to contribute towards key service and community infrastructure within the latest Development Contribution Plan for DCA's 13 and 15. A cost contribution payment based on the area being developed will be required in accordance with the relevant contribution rate in the DCP in DCA's 13 and 15 at the time that development is implemented.

7 ADDITIONAL INFORMATION

ADDITIONAL INFORMATION	APPROVAL STAGE	CONSULTATION REQUIRED
Bushfire Attack Level Contour Plan	Subdivision Application	Department of Fire and Emergency Services; and City of Cockburn
Bushfire Attack Level Certification	Building Licence	City of Cockburn
Acoustic Assessment	Subdivision Application	City of Cockburn

PLAN 1 - STRUCTURE PLAN MAP

GLEN IRIS ESTATE

PART TWO
EXPLANATORY SECTION

1 INTRODUCTION AND PURPOSE

The purpose of this Structure Plan is to facilitate the development of the vacant land comprising Lot 3 Dean Road on Diagram 30047, Lot 6 on Diagram 91027, Lot 7 on Plan 21402, Lot 512 on Diagram 94292, Lot 139 on Plan 18946, and Lot 509 (No. 76 Dean Road) on Diagram 91028 (the 'subject site') for residential purposes.

A Scheme Amendment request has been lodged concurrently with this Structure Plan to appropriately zone the site for 'Development' under the provisions of the City of Cockburn Town Planning Scheme No. 3 ('TPS 3'). The Scheme Amendment will facilitate the inclusion of all of the land within the same zoning and will facilitate the development of the land in the manner proposed by this Structure Plan.

This Structure Plan will provide a general planning framework to guide the future subdivision and development of the land in an integrated and cohesive manner.

Refer **Plan 1** – Proposed Local Structure Plan.

1.1 PROJECT TEAM

The following multi-disciplinary project team has been engaged by the proponent to progress the preparation of the Structure Plan:

DISCIPLINE	CONSULTANT
Acoustic	Herring Storer Acoustics
Bush Fire	Ecological Australia
Civil Engineering	JDSI Consulting Engineers
Community Engagement	Louise Richardson & Associates
Environmental	Emerge Associates
Hydrological	Hyd2o
Landscape	Emerge Associates
Retail	Taktics4
Survey	MNG
Town Planning and Design	Rowe Group
Traffic	GTA Consultants (Stantec)
Sustainability	Active Sustainability

Table 1: Project Team

Rowe Group is the primary point of contact for all matters relating to this Structure Plan submission.

1.2 PRE-LODGEMENT CONSULTATION

Prior to lodging this Structure Plan, the proponent undertook a programme of consultation, which included meetings and discussions with Technical Officers from the City of Cockburn, and a series of information sessions and workshops with members of the local community. It should be noted that this consultation was undertaken by the proponent at the proponents initiative to assist in informing the preparation of this Structure Plan and does not replace or avoid the need for formal consultation to be undertaken by the City of Cockburn pursuant to the requirements of the Planning and Development (Local Planning Schemes) Regulations 2015.

The subject site was historically used as a private golf course, overlooked by existing residential lots, comprising the Glen Iris Golf Course Estate. Whilst the golf course is no longer operational, the development of the land for residential purposes is considered a significant change for the local residents, and as such, the landowner/developer were committed to a proactive community engagement program, that commenced in April 2020.

The community engagement program was undertaken using the IAP2 Framework, facilitated by Louise Richardson & Associates (LRA). LRA worked with a specialist communication advisor and the Project Team to deploy a range of community engagement tools. These were designed to ensure optimum accessibility and two-way communication.

To date, the community engagement program has comprised the following:

- **Dedicated project information telephone line and email address,** directly linked to LRA. Between March 2020 and April 2021, the project team received a total of 290 enquiries from 220 individuals. All contact was logged in a comprehensive engagement register, analysed weekly to determine key topics of community discussion and concern, as well as informing project team responses.
- **Website.** www.HaveYourSayGlenIrisEstate.com.au was set up as a central source of project information and communication. Community members were encouraged to subscribe to the website to receive updates as the project progresses. These updates included information and feedback on the engagement process milestones, as well as notification of on-site activity (such as ATCO gas works).
- **Letters and Project Newsletter.** Hard copy letters were hand delivered to residents' mailboxes, ensuring maximum accessibility. The following letters were delivered:
  - 9 March 2020 – Community Notice announcing closure of Glen Iris Golf Course by the previous landowners.
  - 6 April 2020 – Letter announcing land purchase settlement.
  - 27 April 2020 – Letter announcing residents' survey.
  - August 2020 – Newsletter delivered to all households in Glen Iris.
  - December 2020 – Newsletter delivered to all households in Glen Iris.
  - 28 April 2021 – Letter announcing release of the draft concept plan.

- **Resident Survey (May - June 2020).** Market Research company, Metrix Consulting, was commissioned to develop and implement a detailed survey of existing Glen Iris residents. The survey was hand delivered to 750 homes within Glen Iris, and could also be completed online a www.HaveYourSayGlenIrisEstate.com.au.

- **Advertising.** To facilitate maximum awareness of pivotal engagement opportunities and milestones, paid advertisements were placed in the Cockburn Gazette and the Fremantle Gazette. Advertisements were placed on 3 September 2020, and 29 April 2021.

- **Briefing notes and stakeholder updates** were prepared for the City of Cockburn, the Department of Planning, Lands and Heritage, the Minister for Planning and Transport, the Member for Jandakot, and State Parliamentary MLC's for the South Metropolitan Region. These were designed to ensure key government stakeholders remained up to date on all aspects of the project planning and community engagement, and to assist with responding to queries received from members of the public.

- **Project Information Sheets** were created to provide comprehensive responses to frequently asked questions and requests for further details about topics of significant interest. These were provided to the City of Cockburn to assist its Technical Officers in responding to correspondence and questions from Residents and Ratepayers. They were also made publicly available through the www.HaveYourSayGlenIrisEstate.com.au website.

- **Frequently Asked Questions.** Monitoring and analysis of the Engagement Register and queries submitted to the City of Cockburn enabled the Project Team to generate a list of Frequently Asked Questions (FAQs) and responses. The FAQs were made available on www.HaveYourSayGlenIrisEstate.com.au and updated regularly in response to community requirements.

- **Precinct Reference Group.** In August 2020, the Project Team invited residents to nominate for inclusion in Precinct Reference Groups (PRG) with the aim of further engaging the Glen Iris community members in discussion about the future development of the site. Three PRGs covering the North, Central and Southern areas of the site were proposed to allow the Project Team to identify and resolve both big picture issues and location-specific concerns. The PRG initially comprised 26 residents, increasing to 32 residents as the process progressed. Given the lower than expected nominations for the PRG's, the three precincts were considered concurrently in the PRG workshops.

- **Visioning Workshops.** The PRG met four times in September, October and November 2020, and May 2021, with workshops independently facilitated by Metrix Consulting. The Project Team (planning, traffic, engineering, landscaping, and environmental) attended the sessions to participate in the discussions. The workshops were critical to ensuring the Project Team understood the key concerns of the Glen Iris community and to discuss their thoughts on the most suitable ways to address those concerns as part of any future development outcomes. The focus of the workshops were as follows:

  - **Workshop 1 (September 2020)** – identified five key issues for the community, being traffic and access, future housing, open space and environment, interface with existing residential lots, local amenities.

  - **Workshop 2 (October 2020)** – provided the opportunity for the PRG to further define the key issues and explore potential solutions from the community's perspective.

  - **Workshop 3 (November 2020)** – participants were given the opportunity to start to draw aspects of the concept development plan with the Project Team.

  - **Information Session (May 2021)** – presentation of the draft concept plan by the project team, with opportunities for questions from the PRG.

Whilst the upfront community engagement program is now complete, residents will remain informed and updated on the project through www.HaveYourSayGlenIrisEstate.com.au, and as otherwise required by the planning process.

A pre-lodgement briefing session was held with the City of Cockburn (May 2021) to present the final draft concept plan and discuss various matters relating to the delivery of the Structure Plan, such as public open space, traffic management and drainage.

Continued engagement with the City of Cockburn and relevant agencies and key stakeholders will be undertaken through the structure planning process.

Refer **Appendix 1** – Community Engagement Report.

Refer **Appendix 2** – Community Engagement Register.

2 LAND DESCRIPTION

2.1 LOCATION

The subject site is located within the municipality of the City of Cockburn, within the suburb of Jandakot. The site is situated approximately 16 kilometres south of the Perth Central Area and is accessible via the Kwinana Freeway (via Berrigan Drive). The Cockburn Central passenger railway station and Cockburn Gateway Shopping Centre are located approximately 1.5 kilometres south west of the subject site.

The site is elongated in shape, extending approximately 2.2 kilometres from Glen Iris Drive in the north to Imlah Court in the south. West to east, the site extends from Glen Iris Drive, Hartwell Parade and The Lakes Boulevard to Dean Road and Prinsep Road. A large proportion of the site boundary abuts the rear of existing residential dwellings.

Berrigan Drive extends east to west through the southern part of the site, effectively dividing the site into a northern and a southern cell.

The site's elongated configuration and location abutting residential dwellings is characteristic of its former use as a golf course.

Refer to **Figure 1** – Regional Location and **Figure 2** – Local Location.

2.2 AREA AND LAND USE

The subject site comprises a total area of approximately 53.74 hectares.

The site was previously utilised as a private golf course (including restaurant and clubhouse), comprising the Glen Iris Golf Course. The golf course officially ceased operation in March 2020, and the land currently remains generally vacant and unused. It is intended for the land to be redeveloped for residential purposes.

Characteristic of its most recent use, the site contains large open grassed areas, with existing vegetation predominantly limited to the periphery. The majority of existing vegetation on site comprises planted trees and shrubs, with native vegetation comprising only approximately 4% of the site, occurring as scattered patches. Two pockets of Banksia scrubland are proposed to be retained on site in public open space, one in the north and one in the south of the site.

The subject site is surrounded by low to medium density housing and associated land uses. A small commercial precinct comprising shops, restaurants and medical uses is located to the immediate east of the site along Berrigan Drive. The land further east of the site is predominantly used for semi-rural purposes, and the land to the south comprises mixed business and industrial land uses.

Refer **Figure 3** – Site Plan.

2.3 LEGAL DESCRIPTION AND OWNERSHIP

The Structure Plan area comprises six (6) lots, legally described as follows:

LOT NO.	DEPOSITED PLAN / DIAGRAM	VOLUME / FOLIO	APPROX. AREA	PROPRIETOR/S
3	D 30047	2190 / 500	0.40 ha	ECP Acquisitions 7 Pty Ltd
6	D 91027	2765 / 992	10.81 ha	ECP Acquisitions 9 Pty Ltd
7	P 21402	2195 / 189	17.58 ha	ECP Acquisitions 7 Pty Ltd
512	D 94292	2183 / 872	2.79 ha	ECP Acquisitions 7 Pty Ltd
139	P 18946	1947 / 547	20.81 ha	ECP Acquisitions 8 Pty Ltd
509 (No. 76 Dean Road)	D 91028	2183 / 871	1.35 ha	ECP Acquisitions 7 Pty Ltd

Table 2: Lot Details

The site has a total area of approximately 53.74 hectares.

Refer **Appendix 3** - Certificates of Title.

A review of the Certificates of Title reveal the following encumbrances relate to the subject site:

LOT NO.	ENCUMBRANCE TYPE	DOCUMENT NO.	BENEFICIARY	PURPOSE
6	Easement	G289136	City of Cockburn	Drainage
7	Easement	G004044	City of Cockburn	Drainage
7	Easement	G289135	City of Cockburn	Drainage
7	Easement	G394840	City of Cockburn	Drainage
7	Easement	G523659	City of Cockburn	Drainage
7	Easement	G523660	City of Cockburn	Drainage
7	Easement	N/A	Water Authority of WA	Water and Sewerage
7	Easement	N/A	Gas Corporation	Gas Supply
7	Easement	N/A	Public	Right of Footway (PAW)
512 and 509	Easement	N/A	Lot 509	Right of Carriageway
139	Easement	B368209	State Energy Commission	Right of access for the purposes of erecting and maintaining towers, poles, wires and other necessary apparatus
139	Easement	G004043	City of Cockburn	Drainage
139	Easement	I296686	City of Cockburn	Drainage and Access
509	Easement	N/A	Water Corporation	Sewerage

Table 3: Encumbrances

2.4 SITE HISTORY

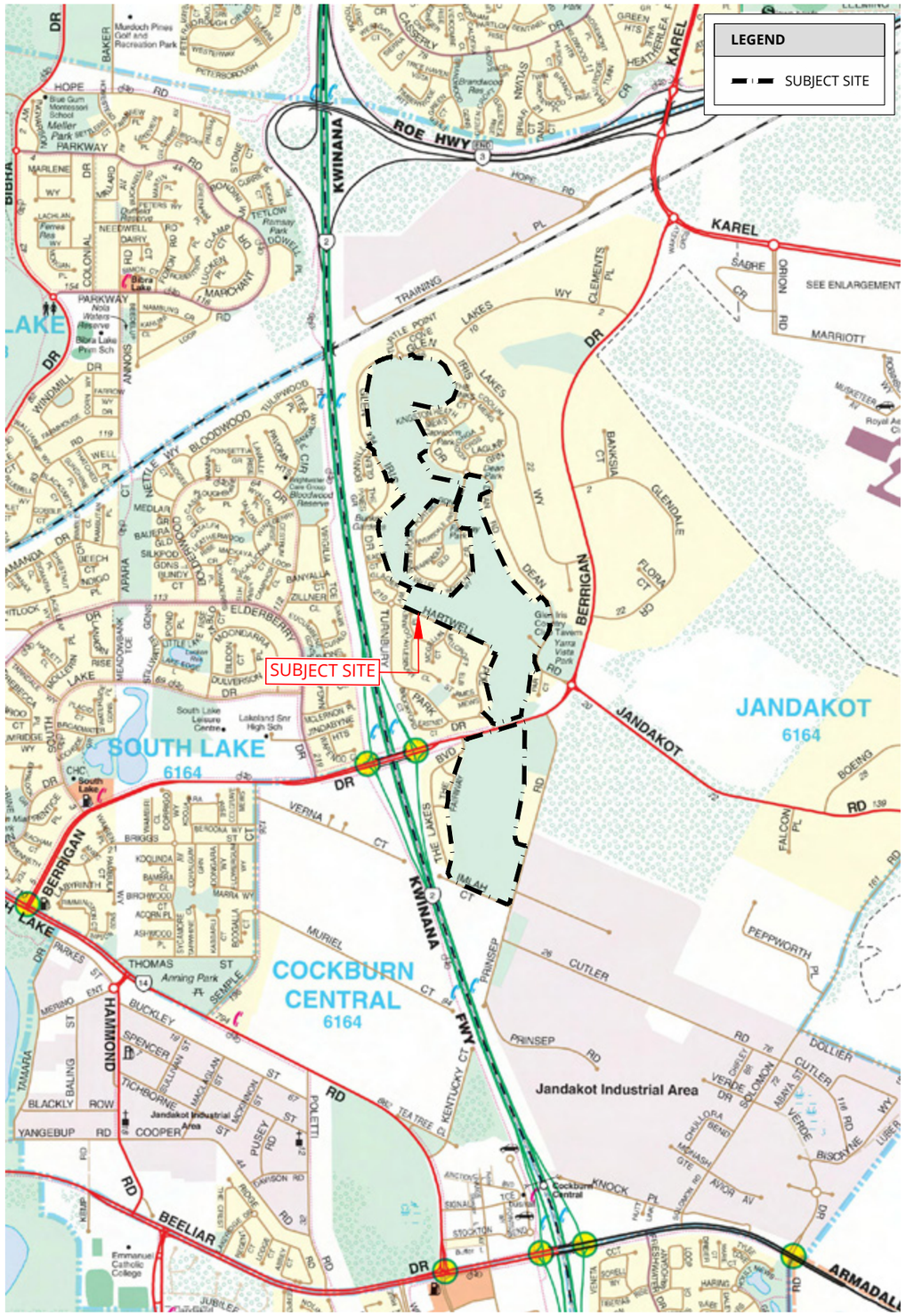
The subject site has had a varied history of zonings and amendments, with the most recent use of the site being a golf course estate. The golf course was officially closed by the previous owners in March 2020, prior to the current proponents/landowners acquiring the site.

The central portion of the subject site was developed as a golf course in the early 1960s. The northern and southern extensions of the golf course were later cleared and developed during different periods in the early 1990s, alongside the residential development of the area between the golf course and the Kwinana Freeway, comprising the Glen Iris Golf Course Estate.

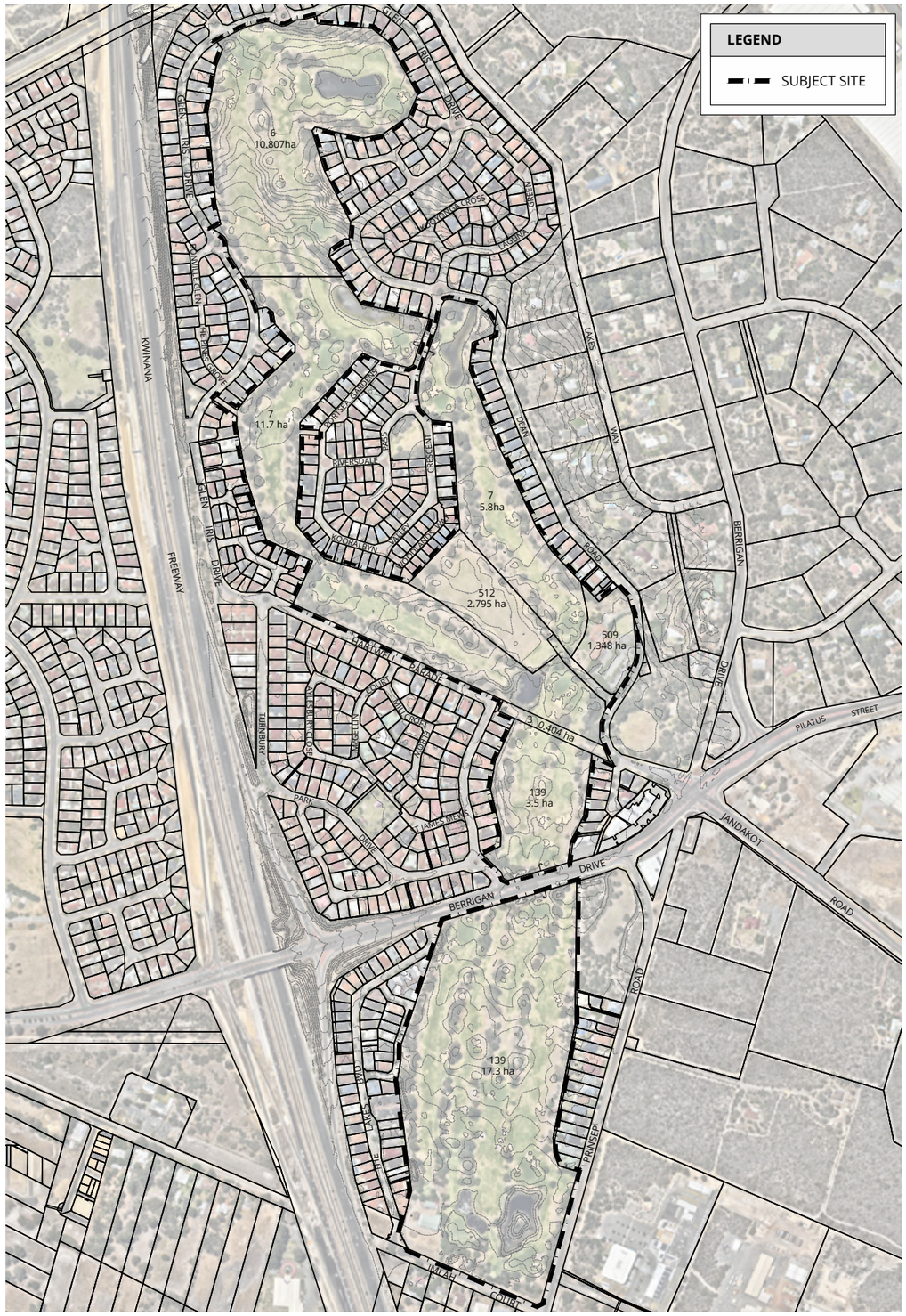
Various scheme amendments were progressed in the 1990s to rationalise existing commercial, hotel, private recreation and light industrial zonings within the site and its surrounds, to facilitate the development of the golf course, restaurant/clubhouse and associated residential estate. Rezoning proposals were also progressed during this period to increase residential densities in some areas from R12.5/15 to R20, R30 and R40.

Since closure of the golf course, the site has remained generally vacant and unused.

1. REGIONAL LOCATION



2. LOCAL LOCATION



3. SITE PLAN

3 PLANNING FRAMEWORK

3.1 ZONING AND RESERVATIONS

3.1.1 METROPOLITAN REGION SCHEME

The subject site and surrounds are zoned 'Urban' under the provisions of the Metropolitan Region Scheme ('MRS').

Refer **Figure 4** – Metropolitan Region Scheme Zoning.

3.1.2 CITY OF COCKBURN LOCAL PLANNING SCHEME NO. 3

3.1.2.1. EXISTING ZONING

The portion of the subject site comprising Lot 512 (2.7945 hectares) is zoned 'Residential' under the provisions of the City of Cockburn Town Planning Scheme No. 3 ('TPS3') and is assigned a residential density coding of R40 on the Scheme Maps. The balance of the site is zoned 'Special Use'.

The purpose of the Residential zone is as follows:

i) To provide for a range of housing and a choice of residential densities to meet the needs of the community.

ii) To facilitate and encourage high quality design, built form and streetscapes throughout residential areas.

iii) To provide for a range of non-residential uses, which are compatible with and complementary to residential development.

The purpose of the Special Use zone is as follows:

To provide for uses which have unique development requirements that cannot be easily accommodated by the objectives of any of the other zones included in the Scheme.

Lots 3, 6, 7 and 139 are located within Special Use Zone 1 ('SU1') under TPS 3, and Lot 509 is located within Special Use Zone 6 ('SU6').

The provisions applying to each Special Use zone are set out below:

NO.	DESCRIPTION OF LAND	SPECIAL USE	CONDITIONS
SU1 (49.59ha)	Berrigan Drive, Jandakot, the Glen Iris Golf Course Estate	Golf Course Estate, Private Recreation, Hotel, Convention Centre and associated uses - means land used and designed for a golf course, integrated with residential development and associated commercial and community facilities.	Structure Plan adopted to guide Subdivision, land use and Development - Glen Iris Golf Course Estate.
SU6 (1.3477ha)	Dean Road, Jandakot, the Glen Iris Golf Course Estate Commercial Area	Private Recreation, Hotel, Convention Centre and Associated Uses.	Structure Plan adopted to guide Subdivision, land use and Development - Glen Iris Golf Course Estate.

Table 4: TPS 3 Special Use Zones

The subject site is also included within Development Contribution Areas 13 (DCA 13) and 15 (DCA 15) under TPS 3.

Refer **Figure 5** – Existing City of Cockburn Town Planning Scheme No. 3 Zoning.

3.1.2.2. PROPOSED ZONING

A request to amend TPS 3 to rezone the site to 'Development' has been lodged concurrently with this Structure Plan. The rezoning of the land to 'Development' under TPS 3 will facilitate the integrated and cohesive development of the site for residential purposes.

The objective of the Development zone is –

To provide for future residential, industrial or commercial development to be guided by a comprehensive Structure Plan prepared under the Scheme.

This Structure Plan has therefore been prepared in accordance with the objectives of the Development zone.

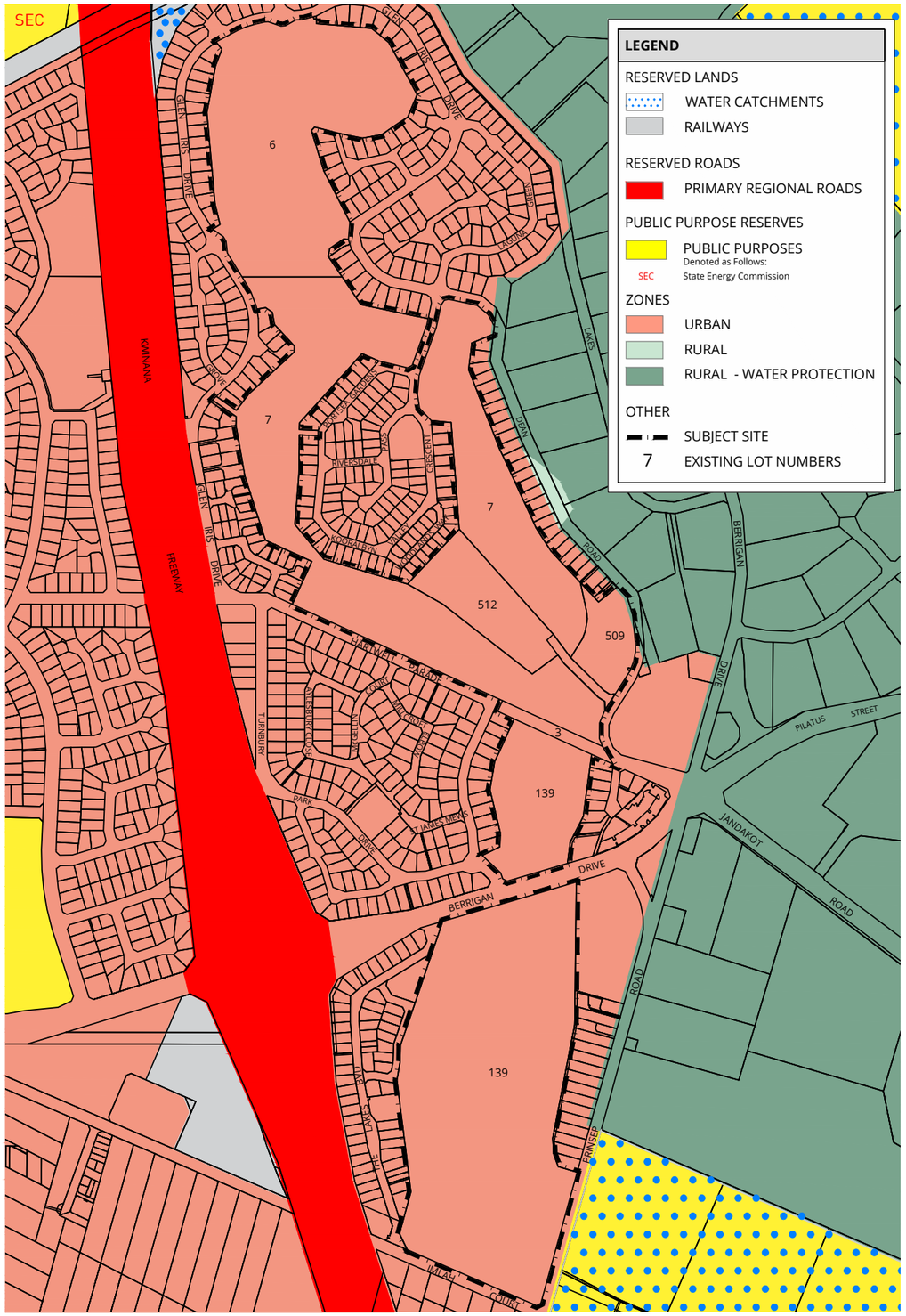
Refer **Figure 6** – Proposed City of Cockburn Town Planning Scheme No. 3 Zoning.

3.1.3 'THE LAKES' STRUCTURE PLAN (1990)

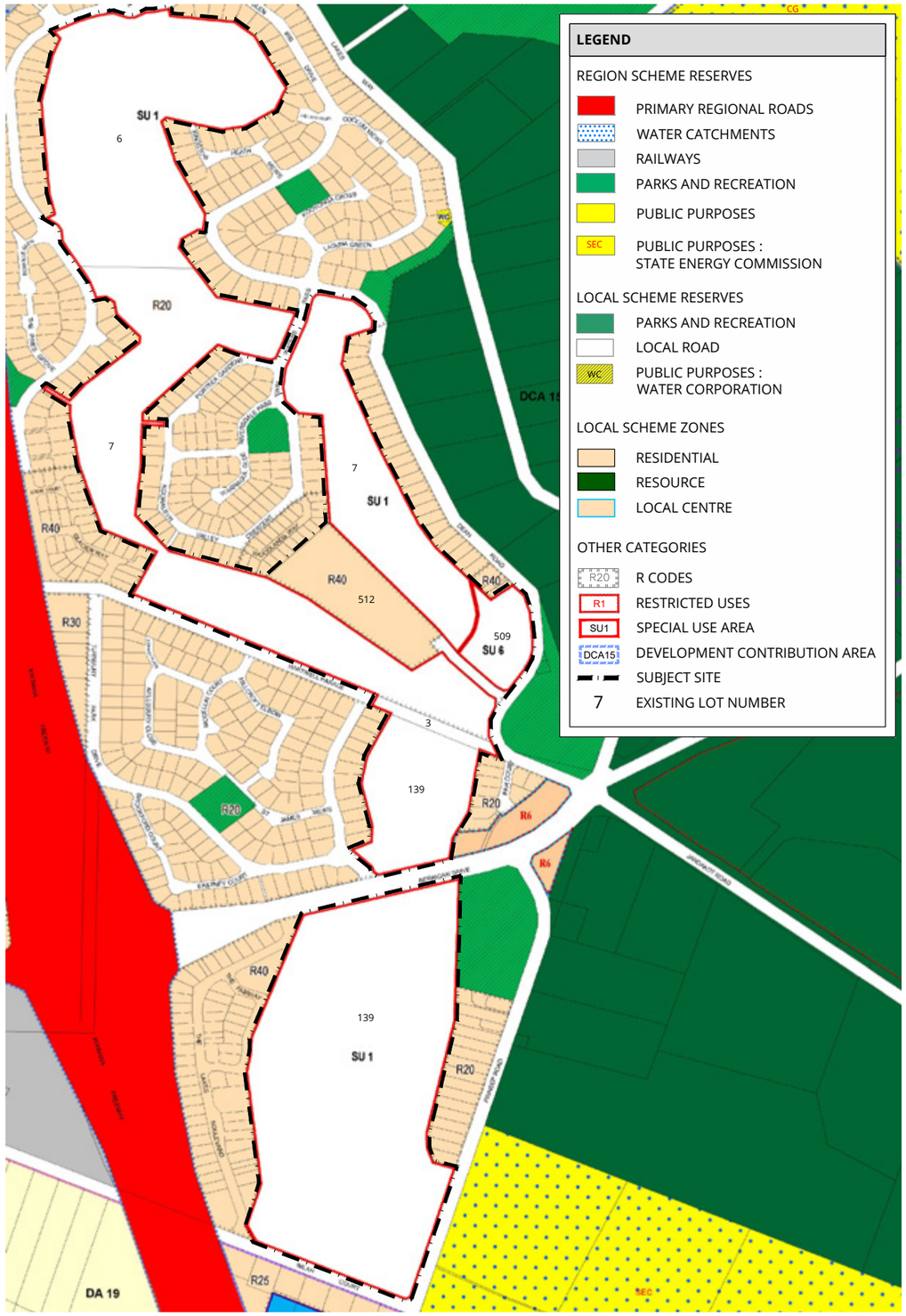
In July 1990, part of the subject site was rezoned via Amendment No. 56 to the (then) City of Cockburn District Zoning Scheme No. 2. 'The Lakes' Concept Plan was prepared in support of that amendment and was adopted in 1990 as a Structure Plan to guide development.

'The Lakes' Concept Plan made provision for a golf course and associated residential estate, special residential lots, and commercial, office, retirement village, showroom and warehouse uses.

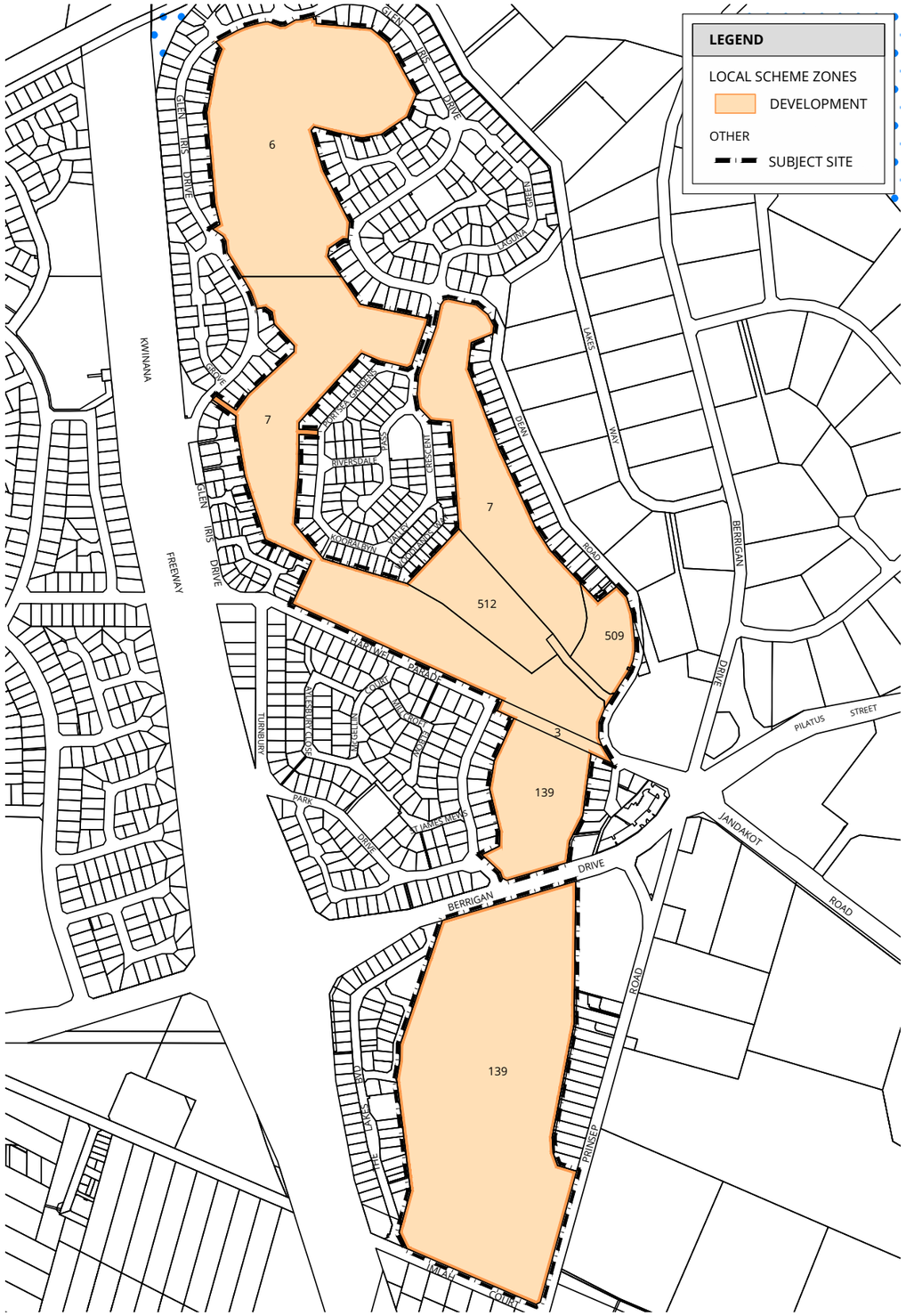
This Structure Plan proposal will supersede the 1990 Structure Plan.



4. METROPOLITAN REGION SCHEME ZONING



5. EXISTING CITY OF COCKBURN TOWN PLANNING SCHEME NO. 3 ZONING



6. PROPOSED CITY OF COCKBURN TOWN PLANNING SCHEME NO. 3 ZONING

3.2 REGIONAL PLANNING STRATEGIES

3.2.1 PERTH AND PEEL @ 3.5 MILLION AND SOUTH METROPOLITAN PEEL SUB-REGIONAL PLANNING FRAMEWORK

Perth and Peel @ 3.5 Million seeks to meet the dwelling targets identified under *Directions 2031 and Beyond* ('Directions 2031') and the *State Planning Strategy 2050*. The infill dwelling target for the City of Cockburn is 14,680 new dwellings by 2050.

The suite of documents associated with *Perth and Peel @ 3.5 million* includes four Sub-Regional Planning Frameworks for the Central, North-West, North-East and South Metropolitan Peel sub-regions. The four Sub-Regional Planning Frameworks detail where future homes and employment should be located, and where important environmental assets should be avoided and protected.

The subject site is located within the *South Metropolitan Peel Sub-Regional Planning Framework* (the 'Framework'). The Framework represents a whole of State Government approach to managing the future urban form within the sub-region, and identifies sufficient land to meet the increased demand for residential dwellings. Within the Framework, the City is expected to require an additional 30,120 dwellings by 2050, of which 14,680 dwellings are expected to be delivered through infill.

Both *Perth and Peel @ 3.5 Million* and the *South Metropolitan Peel Sub-Regional Framework* identify the subject site as 'Urban', consistent with the site's zoning under the MRS.

3.2.2 JANDAKOT AIRPORT MASTER PLAN (2014) AND DRAFT (2021)

The Jandakot Airport Master Plan ('Airport Master Plan') was endorsed in 2014 to guide the development of Jandakot Airport over a 20-year period. It sets out the strategic direction for the efficient and economic development of the Airport and considers a range of issues relating to both aviation and non-aviation matters.

A draft Master Plan was prepared in 2020, and is currently being advertised for public comment. Once finalised and endorsed, the draft Master Plan will replace the current 2014 Plan.

The subject site is not located within the boundaries of Jandakot Airport but is indirectly affected through off-site impacts associated with aircraft noise. The Airport Master Plan uses the Australian Noise Exposure Forecast ('ANEF') system to illustrate noise contours in and around the Airport, plotted at 20, 25, 30, 35 and 40 ANEF units. Part of the subject site is located within the 20 to 25 ANEF contour zone. The zoning, development and subdivision considerations relevant to land within this contour zone are addressed under the WAPC's *State Planning Policy No. 5.3 – Jandakot Airport* and are discussed in Section 3.4.6 of this report.

3.3 LOCAL PLANNING STRATEGIES

3.3.1 CITY OF COCKBURN LOCAL PLANNING STRATEGY (1999)

The City of Cockburn Local Planning Strategy ('Planning Strategy') sets out the long term planning direction for the City, covering a 10-15 year timeframe. It contains an 'Ultimate Strategic District Plan,' which provides a guide as to the ultimate land use pattern for the district, and a context for planning and development under both the MRS and TPS 3. The subject site is identified as 'Urban' on the Ultimate Strategic District Plan, consistent with its zoning under the MRS. The proposed Structure Plan is consistent with the site's designation under the Ultimate Strategic District Plan.

The Planning Strategy does not specifically consider the subject site in isolation but rather deals more broadly with a range of district-wide issues relating to matters such as housing, employment, shopping and transport.

In relation to housing, the Planning Strategy notes the opportunity for infill development within the City is limited due to the small size of existing lots and observes, as a consequence, these areas are likely to be redeveloped on a lot-by-lot basis. The Planning Strategy observes this has a subsequent effect on the timeframe for delivery of infill development.

Unlike these 'typical' infill opportunity sites, the subject site is held under a single ownership and comprises a significant land area (in terms of traditional infill sites). It is also largely cleared and generally unconstrained from an environmental perspective. As such, the subject site is not constrained by existing built form, small lot sizes, and fragmented land ownership. In this regard, the subject site provides a unique opportunity for infill development.

3.3.2 CITY OF COCKBURN DRAFT LOCAL PLANNING STRATEGY (2020)

The City has prepared a draft Local Planning Strategy ('draft Planning Strategy') to replace the current Planning Strategy and inform the preparation of a new Local Planning Scheme. The draft Planning Strategy was endorsed by Council at its meeting on 8 October 2020, and is currently with the WAPC awaiting consent to advertise.

The draft Planning Strategy sets out a vision for the City *"to create a sustainable, healthy, connected and prosperous Cockburn community"*. In achieving this vision, the draft Strategy follows five key themes of Environment, Urban Growth and Housing, Economy and Employment, Infrastructure, and Governance. Strategies and actions are provided for each theme.

The proposed Structure Plan has been considered in relation to the Strategies and Actions contained in the draft Planning Strategy. Having regard to the five key themes of the draft Planning Strategy, the proposed Structure Plan satisfies the following key strategies and actions:

- Focus development intensity in areas that are well-connected to infrastructure to best meet the needs of Cockburn's community, whilst protecting and enhancing the City's natural setting and environmental values, including ecological corridors (Urban Growth and Housing);
- Promote employment self-sufficiency for Cockburn's residents, and encourage new development and employment opportunities within proximity to centres and in areas accessible to where people live (Economy and Employment);
- Create a high quality and liveable urban environment that supports a thriving City that attracts more people to live, work and invest (Economy and Employment);
- Support and promote a transition to sustainable transport mode choices, and improve the efficiency of the City's movement network through integrated transport planning (Infrastructure);
- Prioritise co-location of services, facilities, housing and jobs to reduce trip distances, travel times and reliance on private motor vehicles (Economy and Employment);
- An evidence-based approach to land use planning and decision-making that responds to the local planning framework and considers community benefit (Governance); and
- Appropriate flexibility in the planning framework to respond to changes over time while ensuring the intent of this Strategy and the community's needs are considered (Governance).

The draft Planning Strategy identifies the site as 'Residential - Garden Character Area'. This designation is provided across most of the existing residential areas within the City and recognises the form of development in the existing portions of Glen Iris. The 'Residential - Garden Character Area' is characterised by elements such as open front setbacks; dwellings set amongst landscaping and open space; and dwellings with a form, scale, bulk, style and roof line that generally does not detract from the open, landscape character.

The proposed Structure Plan is consistent with the site's designation under the draft Planning Strategy as it proposes (via a Structure Plan) a form of development that is consistent with the key elements of the Garden Character Area.

In relation to urban infill, the draft Planning Strategy notes urban infill in the form of development of larger sites presents greater opportunities to integrate with the surrounding area; manage appropriate interfaces (streetscape and adjoining properties); rationalise access points and crossovers; and design for increases in traffic and parking that may be generated. Larger infill sites can also provide for a more coordinated outcome, as they allow for greater design flexibility.

The subject site presents a unique opportunity for infill development as it is a large, unused and predominantly cleared area, that is not constrained in the 'typical' manner by existing developed lots and fragmented land ownership (noting the site is held under a single ownership). In this regard, the proposed Structure Plan achieves a quality urban infill outcome consistent with the strategies and actions contained within the draft Planning Strategy.

3.3.3 CITY OF COCKBURN LOCAL COMMERCIAL AND ACTIVITY CENTRES STRATEGY (2012)

An existing commercial area is located on Berrigan Drive, immediately east of the subject site, and provides a variety of retail/shop, restaurant and medical land uses. The commercial area is identified in the City of Cockburn's *Local Commercial and Activities Centres Strategy* ('Commercial Strategy') as a 'Local Centre' with a retail-shop floorspace of approximately 2,146 m^2. Local Centres are defined in the Commercial Strategy as those that *"provide for daily and some weekly household shopping needs, and a very small range of other convenience services"*.

Opportunities for expansion of the Local Centre have been considered as part of the structure planning process and a Retail Needs Assessment has been undertaken by Taktics4. The Retail Needs Assessment indicates a small supermarket-based centre presents the most suitable opportunity for the site, having regard to the number of additional dwellings proposed through the redevelopment and the impacts on existing supermarket-based centres in the surrounding area.

The Structure Plan therefore proposes a Local Centre within the site on Lot 139, with frontage to Berrigan Drive. The location of the Local Centre provides an opportunity to integrate with the existing commercial area also located on Berrigan Drive. The Local Centre is proposed to be approximately 7,000m^2 (site area), with a retail floorspace allocation of approximately 2,500m^2. The Centre would likely comprise a supermarket of 1,500m^2 retail floorspace, and 5 -10 shops, food and beverage tenancies with a combined floorspace of approximately 1,000m^2.

The inclusion of the Local Centre land use is considered to be complimentary to the existing shops and uses on Berrigan Drive.

The expansion of the existing Local Centre is consistent with the Commercial Strategy principles which include:

- supporting the maturation of centres (Principle 3);
- optimising access to and within centres (Principle 5); and
- matching use with purpose (Principle 6).

The identification of a Local Centre within the proposed Structure Plan also respects the hierarchy of activity centres within the City, and is based on robust evidence and considered assessment, in line with the Commercial Strategy principles.

The findings and recommendations of the Retail Needs Assessment are discussed further in Section 5.8 of this report and copy of the Assessment is included in **Appendix 13**.

3.3.4 AGE FRIENDLY STRATEGY (2016)

The City of Cockburn's 'Age Friendly Strategy' was adopted in 2016 and identified many older residents within the City had spent most of their lives in the area and wished to continue to live in Cockburn.

The Age Friendly Strategy identifies Jandakot as a suburb with a high concentration of people over the age of 55 years (30% of the population), which is expected to rise by 2025 (to 38% of the population). The Age Friendly Strategy notes the provision of improved services and accommodation for older people in this area will become critically important and observes the provision of appropriate housing options is a key necessity.

The proposed Structure Plan will facilitate the development of additional undeveloped land suitable for residential purposes, that is of sufficient size to ensure it is developed in a comprehensively planned and coordinated manner. This will ensure the site provides for a diversity of housing needs and takes advantage of its proximity to the existing public transport network and established community facilities and services. The future development of the site provides opportunities for the provision of housing that is more appropriately suited to the occupiers needs. In this regard, the proposed Structure Plan is consistent with the recommendations and strategies contained within the Age Friendly Strategy, including ageing-in-place housing.

3.3.5 HOUSING AFFORDABILITY AND DIVERSITY STRATEGY (2018)

The City of Cockburn adopted its Housing Affordability and Diversity Strategy ('Housing Strategy') in 2018. The Housing Strategy builds upon the findings and recommendations contained within an earlier Strategy adopted in 2014. The key objectives of the Housing Strategy are:

- To provide households with access to housing appropriate to their needs in terms of size, physical attributes and location;
- To provide housing that is affordable to households of varying financial capacity;
- To provide a variety of housing types in locations with good accessibility to public transport, and essential services; and
- To promote affordable living, taking into consideration the total cost of living in a dwelling, including energy and water consumption, the price of transport to access employment and essential services, and other daily needs impacted by location.

The proposed Structure Plan responds to the objectives of the Housing Strategy by:

- Providing greater choice through lot and dwelling diversity, thereby increasing the number of affordable entry points into the housing market;
- Designating areas of medium density (R30) in strategic locations, to accommodate smaller houses with lower living/running costs and provide opportunities for existing residents to downsize, whilst remaining in the local area (ie. facilitating ageing-in-place);
- Providing additional housing in an area that is accessible to the existing public transport network (eg. Perth – Mandurah Railway Line and future METRONET Thornlie link), thereby reducing travel costs;
- Providing additional housing in proximity to existing employment areas, essential facilities, services and social activities (eg. Jandakot Airport, Cockburn Central District Centre);
- Developing unused land that is not significantly constrained by noise or bushfire risks and which may otherwise necessitate more expensive construction costs;
- Improving access to essential services through the expansion of the existing Local Centre on Berrigan Drive.
- Maximising north-south/ east-west lot orientation to reduce heating and cooling costs; and
- Promoting tree retention through design considerations such as road layout and public open space configuration, reducing the 'heat island' effect and subsequently reducing heating and cooling costs.

In this regard, the proposed Structure Plan is consistent with the objectives and recommended actions contained in the Housing Strategy.

3.3.6 URBAN FOREST PLAN (2018)

The City of Cockburn's Urban Forest Plan sets out a vision for the future management and expansion of the City's urban forest and directs the management of streetscapes and public open space to improve liveability and wellbeing.

The proposed Structure Plan satisfies the objectives and provisions of the Urban Forest Plan by:

- Providing approximately 18.75% of the gross subdivisible area as credited public open space (with a total 24.9% of green space, including the non-credited landscaped interfaces and the Western Power easement), well in excess of the minimum 10% requirement under Liveable Neighbourhoods;
- Designing areas of public open space around the retention of trees – that is, locating areas of public open space to maximise the retention of existing trees;

- Retaining over 500 existing mature trees and planting over 1000 additional new trees;
- Undertaking a targeted tree survey as part of the Environmental Assessment Report to identify the location, species and quality of existing vegetation on site, informing design outcomes;
- Widened road reserve widths to accommodate street trees and other vegetation through the provision of a landscaped interface to existing residential development;
- Developing an unused parcel of land that has previously been cleared to facilitate its former use as a golf course, thereby reducing the need for additional clearing; and
- Satisfying the provisions of the City's *Local Planning Policy No. 5.1 'Subdivision and Development – Street Trees'* by providing street trees at a rate of one tree per lot.

The structure planning process will respond to the objectives and provisions of the Urban Forest Plan and in doing so, ensure development is undertaken in a coordinated and considered manner.

3.3.7 STRATEGIC COMMUNITY PLAN (2020)

The City of Cockburn Strategic Community Plan ('Community Plan') was adopted in 2020 and sets out the City's vision and outlines how the vision will be achieved. The Community Plan has five (5) broad strategic themes covering the Local Economy; Environmental Responsibility; Community, Lifestyle and Security; City Growth and Moving Around; and Listening and Leading. For each theme, the Community Plan identifies a list of *Priorities* and *Focus Areas*, based on feedback provided through consultation with the community.

The proposed Structure Plan has been considered in relation to the Community Plan and satisfies the following Priorities and Focus Areas:

- **Economic, Social and Environmental Responsibility**
  - Improved sustainability by utilising an unused parcel of land and providing additional dwellings in an area close to public transport (eg. Perth – Mandurah Railway line and future METRONET Thornlie link) and employment opportunities (eg. Jandakot Airport and Cockburn Central Secondary Centre);
  - Creation of new open spaces and parks accessible to everyone;
  - Increasing the urban tree canopy through additional street planting, landscaping of public open space and tree retention;
  - Upgrading parks and local infrastructure (such as roads and intersections);
  - Improved environmental outcomes, given a significant reduction in groundwater use and fertilizer application when compared to the former use as a golf course; and
  - 70% reduction of the 325 million litres of groundwater previously extracted to water the greens and fairways of the golf course.
- **Community, Lifestyle and Security**
  - Improved security and community safety through adherence with Crime Prevention through Environmental Design Principles; and
  - Enhanced open space network and opportunities for exercise options leading to improved health and wellbeing.
- **City Growth**
  - Revitalisation of an existing residential area; and
  - Managing an increase in population and housing density against the need to retain a desirable living environment. This is achieved through a careful design response that recognises the area's existing character.
- **Moving Around the City**
  - Road safety through improvement to the local road network, including construction of new intersections; and
  - Improved public transport options, including creating the opportunity for better connected and more frequent bus services.
- **Listening and Leading**
  - Community engagement and consultation-lead design response.

By redeveloping an unused parcel of land in a comprehensively planned and coordinated manner, the proposed Structure Plan will assist in delivering key Priorities and Focus Areas identified in the Community Plan.

3.3.8 COMMUNITY, SPORT AND RECREATION FACILITIES PLAN (2018)

The City of Cockburn adopted its *Community Sport and Recreation Facilities Plan 2018-2033* ('CSRFP') in 2018 to provide strategic direction and guidance on the provision of community, sport and recreation facilities across the City. The CSRFP also identifies current and planned sporting and recreational facilities that service each of the localities within its jurisdiction, based on current and future population growth. The CSRFP recommends 10% of every development be set aside as public open space, with 4.2% allocated to sporting grounds and 3.8% allocated to parks and recreational purposes.

The CSRFP recognises however, this level of provision is not going to be achievable on all occasions due to issues such as the size of the area available or the significant features of the area needing to be retained.

The Structure Plan provides for approximately 18.75% of the gross subdivisible area as credited public open space, with a total of approximately 24.9% being allocated as 'green space', distributed across 20 parks and an interconnected landscaped pedestrian network, catering to a range of recreational opportunities.

The public open space network has been designed around tree retention (with the proposed retention of some 500 mature trees across the site), and working with the existing topography and drainage flows across the site (including existing storage areas from surrounding residential development), as well as integration with the existing surrounding public open space and road network.

Further, the irregular linear configuration of the site, and being an infill development, does not necessarily provide the optimal attributes for the provision of large expanses of playing fields and sporting grounds. The public open space strategy does, however, consider the inclusion of a playing field through reimagining the existing Prinsep Park on the corner of Berrigan Drive and Prinsep Road. With some modifications and more discussion around confirming the oval's content and use levels, this may be achievable subject to further detailed design. This location is also considered to be ideal for the provision of a hard-court facility, as part of an active space for teens, as requested by the City of Cockburn.

The provision of playing fields at Prinsep Park will require a process of evaluation by the City that will include the assessment of a number of factors associated with the creation and use of the reserve. Should the City wish to pursue the use of Prinsep Park in such a manner, a separate process led by the City would need to be undertaken. The staging of implementation of development within the subject site has however been adjusted to provide sufficient flexibility to accommodate the playing fields should the Council resolve to pursue this option.

Developer Contributions will also be paid for the proposed development in accordance with the endorsed Development Contribution Plans for DCAs 13 and 15, involving the delivery of community facilities such as sporting grounds and playing fields. However noting, funds collected under DCAs 13 and 15 may only be used for the funding of specific infrastructure items listed in those Schemes.

3.4 STATE PLANNING POLICIES

3.4.1 LIVEABLE NEIGHBOURHOODS

Liveable Neighbourhoods represents the Western Australian Planning Commission's ('WAPC') primary policy to guide the design and assessment of residential structure plans and subdivision. The underlying objective of Liveable Neighbourhoods is to create safe, sustainable and attractive neighbourhoods with a strong site responsive identity that reduce dependency on private vehicles, and are more energy and land efficient. As such, Liveable Neighbourhoods seeks to promote an urban structure based on walkable, mixed-use neighbourhoods with interconnected street patterns. It functions by drawing together key policy aspects into a single 'integrated planning and assessment policy' to provide for a performance-based approach to planning assessment. These aspects include:

- Community;
- Movement;
- Lot Layout;
- Urban Water Management;
- Public Open Space; and
- Schools.

Liveable Neighbourhoods identifies a series of objectives and requirements for structure plans that, when met, demonstrate compliance with the overall outcomes sought by Liveable Neighbourhoods. These objectives and requirements relate to items such as road layout, relationship of housing to open space and schools, school location/distribution, public open space layout and location, and housing densities.

Working with the site constraints, the Structure Plan has been prepared to satisfy the various objectives and requirements of Liveable Neighbourhoods to ensure more detailed proposals at subdivision stage are also capable of satisfying the relevant criteria.

3.4.2 STATE PLANNING POLICY 2.3 – JANDAKOT GROUNDWATER PROTECTION

Part of the site is currently classified as a Priority 3 Groundwater Protection Area, and is therefore subject to the principles and policy measures contained within the WAPC's State Planning Policy 2.3 – *Jandakot Groundwater Protection* ('SPP 2.3'). SPP 2.3 aims to protect the Jandakot Groundwater Protection Area from development and land uses that may potentially have a detrimental impact on the water resource.

The Department of Water (2016) *Land Use Compatibility Tables for Public Drinking Water Source Areas Water Quality Protection Note No 25*, details urban residential as an acceptable land use within a Priority 3 area. The site's location within the Jandakot Groundwater Protection Area therefore does not preclude residential development, although some specific land use and development restrictions/exclusions (such as a sewer pump station or a petrol station) may apply.

A Local Water Management Strategy ('LWMS') has been prepared in support of the proposed Structure Plan to examine the site's hydrological conditions and recommends a strategy for managing existing and future stormwater on-site. The LWMS demonstrates the site can be developed for urban (residential) purposes in accordance with the Objectives of SPP 2.3 and without compromising the SPP's Groundwater Protection Principles.

Refer **Appendix 10** – Local Water Management Strategy.

3.4.3 STATE PLANNING POLICY 3 – URBAN GROWTH AND SETTLEMENT

State Planning Policy 3 – Urban Growth and Settlement ('SPP 3') sets out the principles and considerations which apply to planning for urban growth and settlement in WA. SPP 3 recognises:

> *The orderly planning of urban growth and settlement should be facilitated by structure plans, which should take into account the strategic and physical context of the locality, provide for the development of safe, convenient and attractive neighbourhoods which meet the diverse needs of the community, and facilitate logical and timely provision of infrastructure and services. Structure plans may consist of a hierarchy of plans ranging from broad district structure plans to more detailed plans for neighbourhoods and precincts.*
>
> *Proposals for future urban growth will be determined having regard to*
>
> - *the State Planning Strategy, relevant statements of planning policy and regional and subregional strategies in the State Planning Framework;*
> - *population projections provided by the Department for Planning and Infrastructure;*
> - *land release plans published by the Commission; and*
> - *local planning strategies prepared by local government and endorsed by the Commission.*

The proposed Structure Plan is consistent with the abovementioned objectives for future urban growth. Consideration of the strategic and physical context of the subject site is discussed further within this document and more detailed design provisions are to be addressed and considered at the subdivision stage.

3.4.4 STATE PLANNING POLICY 3.7 – PLANNING IN BUSHFIRE PRONE AREAS

State Planning Policy 3.7 – Planning in Bushfire Prone Areas ('SPP 3.7') seeks to guide the implementation of effective risk-based land use planning and development to preserve life and reduce the impact of bushfire on property and infrastructure. Part of the site (along the periphery) is identified by the Department of Fire and Emergency Services ('DFES') Map of Bush Fire Prone Areas as being 'bushfire prone' with the mapped bushfire risk coming from the adjacent areas of remnant vegetation.

Due to the subject site being identified as 'bushfire prone", the principles and objectives of SPP 3.7 need to be considered as part of the structure planning process. A Bushfire Management Plan ('BMP') has therefore been prepared by Ecological Australia in support of the proposed Structure Plan.

Refer **Appendix 5** – Bushfire Management Plan.

3.4.5 STATE PLANNING POLICY 4.2 – ACTIVITY CENTRES FOR PERTH AND PEEL

State Planning Policy 4.2 – Activity Centres for Perth and Peel ('SPP 4.2') sets out the broad planning requirements for the planning and development of new activity centres and the redevelopment and renewal of existing centres in Perth and Peel. An existing commercial centre is located on Berrigan Drive, immediately east of the subject site. The centre is defined as a 'Local Centre' under the provisions of the City of Cockburn's *Local Commercial and Activities Centres Strategy*.

Opportunities for expansion of the Local Centre have been considered as part of the structure planning process and a Retail Needs Assessment has been undertaken by Taktics 4. The Assessment indicates a small supermarket-based centre presents the most suitable opportunity for the site having regard to the number of additional dwellings proposed through the redevelopment and the impacts on existing supermarket-based centres in the surrounding area.

The Structure Plan therefore proposes a Local Centre within the site on Lot 139, with frontage to Berrigan Drive. The Local Centre is proposed to be approximately 7,000m^2, with a retail floorspace allocation of approximately 2,500m^2. The Centre would likely comprise a supermarket of 1,500m^2 retail floorspace, and 5 -10 shops, food and beverage uses with a combined floorspace of approximately 1,000m^2.

The Structure Plan provides for residential uses associated with the expansion of the Local Centre within a medium density walkable catchment. In this context, consideration has been given to the objectives of SPP 4.2 to provide for integrated urban development which provides for the daily and some weekly household shopping needs, and a small range of other convenience services.

The findings and recommendations of the Retail Needs Assessment are discussed further in Section 5.8 of this report and copy of the Assessment is included in **Appendix 13**.

3.4.6 STATE PLANNING POLICY 5.3 – LAND USE PLANNING IN THE VICINITY OF JANDAKOT AIRPORT

The subject site is located approximately 1.5 kilometres west of Jandakot Airport and accordingly, the provisions of *State Planning Policy 5.3 – Jandakot Airport Vicinity* ('SPP 5.3') are a relevant consideration in the structure planning process. SPP 5.3 recognises the strategic importance of Jandakot Airport, both as an element of transport infrastructure and as a local economic contributor. Its objectives are to protect Jandakot Airport from encroachment by incompatible land use and development, whilst also minimising the impact of airport operations on existing and future communities, with particular reference to aircraft noise.

SPP 5.3 is predicated upon the Australian Noise Exposure Forecast ('ANEF') system which is used to guide zoning, land use and development proposals. The *Jandakot Airport Ultimate Capacity ANEF Chart 2019* ('ANEF Chart') illustrates noise contours in and around the Airport, plotted at 20, 25, 30, 35 and 40 ANEF units. The contour plot is the calculated total noise energy at that given point on the ground on an annual average day. The higher the ANEF value, the greater the expected exposure to aircraft noise in that area. The ANEF contours contained in the ANEF Chart are calculated on the theoretical maximum movement capacity of the airfield and in this regard, represent maximum noise exposure levels.

The southern portion of the site, comprising part of Lots 3, 7, 512, 509 and 139, is identified on the ANEF Chart as being located between the 20 ANEF and 25 ANEF contours. The balance of the site is located below the 20 ANEF contour.

SPP 5.3 provides guidance on zoning, land use, residential density, subdivision, and development within each of the various ANEF contours based on *AS2021 – Building Site Acceptability Based on ANEF Zone*. Within the 20 to 25 ANEF zone, residential uses are deemed 'Conditionally Acceptable', meaning consideration should be given to the suitability of such uses within this noise exposure zone. Where land is zoned for residential purposes, SPP 5.3 recommends a maximum dwelling density of R20, except where:

- land is identified as appropriate for more intensive development through strategic planning instruments such as a regional or sub-regional structure plan;
- a higher density coding is desirable to facilitate redevelopment or infill development of an existing residential area; and
- it can be demonstrated the public benefits of higher density coding outweigh the negative impacts of exposing additional residents to aircraft noise.

The Structure Plan proposes residential uses within the 20 to 25 ANEF contour zone, predominantly at a density of R20 with some (limited) R30 in strategic locations where an increase in density is desirable. This includes areas of high amenity such as adjoining public open space; areas well serviced by, or connected to, the existing public transport network and strategic Transport connections such as the Kwinana Freeway; and areas located in proximity to the existing (and proposed expanded) Local Centre along Berrigan Drive.

Within the 20 to 25 ANEF contour, subdivision and development may be approved provided it is consistent with the zoning and density coding provided under the applicable local planning scheme. There are no restrictions on zoning, density or development within areas below the 20 ANEF contour.

The Structure Plan considers the objectives and policy measures of SPP 5.3 and responds appropriately by:

- Designating the land for residential land uses, consistent with its 'Urban' zoning under the MRS, and 'Urban' designation under *Perth and Peel @ 3.5 Million and the South Metropolitan Peel Sub-Regional Framework*;
- Limiting the density of residential development to predominantly R20;
- Designating R30 density development only in strategic locations where a higher density coding is desirable;
- Avoiding the designation of land for more sensitive land uses such as educational establishments,

child-care premises and nursing homes;

- Assessing potential noise impacts through an Acoustic Assessment of the site and surrounds; and
- Identifying mitigation strategies to address aircraft noise and including these strategies in future Local Development Plans to be prepared for the site.

It is also relevant to note the adjoining area, which also falls within the 20 to 25 ANEF contour zone, has been developed for residential purposes ranging in density from R20 to R40.

An Acoustic Assessment has been undertaken in support of the proposed Structure Plan to examine the potential noise impacts from Jandakot Airport in further detail and recommend appropriate noise mitigation measures where required. These measures will be implemented through Local Development Plans and/or conditions of subdivision approval.

The Acoustic Assessment is contained at **Appendix 6** of this report and demonstrates compliance with SPP 5.3.

3.4.7 STATE PLANNING POLICY 5.4 – ROAD AND RAIL NOISE

The Kwinana Freeway (Primary Regional Road), Berrigan Drive, the Perth to Mandurah Railway Line, the Thornlie to Cockburn passenger rail line and the Yangebup Freight Rail Line are located in proximity to the site and accordingly, the provisions of *State Planning Policy 5.4 - Road and Rail Noise* ('SPP 5.4') are a relevant consideration. The general objectives of SPP 5.4 are to ensure people are protected from unreasonable levels of transport noise, and to ensure new development is compatible with existing transport corridors and freight operations.

An Acoustic Assessment has been undertaken in support of the proposed Structure Plan to examine the potential noise impacts from road traffic (Kwinana Freeway) and rail traffic (Perth to Mandurah Line and Yangebup Freight Rail Line) and recommend appropriate noise mitigation measures where required. These measures will be implemented through Local Development Plans and/or conditions of subdivision approval.

The Acoustic Assessment demonstrates the potential road and rail noise levels at the site are not at a sufficient level to require acoustic amelioration, but recommends notification be placed on the Titles of lots in proximity to the road and rail line. A copy of the Acoustic Assessment is contained at **Appendix 6** of this report.

3.5 LOCAL PLANNING POLICIES

The following City of Cockburn Local Planning Policies are to be addressed and considered through the subdivision and detailed design stages:

- Local Planning Policy No. 1.1 – Residential Design Codes Alternative Deemed to Comply Provisions;
- Local Planning Policy No. 1.2 – Residential Design Guidelines;
- Local Planning Policy 1.12 – Noise Attenuation;
- Local Planning Policy No. 1.16 – Single House Standards for Medium Density Housing in the Development Zone; (Note – the WAPC is in the process of preparing Medium Density Design Codes. Subject to the outcome of this process, LPP 1.16 may be revoked or amended.)
- Local Planning Policy No. 5.1 – Public Open Space;
- Local Planning Policy No. 5.2 – Incorporating Natural Areas in Public Open Space and/or Drainage Areas;
- Local Planning Policy No. 5.4 – Location of High Voltage Overhead Power Lines & Microwave Towers;
- Local Planning Policy 5.5 – Local Development Plans;
- Local Planning Policy 5.7 – Uniform Fencing;
- Local Planning Policy No. 5.15 – Access Street Road Reserve Pavement Standards;
- Local Planning Policy No. 5.18 – Subdivision and Development - Street Trees; and
- Local Planning Policy No. 5.19 – Structure Plans and Telecommunications Infrastructure.

4 SITE CONDITIONS AND CONSTRAINTS

The following provides a summary of the environmental conditions and constraints relating to the subject site. For further detailed information, refer to the Environmental Assessment Report ('EAR') contained at **Appendix 4**.

4.1 BIODIVERSITY AND NATURAL AREA ASSETS

4.1.1 FLORA AND VEGETATION

4.1.1.1. PLANT COMMUNITIES AND CONDITION

A Reconnaissance Flora and Vegetation Survey was undertaken to support the preparation of the EAR. The Survey recorded four (4) native plant communities present on the site.

Plant community ***EmB***, which is described as *"woodland to open woodland"*, was found to comprise the most intact native vegetation within the site, covering approximately 4% of the site. Some patches were mapped as being in 'very good – good' condition while others were mapped as being in 'good' and 'good – degraded' condition.

Plant community ***TdSt***, which is described as *"closed sedgelands"*, covers less than 1% of the site and was identified as being in 'good – degraded' condition as it comprises a combination of native and non-native species that only exist on the site due to the presence of the artificial lakes.

The two remaining plant communities ***Planted Trees and Shrubs*** (25% coverage) and ***Turf and Bare Ground*** (66% coverage) were mapped as being in 'completely degraded' condition, as they were dominated by non-native species or present only as bare non-vegetated areas on the site.

The remainder of the site supports multiple artificial lakes, buildings and hardstand that formed part of the former golf course. These areas were not assigned a condition category. As outlined in the EAR/EAMS reports, the golf course was historically established and expanded through the extensive clearing of native vegetation, and its replacement with irrigated turf and planted amenity tree species, some of which are native plant species. There were some small patches of native vegetation retained and some remnant scattered trees, which have continued to exist within the largely modified golf course environment.

The former golf course use required the application of fertilisers and considerable irrigation which created and maintained the modified and highly artificial environment. While this was critical to maintaining the turf, it also exacerbated the proliferation of invasive weeds within the patches of native vegetation which contributed to its degradation over time, which can be seen at the current time and is evidenced in the recent flora and vegetation survey. The patches of native vegetation were not being managed to retain natural values during the operation of the golf course.

Since the golf course has been decommissioned, with the associated decommissioning of the irrigation network and the cessation of fertiliser applications, the site may appear to have degraded. This primarily relates to the condition of the turf, which will appear to 'green up' and 'brown off' in response to the local seasonal climatic conditions. The established trees will not rely on the irrigation given their roots will have extended to the local groundwater table, and the native vegetation is naturally adapted to the local climatic conditions, hence it does not require irrigation.

The redevelopment of the golf course provides the opportunity to transfer parts of the golf course to public open space, which will ensure that areas intended for public amenity and use will be established and maintained appropriately, and areas of retained vegetation can be managed separately to enhance and maintain natural values. The Developer will play a key role in this to establish all areas prior to vesting of these areas to the City.

4.1.1.2. WEEDS

Mapping of weed species undertaken as part of the EAR revealed weed cover across the subject site is widespread, with moderate - high coverage across the site, particularly in the areas subject to historical disturbance. The areas within the site classified as turf and bare ground are also consistent with widespread weed cover.

No species listed as a declared pest pursuant to *Biosecurity and Agriculture Management Act 2007* or *Weeds of National Significance* were recorded within the site. Furthermore, no signs of Phytophthora dieback were observed within the site.

4.1.1.3. THREATENED AND PRIORITY ECOLOGICAL COMMUNITIES

No threatened or priority flora species ('TEC') were recorded within the subject site as part of the Reconnaissance Flora and Vegetation Survey undertaken for the site. Furthermore, there were no locally or regionally significant flora species recorded.

The Reconnaissance Flora and Vegetation Survey also noted the structure and composition of plant community ***EmB*** indicates it has the *potential* to represent Commonwealth listed TEC 'Banksia Woodland of the Swan Coastal Plain' (BWTEC), and the state listed PEC 'banksia dominated woodlands of the Swan Coastal Plain IBRA region'. However, due to the small size of the vegetation patches, it does not satisfy the criteria to be considered a TEC.

Notwithstanding, intensive targeted searches were undertaken in August and early September 2021 across the ***EmB*** vegetation, confirming none of the identified threatened or priority flora species were recorded. The absence of the larger perennial species such as *Jacksonia gracillima*, *Verticordia lindleyi* subsp. *lindleyi* and *Andersonia gracilis* was relatively easy to confirm. However, due to their size and seasonal lifeform, smaller annual or geophytic species such as *Drakaea elastica*, *Thelymitra variegata* and *Caladenia huegelii* can be more difficult to detect.

The targeted searches in August and September 2021 are considered sufficient to conclude that *Drakaea elastica* and *Thelymitra variegata* do not occur. The searches were conducted during the main growing and flowering period for these species and it is unlikely they would come to be recorded later in the season.

August and early September lie within the active growing period and the beginning of the flowering period of *Caladenia huegelii* and so the leaf and potentially the flower of *Caladenia huegelii* would be expected to be visible at this time, if present. Suitable habitat in the site was intensively searched and no evidence to indicate that *C. huegelii* occurs, such as flowering individuals or sterile orchid leaves, was recorded. Therefore, it was considered very unlikely that *Caladenia huegelii* would occur within the site. Nevertheless, further targeted flora and vegetation surveys were undertaken on the 7th and the 28th of October 2021. These surveys confirmed that no locally or regionally significant flora species (including *C.huegelii*) are present within the site.

No Bush Forever sites occur within the subject site or immediate surrounds. Furthermore, no *Environmentally Sensitive Areas* prescribed under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* are present within or in proximity to the site.

The City of Cockburn 'Towards a Green Network' and 'Natural Area Management Strategy' documents identify two local ecological linkages/corridors. One of the linkages primarily comprises the rural residential land to the east of Dean Road with a very small portion of the linkage entering the subject site. The second linkage aligns with the Western Power easement located along the southern edge of the site adjacent to Imlah Court. The extent to which the site contributes to these linkages is limited by the lack of native remnant vegetation within the site, but is proposed to be retained as open space in any event.

4.1.2 FAUNA

A Level 1 Fauna Survey and targeted Black Cockatoo Habitat Assessment were carried out by Emerge Associates to determine the fauna values associated with the subject site.

Five fauna habitats were recorded on the site. The majority of the site supports turf, bare ground and infrastructure, which provides low habitat values for native fauna. The native woodland habitat provides the highest relative value but, as this habitat extends over a small portion of the site (4%) and occurs as scattered patches, the importance of this habitat to native fauna is limited. The remainder of the site supports planted trees and shrubs, which provide varying habitat values depending on plant species and density.

11 black cockatoo habitat trees were recorded on the site, however none were determined to be suitable for breeding due to the absence of suitable hallows. Approximately 4.9 hectares of Carnaby's Black Cockatoo and Forest Red-tailed Black Cockatoo foraging habitat exists on the site, and extensive areas of foraging habitat for both species occur adjacent to the site and in the wider area.

15 native, two introduced and two conservation significant fauna species were recorded at the site. The conservation significant species recorded were:

- Carnaby's black cockatoo listed as 'endangered' under the EPBC Act; and
- Quenda, listed as Priority 4 at the state level.

In addition, 45 further species of conservation significance have potential to occur on the site. The majority of these are birds which may only use the site intermittently if at all, including forest red-tailed black cockatoo which are 'likely' to occur due to potential habitat present at the site.

Given the fragmented nature of existing native vegetation within the site, it is considered unlikely the site would contain any habitat critical to the survival of any terrestrial fauna species or any species of conservation significance. Where possible, trees will be retained as part of construction, with tree retention opportunities identified as part of the detailed design phase. It is currently anticipated up to 8 of the 11 Black Cockatoo breeding habitat trees could be retained on site in public open space and road reserve, subject to detailed engineering design. Where trees are to be retained, these will be detailed within the Construction and Environment Management Plan ('CEMP').

The site contains foraging habitat for Black Cockatoos, which are listed as *Matters of National Environmental Significance* ('MNES') under the *Environmental Protection and Biodiversity Conservation Act* ('EPBCA'). Construction work undertaken following the approval of subdivision or development applications has the potential to impact this foraging habitat, and therefore impact the MNES. However, based on the ecological survey work undertaken and the preliminary subdivision layout designs prepared for the site, it is considered these potential impacts would not be significant. Therefore, a referral to the Department of Agriculture, Water and the Environment ('DAWE') for a determination as to whether the proposed redevelopment of the site constitutes a 'controlled action' requiring an EPBC Act approval is not currently required, given only potentially significant impacts trigger the referral process.

Once the detailed designs have been progressed to subdivision and/or development application stage, there will be sufficient certainty to confirm the extent of any impact to the Black Cockatoo species. Using this design information, a self-assessment in accordance with DAWE's *Matters of National Environmental Significance Significant Impact Guidelines* will be undertaken to determine if the confirmed impact extent raises any issues that will alter the current view that any impact to the Black Cockatoo species will not be significant. While there is currently no expectation this view will be altered, it is recognised that if the self-assessment raised sufficient doubt, a referral might be required to obtain regulatory certainty.

4.1.3 WETLANDS

The Department of Biodiversity Conservation and Attractions '(DBCA') Wetland Mapping does not identify any wetlands within the subject site.

4.2 LANDFORM AND SOILS

4.2.1 TOPOGRAPHY

The topography of the subject site ranges from approximately 25 metres Australian Height Datum ('AHD') in the southern portion of the site up to approximately 40 metres AHD in the northern portion of the site.

4.2.2 GEOLOGY

The subject site is located on the Swan Coastal Plain, which is the geomorphic unit characterising much of the Perth Metropolitan Area.

Regional soil association mapping indicates the subject site is within the Bassendean soil association, which is described as *"sand plains with low dunes and occasional swamps, iron or humus podzols and areas of complex steep dunes"*. This site geology was confirmed by field surveys undertaken by Emerge Associates.

Desktop research and field surveys did not identify any restricted landforms or unique geological features present at the subject site.

4.2.3 ACID SULPHATE SOILS

The Department of Water and Environmental Regulation ('DWER') Acid Sulphate Soils ('ASS') Mapping identifies the subject site as having a 'moderate to low' risk of ASS occurring within 3 metres of natural soil surface, but 'high to moderate' risk of ASS beyond 3 metres of the natural soil surface.

As there is appropriate separation to groundwater, and the regional ASS mapping indicates there is 'moderate to low' risk of encountering ASS within 3 metres of the natural soil surface, ASS is not considered to pose a significant constraint to the proposed urban development of the site. Notwithstanding, any management measures required to address any potential risk from ASS will be further explored prior to subdivision and will be subject to more detailed engineering and environmental advice at that time.

4.2.4 CONTAMINATION

The Department of Water and Environmental Regulation's ('DWER') Contaminated Sites Database does not list the subject site as being a known or suspected contaminated site.

4.3 GROUNDWATER AND SURFACE WATER

4.3.1 GROUNDWATER

The DWER *Water Register* indicates the site is underlain by a multi-layered aquifer system comprised of the following resources:

- Perth – Superficial Swan (unconfined).
- Perth – Leederville (confined).
- Perth – Yarragadee North (confined).

The DWER *Water Information Reporting Tool* indicates the current water table in the northern part of the site is 18 metres below surface level, with the base of the aquifer 59 metres below surface level. In the southern part of the site, the water table is 4 metres below surface level with the base of the aquifer 47 metres below surface level.

It is unlikely that provision of appropriate separation distance between surface levels and groundwater will require further consideration within the site. Groundwater and surface water runoff will be managed in accordance with the endorsed *Better Urban Water Management Framework* ('BUWMF') and will aid the Local Water Management Strategy for the site.

4.3.2 SURFACE WATER

There are no natural surface water bodies present within the subject site.

The site does not have a connection to any arterial drainage scheme, and all stormwater that is generated on site is infiltrated. Currently the site provides stormwater storage and infiltration areas for adjacent developed areas which drain into the site, including 18 bubble-up pit outlets.

There were a number of open water bodies within the site, associated with the previous golf course use. The majority of these water bodies were lined and ornamental, with one in the south of the site being an excavation into the regional groundwater table. The water bodies have been rationalised since the golf course has ceased operating, however some of the water bodies in the area north of Berrigan Drive also serve an existing drainage function.

Surface water runoff will be managed in accordance with the Better Urban Water Management framework, which includes maintenance of the post-development environment in accordance with the pre-development environment. This will ensure the proposed urban development does not impact on surrounding environmental values.

4.3.3 PUBLIC DRINKING WATER SOURCE AREAS

Parts of the subject site are located within a Priority 3 (P3) Public Drinking Water Supply Area ('PDWSA'), being the *'Jandakot Underground Water Pollution Control Area'* (UWPCA). A review of the Department of Water's *Land Use Compatibility Tables for Public Drinking Water Source Areas* indicates land zoned for urban purposes is an acceptable use within a P3 PDWSA.

Three Water Corporation Jandakot Mound production bores are located adjacent to the eastern boundary of the site. Water Corporation bores have a 300 metre radius wellhead protection zone (WPZ) in PDWSA Priority 2 and Priority 3 areas. All three bores have WPZs that extend into the Structure Plan area. A fourth Water Corporation bore is located within the site near the old clubhouse on Lot 509. This bore is no longer in use, however a WPZ still exists.

Advice from DWER indicates urban development within WPZ areas is permitted, consistent with an underlying Priority 3 classification, although some restrictions and exclusions may apply, such as locating a sewer pump station or petrol station in these areas.

4.4 BUSHFIRE MANAGEMENT

Portions of the subject site are identified on the Department of Fire and Emergency Services ('DFES') mapping as being bushfire prone. Therefore, as required by State Planning Policy 3.7: Planning in Bushfire Areas (SPP 3.7), a Bushfire Management Plan has been prepared for the site in support of this Structure Plan, with a copy provided at **Appendix 5**. The Bushfire Management Plan has been prepared in accordance with the requirements set out under the Guidelines for Planning in Bushfire Prone Areas (the Guidelines).

An assessment of the classified vegetation and effective slope within 150 metres of the site was undertaken on the basis of the following assumptions, in accordance with the indicative subdivision concept plan prepared for the site (refer **Figure 5**):

- Majority of the site has been excluded from classification on the basis the land is either cleared or is proposed for residential development, or is proposed to be landscaped with low threat vegetation in the form of streetscapes, public open space, planted drainage basins and screen planting;
- Two pockets of retained Banksia scrub in the northern and southern portions of the site have been classified; and
- The current extent of classified vegetation within the Western Power easement in the south of the site has been retained, however may be modified to low threat vegetation as part of the development of the site.

Classified vegetation across the site includes 'Class B Woodland', 'Class C Shrubland', 'Class D Scrub' and 'Class G Grassland', with an effective slope classification of 'all upslopes and flat land (0 degrees)'.

Vegetation is proposed to be retained (and managed) on site in public open space and streetscapes only, with the balance of vegetation intended to be cleared to facilitate development of the proposed residential lots. Therefore, the post-development vegetation is not considered a significant bushfire risk, with any hazards readily managed through a staged clearing process, adequate separation of future built assets from classified vegetation (both external and internal [e.g. retained vegetation] to the subject site), and ongoing fuel management that can be undertaken in and around individual development stages.

On this basis, the Bushfire Management Plan considers the bushfire hazards within and adjacent to the subject site, and the associated bushfire risk readily manageable through standard management responses. On implementation of the proposed management measures, the subject site will be able to be developed with a manageable level of bushfire risk, while maintaining full compliance with the acceptable solutions outlined in the Guidelines.

A further Bushfire Attack Level assessment and contour plan will be required to be submitted with any subsequent subdivision applications.

Refer **Appendix 5** – Bushfire Management Plan.

4.5 HERITAGE

4.5.1 ABORIGINAL HERITAGE

A search of the Department of Planning, Lands and Heritage Aboriginal Heritage Inquiry System identified no registered sites within the Structure Plan area or immediate surrounds.

4.5.2 EUROPEAN HERITAGE

A search of the Heritage Council of Western Australian's Register of Heritage Places identified no sites of State heritage significance within the subject site or immediate surrounds.

A search of the City of Cockburn's Municipal Heritage Inventory identified no sites of local historic significance within the subject site or immediate surrounds.

4.6 CONTEXT AND OTHER LAND USE CONSTRAINTS AND OPPORTUNITIES

4.6.1 EXISTING RESIDENTIAL DEVELOPMENT

There is existing development surrounding the subject site, with several residential lots and existing roads directly adjoining the site. This existing development was established through the 1990's as part of the Glen Iris Golf Course Estate. Whilst the golf course has now closed, there is an established community expectation of a 'green' outlook for those lots directly abutting the site, being the former golf course.

Given the established existing community expectations for the site, careful consideration of the design outcomes have been required to manage the perceived and potential amenity impacts of the development of the site. In this respect, the Structure Plan includes a mix of public open space, landscaped interface treatments and existing road reserves to act as a 'buffer' between the existing and proposed residential development.

The proposed retention of approximately 500 existing mature trees and the planting of some 1000 new trees across the site will also assist in managing the interface with the existing residential development, and maintaining the existing character of the area.

Further, it is proposed that existing rear fences (excluding retaining walls) will be upgraded where suitable and necessary to manage level differences and any impact of development works. This is proposed to be undertaken in consultation with the individual affected adjoining landowners, at the subdivision stage. Where lots adjoin public open space or road reserves (including landscape interface areas), uniform fencing is expected. Consideration for direct access from existing lots to areas of public open space will also be explored through detailed design. Such elements will be managed through Local Development Plans.

4.6.2 WESTERN POWER HIGH VOLTAGE POWER LINE EASEMENT

There is an existing Western Power high voltage power line easement traversing the site along its southern boundary. The easement is approximately 40 metres wide.

Whilst Western Power policy requirements limit land use and construction within the easement, it is anticipated the easement will be landscaped and will provide for the storage of some local drainage. The Structure Plan also proposes a road through the easement, providing a connection from the site to Imlah Court.

All construction and landscaping undertaken within the easement will be designed in accordance with Western Power requirements, and will be subject to all relevant approvals.

The Western Power easement area has been excluded for the purposes of calculating public open space contributions. Notwithstanding, the area provides an ecological linkage/corridor as identified in the City's 'Towards Green Network' and 'Natural Area Management Strategy', and will therefore be created as a public open space reserve, to be transferred and managed by the City.

4.6.3 EXISTING DRAINAGE

The site currently provides stormwater storage and infiltration areas for the existing surrounding development. There are currently 18 bubble up pit outlets that drain into the site from the existing surrounding development, discharging into 15 separate drainage areas. These drainage areas range from wet basins to shallow informal depressions to fenced, steep sided, deep sumps. The existing drainage infrastructure is largely protected through easements on Title.

Post development, the site will be required to continue to provide stormwater storage for the external catchment. Therefore, the design of the site has been required to consider and allow for the retention of existing outlets and storage areas. Some modification and relocation may be possible, subject to detailed engineering design.

To provide for design efficiency, the stormwater management approach for the site has considered the integration of the site's internal drainage requirements with the existing storage areas.

The design of the proposed development provides the opportunity for a range of Water Sensitive Urban Design outcomes, including at source infiltration. This provides for a better environmental outcome than the current drainage regime on site, which primarily comprises sumps, as well as providing for a higher amenity outcome for residents.

Refer **Appendix 10** – Local Water Management Strategy for further detail.

4.6.4 ACOUSTIC ASSESSMENT

The subject site is situated within proximity to the Kwinana Freeway, Berrigan Drive, the Perth-Mandurah Railway Line (within the Kwinana Freeway Reserve), the Yangebup Freight Rail Line, and the Jandakot Airport. An Acoustic Assessment has therefore been undertaken for the site in accordance with the requirements set out under *State Planning Policy 5.4: Road and Rail Noise* (SPP 5.4) and *State Planning Policy 5.3: Land Use Planning in the Vicinity of the Jandakot Airport* (SPP 5.3) and in accordance with the *City of Cockburn Local Planning Policy 1.12 Noise Attenuation* (LPP 1.12). Refer **Appendix 6**.

Road Noise

Concept planning proposes residential and commercial development in proximity to Berrigan Drive and the Kwinana Freeway. Therefore, noise levels for the future road traffic are such, that at some of the lot façades, the noise could exceed the 55 dB(A) noise Target. Therefore, amelioration in the form of Quiet House Design is required. These areas have been identified in the Acoustic Assessment and general "deemed to satisfy packages" as per the SPP 5.4 guidelines applied. Detailed design for these requirements can be applied at subdivision staging once further information is available.

Further, the lots exceeding the target noise levels in this area would require a notification on Title advising of the Kwinana Freeway and Berrigan Drive noise impact.

Kwinana Freeway and Perth-Mandurah Railway Line

The Acoustic Assessment identifies two areas which exceed the 55 dB(A) noise target based on the future Kwinana Freeway traffic flows, however this is marginal and not at a sufficient level to require acoustic amelioration within the site. Notwithstanding, as noise levels exceed the noise target, the residential lots in this area would require Notifications on Title, advising of the potential noise impact.

Future METRONET Thornlie-Cockburn Link

As there are existing residential premises located adjacent to the proposed rail line, development of the future rail line operations needs to consider these highly noise sensitive premises.

Review of the preliminary design noise levels, as provided in the *Thornnlie-Cockburn Link Noise and Vibration Assessment Report Number 675.10409.00100-R01* indicates noise levels to these existing residential premises will be designed such that the target noise levels (as per SPP 5.4) will be met.

Yangebup Freight Rail Line

Due to the existing topography of the Freight Line (situated in a cutting) and the existing noise wall and residential development between the rail line and the Structure Plan area, the noise levels for the worst-case future scenario of one train per hour have been assessed as being below the night time noise target criteria. On this basis, there are no acoustic requirements for the subject site resulting from the Yangebup Freight Rail Line.

Jandakot Airport

Based on guidance from SPP 5.3, the majority of the northern section of the Structure Plan area is acceptable for residential development.

Areas within the Structure Plan area situated within the ANEF 20 to 25 contour are also acceptable for residential development, however subject to conditions. These conditions require internal noise levels (for aircraft noise events) to meet the criteria detailed in AS2021. The enclosed Acoustic Assessment (Refer **Appendix 6**) identifies the affected lots.

The residential lots affected by the ANEF 20 to 25 contour will be subject to a Notification on Title. An example of a notification is provided below:

> *"This lot is situated in the vicinity of Jandakot Airport, and is currently affected, or may in the future, be affected by aircraft noise. Noise exposure levels are likely to increase in the future as a result of increases in numbers of aircraft using the airport, changes in aircraft type or other operational changes. Further information about aircraft noise, including development restrictions and noise insulation requirements for noise-affected properties, are available on request from the relevant local government offices."*

Refer **Appendix 6** – Acoustic Assessment.

4.6.5 TREE RETENTION

One of the key design considerations for the site has been premised on the retention of existing mature trees and vegetation. The Structure Plan proposes to retain some 500 existing mature trees across the site, through public open space distribution and configuration, and streetscape considerations. The retained trees on site comprise a range of species, including both local and introduced.

Two small areas of existing Banksia bushland are also proposed to be retained within the site, as well as the potential to retain 8 of the 11 Black Cockatoo habitat trees surveyed on site, subject to detailed engineering design

In addition to the trees proposed to be retained on site, it is intended that some 1,000 new trees will be planted. These will comprise trees of local character, preferably being endemic and native to the site. This will provide for local ecosystems as habitat for a range of endemic fauna.

The retention and planting of a substantial number of mature trees and vegetation across the site not only has key environmental benefits, but also seeks to provide a strong sense of place and character, and soften the landscape within an existing residential area, meeting established community expectations for the site.

4.6.6 EXISTING ROADS

The site is dissected by Berrigan Drive, which runs east west through the site, connecting Jandakot Road to the Kwinana Freeway. Berrigan Drive is classified as a District Distributor A road under Main Roads WA's *Functional Road Hierarchy* and has a posted speed limit of 70km/hr.

Traffic volumes along Berrigan Drive have continued to grow at a consistent and relatively high rate over the past 5 years to 2021, resulting in very poor and worsening levels of service and diminishing safety for existing residents in the surrounding area.

The Structure Plan proposes one crossing of Berrigan Drive, by the proposed Neighbourhood Connector, to provide for connectivity between the northern and southern portions of the site. This intersection is proposed to be managed by a new signalised intersection, accommodating the additional traffic generated by the proposed development, and improving access for existing residents. Refer Transport Impact Assessment at **Appendix 9** for further detail.

The Structure Plan also proposes modifications to The Lakes Boulevard, making it a left-in, left-out intersection, as well as closing the intersection of Turnbury Park Drive with Berrigan Drive.

The Structure Plan seeks to minimise residential development fronting Berrigan Drive, through the provision of public open space and the strategic location of the proposed Local Centre. Where residential development is proposed, no direct access will be permitted from Berrigan Drive, with interface treatments managed through a Local Development Plan.

There are also a number of existing local access roads surrounding and adjoining the boundary of the site. These are proposed to be retained through the development of the site and have been considered as part of the overall design response.

5 LAND USE AND SUBDIVISION REQUIREMENTS

5.1 LAND USE

The Structure Plan sets out land use, residential densities, public open space, public and private transport provision, environmental considerations, hydrological and servicing requirements.

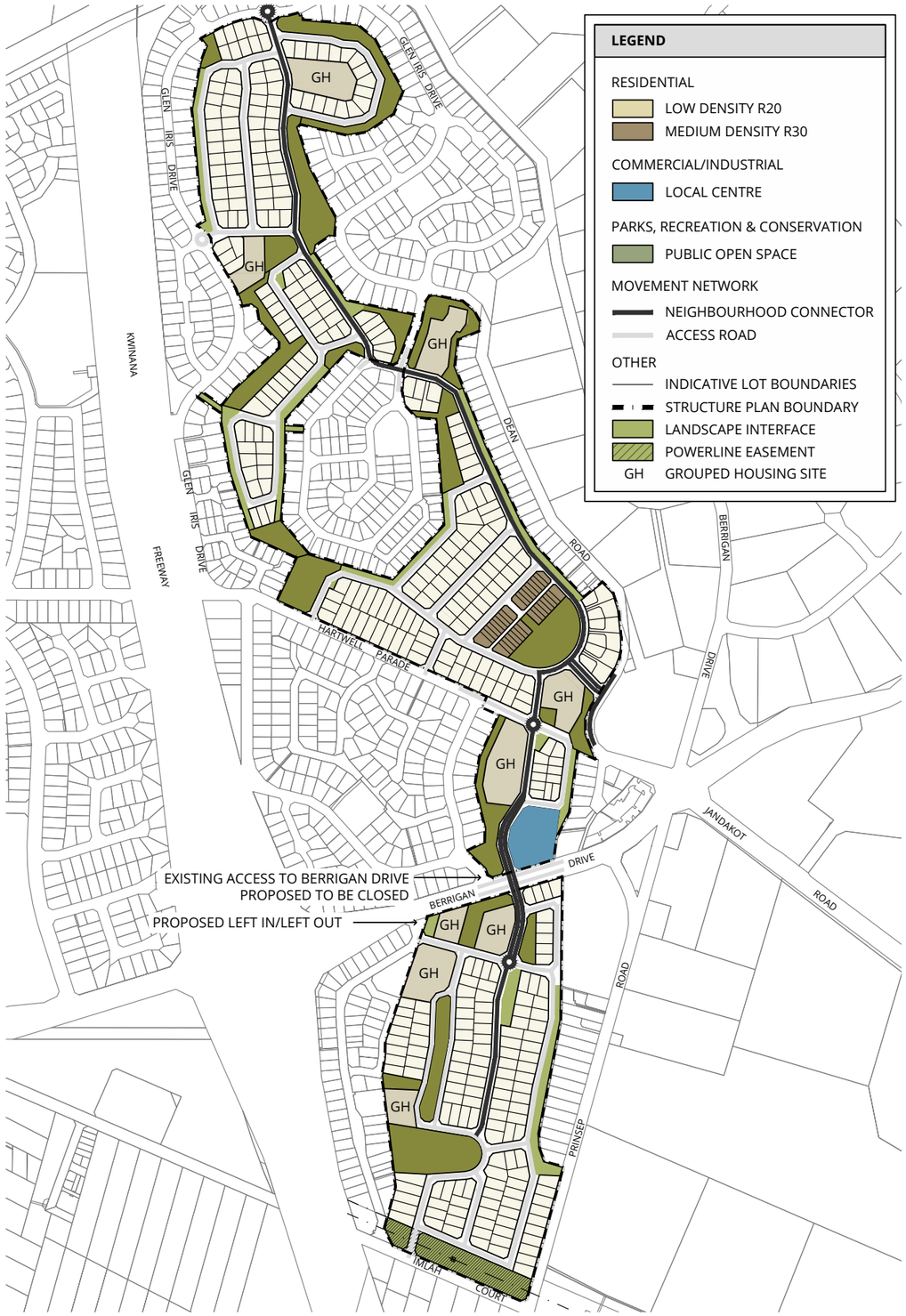
The Structure Plan comprises residential development with density codes ranging from R20 to R30. The Structure Plan also comprises areas of public open space and a local centre.

The following describes the design response underpinning the Structure Plan and addresses the relevant elements of Liveable Neighbourhoods. Please also refer to the Land Use Summary Table provided within the Executive Summary on Page IV of this report.

The Structure Plan layout has been carefully considered within the site's location. The proposed Structure Plan contributes a residential infill development opportunity within an existing contained residential area. It is well located adjoining Berrigan Drive to the north and south, which provides connections to major transport infrastructure. The site maintains an interface (buffer) with existing residential dwellings, within its surrounding residential area and associated movement network.

Refer **Plan 1** – Structure Plan.

Refer **Figure 7** – Indicative Subdivision Concept.



7. INDICATIVE SUBDIVISION CONCEPT

5.2 DESIGN RATIONALE

The subject site is situated on 53.74 hectares of vacant land within an existing residential locality of approximately 130 hectares. The existing residential locality is inherently confined by surrounding land uses, including the Rural Residential land to the east, Kwinana Freeway to the west, freight rail to the north and industrial land uses to the south. The site provides an opportunity for a residential infill development integrated with, and building upon, the existing residential area. The future development of the site will enhance the sense of community within the locality, whilst providing housing opportunities within proximity to major services and infrastructure.

The design rationale has been informed through an extensive community engagement process undertaken with representatives from the Glen Iris Project Reference Group. The outcomes of the community engagement are outlined in the Community Engagement Report provided at **Appendix 1** and summarised at Section 1.2 of this report.

Through the community engagement process, the following priority areas for consideration were identified:

- Traffic and Access;
- Future Housing;
- Open Space and Environment;
- Interface with existing residences; and
- Local Amenities.

The above elements have been considered within the Structure Plan to provide for a site responsive design that integrates with, and is in keeping with, the characteristics of the existing residential area. The increase in the residential population provides the impetus for improved community facilities (public open space) and services.

The layout includes and repeats design elements currently found in Glen Iris to assist with the integration of the new development with the existing residential area. These design elements include:

- Meandering road layout;
- Interconnected pedestrian network;
- Substantial areas of open space;
- Direct lot interface with open space;
- Combination of linear open space and traditional open space;
- Cul-de-sacs connected with PAWs;
- Dispersed Group Housing / Strata development;
- 4-Packs subdivision layout, ensuring retention of existing streetscape; and
- Integration of commercial development with the existing Local Centre.

The design considerations have been addressed through the following sections.

5.2.1 TRAFFIC AND ACCESS

The proposed movement network has been designed to integrate with the existing road network, to improve traffic flows for the existing residents, whilst accommodating traffic generated by the future subdivision within the site. Connections to the existing road network have been integrated at all possible and logical access locations to provide for a legible and considered distribution of traffic.

The vehicle movement network has been designed in consultation with the project traffic engineers to encourage all additional vehicle traffic generated by the proposed development to utilise the proposed internal subdivision roads, and to be directed primarily to Berrigan Drive. Through consultation with representatives from the City, it is understood there is a desire to create a road link between Dean Road and Lakes Way. Although there are two potential existing accessways that may assist in addressing this request, they are outside the Structure Plan area and may not be ideally located. Other than these accessways, the land between Dean Road and Lakes Way is held in private ownership making the provision of a new road problematic in this area.

It is however noted the 'Resource' zoned area east of Dean Road has been identified by the WAPC as part of the Jandakot/Treeby Planning Investigation Area. The future land use for this area will be finalised as part of the review of the South Metropolitan Peel Sub-Regional Planning Framework which is intended to be finalised during 2021. There is the potential for a new road connection to be provided in this area through a future Structure Planning and subdivision process should the urbanisation of the land be supported.

It should be noted that the proposed development of the subject land does not generate the need for a road connection between Dean Road and Lakes Way. The Structure Plan proposes the addition of new roads to the existing movement network which will assist in alleviating existing traffic congestion by providing improved connectivity and legibility to the existing residents. The existing intersections with Berrigan Drive have been reconfigured, with the proposed closure of Turnbury Park Drive at its intersection with Berrigan Drive, and the reconfiguration of The Links Boulevard to a left in- left-out arrangement, will redirect traffic through the estate to a proposed signalised priority-controlled intersection with Berrigan Drive. The proposed location of the traffic signals will provide for a centrally located priority access to the proposed residential areas north and south of Berrigan Drive. This will provide for a landmark entry to the estate, which interconnects the estate north and south.

5.2.2 FUTURE HOUSING

The proposed development will provide for diversity in housing choice that will compliment the local area. Whilst the proposed development will comprise predominately single residential lots, which are in keeping with the existing residential area, it will also provide for group housing sites, which will present the opportunity for downsizing and aging in place. This will be achieved through the inclusion of townhouses on medium density lots and group housing sites with an interface to public open space, which will contribute to the visual appeal and passive surveillance of the area.

The quality of the built form outcome will be managed through Local Development Plans and Design Guidelines.

5.2.2.1. LOT TYPOLOGIES

The development is intended to provide for a seamless integration with the surrounding residential area. The proposed urban layout carries the same design philosophy of the existing residential development with direct lot frontage to areas of open space and natural appeal.

Based on indicative concept planning, the proposed average lot size for the low density (R20) land is approximately 596m^2, comprising single residential dwellings. This density is consistent with the R20 residential density that is currently allocated to the Special Use zoned areas. The medium density (R30) lots will achieve an average lot size of 300m^2 in accordance with R-Codes requirements, comprising a mix of rear-loaded terrace product and grouped housing sites. The medium density coding is lower than the R40 coding that currently applies to Lot 512, however the R30 coded areas are disbursed across the site rather than being concentrated in one part of the site. The anticipated average lot sizes are commensurate to the existing surrounding residential lots, and provide for a diversity in housing product.

5.2.2.2. GROUPED HOUSING SITES

Medium density grouped housing sites have been included within the proposed development to provide for increased diversity in housing choice. Nine grouped housing sites have been identified in locations which provide for the amenity suitable to support increased density, including public open space and the proposed Local Centre. The proposed sites have been configured to allow for the development of townhouses in groups ranging from approximately 7 dwellings to 20 dwellings, each with internal access and proximity to open space.

5.2.2.3. BATTLEAXE LOT CONFIGURATION

Lots in a '4-Pack' battleaxe configuration have been included in strategic locations. This lot typology assists in extending the diversity in housing choice in suitable locations and is in keeping with the lot design context of the existing residential area.

This design response has been considered to be the preferred outcome along the southern portion of Dean Road where a sweeping left-hand bend, heading north poses a danger to vehicular access to lots with crossovers to Dean Road.

Whilst alleviating the potential traffic issue, it provides vehicular access to the 4-Pack lots from within the estate, contributing to safe traffic movements for the existing and future residents. This design also allows for the retention of a number of existing mature trees and protects the natural interface with the existing park on the eastern side of Dean Road.

5.2.3 LOCAL AMENITIES

The location of the Structure Plan area adjoining Berrigan Drive to the north and south, and adjacent the existing Glen Iris Local Centre, provides an opportunity for the expansion of the Local Centre to provide for improved community facilities and convenience. The proposed Local Centre expansion allows for a range of uses which may include a small supermarket, café/retail outlets, as well as community services which complement the existing provisions, such as additional medical facilities.

A Retail Needs Assessment has been undertaken for the site, which indicates that with an increase in the residential population, a range of retail uses may be supported in this area, including a supermarket, with an anticipated overall retail floorspace of approximately 2,500m^2 (additional to the existing commercial facilities on Berrigan Drive), which would provide for future and existing resident needs. This provides an opportunity to integrate with, and expand on, the existing centre on Berrigan Drive.

Connections for reciprocal access and car parking will be explored at the detailed design phase of the Local Centre.

5.2.4 OPEN SPACE AND ENVIRONMENT

The irregular cadastral boundaries of the site boundary, its undulating topography and mature trees, provide a challenging spatial configuration for incorporating rectilinear residential lots. Conversely, it provides the opportunity for an urban layout with serendipitous areas of open space, linked through interconnected linear 'green corridors'.

Public open space has been strategically located to provide for both active and passive recreation opportunities within areas identified as suitable for tree retention and landscape protection, that are also within proximity to proposed and existing residents. The open space areas are intended to extend and enhance the recreational opportunities within the broader precinct.

PEDESTRIAN LINKS

The urban layout supports a pedestrian environment which integrates the existing residential areas with the proposed development, with an interconnected path network allowing for pedestrian movement with minimal intrusion from the vehicular traffic. The philosophy for pedestrian and cycle movement has incorporated an approach whereby where possible, the paths are located within 'green' open spaces creating a series of defined 'loops'. This will allow for safe pedestrian movement throughout the estate to the proposed Local Centre and public open space areas.

5.2.4.1. TREE RETENTION

The preservation of mature trees is broadly acknowledged to be a significant benefit in many aspects and has significantly influenced the urban design of the Structure Plan. It is recognised the preservation of trees will require the retention of the natural ground level where trees are to be retained. This will be further considered through the detailed engineering design and bulk earthworks.

5.2.5 INTERFACE

The interface with existing residential lots has been considered extensively through the community engagement process, which identified a preference for a 'green buffer' adjoining existing lot boundaries, running parallel to roads and future residential development. This has been balanced in the context of ensuring passive surveillance and the community safety for public spaces.

The Structure Plan provides the opportunity for an interface with adjoining residential lots, which includes a widened road reserve with retained trees and an enhanced landscape environment, preserving the predominately natural aspect from the rear of existing residential lots.

A widened road reserve of 20 metres, which includes a landscaped buffer of approximately 10 metres from the existing lot boundary to the kerb edge of the road carriageway is proposed in several locations. The proposed residential dwellings will provide for surveillance and activation of the street. An indicative cross section example is provided within the supporting Landscape Strategy (refer **Appendix 7**).

This interface treatment will maintain a rear outlook for the existing dwellings across a retained natural landscape, providing a natural transition from the existing residential lots to the proposed development.

5.3 SUSTAINABILITY COMMITMENTS

The Structure Plan has been designed to address and incorporate key principles and practices that define sustainable urban development.

The development of the site constitutes urban infill, addressing the Perth and Peel @ 3.5 Million objectives of consolidating urban growth, as well as the City of Cockburn's planning strategies addressing environmental integrity and social community benefit, such as housing choice, liveability, connection to activity centres and services, transport options, and access to public spaces and employment.

Integral to this, the proponent is committed to implementing key sustainability initiatives aligned with the UDIA EnviroDevelopment standards. Active Sustainability has undertaken a detailed analysis of the proposed development to inform the Structure Plan and determine project initiatives. A copy of the 'Sustainability Initiatives' prepared by Active Sustainability is contained in **Appendix 11**. The results of this analysis indicate the development is well placed to address the EnviroDevelopment certification requirements in all six categories, being Ecosystems, Community, Waste, Materials, Energy and Water. Further assessment will be undertaken as detailed design and development progresses.

The following table summarises the preliminary sustainability analysis undertaken for the proposed Structure Plan.

ENVIRODEVELOPMENT CATEGORY	KEY PROJECT SUSTAINABILITY INITIATIVES
Ecosystems	- Water Sensitive Urban Design to manage surface water quality to support ecological health, including a major reduction in the existing long-term groundwater draw, and significant reduction in the use of fertilisers, herbicides and pesticides; - Retention of over 500 existing mature trees, relocation of some, and planting of local natives species in new parks and the landscaped interface adjoining existing residences, including the planting of some 1,000 new trees; - Protection and/or relocation of native fauna during construction; - Creation of possible fauna habitat opportunities within open space and retention of trees suitable for avian fauna; and - Significant public open spaces - 18.75% of the gross subdivisible area- and a total green space of 24.9% of the gross subdivisible area in park and bushland corridors, designed to manage fire risk.
Community	- Detailed consultation with existing residents to ensure new areas are strongly integrated with the existing community; - Delivery of a range of housing types and densities to allow greater diversity of residents, including down-sizing for retirees (ageing in place), singles, couples and families; - Creating a community hub (local centre) as a connection point for interaction of future and existing residents; - The public open space and movement network has been designed to encourage a safe environment, and encourage positive interaction between residents and other local people using the area; - All dwellings will be within 150 metres of local parks and green spaces; - Public spaces will be designed to provide for multiple uses with safety, comfort and security for community members, including children, the elderly and disabled people, providing shade, seating and quality amenities; and - Pathways for both walking and cycling that are safe, attractive and well-lit, connecting residential areas with public spaces and local facilities.
Water	- Reduction in water use though waterwise landscaping and gardens, water efficient fixtures and appliances; - Rainwater harvesting and reuse OR Greywater reuse on larger lots; and - Landscape guidelines will be provided to residents to assist in making informed choices around design, aesthetics, plants species selection and productive gardens.
Energy	- Street and lot orientation designed to provide best practice solar access opportunities, as well as ensure buildings and outdoor spaces have solar amenity; - Building design guidelines will be prepared, informing purchasers about energy efficiency and comfort, addressing the following elements: › climate responsive, solar passive design for homes, › renewable energy systems and investigations into a community micro-grid battery storage system for all lots, and potentially including existing adjoining lots, and › efficient fixtures and appliances. - Use of efficient LED and solar lighting for street lighting and public spaces.
Waste	- All development works are to be guided by a Waste Management Plan during civil works and building construction, targeting > 80% recycling; and - Building design guidelines to be prepared, informing purchasers about the waste hierarchy of reduce, reuse and recycle.
Materials	- All civil works and landscape design to incorporate materials with recycled content, reused, and replacement materials; such as for construction of roads and pathways, landscape features, reuse of timber as both nature play elements and in mulch and possible selected public art elements.

5.4 PUBLIC OPEN SPACE

The Structure Plan provides a framework for the hierarchy and location of public open space areas across the site, considering the requirements for vegetation and tree retention, pedestrian connectivity, residential interface, topography, and drainage. Parkland across the Structure Plan area has been designed to provide a strong interconnected network of open space and pedestrian access ways, also providing links to existing areas of open space within the surrounding residential areas.

The findings of the Arboricultural Assessment contained in Appendix F of the Environmental Assessment and Management Strategy (which is contained in Appendix 4 of this document) influenced decisions with respect to tree retention and the Structure Plan layout. A plan depicting the trees proposed to be retained is provided at Figure 7 of the Environmental Assessment and Management Strategy. It should be noted that only trees with a trunk diameter of 30 centimetres (measured at breast height) have been mapped. It should also be noted that trees of a smaller trunk diameter that are contained within proposed open space areas, are also proposed to be retained.

The symbol used in Figure 7 of the Environmental Assessment and Management Strategy does not denote the canopy extent, drip or root protection zone of each tree. Additionally, in some cases where a group of closely positioned trees was found these were recorded as a single location. Each recorded tree (or group of trees) has been tagged, photographed and assessed, with the details published in the Arboricultural Assessment.

Detailed subdivision design will provide further refinement of the Structure Plan public open space framework, defining the configuration, uses and treatment within each public open space area in addition to further refinement of tree retention in consultation with the City.

The Structure Plan provides for approximately 9.27 hectares of public open space, being approximately 18.75% of the gross subdivisible area, and comprising approximately 16.61% unrestricted open space, 1.02% restricted open space (drainage), and 1.12% dedicated drainage (first 15mm). The open space is distributed across 20 parks, ranging in size from approximately 700m^2 to 1 hectare.

The Structure Plan also provides an additional 2.05 hectares of land as a dedicated landscaped pedestrian network and 0.99 hectares of landscaped Western Power easement (to be reserved as public open space), connecting the areas of public open space and providing an interface to the existing residential development surrounding the site. Whilst not credited toward public open space, this land provides an important amenity and recreational function. Combining the credited public open space and landscape interface/pedestrian network, the Structure Plan provides a total of 12.3 hectares (being approximately 22.8% of the total site or 24.9% of the gross subdivisible area) as reserved green space for passive and active recreational purposes.

All lots within the Structure Plan area are situated within 150 metres of an area of public open space, either within the Structure Plan area or existing within the site surrounds.

Refer **Figure 8** – Public Open Space Schedule and **Figure 9** – Public Open Space Plan.

Glen Iris Estate, Jandakot – Public Open Space Schedule

Lot 3 Dean Road on Diagram 30047, Lot 6 on Diagram 91027, Lot 7 on Plan 21402, Lot 512 on Diagram 94292, Lot 139 on Plan 18946, and Lot 509 (No. 76 Dean Road) on Diagram 91028, Jandakot

20.09.2021				
Site Area (Local Structure Plan Boundary)				53.74
Deductions				
Western Power Easement (exd. Road Reserve)	0.99			
Proposed Local Centre	0.72			
Streetscapes / Landscaped Pedestrian Network	2.05			
Dedicated Drainage (1:1yr ARI / First 15mm)	0.55			
Total		4.31		
Gross Subdivisible Area				**49.43**
POS @10%				4.94
Public Open Space Contribution				
May comprise:				
Min 80% unrestricted POS		3.95		
Min 20% restricted use POS		0.99		
Total Required POS				**4.94**
POS Reference Number (area within LSP boundary only)		**1:1yr / First 15mm Drainage (m^2)** *Deduction from Net Area*	**Unrestricted POS area (m^2)**	**Credited Restricted POS area (m2)**
1	1297	105	616	576
2	9182	542	8328	312
3	8253	0	8253	0
4	2543	212	2201	130
5	7224	928	5775	521
6	1329	229	898	202
7	3201	92	3024	85
8	5458	88	4652	718
9	5091	0	5091	0
10	3004	91	2839	74
11	5760	606	4595	559
12	8732	804	7659	269
13	719	141	482	96
14	2159	353	1656	150
15	6068	676	4649	743
16	3186	187	2875	124
17	1843	125	1651	67
18	5355	137	5109	109
19	1432	0	1308	124
20	10822	219	10439	164
Total	**92658**	**5535**	**82100**	**5023**
	9.27	**0.55**	**8.21**	**0.50**
Percentage of gross subdivisible area		**1.12%**	**16.61%**	**1.02%**

Notes:

1. This Public Open Space Schedule is based on the Public Open Space Plan prepared by Rowe Group (Plan ID: 9166-FIG18D_20210915).
2. This Public Open Space Schedule is based on the drainage assumptions as per the Local Water Management Strategy prepared by Hyd2O dated 16 September 2021 (Ref: H20002AV3).
3. Restricted Open Space credit based on 5 yr/ 20% drainage area less the 1yr / 15mm area. Therefore, Restricted Open Space actual land area equals Restricted open space credited area plus the 15mm area.
4. Restricted Open Space actual 'on the ground' land area equals Restricted open space credited area plus the 1 yr / 15mm area.
5. The Landscape Interface and Western Power easement also comprises areas of dedicated 1yr/ 15mm drainage. To avoid double counting deductions, these areas have not been included in the 15mm draina
6. The Landscape Interface and Western Power easement also include areas of 20% and 1% AEP drainage.

8. PUBLIC OPEN SPACE SCHEDULE

9. PUBLIC OPEN SPACE PLAN

5.4.1 LANDSCAPE AND PUBLIC OPEN SPACE STRATEGY

A Landscape and Public Open Space Strategy has been developed for the site by Emerge Associates, depicting the anticipated use and intent of each of the public open space areas, as well as the key principles underpinning the design. Please Refer **Appendix 7**.

The overall landscape design strategy has been built around the following objectives:

- To reflect and respond to the key existing landscape elements and character of the site, in order to maintain visual continuity between existing and new precincts wherever reasonably possible. This includes built form and landscape treatments within streetscapes and open space;
- To provide a safe external environment for the quiet enjoyment of the residents, guests and the general public;
- To best cater for the lifestyle needs and aesthetic desires of the existing residential community within the bounds of the capacity of the development to do so;
- To best cater for the lifestyle needs and expected desires of the new future residential community, in reference to their anticipated demographics;
- To provide integrated public access that links with the existing residential, street and path network, with a strong sense of movement opportunity, options and legibility as part of a broader open space green link strategy;
- To retain mature trees wherever reasonable and practical to do so within the bounds of the project's delivery and approval requirements;
- To provide a more environmentally sustainable outcome than the prior land use (golf course), inclusive of the use of sustainable design practices applied to new works;
- To consider habitat retention and creation through various methods, including vegetation retention and replanting;
- To clearly define various landscape design typologies as applicable to all areas of open space, to assist in the provision of facilities and legibility;
- To manage fire risk in a creative and aesthetic manner, while meeting required standards and obligations; and
- To respond to the local colour palette with either matching or complimentary colours and textures, with the aim of minimising visual impacts and blending where possible.

5.4.1.1. PUBLIC OPEN SPACE TYPOLOGIES

Broadly, the public open space areas proposed across the site will consist of set landscape and use typologies. These typologies have been determined by a number of factors including size of the open space, grades and levels, the amount and location of gravity surface runoff, tree retention ability, habitat retention and creation, and usable, safe walkable linkages.

The four open space typologies proposed across the site include:

- **Focal Open Space:**

  The proposed design consists of four larger open space areas suitable for community gathering and informal active recreation. These four parks are distributed generally evenly throughout the site. These parks cater for a range of informal active recreation uses and a mix of passive recreation uses. These larger areas of open space have the ability to cater for tree retention and larger areas of surface runoff drainage storage and management.

- **Access Open Space:**

  The proposed design consists of eleven access open space areas. These open space areas are characterised by providing a strong open space link between other open space typologies. In doing so, these open spaces provide a critical role in the creation of a continuous green link option for pedestrian and cycle movement around the site. The linear nature of these open space links allows for the retention of vegetation, while the width of these open spaces enables the inclusion of series of public facilities accessible for existing and new residents.

- **Pocket Park Open Space:**

  The proposed layout includes five smaller open space areas set within the residential zone. These smaller open space areas are located to provide a range of localised incidental benefits, including visual softening among the residential zone, walkability, rest and respite via shade and seating, and in some cases specific associated needs such as low point drainage management and existing landmark specimen tree retention.

- **Buffer and Linking Open Space:**

  The proposal consists of eleven linear open space links. The nature of these open space areas ranges from road reserves with a widened verge to one side, to narrow buffers suitable to cater for a linking path and low planting between existing and proposed residential development, and landscaped pedestrian access ways. The internal function of these spaces is to act as a landscaped pedestrian access link.

The proposed open space typologies have been distributed across the site to provide a range of experiences and also a range of facilities within both vehicular and walking proximity to all existing and future residents of Glen Iris and Jandakot generally.

5.4.1.2. COMMUNITY FACILITIES

The Structure Plan proposes to build on existing community facilities, whilst catering for new residents via a range of new publicly accessible facilities. The extensive community consultation process and discussions with the City of Cockburn Technical Officers have identified a number of desirable public facilities including:

- **Informal larger play areas** disbursed through the focal parks to cater for informal recreation activities, such as informal touch football, ball games, unstructured training, frisbee, kite flying, dog exercise and the like;
- **Defined personal training areas.** It is envisaged areas be set aside for small gatherings of residents and visitors to allow for use/hiring for personal training and bootcamp type events. This is intended to cater for a variety of local age groups and skill levels. The landscape design can provide definition to these areas via small level changes and path and wall layouts;
- **Playground facilities** – it is noted the need for a major regional facility is already catered for externally to the site. It is proposed a mid-order play facility be located within the site to cater for the expected increase in local use and change in demographics;
- **Smaller play elements generally associated with nature play** items located in discrete locations along the green links, as part of a broader play trail running through the proposed development. This caters for smaller local precincts and also acts as a combined whole, with each nature play area having a different type of play offering;
- **Shelter structures with picnic settings** to select locations where residents are encouraged to stop and stay for a while. These are generally associated with play elements and view axis lines from adjacent roads;
- **Electric BBQs** are proposed to select locations as part of a social gathering and mixing initiatives, catering for smaller family groups and family scaled events;
- **Fitness elements** are proposed as part of the broader green link design approach. This is in response to community feedback gained from the community consultation process;
- **Walking trails** are proposed to occur through the green link network and are to be denoted via signage and colour coded elements to identify trails of various lengths and difficulty to suit a variety of users (such as 1km, 3km, 5km, 7km). It is envisaged these trails will form a key tool in encouraging greater social interaction between existing and new residents;
- **Cycle trails** are proposed to meander through the proposed development, primarily on a path network, with suitable signage. In some locations this may also occur partly onto the road system where low vehicle flow is to occur;
- **Dog walking trails and facilities** are proposed to be included generally in alignment with the pedestrian walking trails. These may include rest points in shade, taps and fixed dog bowls and discrete areas containing dog agility elements as part of a broader walking network;
- A **hard surface ball court** is proposed to provide an active focus for teens. The final location of these facilities will be subject to detail design to mitigate noise impacts to adjacent residents, but also to maintain clear and open view lines for passive surveillance;
- **Embayment carparking** is proposed adjacent to the larger areas of open space and along certain streets. The car bays will cater for local visitors and a variety of social events and informal activities;
- **Street furniture** is proposed in defined locations for the comfort of open space users. This will include seating, table settings, drink fountains, select bollards and the like;
- **Public art** is proposed to occur either as a larger landmark elements on key view lines or as smaller discrete art elements to be discovered as part of the green link approach, perhaps set into paving or on to low walls and the like; and
- A **3-phase power outlet** is proposed for the larger open community gathering grass space to cater for possible periodic larger scaled community events.

In addition to the above, the City of Cockburn has discussed an opportunity to provide an additional community facility (formal playing field) to address the unanticipated increased demand (partly) generated by development of the former golf course. To deliver this, the Structure Plan considers the inclusion of a formal playing field through reimagining the existing Prinsep Park on the corner of Berrigan Drive and Prinsep Road. With some modifications and more discussion around confirming the oval's content and use levels, this may be achievable subject to further design input. This location is also considered to be ideal for the provision of a hard court facility, as part of an active space for teens. Refer Section 5.5 of this report for further information.

The Structure Plan area is within Developer Contribution Areas (DCA) 13 and 15 and as such developer contribution funds will be collected by the City for the Regional, Sub-regional (East) and selected Local items (Banjup Playing Field and Banjup Community Centre) and the 'neighbourhood-level' playing fields and pavilion identified for a site within Lot 705 Armadale Road by the City's Community, Sport and Recreation Facilities Plan. It is however noted that the existing arrangements embodied in the DCA's will not facilitate the ability for the DCA funds to be used in the context of the establishment of potential playing fields at Prinsep Park.

The provision of playing fields at Prinsep Park will require a process of evaluation by the City that will include the assessment of a number of factors associated with the funding, creation and use of the reserve. Should the City wish to pursue the use of Prinsep Park in such a manner, a separate process led by the City would need to be undertaken. The implementation of development within the Structure Plan area does however provide sufficient flexibility to accommodate the playing fields at Prinsep Park should the Council resolve to pursue this option.

5.4.1.3. CPTED AND PASSIVE SURVEILLANCE

The detailed design of public open space and streetscapes will take into consideration various Crime Prevention Through Environmental Design ('CPTED') principles. Noting the extent of open space and the connected nature of the path system, passive surveillance over the open space areas is a key part of the developments safety and security approach. The design of the open space landscape treatments, combined with orientation of the open space to roads, paths, and new and existing residential development enables passive surveillance of public spaces.

The height of rear boundary fencing, and possible semi-permeable detailing enables interaction. This can be managed through the application of Local Development Plans. In addition, the use of level changes, where required, allows for some overlooking of public spaces. The location of trees, furnishings, and play elements will be arranged to not impede views to smaller open space areas.

Shrub planting will typically be lower shrubs and groundcovers to minimise the ability for hiding. The location of key facilities will be set on key view lines from adjacent streets, inclusive of car headlights illuminating various elements. The use of lighting will also be carefully considered through detailed design.

5.4.1.4. TREE RETENTION

A key element of the Structure Plan and public open space design has been around the objective of maximising tree retention across the site.

It is proposed in the order of 500 existing mature trees will be retained across the site, and more than 1,000 new trees will be planted as part of public open space and streetscape development. This is in addition to the trees to be retained within existing streetscapes in and around the surrounds of the site.

Two areas of existing Banksia bushland are also proposed to be retained within the site, one in the north and one in the south of the site.

Whilst the retained trees on site comprise a range of species, including both local and introduced, the trees proposed to be planted across the site will comprise those of local character, preferably being endemic and native to the site. This will provide local ecosystems as habitat for a range of endemic fauna. Native trees are also typically lower maintenance than introduced species.

The tree and plant species proposed for the site will also comprise a series of attractive and contrasting foliage, colour and form to enable design-based planting, and displaying the diversity of the local environment. A selection of species will also ideally enable seasonal flowering to occur all year round, as well as being of suitable form to promote shade and provide screening where required.

Planting will consist of a mix of mature stock for specific uses and high-profile location purposes, and smaller nursery hardened off stock for mass planting purposes.

5.4.1.5. LANDSCAPE RESPONSE TO BUSHFIRE MANAGEMENT

As detailed in Section 4.4 of this report, portions of the site are identified on the Department of Fire and Emergency Services mapping as being bushfire prone. As a result, development of the site is to be undertaken in accordance with the requirements set out under an approved Bushfire Management Plan, in accordance with SPP 3.7 and the associated Guidelines.

An assessment of the classified vegetation and effective slope within 150 metres of the site was undertaken, in accordance with the indicative subdivision concept plan prepared for the site (refer Figure 7). Based on that assessment, a fire setback zone occurs around parts of the site's boundary where it abuts a bushfire threat. In addition, two small areas of existing Banksia bushland are proposed to be retained within the site. As a result, the landscape design will respond to the relevant Bushfire Attack Level contours in these two smaller defined locations, and will employ the use of compliant fire management techniques to meet fire management obligations.

For those areas requiring a bushfire management response, as identified in the Bushfire Management Plan provided at **Appendix 5**, the landscape response will include, but not be limited to the following:

- Use of endemic plants and native species identified by the Department of Fire and Emergency Services (DFES) as being low fire fuel species;
- Selection, arrangement and spacing of shrub planting to meet low fire risk principles and requirements;
- Selection, arrangement and spacing of trees to meet low fire risk principles and requirements;
- Use of non-combustible and low-combustible landscape materials within the fire setback zone, including hard paving, gravels as paths and mulches in select areas, limited organic material, rocks and boulders;
- Provision of access for fire and emergency vehicles;
- Incorporation of a fire setback zone management and maintenance approach, inclusive of removal of necessary vegetative fuel and debris at standard required intervals; and
- Proposed inclusion of irrigation to fire zones for use in advance of fire emergency.

5.5 PRINSEP PARK – ALTERNATE STRUCTURE PLAN CONFIGURATION

The Structure Plan proposes a significant surplus of Public Open Space however the recreational opportunities provided are predominantly passive or low level active in nature. This type of Public Open Space has been provided in response to Community feedback as it is conducive with the retention of trees, the creation of shaded and connected walking trails, and is consistent with the existing character of the locality. More intensive active recreation, specifically in the form of formalised team sport, is catered for at a Regional and Sub-regional level. However, this provision was assessed prior to the proposed residential redevelopment of the former Glen Iris golf course.

The Structure Plan area is within Development Contribution Area 13, which is a community infrastructure DCA covering most of the City of Cockburn and requiring a financial contribution towards selected items including the Banjup Playing Field and Banjup Community Centre. The Structure Plan area is also within Development Contribution Area 15, which is another community infrastructure DCA. It covers Treeby and Jandakot only and was prepared to fund the 'neighbourhood-level' playing fields and pavilion identified by the City's Community, Sport and Recreation Facilities Plan (2017-2031). This facility will be provided within the 'District Open Space' at Lots 705 and 707 Armadale Road, Treeby, which is scheduled for delivery between 2024 and 2027. Contributions under both community infrastructure DCAs will be payable on a per-lot basis at the time of subdivision clearance.

Notwithstanding the existing and planned sporting facilities, the City has advised there is an existing shortage of consolidated open space areas suitable for use as active formalised team sports areas to support the additional demand created by this development. As such, the City has requested further investigation into enlarging and improving the use of the existing local reserve at the intersection of Prinsep Road and Berrigan Drive, creating a future community asset. Facilitating the request from the City would require increasing the size of proposed Public Open Space area 17 (refer Figure 9) by approximately 7,437m^2 and adding that area, together with the 1,843m^2 of Public Open Space area 17 and the 22,000m^2 of the existing Prinsep Park reserve, to create a new consolidated active recreation park of approximately 31,280m^2 in area.

In this regard, the City has requested a concept be prepared to explore whether sufficient space is available to accommodate the following:

- AFL (multi-use) size oval – prefer 165m long by 135m wide (plus 5 min run-off);
- Clubroom – 525m^2 ;
- Small playground area (can include provision of multi-use hard court;
- Car Parking – 35-40 bays; and
- Two-bay cricket nets.

Given there is still a need to 'test' the use of the reserve on Prinsep Road for the purposes of a community oval through a process of more detailed evaluation by the City, an alternate option for the configuration of the portion of the Structure Plan south of Berrigan Drive has been prepared to facilitate the ability to seek Community input and explore this option. In the event that Council resolves to support the Prinsep Park option, the alternate Structure Plan configuration can be progressed for consideration by the WAPC.

A Concept Plan depicting the potential Prinsep Park sporting facility has been prepared and is contained in Figure 10. As is evident from the Concept Plan, there is insufficient area to accommodate a full size (senior) AFL ground, however, a full size (junior) AFL ground of 135m x 110m can be accommodated, together with parking, club rooms and playground facilities. It should be noted the Concept Plan is indicative only and will be subject to further design refinement should the Council resolve to proceed with this option.

Implementation of the Prinsep Park sporting facility would require the removal of an amount of existing vegetation. The Concept Plan seeks to retain as much of the existing vegetation as possible, particularly where it can act as a buffer for existing homes adjoining Prinsep Park; however, it is unavoidable that some vegetation in the area occupied by the proposed oval would need to be removed if the attached plan was to be implemented. A Flora and Vegetation assessment has been undertaken to determine the environmental values of the vegetation. A copy of the assessment is contained in **Appendix 8**.

Should there be support for the Prinsep Park sporting facility and should the alternate Structure Plan option be pursued, implementation of the proposal would require 7,437m^2 of land being added to Public Open Space area 17. As noted earlier, the Structure Plan proposal already incorporates a significant surplus of open space. Whilst the generous Public Open Space provision across the Structure Plan area provides significant community benefit, it also places an additional and ongoing maintenance obligation on the City. A reduction in the size of Public Open Space area 20 to partly offset the addition of open space within Public Open Space area 17, would bring the overall Public Open Space provision closer to the amount of Public Open Space proposed through the Structure Plan and therefore forms part of the alternate Structure Plan (Prinsep Park sporting facility) option.

Notwithstanding the reduction in the size of Public Open Space area 20, there would still be an overall increase in Public Open Space provision of approximately 1,950m^2 should the Prinsep Park sporting facility option be pursued by the City. An alternate Public Open Space schedule and Public Open Space plan have been prepared and are provided in Figures 11 and 12. An alternate Structure Plan and Indicative Subdivision Plan for the area south of Berrigan Drive have been prepared and are provided in Figures 13 and 14.

10. PRINSEP PARK CONCEPT PLAN

11. ALTERNATE PUBLIC OPEN SPACE DISTRIBUTION PLAN

Glen Iris Estate, Jandakot – Public Open Space Schedule

Lot 3 Dean Road on Diagram 30047, Lot 6 on Diagram 91027, Lot 7 on Plan 21402, Lot 512 on Diagram 94292, Lot 139 on Plan 18946, and Lot 509 (No. 76 Dean Road) on Diagram 91028, Jandakot

2.02.2022				
Site Area (Local Structure Plan Boundary)				53.74
Deductions				
Western Power Easement (excl. Road Reserve)	0.99			
Proposed Local Centre	0.72			
Streetscapes / Landscaped Pedestrian Network	2.05			
Dedicated Drainage (1:1yr ARI / First 15mm)	0.55			
Total		4.31		
Gross Subdivisible Area				**49.43**
POS @10%				4.94
Public Open Space Contribution				
May comprise:				
Min 80% unrestricted POS		3.95		
Min 20% restricted use POS		0.99		
Total Required POS				**4.94**

POS Reference Number (area within LSP boundary only)		**1:1yr / First 15mm Drainage (m^2)** *Deduction from Net Area*	**Unrestricted POS area (m^2)**	**Credited Restricted POS area (m2)**
1	1297	105	616	576
2	9182	542	8328	312
3	8253	0	8253	0
4	2543	212	2201	130
5	7224	928	5775	521
6	1329	229	898	202
7	3201	92	3024	85
8	5458	88	4652	718
9	5091	0	5091	0
10	3004	91	2839	74
11	5760	606	4595	559
12	8732	804	7659	269
13	719	141	482	96
14	2159	353	1656	150
15	6068	676	4649	743
16	3186	187	2875	124
17	9280	125	9088	67
18	5409	137	5163	109
19	1432	0	1308	124
20	5282	219	4899	164
Total	**94608**	**5535**	**84050**	**5023**
	9.46	**0.55**	**8.41**	**0.50**
Percentage of gross subdivisible area		**1.12%**	**17.01%**	**1.02%**

Notes:

1. This Public Open Space Schedule is based on the Public Open Space Plan prepared by Rowe Group (Plan ID: 9166-CON 06 D_20220202).

2. This Public Open Space Schedule is based on the drainage assumptions as per the Local Water Management Strategy prepared by Hyd2O dated 16 September 2021 (Ref: H20002AV3).

3. Restricted Open Space credit based on 5 yr/ 20% drainage area less the 1yr / 15mm area. Therefore, Restricted Open Space actual land area equals Restricted open space credited area plus the 15mm area.

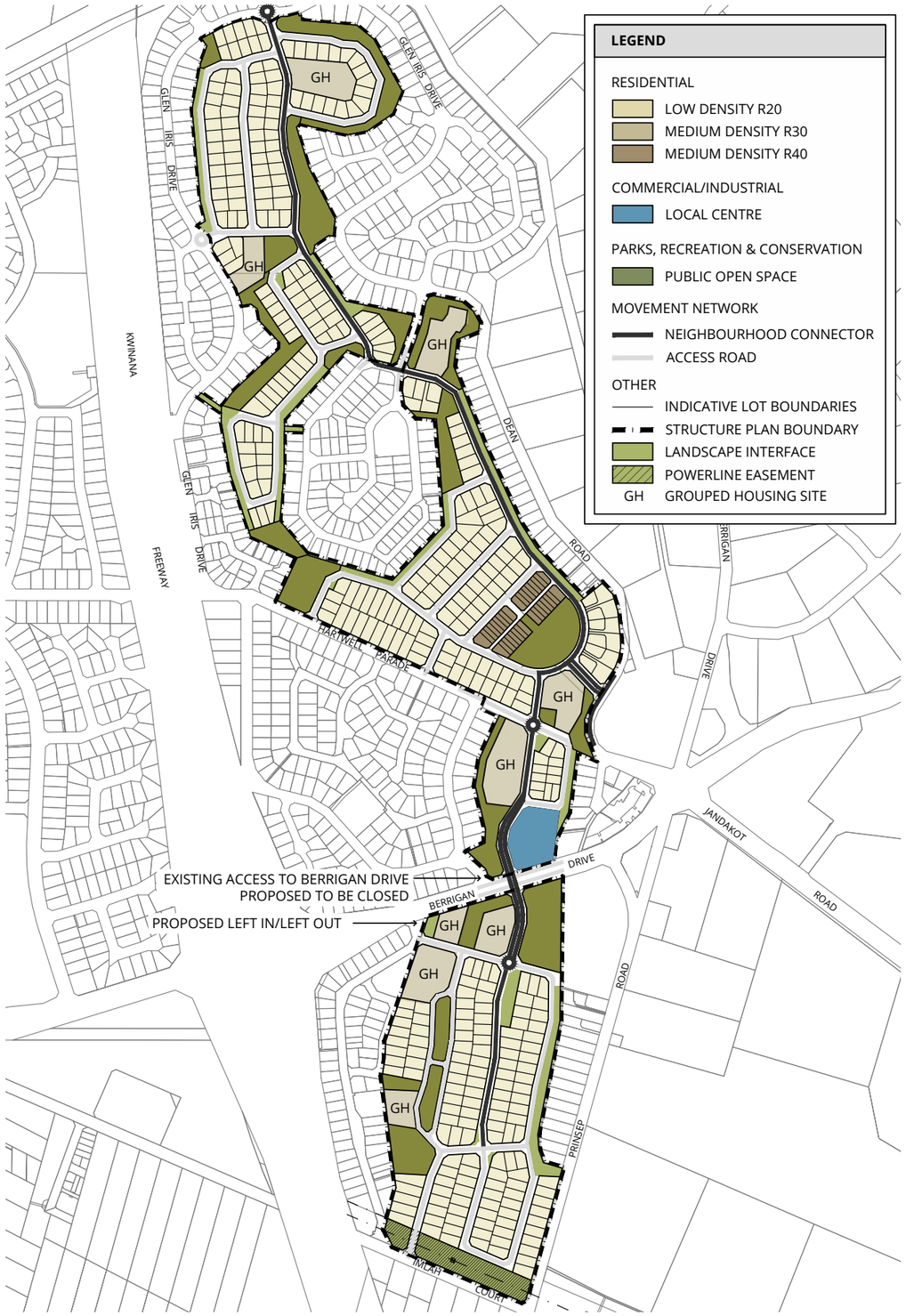
4. Restricted Open Space actual 'on the ground' land area equals Restricted open space credited area plus the 1 yr / 15mm area.

5. The Landscape interface and Western Power easement also comprises areas of dedicated 1yr/ 15mm drainage. To avoid double counting deductions, these areas have not been included in the 15mm drainage calcs.

6. The Landscape interface and Western Power easement also include areas of 20% and 1% AEP drainage.

12. ALTERNATE PUBLIC OPEN SPACE SCHEDULE

13. ALTERNATE STRUCTURE PLAN



14. ALTERNATE SUBDIVISION CONCEPT

5.6 RESIDENTIAL

5.6.1 DENSITY

The Sub-Regional Planning Framework defines an infill target of 14,680 dwellings (32,300 people) for the City of Cockburn, with a minimum average target of 15 dwellings per gross hectare of urban zoned land. Likewise, Liveable Neighbourhoods specifies a target of 15 dwellings per gross urban hectare and an average of 22 dwellings per residential site hectare, however noting that an R20 density code is typically equivalent to a density of 13 dwellings per residential hectare.

An indicative subdivision layout has been prepared for the site, identifying a yield of approximately 550 dwellings. Therefore, based on the indicative subdivision concept, the Structure Plan achieves a density of approximately 19.69 dwellings per residential site hectare and approximately 10.29 dwellings per gross urban hectare.

Whilst the subject site does not achieve the minimum density targets set out under the Planning Framework, the proposed densities are considered appropriate for the site in the context of the site's location and the existing surrounding residential development.

The Structure Plan is situated within an established residential area, with typical lot sizes in the order of 500m^2 – 700m^2, primarily developed to an R20 density code (with areas of R40 dispersed throughout). The densities proposed by the Structure Plan are generally consistent with the surrounding residential development, in keeping with the existing urban fabric and expectations of the community. The Structure Plan proposes a base density code of R20 (consistent with the existing residential density applied to most of the land), with areas of R30 dispersed throughout to provide for a diversity in housing product. The R30 coded land is generally located in areas of higher amenity, typically with direct frontage to public open space and in proximity to the proposed Local Centre.

Based on indicative concept planning, the proposed average lot size for the low density (R20) land is approximately 596m^2, comprising single residential dwellings. The medium density (R30) lots will achieve a minimum average lot size of 300m^2 in accordance with R-Codes requirements, comprising a mix of rear-loaded terrace product and grouped housing sites. The anticipated average lot sizes are commensurate to the existing surrounding residential lots.

Further, approximately 22.8% of the total site (24.9% of the gross subdivisible area) is proposed to be reserved for green space (including the retention of approximately 500 mature trees), either as public open space or as part of the landscaped pedestrian network. While this provides for a high level of amenity for the Structure Plan and surrounds, it reduces the developable area and somewhat restricts the ability to achieve minimum density targets. The lot sizes and the extent of open space proposed within the Structure Plan are a direct reflection of, and response to, the community feedback provided through the consultation process.

In addition, whilst the Structure Plan seeks to facilitate a consolidated urban form (as required by the Planning Framework) and contribute to infill targets, it is not located within close proximity to a METRONET precinct or existing public transport node, nor is it located within an existing or planned activity centre. The closest existing passenger rail station and activity centre is located at Cockburn Central, approximately 1.5 kilometres from the site. Typically, such areas will deliver most of the density required to achieve infill dwelling targets. Therefore, the densities anticipated for the Structure Plan are appropriate and justified in the context of Liveable Neighbourhoods and the Sub-Regional Planning Framework.

For reference, an Indicative Subdivision Concept is provided at **Figure 7**. This is provided for explanatory purposes only, and is subject to review and detailed design at the subdivision stage.

5.6.2 LOCAL DEVELOPMENT PLANS

To provide for appropriate and site responsive built form outcomes, a Local Development Plan is required, as a condition of subdivision approval, for any lots with one or more of the following attributes:

- Lots with an area less than 260m^2;
- Lots with an irregular configuration;
- Lots where specific vehicle access and egress control is required;
- Lots abutting public open space, a pedestrian access way or an area of landscape interface;
- Lots zoned 'Local Centre';
- Lots with particular site constraints (e.g. steeply sloping land);
- Lots directly abutting existing residential development;
- Lots that require quiet house design for noise attenuation through deemed-to-comply noise attenuation packages, and/or lots requiring specialist acoustic requirements, as identified in an approved Noise Management Plan; and/or
- Any lots requiring variations to the Residential Design Codes to achieve specific built form and streetscape outcomes.

Local Development Plans are to address, as a minimum, the following:

- Dwelling orientation and management of dual frontage lots;
- Type of fencing;
- Location of carports/ garages and vehicular access;
- Surveillance;
- Setback variations;
- Solar orientation;
- Access and interface management between private lots and public open space; and
- Requirements for dwelling construction compliant with an approved Bushfire Management Plan and Noise Management Plan.

In preparing Local Development Plans, the design responses between the existing and proposed residential development will need to be considered to ensure an appropriate transition, however noting the design objectives of the proposed development in comparison to the existing urban fabric, which was largely developed through the 1990s, and the need to create a distinct character and sense of place.

The transition between the existing and proposed residential development will be primarily managed through the use of public open space, landscaped interface treatments and road design, creating a 'buffer' between the old and new residential areas.

It is anticipated that where a Local Development Plan(s) is required, in accordance with the abovementioned criteria, a condition of subdivision approval will be imposed by the WAPC requiring the preparation and approval of a Local Development Plan.

5.7 MOVEMENT NETWORKS

5.7.1 EXISTING ROAD NETWORK

The subject site is bound by Dean Road, Glen Iris Drive and Prinsep Road to the east, The Lakes Boulevard, The Fairway, Hartwell Parade and Glen Iris Drive to the west and Imlah Court to the south. These roads are all classified as 'Access Roads' under Main Roads WA's *Functional Road Hierarchy*, and are subject to the default 50km/h built up speed limit.

These roads have typical local street typologies with pavement widths ranging from 6.5 metres to 7.2 metres. The majority of these streets have footpaths on one verge and do not support frequent on street parking.

Vehicular access to and from the site is only possible via Berrigan Drive with full movement priority-controlled intersections at The Lakes Boulevard, Turnbury Park Drive and Prinsep Road, as well as a four-way signal-controlled intersection at Dean Road/Jandakot Road/Berrigan Drive.

Berrigan Drive runs east-west between the northern and southern portions of the site, connecting Jandakot Road to the Kwinana Freeway. It is classified as a District Distributor A road under Main Roads WA's *Functional Road Hierarchy*, and has a posted speed limit of 70km/hr. Berrigan Drive also forms part of the Restricted Access Vehicle Network up to and including Category 4 vehicles, which can be represented by a 27.5m B-Double road train.

Traffic volumes along Berrigan Drive have continued to grow at a consistent and relatively high rate over the past 5 years to 2021, resulting in very poor and worsening levels of service and diminishing safety for existing residents in the surrounding area.

Prinsep Road runs north-south along the eastern boundary of the southern portion of the site, forming a connection between Berrigan Drive and Verde Drive. It is classified as a Local Distributor under Main Roads WA's *Functional Road Hierarchy* and has a posted speed limit of 60km/hr.

Kwinana Freeway is located immediately to the west of the site and **Roe Highway** is located to the north. Given their classification as major roads in the network hierarchy, these roads cannot accommodate any new intersections.

The existing **Thornlie Railway Line**, runs east-west along the north of the site, providing public transport services from Perth to Armadale. The **Perth to Mandurah Railway Line** runs north-south within the Kwinana Freeway reserve. **METRONET** is also connecting the existing rail between Thornlie and Cockburn Railway Stations, north of the site.

5.7.2 PROPOSED ROAD NETWORK

A key design consideration of the proposed road network was to improve the functionality of the existing local network and minimise the increase of traffic on existing roads from the proposed development.

To achieve this, the Structure Plan layout proposes a short section of 'Neighbourhood Connector A' road at the intersection with Berrigan Drive, and adjacent to the proposed Local Centre. Extending from this is a modified 'Neighbourhood Connector B' road running north-south through the site to facilitate future bus access and act as the main spine through the site. The balance of the proposed road network will comprise 'Access Streets (C and D)'.

The proposed Neighbourhood Connector A will be constructed to a reserve width of 20 metres, and the proposed Neighbourhood Connector B and Access Streets will be constructed to a reserve width of between 13.5 – 15 metres. Where roads adjoin existing residential development around the perimeter of the site, reserve widths are proposed to be widened by approximately 9-10 metres to provide for a landscaped interface and tree retention. The cross sections in these areas will vary depending upon the number and elevation of the existing trees that are to be retained and the level difference between the existing residential properties and the new roads. A number of cross section scenarios have been graphically represented in the Transport Impact Assessment contained in Appendix 9 and in the Landscape Strategy contained in Appendix 7 of this document, however each specific road will need to be considered separately in consultation with the City at the detailed design stage.

In other areas, the proposed reserve widths are typically narrower than those recommended under *Liveable Neighbourhoods* due to the future residential lots serviced by these roads being relatively large in size and capable of accommodating on-site parking (ie. on-street parking excluded from the cross-section), or where otherwise adjoining public open space and therefore services are not required on both sides of the road.

The proposed Neighbourhood Connectors will have lane widths of between 3.2 – 3.5 metres to allow for the provision of future Public Transport Authority ('PTA') bus services. Typically, Access Streets throughout the site will be well below 1,000 vehicles per day and will be designed with 5.5 – 6.0 metre pavements.

There are two roundabouts proposed internally within the Structure Plan and two existing roundabouts that are proposed to be modified to include a fourth connection. The two proposed roundabouts will both likely need to accommodate PTA buses in the future and will be designed accordingly. The two existing roundabouts proposed to be modified are located at Bonville Glen / Glen Iris Drive and Turtle Point Cove / Glen Iris Drive.

A new signalised intersection is proposed along Berrigan Drive to accommodate the additional traffic generated by the proposed development and improve access for existing residents. A Concept Plan for the intersection has been prepared but will require formal endorsement from Main Roads WA and the City of Cockburn (refer Transport Impact Assessment at **Appendix 9**). This intersection will be funded by the Developer.

Intersection treatments will be further investigated at the detailed design stage and formalised through the subdivision process.

Refer **Figure 15** – Proposed Vehicle Movement Network.

Further information relating to traffic is contained in **Appendix 9** – Transport Impact Assessment.

5.7.3 PUBLIC TRANSPORT

The road network geometry in the surrounding residential area is prohibitive to the running of public transport vehicles and, as such, bus services in the area are limited. The 515 service has two stops either side of Berrigan Drive.

Due to the long north-south configuration of the surrounding residential area, only a limited number of dwellings are located within the 400-metre public transport walkable catchment promoted under *Liveable Neighbourhoods*.

The Cockburn Central Railway Station is accessible by car via the Kwinana Freeway, or cycling along the Principal Shared Path ('PSP') on the western side of the Kwinana Freeway. This trip is approximately 2.2 kilometres from the bus stops on Berrigan Drive, or 3.5 kilometres from the northern-most residencies in the surrounding residential area.

The Cockburn Central Railway Station park and ride facility is an 5-minute drive via Prinsep Road or the Kwinana Freeway.

No new public transport routes in the area have been confirmed by the PTA, however, the Structure Plan has been designed to accommodate a north-south bus network, if required in the future.

As previously noted, METRONET is connecting the passenger rail between Thornlie and Cockburn Railway Stations, north of the site. This will enable residents to travel direct to areas such as Canning Vale, the Cannington Strategic Metropolitan Centre and the Burswood Peninsula, without having to travel via the Perth CBD and switching lines.

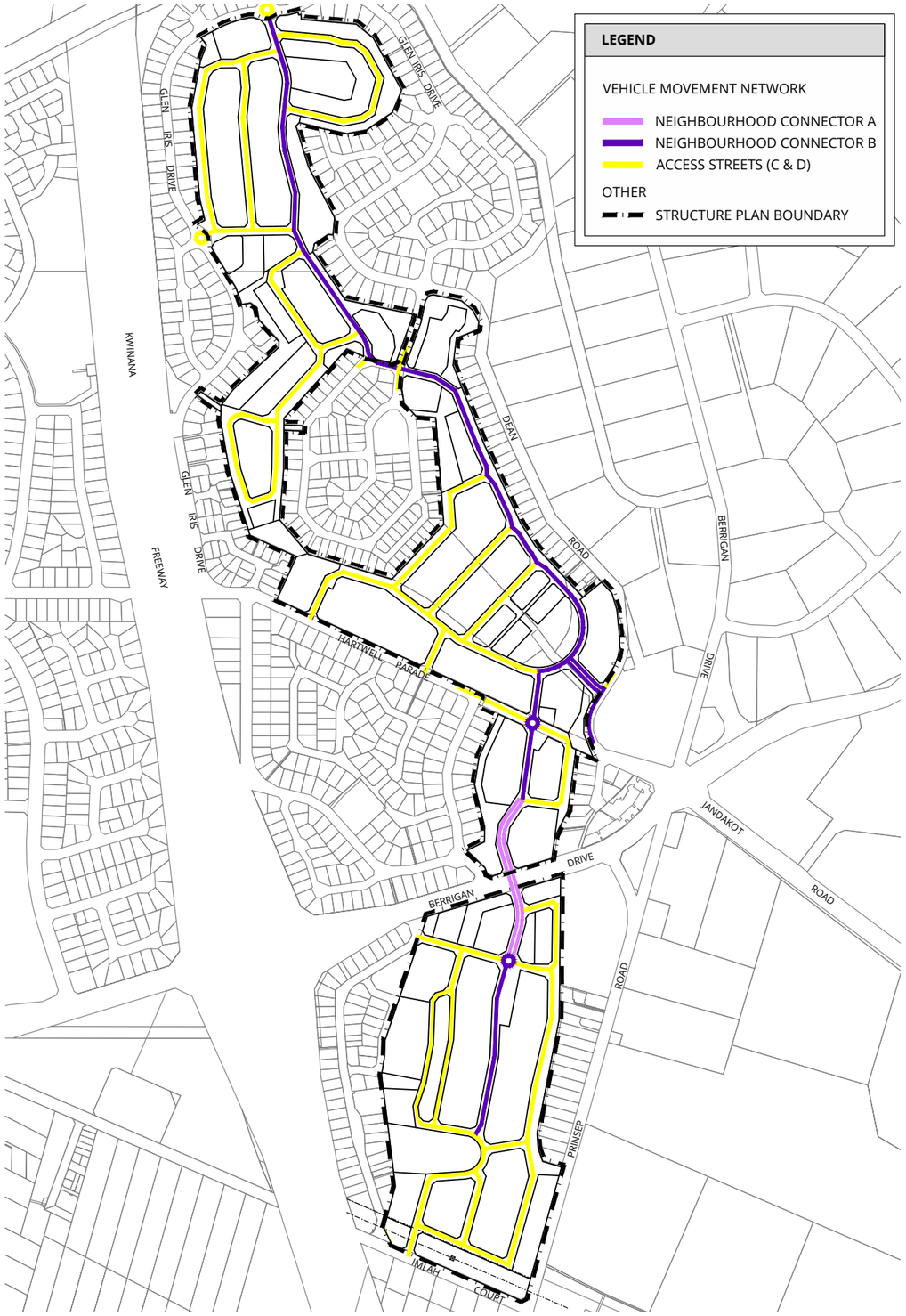
5.7.4 PEDESTRIAN AND CYCLE NETWORK

Given the site's previous use as a golf course, there is no formal pedestrian or cycling network within the site itself. In the surrounding residential area, concrete paths typically between 1.5 – 2.0 metres wide are provided on one-side only over much of the local street network. There is also an existing pedestrian underpass under Berrigan Drive, connecting the northern and southern portions of the site. This underpass is proposed to be retained as part of the development of site.

There are no formal cycling facilities within the surrounding residential area, however low traffic volumes and speeds on these streets are conducive to shared on-street cycling. Notwithstanding, the long winding internal road network provides few opportunities to safely overtake.

An existing PSP is located on the western side of the Kwinana Freeway and is accessible from Berrigan Drive. Longer-term, duplication of this PSP and the construction of a further PSP on the eastern side of the Kwinana Freeway is proposed by Main Roads WA. A commuter cycle route is also proposed along Prinsep Road that links in with the new PSP and provides access to Cockburn Central Railway Station.

Footpaths are proposed on at least one side of all internal roads, in accordance with Liveable Neighbourhoods requirements. The Structure Plan layout also promotes active transport through the extensive and connected shared path network (incorporating a dual-use path) meandering the site, through areas of public open space and the landscaped interface. This path network will be connected to the footpath network proposed within the road verges, as well as to the existing surrounding network. This integrated shared path network will provide recreational amenity and improve accessibility throughout the site and surrounds.



15. PROPOSED VEHICLE MOVEMENT NETWORK

All cycling within the Structure Plan area is proposed to be either on-road or on proposed footpaths. Internal traffic volumes are expected to be low enough such that on-road cycling will not pose a high risk to cyclists.

There will also be consideration for bicycle parking within areas of public open space and at the proposed Local Centre. This is to be explored further through the detailed design phase.

5.8 WATER MANAGEMENT

A Local Water Management Strategy (LWMS) has been prepared in support of this Local Structure Plan and is provided at **Appendix 10**.

The LWMS addresses stormwater management of the site, including areas outside the Structure Plan boundary, which currently discharge stormwater within the site. The LWMS provides a comprehensive overall assessment of the existing water management system for the area, and how it will be modified and integrated with the proposed development to improve water sensitive urban design outcomes.

The LWMS provides a total water cycle management approach and has been prepared in accordance with the principles and objectives of the Better Urban Water Management (2008) framework, and in accordance with the requirements of the Department of Water and the City of Cockburn.

In accordance with the processes defined under Better Urban Water Management, an Urban Water Management Plan (UWMP) will be required to be prepared and implemented at the time of subdivision. The UWMP will refine and implement the proposed drainage network/system, as identified under the LWMS.

5.8.1 EXISTING STORMWATER MANAGEMENT

There is no overarching DWER regional or district stormwater strategy covering the site. The site does not have a connection to any arterial drainage scheme and all stormwater generated on site is infiltrated.

The site currently provides stormwater storage and infiltration areas for existing adjacent development. There are currently 18 bubble up pit outlets draining into the site from the existing surrounding development, discharging into 15 separate drainage areas. These drainage areas range from wet basins to shallow informal depressions to fenced steep sided deep sumps.

5.8.2 STORMWATER MANAGEMENT STRATEGY

The stormwater management system will consist of a series of lot soakwells, road drainage pits, piped drainage, overland flows paths, swales, and distributed bioretention and flood storages areas within public open space and road reserves/ landscape interface areas for water quality treatment and major event management.

A key element of the system will be the minimisation of pipe networks and the use of many small scale local catchments to treat and infiltrate stormwater runoff at source.

In some areas, underground storages may be required due to the constraints provided via the level of existing pipe inverts entering the site from external catchments, and the desire to achieve useable public open space outcomes and tree retention.

5.8.2.1. WATER QUALITY MANAGEMENT

The LWMS proposes a treatment train approach to water quality management, which includes non-structural, as well as structural controls:

- Non-Structural Controls include:
  - **Planning:** Public open space and linear green space network, lot product, and subdivision layout;
  - **Maintenance**: Regular stormwater system maintenance, including public open space biofilter areas; and
  - **Monitoring:** Post development program and performance review.
- Structural Controls include:
  - **Catchment Scale Infrastructure:** Bioretention areas, swales and storages (above and below ground) in public open space areas and road reserves;
  - **Local Scale Infrastructure:** Soakwells; and
  - **Landscape:** Maintaining existing mature trees and native plantings.

Application of a treatment train approach, using a combination of the non-structural and structural measures, will achieve the design objectives for water quality treatment as detailed in Better Urban Water Management.

5.8.3 GROUNDWATER MANAGEMENT STRATEGY

Based on preliminary earthworks plans prepared for the site, fill is generally not required to achieve adequate separation to regional groundwater, given the proximity of groundwater levels to natural surface over much of the site.

It is anticipated the site will broadly be a cut to fill operation, with minimal imported fill required. No subsoil drainage will be needed.

Final design lot levels and fill specification are a detailed design issue to be addressed during the preparation of detailed engineering design drawings and preparation of the UWMP.

5.8.4 MONITORING

5.8.4.1. PRE-DEVELOPMENT

Baseline surface and groundwater monitoring of existing conditions commenced in June 2020 and is currently continuing within the site. Monthly groundwater levels and quarterly water quality are being recorded, in addition to sampling of existing stormwater quality discharging into the site from City of Cockburn drainage systems.

This monitoring is ongoing and scheduled for completion following winter 2021. This information, together with other previous historical monitoring data from the site, will then be will analysed and used to refine predevelopment water quality estimates and water quality targets for the site.

5.8.4.2. POST-DEVELOPMENT

The Department of Water indicates a minimum of 3 years post development monitoring is required, and defines post development as *"from completion of first subdivision to five years after 80 per cent of the development (by land area) has been completed"*.

- Post-development groundwater monitoring is proposed in 9 groundwater monitoring bores, to provide suitable coverage of the site. Locations have been selected based on maintaining existing sampling locations where possible.

The following frequency of monitoring is proposed:

- Monthly groundwater level measurements.
- Quarterly groundwater quality measurements.

Groundwater levels will also be measured in three nearby DWER bores JM45, JM12, and JM2, consistent with pre-development monitoring.

Groundwater quality will be monitored quarterly for physical parameters, nutrients and heavy metals.

Stormwater quality sampling of key stormwater infiltration and biofiltration areas within the site, once constructed, will also be undertaken via grab sampling on up to 4 occasions each winter. Sampling parameters will be the same as groundwater monitoring.

The monitoring schedule will be undertaken for a three-year period, consistent with usual DWER requirements. An annual report will be prepared summarising the results of the program, with results compared to pre-development monitoring data.

5.8.5 IMPLEMENTATION

The following table summarises the roles and responsibilities for the implementation of the LWMS:

ACTION	RESPONSIBILITY
Review and approval of LWMS	DWER and City of Cockburn
Completion of predevelopment monitoring/reporting and tar-get establishment	Developer
Preparation of a UWMP for individual development stages	Developer
Review and approval of UWMP	DWER and City of Cockburn
Construction of stormwater system and maintenance post con-struction until council handover	Developer
Long term stormwater system operation and maintenance	City of Cockburn
Conduct post development monitoring program and annual reporting	Developer
Review of monitoring data and annual reports	DWER and City of Cockburn

Table 5: LWMS Implementation

5.9 EDUCATION FACILITIES

There are no school sites proposed within the Structure Plan area.

Representatives from the Department of Education have advised a new public primary school is not required in this location and it is anticipated the South Lake Primary School would have sufficient capacity to cater for any additional demand. .

Representatives from the Department of Education have also indicated that should the need for a primary school arise in the future, they could potentially consider other options such as the land to the east of the Structure Plan area within the Planning Investigation Area (currently zoned Rural), subject to the progression of planning for that area. A developer contribution towards a potential future public primary school will be requested by the Department at the subdivision stage.

The closest existing school sites to the Structure Plan area are as follows:

- Primary
  - South Lake Primary School (2.1 km);
  - Bibra Lake Primary School (2.2 km); and
  - Treeby (Banjup West) Primary School (opening 2022) (2.6 km).
- Secondary
  - Lakeland Senior High School (1.1 km);
  - Leeming Senior High School (3.5 km);
  - Atwell College (4.2 km); and
  - Willetton Senior High School (5.4 km).

Refer to **Appendix 12** – Correspondence from the Department of Education.

5.10 ACTIVITY CENTRES AND EMPLOYMENT

5.10.1 EXISTING CENTRES

In accordance with *State Planning Policy 4.2: Activity Centres for Perth and Peel* (SPP 4.2), the closest Secondary Centre to the Structure Plan area is the Cockburn Central Activity Centre (approximately 1.5 kilometres to the south). Beside the Perth and Fremantle City Centres (Strategic Metropolitan Centre), Cockburn Central comprises the main regional activity centre within relatively close proximity to the site. It provides a diversity of uses, providing for a range of economic and community services required to service the future population.

The closest District Centre to the site is the Livingston Marketplace in Canning Vale (approximately six kilometres to the east of the site). There are also a number of Neighbourhood and Local Centres accessible from the site, however not within immediate proximity to the site.

There is an existing commercial area located on Berrigan Drive, immediately east of the subject site which provides a variety of retail/shop, restaurant and medical land uses, including medical and dental facilities, a pharmacy, café and hairdresser. The commercial area is identified in the City of Cockburn's *Local Commercial and Activities Centres Strategy* ('Commercial Strategy') as a 'Local Centre' with a retail-shop floorspace of approximately 2,146 m^2. Local Centres are defined in the Commercial Strategy as those that *"provide for daily and some weekly household shopping needs, and a very small range of other convenience services"*.

5.10.2 PROPOSED LOCAL CENTRE

The Structure Plan proposes a Local Centre within the site on Lot 139, with frontage to Berrigan Drive. The Local Centre is proposed to have a land area of approximately 7,000m^2, with a retail floorspace allocation of approximately 2,500m^2 (subject to detail design) additional to the existing commercial uses along Berrigan Drive. The proposed centre provides an opportunity to integrate with the existing commercial area also located on Berrigan Drive.

The expansion of the existing Local Centre is consistent with the City's Commercial Strategy principles which include:

- supporting the maturation of centres (Principle 3);
- optimising access to and within centres (Principle 5); and
- matching use with purpose (Principle 6).

The identification of a Local Centre within the proposed Structure Plan also respects the hierarchy of activity centres within the City and is based on robust evidence and considered assessment, in line with the Commercial Strategy principles.

A Retail Needs Assessment has been undertaken for the proposed centre, which suggests a small supermarket-based centre is the most suitable opportunity for the site. The centre would likely comprise a supermarket of 1,500m^2 retail floorspace, and 5 -10 shops, food and beverage tenancies with a combined floorspace of approximately 1,000m^2.

Whilst a full line supermarket-based neighbourhood centre could potentially be viable within the Structure Plan area, given the distribution of existing surrounding centres and consumer market characteristics, the Retail Assessment suggests a smaller supermarket-based centre presents the best commercial opportunity for this site.

The nearest small supermarket-based centre is located approximately 3 kilometres from the proposed centre, with no full line supermarket currently operating within 4 kilometres of the site. The proposed centre will therefore provide for the day-to-day food, grocery and convenience goods for the Structure Plan area and surrounds.

It is anticipated the proposed centre would likely to capture sales from not only the Structure Plan area, but also Jandakot, Leeming, South Lake, Cockburn Central and Treeby.

The Retail Needs Assessment conveys an expectation that the proposed centre could be trading and viable prior to 2031.

Refer **Appendix 13** – Retail Needs Assessment.

A Concept Plan has been prepared for the proposed Local Centre, noting the key requirements to be addressed as part of the detailed design (subdivision and development application) phase. The Concept Plan has been provided to demonstrate how the Local Centre site could be developed. The development of the site will be the subject of a separate application and detailed design process, including assessment by the City. The Concept Plan considers key vehicle and pedestrian movements through the site, parking and land use layout, as well as the interface treatments between the commercial and residential precincts.

The Concept Plan depicts a loading/servicing area located at the interface with the existing Commercial area and separated from the adjoining land by staff parking hence minimising any potential impacts on nearby residential uses. Food and beverage tenancies are located to orientate towards open space areas hence facilitating integration with the pedestrian/cycle movement network.

A vehicular and pedestrian/cycle connection between the Local Centre and the existing adjoining Commercial area will facilitate integration and enhancement of the commercial activities to create a hub in this area. It should be noted that whilst a left-in left-out access is depicted direct from Berrigan Drive into the Local Centre site, such an arrangement would need to be carefully considered, justified and assessed at the Local Development Plan and development application stage.

A Local Development Plan will be required at the subdivision and/or development application stage, once further detailed design has been undertaken.

Refer **Appendix 14** – Local Centre Concept Plan.

5.10.2.1. LOCAL DEVELOPMENT PLAN

A Local Development Plan will be required, as a condition of subdivision approval, for the proposed Local Centre on Lot 139. The Local Development Plan is to address, as a minimum, the following requirements:

- Vehicle and pedestrian movements and connectivity;
- Access and parking;
- Servicing;
- Interface treatments between the commercial and residential precincts; and
- Landscaping.

5.11 WASTE MANAGEMENT

The structure plan proposes a number of different development forms including single detached housing, grouped housing and commercial uses. Waste collection and management will differ depending upon the nature of the development and site specific design considerations. The following general principles are relevant and are to be considered at the further detailed design stage:

- Laneways are to be designed in a manner that avoids bends obscuring waste truck sightlines or alternate waste collection arrangements such as the use of dedicated bin pads may be considered by the City;
- Road reserve widths shall be adequate to accommodate on-street parking bays abutting POS areas and laneway lots where required;
- All terminating roads (temporary or otherwise) are to include a sufficient area for waste collection vehicles to turn around in forward gear;
- Road design shall ensure that waste trucks do not have to reverse while collecting rubbish;
- Street tree selection and location shall ensure that an unrestricted bin collection space is provided for each lot;
- No bins shall be serviced directly from Berrigan Drive;
- Grouped Housing and other strata-titled properties will require adequate verge space for a communal bin pad (1 bin set/3 dwellings) to be placed and serviced on a straight road frontage unless the City agrees to alternate collection arrangements; and
- Where waste truck access is not possible, any property with insufficient road frontage will require the use of a bin presentation pad (BPP) in front of adjacent properties. These BPPs are to be shown on a Local Development Plan and are to be constructed at the subdivision stage in accordance with the City's specifications.

5.12 INFRASTRUCTURE COORDINATION, SERVICING AND STAGING

The following provides a summary of the infrastructure and servicing requirements for the Structure Plan area. Further information is contained within the Engineering Services Report provided at **Appendix 15**.

5.12.1 SEWER

The site is currently serviced by reticulated sewer, maintained and operated by the Water Corporation.

The site is situated within the Bibra Lake and Jandakot Sewer Districts.

Water Corporation has advised there a number of upgrades required to downstream headworks infrastructure (including collection sewers, pump stations and pressure mains) to facilitate the proposed development. These works will be undertaken by Water Corporation, as the development progresses and new flows come on line.

Reticulation infrastructure downstream of the site will also need to be upgraded as a result of the proposed development. This includes approximately 825 metres of existing DN225 reticulation sewer to be upgraded to DN300. This will be undertaken by the Developer during subdivision works, under a Capital Works arrangement with the Water Corporation (ie. works to be undertaken by the Developer and refunded by Water Corp).

All new wastewater infrastructure installed for the Development will be designed and constructed in accordance with Water Corporations guidelines, including the Developers Manual and Design and Construction Requirements for Gravity Sewer DN150 to SN600 (DS50).

It is noted there are numerous live wastewater lines located within the site, protected by existing easements in favour of the Water Corporation. These have been considered in the indicative concept planning for the site.

5.12.2 WATER

The site is currently serviced by reticulated potable water, owned and operated by the Water Corporation.

The Water Corporation has advised upgrades to the existing network will be required to accommodate the proposed development. This includes upgrades to headworks infrastructure, including distribution mains, and will be undertaken by the Water Corporation as development progresses.

It is expected the site will be connected to the existing DN500 distribution main located in Berrigan Drive, via a DN150 main from both the northern and southern portions of the site.

All water main extensions required for the site will be laid within existing and proposed road reserves, on the correct alignment and in accordance with the Utility Providers Code of Practice and Water Corporation requirements.

5.12.3 ELECTRICITY

There are existing High Voltage (HV) overhead power lines in the east of the site along Prinsep Road, with various sections of underground HV located within the vicinity of the site, servicing the existing residential lots.

There are also existing Low Voltage (LV) underground services surrounding the site.

Western Power forecasting indicates there is between 10 to 15 MVA of capacity available in the existing surrounding network to the service the locality. The proposed development is anticipated to require a power supply of approximately 3500kVA. Therefore, there is currently sufficient capacity in the existing system to service the proposed development.

It is anticipated six sub-station sites (comprising a combination of transformer and switchgear) will be required to service the proposed development.

Western Power owns and operates all electrical supply network assets within the site, and therefore all new electrical supply equipment and cables will need to be installed in accordance with Western Power, WAER (West Australian Electrical Requirements), AS3000 specifications and Standards.

5.12.4 GAS

There are existing ATCO Gas services in the vicinity of the subject site.

ATCO Gas has advised the existing surrounding network has capacity to accommodate the proposed development. The extension of services will be undertaken by the Developer during civil works, at their own cost.

There is also an existing DN150 PVC medium pressure gas main running through the northern portion of the site, through the existing Dean Road reserve. The METRONET Thornlie Cockburn Link project Team are also proposing to install a DN200 steel high pressure gas main through the site along the same alignment as the existing main. This is to replace existing gas mains which currently run through the proposed rail reserves. These mains will also provide opportunity for connection and have been designed to ensure there are no limitations for development in the future.

5.12.5 TELECOMMUNICATIONS

There are existing Telstra and NBN owned pit and pipe networks in the vicinity of the subject site.

The NBN Rollout Map indicates the wider Glen Iris area is covered by the NBN network and is 'service ready'. Existing properties surrounding the site are covered by a fixed line, Fibre To The Node (FTTN) service.

General communication services for the proposed development will consist of the installation of a standard pit and pipe network in accordance with NBN Co guidelines and standards. The current design practice for road reserves, pavement and verge provisions will provide adequate allowance for services in accordance with the agreed Utilities Service Providers handbook. There will be some local land requirements for equipment sites, which will be accommodated at detailed subdivision stage.

NBN advise the site is within their fixed footprint and therefore no additional costs for backhaul will apply to service the proposed development. The Developer will be required to fund the costs of trenching and ducting for the infrastructure, however NBN Co will fund the installation of fibre infrastructure.

5.12.5.1. MOBILE PHONE COVERAGE

Mobile phone coverage in the vicinity of the site is provided by Telstra, Optus and Vodaphone. Based on the coverage maps from these providers there does not appear to be any issues with coverage or capacity in the development area.

Notwithstanding, JDSi contacted the Mobile Black Spot Program Team (managed by the Department of Infrastructure, Transport, Regional Development and Communications) in February 2022, to seek information relating to the proposed development. As at the date of this report no specific feedback has been received.

5.12.6 STAGING

Staging of the Structure Plan area is anticipated to commence from the general intersection of Hartwell Parade and Dean Road, progressively extending to the north and south from this point. The development is likely to be undertaken over 17 stages of approximately 30 to 40 lots each.

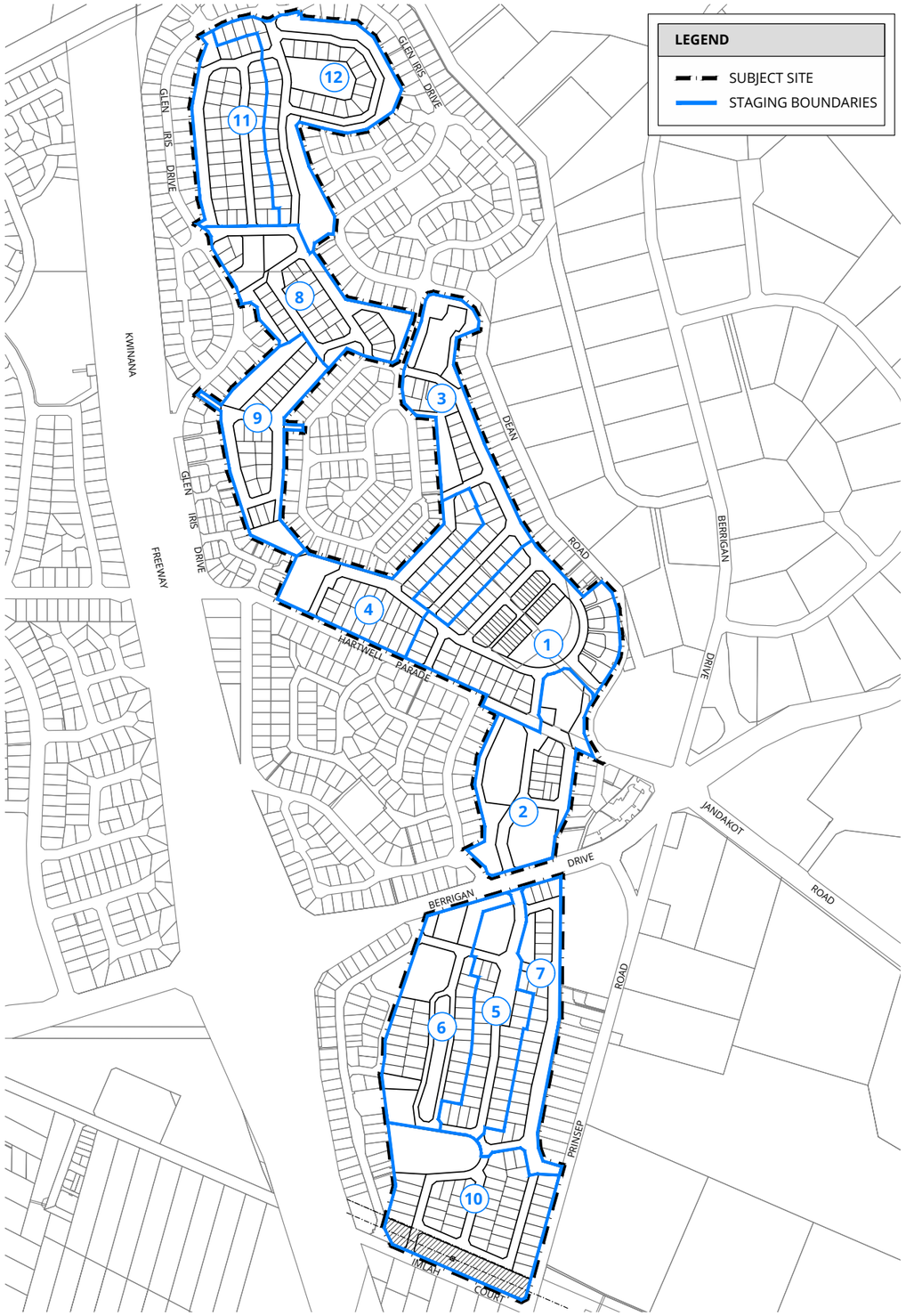
It is anticipated full build out will be complete within approximately 5 years of Structure Plan and subdivision approval, depending on sales rates.

Refer **Figure 16** – Indicative Staging Plan.

5.12.7 EARTHWORKS

To complete the bulk earthworks required for the development, the following construction methodology is proposed:

- Protection of vegetation and trees proposed to be retained (fencing);
- Vegetation (where necessary) and turf removal, and grubbing of roots;
- Stripping of topsoil (approx. 100mm thick) for reuse in public open space or non-structural areas of the site;
- Tyne the top 400mm of the surface to expose any uncontrolled fill or waste materials for removal;
- Moisture condition and recompact the tyned surface; and
- Cut to fill operations across the site, including moisture conditioning and compaction to achieve the target density.



16. INDICATIVE STAGING PLAN

5.13 DEVELOPER CONTRIBUTION ARRANGEMENTS

The structure plan area is situated within Development Contribution Area 13 (DCA 13), which is a community infrastructure DCA covering most of the City of Cockburn. The facilities it covers are listed is Table 10 of the City's Town Planning Scheme No.3.

The landowner (developer) is required to make a cost contribution payment (typically as a condition of subdivision approval) based on the number of lots/dwellings they develop in accordance with the contribution rate set by the Developer Contribution Plan. Under the provisions of DCA 13, the developer will be liable to pay a cost contribution towards the Regional, Sub-regional (East) and selected Local items (Banjup Playing Field and Banjup Community Centre).

The structure plan area is also situated within Development Contribution Area 15 (DCA 15), which is another community infrastructure DCA. It covers only Treeby and Jandakot and was prepared to fund the 'neighbourhood-level' playing fields and pavilion identified for a site within Lot 705 Armadale Road by the City's Community, Sport and Recreation Facilities Plan (2017-2031).

This facility will be provided within the 'District Open Space' shown in the Lots 705 and 707 Armadale Road, Treeby Local Structure Plan and is scheduled for delivery between 2024 and 2027.

The contributions payable under both DCA 13 and DCA 15 will be payable on a per-lot basis at the time of subdivision clearance.

Funds collected under DCAs 13 and 15 may only be used for the funding of specific infrastructure items listed in those Schemes.