

KIARA LOCAL STRUCTURE PLAN

LOT 9000 BOTTLEBRUSH DRIVE,
KIARA

CITY OF SWAN

OCTOBER 2017

PREPARED BY:

burgess design group
TOWN PLANNING + URBAN DESIGN



Lot 9000 Bottlebrush Drive, Kiara

City of Swan

KIARA LOCAL STRUCTURE PLAN

Issue 3: October 2017

Prepared for: **Housing Authority**

Prepared by: Burgess Design Group
101 Edward Street, Perth, 6000
PO Box 8779, Perth Business Centre, W.A., 6849
Telephone: (08) 9328 6411
Facsimile: (08) 9328 4062
Website: www.burgessdesigngroup.com.au
Email: reception@burgessdesigngroup.com.au

Project Planner: Mark Szabo
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**FORMAL ADOPTION OF THE KIARA LOCAL STRUCTURE PLAN FOR LOT 9000 BOTTLEBRUSH DRIVE,
KIARA, CITY OF SWAN**

This structure plan is prepared under the provisions of the City of Swan Local Planning Scheme No.17.

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

_____ 8 December 2017 _____ 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

_____ 8 December 2017 _____ Date

_____ 8 December 2027 _____ Date of Expiry

TABLE 1: AMENDMENTS

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

TABLE 2: DENSITY PLANS

DENSITY PLAN NO.	AREA OF DENSITY PLAN APPLICATION	DATE ENDORSED BY WAPC

EXECUTIVE SUMMARY

This Local Structure Plan (LSP) applies to Lot 9000 Bottlebrush Drive, Kiara, being the land contained within the inner edge of the line denoting the 'Structure Plan Boundary' as shown on the Structure Plan Map.

A summary of all key statistics and planning outcomes of the LSP is provided in Table 3 below:

TABLE 3: SUMMARY TABLE

ITEM	DATA	STRUCTURE PLAN REF (SECTION NO.)
Total area covered by the Structure Plan:	13.7044 hectares	1.2.2
Area of each land use proposed:		3.0
- Residential	3.1376 hectares	
- Private Clubs and Institutions (High School)	4.6772 hectares	
- Public Open Space	4.1128 hectares	
Estimated Lot Yield:	81 lots	3.3
Estimated number of dwellings:	100 dwellings	3.3
Estimated residential site density	33 dwellings per site hectare	3.3
Estimated population:	270 people	3.3
Number of high schools	1 high school	3.6
Estimated number and % of public open space:		3.2
- Local open space	4.1128 hectares 32.17 %	
Estimated area and number:		3.2
- Neighbourhood parks	4.1128 hectares 1 park	
Estimated number and area of natural area and biodiversity assets	3.4128 hectares 1 site	3.2
Total area covered by the Structure Plan:	13.7044 hectares	1.2.2

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PART ONE | **IMPLEMENTATION**

1. STRUCTURE PLAN AREA

This Structure Plan shall apply to Lot 9000 Bottlebrush Drive, Kiara; being the land contained within the inner edge of the line denoting the Structure Plan Boundary as shown on the Structure Plan Map (refer to **Plan 1 – Structure Plan Map**).

2. OPERATION

The date the structure plan comes into effect is the date the structure plan is approved by the WAPC.

3. STAGING

Development is not dependent upon a staged approach.

4. SUBDIVISION AND DEVELOPMENT REQUIREMENTS

The Structure Plan Map outlines land use, zones and reserves applicable within the Structure Plan area.

4.1 Land Use Permissibility

Land use permissibility within the Structure Plan area shall be in accordance with the corresponding zone or reserve under the Scheme.

4.2 Residential Zoned Land

4.2.1 Dwelling Target

- a) An estimated 100 dwellings within the Structure Plan area.

4.2.2 Density

- a) The **Structure Plan Map** defines the residential densities that apply to the Structure Plan area.
- b) The WAPC may approve a variation to a density code where the variation is consistent with an approved Local Development Plan.

4.3 Public Open Space

Public open space is to be provided as shown on the Structure Plan Map and in accordance with the Public Open Space Schedule contained at **Appendix 1**.

4.4 Access to Morley Drive East

No vehicular access is permitted to Morley Drive East.

5. LOCAL DEVELOPMENT PLANS

5.1 Grouped and Multiple Dwelling Development

Local Development Plans (LDP's) shall be required to set out development standards for any Grouped Housing or Multiple Dwelling development/s within the Structure Plan area. LDP's shall set out the following:

- a) Street and boundary setbacks;
- b) Dwelling orientation;
- c) Fencing;
- d) Open Space;
- e) Garage setbacks and width;
- f) Vehicular and pedestrian access;
- g) Parking requirements;
- h) Overshadowing; and,
- i) Visual Privacy.

5.2 Medium Density Single House Development Standards

Local Development Plans may be prepared for any lot within the Structure Plan area for the purpose of implementing WAPC Planning Bulletin 112/2016: *Medium-density single house development standards – Development Zones*.

6. ADDITIONAL INFORMATION

TABLE 4: ADDITIONAL INFORMATION

ADDITIONAL INFORMATION	APPROVAL STAGE	CONSULTATION REQUIRED
Public Open Space Management Plan	Condition of Subdivision Approval where the plan includes Public Open Space	City of Swan

LEGEND

- Structure plan area
- Local Structure Plan Zoning and Reservations**
- Residential R30
 - Residential R40
 - Residential R60
 - Recreation
 - Private Clubs & Institutions
- Other**
- Indicative high school layout
 - Significant trees to be retained
 - Wetland Core
 - Wetland Buffer
 - Vehicular access not permitted

LAND USE SUMMARY

Gross area	Lot 9000 Bottlebrush Drive	13,709 1ha
Land Use	Private Clubs & Institutions	4.6772ha
	Residential	3.1376ha
	Residential R30	1.6279ha
	Residential R40	0.3536ha
	Residential R60	1.1561ha
	Gross POS	4.1128ha



All areas and dimensions are subject to survey, engineering and detailed design and may change without notice.
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0 20 40 60 80 100m
 NORTH
 SCALE 1:2000 (A3)

PLAN 1: KIARA LOCAL STRUCTURE PLAN
LOT 9000 BOTTLEBRUSH DRIVE
KIARA



PART TWO | EXPLANATORY SECTION

1. PLANNING BACKGROUND

1.1 INTRODUCTION AND PURPOSE

This Local Structure Plan (LSP) has been prepared on behalf of the Housing Authority in accordance with the WAPC's *Structure Plan Framework* (August 2015) and Schedule 2, Part 4, clause 15 of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

The objectives of the LSP are to:

- Identify a large portion of the site to be reserved for Public Open Space to accommodate conservation, recreation, visual landscape retention and drainage functions;
- Provide for the development of a new private high school site to complement existing educational opportunities in the community; and,
- Provide for a mixture of medium-density residential development in suitable locations.

1.2 LAND DESCRIPTION

1.2.1 Location

The subject site is located approximately 10.5 kilometres north-east of the Perth CBD, and 6 kilometres west of the Midland Regional Centre.

The site is generally bound by Morley Drive East to the south, Bottlebrush Drive and Roseheath Boulevard to the west, Beckworth Avenue to the North, and Altone Road to the east (refer **Figure 1 – Location Plan**).

1.2.2 Area and Land Use

The LSP encompasses a single lot with a total land area of 13.7044 hectares.

The site is currently vacant and partially vegetated (refer **Figure 2 – Aerial Photograph**). The site is generally surrounded by residential uses to the north and east; abuts the Good Shepherd Catholic School at its south eastern corner; and, adjoins the Kiara Police and Fire Stations at its south western corner.

1.2.3 Legal Description and Ownership

The subject land can be legally described as:

- Lot 9000 on Deposited Plan 72273, volume 2793, folio 890

The site is currently owned by the Housing Authority (refer **Appendix 2** for a copy of the Certificate of Title).

The Certificate of Title lists an easement to the Water Corporation, generally comprising the southernmost 4 metres of the site (abutting Morley Drive East), for access to a wastewater pipeline.

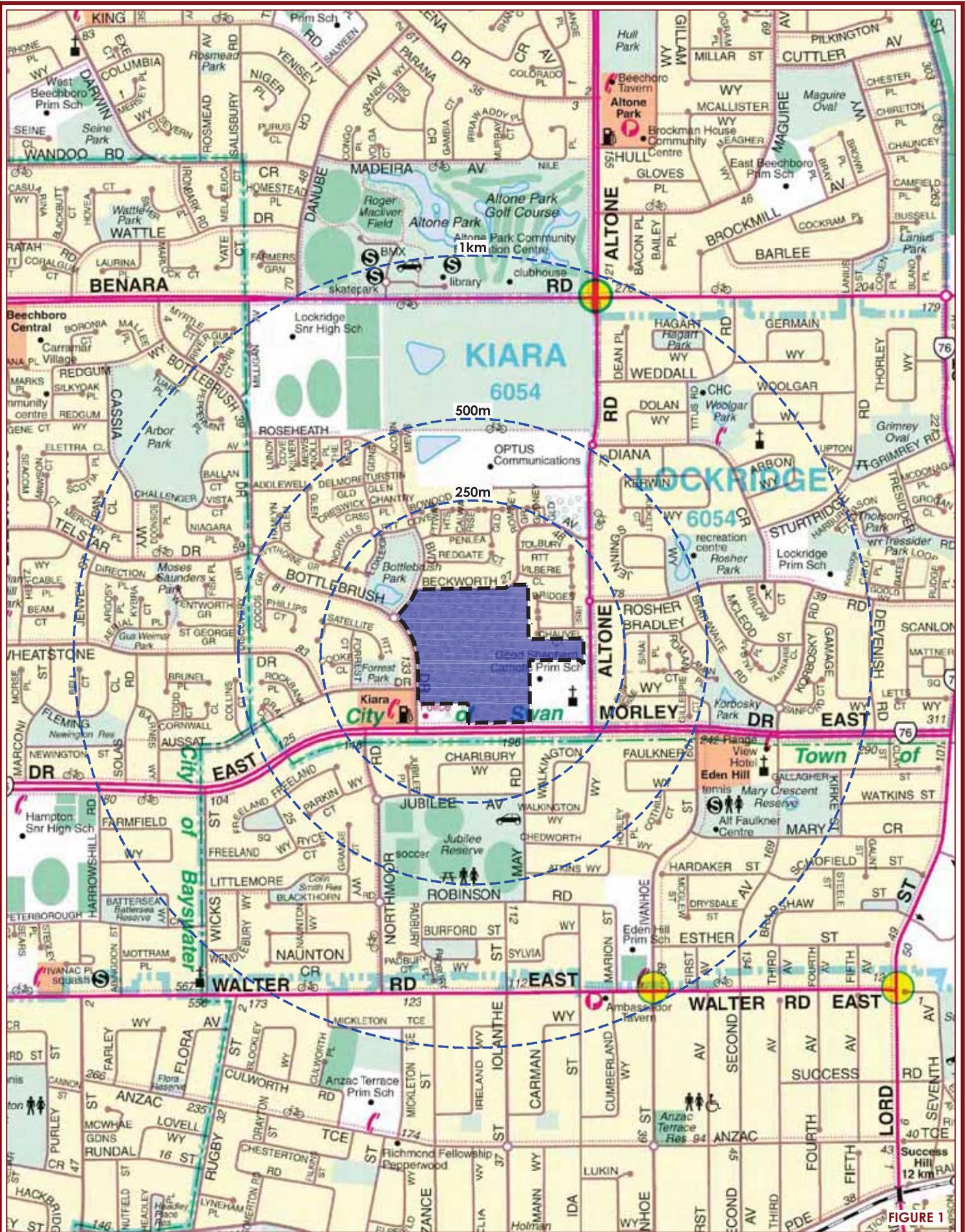


FIGURE 1



NORTH

0 100 200 300 400 500m

SCALE 1:15,000 (A4)

LOCATION PLAN
LOT 9000 BOTTLEBRUSH DRIVE

KIARA

CITY OF SWAN



FIGURE 2

AERIAL PHOTOGRAPH
LOT 9000 BOTTLEBRUSH DRIVE
KIARA
CITY OF SWAN



LEGEND
 Subject Land



Plan No: DPM WA-1-04c, A Client: Department of Housing
 Date: 10.09.13 Planner: JB
 All areas and dimensions are subject to survey.
 Engineering and detailed design drawings to be issued later. Copyright of Burgess Design Group.

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burgess design group
 1000 Lakeside Drive, Perth, Western Australia
 P 08 9438 5411
 F 08 9438 6111

1.3 PLANNING FRAMEWORK

1.3.1 Zoning and Reservations

The subject site is zoned 'Urban' under the Metropolitan Region Scheme (MRS) and 'Residential Development' under the City of Swan Local Planning Scheme No.17 (LPS17) (refer **Figure 3** and **Figure 4**, respectively).

Pursuant to Clause 4.2.14 of LPS 17, the "Residential Development" zone provides for the subdivision and development of land in accordance with an approved Structure Plan.

1.3.2 Directions 2031 and Beyond

Directions 2031 recognises the benefits of a more consolidated city and sets realistic goals to promote housing affordability and sustainable urban growth. The LSP is considered compliant with the key objectives and themes of Directions 2031 and responds in the following manner:-

- The LSP facilitates infill development in an area dominated by low density housing, whilst balancing the social, ecological and landscape values of the site;
- The proposed development seeks to increase patronage levels of existing and proposed public transport services, and improve the viability of existing and proposed district and regional centres and infrastructure; and,
- The proposed development will enhance opportunities to maximise the sense of community and environmental health of residents by providing increased density and housing options in close walking distance to a range of services and amenities.

1.3.3 Draft North-East Sub-regional Planning Framework

The WAPC's Draft North-East Sub-regional Planning Framework (Framework) establishes a long term and integrated planning framework for land use and infrastructure provision in the sub-region.

The LSP complies with the key objectives of the Framework, as follows:

- The site is identified as 'urban' in the Framework;
- The LSP responds directly to the ecological and social values of the site by providing increased opportunities for recreation, landscape retention and management, and access to education for the local community;
- The LSP promotes a consolidated urban form predicated on the designation of medium density residential uses in a manner that is sympathetic to the character of its surrounds and the existing and proposed services and amenities; and,
- The ongoing and sustainable use and management of resources, infrastructure, bushfire risk, public transport, and services and amenities have been considered in the formulation of the Structure Plan.

1.3.4 Planning Policies

State Planning Policy 2 – Environment and Natural Resources Policy (SPP2) & State Planning Policy 2.8 – Bushland Policy for the Perth Metropolitan Region (SPP2.8)

SPP2 defines the principles and considerations that represent good and responsible planning in terms of environment and natural resource issues. SPP2.8 is supplementary to SPP2, and aims to provide a policy and implementation framework that will ensure bushland protection

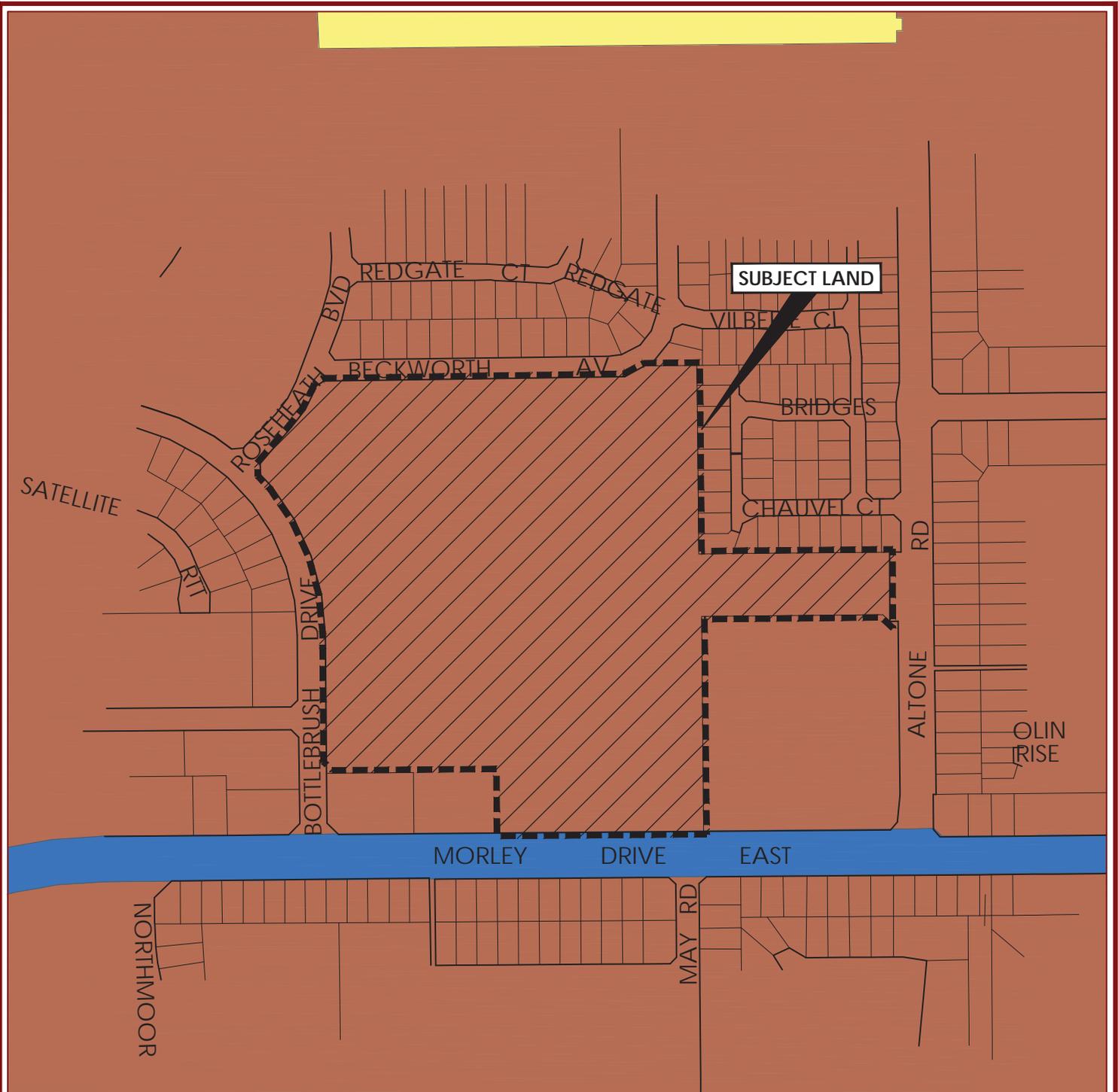


FIGURE 3

LEGEND

ROADS

 OTHER REGIONAL ROADS

 PUBLIC PURPOSES - DENOTED AS FOLLOWS:

WSD WATER AUTHORITY OF WA

ZONES

 URBAN



METROPOLITAN REGION SCHEME MAP
LOT 9000 BOTTLEBRUSH DRIVE

KIARA

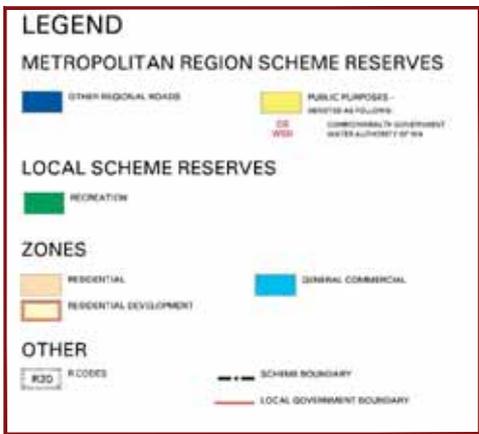


FIGURE 4



0 50 75 100 150
SCALE 1:5,000 (A4)

LOCAL PLANNING SCHEME NO.17 MAP
LOT 9000 BOTTLEBRUSH DRIVE

KIARA

and management issues in the Perth Metropolitan Region are appropriately addressed and integrated within land-use planning decision making.

The LSP complies with the policy measures of SPP2 & SPP2.8, and responds in the following manner:

- Development has been designed to minimise any environmental impacts and to protect aboriginal heritage areas;
- The LSP incorporates a large portion of public open space (30% of the gross site area, and 32.17% creditable area) to ensure some of the bushland is retained;
- Land use and construction impacts have been considered as part of the environmental assessment and the design of development (e.g. dieback management, impacts of recreational use, vegetation rehabilitation and management); and,
- The vegetation type that is contained within the site is well reserved with a low risk conservation status.

State Planning Policy 3 – Urban Growth and Settlement (SPP3)

This policy sets out the principles and considerations which apply to planning for urban growth and settlements in Western Australia.

This proposal responds to the objectives of SPP3 by:

- Providing a variety of housing opportunities within a local community (existing development is dominated by low density single dwellings);
- Forming a logical extension of the surrounding urban areas and representing an efficient use of existing infrastructure and services; and,
- Providing for a type of development that responds to the capability and amenity of the land, and the character of the area.

State Planning Policy 3.7 – Planning in Bushfire Prone Areas (SPP3.7)

SPP3.7 directs how land use should be addressed in bushfire risk management in Western Australia, and applies to all land that is identified as being 'Bushfire Prone' by the Fire and Emergency Services Commissioner as highlighted on the Map of Bushfire Prone Areas.

The LSP responds to the objectives of SPP3.7 by:

- Identifying and considering the impacts of potential bushfire risk areas in the design and delivery of the LSP at an early stage, such that it can be managed in harmony with the conservation and development objectives of the site;
- Providing for the development of a permeable urban form to facilitate easy access and egress in the event of a bushfire emergency; and,
- Locating proposed development away from areas of proposed retained vegetation.

State Planning Policy 5.4 – Road and Rail Transport Noise and Freight Consideration in Land Use Planning

SPP5.4 aims to promote a system in which sustainable land use and transport are mutually compatible.

SPP5.4 applies to major roads (along with railways and freight handling facilities), which are defined as:

- State roads and national highways;
- Urban primary distributors, as described on the metropolitan functional road hierarchy (MRWA, local government) network;
- Other urban roads carrying more than 20 000 vehicles per day;
- Other rural primary distributors carrying more than 5 000 vehicles per day;
- Primary freight roads (Perth metropolitan region) as shown in Schedule 1;
- Primary freight roads (South-West region) as shown in Schedule 2; and,
- Primary freight roads (Statewide) as shown in Schedule 3.

Morley Drive East, which abuts the site on its southern boundary, is classified as an 'Integrator A' by MRWA, and is expected to carry approximately 15,000 vehicles a day (post development) in 2026. In accordance with the criteria outlined in SPP5.4, Morley Drive East is not considered a 'major road', and the policy requirements do not apply.

City of Swan Urban Growth Policy

The City of Swan Urban Growth Policy (POL-C-102) sets out the City's expectations and guidelines for development in urban growth areas to ensure that population growth contributes to sustainable urban communities.

The LSP responds to the objectives of POL-C-102 as follows:

- The LSP proposes infill development that maximises the existing capacity and supports the growth of existing infrastructure and services;
- The LSP coordinates development across the entire development cell, and provides place specific objectives, targets and benchmarks; and,
- The LSP has been prepared following an extensive stakeholder consultation programme (refer **Table 5**).

Liveable Neighbourhoods:

Liveable Neighbourhoods is a state-wide development control policy with the aim of facilitating the development of sustainable communities. It provides an integrated planning and assessment policy for the preparation of Structure Plans and subdivision designs, and represents an alternative performance-based approach to conventional subdivision policies.

This LSP adopts the principles of Liveable Neighbourhoods and has been developed to meet the objectives and requirements of each of the Liveable Neighbourhoods design elements.

1.3.5 Other Approvals and Decisions

Metropolitan Region Scheme Amendment 1133/57

The site was rezoned from 'Public Purposes – Technical School' to 'Urban' under the MRS, and concurrently to 'Urban Development' under LPS17, as part of MRS Amendment 1133/57, which was published in the Government Gazette on 9 April 2010.

The subject land has historically been reserved under the MRS as 'Public Purpose – Technical School', for the proposed development of Kiara TAFE. Following advice from the [then] Department of Education and Training (Department of Education) that the site was no longer required, it was sold to the [then] Department of Housing and Works (Housing Authority).

The Housing Authority subsequently proposed to rezone the land to 'Urban' under the MRS to generally facilitate the development of a Fire Station (which has now been developed), a school, residential uses, and a significant portion of public open space (30% of the gross area).

A significant number of submissions were received on the proposed amendment; comprising: 73 objections; twelve neutral comments; and, one submission in support. These submissions, along with five hearings, were considered by a Hearings Committee established to consider the proposal. The Committee recommended that the proposal be modified to only show portions of the site as 'Urban' and to assess the balance of the land for inclusion into Bush Forever. The WAPC considered the recommendations of the Committee, and in light of relevant policies and strategic planning considerations, resolved to reject the recommendations due to concerns relating to:

- Ongoing management of the site;
- The existing [over]provision of POS and reserves in the locality;
- The provision of affordable land supply in the area; and,
- The economic implications of only developing two small portions of the land.

The Minister for Planning, after considering the amendment, agreed with the recommendation of the WAPC and approved the amendment to rezone the entire site to an 'Urban' zone.

1.3.6 Pre-lodgement Consultation

Table 5: Pre-lodgement Consultation

AGENCY	DATE OF CONSULTATION	METHOD OF CONSULTATION	SUMMARY OF OUTCOME
Relevant community groups in the area	December 1998 - October 1999	Four Stakeholder meetings involving Bayswater Green Works, the Kiara Progress Association and members of the community	Identification of stakeholders (approximately 40) and the preparation of a draft development concept.
	November 2002	Enquiry by design workshop	
	October 2002 - August 2003	Newsletters, newspaper advertisements, letters and community meeting invitations	
	May-August 2007	MRS Amendment Consultation Period	Amendment to the MRS approved
Local government	Various dates	Meetings, MRS and LPS17 Amendments.	Site rezoned to accommodate urban development
Department of Planning			
Department of Water	January 2015		No issues
Department of the Environment	July 2014		Approved with conditions
Department of Education	By sub-consultant, dates unknown		No issues
Department of Indigenous Affairs	July 2000		Consent granted by the Minister
Main Roads Western Australia	By sub-consultant, dates unknown		No issues
Public Transport Authority	By sub-consultant, dates unknown		No issues
Environmental Protection Authority	November 2000		Not assessed-advice given
Western Power	October 2014		No issues
ATCO Gas	November 2014		No issues
Water Corporation	November 2014		No issues
Non-government school providers	Ongoing		School site identified in the LSP.
Fire and Emergency Services Authority	December 2015		Bushfire Management Plan prepared

2. SITE CONDITIONS AND CONSTRAINTS

A Context and Constraints Plan (refer **Figure 5**) has been prepared to illustrate the main issues discussed in this section of the LSP.

2.1 BIODIVERSITY AND NATURAL AREA ASSETS

An environmental assessment report (EAR) was prepared by PGV Environmental in November 2015 (refer **Appendix 3**). This report also considers the findings of previous studies and reports completed between 1996 and 2013.

Flora

The site accommodates four vegetation types, as follows:

- B: Mixed Banksia Low Woodland (Plate 4);
- CC: Marri (*Corymbia calophylla*) Woodland (Plate 5);
- CcB: Mixed Marri-Banksia Woodland (Plate 6); and,
- CcMp: Mixed Marri-Paperbark (*Malaleuca preissiana*) Woodland (Plate 7).

These vegetation types are representative of the Bassendean Dune system and are well reserved within the Metropolitan Region. As such, the site does not contain any areas of regionally significant vegetation, and development of the site will not impact on any significant flora species.

Vegetation condition mapping indicates that vegetation condition ranges from 'Very Good' to 'Good'; though the presence of dead Banksias and Woollybush specimens suggests *Phytophthora Dieback* may be present on the site, so further tests may be required, along with a management plan if necessary.

A large portion of vegetation will be retained and enhanced in accordance with a detailed Public Open Space Management Plan to be prepared as a condition of subdivision approval. This plan may have regard to the rehabilitation of vegetation using native flora species, weed management, and the construction of fences, pathways and any drainage requirements.

Fauna

The site contains four habitat types with varying habitat conditions as listed below:

- Low Banksia Woodland vegetation (Good Fauna Habitat);
- Woodland vegetation with varying Marri, Banksia and Paperbark trees (Good Fauna Habitat);
- Shrubland vegetation with scattered trees (Good Fauna Habitat); and,
- Cleared areas (Highly Degraded Fauna Habitat).

Although the majority of the site consists of Good Fauna Habitat due to the quality of the vegetation, the assemblage of native species on the site is likely to be poor given the lack of connectivity with other bushland, along with the potential impacts of feral and pet cats; However, the site may provide habitat to avifauna that can fly from surrounding bushland areas (most notably, Bush Forever Sites 305, 1.4km to the east, and 307, 2.8km to the north west).

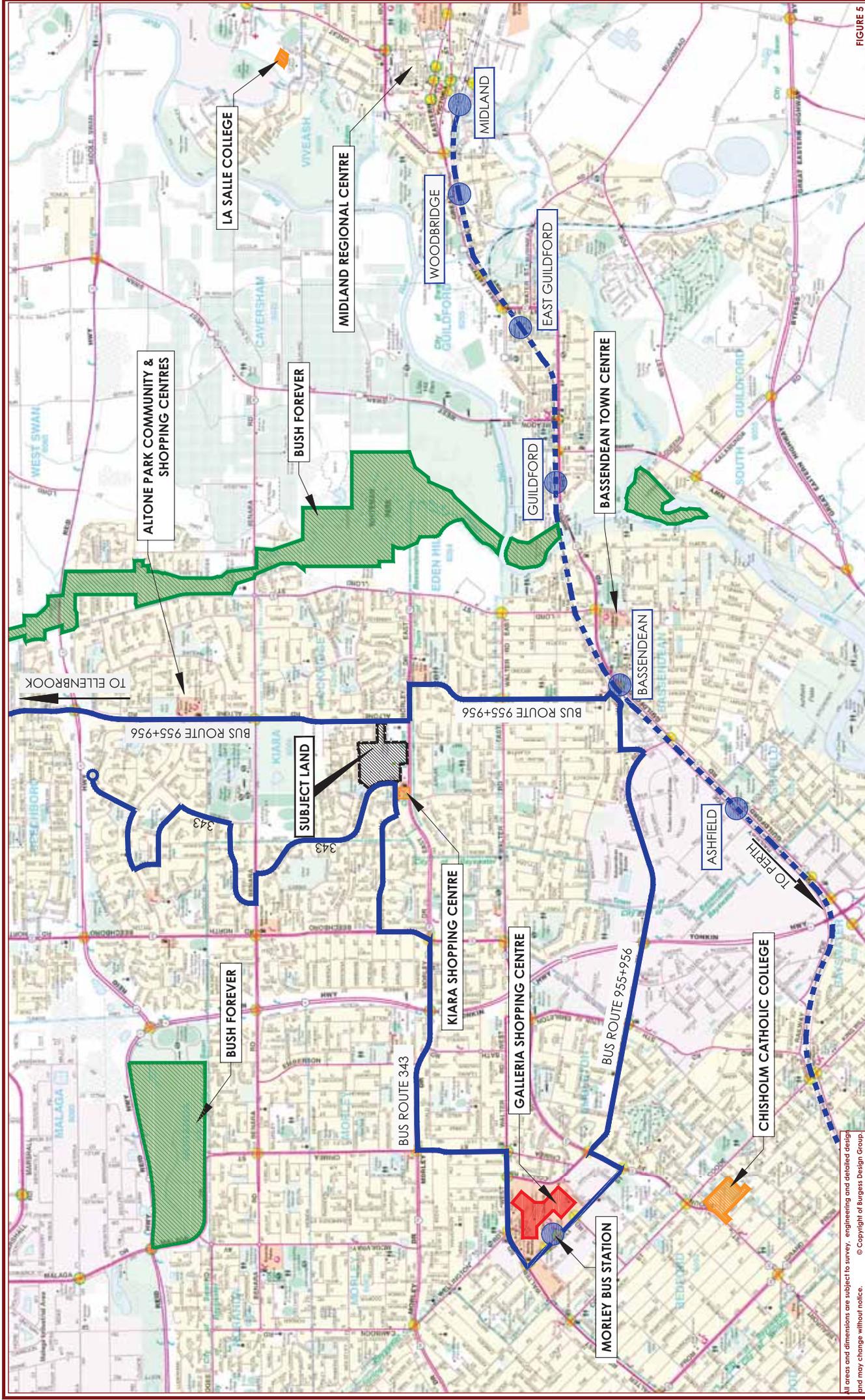


FIGURE 5



NORTH
0 100 200 300 400 500m
SCALE 1:30,000 (A3)

CONTEXT AND CONSTRAINTS
LOT 9000 BOTTLEBRUSH DRIVE
KIARA



All areas and dimensions are subject to survey, engineering and detailed design and may change without notice.
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A Black Cockatoo Habitat Assessment was undertaken by Coffee Environments in 2010. This Assessment found no evidence of Black Cockatoos feeding or breeding on the site, though it did identify 111 potential breeding habitat trees consisting mostly of Marri, with some Jarrah, Banksia and Paperbark – though PGV Environmental note that Banksias and Paperbarks are not utilised by Black Cockatoos for breeding purposes, so the actual number of breeding trees is less than 111. Six hollows were recorded in four of the breeding habitat trees, three of which are located in the northern area of the site within the POS area, with the fourth located along the western boundary of the site.

The proposed development was referred to the Department of the Environment under the EPBC Act, and was approved on 17 July 2014 with conditions. The approval allows for the clearing of no more than 11.2ha of Carnaby's Black Cockatoo foraging and potential breeding habitat, and requires that clearing be undertaken outside of the breeding season (July – November) until potential breeding trees are inspected for the presence of Carnaby's Black Cockatoos.

2.2 LANDFORM AND SOILS

A Geotechnical Investigation was undertaken over the site by Douglas Partners in April 2015 (refer **Appendix 4**). The findings of this investigation are summarised below.

The site is gently undulating with a high point of 27m Australian Height Datum (AHD) in the north-eastern corner to 22m AHD along the southern and western boundaries.

The site occurs partly on the Bassendean System, comprising sand dunes and sandplains with flats and swaps, sandy alluvium over sedimentary rocks and pale deep sand, semi-wet soil and wet soil. The site also occurs partly on the Pinjarra System which consists of poorly drained coastal plain with alluvium over sedimentary rocks and semi-wet soils, grey deep sandy duplexes, brown loamy earths, pale sands and clays.

Field work undertaken by Douglas Partners found that ground conditions beneath the site generally comprise topsoil overlying sand with cemented sand. Clayey soils of the Guildford Foundations indicated on the geological map were not encountered.

Douglas Partners' analysis of Acid Sulphate Soil (ASS) screening tests suggests that the risk of ASS at the site is high. Therefore, an ASS management plan will likely be required as a condition of subdivision approval.

2.3 GROUNDWATER AND SURFACE WATER

A Local Water Management Strategy (LWMS) prepared by Cardno to support the LSP considers groundwater and surface water conditions across the site (refer **Appendix 5**). The findings of the LWMS are summarised below.

Groundwater at the site flows in a south easterly direction, and ranges from 5m below ground level (BGL) in the eastern section of the site (north of the Good Shepherd Catholic School), to 1m BGL in the south eastern corner. The LWMS found that, with fill, a sufficient depth to groundwater can be maintained across the site, and that no active management of the groundwater level should be required.

The LWMS found no surface water features to be present within the site.

Current Wetland Mapping shows portions of two Resource Enhancement Wetlands occurring within the north western portion of the site, both of which have been retained in full within

the POS area (including associated 50m buffers). These wetlands and buffer areas will need to be managed in accordance with a POS Management Plan to be prepared as a condition of subdivision approval.

2.4 BUSHFIRE HAZARD

A Bushfire Management Plan (BMP) has been prepared by Bushfire Prone Planning to support the LSP (refer **Appendix 6**). The findings of the BMP are summarised briefly below.

The LSP falls within a designated 'Bushfire Prone Area' as shown on the DFES *Map of Bushfire Prone Areas*.

The Bushfire Hazard Level (BHL) within the site has been assessed as 'extreme', with land surrounding the site assessed as 'moderate'. The assessed risk is considered to be manageable in accordance with the requirements of SPP3.7 and the WAPC's *Guidelines for Planning in Bushfire Prone Areas* (December 2015) (Guidelines). It should be noted that the anticipated bushfire risk associated with the planned retention of native vegetation within the proposed POS has been considered in the preparation of the BMP

The BMP demonstrates compliance with all four elements of the Guidelines; comprising location, siting and design, vehicular access, and water. Additionally, future buildings within 100m of classified vegetation will need to be constructed to the corresponding BAL classification standards as required by AS 3959-2009 *Construction of Buildings in Bushfire Prone Areas*.

In accordance with the findings of the BMP, the bushfire risk applicable to the site and future development is not considered to be a significant constraint to development.

2.5 HERITAGE

McDonald, Hales and Associates undertook an Aboriginal Heritage Survey of the site in 1996. This survey found four Aboriginal Heritage Sites in the vicinity, as follows:

- Ethnographic sites:
 - A Camp site corresponding to the location of the Good Shepherd Catholic Primary School (outside of the subject site);
 - A campsite situated slightly south of the centre of the site in the vicinity of a large Marri tree (site KE#1).
- Archaeological sites:
 - Two quartz pieces located to the north of the Good Shepherd Catholic Primary School (Site 4368);
 - Quartz artefacts located towards the south west of the site (Site KA#1).

An application to develop the site was lodged under Section 18 of the *Aboriginal Heritage Act 1972* (AHA) on 1 May 2000. The Aboriginal Cultural Material Committee determined that the two archaeological sites (4368 & KA#1) were not within the meaning of Section 5 of the AHA; and on 31 July 2000, the Minister for Aboriginal Affairs gave consent for the land to be used for residential development (refer **Appendix 7**).

This consent listed a number of recommendations, as follows:

- Ethnographic site KE#1 be preserved;
- Consideration be given to the suggestions of the Aboriginal consultants, including the retention of as much bushland as possible; and,
- Consideration is given to erecting a plaque recognising Aboriginal heritage.

In accordance with these recommendations, the LSP retains the large Marri tree within a road reserve, and it is recommended that a plaque be erected in front of the tree recognising the heritage significance of the site. Additionally, a significant portion of the site has been set aside for POS, facilitating the retention of good quality bushland where practicable.

3. LAND USE AND SUBDIVISION REQUIREMENTS

3.1 LAND USE

The proposed land uses within the LSP comprise:

- Predominately medium density urban residential uses (approximately 3.1376ha);
- A large portion of public open space (approximately 4.1128ha); and,
- A private high school site (approximately 4.6772ha).

Refer to **Plan 1 - Structure Plan Map**.

It should be noted that the proposed uses are generally consistent with those outlined in the Concept Development Plan provided as part of MRS Amendment 1133/57, which have evolved through further discussions with the City of Swan and technical investigations.

Land use permissibility shall be in accordance with the corresponding zone or reserve under the Scheme.

3.2 PUBLIC OPEN SPACE

The LSP proposes one parcel of POS; encompassing 4.1128ha of land, and representing 30% of the gross site area and a 32.17% net POS contribution (refer **Appendix 1: POS Schedule**).

The POS has been located to maximise the retention of good quality vegetation; maintain the visual landscape character for adjacent residential uses; and, to accommodate portions of two resource enhancement wetlands and their respective 50m buffers. Additionally, the POS will accommodate an active recreation component, comprising approximately 0.7000ha of grassed playing fields.

The POS will be subject to a Public Open Space Management Plan to be prepared as a condition of subdivision approval. This Management Plan will ensure the POS is properly managed for its ecological value, and to provide a social, recreational and educational value for surrounding residents.

3.3 RESIDENTIAL

The LSP proposes medium density residential uses ranging from R30 to R60. These densities have been designated to:

- Provide a type and form of development that is consistent with the surrounding areas where appropriate (e.g. the R30 areas adjacent to existing residential development);
- Maximise passive surveillance of the public realm (the R40 areas overlooking the POS); and,
- Provide diversity in housing options in close proximity to amenities and services (the R60 portions adjacent to the proposed private high school and the Kiara Shopping Centre).

These densities are expected to yield approximately 81 lots ranging in size from 600m² to 150m², along with three grouped housing sites. The site is expected to accommodate

LEGEND

- Structure plan area
- Local Structure Plan Zoning and Reservations**
- Residential R30
 - Residential R40
 - Residential R60
 - Recreation
 - Private Clubs & Institutions
- Other**
- Indicative high school layout
 - Significant trees to be retained
 - Wetland Core
 - Wetland Buffer
 - Vehicular access not permitted

LAND USE SUMMARY

Gross area	Lot 9000 Bottlebrush Drive	13,709 1ha
Land Use	Private Clubs & Institutions	4.6772ha
	Residential	3.1376ha
	Residential R30	1.6279ha
	Residential R40	0.3536ha
	Residential R60	1.1561ha
	Gross POS	4.1128ha



NORTH
SCALE 1:2000 (A3)
0 20 40 60 80 100m

PLAN 1: KIARA LOCAL STRUCTURE PLAN
LOT 9000 BOTTLEBRUSH DRIVE
KIARA
CITY OF SWAN

All areas and dimensions are subject to survey, engineering and detailed design and may change without notice.
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BURGESS DESIGN GROUP
PO Box 8774, Perth Business Centre 6849
Perth WA 6008
www.burgessdesigngroup.com.au
F (08) 9328 4411
Planner: MS/MB
Date: 12.10.17

approximately 100 dwellings and a population of 270 people, based on an average of 2.7 persons per household in Kiara at the 2011 Census (ABS 2011).

The estimated dwelling yield provides a density of 33 dwellings per site hectare, which exceeds the minimum target of 22 dwellings established in Liveable Neighbourhoods.

Additionally, the site achieves a density of 7.3 dwellings per gross urban zoned hectare (excluding the High School site). This falls below the target of 15 dwellings per gross urban zoned hectare set out in Directions 2031 due to the large proportion of POS included within the Structure Plan area. Given the balance the LSP achieves in delivering additional housing opportunities in the community whilst retaining the landscape character of the area, together with the high number of dwellings per site hectare, this density is considered to be appropriate in this context.

3.4 MOVEMENT NETWORKS

A Transport Assessment was prepared for the site by Cardno in January 2015 (refer **Appendix 8**). This report has been summarised below.

3.4.1 Existing Road Network

The existing road network abutting the site is outlined in **Table 6** below, including pre and post development traffic volumes.

Table 6: Summary of Traffic Volumes

Road	Classification	Speed Limit	Liveable Neighbourhoods Capacity	Existing Volume	2026 Background Growth	2026 with Development
Morley Drive	'Distributor A'	70km/h	25,000	10,550	12,000	15,220
Altone Road	'Distributor A'	60km/h	15,000	7,780	8,850	12,730
Beckworth Avenue	'Local Distributor'	50km/h	3,000	-	1,400	2,150
Bottlebrush Drive	'Local Distributor'	50km/h	7,000	4,550	5,400	5,880
Roseheath Boulevard	'Local Distributor'	50km/h		-	-	-

The additional traffic generated by the proposed development will have only a minor effect on the operation of these roads, and all roads will continue to function below their practical capacity.

3.4.2 Proposed Road Network

The proposed road network conforms to a grid street pattern, comprising:

- Two 'Access Street C' roads; and,
- One 'Neighbourhood Connector B' road.

All proposed intersections will operate as priority intersections, and existing intersections in the vicinity will not be modified. All intersections have sufficient capacity to accommodate the traffic generated by the proposed development.

3.4.3 Public Transport Network

A number of existing bus routes service the site, including:

- Service 343, connecting to the Morley Bus Station; and,
- Services 955 & 956, connecting to Ellenbrook, Bassendean Train Station and Morley Bus Station.

These services are expected to continue operating into the future, with services 955 & 956 becoming more frequent.

3.4.4 Cycle Networks

The existing cycle network in the vicinity of the site comprises a mixture of 'good road riding environments', shared paths and sealed shoulders.

The City of Swan *Swan CycleConnect Strategy* proposes an on-road 1.2m wide cycle lane along Altone Road, extending from Reid Highway through to Rosher Road (about 125m north of the site), and possibly to Morley Drive pending additional funding.

3.5 WATER MANAGEMENT

A Local Water Management Strategy (LWMS) was prepared for the site by Cardno in December 2015 (refer **Appendix 5**). This report is summarised below.

The LWMS seeks to deliver best practice outcomes using Water Sensitive Urban Design Principles to ensure that the existing hydrological regime is maintained and to minimise pollution and instances of flooding.

3.5.1 Stormwater

Surface water runoff will be managed both on a development scale and a lot scale. The first 15mm of rainfall will be retained for infiltration as close to the source as possible, with the 5 year and 100 year ARI storm events detained to pre-developed levels, as outlined below.

The first 15mm of rainfall will generally be retained on site via soakwells for R30 and R40 coded lots, whilst R60 coded lots will drain directly to the City's road drainage system. Some additional fill may be required to provide adequate separation to groundwater. Stormwater from road reserves will be directed to bio-retention areas within roadside swales and detention basins within the POS.

The 5 year ARI event will be directed off future lots towards the road network to be conveyed via the road drainage system and a series of flush kerb gaps to POS areas for detention and discharge via weir structures.

The 100 year ARI event will be directed towards detention basins via overland flow paths for detention and infiltration at pre-development flow-rates.

3.5.2 Groundwater

Indicative groundwater levels for the site indicate that groundwater is located between approximately 2 and 5 mbgl. In order to achieve sufficient separation to accommodate lot-level infiltration via soakwells, fill may need to be imported to provide a minimum depth of

2.4m. Preliminary investigations indicate that sufficient depth to groundwater can be maintained across the site.

It is not anticipated that active management of the groundwater level will be required.

3.6 EDUCATION FACILITIES

The LSP includes the provision of one private high school, comprising approximately 4.6772ha of the site.

The Housing Authority is currently in discussions with the Catholic Education Office regarding the purchase, development, and ongoing operation of the site. Representatives from the Catholic Education Office have advised that the catchment for the school will include families living in Kiara, Lockridge, Morley, Caversham, Beechboro, Bassendean and other surrounding suburbs.

The school is anticipated to accommodate up to 1,000 students, and will help to relieve pressure on the nearby Chisholm Catholic College and La Salle College, which currently have a combined wait-list of approximately 200 students.

3.7 INFRASTRUCTURE COORDINATION, SERVICING AND STAGING

Cardno prepared a Servicing Report for the site in May 2016 to support the preparation of the LSP (refer **Appendix 9**). The report confirms that there are no identified servicing constraints that prevent the land from being developed for urban purposes, and the site is capable of being provided with all essential services and infrastructure. A summary of the report is provided below.

3.7.1 Power

Data obtained from the Western Power *Network Mapping Tool* indicates that the area is serviced by the Hadfields Substation, and there are high and low voltage power lines in the vicinity of the site.

Western Power advised in their feasibility report *MF010177* that the site can be serviced by the existing power infrastructure and that no reinforcement works are required for the proposed development.

3.7.2 Telecommunications

Telstra telecommunications service lines exist along all roads surrounding the site.

The Developer will liaise with Telstra to service the development with telecommunications services as necessary.

3.7.3 Water

The proposed development is expected to have a total Simultaneous Peak Demand of approximately 10.5 litres per second of water, excluding fire services.

The Water Corporation confirmed that the proposed development can be serviced by the existing network.

3.7.4 Wastewater

The development will be serviced via a gravity sewer by connecting to the surrounding existing reticulation lines.

The Water Corporation advised that the existing infrastructure network can support the proposed development with no headworks contributions required.

3.7.5 Gas

Atco Gas identifies Medium Low Pressure gas mains along all roads adjacent to the site, along with Medium Pressure gas mains within the median of Morley Drive and along the eastern verge of Altone Road.

Atco Gas has advised that the existing infrastructure can support the proposed development.

4. CONCLUSION

The Structure Plan as described in this report satisfies the planning frameworks adopted by the City of Swan and the Western Australian Planning Commission, and the advice received during consultation with other agencies.

The proposed development has been shown to be an ideal and timely addition to the area, and will provide for increased housing diversity, additional opportunities for recreation, and better access to education for the local community. Additionally, the proposed land uses will support the ongoing growth of local and regional services and amenities, whilst capitalising on the capacity of existing infrastructure.

In light of the information presented herein, the Structure Plan represents a logical and well planned addition to the community of Kiara.