

THE VINES STAGE 5 (WOBURN PARK)  
DEVELOPMENT PLAN (ODP 37/F)  
AUGUST 2017



robertsday

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# THE VINES STAGE 5 DEVELOPMENT PLAN

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PREPARED FOR LWP PROPERTY GROUP

PREPARED BY ROBERTSDAY

IN ASSOCIATION WITH:  
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COSSILL & WEBLEY CONSULTING ENGINEERS  
WHELANS SURVEYORS  
SKM TRAFFIC ENGINEERS

AUGUST 2017

Amendment ODP37/F to Structure Plan Woburn Park Structure Plan has been approved by the Western Australian Planning Commission on 3 February 2017.

A handwritten signature in black ink, appearing to read 'Rigah', is written over a horizontal line.

Signed by an officer duly authorised by the Western Australian Planning Commission pursuant to Section 16 of the Planning and Development Act 2005



**RECORD OF AMENDMENTS MADE TO THE ENDORSED  
THE VINES STAGE 5 OUTLINE DEVELOPMENT PLAN**

Amendment No.	Description of Amendment	Endorsed by Council	Endorsed by WAPC
Development Plan 37/7	.	6 July 2005	
Development Plan 37/8			
Development Plan 37/9			
Development Plan 37/10		11 April 2007	
Development Plan 37/11	<ul style="list-style-type: none"> <li>- Extension of the Development Plan Area to the north-west to include an additional 12 hectare portion of the original Ellenbrook landholding.</li> <li>- Modification of the road networks and lot layouts to the north of the primary school to provide a more permeable road network and lots with higher amenity.</li> </ul>	12 April 2010	24 May 2010
Development Plan 37/12	<ul style="list-style-type: none"> <li>- An extra road has been provided between the neighbourhood connector (Putney Road) and the Public Open Space Area 1 and Bush Forever Site No.23 to the west of the Development Plan area. This provides a more permeable road network and an improved connection with POS Area 1. In order to accommodate this road lot sizes have been reduced resulting in twenty seven(27) extra lots. A portion of Putley Road has been widened and landscaped to provide an attractive and visible entry point to POS area 1 and the amenity provided by Bush Forever Site No.23.</li> <li>- The area of POS Area 2 has also been increased, resulting in a realignment of the road network to the north and an improved interface with adjacent lots. Lots to the north have been re-designed to provide more conventional lot shapes.</li> </ul>		
Development Plan 37/13	- Amended layout of lots within north-eastern portion of the village in response to market demand. The revised layout will result in an additional seven (7) lots.		
OPD 37 / F	Amend layout of lots in the northern portion of the village, to allow future product to address to buyer demands.	28 September 2016	3 February 2017



# EXECUTIVE SUMMARY

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## CURRENT DEVELOPMENT PLAN REVISIONS

The original Development Plan 37/7 for this portion of The Vines was first granted approval on 6 July 2005. Since that time the Development Plan has been revised several times with the most recent revision (ODP 37/F) receiving approval from the City of Swan on 28 September 2016 and being endorsed by the WAPC on 3 February 2017.

A full outline of the modifications to this Outline Development Plan are contained within the Record of Amendments table.

## DEVELOPMENT STATISTICS

Following the revisions outlined above, the current statistics for ODP 37/F are:

Total Development Plan Area:	92.9 hectares
Total Residential Areas:	37.5737 hectares
Total Road Areas:	18.2038 hectares
Total Public Open Space:	8.8544 hectares
Total Drainage Areas:	1.1681 hectares
Total Bush Forever Site No.23:	27.1 hectares
Total Lots:	417 lots
Lot Range:	R5 to R30
Total Dwelling Yield:	440 dwellings
Total Population:	1,276 people (assuming 2.9 people per dwelling)
Private Clubs and Institutions:	4 hectares (Private Primary School)
Nett Dwelling Density/ha	11.71 dwellings/ha (roads excluded) 7.89 dwellings/ha (roads included)
Population Density/ha	33.96 people/ha (roads excluded) 22.88 people/ha (roads included)



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# 1.0 INTRODUCTION



FIGURE 1 - LOCATION

## LOCATION

The Woburn Park Development Plan comprises a total area of approximately 93 hectares and is commonly referred to as The Vines Stage 5, as it is the remaining portion of the original Vines Estate to be developed.

The Development Plan area is located in the western portion of The Vines estate within the City of Swan in the north-east corridor of the Perth metropolitan region. The site is situated 2 kilometres north-east of the Ellenbrook Regional Centre and 12 kilometres north of the Midland Strategic Regional Centre.

The area is immediately bordered by:

- Ellenbrook Village 7A to the north;
- the existing The Vines estate to the east;
- The Broadway road reserve and Ellenbrook Village 6 (Malvern Springs) to the west; and
- the future Ellenbrook District Centre to the south.

## LAND DESCRIPTION

The original Development Plan area comprises three parent land parcels being:

DESCRIPTION	OWNERS
Lot 808 (Vol LR3151 Fol 899) Reserve Under Management Order Reserve 49300	<i>Primary Interest Holder:</i> Conservation Commission of Western Australia
Lot 9162 (Vol 2697 Fol 881)	<i>Ellenbrook Management Pty Ltd</i> The Vines (WA) Pty Ltd
Lot 9175 (Vol 2711 Fol 647)	85 Spring Street Properties Pty Ltd Landrow Pty Ltd DCA Projects Pty Ltd Martindale Pty Ltd

LAND USE + LANDFORM

The topography of the site slopes gradually from the north-west corner height of 39-40 metres AHD to the south-east corner of the Bush Forever site at 30 metres AHD, with a small peak of 40 metres AHD on the eastern boundary of the Bushforever site.

The Development Plan area contains Bush Forever site No.23 which was extended from 17.4 hectares to 27.1 hectares as a result of a negotiated planning solution.

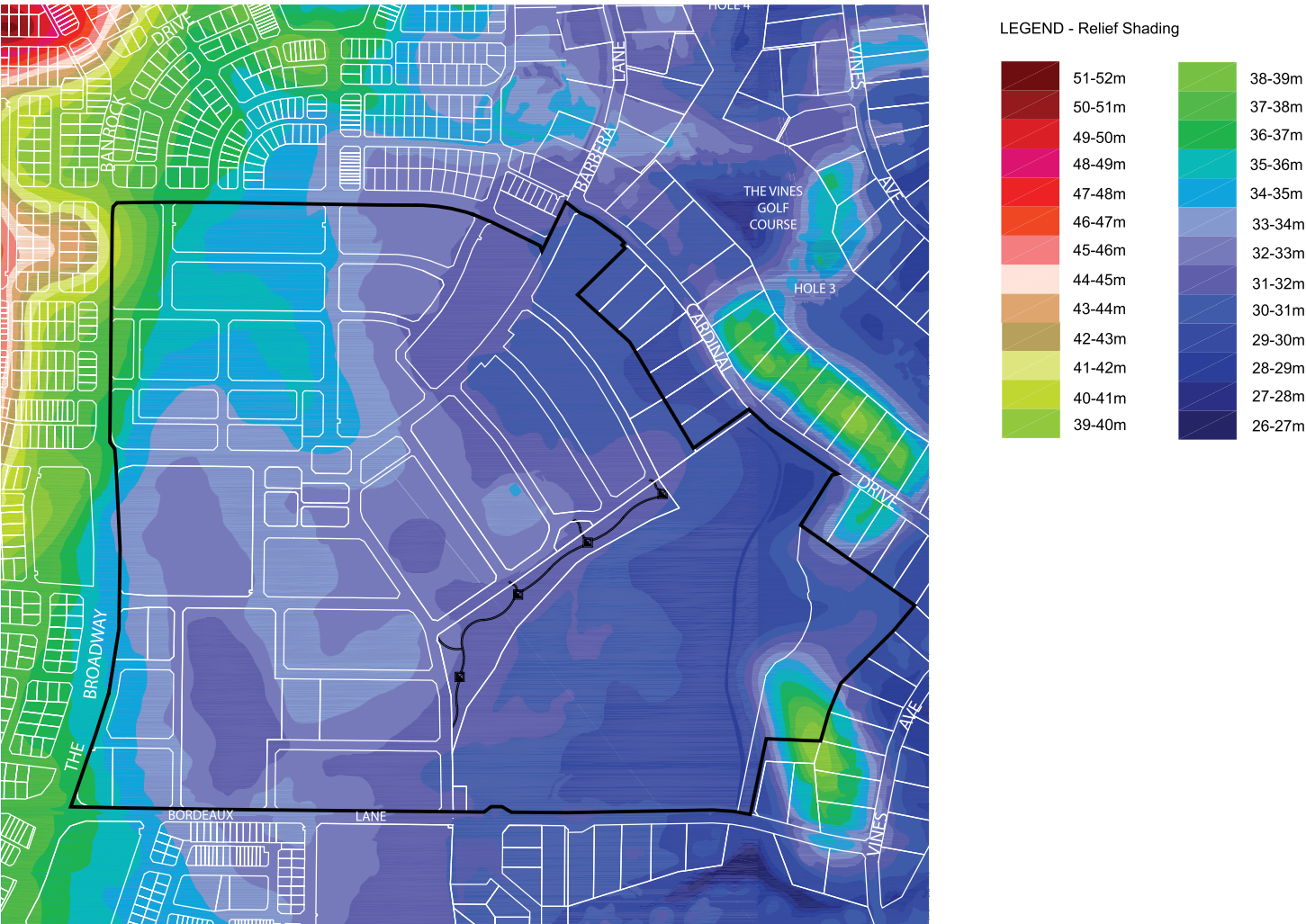


FIGURE 2 - LANDFORM



## PREVIOUS STATUTORY APPROVALS AND ZONING

Lot 9162 and Lot 808 (Bush Forever Site No 23) were together previously known as Pt Lot 3 Bordeaux Lane and formed part of the original Vines Estate. Pt Lot 3 was previously zoned "Urban Deferred" under the Metropolitan Region Scheme (MRS) to allow detailed planning issues and constraints to urban development be addressed including negotiations for the Bush Forever site and the inclusion of Conservation Category wetlands in the southern portion of Public Open Space.

The detailed planning for Pt Lot 3 was not undertaken at the same time as the Development Plan 37/7 for The Vines, although the subject land was identified as 'Future Residential Development' in the Development Plan approved by the City of Swan and endorsed by the Western Australian Planning Commission (WAPC).

In December 2000, as part of the Bush Forever Negotiated Planning Solution, a 27.1 hectare portion of Pt Lot 3 (Lot 808) was transferred to the WAPC as Bush Forever Site No.23. The identification of the Bush Forever site saw the detailed definition and evaluation of vegetation, flora and ecological communities, leading to the agreement between the landowners and Bush Forever Office regarding the exact boundary of the site.

In April 2001, the MRS was amended to transfer the site from the "Urban Deferred" zone to "Urban" zone in recognition that all constraints to urban development had been addressed. An MRS "Parks and Recreation" zone was also placed over the Bush Forever Site No.23.

The preparation of the Development Plan for the site proceeded on the basis that conservation requirements for vegetation, ecological communities, flora and wetlands have been resolved through the formal environmental assessment processes for Ellenbrook and the Bush Forever negotiated planning solution outcomes.



**CURRENT DEVELOPMENT PLAN REVISION**

The original Development Plan 37/7 for this portion of The Vines was first granted approval on 6 July 2005. Since that time the Development Plan has been revised several times with the most recent revision (ODP 37/F) receiving approval from the City of Swan on 28 September 2016 and being endorsed by the WAPC on 3 February 2017.

A full outline of the modifications to this Outline Development Plan are contained within the Record of Amendments table.

The following revisions have been made to the Development Plan under modification ODP 37/F:

- Amend layout of lots within the northern portion of the village, to allow future product to address buyer demands.

**DEVELOPMENT STATISTICS**

Following the revisions outlined above, the current statistics for ODP 37/F are:

Total Development Plan Area:	92.9 hectares
Total Residential Areas:	37.5737 hectares
Total Road Areas:	18.2038 hectares
Total Public Open Space:	8.8544 hectares
Total Drainage Areas:	1.1681 hectares
Total Bush Forever Site No.23:	27.1 hectares
Total Lots:	417 lots
Lot Range:	R5 to R30
Total Dwelling Yield:	440 dwellings
Total Population:	1,276 people (assuming 2.9 people per dwelling)
Private Clubs and Institutions:	4 hectares (Private Primary School)
Nett Dwelling Density/ha	11.71 dwellings/ha (roads excluded) 7.89 dwellings/ha (roads included)
Population Density/ha	33.96 people/ha (roads excluded) 22.88 people/ha (roads included)

# 2.0 STRATEGIC + STATUTORY PLANNING

## STRATEGIC PLANNING

The Vines estate was originally identified as future urban development in the 1994 North East Corridor Structure Plan (WAPC) for ‘tourist and resort development’.

The Development Plan area is covered by the City of Swan “Ellenbrook-Vines Place Plan” (2004), which is a strategic community development plan, although there are no specific strategies or actions that give direction to design or land use activity for the Development Plan area.

## ZONING

The parent lots for Development Plan 37/13 are Lot 9162 and Lot 9175 the details of their zoning under the MRS and the City of Swan Local Planning Scheme No.17 (LPS17) are:

### Lot 9162

MRS zone: Urban  
City of Swan LPS17 zone: Special Use No. 3 (generally covering The Vines Resort)

“Special Use No. 3” zone provisions state that subdivision and development within this area shall be subject to the provisions of Part 5A of LPS No. 17, including the preparation and approval of a Structure Plan. This Special Use zone was originally prepared to guide the development of The Vines Golf Resort.

### Lot 9175

MRS zone: Urban  
City of Swan LPS17 zone: Special Use No. 4 (Ellenbrook Estate)

“Special Use No. 4” zone provisions state that subdivision and development within this area shall be subject to the provisions of Part 5A of LPS No. 17, under a two tiered approach including the preparation and approval of a Structure Plan, then a Development Plan. This Special Use zone was originally prepared to guide the development of the larger Ellenbrook Estate.

Reference to a Structure Plan in this case relates to a larger, district-scale Structure Plan covering the whole Estate, and reference to a Development Plan refers to a smaller, more detailed plan (now referred to as a Local Structure Plan under LPS17).

### Lot 808 (Bush Forever Site No.23)

MRS reserve: Parks and Recreation

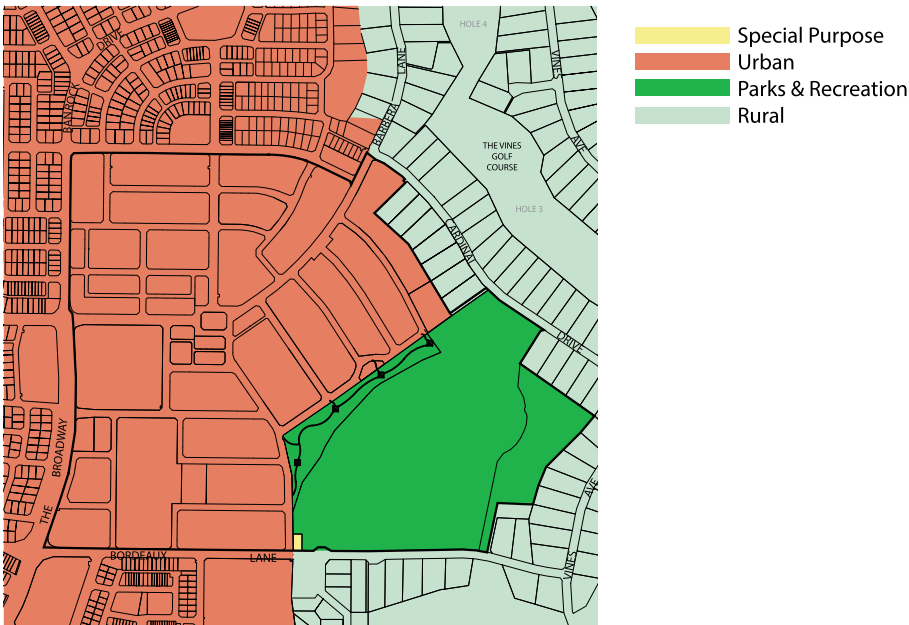


FIGURE 3 - ZONING - METROPOLITAN REGION SCHEME

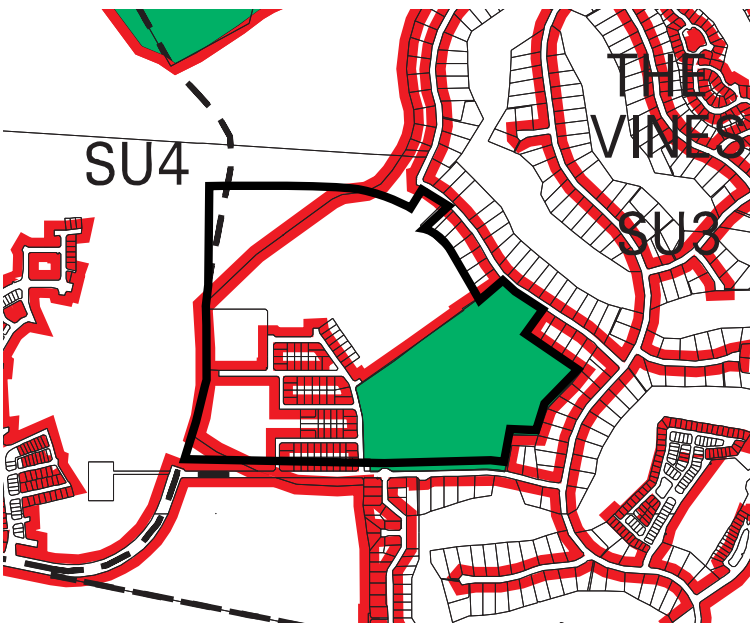
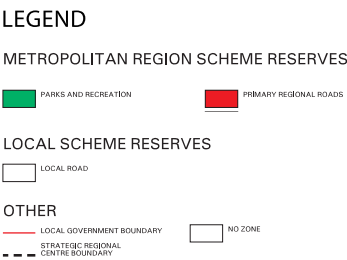


FIGURE 4 - ZONING - DISTRICT LOCAL PLANNING SCHEME NO. 17



## PLAN PREPARATION AND APPROVAL PROCESS

As stated previously it is considered prudent to extend the Development Plan area to include the additional land originally contained in the Ellenbrook estate and consolidate the planning for the "Urban" zones to ensure a permeable and well connected pattern of development.

As the zoning requirements for both areas require the preparation of a Local Structure Plan, it is therefore proposed to prepare 1 consolidated Plan over both lots. To remain consistent with the preparation of previous Plans, the terminology Development Plan will remain, rather than the term Local Structure Plan.

Under LPS17 Section 5A "Structure Planning Areas" required a plan to be prepared that shows the layout of neighbourhoods, lots, roads, open spaces/environmental features, land uses and residential densities, schools and so forth. The Plan is to be accompanied by a written report explaining the context, plans, rationale for the development pattern and location of land uses and resolution of any planning issues.

The plan and report are advertised for community and government comment for 21 days, including referral to WAPC for their comments. The Council then considers the comments and decides either to adopt the plan with or without modifications or refuse the plan. If adopted, the plan is then forwarded to the WAPC for endorsement.

## BUSH FOREVER SITE NO.23

The existing Bush Forever Site No 23 was previously in private ownership and originally covered 17.4 hectare area of land. Following consideration of a concept plan for urban development around the site and ecological assessment of the area, a Negotiated Planning Solution determined the following should apply:

- reserve a total BushForever site of 27.1 hectares. This included a further 7 hectares of land with high ecological values containing a Threatened Ecological Community (TEC) into the Bush Forever site. A total of 19.9 hectares being ceded free of cost to the Crown and 7.2 hectares be purchased.
- incorporate 'hard edges' around the boundary of the site (ie roads etc) to protect from potential fire risks and pollution from adjoining properties and to provide for more effective management;
- incorporate a 2.5 hectare area of Public Open Space (POS) along the north-west boundary of the site (ceded free of cost to the Crown) with purpose of being compatible with the conservation objectives for the site. The BushPlan office was supportive of the area of POS to be used for passive recreation; and
- the ceding of a 7 metre wide Pedestrian Access Way (PAW) link to Cardinal Drive to the Crown free of cost, and that a 3 metre dual-use path be constructed as part of the residential development of Stage 5.

Based on the above recommendations, a Negotiated Planning Solution was agreed by both parties (SANWA Property Group and the WAPC) which modified the concept plan to reflect the requirements of the MFP's BushPlan office, and included:

As previously mentioned, as a result of the successful negotiation for the transfer of the Bush Forever site, the Metropolitan Region Scheme was amended in April 2001 to transfer the remaining land (Lot 9011) from the 'Urban Deferred' zoning to 'Urban' in recognition that constraints to urban development had been addressed. The Development Plan reflects the intent and outcome of the Negotiated Planning Solution in protecting the ecological values of the site.





## 3.0 THE DEVELOPMENT PLAN

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### THEME

Located between the Vines Resort and Ellenbrook New Town, the development pattern and theme of Stage 5 is based around large 'country homesites' lots as the area provides a 'transition' between larger lots in the The Vines Estate (around 4000 m<sup>2</sup>) and the smaller and more conventionally sized lot within Ellenbrook. In this respect, the design provides for the creation of a neighbourhood with a distinctive character which will foster an identifiable sense of place and community will most likely attract a higher proportion of families.

In addition, the subdivision layout focuses streetblocks towards areas of public open space and the Bush Forever site.

### DESIGN PRINCIPLES

The subdivision design is based upon the principle of Traditional Neighbourhood Design (TND) which encompass.

- A radial interconnected road pattern to ensure residents will be focused on the Bush Forever land and/or public open space.
- An interconnected road pattern to provide alternative routes for vehicles which in turn reduces excessive flows on any individual routes;
- Alignment of roads generally north-south to create east-west lots and allow for the benefits of passive solar design/energy efficiency;
- Utilise and reinforce the site topography wherever possible;
- Retain vegetation wherever possible in the prescribed POS areas;
- The use of avenues and boulevards to provide vista's and direct access to the POS and adjoining facilities and services in Ellenbrook and the Vines;
- Strong pedestrian and cycleway links to open space, education, community and retail facilities providing for safe and direct movement;
- A mix of residential lots and densities.



## DEVELOPMENT PLAN

The locational, topographical and landscape features of the site have been merged with the design theme and principles to create the Development Plan.

The road network enables direct access to centrally located areas of POS while also proposing multiple access points to the adjoining Vines Resort (2 connections via Bordeaux and Barbera Lanes) and Ellenbrook (5 connections via east-west roads). Stage 5 is also directly north of the Ellenbrook District Centre (3 connections via subdivisional roads).

These connections will enable residents to access the various retail, community, civic, cultural and recreation facilities that are available, especially the Ellenbrook Town Centre. These multiple entries/access points will disperse traffic movements and reduce the need for a single-heavily trafficked distributor road within Stage 5.

Four areas of POS have been sited and configured to:

- Retain remnant vegetation (refer Appendix A - Environmental Management Report);
- be highly accessible as all residents are within a 5 minute walk or 400 metres of POS; and
- Provide an appropriate buffer between the Bush Forever site and urban development.

The market demand for larger lots at Woburn Park is for lots of 1000m<sup>2</sup> – 1200m<sup>2</sup>. The revised design as shown on the Development Plan incorporates this lots size in the remaining stage, which also takes into consideration the need to transition to the larger lot size in the adjoining Vines estate. The current development Plan design contains 8 lots adjacent the Vines. The revised design proposes 10 lots adjacent the existing Vines lots. Importantly, where the land is higher than

the Vines lots on the western boundary, only one large lot is proposed. The balance 9 lots will be a minimum of 50m deep with a large rear setback. This will provide a transition to the larger Vines lots.



FIGURE 5 - DEVELOPMENT PLAN

**PUBLIC OPEN SPACE**

Public open spaces has been located and designed to:

- retain higher quality remnant vegetation located outside the Bush Forever site (refer Appendix A - Environmental Management Report);
- provide a buffer between the Bush Forever site and urban development through a 2.5 hectare POS strip along the northern boundary of the Bush Forever site. This was agreed through the Negotiated Planning Solution with the landowner agreeing to cede the POS free of cost to the Crown and that it be included as part of the overall 10% POS contribution. The WAPC required that the 2.5 hectare area be utilised as passive POS to ensure compatibility with the conservation objectives of Bush Forever site No.23;

- maintain natural drainage lines and Conservation Category Wetlands;
- provide ready access and distribution to each residence. All lots in the Development Plan are within a five minute or 400 metre walk of POS; and
- provide amenity to nearby residences.

The breakdown of POS requirements and functionality is:

Public Open Space Provision	
1 – Passive	2.53 ha
2 – Active/Passive/Drainage	Total POS area = 1.7779ha 0.8889ha Unrestricted Open Space 0.05ha Restricted Open Space
3 – Passive/Active	0.2387ha
4 – Passive/Drainage	Total POS area = 4.3078ha 2.6578ha Unrestricted Open Space 1.2143ha Restricted Open Space
Total Public Open Space	8.8544 ha (14.09% of site)

Considering only 20% restricted open space can be included and 1 in 1 year drainage areas must be deducted the total POS figure is reduced to 7.5725 ha (12.05%). While one of the key aims of the POS is to retain remnant vegetation, some areas will be developed for both active and passive recreation.



FIGURE 6 - PUBLIC OPEN SPACE

## PUBLIC OPEN SPACE SCHEDULE

<b>Structure Plan Area (Site Area)</b>			92.6131ha
<b>Total Net Site Area</b>			92.6131ha
<b>Deductions</b>			
Dedicated drainage reserves	1.1681ha		
Bush Forever Site No. 23 (Lot 808)	24.5899ha		
Primary School	4.0ha		
<b>Total</b>		29.757ha	
<b>Gross Subdivisible Area (GSA)</b>			62.8551ha
<b>Public Open Space requirement @10% of GSA</b>			<b>6.2856ha</b>
<b>Public Open Space Contribution</b>			
<b>May comprise:</b>			
Minimum 80% Unrestricted Public Open Space			5.028ha
Maximum 20% Restricted Public Open Space (based on 5.9732ha)			1.2571ha
<b>Unrestricted Public Open Space Sites</b>			
POS 1 – Passive Recreation		2.53ha	2.53ha
POS 2 – Active/Passive Recreation		0.8889ha	0.8889ha
POS 3 – Active/Passive Recreation		0.2387ha	0.2387ha
POS 4 – Passive Recreation		2.6578 ha	2.6578ha
Total Unrestricted Public Open Space			<b>6.3154 ha</b>
<b>Restricted Public Open Space Sites</b>			
Total restricted use public open space contribution (less than 20% of total POS)			
Drainage area in POS 2 and 4 (subject to inundation greater than 1 year ARI rainfall interval but more frequently than 5 year ARI rainfall event i.e. between 1 and 5 year rainfall event)			
POS 2		0.0500ha	0.0500ha
POS 4		1.2143ha	1.2143ha
Total Unrestricted Public Open Space			1.2643ha
Only 20% can be included as Restricted Public Open Space			1.2571ha
<b>Total Public Open Space Provision</b>			<b>7.5725ha (12.05 % of the site)</b>
<b>POS Oversupply</b>			1.2869ha



STREET NETWORK

Village 5 makes provision for an interconnected street network to accommodate shared vehicular, pedestrian and cycle access to public open space / Bush Forever site, primary school, and surrounding residential and commercial areas at the Ellenbrook District Centre (planned immediately south of the subject land), The Vines and Ellenbrook.

The street network has been configured to distribute traffic and minimise excessive traffic movements on any one route. The geometric layout of the street network has been assessed by traffic engineers Sinclair Knight Mertz and is considered to provide safe and convenient access for residents and visitors (refer to the Traffic Note contained in Appendix D).

The majority of lots are provided with access directly from the street network, with the exception of several street blocks surrounding the central POS areas and north of the Primary School. Rear laneway access in these instances

is provided to improve the relationship of the dwelling to the street and to take advantage of the amenity of the POS areas. Lots fronting the northern portion of The Boulevard have direct access onto the district distributor as traffic levels are reduced over this portion of the road.

Integral to the street network are the entry boulevards and avenues located at the perimeter and through the Development Plan area. They provide highly legible connections from the area facilitating access to adjoining services and facilities in Ellenbrook and The Vines. Importantly they also provide highly legible connections through the Development Plan area, connecting Ellenbrook proper to The Vines, directing traffic onto key roads thus minimising amenity impacts on future residents.

The street network provides residents with a legible connection to POS areas and provides a visual cue through to the Bush Forever Site.

The street network is generally orientated directly north- south or within an acceptable range to maximise solar orientation of lots.



PEDESTRIAN + CYCLE NETWORK

The pedestrian and cycle network provides a combination of dual-use and footpaths which aim to provide direct linkage to:

- public open spaces, the Bush Forever site and the primary school;
- proposed Ellenbrook District Centre to the south; and
- the surrounding Ellenbrook and The Vines.

Dual use paths have been located on streets that perform local distributor functions within the Development Plan area. All other streets cater for less traffic and are thus suitable for use by both cyclists and pedestrians alike.

Footpaths have been provided on one side of a street for the majority of streets in the Development Plan area to provide for safe and convenient pedestrian access.

A 7 metre Pedestrian Access Way (PAW) link from the Bush Forever site through to Cardinal Drive is required to be ceded free of cost to the Crown and constructed with a 3 metre dual-use path as part of the Negotiated Planning Solution.



FIGURE 8 - PEDESTRIAN + CYCLE NETWORKS

## ACTIVITY CENTRES + EMPLOYMENT

In accordance with the Ellenbrook District Structure Plan, there are no commercial or activity centres required for the Development Plan 37/13 area. Future residents are able to access shops, services and civic facilities in the Ellenbrook District Centre to be constructed directly south of the site in Village 6.

Residents will be able to access a wide range of employment opportunities within the Ellenbrook Regional Centre, the City of Swan, North East and Eastern corridor of Perth.

## EDUCATION

A 4 hectare primary school site located in the eastern portion of the Development Plan area has been created and subdivided through Development Plan 37/7. The site will accommodate a Catholic primary school facility.

Previous strategic planning for Ellenbrook made provision for a private primary school to be located in Village 6, however following consultation with the Catholic Education Office they advised that one primary school facility can service not only Village 6 and but also Village 7, The Vines and the northern portion Aveley.

Given the need to service a wider catchment than Village 6, the site adjacent to The Broadway district distributor was identified as the best location to provide convenient and ready access from the surrounding areas of the Ellenbrook, The Vines and Aveley for vehicles and pedestrians/cyclists. Placement along a district distributor also ensures that traffic is less likely to enter or filter through the Development Plan residential areas.



FIGURE 9 - EDUCATION FACILITES DISTRIBUTION

## **BUSHFIRE MANAGEMENT**

A Bushfire Management Plan was prepared for lots adjacent to the Bush Forever Site (York Gum Services, 2012). in accordance with the 'Planning for Bushfire Protection Guidelines' (WAPC, 2010) and Australian Standards 3959-2009.

The Bushfire Management Plan addresses the requirements for bushfire preparedness and bushfire damage mitigation.

The Bushfire Management Plan also outlines mitigation strategies, namely:

- Hazard management;
- Bush fire risk management (advise to home owners, etc);
- Appropriate road layout and service provision;
- Public education and community awareness;
- Fire safer areas; and
- Ongoing assessment of fire management strategies.

The majority of land covered by the 2012 York Gum Services BMP has now been constructed. A full copy of the 2012 Bushfire Management Plan is contained in Appendix E

A BMP has been prepared for the final stages of development at Woburn Park (Strategen, 2016), which have subsequently been granted conditional subdivision approval, in accordance with State Planning Policy 3.7: Planning in Bushfire Prone Areas and Australian Standards 3959 (AS-3959).

As a result of subdivision works within the Development Plan area, the site has been largely cleared of any remnant vegetation. Where existing vegetation is retained, the BMP considers the bushfire hazard and associated risk within and adjacent to the development area and outlines standard management responses and compliant acceptable solutions to mitigate the hazard / risk.

HOUSING +DENSITY

The Woburn Park Development Plan proposes a total of 417 lots across the village. The proposed lots range in size from R5 up to R30.

A range of larger lot sizes are proposed to cater for the ‘country homesites’ theme and provide a logical transition between the larger lots developed in ‘The Vines’ and the traditional lot sizes found in Ellenbrook.

Overall, the design provides a wide variety of lot sizes, while meeting the objective of providing a transition between The Vines and Ellenbrook.

Projected lot yield and population forecasts for Development Plan 37/13:

R-CODE	AREA (ha)	%	NO. LOTS	%
R5	0.4102	1.09	1	0.24
R10	11.3647	30.25	96	23.02
R12.5	5.8434	15.55	61	14.63
R15	17.4488	46.44	225	53.95
R17.5	1.1617	3.09	19	4.56
R25	0.5787	1.54	13	3.12
R30	0.7663	2.04	2	0.48
TOTAL	37.5737		417	

Total Estimated Dwellings	440 dwellings
Nett Dwelling Density/ha	11.71 dwellings/ha (roads excluded) 7.89 dwellings/ha (roads included)
Estimated Population	1,276 (assumes occupancy rate of 2.9 per household)
Population Density/ha	33.96 people/ha (roads excluded) 22.88 people/ha (roads included)

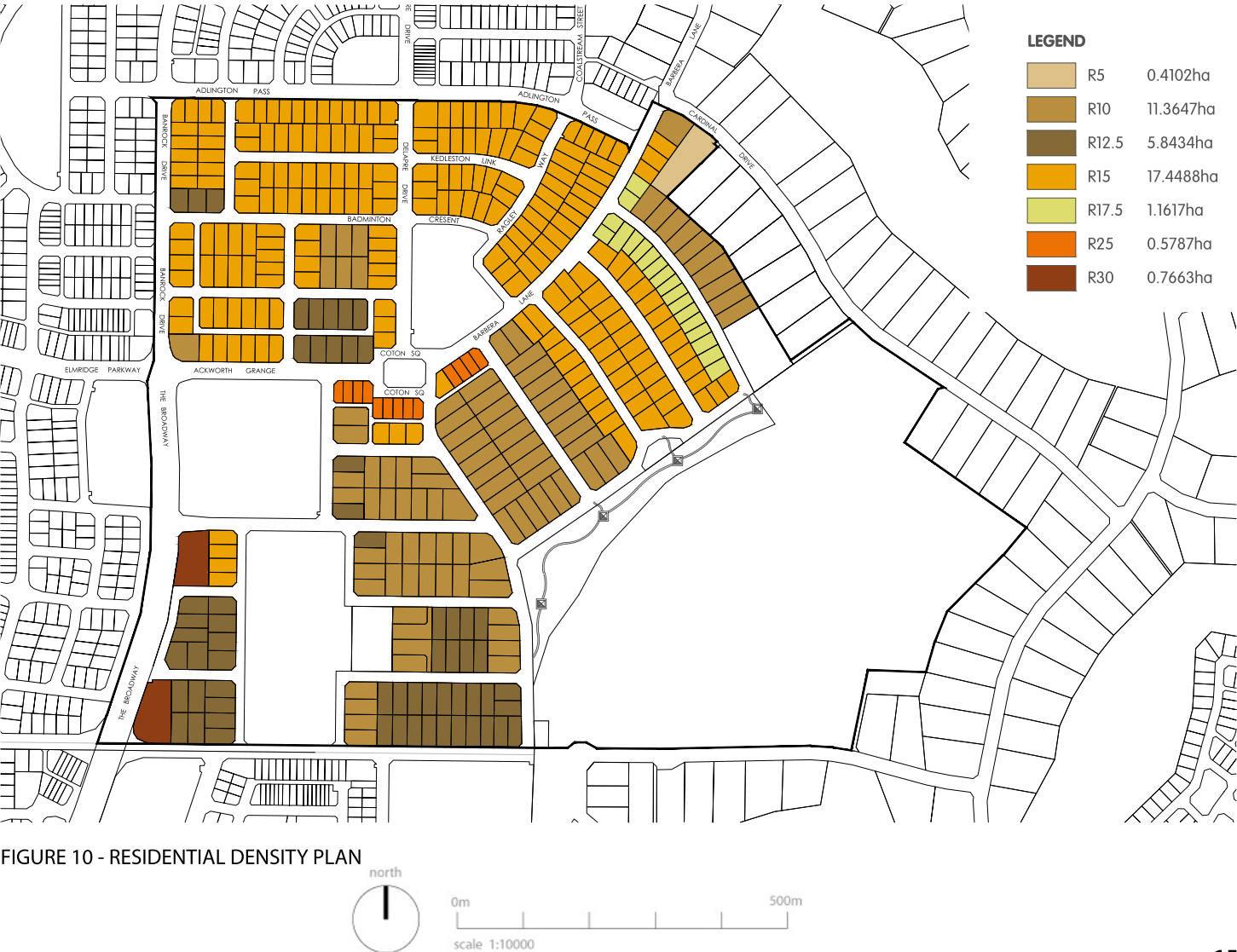


FIGURE 10 - RESIDENTIAL DENSITY PLAN



## ENVIRONMENTAL ASSESSMENT

In support of the proposed development, a comprehensive environmental assessment has been undertaken by RPS Bowman Bishaw Gorham – Environmental Management Consultants (refer Appendix A - Environmental Management Report).

The assessment includes management recommendations and strategies to address issues relating to the protection of wetlands and priority flora and fauna within the BushForever site, the retention of areas of vegetation within the developable area, and to ensure that the wetlands and vegetation are not affected by groundwater rise following urbanisation.

The environmental assessment identifies the manner in which the environmental aspects of development in relation to the site will be managed, including nutrient and drainage, the existence of acid sulphate soils, the protection of flora and fauna and site contamination.

## ENVIRONMENTAL PROTECTION AUTHORITY ADVICE

Environmental Protection Authority (EPA) advice dated 21 December 2004 (refer Appendix B – Environmental Correspondence), states that it does not object to the proposal, however requests that the design be reviews with the view to better protecting the wetlands in the south west corner of the Development Plan area, while at the same time not increasing the overall POS provisions.

Following receipt of the EPA advice, a further site inspection was undertaken by RPS Bowman Bishaw Gorham to identify the best quality vegetation in the south western portion of the site. The Development Plan design was subsequently modified by enlarging the southern POS area to capture the vegetation of highest quality and best condition in this location. Despite the EPA's considerate advice that the amount of POS given up need not be increased to satisfy its requirements, this was not possible due to the extent of land required for drainage within the northern POS area.

The Department of Environment (DoE) has considered the modified plan and advises in correspondence dated 9 March 2005 (Appendix B) that it accepts there is improvement in the size of the POS in the south western corner to include wetland vegetation and extends its qualified support for the subdivision.

## ACID SULPHATE SOILS ASSESSMENT

In July, 2007, a Detailed Site Assessment for acid sulphate soils (ASS) was carried out for the northern portion of Stage 5 in accordance Department of Environment guidelines.

An ASS and Dewatering Management Plan was prepared and concluded:

- *there would be no significant drawdown impacts on the Bush Forever site;*
- *the dewatering program can be undertaken in a sustainable manner; and*
- *no significant offsite impacts to surrounding groundwater users and surrounding ASS areas are predicted.*

## ENGINEERING SERVICES

A comprehensive Engineering Services Report has been prepared by Cossill and Webley – Consulting Engineers (refer Appendix C - Engineering Services Report). This report provides details on the following engineering components:

- *siteworks are required to facilitate development;*
- *the required road network to service the development and corresponding reserve and carriageway requirements;*
- *the provision of reticulated water and sewerage supply; and*
- *the provision of public utility services, i.e: underground reticulated electricity supply, telephone and natural gas supplies.*









