Residential R25

Residential R40

Legend



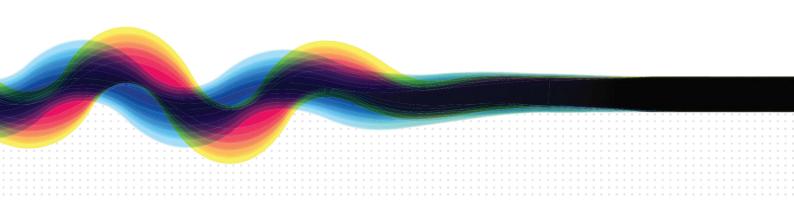


Figure 1 - Structure Plan

Lots 97 - 102 Watson Road

Structure Plan

March 2022 | 21-657





We would like to acknowledge the Kariyarra, Ngarla, and Nyamal people as the Traditional Custodians of the Town of Port Hedland lands. We recognise their strength and resilience and pay our respect to their Elders past and present.

Document ID: /Volumes/Graphics/2021/21-657 Beeliar, Lots 97-102 Watson Road/Planning/Structure Plan Amendment/Final				
Issue Date Status Prepared by Approved by				
1	21.12.21	Final	Ella Compton	Justin Page
2	29.03.22	Final	Ella Compton	Justin Page

This report has been prepared for the exclusive use of the Client, in accordance with the agreement between the Client and Element Advisory Pty Ltd (element) ('Agreement').

element accepts no liability or responsibility whatsoever in respect of any use of or reliance upon this report by any person who is not a party to the Agreement or an intended recipient.

In particular, it should be noted that this report is a qualitative assessment only, based on the scope and timing of services defined by the Client and is based on information supplied by the Client and its agents.

element cannot be held accountable for information supplied by others and relied upon by element.

Copyright and any other Intellectual Property arising from the report and the provision of the services in accordance with the Agreement belongs exclusively to **element** unless otherwise agreed and may not be reproduced or disclosed to any person other than the Client without the express written authority of **element**.

CERTIFICATION OF APPROVED STRUCTURE PLAN

IT IS CERTIFIED THAT AMENDMENT NO. 1 TO THE LOTS 97 – 102 WATSON ROAD STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

	13 October 2022	Date
Sig	ned for an on behalf of the Wesser Australian Planning	Commission
An offi	cer of the Commission duly authorised by the Commiss	ion pursuant to

section 16 of the Planning and Development Act 2005 for that purpose.

Table of Amendments to Structure Plan

Amendment No.	Description of Amendment	Amendment Type	Date Endorsed by WAPC
Original Structu	re Plan Approval		20 February 2018
1	Removal of road reserve abutting public open space to the north and replace with residential R40.	Standard	13 October 2022

Executive Summary

The Lots 97 – 102 Watson Road Local Structure Plan (LSP) was endorsed by the Western Australian Planning Commission (WAPC) on 209 February 2018.

The LSP provides the guiding framework for the residential development of Lots 97 - 102 Watson Road, including the provision of public open space and appropriate road connections to adjoining properties.

Further detail on the land use breakdown as proposed by this structure plan amendment is provided in the Table 1-Summary Table.

Table 1. Summary of the proposed structure plan

Item	Data	Section number referenced within the Structure Plan Report
Total area covered by the Structure Plan	2.43 hectares	1.3
Area of each land use proposed		1.3
Residential	1.49 hectares	
Public Open Space and Drainage	0.29 hectares	
Total estimated lot yield	40 dwellings	1.3
	(This amendment introduces two additional dwellings)	
Estimated number of dwellings	40	1.3
Estimated residential density		1.3
Per site hectare	27 dwellings per site hectare	
Per gross urban hectare	16 dwellings per site hectare	
Estimated Population	112	1.3
(average 2.8 people/household)		
Estimated area and percentage of public open space given over to:		1.3
Local Parks	0.29 hectares (POS 10%)	

Contents

PA	RT ONE - IMPLEMENTATION	1
<u>1.</u>	Structure Plan Area	1
2.	Structure Plan Content	1
3.	Structure Plan Operation	1
4	Staging	1
5.	Subdivision and Development Requirements	1
5.1	Zones and Reserves	1
5.2	Residential Density	1
5.3	Residential Design Code Variations	2
5.4	Public Open Space	2
6.	Local Development Plans	2
7.	Other Requirements	2
7.1	Notifications on Title	2
7.2	Developer Contributions	2
<u>8.</u>	Additional Information	2
	RT TWO – EXPLANATORY FORMATION	5
An	nendment No. 1	5
1.1	Pre-lodgement consultations	5
1.2	Planning Rationale	6
1.3	Residential Densities and Yield	7
1.4	Public Open Schedule	8
1.5	Local Development Plan	9

APPENDIX 1			1
Lots 97 – 102 Watson Road Struct	ture Plan	(2018)	1
APPENDIX 2			1:
Subdivision Concept Plan			1
APPENDIX 3			1!
Landscaping Concept Plan			1
APPENDIX 4			1
Proposed Lot Interface with POS	(R40 Lot	s)	1
APPENDIX 5			19
Habaa Wataa Maaaaaaa Blaa			-

Part One - Implementation

1. Structure Plan Area

This structure plan shall apply to the land contained within the inner edge of the line denoting the 'Structure Plan Boundary' on the Structure Plan Map.

2. Structure Plan Content

This structure plan consists of:

- Part One Implementation Section (this section);
- Part Two Explanatory Information; and
- Appendices Technical information/reports supporting the structure plan.

3. Structure Plan Operation

This structure plan is prepared in accordance with Part 4 of Schedule 2 (Deemed Provisions) in the Planning and Development (Local Planning Schemes) Regulations 2015 ('the Regulations'). It fulfils the requirements of the City of Cockburn Town Planning Scheme No. 3 for the applicable 'Development' zone.

The Regulations require decision-makers to have due regard for the provisions of this structure plan, which takes effect on the date on which it is approved by the Western Australian Planning Commission ('WAPC').

Unless otherwise specified in this Part, all words and expressions used in this structure plan have the same meaning as the same words and expressions in the Regulations and City of Cockburn Town Planning Scheme No. 3 (as amended).

4 Staging

Under the WAPC 155966 subdivision conditional approval, staging will occur from the south and proceed northwards. The southern area topography is higher with stormwater draining to the north. The first stage of subdivision will create lots fronting East Churchill Avenue and the new subdivision to complete the neighbourhood cell. The pace of future subdivision to complete the development of the structure plan will be subject to market forces.

5. Subdivision and Development Requirements

5.1 Zones and Reserves

Subdivision and development of land within the structure plan area should be in accordance with the structure plan and the corresponding Zone or Reserve under the City of Cockburn Town Planning Scheme No. 3 (TPS 3).

5.2 Residential Density

Residential densities applicable to the structure plan area are shown on the Structure Plan map.

1

5.3 Residential Design Code Variations

The City of Cockburn Local Planning Policy 1.16 'Single House Standards for Medium Density Housing in the Development Zone' sets out acceptable variations to the deemed-to-comply provisions of the R-Codes for lots coded R25 – R60 (where enabled).

Except in a situation where an approved Local Development Plan ('LDP') imposes variations to the deemed-to-comply provisions of the R-Code, the standards set out in Local Planning Policy 1.16 shall apply to all residential lots in this structure plan.

5.4 Public Open Space

A minmum of 10% public open space is to be provided generally in the location shown on the Structure Plan Map and landscaped in accordance with City approved Landscape Drawings prepared as a condition of subdivision approval.

6. Local Development Plans

At the subdivision stage, the City of Cockburn may request that the WAPC impose a condition/s of approval requiring local development plan(s) to be prepared, in accordance with Part 6 of the Regulations, for lots with the following site attributes:

i. Lots that abut public open space so as to make provision for an appropriate interface between residential lots and public open space.

7. Other Requirements

7.1 Notifications on Title

In respect of applications for the subdivision of land the City of Cockburn may recommend to the WAPC that a condition be imposed on the grant of subdivision approval for a notification to be placed on the Certificate(s) of Title(s) of affected lots to advise of the following:

i. This lot is located within 300 metres of a small market garden and has the potential to be affected by odours, noise, spray drift and dust that are associated with the continued operation of a small market garden.

7.2 Developer Contributions

The Structure Plan area is subject to the requirements of Developer Contribution Area No. 4 and Developer Contribution Area No. 13 (Community Infrastructure), as detailed in Clause 5.3 and Table 10 of TPS 3.

8. Additional Information

At the subdivision stage, the WAPC may require and/or impose a condition(s) of approval requiring the preparation, submission and approval of the following technical reports (where applicable):

- Urban Water Management Plan
- Public Open Space Landscape Plan.

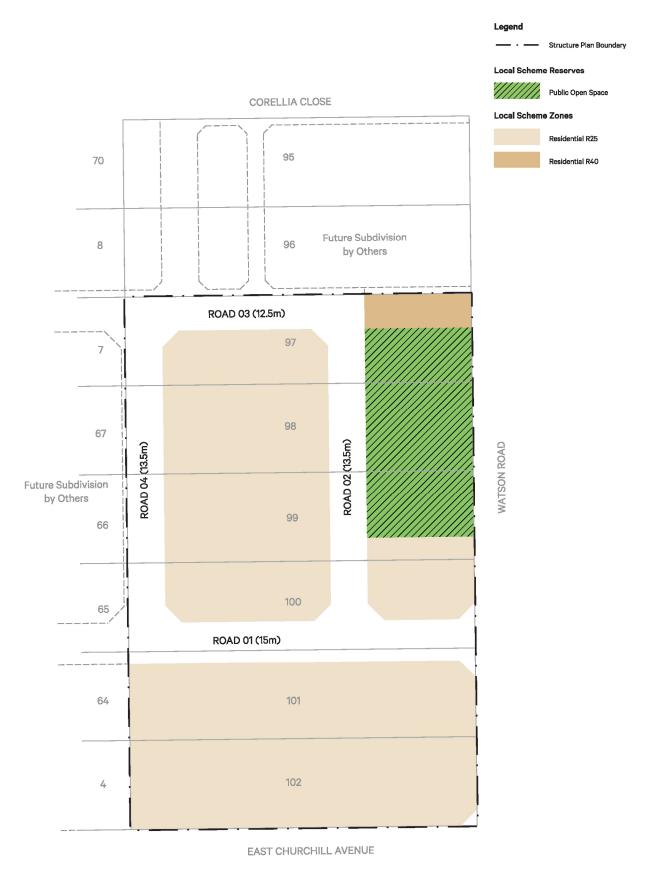


Figure 1 - Structure Plan

Part Two – Explanatory Information Amendment No. 1

The Lots 97 – 102 Watson Road Local Structure Plan (LSP) is the official structure plan to guide planning decision making, which led to the WAPC conditional subdivision approval of WAPC 155966 subdivision. A copy of the WAPC endorsed LSP is contained in **Appendix 1**.

Refer to Appendix 1 – Lots 97 – 102 Watson Road Structure Plan

The approved LSP should be read in conjunction with this amendment. The amendment to the structure plan seeks a more efficient design by eliminating unnecessary road reserve and substituting residential land use. The planning rationale for the amendment is outlined in this report.

1.1 Pre-lodgement consultations

The following Table 2 is a list of key stakeholders that were consulted during the preparation of the Amendment.

Table 2 - Key Stakeholder Consultations

Stakeholder	Comments	Actions
Landowner Lot 96 Watson Road, Beeliar Circa July 2021	Landowner verbally indicates support for the Proponent's proposal to remove the road reserve and create two residential lots abutting Lot 96. Owner of Lot 96 has no intention of demolishing the substantial existing dwelling in the medium-long term.	Proponent to continue to update owner of Lot 96 and later on obtain written confirmation.
City of Cockburn Planning Services Meeting 30 November 2021	Proponent provided a background of the proposal and planning rationale, including discussions with the neighbouring landowner (Lot 96) and proposed two new lots to front Watson Road and internal subdivision road. During discussions the City officers requested further information on the interface of the lots siding onto the POS and impacts on drainage and 10% POS requirement.	Proponent to provide City with further information for City written pre-lodgement consultation feedback.

Stakeholder	Comments	Actions
City of Cockburn Planning Services Emails 7 December 2021	The City supports Element and Terranovis preparing a draft structure plan amendment for the Lot 97-102 Watson Road, Beeliar Structure Plan, based on the reclassification of the road reserve between Lot 96 Watson Road and the approved public open space as 'Residential R40'. City support is based on the preparation of the structure plan amendment only and should not be construed as the City or Council's support for the amendment when it is formally received.	Proponent has provided the necessary information in the LSP amendment documentation.
	As part of the structure plan amendment submission, the following matters to be addressed in the documentation:	
	 Updating of the POS Schedule in Part Two (Section 4.4) of the Structure Plan to specify the unrestricted POS, consistent with the draft UWMP prepared for the site; 	
	 Updating the Structure Plan map to reflect the reclassification of the northern road reserve as 'Residential R40'; 	
	 Inclusion of a Subdivision Concept Plan which reflects the intended lot layout, including any proposed revisions to the POS; 	
	 Inclusion of the prepared Urban Water Management Plan, reflecting the proposed lot layout (and changes that result from the removal of the road) and the partial drainage function of the POS; and 	
	 Inclusion of written correspondence from the landowner of Lot 96 Watson Road consenting to the removal of road reserve on part of Lot 97 (note this should be separate to the amendment report and technical appendices). 	
	The proposed amendment is not considered to be a 'minor' amendment as per clause 17 of the WAPC's Structure Plan Framework, as it represents a change that does materially alter the intent of the structure plan and places a restriction on development of adjoining land (i.e. Lot 96 Watson Road). Noting the amendment will not be considered as 'minor', the proposal will be advertised when it is formally received.	

1.2 Planning Rationale

The Proponent seeks to remove the requirement under the current LSP Part One Clause 4.7 for the creation of road reserve with a temporary cul-de-sac. Clause 4.7 states:

4.7 Northern Road abutting Public Open Space

An easement in gross in accordance with Sections 196 and 197 of the *Land Administration*Act 1997 for the benefit of the City of Cockburn is to be placed on the public open space reserve specifying access rights to facilitate the construction of a temporary cul-de-sac.

This amendment replaces the road reserve abutting the northern portion of the public open space with Residential use under an R40 density code. Two new residential "squat lots" (12.5m x 19.35m) potentially can be created as shown in the Subdivision Concept Plan (Appendix 2).

The planning rationale for removing the road reserve and replacing with residential lots includes:

- The neighbouring landowner of Lot 96 Watson Rd has indicated a desire to retain the existing substantial dwelling in the long term and therefore as such:
 - i. The Proponent's constructed road adjoining their property/house would reduce the amenity of their property;
 - ii. Has no intention of subdividing to create lots fronting the Proponent's road reserve, which would be significantly more costly to develop. This would involve contributing to half the cost of the Proponent's road construction under Section 159 of the *Planning and Development Act*, along with the costs of upgrading and extending services to the proposed lots.
 - iii If the existing dwelling were to be demolished/removed, a more cost effective and efficient form of residential development would be either in the form of grouped housing or two lots (side-by-side) where in both of these options the development would front Watson Road and connect to services already available in Watson Road.

- The road reserve connection to Watson Rd between Lot 96 and the POS currently shown in the approved LSP serves
 no significant benefit. Another road connection to Watson Road is already available via Corella Close, which would be
 completed in future development as shown in the approved LSP document.
- Replacing the road reserve land with residential lots will be a better outcome for the neighbouring owner of Lot 96,
 which will result in the neighbour's existing property siding onto the rear boundary of the Proponent's residential lots.
- The required minimum 10% POS is retained in the WAPC 155966 subdivision. The road reserve land therefore does not need to become more POS.
- The owner of Lot 96 does not want public land POS abutting his existing house as this presents a security issue for the neighbour's land.
- The dwelling on Lot 239 Watson Road (and existing crossover), would be directly opposite where the road reserve will connect with Watson Rd. Removal of the road reserve will benefit Lot 239 by not having this road intersection onto Watson Rd (i.e. headlight glare shining towards the dwelling).
- Creation of two extra residential lots is more efficient use of land and will improve the target density yield. It will also provide for increased housing choice and affordability by creating smaller lower priced lots.

1.3 Residential Densities and Yield

The current approved structure plan provides for approximately 38 dwellings under the existing density code R25. The WAPC 155966 subdivision creates 38 residential lots, roads and public open space at a density of R25. The amendment proposes an additional two lots at a density of R40, given these lots are smaller 'squat lots'.

Table 2 provides development statistics which measure the performance of the structure plan against the density targets in the Perth and Peel@3.5million planning framework.

Table 2 - Development Statistics (based on Subdivision Concept Plan - Appendix 2)

	Site Outcomes	Target Density
Total Structure Plan Area	2.43 hectares	-
Area of each land use proposed		-
Residential	1.49 hectares	
Roads, Public Open Space and Drainage	0.94 hectares	
Area for residential development	1.49 hectares (approximate)	-
Estimate ultimate number of single/grouped dwellings	40 dwellings	-
Estimated number dwellings per gross urban	16 dwellings per site	Directions 2031/Perth and Peel@3.5million
hectare	hectare	15 dwellings per gross urban hectare
Estimated number dwellings per site hectare1	27 dwellings per site	Liveable Neighbourhoods
	hectare	12-20 dwellings per site hectare for standard lot layouts; or
		20-30 dwellings per site hectare for areas within 400m of neighbourhood centres
¹ Liveable Neighbourhoods definition of site hectare is the area available for residential		
development excluding roads, non-residential		
uses, public open space and drainage areas.		

1.4 Public Open Schedule

The current approved structure plan provides for approximately 38 dwellings, which is demonstrated in the approved WAPC 155966 subdivision approval. Approximately 0.264 hectares of combined drainage and public open space is provided in the structure plan, as outlined in Table 3. Calculating the minimum 10% POS requirement under the public open space calculations of WAPC Liveable Neighbourhoods, potentially the structure plan delivers the minimum 10% POS requirement, including land required for drainage infrastructure, as detailed in the Urban Water Management Plan.

A Landscaping Concept Plan for the public open space has been prepared for the POS created under WAPC 155966. The proposed amendment (Residential R40) lots have been illustrated on the landscaping concept plan to show how the lots would interface with the POS (Appendix 3). As part of subdivision approval of the R40 lots, an update to the public open space landscaping plan will need to be prepared and submitted to the satisfaction of the local authority.

Refer to Appendix 3 - Landscaping Concept Plan (showing R40 lots)

Refer to Appendix 5 - Urban Water Management Plan

Table 3. Public Open Space Schedule based on Subdivision Concept Plan

Calculation of Required POS Provision		
	Hectares	Hectares
Total Site Area	2.43	2.43
<u>Deductions</u>		
Surplus Restricted Public Open Space (Drainage Dry Basin 1:100yr 1% AEP)	0.03	
Total Deductions		0.03
Gross Subdivisible area (total area minus deductions)		2.40
Required POS (10%)		0.240
Breakdown of POS Provided		
May comprise:		
minimum 80 per cent unrestricted POS	0.19	
Maximum 20 per cent restricted use POS	0.05	
Restricted Public Open Space		
1:100yr (1% AEP) drainage dry swale integrated with adventure play and passive recreation (shaded seating area for contemplation)	0.05	
Total Restricted POS Credited to a maximum of 20%		0.05
Surplus Restricted Use Public Open Space		0.03
Unrestricted Public Open Space : by function		
<u>Local Park</u>		
Local Park No. 1	0.2	139
Total Unrestricted POS	0.2	139
Public open space provision provided	0.2	639
POS Provision as Percentage of Gross Subdivisible Area	10.	8%

1.5 Local Development Plan

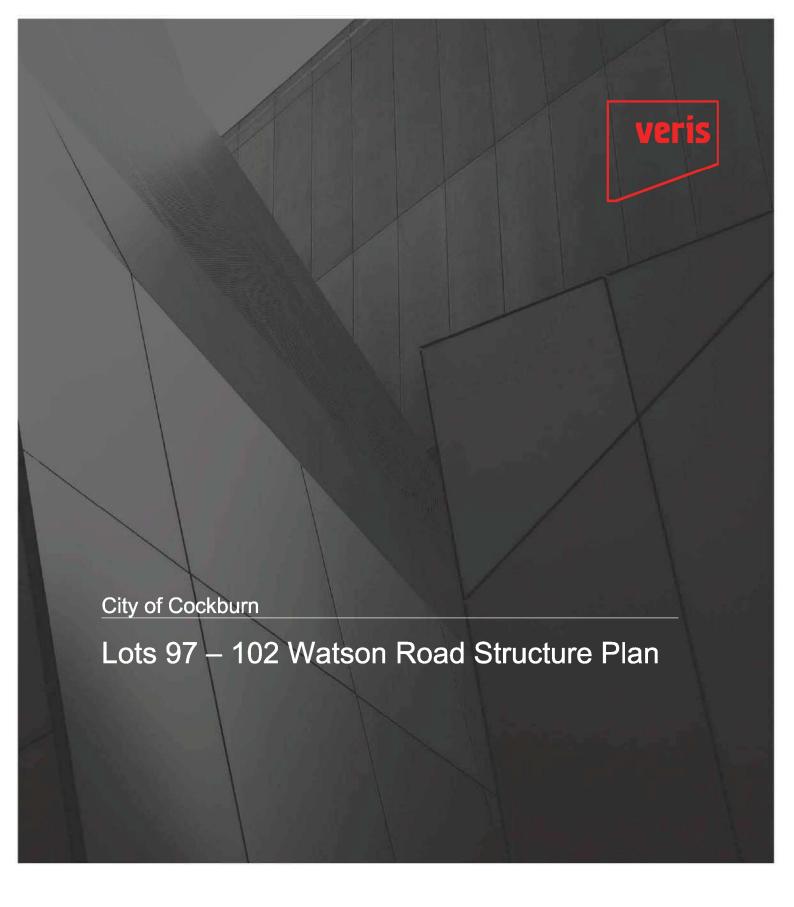
A Local Development Plan will be required to guide the built form development of residential lots abutting the POS. In particular, development of the proposed R40 lots abutting the northern portion of the POS should incorporate the following design elements (as shown in the built form concept sketch in **Appendix 4**):

- Dwellings to orientate towards the POS with a minimum of one major opening to a habitable room and the main entry
 to the dwelling to face the POS;
- Where fencing along the boundary of the POS and residential lots is desired, the fencing should be visually permeable; and
- For the R40 lots, garage/vehicular access should be from public streets.

Refer to Appendix 4 - Proposed Lot Interface with POS (R40 lots)

APPENDIX 1

Lots 97 – 102 Watson Road Structure Plan (2018)



Date: September 2017 Rev 2.0

Veris Ref: 21693

DEVELOP WITH_____ CONFIDENCE ™



TABLE OF AMENDMENTS TO STRUCTURE PLAN

Amendment No.	Description of Amendment	Amendment Type	Date Endorsed by WAPC



CERTIFICATION OF APPROVED STRUCTURE PLAN

This Structure Plan is prepared under the provisions of the City of Cockburn Town Planning Scheme No. 3 and in accordance with the *Planning and Development (Local Planning Schemes) Regulations 2015*

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

THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:
20 February 2018Date
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 20 February 2018Date

.... 20 February 2028 Date of Expiry of this Structure Plan



EXECUTIVE SUMMARY

This Structure Plan has been prepared for Lots 97 – 102 Watson Road, Beeliar ("the subject site"). The subject site is located approximately 20km south of Perth CBD and is situated within the municipality of the City of Cockburn.

This Structure Plan report provides the rationale, justification and planning framework to guide and facilitate the development of approximately 2.43 hectares of land for urban use. The Structure Plan has been prepared in accordance with the provisions of the *Planning and Development (Local Planning Schemes) Regulations 2015* Schedule 2 Part 4 'Structure Plans'. The City of Cockburn Town Planning Scheme No. 3 (TPS 3) requires the preparation and approval of a Structure Plan for land zoned 'Development'.

The subject site forms part of a future urban cell bounded by Howe Street, View Street, East Churchill Avenue and Watson Road. Structure planning and urbanisation has already been approved for Lots 94 & 95 Watson Road and the Structure Plan provides a suitable design that interfaces with existing and planned development, including future urban land neighbouring to the west.

The following table is a summary of the proposed Structure Plan.

Item	Data	Section number referenced within the Structure Plan Report
Total area covered by the Structure Plan	2.43 hectares	1.2
Area of each land use proposed - Residential	1.49 hectares	4.2
Total estimated lot yield	38 lots Based on conceptual subdivision plan	4.2
Estimated number of dwellings	38 dwellings Based on conceptual subdivision plan	4.2
Estimated residential density - Per site hectare - Per gross urban hectare	25 dwellings per site hectare 15 dwellings per site hectare	4.2
Estimated Population (average 2.6 people/household)	99 people	4.2
Estimated area and percentage of public open space given over to:	0.29 ha (12% POS)	4.4
- Local Park		

РА	RI ONE - IMPLEMENTATION	6
1.	Structure Plan Area	6
2.	Operation	6
3.	Staging	6
4.	Subdivision and Development Requirements	6
4.1.	Land Use and Permissibility	6
4.2	Residential Density	6
4.3	Public Open Space	7
4.4	Local Development Plans	7
4.5	Development Contributions	7
4.6	Notifications on Titles	7
PA	RT TWO – EXPLANATORY SECTION	
1.	Introduction	8
1.1.	Location	8
1.2.	Description & Land Ownership	8
1.3.	Existing Use & Surrounding Land Uses	8
2.	Site Description	9
2.1.	Topography & Landform	9



	Topography	9
	Soils	9
2.2.	Vegetation and Flora	9
2.3.	Hydrology	11
	Groundwater	11
	Surface water	11
2.4.	Acid Sulfate Soils	12
2.5.	Site Contamination	12
2.6.	Servicing	12
	Water and sewer services	12
	Power & Gas	12
	Telecommunications	12
2.7.	Access	13
2.8.	Indigenous and European Heritage	13
2.9.	Bushfire Management	13
2.10.	Proximity to Existing Market Garden	13
3.	Key Planning Framework	14
3.1.	Directions 2031	14
3.2.	Draft South Metropolitan Peel Sub-Regional Planning Framework	14
3.3.	Metropolitan Region Scheme	14
3.4.	WAPC Liveable Neighbourhoods	14
3.5.	WAPC State Planning Policy 2.5 'Rural Planning'	16
3.6	City of Cockburn Town Planning Scheme No. 3	15
3.6.	City of Cockburn (Approved) Structure Plans	16
4.	Structure Plan	17



4.1.	Land uses	17
4.2.	Residential Densities and Yield	17
4.3.	Proposed Movement Network	19
	Existing roads	19
	Proposed Roads	19
	Trip Generation and Road Assessment	20
	Intersections	21
	Pathways	21
	Public Transport	21
4.4.	Public Open Space	22
4.5.	Local & Urban Water Management	23
4.6.	Earthworks	23
4.7	Northern Road abutting Public Open Space	23

Figures

Figure 1 – Location Plan

Figure 2 - Cadastral & Aerial Plan

Figure 3 – Existing Structure Plans

Plans

Plan 1 – Structure Plan

Plan 2 - Contour & Services Plan

Plan 3 - Subdivision Concept Plan

Appendices

Appendix 1 – Certificate of Titles

Appendix 2 – Historical Aerial Photos

Appendix 3 – Preliminary Engineering and Stormwater Report

Appendix 4 – Pre-lodgement Consultations



PART ONE - IMPLEMENTATION

Structure Plan Area

This Structure Plan shall apply to Lots 97 - 102 Watson Road, Beeliar being the land contained within the inner edge of the line denoting the Structure Plan boundary on the Structure Plan map (**Plan 1**).

2. Operation

The date the Structure Plan comes into effect is the date the Structure Plan is approved by the Western Australian Planning Commission as set out in the Structure Plan - Certification Page.

3. Staging

The land within the Structure Plan is proposed to be developed in a single stage, however staging and development will be influenced by market forces and could be further refined.

4. Subdivision and Development Requirements

4.1 Land Use and Permissibility

The Structure Plan (Plan 1) outlines the Zones and Reserves applicable within the Structure Plan Area and these will guide future subdivision and development of the land.

Land use permissibility within the Structure Plan Area shall generally be in accordance with the corresponding Zone/Reserve under the City of Cockburn Town Planning Scheme No. 3 (TPS 3).

4.2 Residential Density

Residential densities applicable to the Structure Plan Area shall be those residential densities shown on the Structure Plan map. Subdivision and development within the Structure Plan is generally to achieve a minimum dwelling density target of 15 dwellings per gross urban hectare.



4.3 Public Open Space

A minimum of 10% public open space in accordance with WAPC Liveable Neighbourhoods is required at the time of subdivision and/or development. The location for public open space is shown in the Structure Plan map. The final design of the public open space is subject to detailed subdivision design.

4.4 Local Development Plans

A Local Development Plan is required to be prepared for lots that are adjacent to public open space to make provision for an appropriate interface between residential lots and public open space. A Local Development Plan may also be prepared for lots within this Structure Plan to vary the Residential Design Codes to provide opportunity to incorporate development provisions contained within WAPC Planning Bulletin 112/2016 'Medium-density single house development standards – Development Zones'.

4.5 **Development Contributions**

The Structure Plan is located within 'Development Contribution Area 4' (DCA 4) and 'Development Contribution Area 13' (DCA 13) which relate to developer contributions towards community 'hard and soft' infrastructure. TPS 3 requires the developer to make satisfactory arrangements with the City of Cockburn to provide developer contributions towards infrastructure contained in DCA 4 and DCA 13. This will be required as a condition of subdivision and/or development approval.

4.6 Notifications on Title

For applications for the subdivision of land, the Western Australian Planning Commission shall impose a notification on the Certificate of Title(s) to advise of the following:

"This lot is located within 300 metres of a small market garden and has the potential to be affected by odours, noise, spray drift and dust that are associated with the continued operation of a small market garden".

4.7 Northern Road abutting Public Open Space

An easement in gross in accordance with Sections 196 and 197 of the *Land Administration Act 1997* for the benefit of the City of Cockburn is to be placed on the public open space reserve specifying access rights to facilitate the construction of a temporary cul-de-sac.



Plan No : 21893-1 Revision: REV.0 Scale ::1:1000@43 BEELIAR





PART TWO - EXPLANATORY SECTION

1. Introduction

This report presents a proposal for a Structure Plan for Lots 97 – 102 Watson Road, Beeliar ("the subject site"), which is zoned 'Development' zone under the City of Cockburn Town Planning Scheme No. 3 (TPS 3). The Structure Plan has been prepared pursuant to *Planning and Development (Local Planning Schemes) Regulations 2015* Schedule 2 - Deemed provisions for local planning schemes Part 4 'Structure Plans'. The report provides a description of the subject site, details of the proposal and planning rationale for the Structure Plan including an indicative development concept plan.

1.1. Location

The subject site is approximately 20km south of Perth CBD and 6km west of Cockburn Central as shown in **Figure 1**. **Figure 2** shows the cadastral boundaries and a recent aerial image of the subject site. The legal description of the subject site is contained in the respective Certificate of Titles for Lots 97 – 102, of which copies are provided in **Appendix 1**.

1.2. Description & Land Ownership

The combined area of the subject site is approximately 2.43 hectares. Lots 97 - 102 are all privately owned under single landownership. Details of the land and ownership are provided in Appendix 1.

1.3. Existing Use & Surrounding Land Uses

The subject site has been historically cleared and has remained undeveloped vacant land. The subject site is located within a future urban development area. To the north are similar sized (4,047m²) properties that have recently had structure plan approvals granted, though Lot 95 Watson Road has not yet been subdivided for residential use. A relatively new residential subdivision has occurred in Corella Close immediately to the north (former Lot 94 Watson Road). Lot 96 Watson Road has not yet been structure planned and is under separate ownership.

To the south and west are original subdivided 4,047m² lots that have mostly been developed with a single dwelling and outbuildings. No structure plan has been approved for land to the east or south as yet, however the land has been identified for future urbanisation. Currently these lots are being utilised for residential use, with Lot 65 incorporating a small market garden at the rear of the dwelling. There is undeveloped land at the corner of Wells Road and East Churchill Avenue containing predominantly scrub and grass. To the east land has been developed within Development Area No. 4 with a density predominantly at R20.



2. Site Description

2.1. Topography & Landform

TOPOGRAPHY

The subject site generally slopes from a high point of approximately 32.0m AHD at the south west corner on East Churchill Avenue down to the lowest point approximately 19.0m AHD at the northeast corner on Watson Road. The slope is generally at 6% gradient. **Plan 2** shows the existing contours of the subject site. There are no significant topographical constraints impacting urban development of the subject site, with the existing topography able to be managed through conventional design.

SOILS

The subject site is located within the Spearwood Dune System which is characterised regionally as consisting of yellow-brown siliceous sand over limestone with landforms ranging from hilly to gently undulating. A desktop review of soil type based on the Environmental Geology Map of the GeologicalSurvey of WA series mapping indicates the predominant soil type found on the subject site is 'Ls' *Tamala Limestone* with surface sand being 'S7' sand derived from Tamala Limestone. Further geotechnical investigations would occur at later stages of planning. The soil geology of the subject site is considered suitable for urban development and this is consistent with the surrounding residential development. Accordingly there are no soil constraints impacting urban development of the subject site.

2.2. Vegetation and Flora

The subject site does not contain any significant environmental assets or values. The site has previously been cleared and some scrub re-growth has occurred in some western parts of the site. Vegetation condition has been assessed to the following criteria (Keighery, 1993):

Classification	Vegetation Condition
Pristine	Pristine or nearly so, no obvious signs of disturbance
Excellent	Vegetation structure intact, disturbance affecting individual species and weds are non-aggressive species
Very Good	Vegetation structure altered, obvious signs of disturbance
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbance. Retains basic vegetation structure or ability to regenerate to it
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as being 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs

Keighery, B (1994) Bushland Plant Survey, Guide to Community Survey for Community



In classifying the existing vegetation condition using Keighery (1993), the vegetation within the subject site is classified as being 'Completely Degraded'. All original understorey has been cleared and no rehabilitation of vegetation has been undertaken. A series of historical aerial photographs of the subject site is provided in **Appendix 2** which shows the site has been cleared for some time, with re-growth in the western portions of the site.



Plates 1 & 2 (above & below). Views from Watson Road of existing vegetation within subject site



(Source: Google Maps, 2017)





Plate 3. Existing Acacia scrub re-growth within subject site.

The existing scrub contains predominantly *Acacia cyclops* (Western Coastal Wattle) ranging in height up to 3 metres. There is mostly a mix of weeds and exotic grasses growing within the subject site forming ground cover. Due to the degraded nature of the site, there are no existing flora, vegetation or fauna habitat of significant biodiversity or environmental value that would constrain urban redevelopment or warrant retention of existing vegetation.

2.3. Hydrology

GROUNDWATER

A desktop review of groundwater using the Perth Groundwater Atlas (Department of Water, 1997) indicates groundwater level at approximately 12.0m AHD contours near Watson Road. Groundwater is estimated to be approximately 17 metres below the lowest part of the subject site. Accordingly there are no existing significant hydrological constraints that would impact urban development of the subject site.

SURFACE WATER

There are no surface water expressions or assets within the subject site. Sheet drainage generally occurs generally from south-west to north-east, with infiltration generally at source due to filtration of the relatively sandy soils. The subject site is not significantly impacted by surface water features.



2.4. Acid Sulfate Soils

A desk top review indicates that generally the subject site has no known risk of acid sulfate soils (ASS) being encountered within 3 metres of the natural surface. Accordingly, there are no significant ASS constraints impacting urban development of the subject site.

2.5. Site Contamination

A search of the Department of Water and Environment Regulation 'Contaminated Sites Database' indicates that there are no recorded contaminated sites for the subject site.

2.6. Servicing

A Preliminary Engineering Servicing Report (**Appendix 3**) has been prepared which indicates that the subject site is suitable for urban development and can readily be connected to the necessary services to support urban development. Subdivision and/or development for urban use would be subject to consultation with service providers and the necessary upgrades to existing infrastructure to support development.

WATER AND SEWER SERVICES

The subject site has not been developed and is presently not connected to reticulated water or sewer. There are existing 200mm and 100mm water mains within the road reserves of Watson Road and East Churchill Avenue respectively. Connections into these mains will service future urban development of the subject site with reticulated water supply.

An existing deep gravity reticulated sewer is located within the road reserve along Watson Road. Development within the subject site can potentially be serviced by the existing reticulated gravity sewer mains in the area and the necessary extensions via new subdivision roads.

POWER & GAS

There are high and low voltage overhead cables within the road reserve of East Churchill Avenue and a high voltage aerial line is located within Watson Road. Proposed urban development within the subject site can be connected and serviced by underground power reticulation mains.

There is a 100mm medium pressure gas main located within Watson Road and East Churchill Avenue. To service the subject site with reticulated gas, a new 100mm main may need to be extended along the western side of Watson Road reserve to connect with the reticulated main in East Churchill Avenue. Any upgrading and extensions to existing gas and power infrastructure will be undertaken in consultation with the relevant service provider at the time of subdivision.

TELECOMMUNICATIONS

Telecommunications can be made available to the subject site via extension of existing infrastructure in consultation with the service provider (Telstra). There is existing telecommunications infrastructure in both Watson Road and East Churchill Avenue.



2.7. Access

The site has direct frontage and is readily accessible via Watson Road and East Churchill Avenue, both of which are bitumen sealed roads. Future planning for provision of roads and connections to existing roads to provide new subdivision roads to service residential lots will be discussed in further detail in this report.

2.8. Indigenous and European Heritage

A search of the Department of Planning, Lands and Heritage (Aboriginal Heritage Inquiry System) indicates that no Indigenous Heritage sites exist on the land. The subject site is contained within *Heritage Survey 102670(1)*. There are no places or sites of cultural significance within the subject site under the City of Cockburn Municipal Heritage Inventory and State Heritage Register.

2.9. Bushfire Management

A desktop review indicates that the subject site is not impact by bushfire hazard risk. The site is not affected by the Department of Fire and Emergency Services bushfire prone mapping. The existing vegetation on the subject site will be cleared as part of single staged development.

2.10. Proximity to Existing Market Garden

An existing small scale market garden is located at the rear of Lot 65 View Street, which will be in proximity to proposed residential development within the Structure Plan. The Structure Plan shows proposed residential development opposite the market garden, separated by a new subdivision road.

It is recommended that for applications for the subdivision of land, the Western Australian Planning Commission shall impose a notification on the Certificate of Title(s) to advise of the following:

"This lot is located within 300 metres of a small market garden and has the potential to be affected by odours, noise, spray drift and dust that are associated with the continued operation of a small market garden".

This is consistent with WAPC Statement of Planning Policy 2.5 'Rural Planning' for addressing potential land use conflicts between residential development and existing market gardens.

It is noted that the market garden would be considered a 'non-conforming use' in the proposed urban development area and as such, it would not be a use encouraged or supported, in terms of its intensification.



3. Key Planning Framework

REGIONAL & SUB-REGIONAL PLANNING

3.1. Directions 2031

Directions 2031 establishes the vision for the future growth of Perth and Peel regions. It provides a framework in which population growth is to be accommodated. Directions 2031 seeks a 50% increase in the current average residential density of 10 dwellings per gross urban zoned hectare; and has set a target of 15 dwellings per gross urban zoned hectare of land in new development areas. This proposed Structure Plan achieves the targets set by Directions 2031 and this will be discussed further in this report.

3.2. Draft South Metropolitan Peel Sub-Regional Planning Framework

The Draft South Metropolitan Peel Sub-Regional Planning Framework (SMPSRPF) is an overarching strategic planning instrument that broadly sets out the future settlement pattern for Perth & Peel regions for the next 35 – 40 years to accommodate an expected population of 3.5 million people, as set out in WAPC *Perth and Peel @3.5 million*. The SMPSRPF clearly identifies future land uses through urban consolidation, integrated infrastructure and development, colocation of services and the strategic location of employment opportunities.

Under the SMPSRPF the Structure Plan area is identified as 'Urban' with anticipated urban staging within the 'Short Term (2015 – 2021)'. The proposed Structure Plan is consistent with the draft SMPSRPF.

3.3. Metropolitan Region Scheme

The subject site (and neighbouring land) is zoned 'Urban' under the Metropolitan Region Scheme.

3.4. WAPC Liveable Neighbourhoods

Liveable Neighbourhoods (LN) has been prepared to guide the sustainable development of communities. It addresses both strategic and operational aspects of structure planning and subdivision for both 'greenfield' and urban infill sites.

The Structure Plan has been designed in accordance with the principles of Liveable Neighbourhoods, in particular, the layout of roads and POS. Consistent with LN, the Structure Plan provides a high level of connectivity with good external linkages to existing and planned road, cycle and pedestrian transport networks.

The road design in the Structure Plan is legible and reduces car travel distances by creating alternative routes. These aspects are further addressed in the report when referring to the indicative Subdivision Concept Plan (**Plan 3**) for the subject site.



LN encourages walkable access to Public Open Space (POS). Within the Structure Plan, all lots are within 400 metres walking distance from POS areas. This provides residents with opportunities for active lifestyle and recreation within 5 minutes walking distance from residences. Importantly, the Structure Plan will establish upfront as part of the single staged development a useable and functional active POS area for existing and future residents.

Consistent with LN, it is important for the Structure Plan design to respond to site characteristics and site context. The Structure Plan design has taken into consideration the natural topography, surrounding land uses, solar orientation and existing developments. Proposed lots can achieve an E-W or N-S orientation, which provides good opportunity for solar orientation for dwelling design and outdoor living areas. East – west orientated lots are shown in the Subdivision Concept Plan to have lot frontages generally 12.5m – 15.0m, which provides opportunity for dwellings to setback from the northern boundary to increase the opportunities for natural light and solar access.

Within the Structure Plan, lots that face parkland increase opportunity for passive surveillance and interaction with public spaces. Lot shape and proportion of width to depth is considered important and the lots in the Structure Plan have been designed to be rectangular in shape with a greater depth than width wherever possible. This ensures the ability to develop the lots with high quality housing and built form and conformity with the Residential Design Codes of Western Australia. Other aspects of LN principles, such as local water management and target residential density are addressed further in this report.

3.5. State Planning Policy 2.5 'Rural Planning'

SPP 2.5 only relates to this proposal in terms of proximity of sensitive land use to market gardening. The subject site directly abuts a private landowner market garden at the rear of an existing residence on Lot 65 View Street. The market garden is considered to be of 'hobby scale', being approximately 32m wide by 80m in length and having an area of 2,560m². SPP 2.5 seeks to minimise conflict between land uses and where this cannot be avoided, appropriate mitigation measures be implemented to alleviate incompatibility and ensure persons are not exposed to unsatisfactory health hazards.

Due to the small scale of the existing market garden at a 'hobby scale', mitigation measures are not recommended. However, a notification on title is reflected in Part 1 at Clause 4.6 for each of the proposed residential lots.



LOCAL PLANNING

3.6. City of Cockburn Town Planning Scheme No. 3

The subject site is currently zoned 'Development' zone within 'Development Area 4 (DA 4) under TPS 3 and also lies within 'Development Contribution Area 4' (DCA 4) and 'Development Contribution Area 13' (DCA 13) which relate to developer contributions towards community 'hard and soft' infrastructure.

The provisions of TPS 3 require a Structure Plan to be prepared and approved pursuant to *Planning and Development (Local Planning Schemes) Regulations 2015* Schedule 2 - Deemed provisions for local planning schemes Part 4 'Structure Plans'. Future subdivision and/or development will be guided by the approved Structure Plan.

3.7. City of Cockburn (Approved) Structure Plans

Other structure plans for land to the north have already been approved, including more recently the Lot 94 Watson Road Structure Plan (now constructed) and Lot 95 Watson Road Structure Plan. These structure plans (with residential density of R40) have pioneered the planning for a future urban infill precinct bounded by Watson Road, View Street, East Churchill Avenue and Howe Street.

This Structure Plan is consistent with the approved structure plans and provides an appropriate interface to allow for the structure planning of land to the west. The Structure Plan design and integration with neighbouring land to the west will be further discussed in this report, particularly in regards to the road layout and provision for suitable road connections.



4. Structure Plan

4.1. Land uses

The Structure Plan Map outlines the Zones and Reserves applicable within the Structure Plan Area which will guide future subdivision and development of the land.

4.2. Residential Densities and Yield

The Subdivision Concept Plan (SCP)(Plan 3) provides one option for the urban development of the subject site at the designated density coding of R25. The SCP indicatively shows 38 residential lots that could accommodate single dwellings within the Structure Plan. The SCP shows a mix of single dwellings on 12.5m – 15.0m frontage lots ranging in area from 340m² – 460m², which reflects a contemporary mix of front-loaded lot typologies under a baseline R25 density.

The SCP could accommodate up to approximately 99 people, based on an average household of 2.6 persons (2016 Consensus data). The final lot yield and design would be determined as part of detailed subdivision at later stages of planning.

Table 1 provides a snapshot of development statistics based on the SCP and analyses the effectiveness of the base density code of R25 in terms of achieving set target densities under Directions 2031 and Liveable Neighbourhoods.

Although the SCP is indicative only at this Structure Plan level of planning (and not the subject of subdivision approval), the Structure Plan technical reports have been based on the SCP. The SCP provides a point of reference to demonstrate the capability of the proposed Structure Plan design over the subject site. These investigations and preliminary designing could therefore provide the basis for future subdivision of the subject site.

Table 1 demonstrates that the Structure Plan design and base density code of R25 delivers approximately 25 dwellings per *site hectare*, which meets the Liveable Neighbourhoods density expectations for the site's locational context. Similarly, the SCP delivers 15 dwellings per gross urban hectare, which meets the target density of 15 dwellings per gross urban hectare under Directions 2031.



 Table 1
 Development Statistics (based on Subdivision Concept Plan)

	Site Outcomes	Target Density
Total Structure Plan Area	24,307m ²	-
Area set aside for roads, drainage & POS	9,378m²	-
Balance area for residential development	14,922m²	-
Estimate ultimate number of dwellings	38 dwellings	-
Estimated number dwellings per site hectare ¹	25 dwellings/site hectare	Liveable Neighbourhoods 12 – 20 dwellings per site hectare for standard lot layouts; or 20 – 30 dwellings per site hectare for areas within 400m of neighbourhood centres
Structure Plan target density per gross urban hectare ²	15 dwellings/hectare	Directions 2031 15 dwellings per gross urban hectare

Liveable Neighbourhoods definition of site hectare is the area available for residential development excluding roads, non-residential uses, public open space and drainage areas.

² Directions 2031 definition of *gross urban hectare* is the gross area available for urban development.



4.3. Proposed Movement Network

EXISTING ROADS

Watson Road is classified as a 'Local Distributor' by Main Roads WA and is under the control of City of Cockburn. Watson Road is a single carriageway, two-way local access road with a 7.2m wide carriageway and built up speed limit of 50km/hr. There is an existing pedestrian pathway on the eastern side of Watson Road. Watson Road carries approximately 1,460vpd (City of Cockburn May 2014 data).

East Churchill Avenue is a 50km/hr 'Access Street' road under City of Cockburn control and is a single carriageway, two-way road approximately 6m – 7m pavement width with a pedestrian path on the southern side of the road. East Churchill Road (west of Jervois Street) carries approximately 350vpd (City of Cockburn October 2005 data).

PROPOSED ROADS

The Structure Plan proposes two new subdivision road connections with Watson Road. The roads within the Structure Plan are classified in **Table 2** as follows:

Table 2. Proposed Road Hierarchy and Road Reservations

Proposed Structure Plan Road Reserve Width	Road Hierarchy
15.0m	Access Street C
13.5m	Access Street D

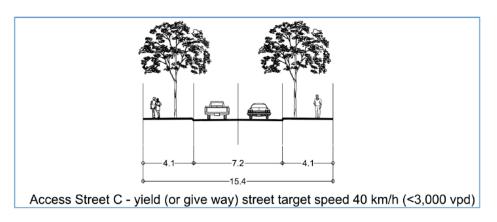


Plate 5. Typical 'Access Street C' indicative cross section subject to detailed design.



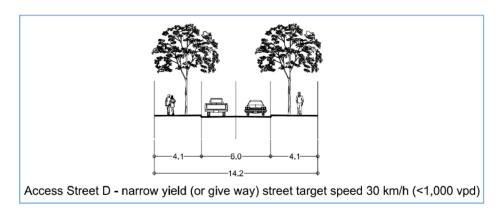


Plate 6. Typical 'Access Street D' indicative cross section noting reduced road reserves 12.5m & 13.5m for development on one-side of road (i.e. lots opposite public open space or interim until ultimate 15m road reserve is created by the neighbouring subdivision).

The proposed local access roads in the Structure Plan will provide for adequate circulation for traffic and waste services. The 12.5m and 13.5m width roads proposed in the Structure Plan on the northern and western boundaries respectively will ultimately form 15.0m road reserves when the respective neighbouring properties develop. The interim 12.5m and 13.5m road reserve widths are sufficient to service lots in the Structure Plan, where there will be development on only one-side of these roads, thus reducing the need for a wider verge on the non-developed side.

No changes are proposed to the existing road network, however it is envisaged that Corella Close will ultimately be extended southwards to connect with the Structure Plan road network as indicatively shown in Plan 3 through Lots 95 & 96 Watson Road.

The proposed road along the western boundary of the Structure Plan will provide adequate opportunity for landowners to the west to interface with the Structure Plan design. The Structure Plan road layout provides an appropriate responsive design to the existing natural topography and landform to accommodate servicing of lots and stormwater drainage.

TRIP GENERATION AND ROAD ASSESSMENT

Assuming 9 vehicles per day (vpd) per dwelling the Structure Plan is estimated to generate approximately 342 total daily vehicular trips for a typical weekday. This includes both inbound and outbound trips. The anticipated post-development total daily traffic on the local access roads within the Structure Plan is well within the 1,000vpd – 3,000vpd for typical *Access Streets*.

The post development daily (weekday) traffic volumes on Watson Road and East Churchill Avenue, conservatively estimated to be an additional (63) trips for East Churchill Avenue (for the lots directly fronting East Churchill Avenue) and (279) trips for Watson Road for the balance of the development is considered minor and will not significantly increase traffic above the capacity of these roads. On this basis it is concluded that a detailed capacity assessment and trip modelling is not warranted for the proposed Structure Plan to create (38) lots.



INTERSECTIONS

As anticipated traffic volumes on local access streets are significantly below the design threshold, capacity analysis at existing and proposed intersections is not warranted. The proposed intersection locations satisfy the minimum separation distances for intersections in Liveable Neighbourhoods. The location of intersections also provides for adequate and unobstructed signtlines at Watson Road.

No intersection treatments are proposed in relation to connections with proposed roads to Watson Road and surrounding existing intersections. The existing and proposed local access roads are not expected to carry significant volumes of traffic post development and will have a default speed limit of 50km/hr. Subsequently this does not necessitate any special intersection treatment consideration. Intersection design is likely to be similar to the 'T' intersections between Watson Road with Corella Close and Luttrell Gardens.

PATHWAYS

There are existing pathways on the eastern and southern sides of Watson Road and East Churchill Avenue respectively. The Structure Plan design allows for provision of pathways at detailed subdivision stage on proposed local access roads within the subject site.

Pathways would be provided for within proposed local access roads and would link in with the surrounding pathway network (refer to **Plan 4** showing indicative pathways). The exact location of pathways will be determined in liaison with the City at the subdivision stage once a more specific form of development for the subject site is proposed. In general, pathways are proposed to be provided on all streets in accordance with the requirements of Liveable Neighbourhoods.

PUBLIC TRANSPORT

Transperth operates Bus Service (No. 531) which includes Watson Road in its regular route from Cockburn Central to Fremantle Transit Station. Bus stop 20972 directly abuts the subject site on the western side of Watson Road and Bus Stop No. 20973 is directly opposite the subject site on the eastern side of Watson Road.

The Perth to Mandurah rail line is located a relatively short travelling distance approximately 7km to the east of the subject site accessible via feeder bus (No. 531). Beeliar Avenue is a major public transport bus route and is within 550m from the subject site, which also provides feeder bus routes to Cockburn Central (and Cockburn Train Station) and Fremantle. Overall the subject site is adequately serviced by public transport.



Plate 5. Route 531 bus stops in Watson Road (Source: Google maps, 2017)



4.4. Public Open Space

The Structure Plan makes provision for the required minimum 10% Public Open Space (POS) contained within the subject site. A minimum area of 2,400m² within the Structure Plan for POS is considered sufficient to make provision for a reasonable size (regular shaped) local park which could be developed for both active and passive recreation. The POS area can incorporate contemporary landscaping and multiple use stormwater design to provide for an attractive high amenity community focal point in the neighbourhood. Table 3 is the indicative Structure Plan POS provision based on the SCP.

Table 3. Public Open Space Schedule based on SCP (Plan 3)

Calculation of Required POS Provision			
Lots 97 – 102 Watson Rd Total Site Area (ha)	2.43	2.43	
Deductions			
Nil			
Total Deductions		0.00	
Gross Subdivisible area (total area minus deductions)		2.43	
Required POS (10%)		0.24	
Breakdown of POS Provided			
May comprise: - minimum 80 per cent unrestricted POS - Maximum 20 per cent restricted use POS	0.19 0.05		
Restricted Public Open Space			
Nil No stormwater infrastructure envisaged within POS thus allowing for 100% unrestricted use.	0.00		
Total Restricted POS Credited to a maximum of 20%		0.00	
Unrestricted Public Open Space : by function			
Lots 97 - 99		0.29	
Total Unrestricted POS		0.29	
Public open space provision provided		0.29	
POS Provision as Percentage of Gross Subdivisible Area		(12%)	

Notes:

- Final POS calculations will be subject to detailed survey and approved Urban Water Management Plan.
 A minimum of 10% POS land contribution to be provided at Survey Deposited Plan final approval stage.
- The 12% POS area shown may be reduced to the minimum 10% POS subject to detailed subdivision design and an approved Urban Water Management Plan.



4.5. Local & Urban Water Management

The subject site is located within the catchment of the existing drainage basin to the north in Radonich Park along Ivankovich Avenue. Stormwater for the Structure Plan development will be managed via the following measures outlined in Table 4:

Table 4 1yr & 5yr & 100yr ARI stormwater management

ARI Event	Stormwater Water Management Principles
1 Year	Stormwater runoff from new subdivision roads will be detained on-site via underground storage units. Stormwater contained within each lot prior to discharge/infiltration to groundwater via conventional methods, such as soakwells.
5 Year	Stormwater runoff from new subdivision roads in excess of the 1:1 year storm event will enter the existing piped system in Watson Road, or where short or temporary lengths of road are concerned, will be contained in soakwells located within either the road reserve or POS. Excess stormwater above the 1:1 yr event ultimately would flow via the existing Watson Road piped drainage system to the Radonich Park drainage basin.
100 Year	As per above for 1:5 yr event. No drainage infrastructure is proposed within the Structure Plan POS that would restrict the use of POS land.

Given the above, it is concluded that there is no need to provide a detailed Local Water Management Strategy, which can be combined at the Urban Water Management Plan approval process as a condition of subdivision.

4.6. Earthworks

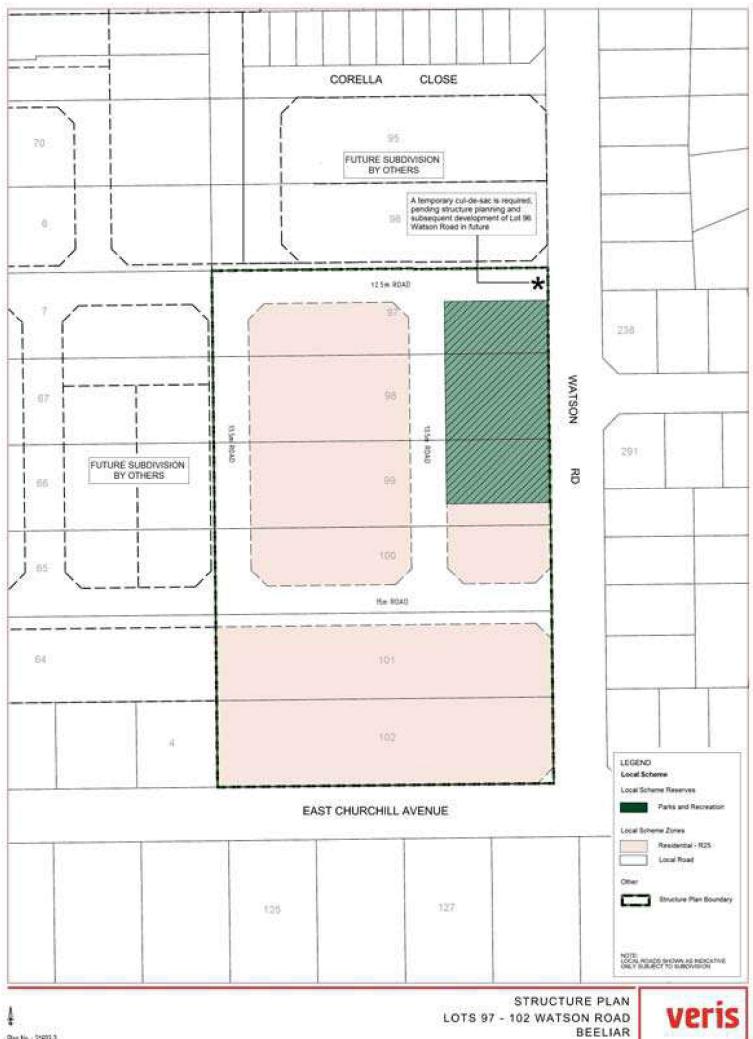
Preliminary civil engineering investigations indicate the site currently grades from south to north with an approximate fall across the site of 12.0m. Site works will be required to create level, free draining lots for dwelling construction and provision of roads and services. Level sites that are terraced reflect the ideal building site to reduce housing cost and create more affordable housing.

Retaining walls will be used to provide terraced lots and absorb level differences. Wherever possible, the height of retaining walls will be kept to a minimum and may vary due to natural ground level differences. In some areas retaining walls may reach up to 2.5m in height in order to provide for servicing and absorb level differences. All retaining walls will be constructed to the City's satisfaction.



Earthworks on site will generally involve removal of topsoil, cut and fill and possible importation of sand fill to provide the necessary finished levels. Due to proximity to the coast, there may be isolated pockets of limestone found on the subject site. If any limestone is encountered, generally it will be broken up prior to use as potential structural fill and replaced with sand.

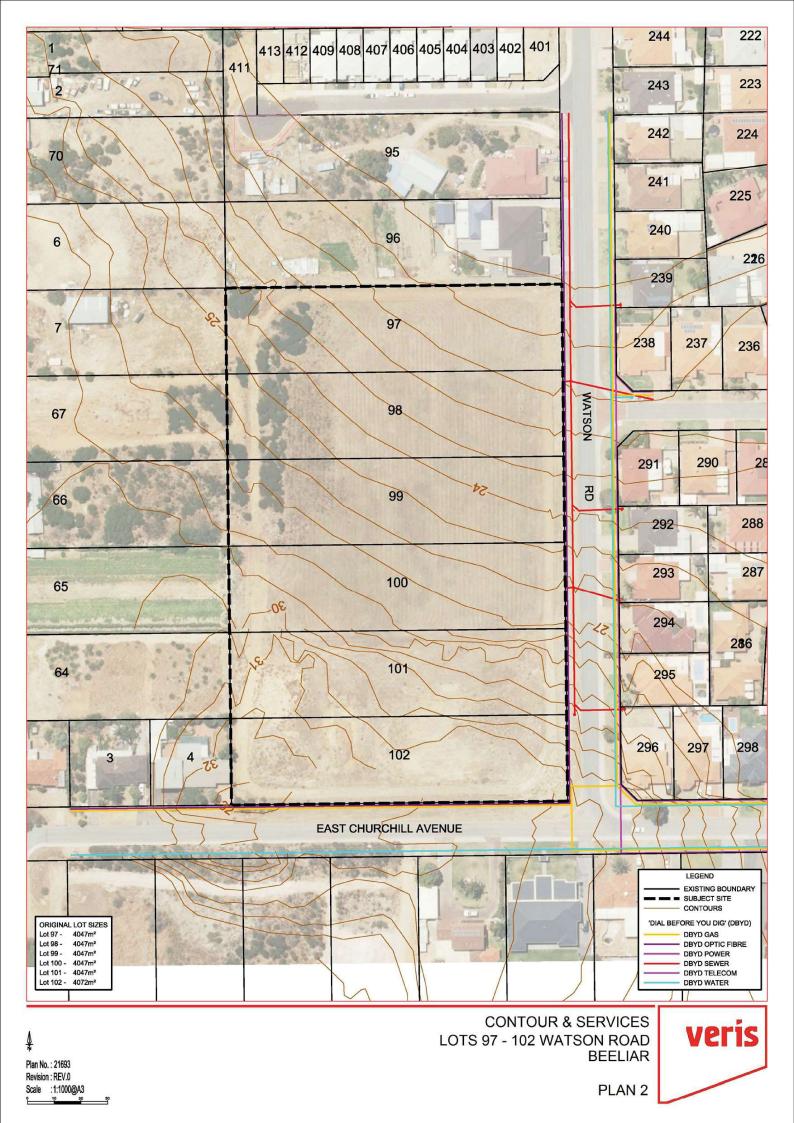


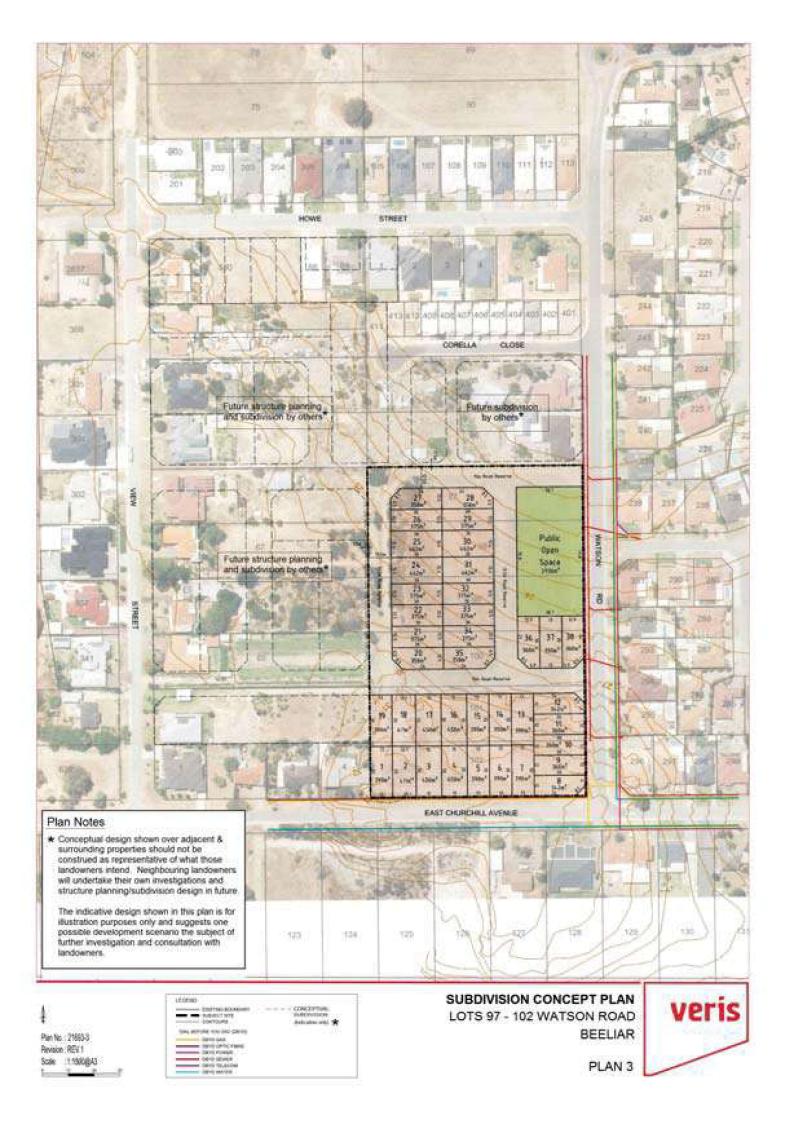


Plan No : 21893-1 Revision: REV.0 Scale ::1:1000@43



PLAN 1

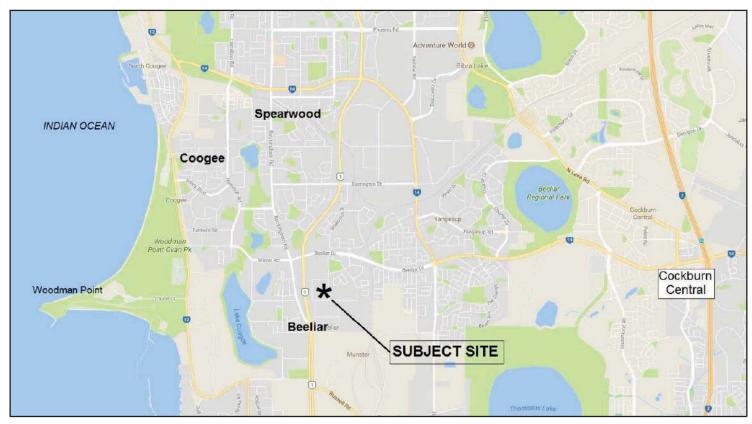














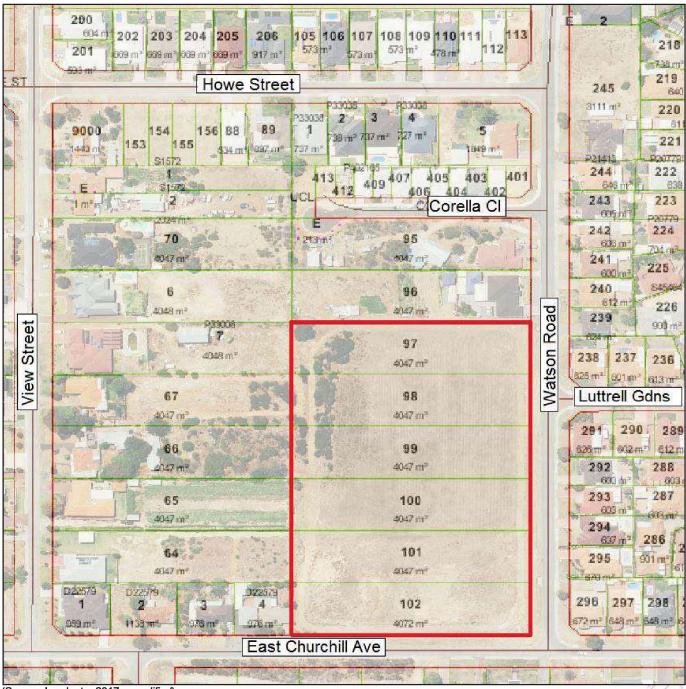
(Source: Google Maps, 2017 – *modified*)

FIGURE 1 LOCATION PLAN

Perth Level 1, 4/40 Hasler Road PO BOX 99 Mt Hawthorn WA 6915 Australia

T 08 9317 0600 F 08 9317 0611 mail@veris.com.au veris.com.au DEVELOP WITH____ CONFIDENCE

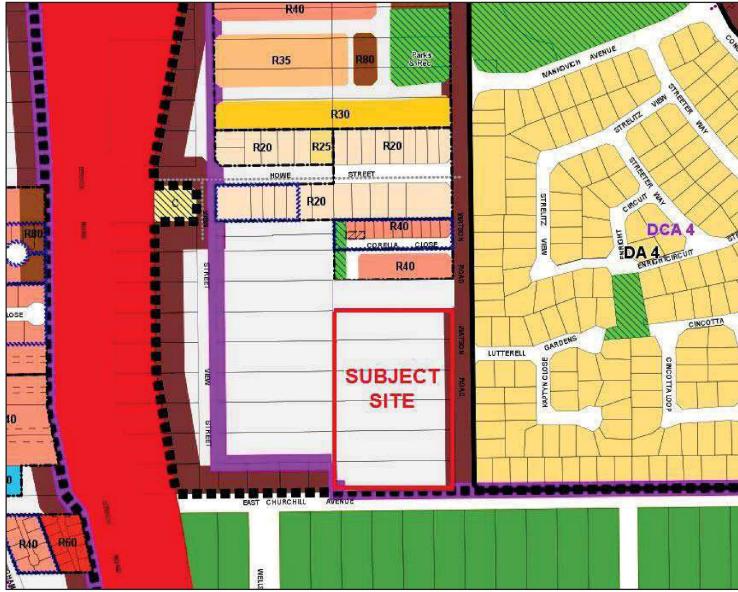




(Source: Landgate, 2017 - modified)

FIGURE 2 CADASTRAL & AERIAL PLAN





(Source: City of Cockburn Intramaps, 2017 - modified)

FIGURE 3
EXISTING STRUCTURE PLANS



Perth

Level 12, 3 Hasler Road Locked Bag 9 Osborne Park WA 6017 Australia

T 08 9317 0600 F 08 9317 0611 mail@veris.com.au veris.com.au

