LEGEND

- SUBJECT LAND
- FOOTPATH
- SHARED USE PATHS
- R30 RESIDENTIAL ZONE (R30)
- R40 RESIDENTIAL ZONE (R40)
- PUBLIC PURPOSES RESERVE
- PARKS AND RECREATION RESERVATION
- LOCAL ROAD

It is certified that this Structure Plan was approved by resolution of the Western Australian Planning Commission on 27/11/15

This Structure Plan expires on 27 November 2025

Signed

Director, Planning and Development

File No. 110/082

Future Third Stream Transportables

Early Childhood Centre

Junior Primary

46

Private (Catholic) Primary School Site

Hardcourt Hardcourt

Grassed Play Area (under construction)

Parking

Possible Open Feature Fencing

31

Public Purpose

AVENUE

R30

15m ROAD

13.5m ROAD

19.4m ROAD (NEIGHBOURHOOD CONNECTOR)

47

5.1907ha

Public Purpose 2.36ha

Public Purpose

ROAD

R30

8.5m LANEWAY

R40

POS 2895m²

GH

BARFIELD

15m ROAD

13.5m ROAD

FRANKLAND

R30

14

Local Centre

POS

48

LOT 47 (No. 213) FRANKLAND AVENUE HAMMOND PARK

STRUCTURE PLAN

N

0 50m

SCALE 1:1500 @ A3

GRAY & LEWIS
LAND USE PLANNERS

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perth@graylewis.com.au

JOB REFERENCE: 100894 DATE: 2nd DECEMBER 2015

GRAY&LEWIS
LAND USE PLANNERS

STRUCTURE PLAN

LOT 47 (No. 213) FRANKLAND AVENUE, HAMMOND PARK

MODIFIED
9 DECEMBER 2015
(Version 4)

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Member of the Australian Association of Planning Consultants Registered Town Planning Consultant
ABN 11 363 195 855

Prepared for: **Miluc Pty Ltd**

Prepared by: Gray & Lewis Landuse Planners
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Project Planner: Liz Bushby
Job Reference 100894

Report file name	Report Status	Date
Version 1 – 2014 Structure Plan Report Lot 47	Version 1	18 December 2014
Version 2 - 2015 -Structure Plan Report Lot 47 May 2015	Version 2	8 May 2015
Version 3 – August 2015 – Structure Plan Report Lot 47	Version 3	9 September 2015
Version 4 – December 2015 - Structure Plan Report Lot 47	Version 4	9 December 2015

ENDORSEMENT PAGE

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

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

27 November 2015 Date

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

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

M. Wieclaw Witness

14 December 2015 Date

27 November 2025 Date of expiry

TABLE OF VARIATION(S) TO STRUCTURE PLAN

Variation No.	Description of Variation	Date Adopted by Council	Date Endorsed by the WAPC (if required)

Contents

List of Figures & Attachments

EXECUTIVE SUMMARY

Lot 47 Frankland Avenue is located within the suburb of Hammond Park which is located approximately 1km west of the Kwinana Freeway, 27 km south of the Perth CBD, 5km south of the Cockburn Central commercial precinct and 7km east of the coast. The suburb is undergoing a transition from small rural residential landholdings and some horticultural uses to residential development consistent with the Development zone.

The State and Local Government planning framework has facilitated the preparation of the Structure Plan for Lot 47 Frankland Avenue.

The Southern Suburbs District Structure Plan Stage 3 (SSDSP3) which was adopted by the City of Cockburn in 2012, identifies the broad land use framework and forms the basis for co-ordinating and considering Structure Plans to be prepared by landowners in the locality.

The Structure Plan for Lot 47 will guide the orderly and proper planning of the subject land in a manner that is consistent with the established and developing planning for Hammond Park. The LSP also provides for the future acquisition of the land required as part of the high school site.

The site has direct frontage to Frankland Avenue and has an area of 5.1907 ha. The proposed Structure Plan has been designed having regard for the existing and proposed road network, proposed primary and high school sites, topography, connectivity and surrounding structure plans.

The proposed Structure Plan will facilitate future subdivision to create approximately 48 single residential lots with density codes of R30 and R40.

An area of 2,895m^2 has been provided as public open space and is centrally located as per the Southern Suburbs District Structure Plan Stage 3, and is opposite the high school site.

Land immediately to the south of Lot 47 Frankland Avenue forms part of the Barfield Road Structure Plan for Lots 48 – 50 Frankland Avenue, Lots 14 & 18 Barfield Road and Lots 13 and 51 Rowley Road, Hammond Park. This Structure Plan was adopted by Council on 14 November 2013 and is pending endorsement by the Western Australian Planning Commission.

The Structure Plan Summary Table overpage details the key outcomes of the Structure Plan.

Item	Data	Section number referenced within the Structure Plan Report
Gross Structure Plan Area	2.8307 hectares (excludes proposed high school site)	2.1
Area of each land use proposed: <u>Zones:</u> Residential <u>Reserves</u> Public Purpose (High School) Amount of Public Open Space Amount of restricted Public Open Space *as per Liveable Neighbourhoods*	 1.645 hectares (58.11%) 2.36 hectares 0.2895 hectares (10%) Nil	 6.2 6.3
Composition of Public Open Space: - District Parks - Neighbourhood Parks - Local Park	 Nil Nil 0.2895 hectares (10 %)	 6.4
Estimated Lot Yield	48 lots	6.2
Estimated Residential Site Density - dwellings per gross hectare *As per Directions 2031* - dwellings per site hectare *As per Liveable Neighbourhoods*	 16.95 dwellings per gross hectare 29.17 dwellings per site hectare	 6.2
Number of Secondary Schools	Portion of proposed high school (2.36ha)	6.3

PART ONE – STATUTORY SECTION

1.0 Structure Plan Area

The Structure Plan is identified as the 'Lot 47 Frankland Avenue, Hammond Park Structure Plan'.

The 'Lot 47 Frankland Avenue, Hammond Park 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.

2.0 Structure Plan Content

The Structure Plan comprises the following sections:

(i) Part One – Statutory Section.
(ii) Part Two – Explanatory Section (Non – Statutory).
(iii) Appendices.

3.0 Land Use

3.1	Residential	1. Re*sidential densities applicable to the Structure Plan area shall be those residential densities shown on the Structure Plan Map.*

4.0 Subdivision / Development

4.1	Notifications on Title	In respect of applications for the subdivision of land the Council shall recommend to the Western Australian Planning Commission that a condition be imposed on the grant of subdivision approval for a notification to be placed on the Certificate(s) of Title(s) to advise of the following: - 1. Land or lots deemed to be affected by a Fire Hazard as identified in a Fire Management Plan as outlined within the Fire Management Plan contained within Attachment 6. 2. Building setbacks and construction standards required to achieve a Bushfire Attack Level (BAL) 29, (BAL) 19 or lower in accordance with Australian Standards (AS3959-2009): Construction of buildings in bushfire prone areas

4.2	Local Development Plans	1. Local Development Plans (LDP's) are required to be prepared and implemented pursuant to Clause 6.2.15 of the City of Cockburn Town Planning Scheme No. 3 for lots comprising one or more of the following site attributes: (i) All residential lots within the Structure Plan area including lots deemed to be affected by a recognised bushfire hazard as identified spatially in the Fire Management Plan – proposed subdivision : Lot 47 Frankland Avenue, Hammond Park WA 6164 by Bushfire Safety Consulting (March 15, 2015) as Attachment 6.
4.3	*Other provisions / standards / requirements	<u>Designated Bushfire Prone Areas - Construction Standards</u> This Structure Plan is supported by a Fire Management Plan (FMP) prepared by Bushfire Safety Consulting dated March 15, 2015. Any land falling within 100 metres of a bushfire hazard identified in the FMP is designated as a Bushfire Prone Area for the purpose of the Building Code of Australia. <u>Flora and Fauna Report and Fauna Relocation Plan</u> This Structure Plan is supported by a Flora and Fauna Report and Fauna Relocation plan dated 1 December 2014. Development of a Fauna Management and Relocation plan shall be required as a condition of subdivision. The Flora and Fauna Report and Fauna Relocation Plan dated 1 December 2014 shall be reviewed and revised to meet any condition of subdivision approval.

5.0 Other Requirements

5.1	Development Contribution Items and Arrangements	1. Contribute proportional amount as per DCA 9 and DCA 13 Community Infrastructure as prescribed in the City of Cockburn Town Planning Scheme No. 3. 2. Road Upgrades – Frankland Avenue is to be proportionally upgraded to a residential standard.

LOT 47 (No. 213) FRANKLAND AVENUE HAMMOND PARK

STRUCTURE PLAN

N

0 50m

SCALE 1:1500 @ A3

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JOB REFERENCE: 100894 DATE: 2nd DECEMBER 2015

PART TWO – EXPLANATORY REPORT

1.0 INTRODUCTION

Lot 47 Frankland Avenue, Hammond Park ('the site') is zoned 'Development' under the City of Cockburn Town Planning Scheme No 3 ('the Scheme'). Pursuant to Clause 6.2.4 and Schedule 11 of the Scheme, a Structure Plan has been prepared to guide future subdivision and development of the site, and is supported by this Structure Plan Report.

The site is located within the suburb of Hammond Park which is currently undergoing a transition from small rural residential landholdings and some horticultural uses to residential development consistent with the zoning.

The site has direct frontage to Frankland Avenue and has an area of 5.1907 ha. There are a number of design issues that already predetermine the road connection required from the south, the high school site and the requirement for 10% public open space.

2.0 SITE DETAILS

2.1 Legal Description

The subject land is described as Lot 47 on Diagram 49108 comprised within Certificate of Title Volume 1698 Folio 219 – *Attachment 1.*

The registered proprietors are Edward John Philip Neesham; Kerry Anne Neesham; Catherine Therese Clark; David Lindsay Clark and Laurie Stuart Clark.

2.2 Location

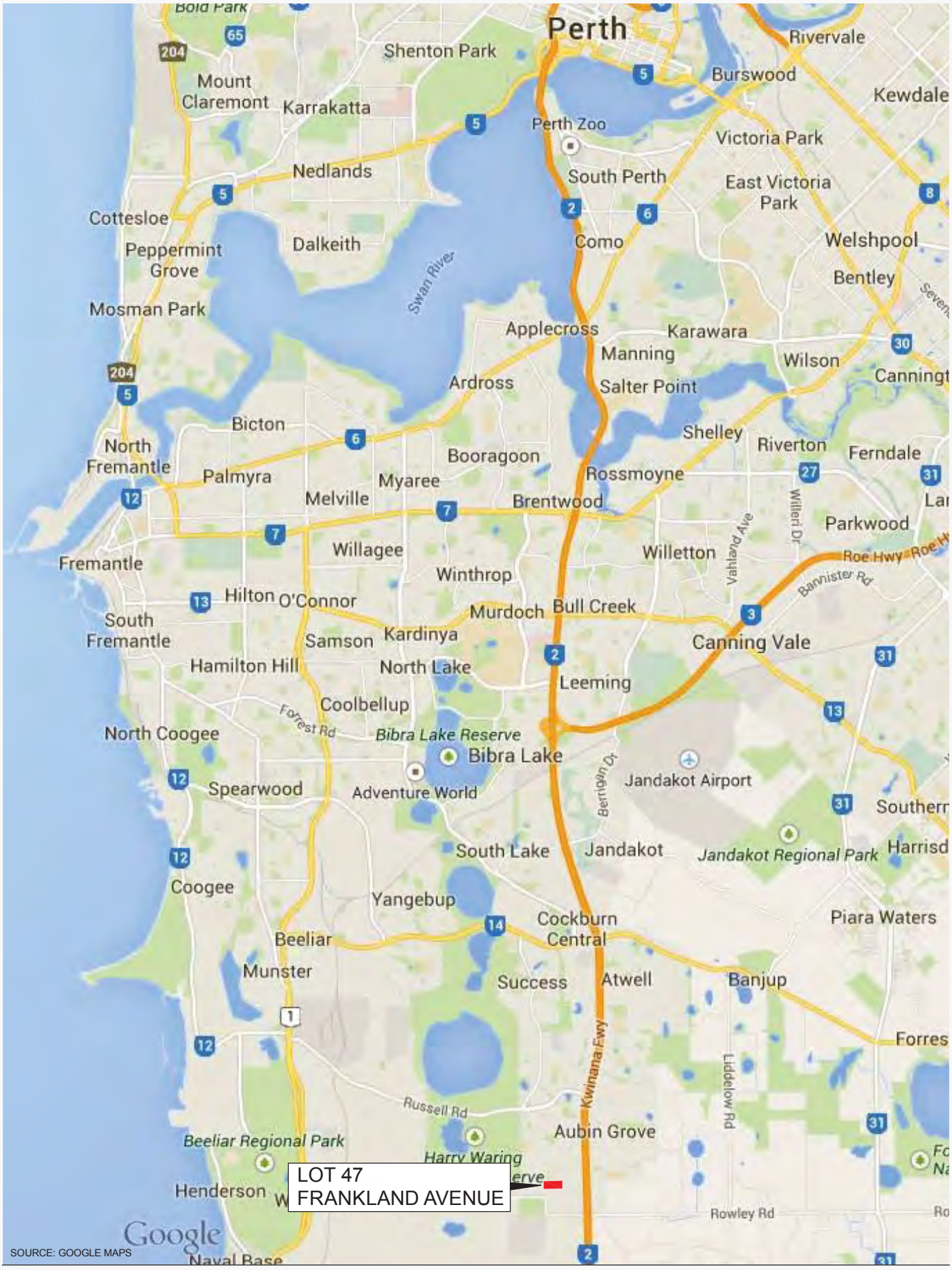
Hammond Park is located approximately 1 kilometre west of Kwinana Freeway, 27km south of Perth CBD, 5km south of the Cockburn Central commercial precinct and 7 km east of the coast – *Figure 1.*

The subject site is located on the eastern side of Frankland Avenue, approximately half way between Gaebler Road and Rowley Road, Hammond Park.

2.3 Surrounding Landuses

Vast portions of Lot 47 remain as native vegetation, with land being cleared around the existing dwelling and associated outbuildings. Land to the south of Gaebler Road is slowly being developed for residential purposes in accordance with approved Structure Plans – *Figure 2.*

In November 2013 Council adopted the proposed Barfield Road Structure Plan for land immediately south of Lot 47, incorporating Lots 48 – 50 Frankland Avenue, Lots 13 and 51 Rowley Road and Lots 14 & 18 Barfield Road, Hammond Park. This Structure Plan is yet to be endorsed by the Western Australian Planning Commission.



SOURCE: GOOGLE MAPS

LOCATION PLAN:

LOT 47 (No. 213) FRANKLAND AVENUE
HAMMOND PARK

N

0 1 2 3 4km

SCALE 1:100 000 @ A4

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Figure 1

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JOB REFERENCE: 100894 DATE: 18.12.2014

The Hammond Park Primary School is located on the corner of Gaebler Road and Frankland Avenue, approximately 800m north of Lot 47.

The Hammond Park Catholic Primary School directly abuts Lot 47 to the north and is being developed in stages.

The majority of surrounding land remains as native vegetation, however, this will be substantially cleared in the short to medium term as structure planning and subdivision in the area progresses.

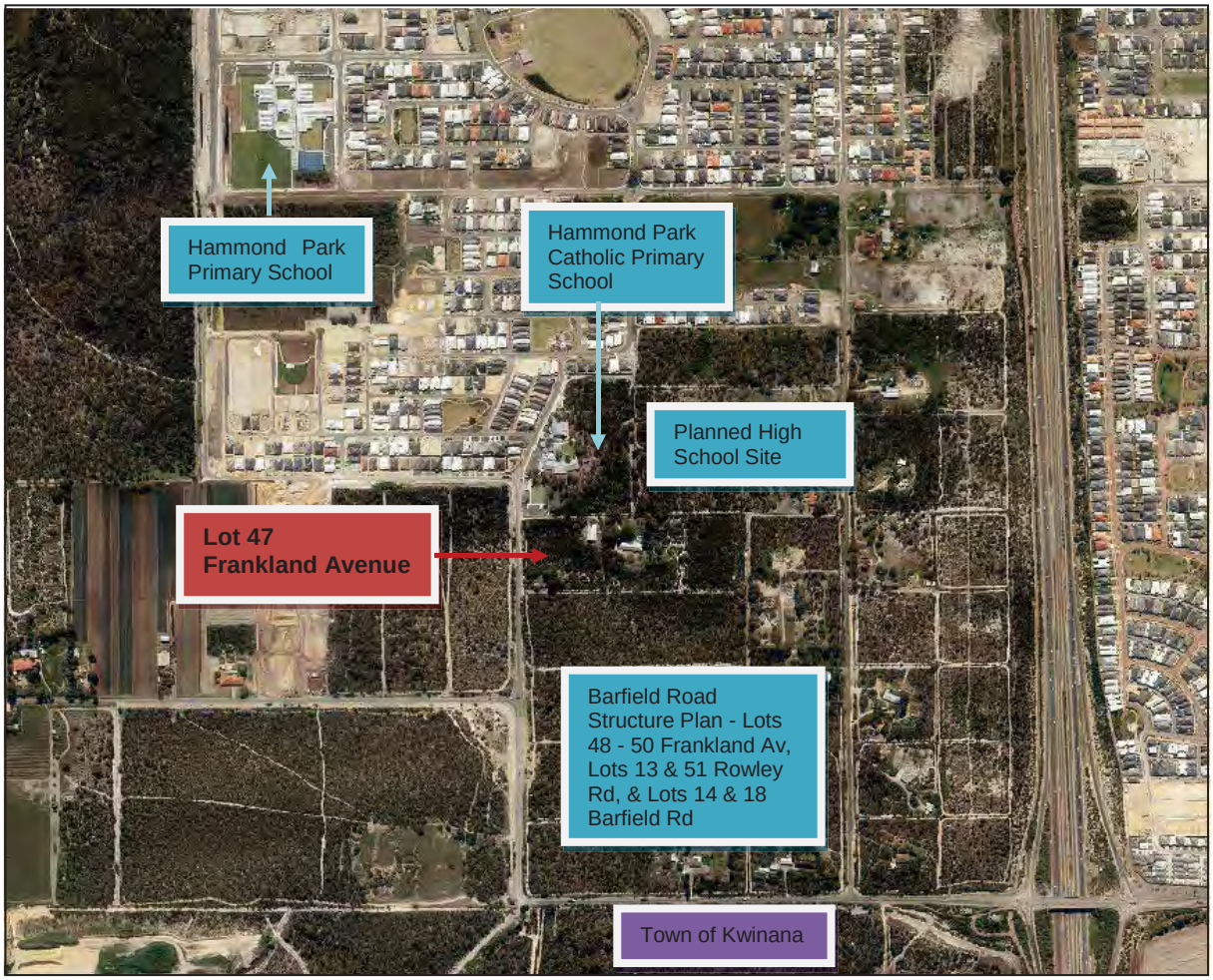

Figure 2 – Surrounding Landuses

2.4 Context and Site Analysis

A Context and Site analysis can be effectively illustrated on one plan as a number of elements associated with the proposed Structure Plan design have been predetermined (such as the need to continue the road connection from the south, the high school site and the requirement for 10% POS). This approach is consistent with Appendix 1 of Liveable Neighbourhoods which states '*Context and site mapping may be undertaken together or separately*'.

The purpose of context analysis is to connect and integrate Structure Planning for Lot 47 with surrounding developed areas and planned subdivision, and to reflect any proposed Structure Plans for adjoining land.

A Context and Site analysis plan has been prepared to identify surrounding land uses (proposed primary and high school sites) and to recognise potential road links, and to reflect the structure plan to the south - *Figure 3*.

3.0 SITE ANALYSIS

3.1 Topography

Lot 47 is gently undulating, lying on the slopes of two low Bassendean sand dunes and the intervening swale. The elevation ranges from 29m AHD at the south-west corner to just under 23m AHD in the central north. The slope reaches a maximum of approximately 12% in the south-west but is mostly less than 5%.

3.2 Geology, Landforms and Soils

Lot 47 is located in the Bassendean Dunes system and is underlain by deep grey sands. The Geological Survey of WA (Gozzard, 1983) mapped the site as "Sand (S8/Qpb) – Very light grey at surface, yellow at depth, fine to medium-grained, subrounded quartz, moderately well sorted, of aeolian origin."

Drilling across six points across the site found a mostly grey and yellow sand soil profile that matched the GWSA mapping. At the lowest point on the central northern boundary the profile was somewhat different, having an iron-enriched hardpan at 2.5m and a silty clay horizon from 3.5m to the bottom of the hole at 5.5m. The clay horizon is characteristic of the Guildford Formation (GSWA: Qpa), which underlies much of the Bassendean Dunes System.

3.3 Soil Permeability

Constant-head permeability tests were carried out at 0.5m depth at two sites in October 2014, targeting the likely location of the infiltration basin. The results show that the surface soils on the sites of the proposed infiltration basin have very high permeability, as is typical of Bassendean sands. This suggests that disposal of roof runoff via soakwells or similar structures on private lots will be readily achieved.

3.4 Acid Sulphate Soils

The Department of Parks and Wildlife maps Lot 47 and its surrounds as medium risk of actual or potential acid sulphate soils. The nearest mapped high ASS risk area is a small wetland located approximately 420m north of Lot 47.

3.5 Phosphorous Retention Index

Soil samples were taken from a depth of 0.5m in the infiltration test holes and analysed for phosphorous retention index (PRI).

PRI is a measure of the ability of a soil to adsorb and retain phosphorous from solution. A high PRI indicates that a soil is unlikely to leach phosphorous to the water table. Typical ranges for PRI values in soils are as follows:

CONTEXT & SITE ANALYSIS

LOT 47 (No. 213) FRANKLAND AVENUE
HAMMOND PARK

LEGEND
SUBJECT LAND
ROAD LINKS

N
0 25m
SCALE 1:1000 @ A3

Figure 3

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JOB REFERENCE: 100894 DATE: 25th JUNE 2015

PRI Range	*Rating*	*Typical soils*
0 – 0.5	Very low	Bassendean Sand
2 – 4	Low – Moderate	Karakatta Sands
5 – 12	Moderate – High	Cottesloe Sands
12 – 20	High	Cushed Limestone, Limesand
20 – 1000+	Very High	Clay

The Department of Water advocates a minimum PRI of 15 for soils beneath infiltration basins.

The PRI values obtained from the on-site samples show that the PRI values are very low (>0.1). Amendment of the soils beneath infiltration swales using crushed laterite, limesand or similar materials will be necessary in order to achieve the DoW's recommended minimum PRI of 15.

3.6 Surface Drainage

Lot 47 is well drained due to its permeable soils. There are no defined drainage paths on the site or nearby. Surface flow may occur over short distances for short periods during and immediately after very intense rainfall. There is no shall groundwater, surface waterlogging or ponding within the site. There is unlikely to be any surface flow off the site under any rainfall up to 100-year ARI.

3.7 Groundwater

Groundwater Occurrence and Flows:

Lot 47 is located on the western outflow of the Jandakot groundwater mound. Mapping by the DoW shows that groundwater flows in a south-westerly direction beneath the lot at elevations of between 19-21m AHD in summer and 21-22m AHD in winter.

Groundwater measurements in six bores within Lot 47 in September 2014 showed that the local groundwater levels were similar to those mapped by the DOW but that the shape and contours differed – instead of an even south-westerly gradient, the groundwater appeared to be flowing towards the centre of the lot from both east and west. This is most likely due to the local influence of abstraction from two domestic bores located bear the existing houses, which supply water year-round for both in-house and garden use.

Groundwater Resources:

Lot 47 is located in the Success sub-area of the Jandakot groundwater area. Most of the Success sub-area is within the Jandakot Public Drinking water Supply Area (PDWSA), where most of the groundwater resource is reserved for public supply. Lot 47 is approximately 500m down gradient of the Jandakot PDWSA.

3.8 Wetlands

There are no wetlands within or close to Lot 47. The nearest mapped wetland is a CCW located approximately 520m north-west of Lot 47 in Lots 41 and 42 Frankland Avenue.

3.9 Water Quality

Water samples were collected from six bores located on Lot 47 in September 2014. The results show that the water quality is variable across the site, with high Total Phosphorous concentrations in the bores at the western end (associated with high levels of suspended solids), although reactive phosphorous levels are uniformly low across the site. The concentrations of all forms of nitrogen are moderate to low in all bores.

3.10 Land Uses and Potential Contamination

Examination of historical Landgate aerial photography of Lot 47 shows no evidence of contamination or contaminating land uses since at least 1953, the date of the earliest photography. Current land uses consist of two occupied dwellings and a large shed.

The Department of Environment and Regulation (DER) Contaminated Sites Database shows not known contaminated sites on or near Lot 47.

4.0 FLORA AND FAUNA

4.1 Objectives

Bayley Environmental Services has prepared a Flora and Fauna Report, and Fauna Relocation Plan to support the proposed Structure Plan – *Attachment 2.*

The objectives of the report are:

- To search for and identify any significant flora or floristic communities on the site, focussing on species of Declared rare Flora gazetted under the *Wildlife Protection Act 1972,* Priority or otherwise significant flora listed by the Department of Parks and Wildlife, and Threatened Ecological Communities listed by DPAW or under the Commonwealth EPBC Act.

- To search for and identify any significant fauna or their habitats, focussing on species of Threatened Fauna listed under the *Wildlife Protection Act 1972,* or the Commonwealth EPBC Act.

- To identify the fauna species requiring relocation.

- To document clearing procedures that will minimise impacts on fauna.

- To describe capture and relocation methods.

- To identify suitable release sites and techniques.

The main report findings are summarised below.

4.2 Vegetation and Flora

A spring vegetation and flora survey of the western part of Lot 47 was carried out by botanist Dr Arthur Weston in September 2014, a copy of which is contained in Appendix A of the Flora and Fauna Report.

The vegetation of the western part consists of Banksia Open Forest to Open low Forest over and understory of native or alien species. The dominant overstorey species are *Banksia attenuata, B. menziesii and B. ilicifolia* in varying proportions, with lesser numbers of *B. grandis, Eucalyptus marginate (Jarrah), Allocasuarina fraseriana* and *Nuytsia floribunda.* There is no groundwater dependent vegetation on the site.

The condition of the native vegetation varies from Excellent to Completely Degraded. Approximately 10% of the site is cleared of native vegetation - *Figure 4*.

Figure 4 – Vegetation Mapping

The flora surveys found no Declared Rare Flora, Priority Flora or Threatened Flora as listed in State or Commonwealth EPBC databases.

4.3 Fauna

A fauna assessment of Lot 47 was undertaken by Bamford Consulting Ecologists in September 2014. The full report of the Bamford study is included as Appendix B in the Flora and Fauna Report and Fauna Relocation Plan.

4.3.1 Habitats

Lot 47 provides moderate to good quality habitat for a range of species. The habitat value is decreasing as the site becomes increasingly isolated due to the development of surrounding areas. The overall fauna assemblage is depauperate, reflecting the impacts of habitat loss and introduced species in the wider Perth area.

The subject land supports open woodland with Banksias, scattered Jarrah and Sheoak. Two vegetation associations are present which differ in the density and type of understorey. There are no wetland or riparian habitats on the lot.

4.4 Significant Fauna

The Bamford study found a number of significant vertebrate fauna species that might be present on Lot 47, including six reptiles, 41 birds and five mammals. Of these, 14 (3 reptiles, 8 birds, 3 mammals) are listed as Priority or conservation-dependent species in State or Commonwealth databases, while the remainder are regarded as at least locally significant due to their patterns of distribution such as isolation, restricted range, local scarcity or habitat dependency.

A number of the listed significant species, especially among the birds, would be present only as migrants, vagrants or occasional visitors for whom the site would be insignificant.

4.5 Black Cockatoos

Forest Red-Tailed Black Cockatoos were observed flying over the project area and have been recorded at White's Bushland approximately 2kms south of the project area. Carnaby's Black-Cockatoos were also recorded from several foraging signs on banksia flowers.

Banksia woodlands of the coastal plan are recognised as primary foraging habitat for Carnaby's Black-Cockatoo by the DoE. The study area contains about 1.8ha of Banksia woodland, which may provide feeding habitat for Carnaby's Black-Cockatoos, or less likely, Forest red-tailed Black Cockatoos.

Bamford (2014) estimated that the banksia food resources on the site could support approximately 0.62 Carnaby's Black Cockatoo per hectare. Therefore, the 1.8ha of banksia woodland on the site could support slightly more than one Carnaby's Black Cockatoo. This represents 0.002% to 0.009% of the estimated total population of Carnaby's Black Cockatoos, or 0.02% of the know Swan Coastal Plain non-breeding population.

Bamford identified a single jarrah tree in the north-eastern corner of the study area with a diameter at breast height (DBH) of 0.95m that may meet the Commonwealth DoE size criterion for potential cockatoo breeding sites. This tree had two sprouts at 8m high but showed no evidence of use by Black Cockatoos. It is therefore concluded that there is no significant potential breeding habitat for cockatoos on the lot.

4.6 Quenda

Bamford found recent Quenda diggings in the banksia woodland, indicating that the species is present in the study area. The density of diggings was less than at other sites in the nearby area.

4.7 Relocation Plan

The Flora and Fauna report includes a Fauna Relocation Plan. The WA Planning Commission may place a condition on the subdivision approval requiring development of a Fauna Management and Relocation Plan.

The existing Fauna Relocation Plan can be reviewed at subdivision stage to ensure compliance with any conditions of subdivision approval.

4.8 Commonwealth EPBC Referral

The EPBC Protected Matters Database lists a number of significant fauna species as potentially occurring within Lot 47 or its vicinity. Of these, the only ones that are considered reasonably likely or capable of being present are the Carnaby's and Forest Red-Tailed Black Cockatoos. Lot 47 contains approximately 1.8ha of Banksia woodland, which Bamford (2014) estimated could provide enough food resources for 1.1Black Cockatoos. No Black Cockatoo breeding habitat was present.

Based on these findings, and on advice received from the Commonwealth Department of Environment over recent referrals in Frankland Avenue and Wattleup Road, it was determined by Bayley Environmental Services that referral of the proposed clearing of Lot 47 under the EPBC Act was not necessary.

5.0 STATUTORY FRAMEWORK

5.1 City of Cockburn Town Planning Scheme No.3

Lot 47 Frankland Avenue is zoned Development under the provisions of the City of Cockburn Town Planning Scheme No. 3. The objective of the Development zone is:

> *"To provide for future residential, industrial or commercial development in accordance with a comprehensive Structure Plan prepared under the Scheme."*

Lot 47 is identified as being within Special Control Area - Development Area 26 (DA 26). Under clause 6.2.2.1 of the Scheme, the purposes of a Development Area are to identify areas requiring comprehensive planning, and to coordinate subdivision and development in areas requiring comprehensive planning through the preparation and adoption of a structure plan.

Schedule 11 of the Scheme describes the Development Areas in detail and sets out the specific purposes and requirements that apply to the subject land. The subdivision and development of land within a Development Area is to generally be in accordance with any structure plan that applies to that land.

5.2 Southern Suburbs District Structure Plan – Stage 3 Hammond Park

The Southern Suburbs District Structure Plan Stage 3 (SSDSP3) relates to the area of land on the western side of the Kwinana Freeway, south of Gaebler Road to Rowley Road, Hammond Park and from the Freeway west along Wattleup Road and represents the last remaining large greenfield area to be developed within the City of Cockburn.

The SSDSP3 was adopted by the City of Cockburn in 2012, subject to a number of modifications, and identifies the broad land use framework, including the major road network, neighbourhood structure, commercial, education, community and significant open space areas. It forms the basis for co-ordinating and considering Structure Plans and plans of subdivision to be prepared by landowners in the area.

The SSDSP3 identifies the western portion of Lot 47 Frankland Avenue as medium density residential with an area of POS, whilst the rear portion comprises part of the high school site over adjacent lots – *Figure 5.*

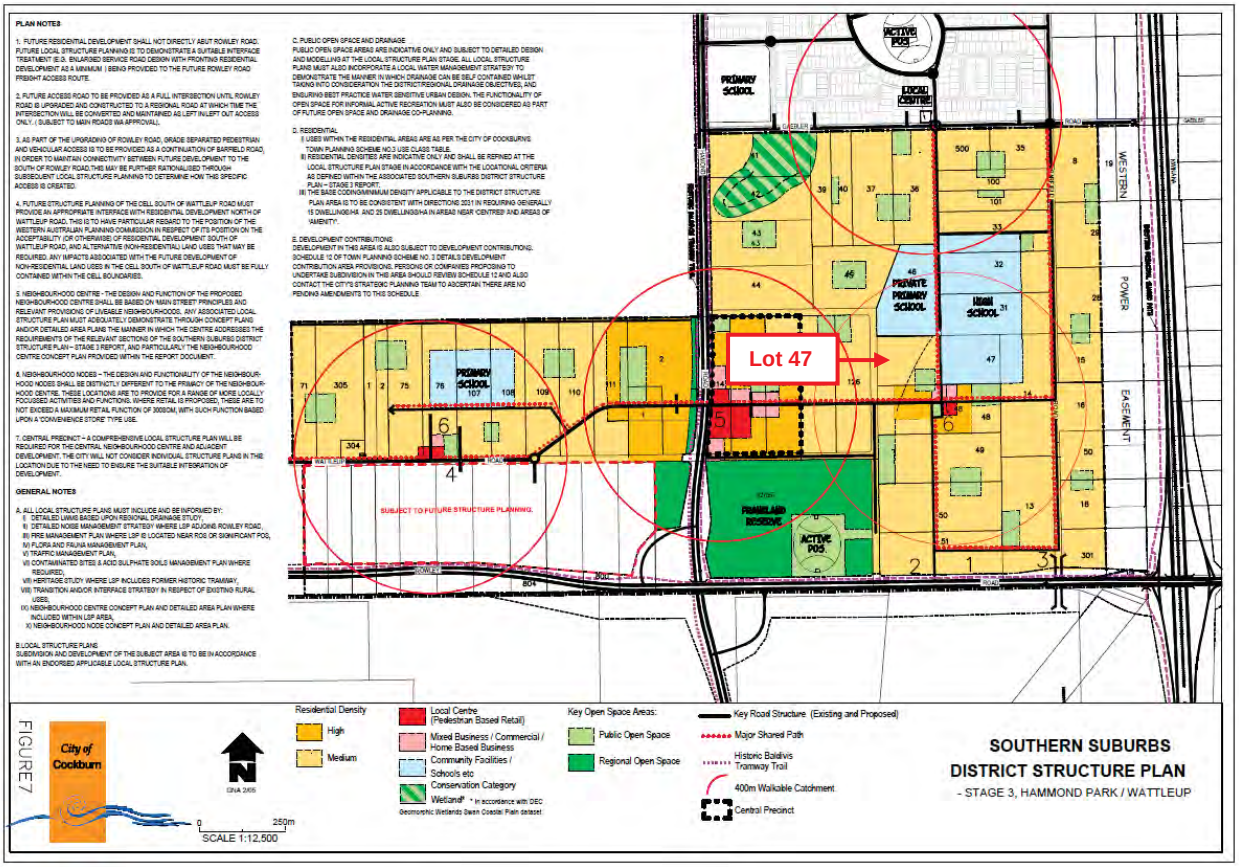

Figure 5 – SSDSP3

6.0 PROPOSED STRUCTURE PLAN

6.1 Design Overview

The proposed Structure Plan has been designed having regard for the existing and proposed road network, the existing Hammond Park Catholic Primary School and the planned high school site, topography, connectivity and adjacent structure plans.

The LSP has been prepared to guide the development of the 5.1907ha site for urban purposes, including residential subdivision and a future high school site, with access to the full range of services and facilities planned for the Hammond Park area including primary and high schools, neighbourhood centres and areas of public open space.

Densities proposed in the Structure Plan aim to achieve compatibility with the proposed subdivision to the south, which is subject to a separate structure plan prepared by Roberts Day Group.

The proposed Structure Plan design for Lot 47 seeks to:

- Continue the general layout and subdivision pattern proposed in the adjoining structure plan to the south.
- Accommodate higher densities in proximity to the primary and high school sites and the area of POS.
- Provide for casual surveillance of the POS.

6.2 Density and Lot Yield

The proposed Structure Plan will facilitate future subdivision to create approximately 48 single residential lots, however the total lot yield is dependent on finalising a subdivision design which requires separate approval of the Western Australian Planning Commission (WAPC).

An Indicative Subdivision Plan is included as *Figure 6.*

It should be noted that the Indicative Subdivision Plan and Structure Plan are based on preliminary advice received from the City of Cockburn and vary slightly in terms of internal road design to those used by the consultants in the preparation of their reports.

The Structure Plan has been designed with lot sizes compatible with those already approved in the Hammond Park area.

6.2.1 Estimated Population

The proposed Structure Plan will facilitate the subdivision of 48 single residential lots, with a total dwelling yield of 48. Based on 2.8 people per household, the estimated population for Lot 47 is 134.

INDICATIVE SUBDIVISION PLAN

LOT 47 (No. 213) FRANKLAND AVENUE
HAMMOND PARK

NOTE:
Areas and dimensions subject to survey.

LEGEND
SUBJECT LAND

N
0 50m
SCALE 1:1500 @ A3

Figure 6

GRAY & LEWIS
LAND USE PLANNERS

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JOB REFERENCE: 100894 DATE: 10th JUNE 2015

6.3 Planned Government High School Site

One government high school has been identified in the SSDSP3 which will provide for the future primary schools identified in Hammond Park, Aubin Grove and Wattleup.

The proposed Structure Plan for Lot 47 Frankland Avenue provides for the creation of portion of the high school site (2.36 ha). The high school site will be acquired by the Department of Education and Training.

6.4 Public Open Space

A Public Open Space area of 2,830m² is provided. This is centrally located as per the SSDSP3 and is opposite the high school site.

At subdivision stage and in accordance with Policy No DC 2.3, the Western Australian Planning Commission's normal requirement in residential areas is that 10 percent of the gross subdivisible area be given up free of cost by the subdivider and vested in the Crown under the provisions of Section 152 of the Planning and Development Act 2005 (as amended) as a Reserve for Recreation.

The proposed local park is provided with a high degree of visible permeability through direct lot frontage and direct street frontage on three sides.

The public open space area generally complies with the 10 percent requirements as summarised below:

PUBLIC OPEN SPACE SCHEDULE			
Site area **Less:**			5.1907ha
Portion of Proposed High School Site	2.36ha	0	
Total **Net site area**			2.8307ha
Deductions (LN Element 4 – R43) Primary School Town centre and commercial Dedicated drainage reserve Transmission corridors Other approved contingencies	 Nil Nil Nil Nil Nil		 0 ha
Gross Subdivisible area			2.8307 ha
Public open space @ 10 percent required			0.2830 ha
Public open space area contribution			0.2895 ha
Unrestricted public open space area			0 ha
Public open space provision provided			0.2895 ha

The Public Open Space area will be ceded to the crown free of cost as part of the normal subdivision process. The open space will be included and ceded as part of the first stage of subdivision.

6.4.1 Public Open Space Design

The Public Open Space will be developed in accordance with the requirements of 'Liveable Neighbourhoods'. Under 'Liveable Neighbourhoods' the Western Australian Planning Commission will generally require public open space to be developed by a subdivider to a minimum standard that may include full earthworks, basic reticulation, grassing of areas, pathways that form part of the overall pedestrian and / or cycle network, and maintenance for two summers.

The developer will meet any standard requirements of the Western Australian Planning Commission in regards to development for the public open space area (in accordance with Liveable Neighbourhoods) including earthworks, soil preparation, grassing, reticulation installation, pathways, landscaping and interim maintenance.

The detailed design of open space will have to be developed in liaison with the City of Cockburn, as the City will ultimately take over responsibility for managing the open space in the longer term.

On street carparking will be provided adjacent to the proposed open space within the road reserve.

At subdivision stage the UWMP and engineering drawings will detail development of the public open space including and not limited to:
- Relative elevation of adjacent road reserves and drainage basin
- Internal footpath network with pedestrian linkages to car embayment's
- Perimeter tree planting and / or landscaping
- Identification of retention or removal of existing vegetation
- Separation between native vegetation, landscaping and grassed areas
- Areas identified for irrigated lawn
- Identification of structures such as seating, exercise or play equipment.

6.5 Road Network

The subject site has excellent connections to the regional road network due its close proximity to the Kwinana Freeway, Russell Road and Rowley Road.

The road design for the site is pre-determined to a large extent by the north-south road connection as identified in the SSDSP3, and the adjoining structure plan to the south.

The Structure Plan area is proposed to be served by two connections to the existing boundary road network (Frankland Avenue), plus additional future connections to the developments to the north and south of Lot 47.

The north south road west of the proposed public purpose site (high school) is identified as a neighbourhood connector (Irvine Parade).

The two east – west roads which will connect to Frankland Avenue will be classified as Access Roads (Type C) with a 15m road reservation. The width of access roads is reduced to 13.5 metres where they are single loaded with one side of the road comprising POS. The laneways will be 8.5m wide.

Road and drainage works are required to meet the City's requirements and standards for urban development. Detailed engineering drawings will require separate written by the City of Cockburn as part of standard subdivision works.

6.5.1 Traffic Impact Assessment

A Traffic Impact Assessment for the proposed Structure Plan has been prepared by Shawmac Consulting Civil and Traffic Engineers. A copy of the Traffic Impact Assessment is included as *Attachment 3.*

In order to assess the potential traffic impact associated with the proposed uses detailed in the Structure Plan on the boundary road network, a traffic generation and distribution exercise was undertaken.

The aim of this exercise was to establish the anticipated traffic volumes which would be generated from the proposed development of the Structure Plan in order to quantify the effect that the additional traffic has on the boundary road network.

Based upon the proposed land uses, it has been estimated that the LSP area would generate in the order of 460 vpd on a typical weekday, with approximately 36 and 48 vehicle trips both in the am and pm weekday peak hours, respectively.

Proposed access points to the primary boundary road system to serve the LSP consist of the following:

- Two east-west connections to the east side of Frankland Avenue along the western boundary of the lands;
- A north-south road along the eastern boundary of the land providing access to the adjacent proposed high school site to the east, connecting to future residential development to the north and south.
- Two north-south orientated 6m laneways providing direct access to the rear of properties fronting Frankland Avenue and to the POS which are both proposed to connect to the two east-west local roads.

7.0 SERVICE INFRASTRUCTURE

Groundwork Consulting Engineers has prepared an Engineering Services Report to assist in providing information on the servicing for the Structure Plan and the subsequent WAPC Application for Subdivision. A copy of this report is attached as *Attachment 4.*

7.1 Potable Water

A potable water supply will be required to service each new lot and be taken over and operated by the Water Corporation. All water reticulation is at the expense of the developer.

The Water Corporation has advised that the new lots within this sub precinct may be serviced by an extension of the existing reticulation pipework into the development from the adjoining roads. Depending on timing of this development and other neighbouring developments, an upgrade to existing distribution mains may be required.

Water reticulation extensions to each stage of the development will need to be extended via road reserves to any proposed stage within the structure plan area.

7.2 Wastewater

Each new lot will be required to be serviced with sewer reticulation to be taken over and operated by the Water Corporation. All sewer reticulation work is at the expense of the developer.

The current planning for the site is by extension of a DN300 sewer from the northern side of the existing primary school to the north. Currently the development to the south of Lot 47 is proposing to extend this sewer to service their development. Part of the design process for this sewer extension requires a route through Lot 47 to be agreed.

7.3 Power

It is expected Western Power will require a logical extension from the existing network. Any upgrades required to the network for the proposed development can be ascertained once a Design Information Package is requested as part of the standard subdivision design process.

The extensions within the site would be by underground power and ground mounted switchgear and transformers as per Western Power requirements.

7.4 Telecommunications

Generally staged developments would pay for any upgrades to the network or extensions of cabling to the site. It is expected that logical extensions and upgrades from nearby the site will service the proposed development.

7.5 Gas

It is expected that logical extensions and upgrades from nearby the site will service the proposed development.

7.6 Siteworks

Siteworks will be undertaken in accordance with the City of Cockburn requirements, LWMS, UWMP and various other statutory requirements. Generally, the works will include clearing, earthworks and retaining within the housing lots area and road reserves. Fill levels will be dependent on the following factors:

- Clearance to peak maximum groundwater levels;
- Provision of a flood route within the site to the POS storage with 0.5m freeboard to habitable floor levels for the 100 year events;

- Provide levels suitable for servicing the lots for sewer and drainage connections;
- Connections into existing roads and services; and
- Interface with the existing levels and proposed levels along the boundary of the site.

Earthworks would need to be stabilised appropriately to prevent wind borne dust nuisance.

7.7 Roadworks

Internal roads within the development will be kerbed and drained, with a nominal seal width of 6.0m. Sealing would generally be with asphalt, except where intersection and entry road treatments are required. This would either be red asphalt or brick paving to differentiate between various road service hierarchies.

Any upgrade to Frankland Avenue would be to the requirements of the Local Authority.

8.0 LOCAL WATER MANAGEMENT STRATEGY

Bayley Environmental Services has prepared a Local Water Management Strategy (LWMS) in support of the proposal which has been amended in line with the comments received from the Department of Water as outlined in their letter dated 2 June 2015 (Ref: RF13643 & SRS39147). A copy of the amended Local Water Management Strategy dated 10 August 2015 is included as *Attachment 5.*

The scope of the LWMS is to:

- Document the existing environment on the site, in relation to soils, drainage, erosion, watercourses, groundwater and water dependent ecosystems.
- Briefly describe the proposed development in relation to water management.
- Address relevant regulatory requirements and design criteria for water harvesting, groundwater management and drainage.
- Describe the strategies to be implemented for water conservation, groundwater management and stormwater drainage.
- Outline the proposed monitoring program.
- Outline what is to be addressed in a future Urban Water Management Plan.

The findings of the LWMS were utilised to prepare a detailed Stormwater Management Strategy as outlined in Section 8.1 below.

8.1 Stormwater Management Strategy

The stormwater management strategy aims to comply with the principles and objectives for stormwater management identified in the *Stormwater Management Manual for WA* (DoW, 2004), and *Better Urban Water Management* (WAPC, 2008).

The drainage system will be designed to maintain surface flow rates and volumes within and from the developed site at or below their predevelopment levels. The drainage design will be refined during the detailed subdivision design stage.

The drainage characteristics of most of the site will be unchanged by the development. Within private lots, the runoff from building roofs and paved areas from storms up to 5-year ARI will be retained within each lot. Runoff from the school site from all storm events will be retained within that site. The section of Frankland Avenue adjacent to the site will be drained to infiltration basins in the proposed subdivision to the west. The major source of runoff to the drainage system will be internal roads. The major source of runoff to the drainage system will be internal roads.

Runoff from road reserves (total area 8,750m^2) will be conveyed by low-flow pipes and road surface, in accordance with the City of Cockburn advice, to a rain garden within the central POS. *Figure 7* shows the nominal location and outline of the infiltration basin. Runoff events up to 5-year ARI will be conveyed by the piped system, with flow from larger events being conveyed by a combination of piped and pavement flow. The roads immediately surrounding the POS will be flush-kerbed so than runoff can sheet directly into the grassed POS.

Runoff from storms up to 1-year ARI will be captured and infiltrated in a rain garden in the centre of the basin. The base (invert level0 of the rain garden has been set nominally at 22.5m AHD, giving a 1m clearance above the historical maximum groundwater level to facilitate effective infiltration. Runoff from larger storms up to and including 100-year ARI (including excess runoff from lots) will be captured in an infiltration basin surrounding the rain garden.

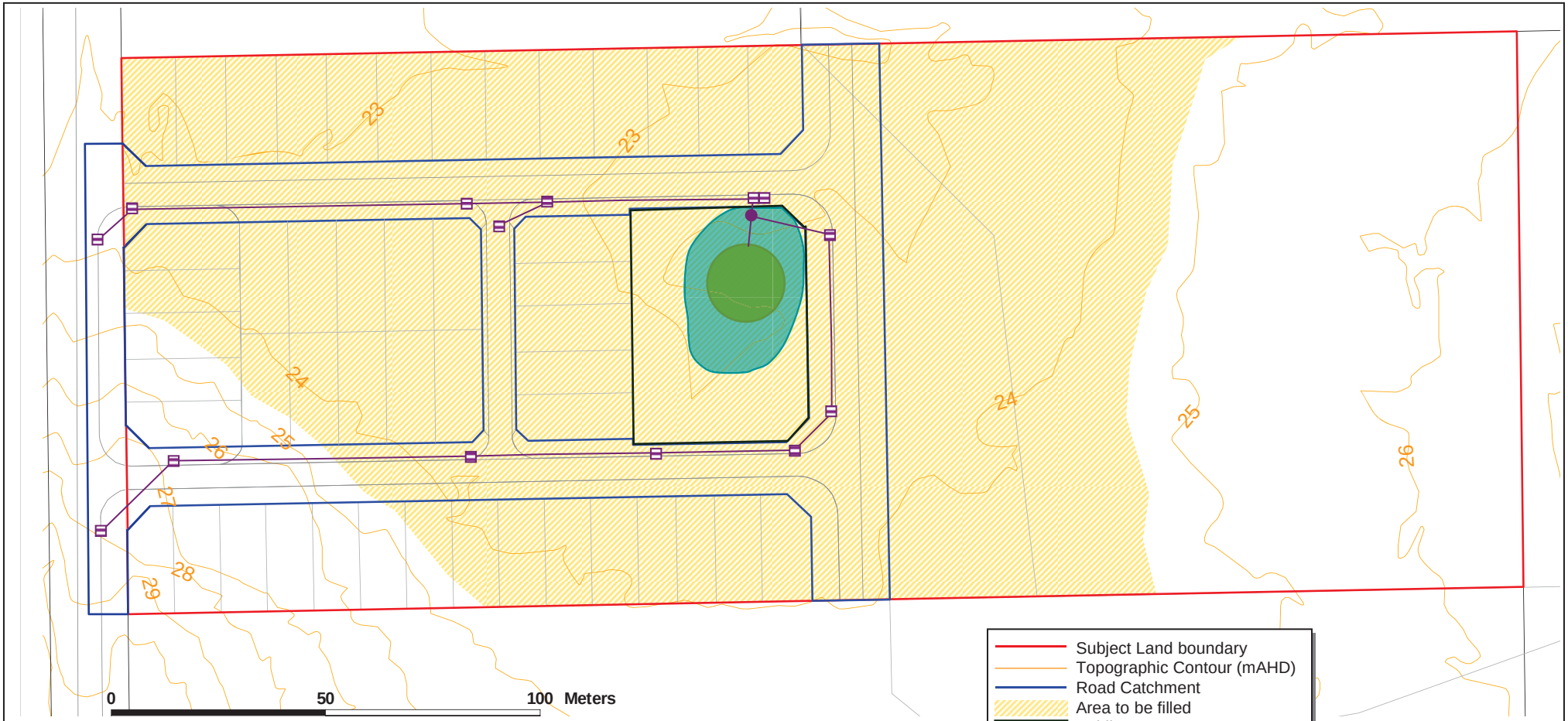
The location of the rain garden in the centre of the basin means that there will be no risk of high flows from large storms scouring the vegetation or base of the rain garden. The vegetation in the rain garden may be completely inundated by large (5 yr+) storm flows, however, these inundation events will be rare and limited to a few hours duration.

The topography of the local area means that there is no overflow path from the site available for runoff in excess of the 100-year ARI storm. Therefore, the site has been designed to provide a minimum of 0.5m of freeboard above the 100-year ARI top water level in the infiltration basin. This will require lots in the site to be filled to a minimum level of 24.2m AHD.

8.2 Groundwater Management – Groundwater Levels

Groundwater levels beneath Lot 47 will not be directly affected by the development. No subsoil drainage will be employed in the development as there is no outlet available for drained water.

Lot 47 will be filled as necessary to create a minimum finished lot clearance of 2.7m above the maximum groundwater level predicted by the DoW.



Subject Land boundary
Topographic Contour (mAHD)
Road Catchment
Area to be filled
Public Open Space
Pipe Drainage
Side Entry Pit
Junction Pit / GPT
Rain Garden (1-yr ARI)
Infiltration Basin (100-yr ARI)

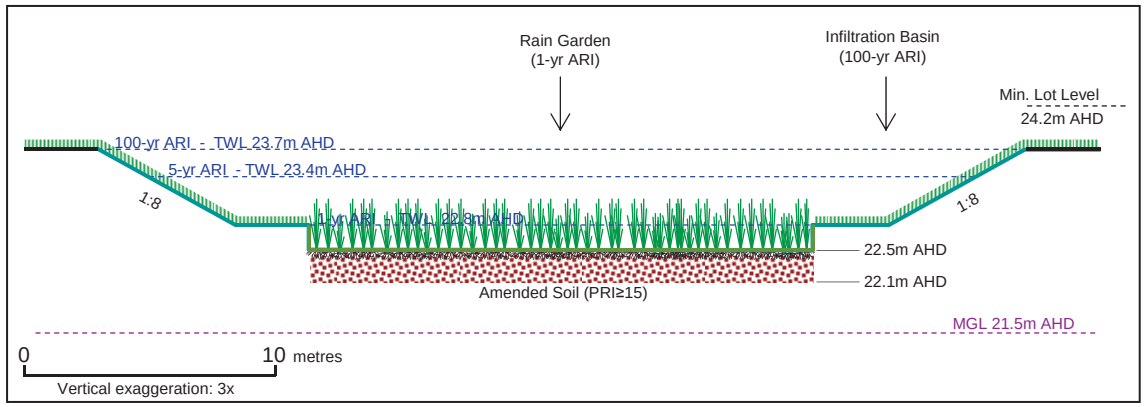


Figure 7

DRAINAGE CONCEPT

bayley environmental services

Given these lot levels, there will be no need for dewatering for the installation of sewers or other underground services. As a result there will be no impact on groundwater levels from construction activities.

Clearing vegetation on Lot 47 and surrounding lots is likely to cause some short-term rise in winter groundwater levels in the first year or two following development. This is likely to be offset in subsequent years by increasing abstraction of groundwater via bores for irrigation of domestic gardens and POS.

No active management of groundwater levels is expected to be necessary, beyond monitoring of levels and yields in the POS irrigation bore.

9.0 FIRE MANAGEMENT PLAN

A Fire Management Plan (FMP) has been prepared by Bushfire Safety Consulting to support the proposed Structure Plan - *Attachment 6.* The FMP covers the entire site and an additional 100 metres surrounding its perimeter - *Figure 8*.

Figure 8 – FMP Study Area

The aim of the FMP is to reduce the occurrence of and minimise the impact of bushfires within the site, thereby reducing the threat to life, property and the environment.

Following development, while areas of remnant vegetation will be cleared within the site to facilitate development, the majority of the remnant vegetation outside of the site will remain in the short to medium term, and will therefore pose varying bushfire hazards to development within Lot 47. Landholdings to the north, south and west of the site are intended for future urban development in accordance with the SSDSP3 and therefore pose only temporary bushfire hazard considerations. Vegetation and bushfire hazard within the Hammond Park Catholic Primary School will be removed during Stage 2 of that development.

All areas within 100m of the site boundary have been assessed for vegetation classification and bushfire hazard rating levels. It has been determined that all proposed future dwellings arising from the LSP will fall within the acceptable level of risk. The temporary Building Protection Zones (BPZ) requirements as well as the predicted Bushfire Attack Levels (BALs) for the current conditions have been assessed and shown in *Figures 9 and 10.*

Any new dwellings constructed within 100m of identified classified vegetation will require consideration of the need for increased construction requirements to address *AS3959 Construction of Buildings in Bushfire Prone Areas.* In order to pre-empt this requirement, a BAL assessment will be undertaken as part of the subdivision process to confirm the BAL ratings for each individual new lot created. BAL ratings should not be determined for future lots at the LSP stage as the final predicted exposure of dwellings to surrounding bushfire hazard is unlikely to remain at that time.

If subdivision proceeds within those areas of the site designated as Bushfire Prone due to temporary bushfire hazards, prior to the hazards being removed, bushfire hazard management measures (ie increased construction standards to meet the increased BAL ratings) will be required. Therefore a detailed and specific BAL assessment will need to be completed at the subdivision approval stage for all lots currently determined to be within "Bushfire Prone Areas".

A temporary Building Protection Zone within Lot 47 will be established and maintained as balance lot if subdivision proceeds prior to vegetation being cleared and removed in land to the south, and within the primary school to the north (refer Appendix J in Attachment 6). Lots along the south and north boundary of Lot 47 will not be created unless and until the temporary bushfire hazards have been removed by the surrounding land being adequately cleared and developed or subdivided.

A specific BAL assessment at subdivision stage will reflect any change in the status of surrounding temporary bushfire hazards. Clearing to the north and south will only improve the bushfire management for Lot 47 and the Fire Management Plan developed for this Structure Plan takes into account the 'worst case' scenario based on current bushfire hazards. It is however recognised that the area is subject to ongoing change due to incremental subdivision of surrounding lots.

It is also envisaged that as part of the subdivision process, any lots deemed to require fire management responses through the BAL assessment, will be subject to notification pursuant to section 70A of the *Transfer of Land Act 1983* placed on the certificate(s) of title indicating that the lot is subject to the requirements of a FMP (ie increased construction standards to meed increased BAL ratings).

It is expected that the implementation of this FMP will reduce the threat to future residents, visitors and fire fighters in the areas proposed within this FMP.

It is anticipated that clearing will commence in 2015 to facilitate subdivision.

The Barfield Road Structure Plan for the adjoining land to the south of Lot 47 will be implemented in a fashion which ensures assests are not constructed in areas subject to an unacceptable bushfire risk from surrounding vegetation which has not been cleared. This includes land which directly abuts Lot 47, which will be developed last.

Appendix J
BUILDING PROTECTION ZONE

LOT 47 (No. 213) FRANKLAND AVENUE
HAMMOND PARK
CITY OF COCKBURN

SOURCE:
PHOTOGRAPHY FROM NEARMAP

PREPARED FOR:

LEGEND

- SUBJECT LAND
- OPEN FOREST
- WOODLAND
- SHRUBLAND
- SCRUB
- GRASSLAND
- PERMANENT BPZ
- TEMPORARY BPZ UNTIL ADJACENT VEGETATION IS REMOVED

NORTH

0 20 40 60 80 100m

SCALE 1:2000 @ A3
DATE: SEPTEMBER 2014
Base mapping supplied by Gray & Lewis

Bushfire Safety CONSULTING
BUSHFIRE SAFETY CONSULTING
PO BOX 84 STONEVILLE WA 6081
Mbl: 0429 949 262
www.bushfiresafety.net


832
833
834
STREET
46
Private (Catholic) Primary School Site
Site under construction
100m ZONE SURROUNDING DEVELOPMENT
47
Proposed High School Site
20.0 m
TEMPORARY BPZ
43.0 m
20.0 m
15m ROAD
12.5m ROAD
6m LANEWAY
6m LANEWAY
BPZ
165.1
47
5.1907h
BPZ and BAL requirements to be determined at Development Application Stage for the school site
143.7
143.8
FORMER PROPOSED BOUNDARY
AVENUE
FRANKLAND
ROAD
High School
GH
74
20.0 m
BPZ
15m ROAD
43.0 m
TEMPORARY BPZ
20.0 m
164.0
Local Centre
POS
48
Local Structure Plan by others (lodged)

10.0 FUTURE SUBDIVISION AND STAGING

The lots under this Structure Plan will be released as one stage.

11.0 CONCLUSION

The Structure Plan report has been prepared in collaboration with the project team of specialist environmental, traffic, fire management and engineering consultants in order to guide the future subdivision and development of Lot 47 Frankland Avenue, Hammond Park.

The Structure Plan has been prepared in accordance with the Southern Suburbs District Structure Plan Stage 3.

The Structure Plan for Lot 47 Frankland Avenue will facilitate a subdivision creating new housing opportunities in Hammond Park compatible with approved subdivisions in the area to the north and the adopted Structure Plan for land immediately to the south. It will also reflect the future development of the proposed high school site.

We respectfully seek Council's support for the adoption of the Structure Plan, and adoption by the Western Australian Planning Commission.