

325 ROCKINGHAM ROAD, SPEARWOOD

STRUCTURE PLAN

MARCH 2016



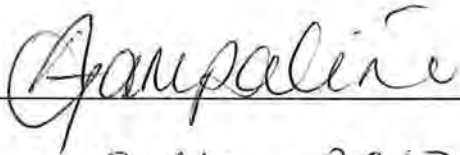
This structure plan is prepared under the provisions of the City of Cockburn Town Planning Scheme No.3

IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON: 9 May 2017

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

9 May 2017

Date

Date of Expiry: 9 May 2027

TABLE OF AMENDMENTS TO STRUCTURE PLAN

Amendment No.	Summary of Amendment	Amendment Type	Date Approved by WAPC

TABLE OF DENSITY PLANS

Density Plan No.	Area of density plan application	Date endorsed by WAPC

EXECUTIVE SUMMARY

This Structure Plan has been prepared to guide the future development of Lot 14 (No.325) Rockingham Road in Spearwood. It has been prepared under the provisions of the City of Cockburn's Town Planning Scheme No.3 (TPS3) to guide the subdivision and/or development of the land which is in a 'Development Area'.

The land the subject of this Structure Plan is situated on the western side of Rockingham Road in Spearwood, south of Spearwood Avenue and immediately south of the rail line which crosses Rockingham Road and serves Fremantle Port. The area of land the subject of this Structure Plan is 1.8277 hectares (18,277 m²).

The purpose of the Structure Plan is to facilitate the use of the land for primarily residential purposes. The land is considered highly suitable for residential use and development in a manner that recognises a host of strategic opportunities. The land also sits in a context that allows for a scale of development achievable without impact on the immediate or broader location. The intention is to provide for a different form of residential development to that typically found in the immediate area and the Spearwood location generally.

The proposed Structure Plan and appended technical reports respond to all relevant considerations, providing an account of the extent to which impacts materially affect the land. Most importantly, given the type, density and scale of development proposed, the Structure Plan identifies how residential development is to occur for the purposes of achieving acceptable levels of amenity, thus allowing the intrinsic value of the land to be realised given its size and position.

The proposed Structure Plan can deliver:-

- A diversity of residential dwelling types to the location;
- Residential development that provides the local and broader community with housing choice (and the relative affordability associated with such, notably smaller multiple dwellings);
- A significant residential development making the attraction of the location available to a greater number of future residents;
- A form of residential development that caters to a more diverse local population;
- New residential development in a location conveniently served by a wide range of retail, commercial and community services;
- New residential development within walking distance of Phoenix town centre and the City of Cockburn civic precinct;
- Residential development to an accessible location well served by the local traffic network and high frequency public transport;
- A high level of surveillance via occupied residential development overlooking the adjoining public realms (Rockingham Road and the rail reserve);
- Residential development in an established area at a density and scale (height) that will have minimal, if any impact on the context;
- Residential development that will be sustainable in design whilst making efficient use of existing land in an infill setting; and
- Residential development that will be suitably designed and attenuated to address State Planning Policy 5.4 *Road and Rail Transport Noise and Freight Considerations in Land Use Planning*.

SUMMARY TABLE

Item	Data	Section number referenced within the Structure Plan Report
Total area covered by the Structure Plan	18,277m ² or 1.8277 hectares	1.2.2 Area and Land Use
Area of each land use proposed		1.2.2 Area and Land Use
Residential	13,773m ² or 1.3773 hectares (75.35%)	
Roads	2,676m ² or 0.2676 hectares (14.64%)	
Public Open Space	1,828m ² or 0.1828 hectares (10.00%)	
Total estimated Lot Yield	190 (Grouped and Multiple Dwellings)	3.3 Residential
Estimated number of dwellings	190 (Grouped and Multiple Dwellings)	3.3 Residential
Estimated residential site density	96 dwellings per site/hectare	N/A
Estimated population	513 people @ 2.7 people/household	N/A
Estimated area and percentage of public open space given over to: <ul style="list-style-type: none"> • Regional open space • District open space • Neighbourhood parks • Local 	1,828m ² or 0.1828 hectares (10.01%)	3.2 Public Open Space



LEGEND

Structure Plan Boundary

LOCAL SCHEME RESERVES

Local Road
 Parks and Recreation

ZONES

Residential
 Area where ground level office is permitted and designed in such a manner to also accommodate residential development

OTHER

R-Code
 Local Development Plans
 Existing property boundaries
 Indicative subdivision layout

STRUCTURE PLAN MAP

Lot 14 (No. 325) Rockingham Road, Spearwood
 City of Cockburn



PLAN: PAL-2 010E
 DATE: 170420
 PROJECT: PALERMO
 DESIGNED: TW

SCALE: 1:1000 @ A3



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PART ONE – IMPLEMENTATION

1.0 Structure Plan Area

The Structure Plan (SP) is identified as the 325 Rockingham Road, Spearwood, Structure Plan. The SP shall apply to the land contained within the inner edge of the line denoting the SP boundary on the SP Map.

2.0 Operation

The SP comes into effect the date it is approved by the Western Australian Planning Commission (WAPC).

3.0 Staging

Staging is likely to take place but is dependent on the manner in which the land is to be developed.

4.0 Subdivision and Development Requirements

The predominant land use zone on the SP Map is Residential. Local Scheme Reserves in the form of 'Local Road' and 'Parks and Recreation' reserves are also shown.

The SP Map shows an indicative subdivision layout. Development is envisaged to take place within the lots shown when created and/or sold.

Development within the SP area is to have due regard for adjoining land uses. Considerations include: bulk (design) and scale (height) of development, road and rail transport noise and related considerations. Arrangements for the interface of development on the SP area will be dealt with by a Local Development Plan/s (LDP).

Public open space is to be provided in accordance with WAPC Policy.

WAPC residential density targets will be achieved, applied by *Directions 2031* and other higher level strategic plans, strategies and/or sub-regional structure plans prepared by the WAPC (including *Perth and Peel @3.5million* and the *South Metropolitan Peel Sub-Regional Planning Framework sitting beneath Perth and Peel @3.5million*).

5.0 Local Development Plans

LDP's will apply to the SP area.

The LDP's will address:- building size, building height, street and boundary setbacks, open space, streetscape address, fencing, building appearance, outdoor living areas, parking (including visitor), vehicular access, visual privacy, sound attenuation and related considerations.

6.0 Other Requirements

Funding for land and infrastructure works is required in accordance with DCA 12 (Packham North), whilst arrangements for the provision of community infrastructure are to be in accordance with DCA 13.

7.0 Additional Information

Additional Information	Approval Stage	Consultation Required
LDP	After approval of SP variation by the WAPC.	Yes

PART TWO – EXPLANATORY SECTION

1.0 Planning Background

1.1 Introduction and Purpose

The purpose of this Structure Plan (SP) is to guide the future development of the subject land.

MW Urban has prepared the SP on behalf of the owners of the land Gaetano and Vito Palermo. It has been prepared under the provisions of the City of Cockburn's Town Planning Scheme No.3 (TPS3) to guide the subdivision and/or development of the land which is in a 'Development Area'. The SP is supported by the following:-

- A builtform concept prepared by Gresley Abas Architects;
- Environmental acoustic input and assessment by Herring Storer;
- Landscape architectural input by Ecoscape;
- A servicing and infrastructure report by Porters Engineering; and
- A transport assessment by Flyt traffic engineers.

The intent of the SP is to provide for medium density residential development on a strategic land holding in a location well suited for such purposes. The SP also provides for a small amount of mixed-use development (residential/commercial).

1.2 Land Description

1.2.1 Location

The land the subject of this SP is situated on the western side of Rockingham Road in Spearwood, south of Spearwood Avenue and immediately south of the rail line which crosses Rockingham Road and serves Fremantle Port (see Figure 1 – Location Plan).

1.2.2 Area and Land Use

The area of land the subject of this SP is 1.8277 hectares (18,277 m²). The land is currently vacant and within a 'Development' zone under the City's TPS3.

1.2.3 Legal Description and Ownership

The Certificate of Title identifying the owners of the land is included in Figure 2. The legal description of the lot the subject of the SP is Lot 14 Rockingham Road on Diagram 26999, Certificate of Title Volume 580, Folio 94A.

1.3 Planning Framework

1.3.1 Zoning and Reservations

The land the subject of this SP is zoned 'Urban' under the Metropolitan Region Scheme and 'Development' under the City of Cockburn's TPS3 (see Figure 3). The land is not the subject of, or affected by any land reservation, nor is it the subject of or affected by any existing or proposed improvement plan.

1.3.2 Regional and Sub-Regional Structure Plan

There is no applicable Regional or Sub-Regional Structure Plan.

1.3.2.1 District Structure Plan

The land the subject of this SP is within the 'Packham North District Structure Plan'. The District SP identifies the use and development of the land for 'Mixed Business' subject to 'Restricted Use'.

As stated where land use is concerned, Mixed Business uses set out in Table 1 of the Scheme. Residential uses are not permitted due to the proximity of the railway corridor, the nature of adjoining (non-residential) land uses and the nature of the constrained road network. Council will only consider residential development via a proposed local structure plan which demonstrates that issues such as noise, vibration, adjoining land use impacts/risks and structural elements of residential design are suitably addressed in accordance with State and Local planning requirements.

1.3.3 Planning Strategies

1.3.3.1 Directions 2031 (State)

The proposed SP accords with the State's strategy for the metropolitan region (Directions 2031), that is, to achieve urban growth via a more compact, consolidated city.

Directions 2031 requires 47% of all new dwellings in Perth to be developed within existing suburbs. Providing the quality of this form of new development is of a high standard, local communities and those looking to participate in the property market will continue to embrace this new approach to housing the city's growing population. At present, the percentage of infill development taking place in Perth is approximately 28-30%.

The SP proposed provides for a mix of apartment living and grouped houses. It does so in a location characterised by single residential and grouped dwelling development. In addition to contributing to a more diverse range of housing types, the proposed SP should relatively speaking, deliver more affordable housing. This will be a derivative of smaller dwellings as part of higher yielding developments based on the intended form of development.

1.3.3.2 Perth and Peel @3.5million (State)

The WAPC recently released Perth and Peel @3.5million. The draft publication considers the growth of Perth over the next 35-40 years – and how this might best take place. The document refers to a connected city growth pattern that will deliver a balance between development within the existing spatial framework and development of selected peri-urban areas adjacent to the existing urban front. The approach will provide for:-

- New 'infill' and new 'fringe' lifestyle opportunities;
- The protection of important areas of conservation and agricultural significance;
- Increased land use and infrastructure efficiencies; and
- Better public transport and land use integration.

A connected city as stated in the document will have amongst its features:-

- *Urban areas that deliver a range of contemporary lifestyle choices from low density suburban, to medium-density urban and high-density inner city lifestyles in strategically-located areas;*
- *High-quality global and local infrastructure networks including roads, public transport, energy, water, communication and globally competitive, highly accessible airport and sea port infrastructure; and*
- *Urban form that maximises the use of existing infrastructure assets in parallel with extending infrastructure into the development areas of the outer sub-regions identified in the relevant draft sub-regional planning frameworks.*

Of particular relevance to the proposed SP, Perth and Peel @3.5million states that *Future infill growth will make much better use of existing infrastructure and amenities and promote increased density and diversity of mixed-use development. In particular, turning key transport corridors into multi-functional corridors is crucial in the development of a more compact urban form.*

The key objective of Perth and Peel @3.5million is *To create sustainable communities that are attractive places to live and work. The consolidation of urban areas will provide for more efficient use of urban land and infrastructure with improved access to public transport, recreation, community and commercial facilities while avoiding impacting upon significant environmental attributes.*

With respect to housing diversity and affordability, Perth and Peel @3.5million states that *One effective response to the affordability issue is developing greater housing diversity and work towards shifting public perception that affordable housing does not always equate to affordable living and that large, low-density, detached homes on the urban fringes are not always the best option. Smaller dwellings like townhouses, apartments and ancillary dwellings (granny flats) tend to be more affordable than larger homes and can provide opportunities for people to live in their preferred sub-region.*

Again, the proposed SP aligns with the above commentary. The document also states *The move towards encouraging more small and diverse housing types is supported by the*

findings of a 2013 study, *The Housing We'd Choose: a study for Perth and Peel*, prepared by the Western Australian Planning Commission and the departments of Housing and Planning. The vast majority of respondents indicated that location was a primary consideration and that they would prefer to live in the central area but could not afford to do so. Three quarters of respondents said that they were prepared to trade off house size or type in order to live in their preferred area.

When comparing the current housing stock to people's financially-constrained housing choices, there was an over-supply of detached housing and an under-supply of semi-detached housing.

1.3.3.3 South Metropolitan Peel Sub-Regional Planning Framework (State)

Sitting beneath Perth and Peel @3.5million are four draft planning frameworks. These frameworks provide a high-level strategic context to guide future development in each of the sub-regions that make up the metropolitan area. The frameworks build upon the principles of Directions 2031 and will act as instruments for the purpose of achieving a *more-consolidated urban form that will reduce dependence on new urban greenfield developments to accommodate the anticipated population growth by increasing residential density and urban infill development targets.*

The sub-regional planning framework has entailed a multilayered planning response to *avoid, protect and mitigate the sub-region's environmental attributes that are protected under Commonwealth and State environmental legislation.* This approach:-

- *Informs a consolidated urban form that limits the identification of new greenfield areas to where they provide a logical extension to the urban form, and that places a greater emphasis on urban infill and increased residential density; and*
- *Maximises the use of existing infrastructure, including transport, community/social and service, where there is a concentration of urban and employment opportunities.*

Objectives associated with a consolidated urban form referred to in the sub-regional framework include:-

- *To create sustainable communities that are attractive places to live and work. The consolidation of urban areas will provide for more efficient use of urban land and infrastructure with improved access to public transport, recreation, community and commercial facilities, while avoiding impacts upon significant environmental attributes.*
- *To provide the capacity to accommodate the predicted population growth, vacant and under-utilised urban land that can be serviced with the required infrastructure and that is located within activity centres, transit corridors or areas of high amenity is to be identified for increased residential densities.*

The document proceeds to state that *It is critical that planning for the predicted population growth focuses on making the most efficient use of transport networks, service infrastructure, employment and key community/social infrastructure facilities. A foundation*

of the proposed consolidated urban form is to concentrate the majority of the population within reasonable proximity of a wide range of services and activities.

The proposed SP is for land in close proximity to two identified District Centres, being Phoenix and Port Coogee. The SP land is also proximate to the employment centres of Bibra Lake, Henderson, the AMC and Kwinana. Where public transport is concerned, key infrastructure being investigated by the Department of Transport and Public Transport Authority includes a network of transit priority routes. As stated, these correspond with *the distribution of key activity centres, related urban catchments ... integrating with heavy rail systems and local bus services.*

Rockingham Road on which the subject land is located is identified for transit priority routes connecting Rockingham–Kwinana–Fremantle and Armadale–Cockburn–Fremantle.

1.3.3.4 City of Cockburn's Local Planning Strategy (LPS)

The City's LPS, supporting and to be read in conjunction with the City's TPS3, promotes the following actions where residential development is concerned:-

- Higher density, and mixed land-use developments, reducing car use whilst promoting cycling, walking and public transport;
- Medium and high-density housing in and near regional and district centres, and near public transport facilities;
- The delivery of a range of housing opportunities; and
- The promotion of mixed uses of land in communities, especially through the location of housing in commercial centres.

The City's LPS also refers to:-

- *Strategic Planning by the preparation and implementation of structure plans; and*
- *Adopting R-Code densities which do not preclude opportunities for subdividers and builders to provide alternative and innovative forms of housing.*

The proposed SP accords with the above points and the City's LPS.

1.3.3.5 Phoenix Central Revitalisation Strategy (Local)

This strategy provides the framework for the revitalisation of the Phoenix town centre and environs. The content of the strategy also provided the basis for zoning changes to the City's TPS3 for the purpose of increasing residential densities in the vicinity of the town centre. These changes, the catalyst for new development at increased densities, support the renewal and viability of the town centre. Assisting the renewal process and the convenience of the current and emerging population is the highly walkable nature of the Phoenix area.

The study area was based on an 800m walkable catchment from the Phoenix town centre. The land subject of this SP sits within the 800m depicted in Figure 1 in the Strategy. The

proposed SP supports the ideas and objectives of the Phoenix Central Revitalisation Strategy which are similar to those contained in Directions 2031.

1.3.3.6 Other

The proposed SP is also aligned with the City's Strategies dealing with 'Housing Affordability and Diversity' and 'Sustainability'.

1.3.4 Policies

State Planning Policy 3 – Urban Growth and Settlement

The SP accords with the following objective of this Policy, *To promote the development of a sustainable and liveable neighbourhood form which reduces energy, water and travel demand while ensuring safe and convenient access to employment and services by all modes, provides choice and affordability of housing and creates an identifiable sense of place for each community.*

State Planning Policy 3.1 - Residential Design Codes

As stated in the City of Cockburn's TPS3, *Unless otherwise provided for in the Scheme the development of land for any of the residential purposes dealt with by the Residential Design Codes is to conform to the provisions of those Codes.* The R-Codes will apply to new development subject to a variation dealing with building height notated on the SP Map. This caters to the ability to develop to a greater height without impacting the local context.

Where necessary dependant on the type of development proposed, Detailed Area Plans prepared in accordance with the requirements of TPS3 will also provide for variations to the R-Codes.

Other

Liveable Neighbourhoods

Liveable Neighbourhoods operates as a Development Control Policy to facilitate the development of sustainable communities. It is a Policy that has continued to evolve through refinements and updates *based on operational practice.* The SP has regard for the following principal aims of Liveable Neighbourhoods:-

- *To foster a sense of community and strong local identity and sense of place in neighbourhoods and towns;*
- *To ensure active street-land use interfaces, with building frontages to streets to improve personal safety through increased surveillance and activity;*
- *To facilitate new development which supports the efficiency of public transport systems where available, and provides safe, direct access to the system for residents;*

- *To provide a variety of lot sizes and housing types to cater for the diverse housing needs of the community at a density that can ultimately support the provision of local services;*
- *To provide for a more integrated approach to the design of open space and urban water management;*
- *To ensure cost-effective and resource efficient development to promote affordable housing; and*
- *To maximise land efficiency wherever possible.*

Development Control Policy DC 2.6 – Residential Road Planning

The SP has regard for and is consistent with this Policy where road planning is concerned. The type and scale of development proposed will be served by a road determined as applicable under the Policy.

1.3.5 Pre Lodgement Consultation

A series of pre-lodgement meetings have taken place with the City's Strategic Planning team.

The purpose of the meetings with the City's Strategic planners has been to systematically investigate what considerations need to be taken into account in pursuing the development of the land for residential use. In addition to focussing on the items referred to in the District SP, a number of additional factors were identified and explored as part of a cursory examination contemplating residential land use.

The proposed SP and appended technical reports respond to all relevant considerations, providing an account of the extent to which impacts materially affect the land. Most importantly, given the type, density and scale of development proposed, the SP identifies how residential is to occur for the purposes of achieving acceptable levels of amenity, thus allowing the intrinsic value of the land given its size, positioning and proximity to be realised.

2.0 Site Conditions, Opportunities and Considerations

The land the subject of this SP consists of one (1) lot on the western side of Rockingham Road in Spearwood. The lot sits immediately south of the rail line serving Fremantle Port and is approximately 165m south of Spearwood Avenue.

Currently vacant, the lot is considered highly suitable for use and development in a manner that recognises a host of strategic opportunities in a context that allows for a scale of development achievable without impact on the immediate or broader location.

Whilst Rockingham Road and the abutting rail line are acknowledged as influences requiring considered responses for the purposes of achieving acceptable levels of residential amenity, these transport corridors provide separation to lower density residential (catering to development at an increased density and scale). The western edge to the land is also conducive to development at an increased density and scale.

At the same time, the SP has been tailored to respond to the land uses abutting the south-eastern corner of the land and southern boundary. These are a service station and local retail (south-eastern corner) and aged persons dwellings (southern boundary).

Opportunities where the land is concerned are many and include (see Figure 4 – Opportunities and Constraints):-

- A large strategically positioned englobo parcel of land (1.8277 hectares) providing for comprehensive master planning and development;
- Proximity to the City of Cockburn's Civic Precinct and Phoenix shopping centre;
- Access to high frequency public transport (multiple bus services on Rockingham Road);
- High density residential development (up to R80) without material impact on adjoining development. This includes multiple dwellings in appropriately positioned buildings up to five (5) storeys in height;
- Development which provides for a strong mix of dwelling types, with a focus on apartment living;
- A diversity of dwelling types that provides for affordable living, including 'key-worker' housing;
- High levels of surveillance over the adjacent public realm; and
- The incorporation of the City's sump/drainage needs into the development.

Considerations include:-

- Access, the most appropriate location for such off Rockingham Road;
- Taking account of existing non-residential land uses abutting the south eastern corner of the SP land;
- A suitable response to the aged persons dwellings adjacent to the southern boundary of the subject land (up to 2 storeys in height and setback);
- The response to the existing non-residential building on the western side boundary of the subject land; and
- Noise and vibration from the rail line adjacent to the northern side boundary of the subject land.

2.1 Biodiversity and Natural Area Assets

The site has no biodiversity or natural area assets.

2.2 Landform and Soils

The site is relatively flat rising from approximately 10.5m AHD along Rockingham Road to approximately 12.5m AHD along the western boundary. It is noted this rise is across 171.0m, providing for a gentle upward slope in a westerly direction. The size of the land holding provides scope for levelling whilst finished levels of proposed development in the vicinity of lot's boundaries will respect existing levels.

It is noted the site sits within a valley whilst the soil type for the location is pale, yellow/brownish in colour (derived from Tamala limestone). The sand is recognised as being highly permeable and suitable for on-site infiltration.

2.3 Groundwater and Surface Water

The land the subject of the SP does not contain any drainage infrastructure, nor does the land contain any surface water bodies. The expectation as with all new development is that stormwater be contained on-site. In this regard, the City's stormwater drainage sump abutting the land is noted as an opportunity for transformation as part of a larger parcel of community/public open space.

2.4 Bushfire Hazard

The land the subject of this SP is not subject to a bushfire hazard.

2.5 Heritage

The land the subject of this SP is not affected by any heritage consideration/s.

2.6 Coast and Foreshores

The land the subject of this SP is inland.

2.7 Context and Other Land Use Constraints

The context amounts to a varied setting where the subject land is concerned, providing the scope for the use of land and scale of development proposed by the SP. Whilst the setting presents a number of challenges they are accepted, the considerations associated with which to be taken into account in future development. The proposed SP, therefore, provides the opportunity to realise the real potential of a significant and strategically positioned landholding within the City.

3.0 Land Use and Subdivision Requirements

3.1 Land Use

The use of the land the subject of this SP is for primarily residential purposes with mixed-use development on Rockingham Road. The intention is to provide for a different form of residential development to that typically found in the immediate area and the Spearwood location generally. The alternative dwelling form is multiple dwellings. The justifications for the SP providing for residential use are as follows:-

- The delivery of a diversity of residential dwelling types to the location;
- The delivery of residential development that provides the local and broader community with housing choice (and the relative affordability associated with such, notably smaller dwellings);

- The delivery of a significant residential development making the attraction of the location available to a greater number of future residents;
- The delivery of a form of residential development that caters to a more diverse local population;
- The delivery of new residential development in a location conveniently served by a wide range of retail, commercial and community services;
- The delivery of new residential development within walking distance of Phoenix town centre and the City of Cockburn civic precinct;
- The delivery of residential development to an accessible location well served by the local traffic network and high frequency public transport;
- The delivery of a high level of surveillance via occupied residential development overlooking the adjoining public realms (Rockingham Road and the rail reserve);
- The ability to deliver residential development in an established area at a density and scale (height) that will have minimal, if any impact on the context; and
- The delivery of residential development that will be sustainable in design whilst making efficient use of existing land in an infill setting.

In support of the above justifications, the City's objective for residentially zoned land is:-

- *To provide for residential development at a range of densities with a variety of housing to meet the needs of different household types through the application of the Residential Design Codes.*

The SP is consistent with the above objective.

Other justifications or grounds for support include:-

- The development of a land use that will contribute further to the sense of place and community of Spearwood;
- The development of a land use that will support the viability of local retail, commercial and community services;
- The development of a land use that is well served by employment, recreational and lifestyle opportunities; and
- The development of a land use by virtue of its intended form that will assist in allowing existing residents to 'down-size' and 'age-in-place' within the local area and the City of Cockburn generally.

With respect the final point above, it is the case the Perth housing market has changed markedly with a significant move toward apartment living. The changes to the market reflect a maturation of the City's population and the development industry where housing and residential land use is concerned. This includes a distinct move towards 'urban' living and the housing types associated with such.

3.2 Public Open Space

The SP proposes one contiguous area of public open space totalling approximately 3,154m², located centrally within the site and including the City's own stormwater drainage sump.

The public open space provision to be provided on the site itself meets the minimum 10 per cent requirement in accordance with Liveable Neighbourhoods (1,828m²).

A landscape concept prepared by Ecoscape for the combined public open space/stormwater drainage sump is provided in Appendix 1. The public open space will provide a focal point and parkland setting for the local community, including areas for passive and active (kick about) recreation. The space will also provide for the integration of urban water management, coordinated in presentation and function with the City's own drainage sump.

3.3 Residential

The SP proposes R40 and R80 codings over the land, acting as a catalyst for multiple dwelling development. The codings provide for the opportunities listed above under section 3.1 Land Use (being residential land use at a higher density) and clarity of intent where the future of the land is concerned. The approach is considered clear and respectful in the context, the R40 coding responding to the density of adjoining development.

Where dwelling numbers are concerned, an indicative development concept reveals a yield of 170+ apartments on the SP land. The concept was prepared to enable items including the interface of future residential development to the rail corridor to be sufficiently investigated. The dwelling yield also informs the traffic assessment whilst highlighting how building height can be accommodated on-site.

From a scale of development and builtform perspective, the number of dwellings identified can be comfortably developed on the SP land without impacting adjoining properties or the location generally. The indicative development concept prepared by Gresley Abas Architects (see Appendix 2) was informed by indicative building heights and footprints previously presented to the City. It displays a form and scale of development that is:-

- Considerate in the context;
- Responsive to the challenges associated with the land; and
- Realising of the true potential of the land in a location well suited for strategic infill development.

The imagery highlights that medium density development can be seen as a positive on the land and in the location. This includes building height/s up to five (5) storeys on the northern part of the land.

3.3.1 Residential Amenity

Prior to progressing to the preparation of this SP, it was agreed with the City that a preliminary acoustical study investigating noise and vibration in relation to residential land use be undertaken. Herring Storer Acoustics has logged noise and vibration at the site on several occasions, providing the reports contained in Appendix 3. These reports explain the modelling and provide recommendations. In summary, Herring Storer advise:-

- Noise modelling indicates noise received from both Rockingham Road and the rail line has the potential to exceed the considerations in WAPC State Planning Policy 5.4 dealing with road and rail transport noise.
- The dwellings adjacent to both the road and rail line can be designed and treated, however, to meet specified internal noise levels. Herring Storer also recommends Section 70A Notifications on the Titles of dwellings abutting both the road and rail line.
- A 2.2m high wall will be erected along the northern boundary of the land to assist with noise attenuation.
- A 1.8m high wall will be erected along Rockingham Road to assist with noise attenuation.
- Rail vibration. *Base on the measured levels, the setback of the proposed building envelopes yields vibration levels lower than both the 1.4x and 2.0x criteria and the closest points. As of such, no additional works are required to achieve compliance with AS 2670.2-1990 "Evaluation of human exposure to whole-body vibration; Part 2: Continuous and shock-induced vibration in buildings (1 to 80Hz)".*

With respect to the above, the assessment undertaken and findings provided have regard for plans that were in part informed by early advice provided by Herring Storer. This included setback distances for the purpose of ensuring vibration is not an issue. The most recent round of reporting was also undertaken at the request of the City of Cockburn with particular attention being paid to vibration.

It is also noted the total number of dwellings requiring ameliorating measures for the purpose of responding to noise is a small percentage of those potentially developable on-site. Herring Storer has indicated dwellings/buildings adjacent to the rail line will barrier dwellings/buildings to the rear i.e. those that are set well off the rail line.

3.4 Movement Networks

A Local Structure Plan Transport Assessment has been prepared by Flyt traffic consultants and is included in Appendix 4. The Transport Assessment has been prepared following a meeting and subsequent follow-up by Flyt with the City's Traffic Engineer. It has also been prepared in accordance with the WAPC's *Transport Assessment Guidelines for Developments (August 2016) Volume 2 – Structure Plans*. The Executive Summary contained in the Transport Assessment states *The indicative form of development proposed for the LSP area can be accommodated within the existing transport networks with little or no material impacts anticipated.*

3.5 Water Management

The SP variation does not affect local or district water management. The Department of Water has been consulted to determine whether a Local Water Management Strategy (LWMS) is required. In response, the Department has advised the proposed development (via the SP) *is considered infill utilising existing drainage infrastructure*. There isn't the need, therefore, for a LWMS. Accordingly, groundwater monitoring for this site is not required.

3.6 Infrastructure Coordination, Servicing and Staging

A servicing report prepared by Porters Engineering reveals the SP land is capable of being serviced for the type of development proposed. The report forms Appendix 5 to this document. As stated in Porters covering letter *All of the service information received and advice given by service authorities indicate there are no service constraints on the site.*

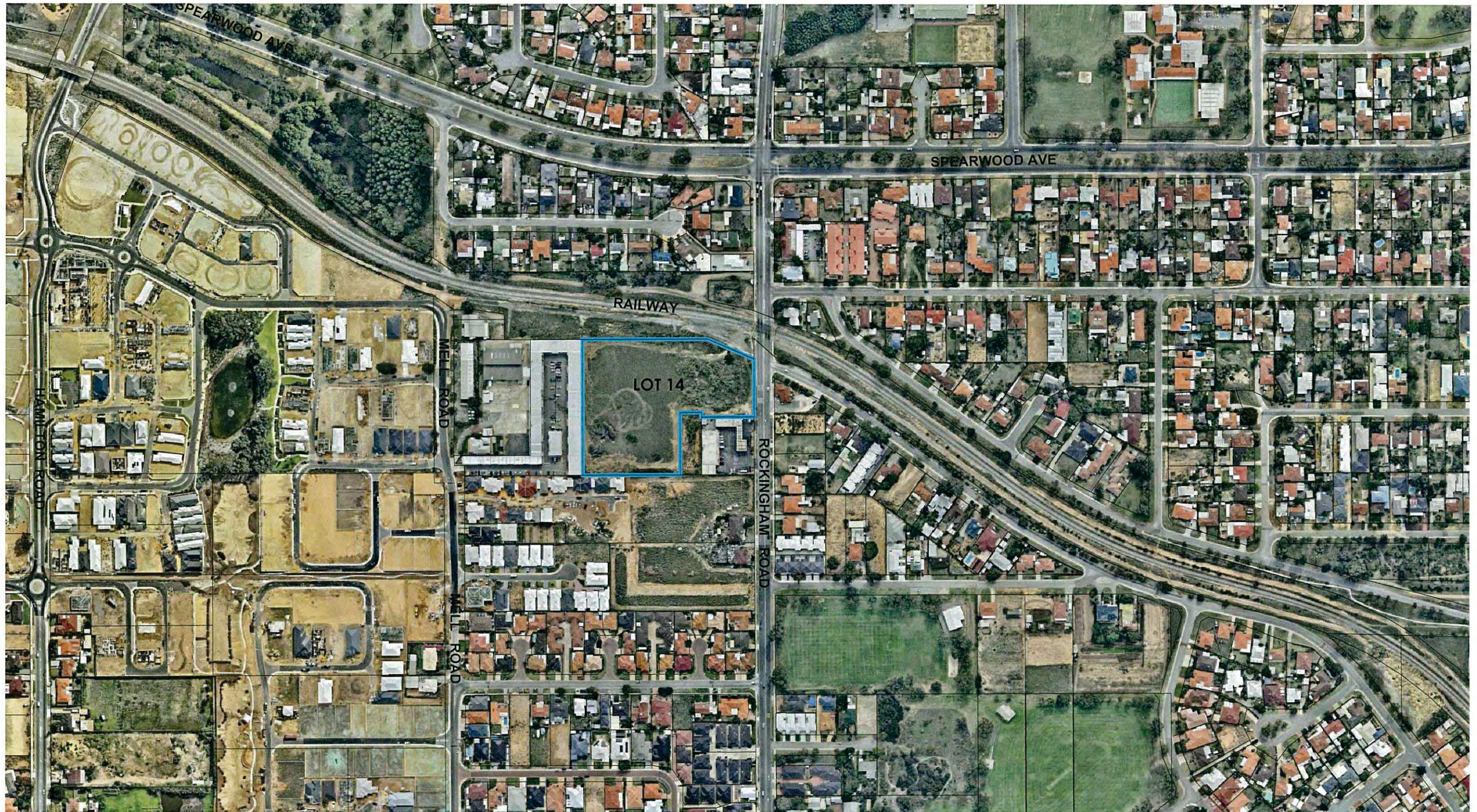
3.7 Developer Contribution Arrangements

Funding for land and infrastructure works is required in accordance with DCA 12 (Packham North), whilst arrangements for the provision of community infrastructure are to be in accordance with DCA 13.

Pre-lodgement Consultation

Agency	Date of Consultation	Method of Consultation	Summary of Outcome
Land owners within and adjacent to the structure plan area	-	-	-
Local government	26.9.15 17.10.15 6.2.15	Meetings	Ideas for SP land discussed in detail i.e. planning considerations and issues along with the City's expectations (with the City's Strategic Planning Team).
	22.10.15	Meeting	Road and rail noise and vibration discussed in detail with the relevant member of the City's Health Services Team.
	12.8.15	Meeting	Traffic discussed in detail with the City's Traffic Engineer. FLYT traffic consultant present.
	Other	Emails	Emails between MW Urban and relevant City officers.

Figure 1. Location Plan



SOURCE: NEARMAPS

FIGURE 1

LOCATION PLAN

Lot 14 (No. 325) Rockingham Road, Spearwood
City of Cockburn

MWURBAN
planning and development

PLAN: PAL-2 008A
DATE: 150701
PROJECT: 325 ROCKINGHAM
DESIGNED: TW

SCALE: 1:4000 @ A3



Figure 2. Certificate of Title

INDEXED

JM *

Application A462564
Volume 1265 Folio 627

WESTERN



AUSTRALIA

REGISTER BOOK

VOL. 580

FOL. 94A

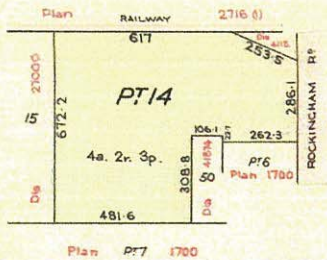
Certificate of Title

UNDER THE "TRANSFER OF LAND ACT, 1893" AS AMENDED

Rosemarie Helen Jepson Turner, of Garlogs Nether Wallop, Hampshire, England, Married Woman, **one undivided third share**, John Charles Baron Monk Bretton, of Conyboro, Lewes, Sussex, England, Farmer, **one undivided third share** and John Bewley Gilbert-Smith, of 70 Pall Mall, London, S.W.1., England, Solicitor and Andrew Ryle Harding, of Dowgate Hill House, London, E.C.4, England, Solicitor, **as joint tenants, one undivided third share** are now the proprietors **as tenants in common** in the shares as set out above of an estate **in fee simple** subject to the easements and encumbrances notified hereunder in all that piece of land delineated and coloured green on the map hereon containing four acres two rods and three perches or thereabouts, being **portion of Cockburn Sound Location 264 and being part of Lot 14 on Diagram 26999.**

Dated the 23rd day of November 1971

Scale: 4 chains to an inch
JG.



Richard ...
REGISTRAR OF TITLES



Transfer A625876 to Mildura Limited, of care of Francis A. Jones and Associates, Post Office Box 39, Fremantle. Registered 9th February 1973 at 3.19 o'clock.



Transfer A813015 to Bunning Bros. (Fremantle) Pty. Ltd., of 255 Adelaide Terrace, Perth. Registered 23rd April 1974 at 11.00 o'clock.



Transfer B447015 to Bunning Timber Holdings Ltd., of 255 Adelaide Terrace, Perth. Registered 9th December 1977 at 11.31 o'clock.



Application C57238 On 27-10-1980 The proprietor changed its name to Bunnings Limited. 8th January 1981



Transfer C978717 to Pasquale Mirco, Business Manager, and Vito Alfio Palermo, Business Manager, and Vincenzo Mirco, Business Manager and Gaetano Palermo, Business Manager, all of 333 Rockingham Road, Spearwood. Registered 14th March, 1985 at 3.06 o'clock.



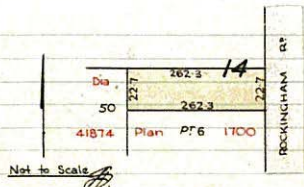
Transfer E321202 to Pasquale Mirco, Vito Alfio Palermo, Vincenzo Mirco and Gaetano Palermo all of 333 Rockingham Road, Henderson, as tenants in common in equal shares. Registered 21st March 1990 at 10.59 hrs.



Transfer H195377 to Gaetano Palermo of 4 Elk Place, Bibra Lake and Vito Alfio Palermo of 4 Fairview Street, Coogee Beach as tenants in common in equal shares. Registered 13th August, 1999 at 13.08 hrs.



EASEMENTS AND ENCUMBRANCES REFERRED TO



Transfer A462563. Grants to the proprietor or proprietors for the time being of Lot 50 on Diagram 41874 a right of carriageway over the portion of the within land coloured brown on the map in the margin hereof.



Mortgage D676993 to National Australia Bank Ltd. Registered 19th February, 1988 at 9.12 hrs.

DISCHARGED



Discharge F851979 of Mortgage D676993. Registered 10th April 1995 at 15.16 hrs.



Mortgage G3318 to Bank of Western Australia Ltd. Registered 12th October 1995 at 8.47 hrs.

DISCHARGED



Discharge H195376 of Mortgage G3318. Registered 13th August, 1999 at 13.08 hrs.



Pub
Rockingham

Man of Palermo
Suoni

CERTIFICATE OF TITLE

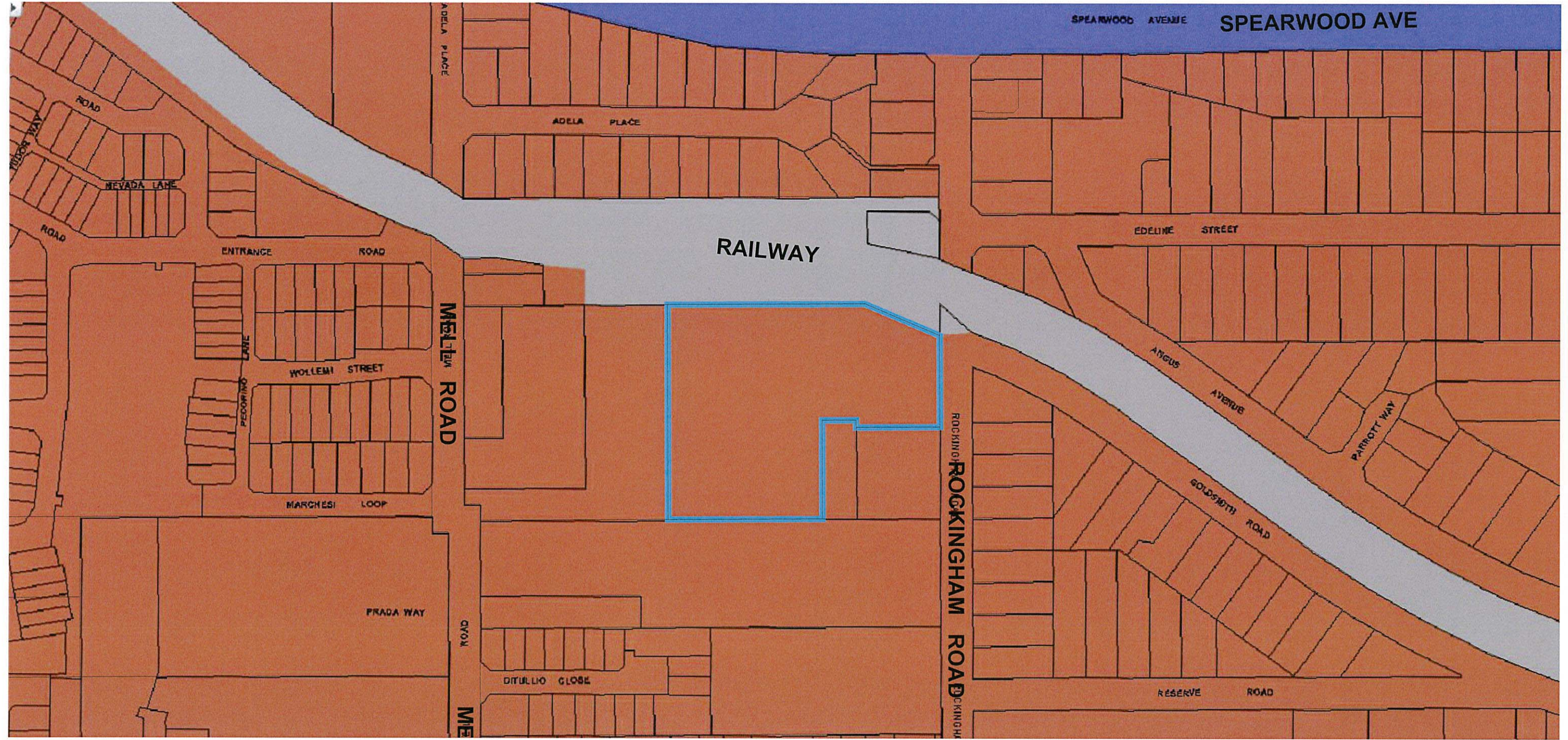
VOL. 580 FOL. 94A

#195377 (P) 221

Man of Palermo

Figure 3. Zoning Plans

EXISTING MRS ZONING



SOURCE: CITY OF COCKBURN INTRAMAPS

LEGEND

ZONE		RESERVATIONS	
	SUBJECT LAND		RAILWAYS
	URBAN		OTHER REGIONAL ROADS

FIGURE 3

ZONING PLAN - MRS

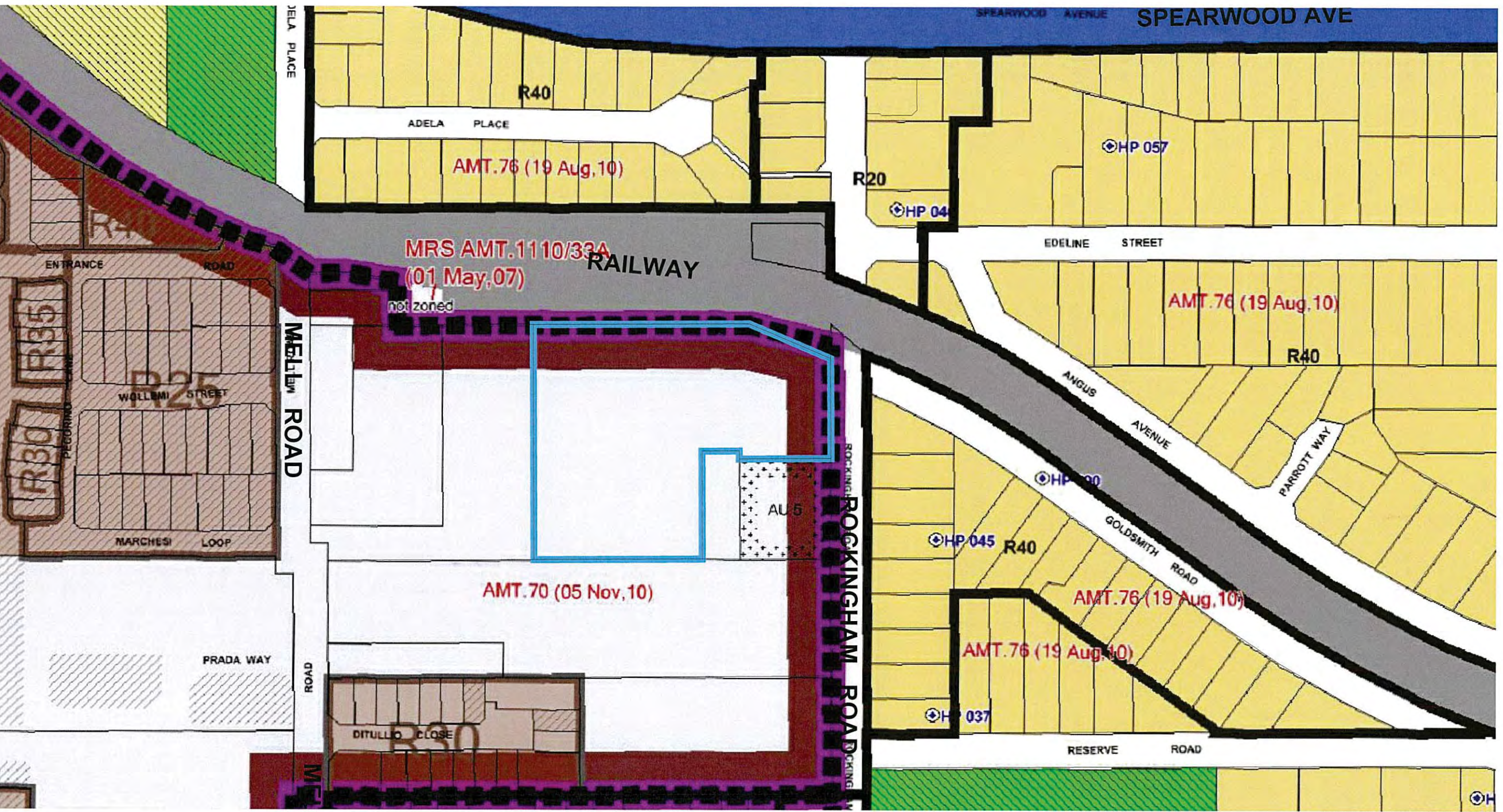
Lot 14 (No. 325) Rockingham Road, Spearwood
City of Cockburn



PLAN: PAL-2 009B
DATE: 170417
PROJECT: 325 ROCKINGHAM
DESIGNED: TW

SCALE: 1:2500 @ A3





SOURCE: CITY OF COCKBURN INTRAMAPS



Figure 4. Opportunities and Considerations



SOURCE: CITY OF COCKBURN INTRAMAPS/NEARMAPS

OPPORTUNITIES

- 1. Large, strategically positioned, englobo parcel of land (1.8277 hectares) providing for comprehensive master planning and development.
- 2. Well positioned to the City of Cockburn's Civic Precinct and Phoenix shopping centre.
- 3. Served by high frequency public transport (multiple bus services on Rockingham Road).
- 4. Higher density residential development (up to R80) can take place without materially impacting adjoining development. This includes multiple dwellings in appropriately positioned buildings up to five (5) storeys in height.
 - Development which provides for a strong mix of dwelling types, with a focus on apartment living.
 - A diversity of dwelling types that provides for affordable living, including 'key-worker' housing.
- 5. Incorporation of the City's sump/drainage needs into the development.

CONSIDERATIONS

- 1. Access, the most appropriate location for such off Rockingham Road.
- 2. The response to existing non-residential land uses abutting the south eastern corner of the subject land.
- 3. The response to aged persons dwellings being constructed adjacent to the southern boundary of the subject land (to be 1 to 2 storeys in height and setback).
- 4. The response to the existing non-residential building on the western side boundary of the subject land.
- 5. Noise and vibration from the rail line adjacent to the northern side boundary of the subject land.

OPPORTUNITIES AND CONSIDERATIONS
 Lot 14 (No. 325) Rockingham Road, Spearwood
 City of Cockburn



PLAN: PAL-2 002C
 DATE: 160316
 PROJECT: PALERMO
 DESIGNED: TW

SCALE: 1:4000 @ A3



Appendix 1. Builtform Concept (Gresley Abas Architects)



LOT 14 ROCKINGHAM ROAD_SPEARWOOD
CONCEPT_APRIL 2017

gresleyabas

LOT 14 ROCKINGHAM RD SPEARWOOD
OVERALL DEVELOPMENT SUMMARY

	BUILDING TYPE	No. DWELLINGS	COMM	GROSS BLDG AREA (SQM)	Lot Area
LOT 1	MIXED USE	20	305 SQM	2613	1689
LOT 2	APARTMENTS	40	0	3755	2706
LOT 3	APARTMENTS	40	0	4225	2860
LOT 4	APARTMENTS	40	0	4225	2563
LOT 5	APARTMENTS	30	0	3380	1940
LOT 6	GROUPED DWELLINGS	-	0	1350	1938
TOTAL APARTMENTS		170 +		19548	

TOTAL LOT AREA	18288
LOTS 1-6	13694
PUBLIC OPEN SPACE	1288
OTHER	2766

TABLE 1

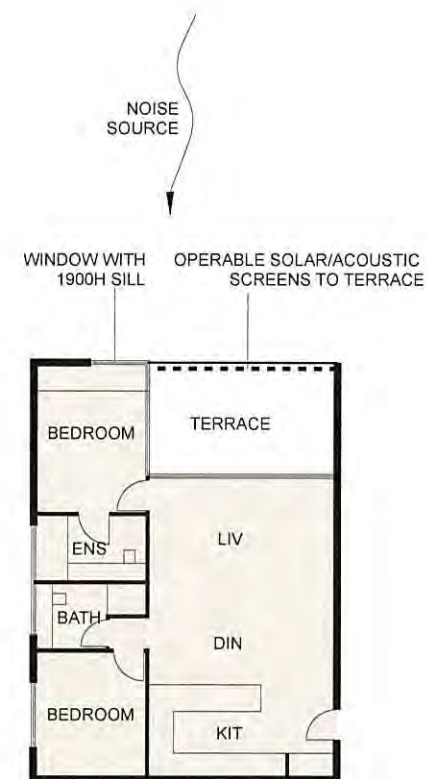


FIGURE 1

DESIGN TO ADDRESS PLANNING POLICY
5.4:
ROAD & RAIL TRANSPORT NOISE AND

Design Statement

This document proposes a development scenario for Lot 14, Rockingham Road, Spearwood.

This design scheme has been prepared to reflect the principles and design guidelines that have been established by ongoing consultation with the City of Cockburn.

This scheme aims to illustrate the ability for a development of this scale to occur on this site, whilst maintaining the following key qualities:

1. A high level of public amenity and public open space for the residents of the development
2. A high level of design quality of the proposed dwellings. 42% of dwellings are north facing. 100% of dwellings have good cross ventilation (operable windows on at least two sides of the dwelling envelope)
3. Effective design solutions for noise abatement from the adjacent railway line (Refer Figure 1)
4. Promotion of activated uses on the Rockingham Road frontage.
5. Provision of a diverse range of dwelling and accommodation types and sizes.

This development scenario proposes a total of 170+ dwellings, distributed as per the adjacent table (Table 1).

The drawings to follow aim to illustrate that a relatively high density of dwellings can be delivered on this site within the parameters of best practice built environment outcomes for both the private and public realm.



LOT 4 - TYPE D

5 STOREY
• 40 DWELLINGS

LOT 3 - TYPE B

5 STOREY
• 40 DWELLINGS

LOT 2 - TYPE C

5 STOREY
• 40 DWELLINGS

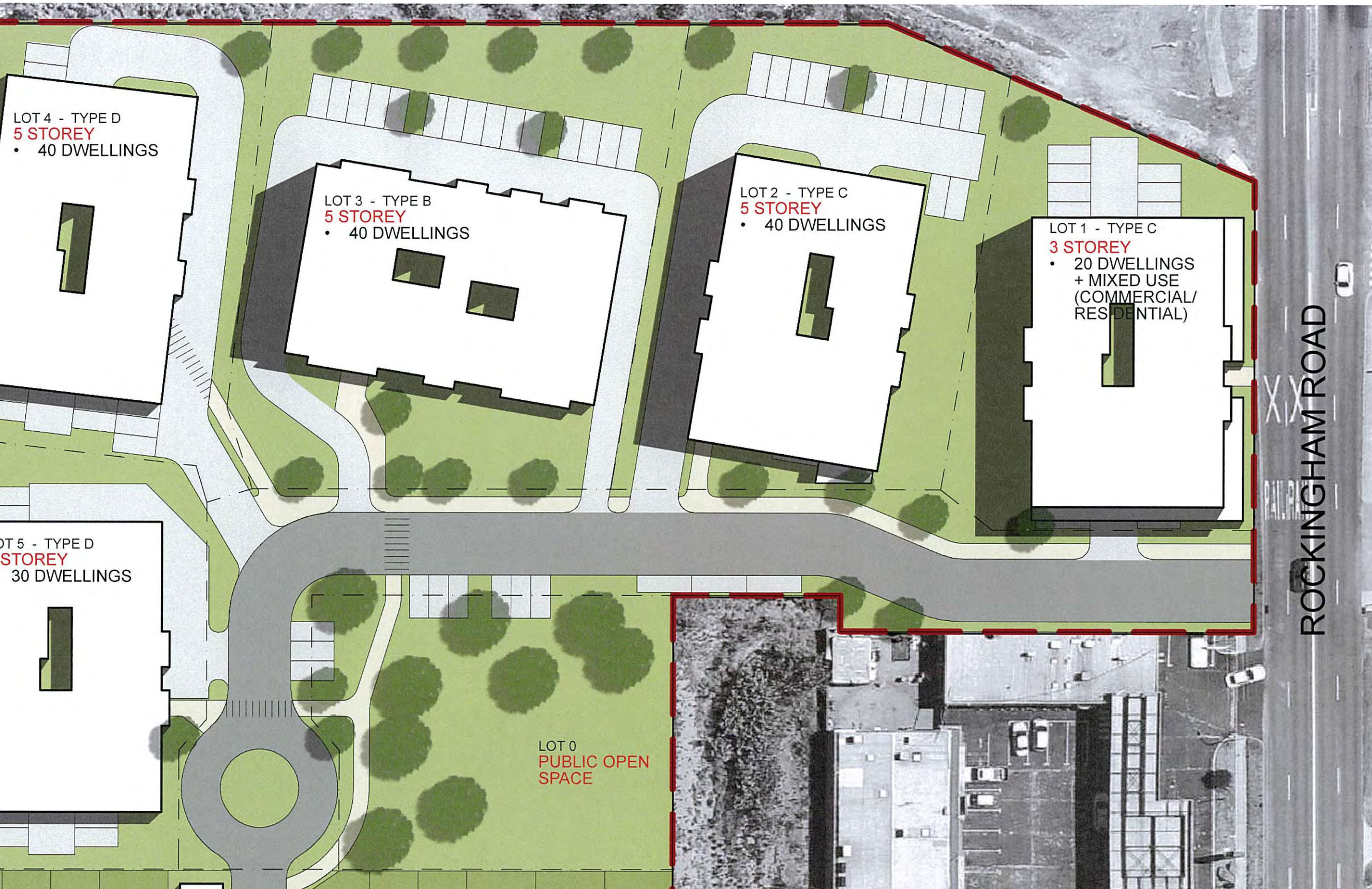
LOT 0

PUBLIC OPEN SPACE

LOT 6 - TYPE A

GROUPED DWELLINGS (R40)

LOT 1 - TYPE C



LOT 4 - TYPE D
5 STOREY
• 40 DWELLINGS

LOT 3 - TYPE B
5 STOREY
• 40 DWELLINGS

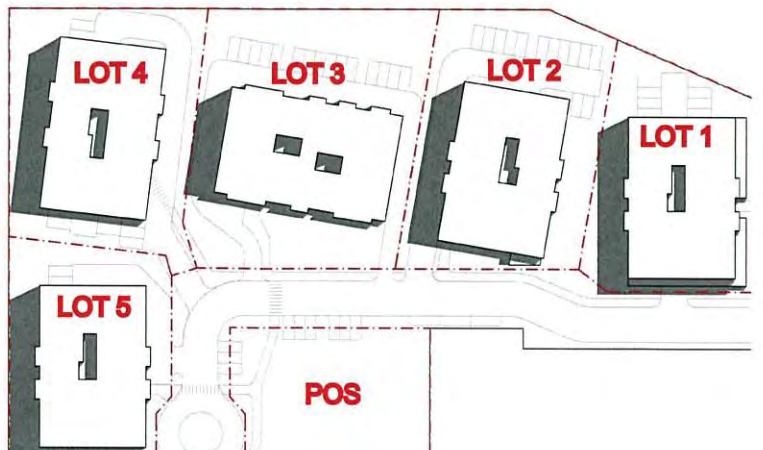
LOT 2 - TYPE C
5 STOREY
• 40 DWELLINGS

LOT 1 - TYPE C
3 STOREY
• 20 DWELLINGS
+ MIXED USE
(COMMERCIAL/
RESIDENTIAL)

LOT 5 - TYPE D
3 STOREY
30 DWELLINGS

LOT 0
PUBLIC OPEN
SPACE

ROCKINGHAM ROAD





RAILWAY SETBACK LINE

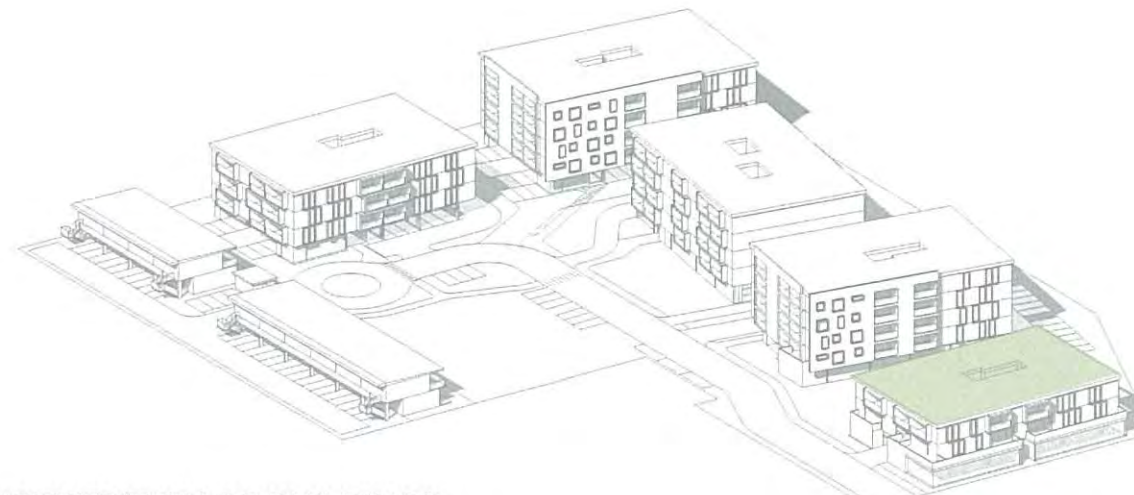


LOT 1

OVERALL NET FLOORPLATE 751 M2
 GROUND LEVEL CARPARK + 2 LEVELS

UNIT #	TYPE	GROSS INTERNAL AREA (M2)	TERRACE	No. OF UNITS
1	2BED/2BTH	73	15	2
2	2BED/1BTH	66	12	2
3	1BED/1BTH	62	12	2
4	2BED/2BTH	73	15	2
5	1BED/1BTH	56	15	2
6	2BED/2BTH	73	15	2
7	1BED/1BTH	58	12	2
8	1BED/1BTH	54	12	2
9	2BED/1BTH	73	15	2
10	1BED/1BTH	56	15	2
TOTAL APT's				20

NET APT AREA/FLOOR	644 SQM
NET APT AREA/BLDG	2576 SQM
NET COMMERCIAL (GRND)	305 SQM
GROSS BLDG AREA	2613 SQM



DISTRIBUTION OF BUILDINGS



LOT 2

OVERALL NET FLOORPLATE 751 M2

GROUND LEVEL CARPARK + 4 LEVELS

UNIT #	TYPE	GROSS INTERNAL AREA (M2)	TERRACE	No. OF UNITS
1	2BED/2BTH	73	15	4
2	2BED/1BTH	66	12	4
3	1BED/1BTH	62	12	4
4	2BED/2BTH	73	15	4
5	1BED/1BTH	56	15	4
6	2BED/2BTH	73	15	4
7	1BED/1BTH	58	12	4
8	1BED/1BTH	54	12	4
9	2BED/1BTH	73	15	4
10	1BED/1BTH	56	15	4
TOTAL APT's				40

NET APT AREA/FLOOR 644 SQM

NET APT AREA/BLDG 2576 SQM

GROSS BLDG AREA 3755 SQM



DISTRIBUTION OF BUILDINGS



LOT 3

OVERALL NET FLOORPLATE 845 M2

GROUND LEVEL CARPARK + 4 LEVELS

UNIT #	TYPE	GROSS INTERNAL AREA (M2)	TERRACE	No. OF UNITS
1	2BED/2BTH	73	12	4
2	2BED/1BTH	66	12	4
3	2BED/2BTH + STUDY	81.5	12	4
4	1BED/1BTH	54.5	12	4
5	2BED/2BTH	75	12	4
6	3BED/2BTH	93	12	4
7	2BED/1BTH	66	12	4
8	2BED/2BTH + STUDY	74	12	4
9	2BED/1BTH	66	12	4
10	2BED/2BTH	72.75	12	4
TOTAL APT's				40

NET APT AREA/FLOOR	721.75 SQM
NET APT AREA/BLDG	2887 SQM
GROSS BLDG AREA	4225 SQM





LOT 4

OVERALL NET FLOORPLATE 845 M2

GROUND LEVEL CARPARK + 4 LEVELS

UNIT #	TYPE	GROSS INTERNAL AREA (M2)	TERRACE	No. OF UNITS
1	2BED/2BTH	73	15	4
2	2BED/1BTH	66	12	4
3	2BED/2BTH + STUDY	86	12	4
4	2BED/2BTH	73	15	4
5	1BED/1BTH	56	15	4
6	2BED/2BTH	73	15	4
7	2BED/2BTH	72	12	4
8	2BED/1BTH	66	12	4
9	2BED/2BTH	73	15	4
10	1BED/1BTH	56	15	4
TOTAL APT's				40

NET APT AREA/FLOOR	694 SQM
NET APT AREA/BLDG	2776 SQM
GROSS BLDG AREA	4225 SQM





LOT 5

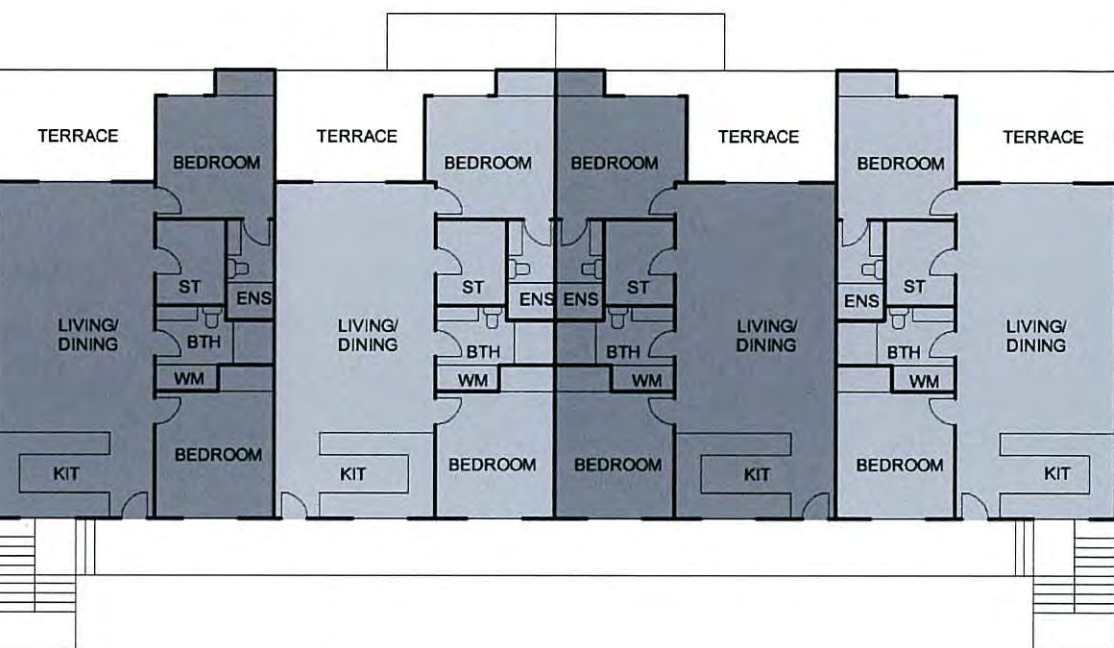
OVERALL NET FLOORPLATE 845 M2
 GROUND LEVEL CARPARK + 3 LEVELS

UNIT #	TYPE	GROSS INTERNAL AREA (M2)	TERRACE	No. OF UNITS
1	2BED/2BTH	73	15	3
2	2BED/1BTH	66	12	3
3	1BED/1BTH	62	12	3
4	2BED/2BTH	73	15	3
5	1BED/1BTH	56	15	3
6	2BED/2BTH	73	15	3
7	1BED/1BTH	58	12	3
8	1BED/1BTH	54	12	3
9	2BED/2BTH	73	15	3
10	1BED/1BTH	56	15	3
TOTAL APT's				30

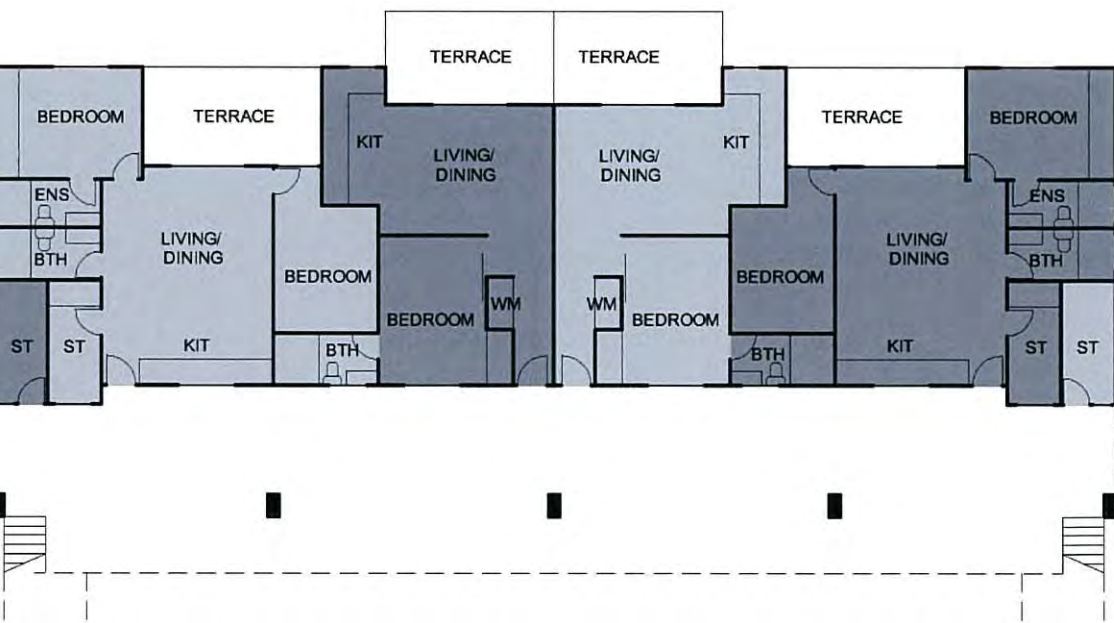
NET APT AREA/FLOOR	644 SQM
NET APT AREA/BLDG	1932 SQM
GROSS BLDG AREA	3380 SQM



DISTRIBUTION OF BUILDINGS

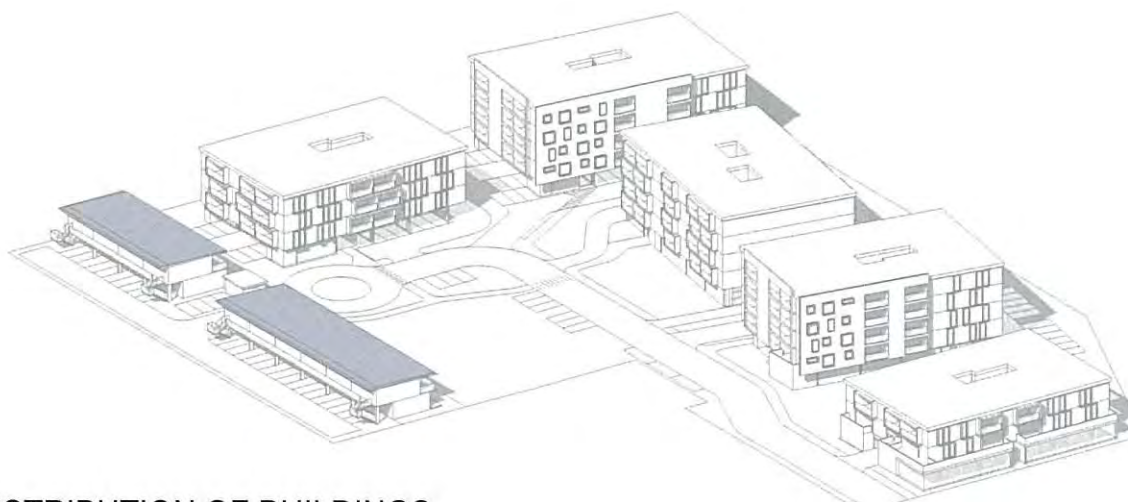


LOT 6 - TYPE A, FIRST FLOOR PLAN



LOT 6
 OVERALL NET FLOORPLATE 845 M2
 GROUND LEVEL CARPARK + 3 LEVELS

UNIT #	TYPE	GROSS INTERNAL AREA (M2)	TERRACE	No. OF UNITS
1	2BED/2BTH	75.6	14	10
2	2BED/2BTH	62	12 + YARD	5
3	1BED/1BTH	45	12 + YARD	5
TOTAL APT's				20
NET APT AREA/BLDG		1291 SQM		
GROSS BLDG AREA		1350 SQM		



DISTRIBUTION OF BUILDINGS

**Appendix 2. Environmental Acoustic Input and Assessment
(Herring Storer)**

Rochdale Holdings Pty Ltd A.B.N. 85 009 049 067 trading as:

HERRING STORER ACOUSTICS

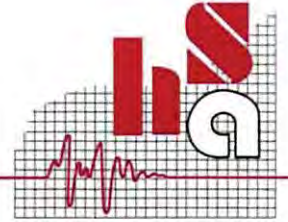
Suite 34, 11 Preston Street, Como, W.A. 6152

P.O. Box 219, Como, W.A. 6952

Telephone: (08) 9367 6200

Facsimile: (08) 9474 2579

Email: hsa@hsacoustics.com.au



MW URBAN

PROPOSED DEVELOPMENT 325 ROCKINGHAM ROAD, SPEARWOOD

ACOUSTIC ASSESSMENT

MARCH 2016

OUR REFERENCE: 20295-6-14255-02



DOCUMENT CONTROL PAGE

ACOUSTIC ASSESSMENT
325 ROCKINGHAM ROAD, SPEARWOOD

Job No: 14255

Document Reference : 20295-6-14255-02

FOR

MW URBAN

DOCUMENT INFORMATION

Author:	Geoffrey Harris	Checked By:	George Watts
Date of Issue :	21 March 2016		

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1	Amend Date	16/3/15	GH	GW
2	Updates Re: Council Inquiries	25/7/16	GH	GW
3	Updates Re: Department of Planning Comments	16/3/17	GH	GW
4	Minor Corrections	28/4/17	GH	GW
5	Minor Corrections	03/5/17	GH	GW

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A	Indicative Concept Development Plan
B	Measured Train Vibration
C	Glazing R_w Requirements

1. INTRODUCTION

Herring Storer Acoustics was commissioned by MW Urban to undertake an acoustical study relating to noise and vibration that would be received at a proposed residential development at 325 Rockingham Road, Spearwood from Rockingham Road and the Fremantle-Cockburn freight rail route. This is a follow up to our previous Preliminary Acoustic Report (our ref: 18676-1-14255) after being provided with a design plan that included building envelopes and floor plans.

As part of the study, the following was carried out:

- Perform noise and vibration monitoring for vehicle activities on Rockingham Road and the Fremantle-Cockburn Rail Route.
- Determine by noise modelling the amelioration and/or buffer required to mitigate future noise from Rockingham Road.
- Determine by noise modelling the amelioration and/or buffer required to mitigate future noise from the Fremantle-Cockburn freight rail route.
- Assess the vibration levels for compliance with the appropriate criteria.

For information, an indicative development concept plan is attached in Appendix A.

2. SUMMARY

- Noise modelling indicates that noise received at 325 Rockingham Road from both vehicles travelling along Rockingham Road and trains travelling along the Fremantle-Cockburn freight rail route, has the potential to exceed the Western Australian Planning Commission (WAPC) State Planning Policy (SPP) 5.4 "*Road and Rail Transport Noise and Freight Considerations in Land Use Planning*" "day time limit" and "night time limit" criteria.
- Under the planning policy, it is recommended that houses located adjacent to a major road or rail line, be designed to internal noise levels do not exceed and $L_{Aeq(Night)}$ of 35dB(A) in a bedroom or an $L_{Aeq(Day)}$ 40dB(A) in a living space.
- To achieve compliance with the above criteria, Appendix C contains required construction methods, being the noise reduction rating for glazing and wall construction (an $R_w + C_{tr}$ of no less than 50 dB). It is noted the construction advice is provided in relation to the indicative development concept plan which could be subject to change, based on the need to achieve compliance with other considerations and/or SPP 5.4.
- For this Structure Plan, a 2.2m noise wall is to be constructed on the northern boundary of the subject land. This wall will provide noise mitigation to assist future development in meeting the requirements of SPP 5.4. For maximum effect, the noise wall is to be located as close to the source as possible i.e. the northern boundary, providing for a 'line of sight barrier'. The wall will also assist the facilitation of more flexible dwelling designs by ensuring they are not entirely bound by 'Quiet House' requirements. The wall is to be anti-graffiti coated.
- Similarly, a 1.8m noise wall on the eastern boundary adjacent to Rockingham Road is required. Like the 2.2m wall required on the northern boundary, but lower in height for the purposes of

addressing Rockingham Road, this wall will also provide for noise mitigation to assist future development in meeting the requirements of SPP 5.4. For maximum effect, this wall is also to be located as close to the source as possible i.e. the eastern boundary, providing for a 'line of sight barrier'. If the lower level of the Rockingham Road frontage is developed for residential use, the wall will assist the facilitation of more flexible dwellings designs, again by ensuring they are not entirely bound by 'Quiet House' requirements. This wall is also to be anti-graffiti coated.

- It is noted the ground floor of any future development adjacent to Rockingham Road could be used for either residential or commercial use. Residential noise criteria are more stringent than for other land use types. If a non-residential use is proposed at this level, compliance with residential noise criteria would ensure compliance with all other less stringent criteria. Additionally, to advise prospective purchasers of potential noise impacts, notifications on title as required by SPP 5.4 should take place on affected dwellings.
- Measurements of the vibration received from the Fremantle-Cockburn freight route indicate compliance with AS 2670.2-1990 "Evaluation of human exposure to whole-body vibration; Part 2: Continuous and shock-induced vibration in buildings (1 to 80Hz)" criteria.

3. CRITERIA

3.1 WAPC PLANNING POLICY

The Western Australian Planning Commission (WAPC) released on 22 September 2009 State Planning Policy 5.4 "Road and Rail Transport Noise and Freight Considerations In Land Use Planning". Section 5.3 – Noise Criteria, which outlines the acoustic criteria, states:

"5.3 - NOISE CRITERIA

Table 1 sets out the outdoor noise criteria that apply to proposals for new noise-sensitive development or new major roads and railways assessed under this policy.

These criteria do not apply to—

- *proposals for redevelopment of existing major roads or railways, which are dealt with by a separate approach as described in section 5.4.1; and*
- *proposals for new freight handling facilities, for which a separate approach is described in section 5.4.2.*
- *The outdoor noise criteria set out in Table 1 apply to the emission of road and rail transport noise as received at a noise-sensitive land use. These noise levels apply at the following locations—*
- *for new road or rail infrastructure proposals, at 1 m from the most exposed, habitable façade of the building receiving the noise, at ground floor level only; and*
- *for new noise-sensitive development proposals, at 1 m from the most exposed, habitable façade of the proposed building, at each floor level, and within at least one outdoor living area on each residential lot.*

Further information is provided in the guidelines.

Table 1: Outdoor Noise Criteria

Time of day	Noise Target	Noise Limit
Day (6 am–10 pm)	$L_{Aeq(Day)} = 55 \text{ dB(A)}$	$L_{Aeq(Day)} = 60 \text{ dB(A)}$
Night (10 pm–6 am)	$L_{Aeq(Night)} = 50 \text{ dB(A)}$	$L_{Aeq(Night)} = 55 \text{ dB(A)}$

The 5 dB difference between the outdoor noise target and the outdoor noise limit, as prescribed in Table 1, represents an acceptable margin for compliance. In most situations in which either the noise-sensitive land use or the major road or railway already exists, it should be practicable to achieve outdoor noise levels within this acceptable margin. In relation to greenfield sites, however, there is an expectation that the design of the proposal will be consistent with the target ultimately being achieved.

Because the range of noise amelioration measures available for implementation is dependent upon the type of proposal being considered, the application of the noise criteria will vary slightly for each different type. Policy interpretation of the criteria for each type of proposal is outlined in sections 5.3.1 and 5.3.2.

The noise criteria were developed after consideration of road and rail transport noise criteria in Australia and overseas, and after a series of case studies to assess whether the levels were practicable. The noise criteria take into account the considerable body of research into the effects of noise on humans, particularly community annoyance, sleep disturbance, long-term effects on cardiovascular health, effects on children's learning performance, and impacts on vulnerable groups such as children and the elderly. Reference is made to the World Health Organization (WHO) recommendations for noise policies in their publications on community noise and the Night Noise Guidelines for Europe. See the policy guidelines for suggested further reading.

5.3.1 Interpretation and application for noise-sensitive development proposals

In the application of these outdoor noise criteria to new noise-sensitive developments, the objective of this policy is to achieve –

- *acceptable indoor noise levels in noise-sensitive areas (for example, bedrooms and living rooms of houses, and school classrooms); and*
- *a reasonable degree of acoustic amenity in at least one outdoor living area on each residential lot¹.*

If a noise-sensitive development takes place in an area where outdoor noise levels will meet the noise target, no further measures are required under this policy.

In areas where the noise target is likely to be exceeded, but noise levels are likely to be within the 5dB margin, mitigation measures should be implemented by the developer with a view to achieving the target levels in a least one outdoor living area on each residential lot¹. Where indoor spaces are planned to be facing any outdoor area in the margin, noise mitigation measures should be implemented to achieve acceptable indoor noise levels in those spaces. In this case, compliance with this policy can be achieved for residential buildings through implementation of the deemed-to-comply measures detailed in the guidelines.

In areas where the outdoor noise limit is likely to be exceeded (i.e. above $L_{Aeq(Day)}$ of 60 dB(A) or $L_{Aeq(Night)}$ of 55 dB(A)), a detailed noise assessment in accordance with the guidelines should be undertaken by the developer. Customised noise mitigation measures should be implemented with a view to achieving the noise target in at least one outdoor living or recreation area on each noise-sensitive lot or, if this is not practicable, within the margin. Where indoor spaces will face outdoor areas that are above the noise limit, mitigation measures should be implemented to achieve acceptable indoor noise levels in those spaces, as specified in the following paragraphs.

¹ For non residential noise-sensitive developments, (e.g. schools and child care centres) consideration should be given to providing a suitable outdoor area that achieves the noise target, where this is appropriate to the type of use.

For residential buildings, acceptable indoor noise levels are $L_{Aeq(Day)}$ of 40 dB(A) in living and work areas and $L_{Aeq(Night)}$ of 35 dB(A) in bedrooms². For all other noise-sensitive buildings, acceptable indoor noise levels under this policy comprise noise levels that meet the recommended design sound levels in Table 1 of Australian Standard AS 2107:2000 Acoustics—Recommended design sound levels and reverberation times for building interiors.

These requirements also apply in the case of new noise-sensitive developments in the vicinity of a major transport corridor where there is no existing railway or major road (bearing in mind the policy's 15-20 year planning horizon). In these instances, the developer should engage in dialogue with the relevant infrastructure provider to develop a noise management plan to ascertain individual responsibilities, cost sharing arrangements and construction time frame.

If the policy objectives for noise-sensitive developments are not achievable, best practicable measures should be implemented, having regard to section 5.8 and the guidelines."

The Policy, under Section 5.7, also provides the following information regarding "Notifications on Titles" :

"5.7 - NOTIFICATION ON TITLE

If the measures outlined previously cannot practicably achieve the target noise levels for new noise-sensitive developments, this should be notified on the certificate of title.

Notifications on certificates of title and/or advice to prospective purchasers advising of the potential for noise impacts from major road and rail corridors can be effective in warning people who are sensitive to the potential impacts of transport noise. Such advice can also bring to the attention of prospective developers the need to reduce the impact of noise through sensitive design and construction of buildings and the location of outdoor living areas.

The notification is to ensure that prospective purchasers are advised of –

- the potential for transport noise impacts; and*
- the potential for quiet house design requirements to minimise noise intrusion through house layout and noise insulation (see the guidelines).*

Notification should be provided to prospective purchasers and be required as a condition of subdivision (including strata subdivision) for the purposes of noise-sensitive development as well as planning approval involving noise-sensitive development, where noise levels are forecast or estimated to exceed the target outdoor noise criteria, regardless of proposed noise attenuation measures. The requirement for notification as a condition of subdivision and the land area over which the notification requirement applies, should be identified in the noise management plan in accordance with the guidelines.

An example of a standard form of wording for notifications is presented in the guidelines."

² For residential buildings, indoor noise levels are not set for utility spaces such as bathrooms. This policy encourages effective "quiet house" design, which positions these non-sensitive spaces to shield the more sensitive spaces from transport noise (see guidelines for further information).

3.2 VIBRATION CRITERIA

From previous projects we understand that AS 2670.2-1990 "Evaluation of human exposure to whole-body vibration; Part 2: Continuous and shock-induced vibration in buildings (1 to 80 Hz)" has been used to assess compliance with ground vibration. In this case where the axis of the occupants varies or is not known Curve 4(a) has been used as the bases of assessment.

Table 2 in Appendix A of the standard lists the acceptable criteria. In this situation, the passing trains would be considered as transient vibration. As such the recommended range of multiplying factors range from 1.4 to 2.0 times the base curve. We believe that from previous studies the 2.0 times the base curve should be used as the acceptable criteria. However, we understand that the Department of Environmental Regulation has expressed a preference that the 1.4 times the base curve be used as the criteria. Therefore, for this study ground vibration has been assessed for compliance with both the 1.4 and 2.0 times the base curve.

4. MEASUREMENTS AND OBSERVATIONS

4.1 ROAD TRAFFIC

Noise logging of noise received at the site was conducted over a continuous seven day period commencing Thursday 20 November 2014 to determine the existing traffic noise levels on the site. Noise monitoring was conducted at 325 Rockingham Road, approximately 10m from the road edge.

The logger used was a Rion NL22 statistical noise data logger. The Noise Logger was calibrated prior to and after use with a Bruel and Kjaer 4230 Calibrator. All equipment used is currently factory calibrated. Calibration certificates are available on request.

TABLE 4.1: SUMMARY OF MEASURED NOISE LEVELS

Logger Location	Measured Noise Level, dB(A)		
	L _{A10} (18 hour)	L _{Aeq, day} (6am to 10pm)	L _{Aeq, night} (10pm to 6am)
325 Rockingham Road	64.9	62.7	60.7

4.2 RAIL NOISE

The rail section of the Fremantle-Cockburn Freight Rail Route adjacent 325 Rockingham Road was visited on 12 January 2015 and noise levels of a freight train pass were recorded with a Larson Davis 831 Sound Level Meter approximately 7 metres from the rail line. These measurements included both noise and duration for the locomotive, carriages and horn. A calibration check was carried out prior to and after measurements with a Bruel and Kjaer 4231 Sound Level Calibrator.

The details of the relevant recorded noise levels are displayed in Table 4.2 below. All instruments used are currently factory calibrated. Calibration certificates are available on request.

TABLE 4.2 – MEASURED NOISE LEVEL

	Sound Pressure Level, dB									dB(A)
	31.5	63	125	250	500	1k	2k	4k	8k	
Train Pass (2 minutes)	86	81	77	71	75	66	64	85	70	86

4.3 RAIL VIBRATION

Vibration monitoring of the rail section of the Fremantle-Cockburn Freight Rail Route adjacent 325 Rockingham Road was conducted on 15 February 2016 for approximately one week and vibration levels of various operating conditions were recorded with 2 Svan 212 Vibration Monitoring Stations. These vibration monitoring stations were positioned at the two closest points of the proposed buildings, the North East corner of Lot 2 and the North East corner of Lot 4.

Appendix B details the measured vibration levels at the above mentioned locations and compares the results to the appropriate criteria, i.e. Base curve x 1.4 and x2.

5. NOISE MODELLING

5.1 RAIL NOISE

The noise modelling was carried out based on measured levels combined with movement information provided by Brookfield Rail and is summarised in Table 5.1. It is noted that whilst future number of train movements is unknown, the maximum of 1 per hour has been accounted for as a conservative approach.

TABLE 5.1 – TRAIN MOVEMENTS – FREMANTLE-COCKBURN FREIGHT LINE

Parameter	Train Movements (per hour)	
	Current (2015)	Future (2031)
Movements (Day 0600-2200)	5	16
Movements (Night 2200-0600)	3	8
L _{Aeq} Day (0600-2200)	68.1	72.8
L _{Aeq} Night (2200-0600)	69.3	72.8

Based on the above number of train movements, if compliance is achieved with the night period criteria, compliance will also be achieved with the day period criteria.

5.2 ROAD TRAFFIC

To determine the noise received within the subdivision from Rockingham Road, acoustic modelling was carried out using SoundPlan, using the Calculation of Road Traffic Noise (CoRTN) algorithms. Noise modelling was undertaken in accordance with the "Implementation Guidelines" for the State Planning Policy 5.4.

The input data for the model included:

- Ground contours as provided, modified to suit road profiles;
- Traffic data obtained from the MRWA Metropolitan Traffic Digest, as listed in Table 5.2;
- A +2.5 dB adjustment to allow for façade reflection;
- A -2.5 dB adjustment for future road upgrade to Dense Graded Asphalt from Chip Seal; and
- Adjustments as listed in table 5.3.

TABLE 5.2 - NOISE MODELLING INPUT DATA – ROCKINGHAM ROAD

Parameter	Rockingham Road (Current 2015)	Rockingham Road (Future 2031)
Traffic flows for 2031	21000	29450
Percentage traffic 0600 – 2400 hours	94%	94%
Heavy Vehicles	6%	6%
Speed (km/hr)	60	60
Receiver Level (m)	+1.5 above ground	+1.5 above ground
Façade Correction	-	+ 2.5 dB(A)
Road Surface	Chip Seal	Dense Graded Asphalt

TABLE 5.3 – ADJUSTMENTS FOR NOISE MODELLING

Description	Value
Conversion from L_{A10} (18 hour) to L_{Aeq} (16 hour) (Day)*	-2.2 dB
Conversion from L_{A10} (18 hour) to L_{Aeq} (8 hour) (Night)*	-4.2 dB

*As per previously listed monitoring results in Table 4.1.

Using the data contained in Table 5.2, modelling was carried out under existing conditions for calibration. The SoundPlan model for the site has been set up for the 2031 scenario as defined in Table 5.2. The following assumptions have been made:

- 18 hour traffic count will be 94% of daily figures; and
- The same diurnal relationship will exist in the future between the L_{A10} (18 hour) and the L_{Aeq} parameters.

We note that with the difference between the $L_{Aeq,8hr}$ and the $L_{Aeq,16hr}$ being less than 5 dB(A), achieving compliance with the night period criteria will also achieve compliance with the day period criteria.

6. DISCUSSION / RECOMMENDATIONS

6.1 NOISE

Noise modelling indicates that noise received at 325 Rockingham Road from both vehicles travelling along Rockingham Road and trains travelling along the Fremantle-Cockburn freight rail route, has the potential to exceed the Western Australian Planning Commission (WAPC) State Planning Policy (SPP) 5.4 “Road and Rail Transport Noise and Freight Considerations in Land Use Planning” “day time limit” and “night time limit” criteria.

Under the planning policy, it is recommended that houses located adjacent to a major road or rail line, be designed to internal noise levels do not exceed and $L_{Aeq(Night)}$ of 35dB(A) in a bedroom or an $L_{Aeq(Day)}$ 40dB(A) in a living space.

To achieve compliance with the above criteria, Appendix C contains required construction methods, being the noise reduction rating for glazing and wall construction (an $R_w + C_{tr}$ of no less than 50 dB). It is noted the construction advice is provided in relation to the indicative development concept plan which could be subject to change, based on the need to achieve compliance with other considerations and/or SPP 5.4.

TABLE 6.1 – CONSTRUCTION REQUIREMENTS & CORRESPONDING R_w VALUES - GLAZING

R_w Value	Description of Construction
20 to 24	Openable - 6mm horizontal sliding window Fixed – 4mm glass
25 to 27	Openable – 6mm glass in awning type windows with mechanical winders closing on compressible seals. Fixed – 6mm glass
28 to 30	Openable – 6.38mm laminated glass in awning type windows with mechanical winders closing on compressible seals. Fixed – 6.38mm laminated glass Fixed – 10mm glass
31 to 34	Openable – 10.38mm laminated glass in awning type windows with mechanical winders closing on compressible seals. Fixed – 10.38mm laminated glass
35 to 38	Double glazing being 1x6.5mm laminated glass and 1x6.38mm laminated glass with 25mm air gap. Openable sections to be awning type windows with mechanical winders closing on compressible seals.
39 to 40	Double glazing being 1x6.5mm laminated glass and 1x10.38mm laminated glass with 25mm air gap. Openable sections to be awning type windows with mechanical winders closing on compressible seals.

R_w rating applies to window system, including frame.

We note that the R_w rating is a function of the area of glazing. Thus, the required R_w rating can be reduced by reducing the area of glazing. A 50% reduction of glazed area would reduce the R_w by 3dB.

For this Structure Plan, a 2.2m noise wall is to be constructed on the northern boundary of the subject land. This wall will provide noise mitigation to assist future development in meeting the requirements of SPP 5.4. For maximum effect, the noise wall is to be located as close to the source as possible i.e. the northern boundary, providing for a 'line of sight barrier'. The wall will also assist the facilitation of more flexible dwelling designs by ensuring they are not entirely bound by 'Quiet House' requirements. The wall is to be anti-graffiti coated.

Similarly, a 1.8m noise wall on the eastern boundary adjacent to Rockingham Road is required. Similar to the 2.2m wall required on the northern boundary, but lower in height for the purposes of addressing Rockingham Road, this wall will also provide for noise mitigation to assist future development in meeting the requirements of SPP 5.4. For maximum effect, this wall is also to be located as close to the source as possible i.e. the eastern boundary, providing for a 'line of sight barrier'. If the lower level of the Rockingham Road frontage is developed for residential use, the wall will assist the facilitation of more flexible dwellings designs, again by ensuring they are not entirely bound by 'Quiet House' requirements. This wall is also to be anti-graffiti coated.

It is noted the ground floor of any future development adjacent to Rockingham Road could be used for either residential or commercial use. Residential noise criteria are more stringent than for other land use types. If a non-residential use is proposed at this level, compliance with residential noise criteria would ensure compliance with all other less stringent criteria. Additionally, to advise prospective purchasers of potential noise impacts, notifications on title as required by SPP 5.4 should take place on affected dwellings.

In addition to the requirements of Western Australian Planning Commission (WAPC) State Planning Policy (SPP) 5.4 "Road and Rail Transport Noise And Freight Considerations In Land Use Planning", Low Frequency Noise and Regenerated Noise have been highlighted as potential concerns for the development and as of such have been addressed below:

Low Frequency Noise

The German Method [DIN45680 (1997) Messungen und Bewertung Tieffrequenter Gerauscheinmissionen in der Nachbarschaft] for low frequency noise calculation states that when the dB(C) – dB(A) is greater than 20 dB, low frequency noise should be investigated. Based on our measurements and calculations, noise received at the development from train movements is less than 5 dB. However due to glass attenuating lower frequencies less than higher frequencies, this difference could increase in the order of 5 dB for internal locations. As of such, Herring Storer Acoustics believe that low-frequency noise would not be an issue within this development.

Regenerated Noise

Typically, the test for vibration covers 1-80Hz and is against human perception. Human Perception is significantly lower (6-10x) than vibration levels that can cause structural movement or damage. The ground vibration levels were below the 1.4x base curve for perception at the façade of where buildings are proposed to be located, thus Herring Storer Acoustics do not believe that regenerated noise will occur.

6.2 **RAIL VIBRATION**

Based on the measured levels, the set back of the proposed building envelopes yields vibration levels lower than both the 1.4x and 2.0x criteria at the closest points. As of such, no additional works are required to achieve compliance with AS 2670.2-1990 "Evaluation of human exposure to whole-body vibration; Part 2: Continuous and shock-induced vibration in buildings (1 to 80 Hz)".

APPENDIX A

INDICATIVE DEVELOPMENT CONCEPT PLAN

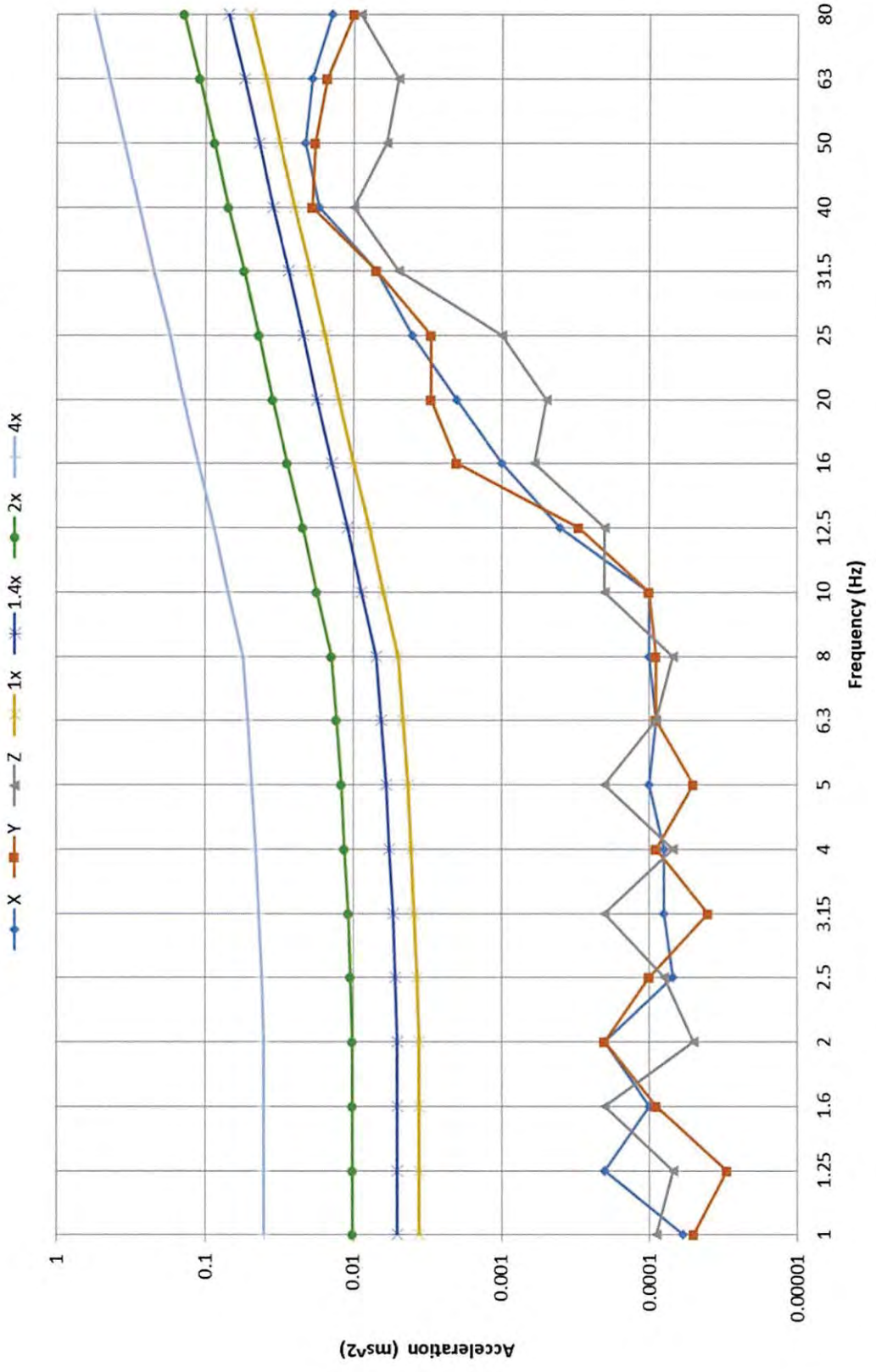


LOT 14 ROCKINGHAM ROAD_SPEARWOOD
SITE PLAN 1:500
CONCEPT, APRIL 2017
gresleyabab

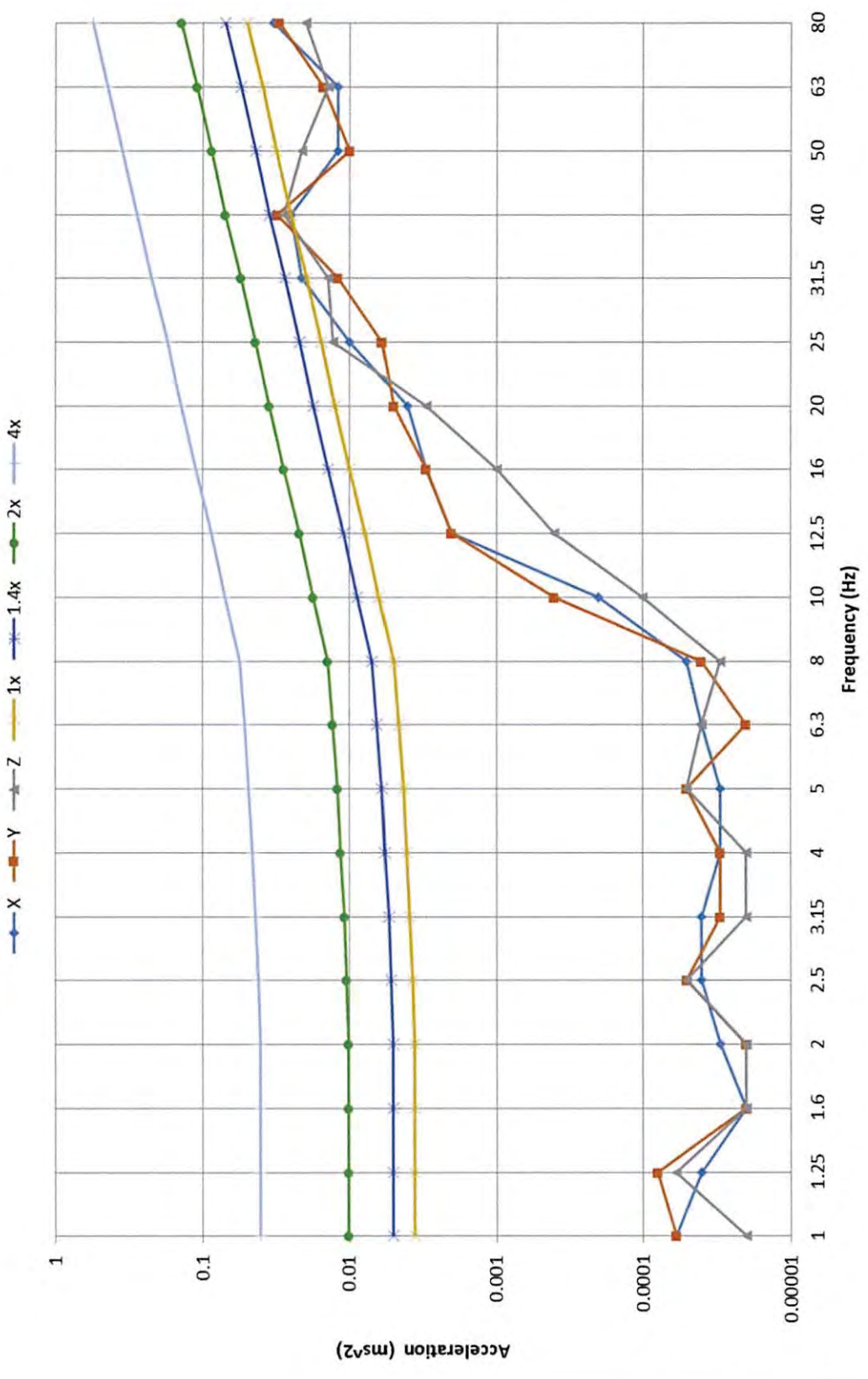
APPENDIX B

MEASURED TRAIN VIBRATIONS

Train Pass Vibration - North East Corner of Lot 4 325 Rockingham Road - 18:00 15th February 2016



Train Pass Vibration - North East Corner of Lot 2 325 Rockingham Road - 04:40 16th February 2016



APPENDIX C

GLAZING R_w REQUIREMENTS

Lot	Floor	Location	Noise Level	Required Rw
1	1	A1 BED1	60	26
		A3 BED1	58	24
		A3 BED2	68	34
		A5 BED1	68	34
		A5 LIV	65	23
		A7 BED1	68	34
		A7 LIV	65	24
		A8 BED2	57	23
		A9 BED1	60	26
		A10 BED1	68	34
		A10 BED2	65	31
	2	A1 BED1	61	27
		A2 BED1	55	21
		A3 BED1	59	25
		A3 BED2	67	33
		A5 BED1	67	33
		A5 LIV	64	24
		A7 BED1	67	33
		A7 LIV	64	24
		A8 BED2	59	25
		A9 BED1	61	27
		A10 BED1	67	33
A10 BED2	64	30		
2	1	A1 BED1	57	23
		A2 BED1	58	24
		A3 BED2	57	23
		A5 BED1	56	22
	2	A1 BED1	57	23
		A2 BED1	58	24
		A3 BED1	55	21
		A3 BED2	58	24
		A5 BED1	57	23
		A7 BED1	55	21
		A10 BED1	55	21
	3	A1 BED1	57	23
		A2 BED1	59	25
		A3 BED1	55	21
		A3 BED2	58	24
		A5 BED1	58	24
		A7 BED1	57	23
		A10 BED1	56	22
	4	A1 BED1	57	23
		A2 BED1	59	25
		A3 BED1	55	21
		A3 BED2	59	25
A5 BED1		58	24	
A7 BED1		58	24	
A10 BED1		57	23	
A10 BED2		55	21	

Lot	Floor	Location	Noise Level	Required Rw
3	1	A3 BED1	55	21
	2	A1 BED1	55	21
		A3 BED1	55	21
	3	A1 BED1	55	21
		A3 BED1	55	21
	4	A1 BED1	55	21
		A3 BED1	55	21
	4	1	A1 BED1	55
A2 BED1			56	22
2		A1 BED1	55	21
		A2 BED1	56	22
3		A1 BED1	55	21
		A2 BED1	56	22
4		A1 BED1	55	21
		A2 BED1	56	22

Notes:

- *Apartments are labelled from left to right, then top to bottom and bedrooms are balled top to bottom based on drawings
- * All other locations would meet the requirements given standard construction.

Appendix 3. Landscape Architectural Input (Ecoscape)

30 September 2015

Our ref: 10412-3485-15L

Tony Watson
Director
MW Urban
PO Box 214
North Fremantle WA 6159

325 ROCKINGHAM ROAD: LANDSCAPE CONCEPT DESIGN

Please find attached the landscape concept for the public open space (POS) at 325 Rockingham Road. The landscape concept has been developed in line with the following mission statement:

To deliver a high level concept that represents a coordinated response to public open space, offering amenity and a sense of place to future residents.

A City of Cockburn drainage sump abuts the eastern side of the POS, west of the service station fronting Rockingham Road. In preliminary discussions with MW Urban the City of Cockburn suggested a coordinated response was required for the POS which incorporates the drainage functions of existing sump as well as the drainage requirements of the development to create a larger, usable space for public recreation.

Design Process

Throughout the landscape design process Ecoscape liaised with the City of Cockburn to ensure they were informed of the direction the design and function of the POS. The design was also developed with reference to the City's "Public Open Space Strategy 2014 – 2024" document.

An initial POS concept design was issued to the City of Cockburn for comment on 18 September 2015. This design featured:

- a picnic and seating area
- large areas of banded planting which could be viewed from the upper levels of surrounding buildings as well as from within the POS
- a centralised turf area
- a combined approach to the existing sump and POS drainage, planted out with native species.

Feedback provided by the City of Cockburn raised a number of concerns with the preliminary landscape concept. These issues included the on-going maintenance requirement for large areas of planting particularly after handover to the City, steep slopes associated with the existing sump embankments, illegal dumping to the back of the service station and the concentration of site amenities (i.e. seating and picnic tables) in one area.

The City of Cockburn recommended the following amendments to the design:

- bowled grass areas to reduce the nuisance of balls being kicked across the road
- basin bubble-up pit located away from the middle of the lawn to increase useable space
- a circulatory loop path around/inside the perimeter of the entire combined POS/swale to establish access to the rear of the service station
- shrub planting between the internal loop path and the road to reduce balls straying onto the road
- a double avenue of trees around the perimeter to help contain balls and frame the park
- seating located along the loop path provide an opportunity for people to meet in passing.

These recommendations have been incorporated into the current POS landscape design to address the City of Cockburn's concerns.

Design Assumptions

It should be noted that the current landscape design is intended as an indicative concept only and is subject to further design development and investigation. In particular the drainage capacity requirements for the POS are subject to civil engineering design, which will have an impact on the size and extent of the combined basin area to be accommodated within the landscape.

Plant species have not been nominated on the landscape drawing. However, it is assumed that as the planting palette is developed it will focus on the use of local native shrub and groundcover species appropriate to the site conditions.











Irrigation water sources will also be further investigated in future design stages including the option of installing a bore on the site.

Yours sincerely

Ecoscope (Australia) Pty Ltd



PATRICK JORDAN
Principal Landscape Architect

-  POS BOUNDARY
-  PROPOSED TREES
-  SCREEN PLANTING
-  CONCRETE PAVING
-  CONCRETE PAVING
-  MULCH
-  TURF
-  BANDED PLANTING (LOW SHRUBS AND GROUNDCOVERS)
-  BENCH SEAT
-  NOMINAL BUP LOCATION SUBJECT TO CIVIL DESIGN

DESIGN IMAGES

